TURCK

Industrial Automation

FIELDBUS COMPONENTS FOR FOUNDATION FIELDBUS™

Fieldbus Foundation

F1024/01

FIELDBUS COMPONENTS FOR FOUNDATION FIELDBUS™

Fieldbus systems in process automation
Fieldbus systems have become prevalent in the field of process automation in addition to decentral peripheral systems. FOUNDATION fieldbus™ and PROFIBUS-PA fieldbus systems are now the established fieldbuses in this field (for further information about the TURCK-product portfolio and in particular PROFIBUS-PA products, please see catalogue D301026). The advantages of both of these systems are the process adapted specification and the real interoperability of field devices from various manufacturers and their compatibility with external host systems.

Both the FOUNDATION fieldbus™ and PROFIBUS-PA fieldbus fulfil the demands of the chemical, pharmaceutical and petrochemical industries. The most important features are :
- standardised user profile
- suited for use in explosion hazardous areas
- bus supply and fieldbus communication via shielded and twisted pair cables
- online device exchange without affecting system processes
- diagnostics for Asset Management

Comprehensive tests performed by the industry, interest groups and committees confirm the unlimited suitability of both bus systems for use in process engineering.

TURCK fieldbus components
With TURCK products you are not tied down to company-specific fieldbus technologies, but can choose the most suitable bus product for your application from a comprehensive product spectrum.

TURCK offers the complete range for all conventional industrial fieldbus systems in factory and process automation, no matter whether you require junction modules, connection products or even complete systems.

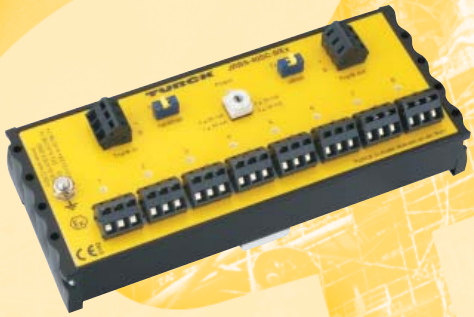
TURCK fieldbus components are specially designed for the harsh industrial environment. The extensive product line for diverse applications fulfils all demands and provides Plug & Play connectivity to ensure fast and easy connection of the field device to the control system.

Fieldbus cables and cordsets in various fieldbus standards and materials and with different connector types are available for data transfer and voltage supply of the stations.

Junction modules in IP67 (1, 4 and 6 channels)
- Device versions for use in:
  - zone 1
  - zone 2
  - Non-Ex area
- Adjustable current limitation
- Switch-in terminating resistors
- Housing material: powder-coated aluminium die-cast (4- and 6-channel types) or encapsulated Polyurethane (PUR) for the single channel versions.
- Connection technology: cable glands- or flange connections in 7/8“ or M12 × 1, stainless steel

Multibarriers in IP66 (4 channels)
- Installation in explosion hazardous areas (zone 1)
- Galvanic isolation between the EEx i outputs and the EEx e main cable as well as between the individual EEx i outputs
- Fieldbus power supply according to enhanced safety EEx e
- Four intrinsically safe EEx ia outputs, 4 × 40 mA, short-circuit protected and non-interacting
- FISCO and Entity conform outputs (IEC TS 60079-27)
- Short-circuit indication via LEDs (inside housing)
- Integrated terminating resistors (switch-in)

Junction modules in IP20 (4, 6, 8 and 12 channels)
- Device versions for use in:
  - zone 1
  - zone 2
  - Non-Ex area
- Adjustable current limitation
- Switch-in terminating resistors
- Housing material: aluminium
- Connection technology: cage clamp terminals or removeable connectors



Stainless steel housing for IP20 junction boxes
- Plastic or stainless steel cable glands
- Degree of protection IP67
- Pressure compensation element
- Isolated shielding bus

Temperature transmitters
- Automatic protocol conversion
- Ex-approval (EEx ia and EEx n)
- DIN type B connector
- Linear resistance, compensator and bipolar mV measurements

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Fieldbus Foundation

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Diagnostic Power Conditioner System
- Segment and system diagnostics
- Commissioning support
- Longterm diagnostics via FF-HSE
- FF functions blocks for diagnostic alarms
- Diagnostics via DTM and/or DD
- Redundant power supply
- High output power for extended fieldbus segments (800 mA, 30 VDC)
- Complete galvanic isolation

FISCO and FNICO power supply
- Integrated repeater function
- Certified to FISCO and FNICO
- Switch-in terminating resistor
- Switch-in power supply for the host
- Output current:
  - 120 mA or 265 mA for FISCO
  - 180 mA or 320 mA for FNICO

Field device overvoltage protection
- Aluminium die-cast housings
- Connection to potential equalisation via M5 × 1 bolt on housing
- Degree of protection: IP67 and IP20

The data sheets are available under www.turck.com

Terminating resistors
- Versions for intrinsically-safe and non-intrinsically safe circuits
- M12 × 1 or 7/8“
- Plug-and-Play technology
- Connector pin assignment conform to CENELEC standard EN 50044

Connectors
- Connector size: M12 × 1 or 7/8“, type: straight or angled (angled M12 × 1 only)
- Plug-and-Play technology
- Load capacity: 7/8“ with 9 A, M12 × 1 with 4 A
- Connector pin assignment conform to CENELEC standard EN 50044

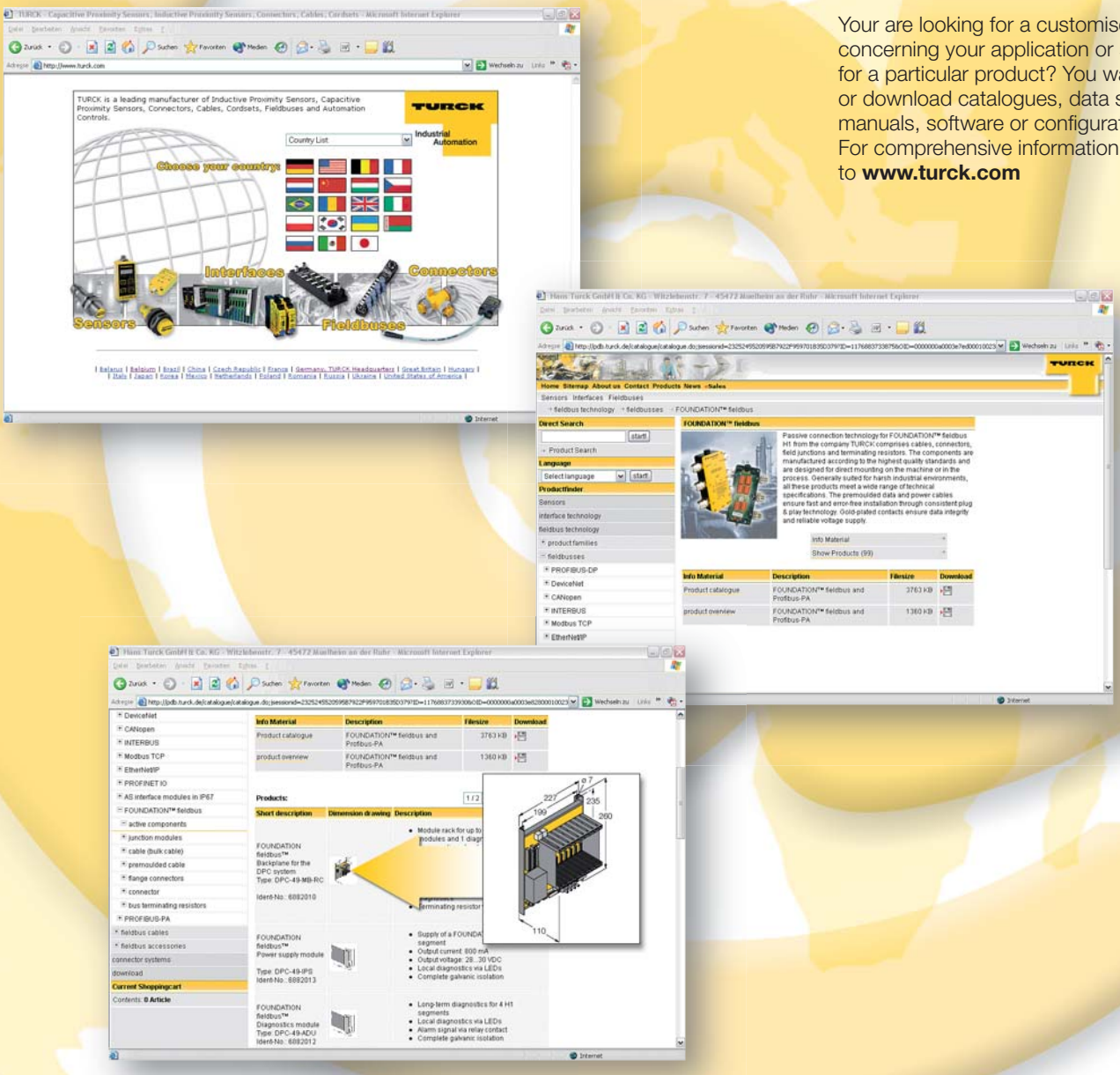
Fieldbus cable available as bulk cable or prefabricated
- For indoor and outdoor use
- For connection to field-wireable M12 × 1 or 7/8” connectors, PG9 or M16/M20 cable glands
- Simple installation via Fast-*Assembly*™ technology
- Just-In-Time delivery by the TURCK-JIT-5D-programme: Delivery of all avaliable premoulded cable lenghts within 5 days .

Special accessories
- Stripping tool, stripping of round (shielded) data conductors from 2.5...8 mm Ø (also for FastConnect®/Fast *Assembly*™),
- Special tool for cable glands on multibarrier and junction modules
- Closure caps and feed-throughs in 7/8“ and M12 × 1

Flange connections
- Field-wireable or prefabricated
- Connector size: M12 × 1 or 7/8“
- Solderable and screw-type versions
- Standard installation thread
- Stainless steel housings

THE TURCK PRODUCT DATA BASE IN THE WORLD WIDE WEB

www.turck.com



Your are looking for a customised solution concerning your application or searching for a particular product? You want to order or download catalogues, data sheets, manuals, software or configuration files? For comprehensive information, please go to **www.turck.com**

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FIELDBUS COMPONENTS FOR FOUNDATION FIELDBUS™

Industrial Automation

FOUNDATION fieldbus™ Basics

FOUNDATION fieldbus™ – Bus physics
With the publication of the international standard IEC 61158-2 in October 1994, a suitable transmission technology was determined and internationally specified for the application areas of FOUNDATION fieldbus™ and PROFIBUS-PA. This was later integrated into the European standards as EN 61158-2.

Both systems comply with IEC 61158-2 and operate on the voltage mode with a transmission speed of 31.25 kBit/s. In this way the data packages are modulated onto the supply voltage for the fieldbus station and transmitted via a shielded two-wire cable (see Fig. 1).

These bus physics offer a decisive advantage: fieldbus communication and power supply of the bus station can be implemented using a single cable. These bus physics lead to enhanced operational safety and lower costs compared with the conventional fieldbus solution used up to this point with its additional wiring effort.

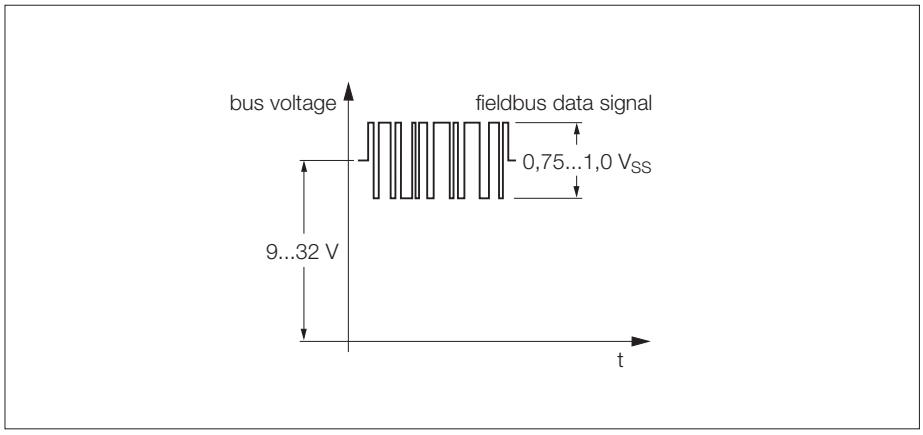

Fig. 1 Transmission of data packages to IEC 61158-2

Characteristic features of the IEC 61158-2 transmission physics

Data transmission	digital, bit synchronous, Manchester coding
Transmission speed	31.25 kBit/s, voltage mode
Data security	preamble, fault protected start and end delimiter
Cable	shielded and twisted 2-wire cable
Remote supply of the stations	optionally via signal cables
Protection classes	intrinsically safe (Ex ia/ib or Ex nL), increased safe (Ex e or Ex nA) and explosion protected (EEx d/m/p/q)
Topology	spur and tree topologies; also in combination
Number of stations	up to 32 stations per cable segment
Repeater	can be extended with a maximum of 4 repeaters

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FOUNDATION fieldbus™ – Topology
The FOUNDATION fieldbus™ network is either

- opened directly via a FOUNDATION fieldbus™ segment card from the process host system and supplied with TURCK DPC system (diagnostic power conditioner system) (Fig. 2 and 3)
  or
- enabled via a “Linking-Device” by high speed ethernet (HSE).

We recommend the use of TURCK multibarriers for a FOUNDATION fieldbus™ application in the explosion hazardous area (Fig. 3), which can supply up to 32 stations in the explosion hazardous area when “cascaded”. The benefits compared to a simple intrinsically safe power supply device are primarily the enhanced number of stations within a bus segment. Furthermore, a higher level of security is given by the enhanced level of availability provided by the galvanic isolation to all sides in the barrier (refer to page 31 for more details).

The number of multibarriers, which can be switched in, and the usable cable lengths depend on the output power of the power conditioner and also on the cable type. TURCK recommends the long-distance cable type FBY.../LD (see page 109) for the main cable (trunk line); for the outputs the standard cable type FBY.../SD (see page 108) is recommended.

Both system configurations in Fig. 2 and 3 are operated with the TURCK DPC system (diagnostic power conditioner system, see from page 10 on). Due to the high output power of the DPC system, segments can be extended up to 1900 m.

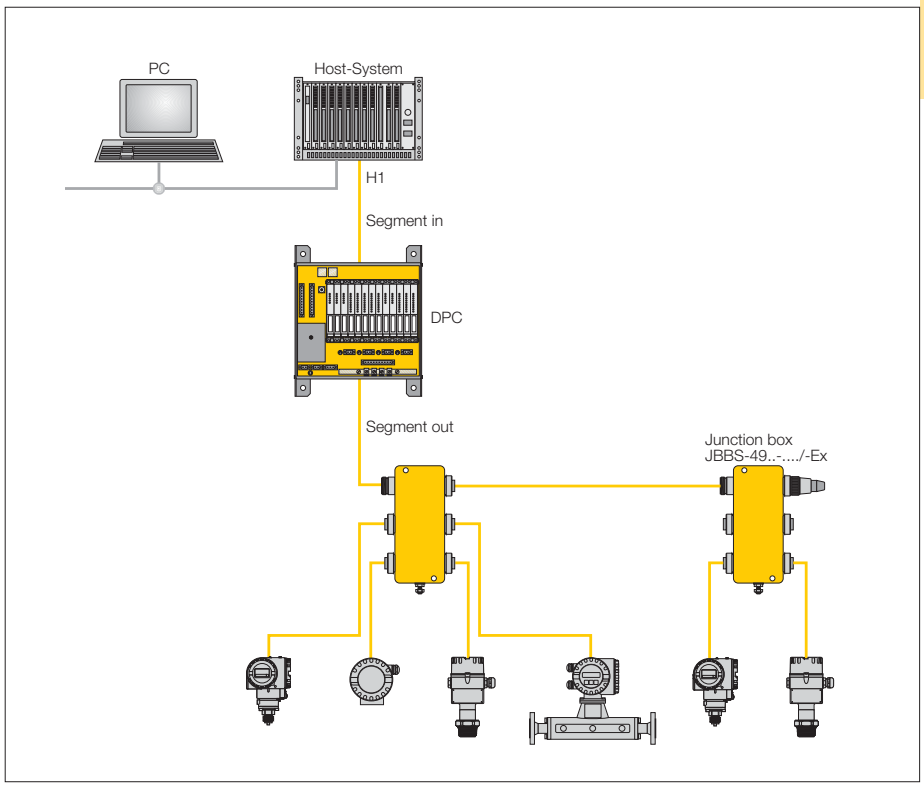


Fig. 2 Topology – FOUNDATION fieldbus™ in the non-explosion hazardous area

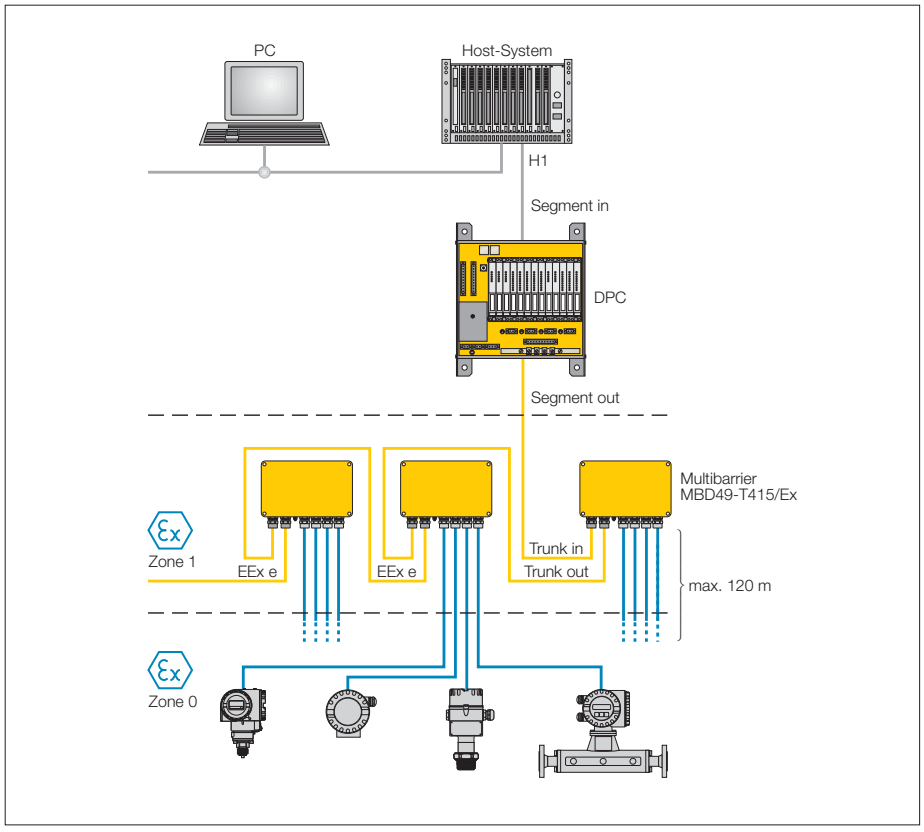


Fig. 3 Topology – FOUNDATION fieldbus™ in the explosion hazardous area

In zone 2 a simple but safe energy limitation is necessary. Fig. 4 shows a FOUNDATION fieldbus™ network topology for zone 2. The power limitation can of cause be implemented in the power supply, e.g. with the TURCK-FNICO-Power-Supply. The advantage is, that working within zone 2 is possible while the system is under power. The disadvantages are, the low number of field devices per FNICO-Power-Supply and a limited segment extension of 1000 m maximum.

Due to these disadvantages TURCK recommends the combination of the TURCK DPC system and the TURCK junction boxes with short circuit protection, also applicable in zone 2. The trunk line is fed with explosion protection Ex nA, as the output of the DPC system is power limited. The limitation of power in the junction boxes is implemented such that the circuits of the drop line are limited according to Ex nL. Therefore working at the field devices during operation is possible and the segment can be extended up to 1900 m max. (Fig. 5).

A FOUNDATION fieldbus™ network in non-Ex and Ex areas can also be established via a HSE-H1 link.
HSE stands for “High Speed Ethernet” and supports Ethernet fieldbus solutions. In addition to the Ethernet protocol family, the HSE also supports the FOUNDATION fieldbus™ H1 protocol. As a result, it is possible to access every Ethernet based network with a transmission speed of 10...1000 MBit/s in H1 fieldbus segments.

HSE and H1 have been fundamentally developed as supplementary networks. Whereas H1 has been optimised for applications in traditional process automation, HSE is more suited to high performance process control applications. Attractively-priced, commercial standard Ethernet devices can be operated in HSE applications.

The combined H1 and HSE fieldbus solution enables complete integration of fundamental and complex industrial process instrumentation and measurement into the higher level control system. This kind of integrated architecture not only helps reduce system downtimes but also provides improved diagnostics functions and better user information.

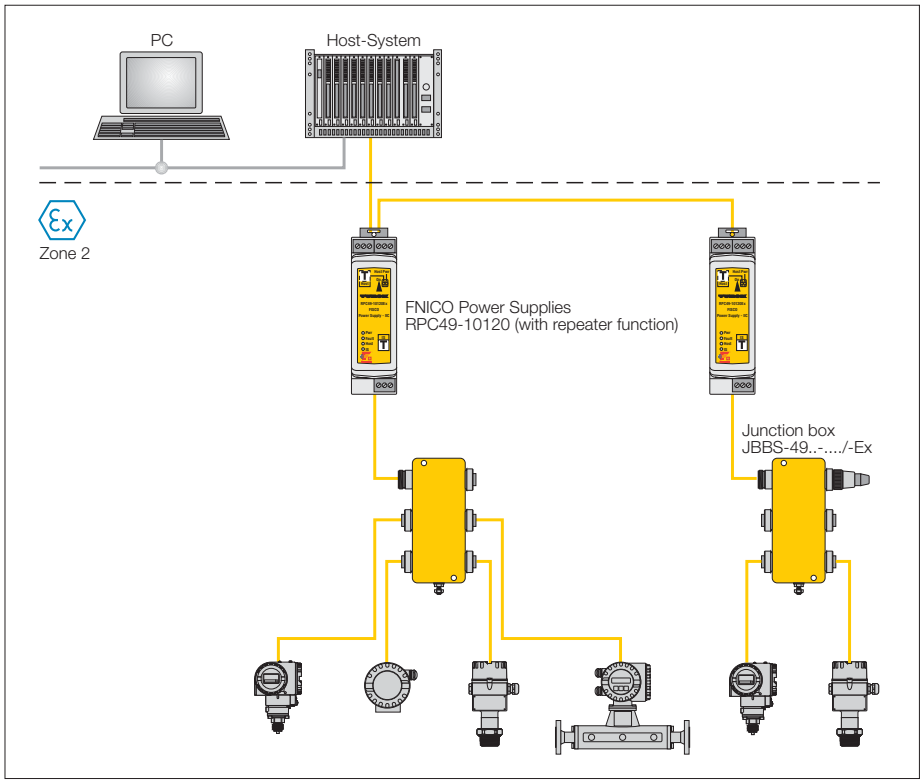


Fig. 4 Topology – FOUNDATION fieldbus™ with FNICO power supply in zone 2

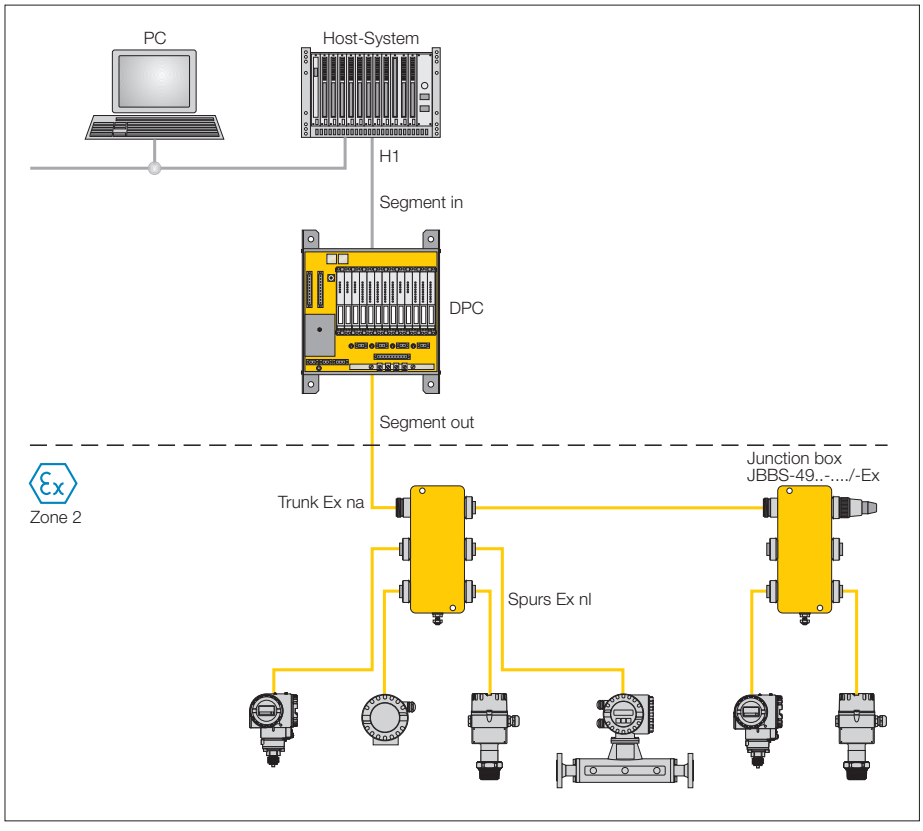


Fig. 5 Topology – FOUNDATION fieldbus™ with power conditioner system in zone 2

Overview – Application areas of TURCK's fieldbus components in the explosion hazardous and non-explosion hazardous area

	Application in EEx i circuits conform to FISCO			Application in EEx i circuits conform to EN 50020			Application in Ex nL circuits conform to		Installation in			Installation in the Non-Ex area
	EEx ia	EEx ib		EEx ia	EEx ib							
	Zone 0	Zone 1	Zone 2	Zone 0	Zone 1	Zone 2	FNICO	Entity	Zone 0	Zone 1	Zone 2	
Junction boxes without short-circuit protection												
JBBS...M...	–	–	–	–	–	–	✔	✔	–	✔	✔	✔
JBBS...E...	–	–	–	–	–	–	✔	✔	–	✔	✔	✔
JBBS...T...	–	–	–	–	–	–	✔	✔	–	✔	✔	✔
Junction boxes with short-circuit protection												
JBBS...SC...M...	–	–	–	–	–	–	✔	✔	–	–	✔	✔
JBBS...SC...E...	–	–	–	–	–	–	✔	✔	–	–	✔	✔
JBBS...SC...T...	–	–	–	–	–	–	✔	✔	–	–	✔	✔
Ex junction boxes without short-circuit protection												
JBBS...M.../Ex	✔	✔	✔	✔	✔	✔	✔	✔	–	✔	✔	✔
JBBS...E.../Ex	✔	✔	✔	✔	✔	✔	✔	✔	–	✔	✔	✔
JBBS...T.../Ex	✔	✔	✔	✔	✔	✔	✔	✔	–	✔	✔	✔
Ex junction boxes with short-circuit protection												
JBBS...SC...M.../Ex	✔	✔	✔	✔	✔	✔	✔	✔	–	✔	✔	✔
JBBS...SC...E.../Ex	✔	✔	✔	✔	✔	✔	✔	✔	–	✔	✔	✔
JBBS...SC...T.../Ex	✔	✔	✔	✔	✔	✔	✔	✔	–	✔	✔	✔
Ex junction boxes for DIN hat-rail mounting JRBS...[1]	✔	✔	✔	✔	✔	✔	✔	✔	–	✔	✔	✔
Multibarriers MBD...[2]	✔	✔	✔	✔	✔	✔	–	–	–	✔	✔	✔
Power conditioner system	–	–	–	–	–	–	–	–	–	–	–	✔
FISCO power supply	–	✔	✔	–	–	–	✔	✔	–	–	✔	✔
FNICO power supply	–	–	–	–	–	–	✔	✔	–	–	✔	✔
Temperature transmitters[1]												
KMU-40Ex/1GD	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
KMU-40Ex/3G	–	–	–	–	–	–	✔	✔	–	–	✔	✔
Terminating resistors RS...-TR	–	–	–	–	–	–	–	–	–	–	–	✔
Ex terminating resiators RS...-TR/Ex	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Passive equipment without electronics (cable, connectors, flanges ...[3]	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

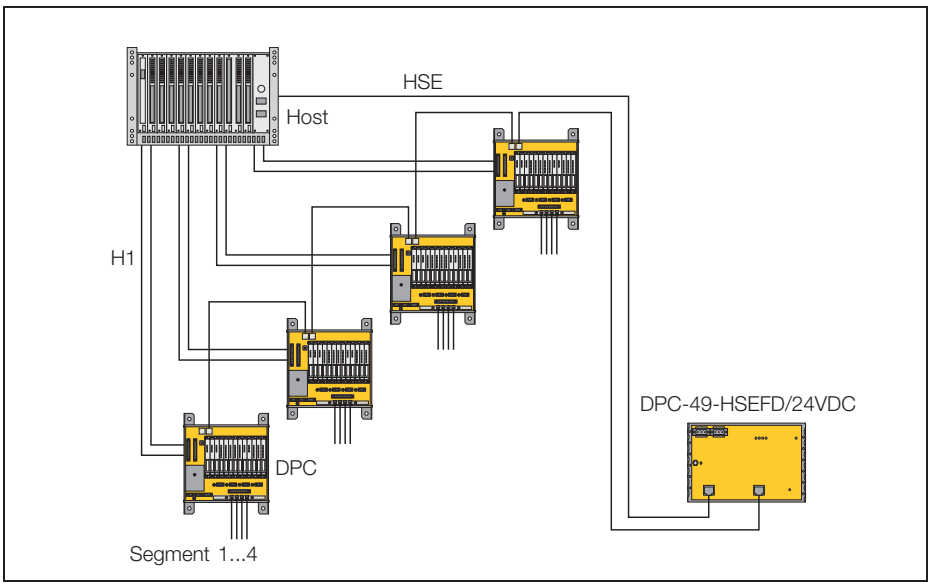
✔ = Use possible
— = Use not possible

[1] Use only permitted when installed in an additional housing (minimum IP54 degree of protection)
[2] Equipment with differing protection classes – only the EEx i outputs have intrinsically safe circuits
[3] Taking consideration of the EN 50014, EN 50020 and EN 60079-14 standards

CAUTION
Intrinsically safe equipment, which has been used in non intrinsically safe applications, may not subsequently be used in intrinsically safe applications.

FOUNDATION fieldbus™
Backplane for the DPC system
DPC-49-MB-RC

Industrial Automation



The DPC-System (Diagnostic-Power-Conditioner-System) is a power supply system for the installation of FOUNDATION fieldbus™ H1 segments. It offers comprehensive diagnostic functions for the monitoring of FOUNDATION fieldbus™ segments and thus supporting Asset Management for the whole system.

A DPC system consists of one or more module racks DPC-49-MB-RC each with up to eight power supply modules DPC-49-IPS and one diagnostic module DPC-49-ADU. Up to four H1 segments for each module rack can be operated and monitored redundantly in the FOUNDATION fieldbus™. The diagnostic data from the H1 segments are transmitted via the HSE interface modul DPC-49-HSEFD/24VDC to the higher level Asset-Management-System.

The module rack DPC-49-MB-RC consists of a backplane and the actual rack system for the power supply modules and the diagnostic module.

The single components of the system are electrically linked via the connection terminals of the backplane from the user side. Thereby from an electrical perspective, the backplane is to be considered passive.

The power can be supplied via two 2-pole screw connectors. The connection to the host system is established via two system cables. Pre-assembled system cables are optionally available as accessory at Turck.

For the connection of the H1 segments to the fieldbus side a 2-pole screw connector terminal is provided for each segment, or alternatively a 10-pole screw connector terminal for all segments together on the system side (system connection).

Shielding is established via a shielding bus bar DPC-49-SB4 or via the system connection, which is internally connected with the M5 threaded bolt for equipotential bonding.

A connection to the relay alarm contact of the diagnostic module is avaliable for simple diagnostics processing. Additionally a terminal for the connection of test devices is available for each H1 segment.

The rack system is made of extruded aluminium sections. Thus high system stability and shielding is guaranteed. The module rack is suited for wall mounting as well as for 19" rail mounting.

- **Module rack for up to 8 power supply modules and 1 diagnostics module for the mounting of up to 4 H1 segments**
- **Redundant power supply**
- **Redundant HOST connection**
- **Removable terminal blocks with screw connection**
- **RJ45 connector for HSE fieldbus diagnostics**

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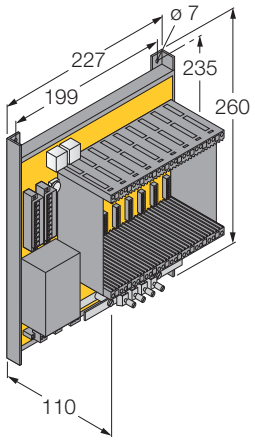
FOUNDATION fieldbus™
Backplane for the DPC system
DPC-49-MB-RC

Industrial Automation

Type	DPC-49-MB-RC
Ident-No.	6882010
Operating voltage (Pwr)	18...32 VDC
Surge/overvoltage suppression	> 250 VDC
Connection	removable terminal block, reverse polarity protected, screw connection RJ45 socket
Protection degree	IP20
Ambient temperature	-20...+60 °C
Housing material	aluminium
Housing colour	black/yellow
Dimensions	227 x 260 x 110 mm
Connection mode	wall mounting

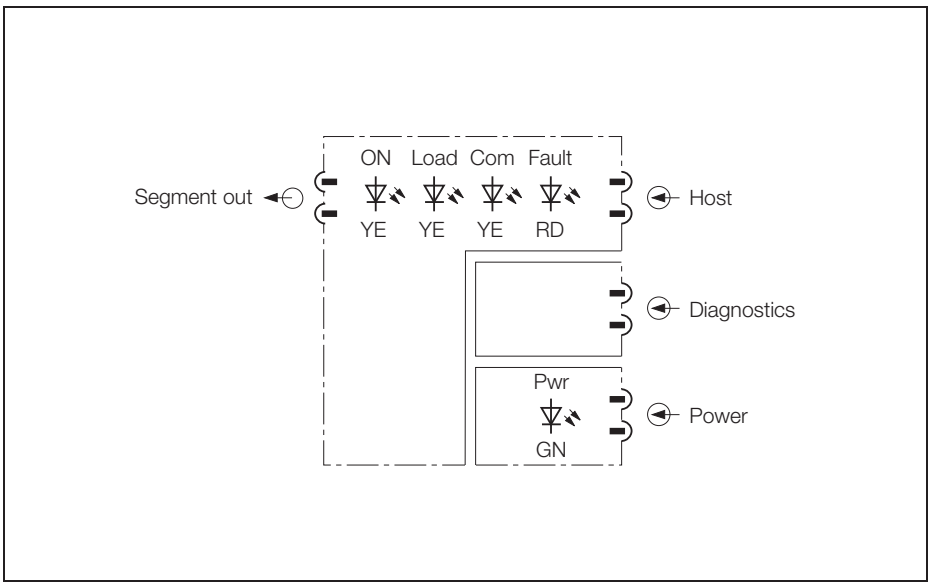
Dimensions



2

FOUNDATION fieldbus™
Power supply module
DPC-49-IPS

Industrial Automation



The DPC system (Diagnostic-Power-Conditioner-System) is a power supply system for the installation of FOUNDATION fieldbus™ H1 segments. It offers comprehensive diagnostic functions for the monitoring of FOUNDATION fieldbus™ segments and thus supporting Asset Management for the whole system.

A DPC system consists of one or more module racks DPC-49-MB-RC each with up to eight power supply modules DPC-49-IPS and one diagnostic module DPC-49-ADU. Up to four H1 segments for each module rack can be operated and monitored redundantly in the FOUNDATION fieldbus™. The diagnostic data from the H1 segments are transmitted via the HSE interface module DPC-49-HSEFD/24VDC to the higher level Asset-Management-System.

The power supply module provides up to 30 VDC and 800 mA for the installation of the segment. Due to this maximum output power broad segment allocation (up to 1900 m) is possible without restriction.

If two power supply modules are applied, a redundant operation of the segment is possible. Therefore the power supply modules can be plugged and unplugged shock-free (hot swapable in run)

Due to complete galvanic isolation
- H1 to H1
- H1 for the internal supply
- H1 to the diagnostics module
- H1 to the HSE diagnostics bus

potential transfer is avoided and an error-free communication is insured.

In order to simplifiy the start-up and the diagnostics on site, the following LED functions are available:

- Pwr: green: Operational readiness
- On / Off: yellow: Output switched on
- Load: yellow: Recognition of consumers (field device) at the segment
- Com: yellow: Communication display
- Fault: red: Short-circuit message

- **Supply of a FOUNDATION fieldbus ™ H1 segment**
- **Output current: 800 mA**
- **Output voltage: 28...30 VDC**
- **Local diagnostics via LEDs**
- **Complete galvanic isolation**

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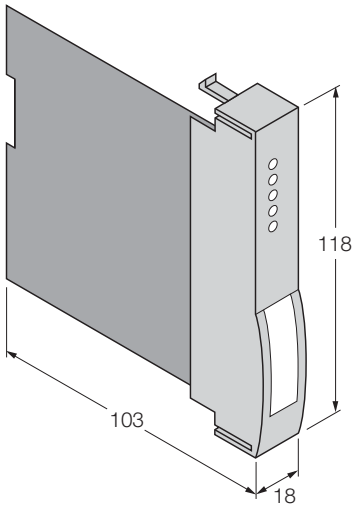
FOUNDATION fieldbus™
Power supply module
DPC-49-IPS

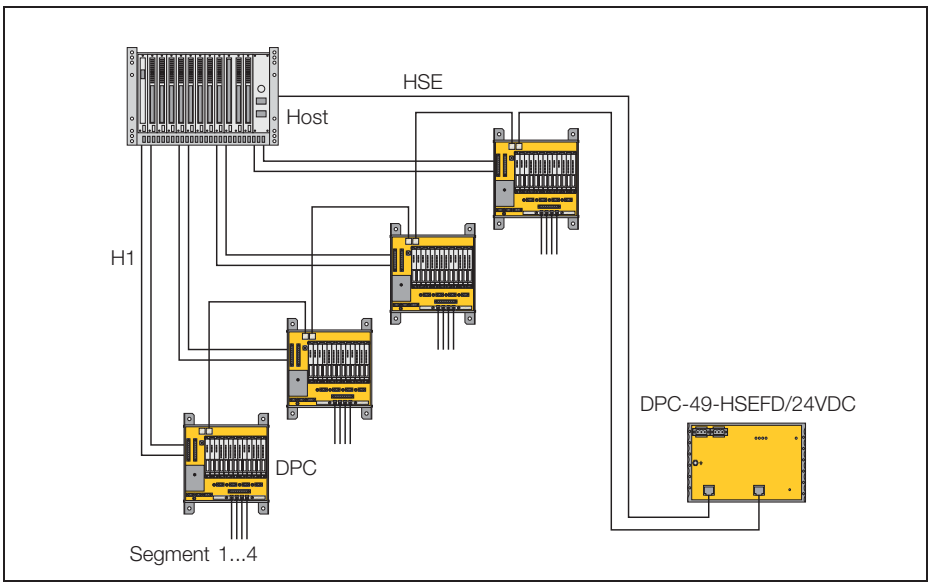
Industrial Automation

Type	DPC-49-IPS
Ident-No.	6882013
Supply voltage	via the backplane
Current consumption	0.8...1.7 A
Galvanic isolation	complete galvanic isolation, test voltage 500 VAC
Output circuits	field
Output current	≤ 800 mA
Output voltage	> 28 VDC
Short-circuit protection	≤ 850 mA
Efficiency	80 %
Output circuits	HOST
Output current	< 30 mA
Output voltage	27 VDC
Indication	
Operational readiness	1 x green
Output active	1 x yellow
Output current	1 x yellow
Short-circuit message	1 x red
Bus communication	1 x yellow
Protection degree	IP20
Ambient temperature	-20...+60 °C
Housing material	plastic flammability class V-0 to UL 96
Housing colour	yellow
Dimensions	18 x 118 x 103 mm

Dimensions



FOUNDATION fieldbus™
Diagnostics module
DPC-49-ADU



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The diagnostic module DPC-49-ADU is used as a communication and diagnostic interface between the H1 segments and the power supply module. The diagnostics module monitors the electrical parameters and the communication parameters of the H1 segments. Operation without diagnostic module is possible.

The diagnostic information is collected in the device and transmitted via the HSE interface module to the higher fieldbus level (e.g. to the host) as diagnostic and alarm data. The diagnostic module can be plugged and unplugged during operation (hot swap-able in run).

The device features a LED display which indicates the operating status of the H1 segments. A pre-alarm is indicated yellow and a main alarm red on the LED display. Alarm signals can also be transmitted via a relay contact.

- **Long-term diagnostics for 4 H1 segments**
- **Local diagnostics via LEDs**
- **Alarm signal via relay contact**
- **Complete galvanic isolation**

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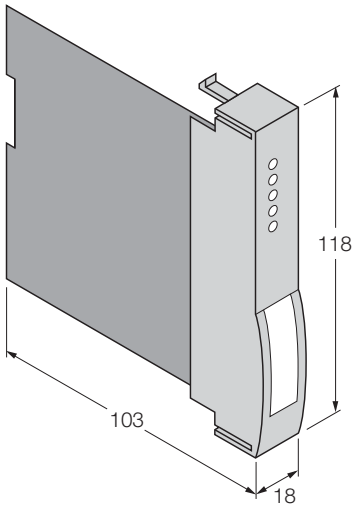
FOUNDATION fieldbus™
Diagnostics module
DPC-49-ADU

Industrial Automation

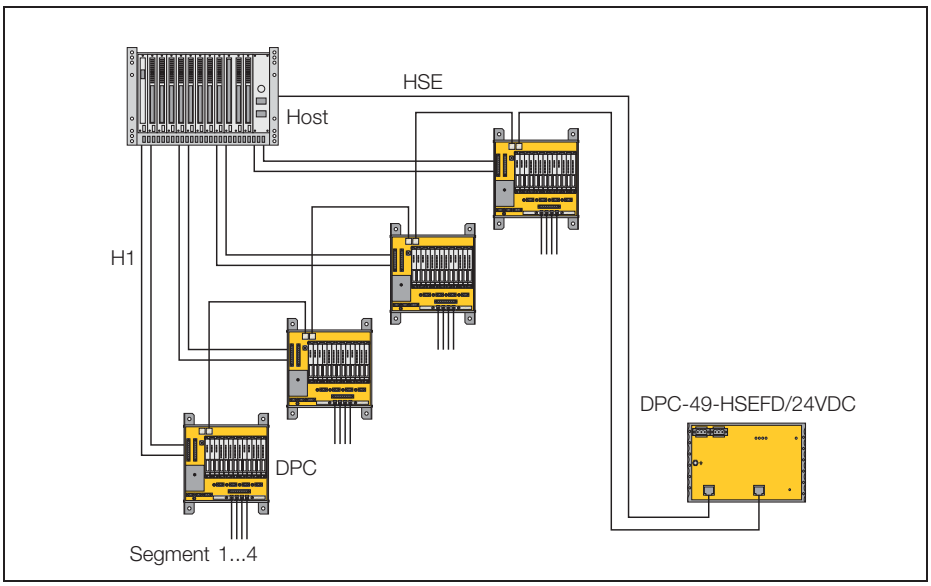
Type	DPC-49-ADU
Ident-No.	6882012
Supply voltage	via the backplane
Current consumption	< 100 mA
Galvanic isolation	complete galvanic isolation, test voltage 500 VAC
Diagnosis	1 x relay
Switching current	≤ 1000 mA
Switching voltage	≤ 30 VDC
	galvanically isolated against other electronic parts
Operational readiness	1 x green / red
Alarm	4 x yellow / red
Protection degree	IP20
Ambient temperature	-20...+60 °C
Housing material	plastic
	flammability class V-0 to UL 96
Housing colour	yellow
Dimensions	18 x 118 x 103 mm

Dimensions



FOUNDATION fieldbus™
HSE field device
DPC-49-HSEFD/24VDC

Industrial Automation



The DPC-System (Diagnostic-Power-Conditioner-System) is a power supply system for the installation of FOUNDATION fieldbus™ H1 segments. It offers comprehensive diagnostic functions for the monitoring of FOUNDATION fieldbus™ segments thus supporting Asset Management for the whole system.

A DPC system consists of one or more module racks DPC-49-MB-RC, each with up to eight power supply modules DPC-49-IPS and one diagnostic module DPC-49-ADU. Up to four H1 segments for each module rack can be operated and monitored redundantly in the FOUNDATION fieldbus™.

The diagnostic data from the H1 segments are transmitted via the HSE interface module DPC-49-HSEFD/24VDC to the higher level Asset-Management-System. Only the diagnostics data of the diagnostic module DPC-49-ADU are transmitted with the HSE interface module, not the process data of the H1 field device. Each diagnostic module monitors up to four H1 segments

The HSE interface module is a FOUNDATION fieldbus™ field device, which contains one resource and one transducer block and various standard function blocks. On the basis of these standard function blocks, suitable applications for the analysis of the diagnostics data can be programmed in the control system.

Features

- HSE interface module for the transmission of diagnostic data
- FOUNDATION fieldbus™ function blocks for remote diagnostics
- Diagnostics via LEDs
- Long term diagnostics for sixteen H1 segments
- Complete galvanic isolation

- **HSE interface device for transmission of diagnostics data**
- **FOUNDATION fieldbus™ function blocks for remote diagnostics**
- **Local diagnostics via LEDs**
- **Long-term diagnostics for 16 H1 segments**
- **Complete galvanic isolation**

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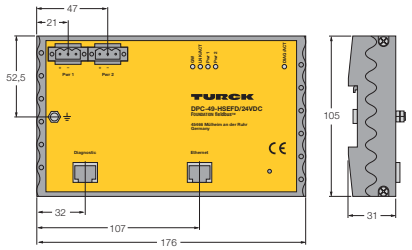
FOUNDATION fieldbus™
HSE field device
DPC-49-HSEFD/24VDC

Industrial Automation

Type	DPC-49-HSEFD/24VDC
Ident-No.	6882014
Supply voltage	via the backplane
Current consumption	< 100 mA
Galvanic isolation	complete galvanic isolation, test voltage 500 VAC
Indication	
Operational readiness	2 x green
State/ Fault	1 x yellow / red
Bus communication	1 x green / yellow
Int. communication (CAN)	1 x yellow / red
Connection	removable terminal block, reverse polarity protected, screw connection RJ45 connector
Protection degree	IP20
Ambient temperature	-20...+60 °C
Housing material	aluminium
Housing colour	black/yellow
Dimensions	176 x 105 x 31 mm
Connection mode	snap-on DIN rail (DIN 50022)

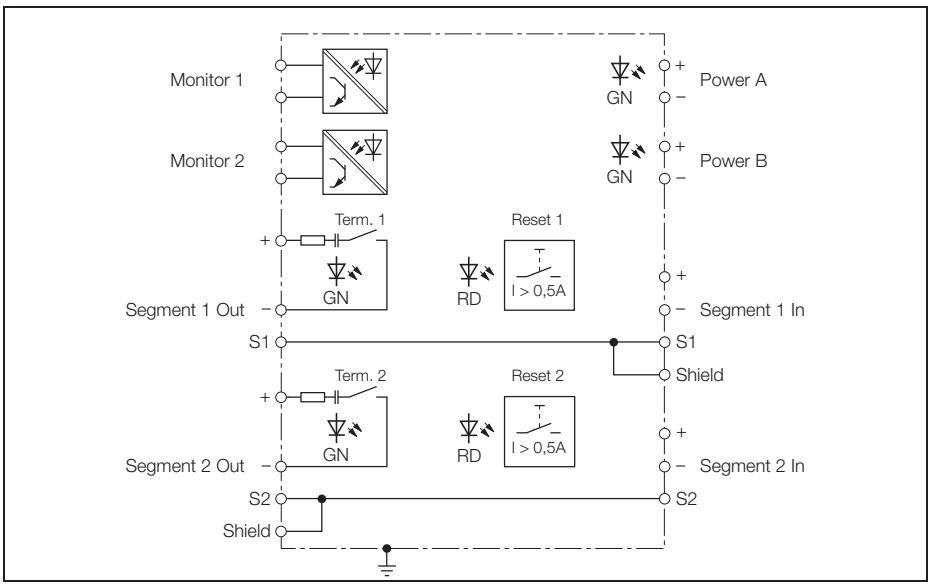
Dimensions



2

FOUNDATION fieldbus™
Power conditioner, dual channel
RPC49-205

Industrial Automation



The power conditioner RPC49-205 provides 2 segments for construction of a FOUNDATION fieldbus™ network. In conjunction with the TURCK power supply PSU-3214 the two segments provide each approx. 500 mA at an output voltage of at least 27.5 V.

The conditioner can be powered redundantly when using two power supplies with „POWER A“ as the primary input. If redundant power supply is not available, the power supply should be connected to ”POWER B”. As soon as the voltage at ”POWER A” drops below 20 V, the input ”POWER B” activates.

The two Power LEDs indicate that the supply voltage is applied when they illuminate green. Green active LEDs also signal that the device is actively powered. The two short-circuit protected outputs of the power conditioner switch off the affected output in the event of an overload (> 500 mA). This status is indicated by a red LED per segment. The overload protection of the affected segment can be reset via two reset buttons.

The monitor terminals can be used for hardware diagnostics. If the input voltage is within the permissible operating voltage range, the solid state relays (N.O.) are closed. The relays can be used for further display and switching operations. The power conditioner is equipped with an optional terminating resistor for the bus.

- **Supply of 2 H1-segments, connection via removable screw terminals**
- **Aluminium rail housing**
- **Degree of protection IP20**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Monitor function**
- **LEDs for indication of the operating status**
- **2 x 500 mA output current**
- **Redundant power supply**
- **Short-circuit protected outputs**

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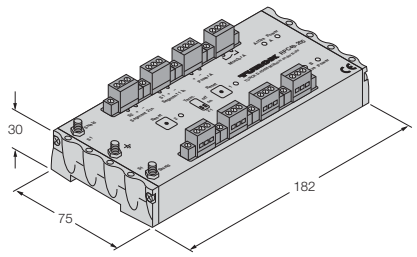
FOUNDATION fieldbus™
Power conditioner, dual channel
RPC49-205

Industrial Automation

Type	RPC49-205
Ident-No.	6603801
Operating voltage (Pwr)	21...32 VDC
Surge/overvoltage suppression	> 36 VDC
Current consumption	535 mA (1 x 500 mA I_{out}) 1043 mA (2 x 500 mA I_{out})
Voltage drop	≤ 4.4 V
Output circuits	
Output current	≤ 500 mA
Output voltage	U_{out} = Pwr - [2V + (I_{out} x 4.4Ohm)]
Short-circuit protection	≤ 500 mA
Diagnosis	2 x solid state relay
Switching current	≤ 700 mA
Switching voltage	≤ 400 VDC galvanically isolated against other electronic parts
Indication	
Operational readiness	2 x green
Output active	2 x green
Short-circuit message	2 x red
Connection	8 x 3-pole removable terminal blocks, screw connection
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Ambient temperature	-20...+70 °C
Relative humidity	≤ 95 %, non condensing
Housing material	aluminium
Housing colour	black/yellow
Dimensions	182 x 75 x 30 mm
Connection mode	snap-on DIN rail (DIN 50022)

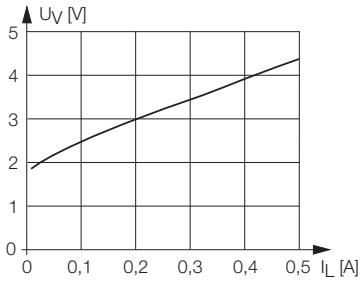
Dimensions



Segment In/Out

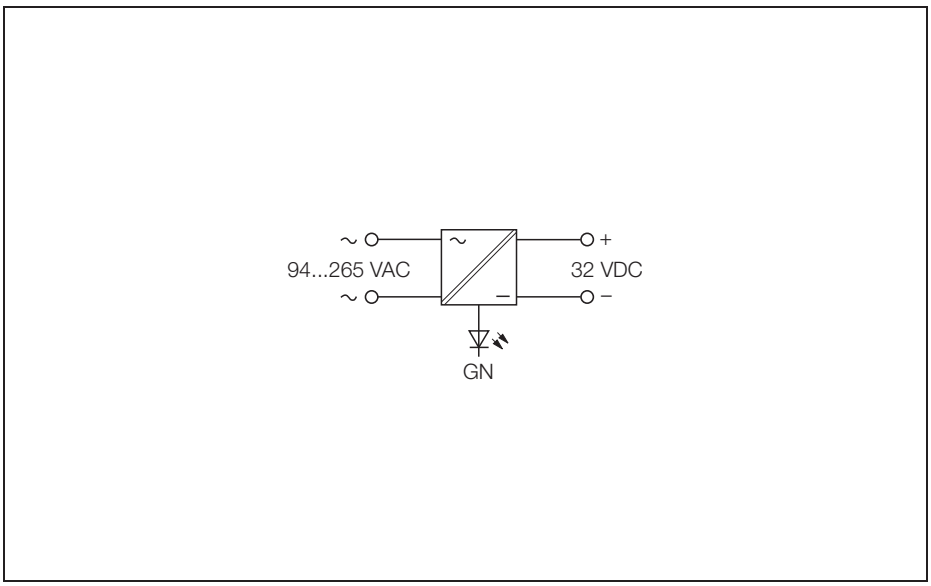
Power/Monitor

Voltage drop/Load current



Power supply
Single-channel
PSU-3214

Industrial Automation



The power supply PSU-3214 is designed to supply a power conditioner.

The device provides a safety extra low voltage (SELV) acc. to IEC/EN 60950. It features protection class II and accords to EMC class B.

The output voltage is specified with 32 VDC with a maximum output current of 1.4 A. The overload protection is triggered at a current of typically 1.6 A.

In conjunction with the TURCK power conditioner RPC49-205 an output voltage of 29 V is provided for the fieldbus segment, depending on the output current.

When combined with the TURCK multibarrier MBD49-T415/Ex, cable lengths up to 1000 m can be used in the explosion hazardous area.

A green LED indicates that the device is powered.

- **Output voltage 32 VDC**
- **Output current 1.4 A**
- **Safety extra low voltage SELV according to IEC/EN 60950**
- **Universal operating voltage (94...264 V AC)**

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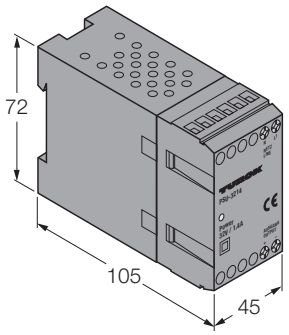
Power supply
Single-channel
PSU-3214

Industrial Automation

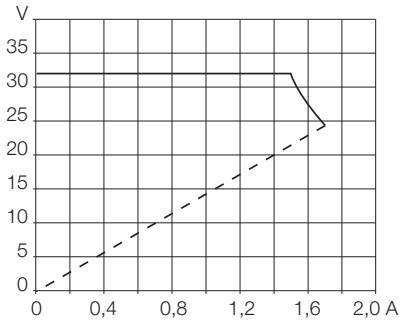
2

Type	PSU-3214
Ident-No.	7545024
Operating voltage (Pwr)	94...265 VAC
Mains frequency	47...63 Hz
Current consumption	0.6 A at 230 VAC / 1.1 A at 120 VAC
Starting current inrush	$I^2t < 2.8\ A^2s$
Galvanic isolation	Input circuit to output circuit and supply voltage for 250 V_{rms}; test voltage 3 kV_{rms}
Output circuits	
Output current	≤ 1400 mA
Output voltage	32 VDC (± 3 %)
Residual ripple	≤ 50 mV_{ss}
Short-circuit protection	≤ 1600 mA
Efficiency	89 %
Derating	2.5 %/K (from +60 °C)
Indication	
Operational readiness	1 x green
Connection	flat terminals with self-lifting pressure plates
Connection cross-section	1 x 2.5 mm^2 / 2 x 2.5 mm^2
Protection degree	IP20
Ambient temperature	-10...+70 °C
Housing material	plastic
Housing colour	blue
Dimensions	45 x 72 x 105 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions

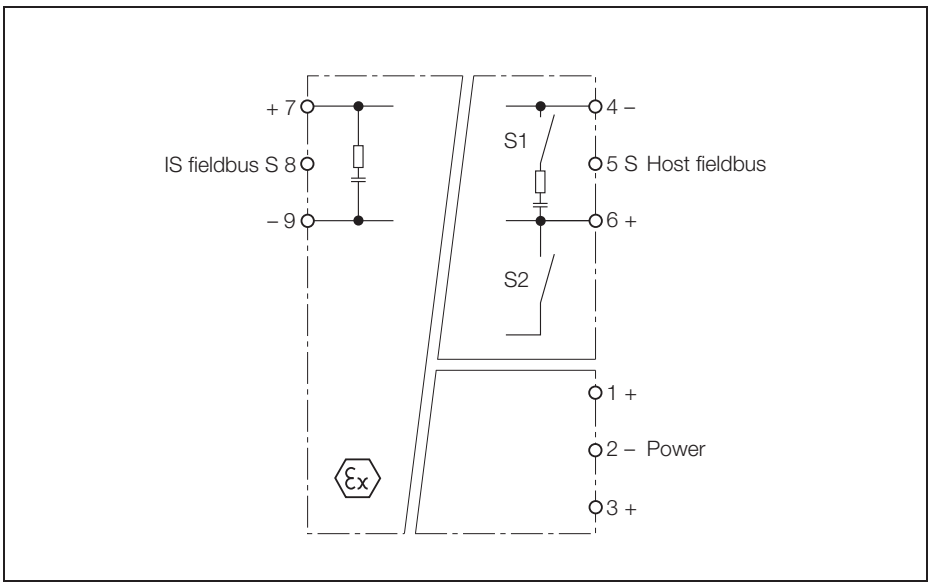


Output curve



FOUNDATION fieldbus™
FISCO Power Supply
RPC49-10120EX

Industrial Automation



The RPC49-10120EX fieldbus power supply repeats the fieldbus signal from a host control system to intrinsically safe fieldbus devices in a zone 1 hazardous area. Complying with the IEC 60079-27 FISCO technical specification, it is capable of providing high levels of current in the hazardous area, while maintaining the benefits of a true intrinsically safe circuit throughout the field network.

With the RPC49-10120EX an integrated transfer between the host and the field connections can be implemented, which enables a parallel connection of several devices in the fieldbus and accordingly allows a higher number of field devices in the segment.

Designed to operate in harsh environments, and suitable for installation in zone 2 explosion hazardous areas, the TURCK power supply RPC49-10120EX expands the boundaries for fieldbus architecture.

The RPC49-10120EX delivers up to 120 mA, powering field devices in Gas Group IIC environments. The DIN-rail mounted unit is designed to exploit the very latest advances in explosion protection practice contained in the FISCO (Fieldbus Intrinsically Safe Concept) technical specifications, allowing users to reap the full potential of digital fieldbus communication without artificial constraints.

Offering unparalleled performance and flexibility, the TURCK supply RPC49-10120EX makes it easy to design, install and maintain IEC 61158-2 fieldbus networks conforming to the 31.25 kbits/s physical layer specification. Compatibility with the TURCK range of wiring components and accessories ensures high reliability, low installation cost and high operational safety.

The supply to the host can be selected by a switch; accordingly no additional power supplies are required.

- **FISCO compliance according to IEC TS 60079-27**
- **Protection type: [EEx ib] IIC**
- **Mounting in zone 2 possible**
- **FISCO power supply for FOUNDATION fieldbus™**
- **Output current: 120 mA**
- **Fieldbus - repeater**
- **Installation in zone 2**
- **Temperature range: -40...+70°C**

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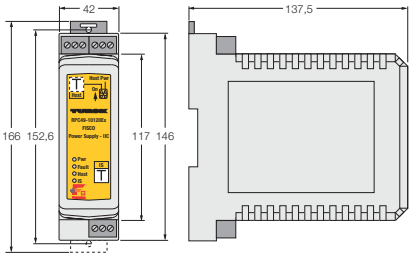
FOUNDATION fieldbus™
FISCO Power Supply
RPC49-10120EX

Industrial Automation

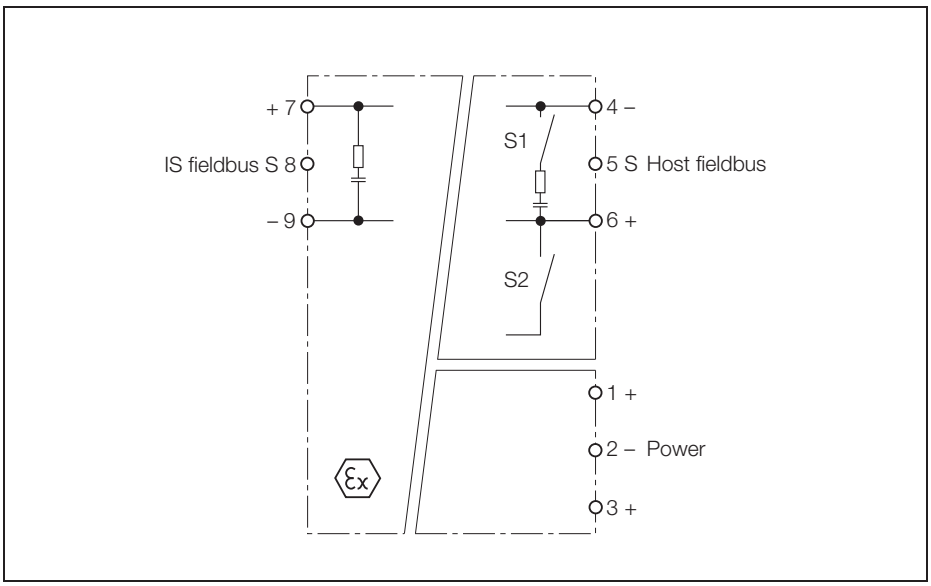
Type	RPC49-10120EX
Ident-No.	6604157
Operating voltage (Pwr)	19.2...30 VDC
Current consumption	235 mA (typ.) 330 mA (max.) at 20 V 190 mA (typ.) 265 mA (max.) at 24 V 155 mA (typ.) 215 mA (max.) at 30 V
Galvanic isolation	input circuit to output circuit and supply voltage for 250 V_{rms}
Output circuits	
Output current	≤ 120 mA
Output voltage	12.4 VDC
Short-circuit protection	≤ 140 mA
Indication	
Operational readiness	1 x green
Short-circuit message	1 x red
Bus communication	2 x yellow
Ex approval acc. to conformity certificate	BASEEFA 05 ATEX 0127
FISCO parameter acc. to IEC TS 60079-27	
Max. output voltage U_o	≤ 14 V
Max. output current I_o	≤ 180 mA
Max. output power P_o	≤ 2520 mW
External inductances/capacitances L_o/C_o	300 µH / 0.2 µF
Marking of the device	⟨Ex⟩ II (2) GD [EEx ib] IIC ⟨Ex⟩ II 3 G EEx nA II T4 X FISCO Power Supply
Connection	3 x 3-pole removable terminal blocks, reverse polarity protected, screw connection or tension spring
Connection cross-section	2.5 mm^2
Protection degree	IP20
Ambient temperature	-40...+70 °C
Housing material	plastic
Housing colour	black/yellow
Dimensions	42 x 166 x 137.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions



2

FOUNDATION fieldbus™
FISCO Power Supply
RPC49-10265EX



The RPC49-10265EX fieldbus power supply repeats the fieldbus signal from a host control system to intrinsically safe fieldbus devices in a zone 1 hazardous area. Complying with the IEC 60079-27 FISCO technical specification, it is capable of providing high levels of current in the hazardous area, while maintaining the benefits of a true intrinsically safe circuit throughout the field network.

With the RPC49-10265EX an integrated transfer between the host and the field connections can be implemented, which enables a parallel connection of several devices in the fieldbus and accordingly allows a higher number of field devices in the segment.

Designed to operate in harsh environments, and suitable for installation in zone 2 explosion hazardous areas, the TURCK power supply RPC49-10265EX expands the boundaries for fieldbus architecture.

The RPC49-10265EX delivers up to 265 mA powering field devices in Gas Group IIB environments. The DIN-rail mounted unit is designed to exploit the very latest advances in explosion protection practice contained in the FISCO (Fieldbus Intrinsically Safe Concept) technical specifications, allowing users to reap the full potential of digital fieldbus communication without artificial constraints.

Offering unparalleled performance and flexibility, the TURCK supply RPC49-10265EX makes it easy to design, install and maintain IEC 61158-2 fieldbus networks conforming to the 31.25 kbits/s physical layer specification. Compatibility with the TURCK range of wiring components and accessories ensures high reliability, low installation cost and high operational safety.

The supply to the host can be selected by a switch; accordingly no additional power supplies are required.

- **FISCO compliance according to IEC TS 60079-27**
- **Protection type: [EEx ib] IIB**
- **Mounting in zone 2 possible**
- **FISCO power supply for FOUNDATION fieldbus™**
- **Output current: 265 mA**
- **Fieldbus - repeater**
- **Installation in zone 2**
- **Temperature range: -40...+70°C**

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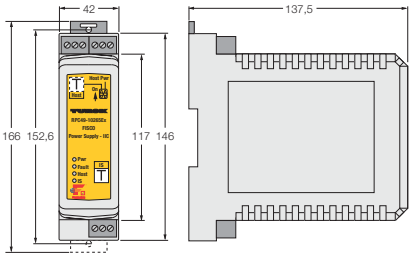
FOUNDATION fieldbus™
FISCO Power Supply
RPC49-10265EX

Industrial Automation

Type	RPC49-10265EX
Ident-No.	6604158
Operating voltage (Pwr)	19.2...30 VDC
Current consumption	380 mA (typ.) 495 mA (max.) at 20 V 315 mA (typ.) 410 mA (max.) at 24 V 255 mA (typ.) 330 mA (max.) at 30 V
Galvanic isolation	input circuit to output circuit and supply voltage for 250 V_{rms}
Output circuits	
Output current	≤ 265 mA
Output voltage	13.1 VDC
Short-circuit protection	≤ 285 mA
Indication	
Operational readiness	1 x green
Short-circuit message	1 x red
Bus communication	2 x yellow
Ex approval acc. to conformity certificate	BASEEFA 05 ATEX 0127
FISCO parameter acc. to IEC TS 60079-27	
Max. output voltage U_o	≤ 14.8 V
Max. output current I_o	≤ 359 mA
Max. output power P_o	≤ 5310 mW
External inductances/capacitances L_o/C_o	550 µH / 0.5 µF
Marking of the device	⟨Ex⟩ II (2) GD [EEx ib] IIB ⟨Ex⟩ II 3 G EEx nA II T4 X FISCO Power Supply
Connection	3 x 3-pole removable terminal blocks, reverse polarity protected, screw connection or tension spring
Connection cross-section	2.5 mm^2
Protection degree	IP20
Ambient temperature	-40...+70 °C
Housing material	plastic
Housing colour	black/yellow
Dimensions	42 x 166 x 137.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions



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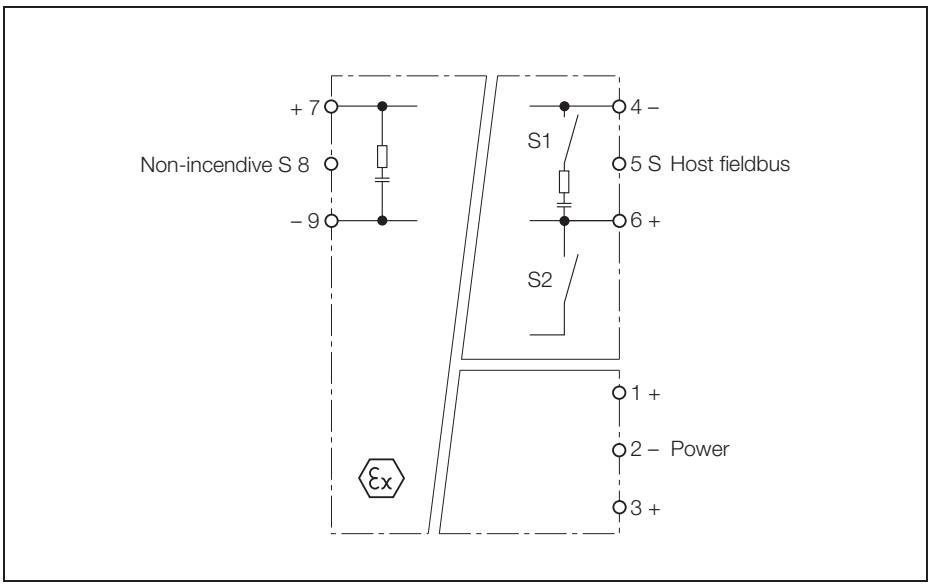
FOUNDATION fieldbus™
FNICO Power Supply
RPC49-10180/3G



The non incendive power supply type RPC49-10180/3G transfers the fieldbus signal from a host to approved FNICO and FISCO fieldbus devices in the explosion hazardous area of zone 2.

With the RPC49-10180/3G an integrated transfer between the host and the field connections can be implemented, which enables a parallel connection of several devices in the fieldbus and accordingly allows a higher number of field devices in the segment.

Developed for use in harsh environments and suitable for installation in explosion hazardous areas of zone 2, the TURCK RPC49-10180/3G power supply extends the limits for fieldbus topologies.

The RPC49-10180/3G provides up to 180 mA and supplies power to field devices in the explosion hazardous area of explosion group IIC. The device is mounted on DIN hat rails. It has been developed to utilize the latest developments of the FNICO (Fieldbus Non Incendive Concept) specification for explosion hazardous areas. Accordingly, full exploitation of the potential in digital fieldbus communication is thus not subject to any system related limitations.

The RPC49-10180/3G enables a simple installation, design and maintenance of fieldbus networks in accordance with IEC 61158-2 (Physical Layer with 31.25 kbps) due to its performance and flexibility. Furthermore, the compatibility to connection components and accessories of the TURCK range guarantees a high level of reliability, low installation costs and high operating security.

The supply to the host can be selected by a switch; accordingly no additional power supplies are required.

- **FNICO compliance according to IEC TS 60079-27**
- **Protection type: EEx nA[L] IIC**
- **Mounting in zone 2 possible**
- **FNICO power supply for FOUNDATION fieldbus™**
- **Output current: 180 mA**
- **Fieldbus - repeater**
- **Temperature range: -40...+70°C**

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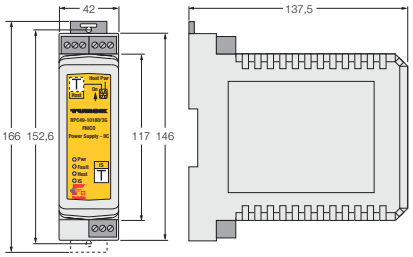
FOUNDATION fieldbus™
FNICO Power Supply
RPC49-10180/3G

Industrial Automation

Type	RPC49-10180/3G
Ident-No.	6604484
Operating voltage (Pwr)	20...30 VDC
Current consumption	300 mA (typ.) 330 mA (max.) at 20 V 250 mA (typ.) 280 mA (max.) at 24 V 210 mA (typ.) 235 mA (max.) at 30 V
Galvanic isolation	input circuit to output circuit and supply voltage for 250 V_{rms}
Output circuits	
Output current	≤ 180 mA
Output voltage	12.4 VDC
Short-circuit protection	≤ 180 mA
Indication	
Operational readiness	1 x green
Short-circuit message	1 x red
Bus communication	2 x yellow
Ex approval acc. to conformity certificate	pending
Marking of the device	⟨Ex⟩ II 3 G EEx nA [L] FNICO Power Supply
Connection	3 x 3-pole removable terminal blocks, reverse polarity protected, screw connection or tension spring
Connection cross-section	2.5 mm^2
Protection degree	IP20
Ambient temperature	-40...+70 °C
Housing material	plastic
Housing colour	black/yellow
Dimensions	42 x 166 x 137.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions



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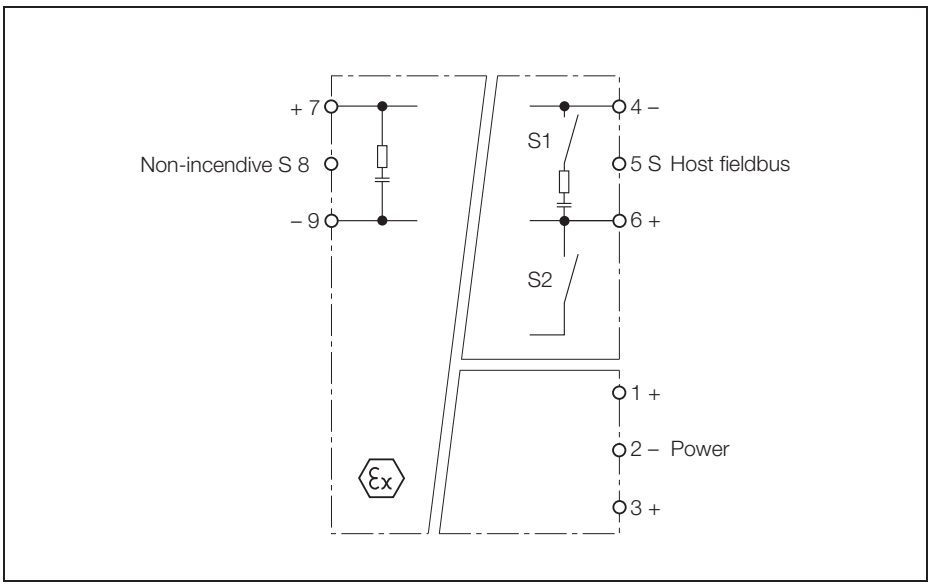
FOUNDATION fieldbus™
FNICO Power Supply
RPC49-10320/3G

Industrial Automation



The non incendive power supply type RPC49-10320/3G transfers the fieldbus signal from a host to approved FNICO and FISCO fieldbus devices in the explosion hazardous area of zone 2.

With the RPC49-10320/3G an integrated transfer between the host and the field connections can be implemented, which enables a parallel connection of several devices in the fieldbus and accordingly allows a higher number of field devices in the segment.

Developed for use in harsh environments and suitable for installation in explosion hazardous areas of zone 2, the TURCK RPC49-10320/3G power supply extends the limits for fieldbus topologies.

The RPC49-10320/3G provides up to 320 mA and supplies power to field devices in the explosion hazardous area of explosion group IIC. The device is mounted on DIN hat rails. It has been developed to utilize the latest developments of the FNICO (Fieldbus Non Incendive Concept) specification for explosion hazardous areas. Accordingly, full exploitation of the potential in digital fieldbus communication is thus not subject to any system related limitations.

The RPC49-10320/3G enables a simple installation, design and maintenance of fieldbus networks in accordance with IEC 61158-2 (Physical Layer with 31.25 kbps) due to its performance and flexibility. Furthermore, the compatibility to connection components and accessories of the TURCK range guarantees a high level of reliability, low installation costs and high operating security.

The supply to the host can be selected by a switch; accordingly no additional power supplies are required.

- **FNICO compliance according to IEC TS 60079-27**
- **Protection type: EEx nA[L] IIB**
- **Mounting in zone 2 possible**
- **FNICO power supply for FOUNDATION fieldbus™**
- **Output current: 320 mA**
- **Fieldbus - repeater**
- **Temperature range: -40...+70°C**

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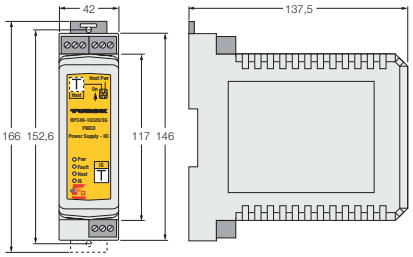
FOUNDATION fieldbus™
FNICO Power Supply
RPC49-10320/3G

Industrial Automation

Type	RPC49-10320/3G
Ident-No.	6604483
Operating voltage (Pwr)	20...30 VDC
Current consumption	490 mA (typ.) 550 mA (max.) at 20 V 400 mA (typ.) 460 mA (max.) at 24 V 320 mA (typ.) 370 mA (max.) at 30 V
Galvanic isolation	input circuit to output circuit and supply voltage for 250 V_{rms}
Output circuits	
Output current	≤ 320 mA
Output voltage	13.1 VDC
Short-circuit protection	≤ 320 mA
Indication	
Operational readiness	1 x green
Short-circuit message	1 x red
Bus communication	2 x yellow
Ex approval acc. to conformity certificate	pending
Marking of the device	Ⓔx II 3 G EEx nA [L] FNICO Power Supply
Connection	3 x 3-pole removable terminal blocks, reverse polarity protected, screw connection or tension spring
Connection cross-section	2.5 mm^2
Protection degree	IP20
Ambient temperature	-40...+70 °C
Housing material	plastic
Housing colour	black/yellow
Dimensions	42 x 166 x 137.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions



FOUNDATION fieldbus™ Multibarrier MBD49-T415/Ex – Basics and application benefits

The operating principle of the **MBD49-T415/Ex** multibarrier is physically based on IEC 61158-2. The use of multibarriers increases the number of fieldbus stations in the FOUNDATION fieldbus™ network to a maximum of 32 field devices.

This high number of stations is achieved by enhanced safety of the fieldbus supply which can be looped through from multibarrier to multibarrier. The fieldbus stations in zone 0 are supplied with power via the four intrinsically safe outputs of each multibarrier device.

User benefits
The user can expect substantial cost advantages due to the possibility of cascading the multibarriers in a single segment in the explosion hazardous area, thus fully exploiting the entire function range of the bus systems.

All fieldbus devices can be operated in a single fieldbus segment in the explosion hazard area. Thus, the costs for an additional bus coupler or a segment card as well as their integration and parameter definition are eliminated. An additional trunk line and the wiring material is also spared.

The supply of power to the multibarriers is implemented via the bus which means that an additional power cable is not required.

Installation in the explosion hazardous area
The area of application to ATEX is
II 2 (1 GD) G EEx m e [ia] IIC T4.

Due to its EEx e protection rating, the **MBD49-T415/Ex** multibarrier can be installed in zone 1 (II 2 G) according to 94/9/EC (ATEX 95a).

Use in explosion hazardous areas with explosion protection group IIC – in conjunction with temperature class T4 – is the standard in the process industry.

Within zone 1, the MBD49-T415/Ex is connected via a cable and connections with enhanced safety (EEx e) to the main line (trunk line) of a fieldbus conform to IEC 61158-2. This offers the advantage that the connection to the bus can be implemented using a loop isolator without EX approval, but with a sufficiently high capacity.

Intrinsic safety and galvanic isolation between all outputs
For safety reasons, galvanic isolation of signals plays a decisive role in the Ex area. The multibarrier provides four intrinsically safe and galvanically isolated outputs. The complete galvanic isolation exists between the main bus cable (trunk line) **and** the output circuits as well as between all of the four individual output circuits.

Galvanic isolation of intrinsically safe circuits, as demanded by the industry, particularly for zone 0, is thus provided.

Potential transfers and potential equalization currents are thus reduced and safe data transmission is guaranteed.

Operational safety
Operational safety of the bus system must be guaranteed should a bus station fail or malfunction. The four outputs of the multibarrier each supply an output current of max. 40 mA.

If a short-circuit occurs on a fieldbus station, the integrated short-circuit protection comes into play. Only the affected output will be shut down, the main line and the other outputs of the fieldbus segment remain operational. The short-circuit is indicated for each channel by a red LED inside the housing.

Industrially suitable housing
Industrial environmental conditions are frequently harsh and aggressive. Therefore, a housing suitable for these conditions is necessary. The enhanced IP66 degree of protection and the special housing material (die-cast aluminium) – in conjunction with the encapsulated module electronics – meet these demands and provide a high level of operational safety. Direct installation of a multibarrier in the system is thus unproblematic.

The EEx e cable glands guarantee safe and quick connection technology in conjunction with the high-quality cage clamps.

Shield terminals are capacitively connected to the housing potential in order to divert possible interference voltages on the cable shield. The riveted ground bolt connects the housing to the main potential equalisation.

Functions which supplement the standard

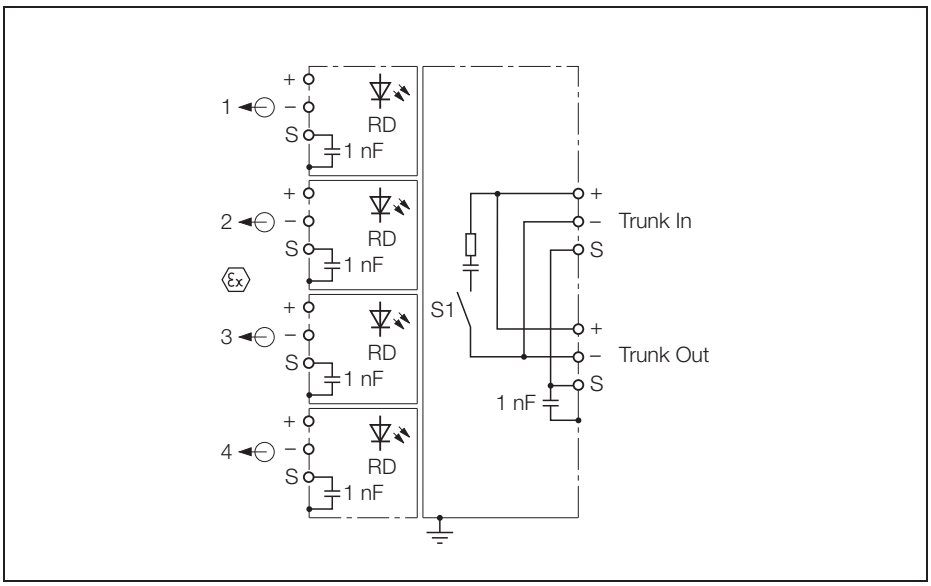
- **FISCO conformity**
  The FISCO model has been developed for the supply of power to fieldbus stations in the Ex area by the PTB in cooperation with renowned manufacturers. FISCO stands for Fieldbus Intrinsically Safe Concept.
  It is intended to simplify the verification of intrinsic safety of fieldbus systems. Intrinsically safe networks can be configured without highly complex calculations, and also expanded and operated without system certification.
  The outputs of the multibarrier conform to the demands of an Ex current supply and also conform to FISCO.

- **Switch-in terminating resistors**
  Data transmission on bus cables is frequently influenced by signal reflection, which can occur when the bus ends are not terminated. The fieldbus must be provided with a terminating resistor at both ends in order to avoid signal reflection. The multibarrier is provided with an integrated terminating resistor, which should be activated, when the multibarrier is connected as the last device on the main bus line (trunk line).

- **Climatic compensation**
  In regions subject to large temperature and air-humidity variations, it is possible that formation of condensation or a build-up of water within the housing is possible during operation. In order to avoid this, the multibarrier is fitted on the cable connection end with a pressure equalisation element to avoid the build-up of condensation.
  The pressure equalisation element features IP67 degree of protection and guarantees continuous and reliable ventilation and venting of the multibarriers. The ePTFE diaphragm in the centre of the gland features a very high water ingress pressure and repels oil. Even 100 % of salt crystals are kept out.

FOUNDATION fieldbus™
Multibarrier, 4-channel
MBD49-T415/EX

Industrial Automation



The MBD49-T415/EX is designed to connect a large number of field devices to the FOUNDATION fieldbus™ (acc. to IEC 61158-2).

The number of connectable field devices to the multibarrier depends on the current consumption of the individual devices. Up to 32 EEx i field devices can be connected to the bus. This extension capacity is achieved by means of the EEx e fieldbus supply which is fed through from multibarrier to multibarrier.

The inputs and outputs of the trunk line feature increased safety (EEx e) whereas the outputs to the field devices feature intrinsic safety, type EEx i.

The multibarrier is equipped with a selectable bus terminating resistor. The switch is integrated in the housing on the board.

The multibarrier is equipped with four LEDs located on the printed circuit board inside the housing to provide short-circuit indications separately for each channel.

Due to complete galvanic isolation, trunkline to EEx i-outputs and between EEx i-outputs, a safe operation is guaranteed.

- **Entity and FISCO compliance according to IEC TS 60079-27**
- **Galvanic isolation between the EEx i outputs and the EEx e bus line, as well as between the EEx i outputs**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -20...+70 °C (-4...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive connection to housing potential**
- **Output data: 10.0V/40mA (short-circuit proof)**

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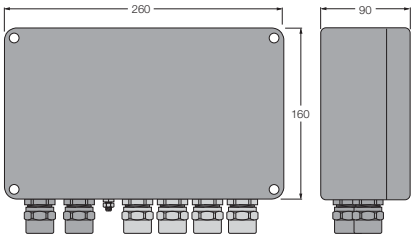
FOUNDATION fieldbus™
Multibarrier, 4-channel
MBD49-T415/EX

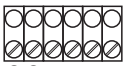
Industrial Automation

Type	MBD49-T415/EX
Ident-No.	6611247
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	16...32 VDC
Current self-consumption	≤ 40 mA
Galvanic isolation	input circuits (EEx e) to output circuits (EEx i) for 253 V_{rms}; output circuits (EEx i) to each other for 60 V_{rms}
Output circuits	
Output current	≤ 40 mA
Output voltage	≥ 10 VDC
Short-circuit protection	≤ 45 mA
Indication	
Short-circuit message	4 x red
Ex approval acc. to conformity certificate	PTB 04 ATEX 2021
Max. output voltage U_o	≤ 14.3 V
Max. output current I_o	≤ 268 mA
Max. output power P_o	≤ 958 mW
Internal resistance R_i	53.3 Ω
Internal inductance/ capacitance L_i/C_i	negligible
Typical curve	linear
Marking of the device	Ⓔx II 2(1 G/D)G EEx m e [ia] IIC T4 FISCO / Entity multibarrier
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 10...14 mm); black
Segment OUT	1 x M20 x 1.5 (Ø 10...14 mm); black
Drop line	4 x M20 x 1.5 (Ø 5...9 mm); blue
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP66
Ambient temperature	-20...+70 °C
Relative humidity	≤ 95 %, non condensing
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	260 x 160 x 90 mm
Connection mode	wall mounting

Dimensions

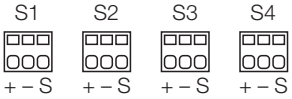


Trunk-line



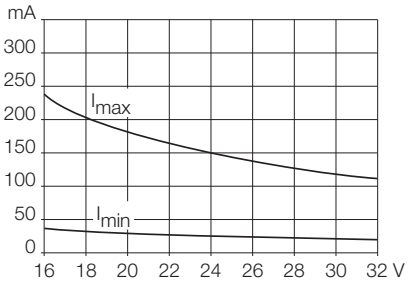
EEx e

Outputs



EEx i

Current consumption



3

FOUNDATION fieldbus™
Fieldbus display, 3-channel
FD-49-T317/EX

The three-channel digital indicator FD-49-T317/EX displays the process information of the fieldbus nodes belonging to FOUNDATION fieldbus™-Network.

The device scans the programmed fieldbus addresses and displays their values. Parameterisation is keyword protected and implemented with the front keypad. Adjustments can be made for each channel separately. The process value of the actuator i.e. sensor is displayed as a 5 digit number and the process value status via limiting value tags.

Apart from a measuring value indicator, the display contains a 41-segment bargraph for trend monitoring, which can be scaled separately from the display value.

The indicator FD-49-T317/EX performs as a "listener", i.e. initialisation by the host is not required (integration via software redundant) and it doesn't appear in the network as a node with an own address.

The device is supplied with energy by the fieldbus (< 10 mA) and can be applied in Ex areas up to temperatures of the class T6.

- **Entity and FISCO compliance according to IEC TS 60079-27**
- **Digital fieldbus display for mapping of process values**
- **Powder-coated die-cast aluminium housing**
- **Connection of the housing potential via external earth connection**

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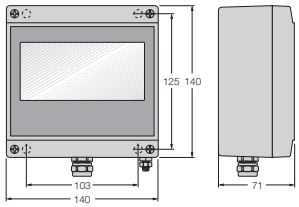
FOUNDATION fieldbus™
Fieldbus display, 3-channel
FD-49-T317/EX

Industrial Automation

Type	FD-49-T317/EX
Ident-No.	6901312
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...30 VDC
Current self-consumption	≤ 10 mA
Indication	
Display	LCD, five-digit 7-segment display
Ex approval acc. to conformity certificate	TÜV 07 ATEX 553588
Max. input voltage U_i	≤ 30 V
Max. input current I_i	≤ 660 mA
Max. input power P_i	≤ 1600 mW
Internal inductance/ capacitance L_i/C_i	negligible
Marking of the device	⟨Ex⟩ II 2 (1) G EEx ia IIC T6 resp. T5 ⟨Ex⟩ II 2 D IP65 T70 °C FISCO / Entity Field device
Connection	cable glands
Connection cross-section	2.5 mm^2
Protection degree	IP66
Ambient temperature	-10...+60 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black
Dimensions	140 x 140 x 71 mm
Connection mode	wall mounting

Dimensions



3

FOUNDATION™ fieldbus
Temperature Transmitter
General Information

The KMU-40Ex/3G and KMU-40Ex/1GD transmitters are intended for connection to the FOUNDATION fieldbus™. The unique conversion function enables automatic switch-over between both protocols. The bus connection is free of polarity considerations.

Applications:

- Linear temperature measurements with resistance thermometers or thermocouples
- Differential, average value or redundant temperature measurements with resistance thermometers or thermocouples
- Linear resistance, compensator and bipolar mV measurements

The 24 bit A/D converter guarantees a high resolution.

Both transmitters can be mounted in a type B terminal housing (DIN standard).

Whereas the KMU-40Ex/3G is used in the explosion hazardous area in zone 2, the KMU-40Ex/1GD can also be used in zones 0, 1 and 2 in intrinsically safe circuits.

General technical data

Accuracy (general values)

Input type	Absolute accuracy	Temperature coefficient
– All	≤ ± 0.05 % of measured value	≤ ± 0.002 % of measured value/°C

Accuracy (fundamental values)

Input type	Fundamental accuracy	Temperature coefficient
– Pt100/Pt1000	≤ ± 0.1 °C	≤ ± 0.002 °C/°C
– Ni100	≤ ± 0.15 °C	≤ ± 0.002 °C/°C
– Cu10	≤ ±1.3 °C	≤ ± 0.02 °C/°C
– Linear resistor	≤ ± 0.05 Ω	≤ ± 0.002 Ω/°C
– Voltage	≤ ± 10 µV	≤ ± 0.2 µV/°C
– Thermocouple type: E, J, K, L, N, T, U	≤ ± 0.5 °C	≤ ± 0.010 °C/°C
– Thermocouple type: B, R, S, W3, W5	≤ ± 1 °C	≤ ± 0.025 °C/°C

Electrical input data (resistance thermometer and linear resistance)

Type	Minimum value	Maximum value	Standard/remarks
– Pt25...Pt1000	-200 °C	+850 °C	IEC 60751/JIS C 1604
– Ni25...Ni1000	-60 °C	+250 °C	DIN 43760
– Cu10...Cu1000	-50 °C	+200 °C	a = 0.00427
– Linear resistor	0 Ω	10 kΩ	–
– Potentiometer	0 Ω	100 kΩ	–
Conductor resistance per conductor	50 Ω		
Sensor current	nom. 0.2 mA		

Electrical input data (thermocouple and mV input)

Type	Minimum value	Maximum value	Standard
– B	+400 °C	+1820 °C	IEC 584
– E	-100 °C	+1000 °C	IEC 584
– J	-100 °C	+1200 °C	IEC 584
– K	-180 °C	+1372 °C	IEC 584
– L	-200 °C	+900 °C	DIN 43710
– N	-180 °C	+1300 °C	IEC 584
– R	-50 °C	+1760 °C	IEC 584
– S	-50 °C	+1760 °C	IEC 584
– T	-200 °C	+400 °C	IEC 584
– U	-200 °C	+600 °C	DIN 43710
– W3	0 °C	+2300 °C	ASTM E988-90
– W5	0 °C	+2300 °C	ASTM E988-90
– Ext. cold junction compensation	-40 °C	+135 °C	IEC 60751
– mV input	-800 mV	+800 mV	–
Cold junction compensation (CJC)	< ± 0.5 °C		
Sensor fault recognition	yes		
Short-circuit recognition	< 3 mV		

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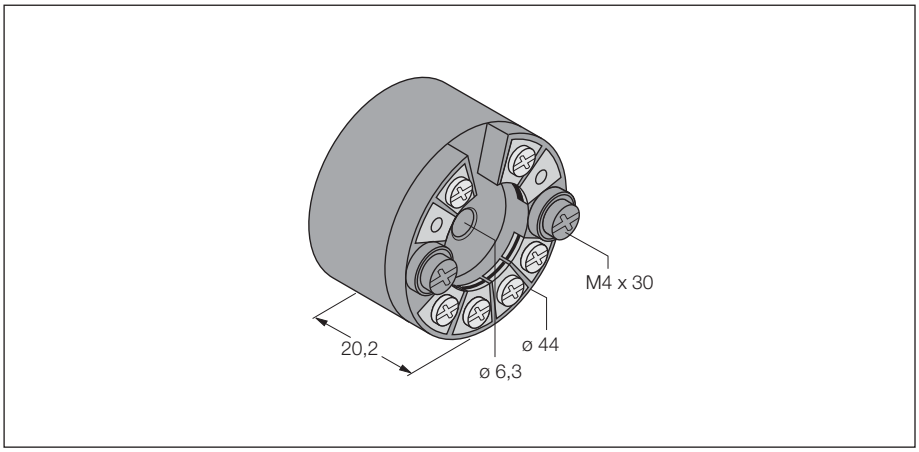
FOUNDATION™ fieldbus Temperature Transmitter KMU-40Ex/3G



- Configuration via FOUNDATION fieldbus™ with Emerson Delta V, YOKOGAWA CS 1000/CS 3000, ABB Melody/Harmony and Honeywell Psource software
- Suitable for use in zone 2
- Type B terminal housing

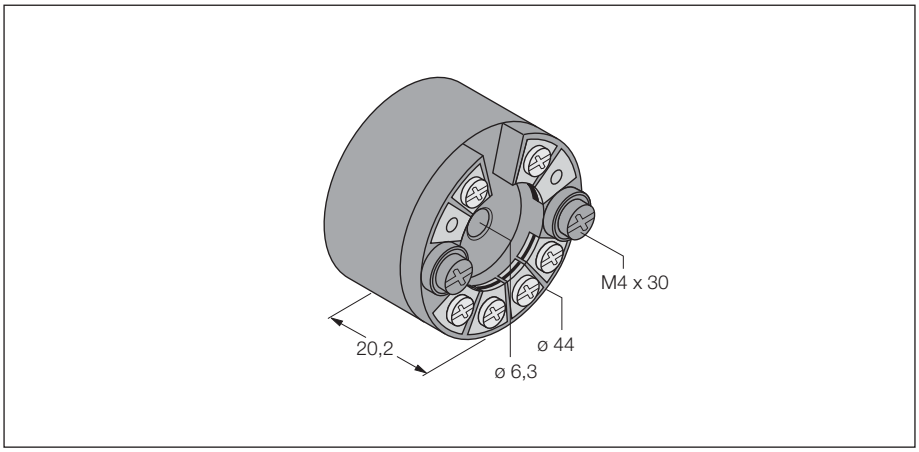
General information:
see page 36
Wiring diagrams:
see page 39

3

Type	KMU-40Ex/3G
Ident-No.	7506619
Operating voltage (Pwr)	9...32 VDC
Current consumption	< 11 mA
Insulation voltage – test/operation	1500 VAC/50 VAC
Signal to noise ratio	> 60 dB
Response time (programmable)	1...60 s
Refresh time	< 400 ms
Execution time (PID controller)	< 200 ms
Execution time (analogue input)	< 50 ms
Signal resolution (input)	24 Bit
Calibration temperature	20...28 °C
Ex approval according to	
EC type examination	KEMA 05 ATEX 1031 X
– U_0	5.71 V
– I_0	8.4 mA
– P_0	12 mW
– C_0/L_0	40 µF/200 mH
Marking of device	Ⓔx II 3 G EEX nA [L] IIC T4...T6
FM, UL and CSA approval	Class I, Div. 2, Gr. A, B, C, D; Class I, Zone 2, NIFW/FNICO
Output	
FOUNDATION fieldbus™ version	ITK 4.6
FOUNDATION fieldbus™ functionality	Basic or LAS
FOUNDATION fieldbus™ function blocks	2 × analogue and 1 × PID
Housing	
Housing material	Cycoloy
Housing and terminal degree of protection	IP68 or IP00 (IEC 60529/EN 60529)
Dimensions/weight	Ø 44 × 20.2 mm/55 g
Vibration resistance	to IEC 60068-2-6, Test FC
Relative humidity	< 95 % (non-condensating)
Ambient temperature	-40...+85 °C (-40...+185 °F)

FOUNDATION™ fieldbus Temperature Transmitters KMU-40Ex/1GD

Industrial Automation



- Configuration via FOUNDATION fieldbus™ with Emerson Delta V, YOKOGAWA CS 1000/CS 3000, ABB Melody/Harmony and Honeywell Psource software
- Suitable for use in zone 0, 1 and 2, 20, 21, 22
- Type B terminal housing

General information:
see page 36
Wiring diagrams:
see page 39

Type	KMU-40Ex/1GD
Ident-No.	7506618

Operating voltage (in FISCO installations)	9...30 VDC (9...17,5 VDC)
Current consumption	< 11 mA
Insulation voltage – test/operation	1500 VAC/50 VAC
Signal to noise ratio	> 60 dB
Response time (programmable)	1...60 s
Refresh time	< 400 ms
Execution time (PID controller)	< 200 ms
Execution time (analogue input)	< 50 ms
Signal resolution (input)	24 Bit
Calibration temperature	20...28 °C

Ex approval according to				
EC type examination	KEMA 05 ATEX 1030			
$U_0/I_0/P_0/C_0/L_0$	5.71 V/8.4 mA/12 mW/40 µF/200 mH			
Zone 0, Div. 1, EEx ia IIC, Entity/FISCO	**Barriers with P_0 < 0.84 W**	**Barriers with P_0 < 1.3 W**	**FISCO (IIB)**	**FISCO (IIC)**
– U_i	30 VDC	30 VDC	17.5 VDC	15 VDC
– I_i	120 mA	300 mA	250 mA	free [1]
– P_i	0.84 W	1.3 W	2.0 W	free [1]
– L_i/C_i	1 µH/2.0 nF	1 µH/2.0 nF	1 µH/2.0 nF	1 µH/2.0 nF
Zone 1, Div. 2, EEx ib IIC, Entity/FISCO	**Barriers with P_0 < 5.32 W**	**FISCO segment coupler**		
– U_i	30 VDC	17.5 VDC		
– I_i	250 mA	free [1]		
– P_i	5.32 W	free [1]		
– L_i/C_i	1 µH/2.0 nF	1 µH/2.0 nF		
Marking of device	Ⓔx II 2(1) GD EEx ib [ia] IIC T1...T6			
FM, UL and CSA approval	Class I, Div. 1, Gr. A, B, C, D;	Class I, Zone 0/1, Gr. IIC;	Class I, Div. 2, Gr. A, B, C, D	

Output	
FOUNDATION fieldbus™ version	ITK 4.6
FOUNDATION fieldbus™ functionality	Basic or LAS
FOUNDATION fieldbus™ function blocks	2 × analogue and 1 × PID

Housing	
Housing material	Cycoloy
Housing and terminal degree of protection	IP68 or IP00 (IEC 60529/EN 60529)
Dimensions/weight	Ø 44 × 20.2 mm/55 g
Vibration resistance	to IEC 60068-2-6, Test FC
Relative humidity	< 95 % (non-condensating)
Ambient temperature	-40...+85 °C (-40...+185 °F)

[1] Transducers can be freely mounted taking consideration of L_i and C_i. Current and power are limited by the FISCO model.

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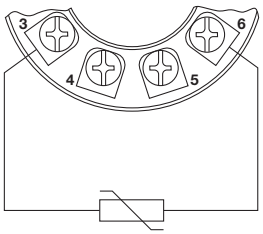
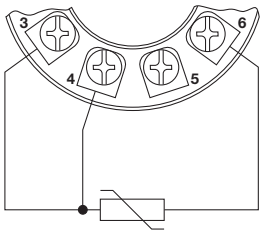
FOUNDATION fieldbus™
Transmitters
Wiring and block diagrams

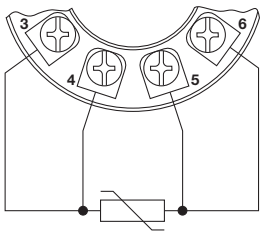
Resistance thermometer, 2-wire



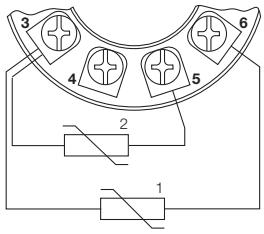
Resistance thermometer, 3-wire



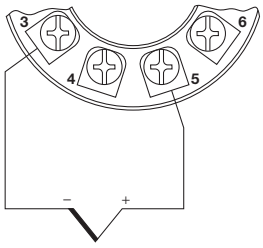
Resistance thermometer, 4-wire



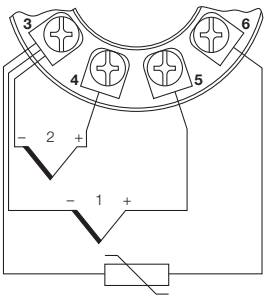
2 × resistance thermometer, 2-wire



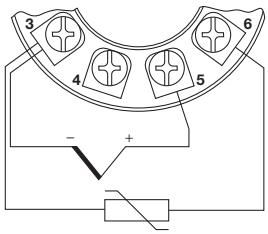
Thermcouple with internal cold junction compensation



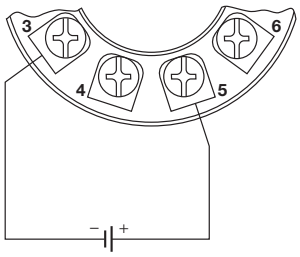
2 × thermcouple with internal cold junction compensation



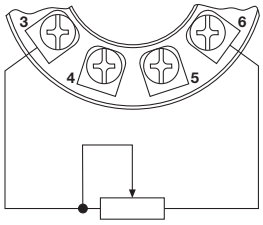
Thermcouple with external cold junction compensation



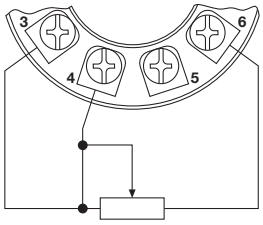
mV input



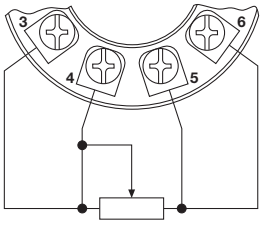
Resistor, 2-wire



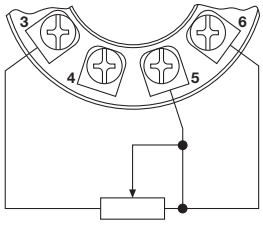
Resistor, 3-wire



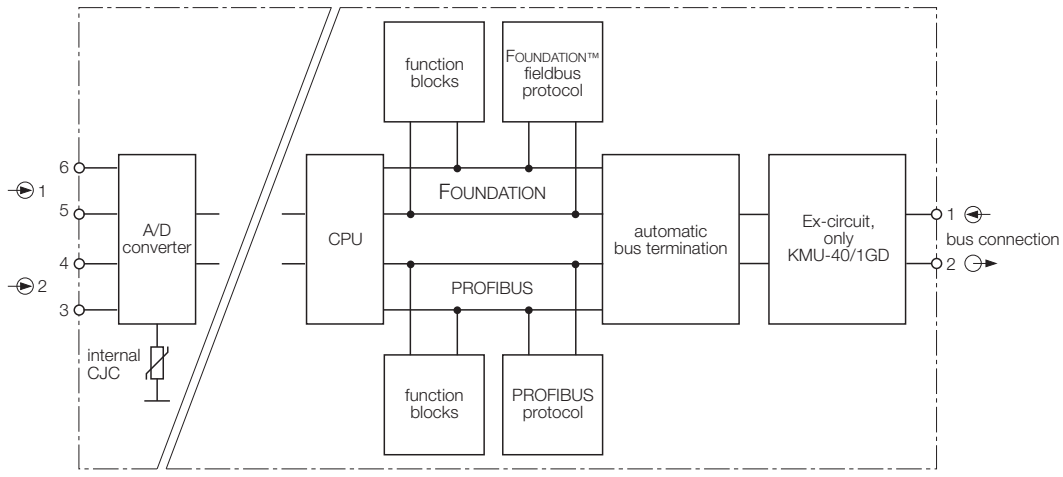
Resistor, 4-wire



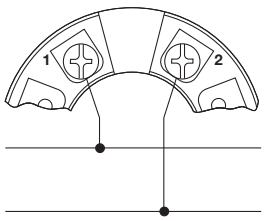
Potentiometer, 3-wire

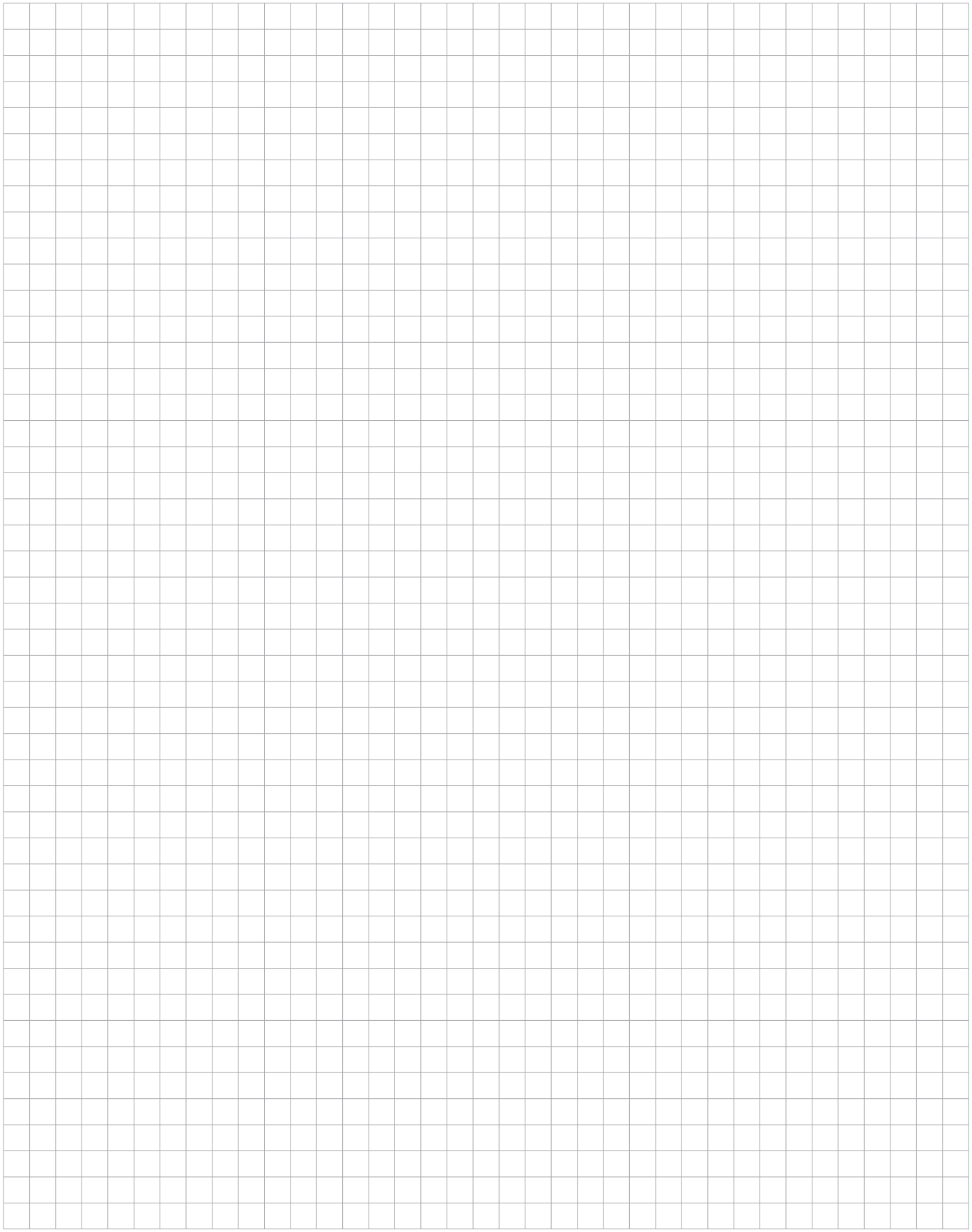


Block diagram



Output





FOUNDATION fieldbus™
Junction Boxes by TURCK

TURCK
Industrial Automation

TURCK offers junction boxes in various designs for the distribution of energy and data.

The junction boxes differ in the number of channels, the housing style and special features such as integrated short-circuit protection, switch-in terminating resistor and selectable shielding concept.

The following junctions are available as standard versions.
Special solutions are available on request.

IP67 junction boxes with or without short-circuit protection (1, 4 and 6 channels)

- Explosion-protected junctions (for use in zone 1 or 2, distribution of EEx ia signals in zone 0)
- Standard junctions (non-Ex)
- IP67 degree of protection
- Switch-in terminating resistor
- Selectable shielding concept (hard-wired or capacitive grounding)
- Active and passive types
- Pressure compensation element to prevent water condensation
- Housing material: powder-coated die-cast aluminium (4 and 6-channel type)
- Connection technology: stainless steel flange connectors 7/8“, M12 or cage-clamp terminals
- Cable glands: plastic, stainless steel, nickel-plated brass, EMC
- Temperature range: -25°C ... +70°C

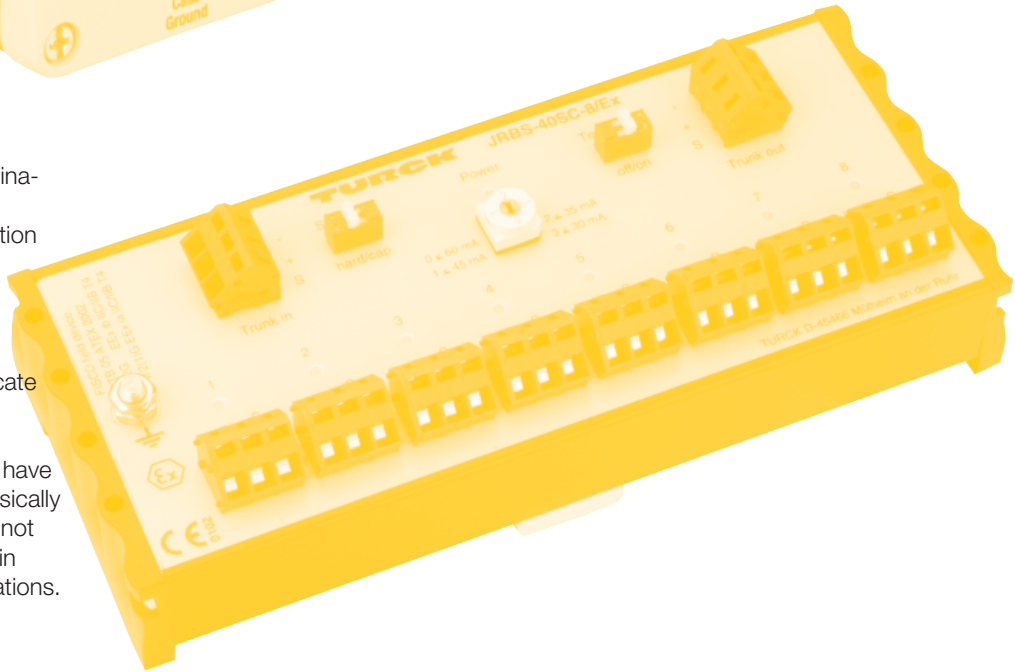
IP20 junction boxes with or without short-circuit protection (4 , 6, 8 and 12 channels)

- Suitable for the explosion hazardous and the safe area
- For use in zone 1 or 2, distribution of EEx ia signals in zone 0
- IP20 degree of protection
- Switch-in terminating resistor
- Selectable shielding concept (hard-wired or capacitive grounding)
- Active and passive types
- Housing material: aluminium
- Connection technology: cage-clamp terminals or removable screw terminals
- Temperature range: -40°C ...+70°C

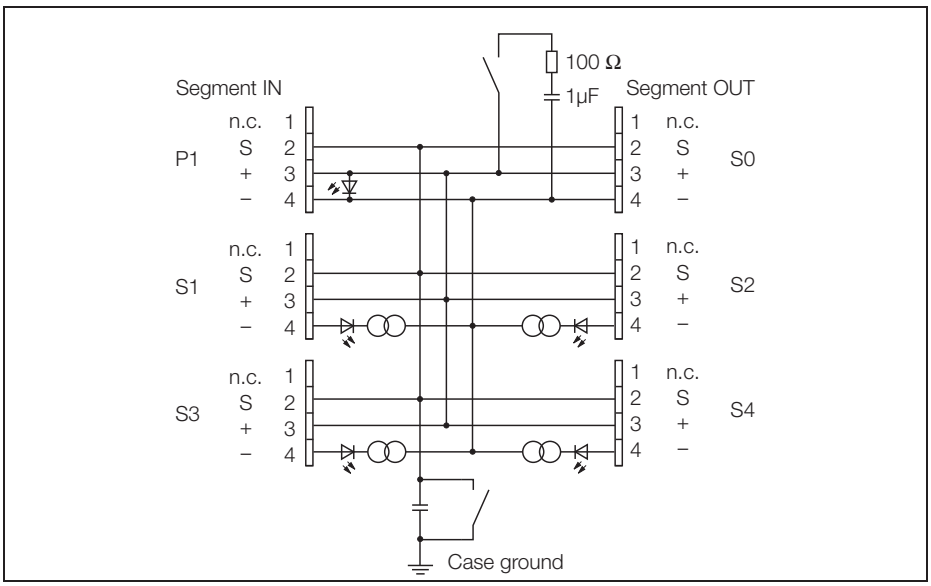
4

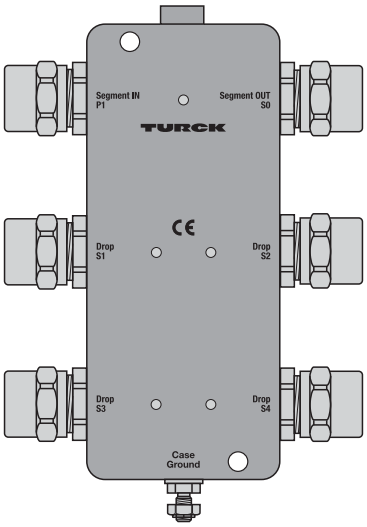
CAUTION
Explosion Danger!
The EC type test examination certificate and the manufacturer’s declaration of conformity must be observed.
It is essential that the “special conditions” in the EU type test certificate are observed.

Junction boxes, which have been used in non intrinsically safe applications, may not subsequently be used in intrinsically safe applications.



FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-T415/3G





The 4-channel Ex junction box, type JBBS-49SC-T415/3G is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with PVC cable glands M20 x 1.5**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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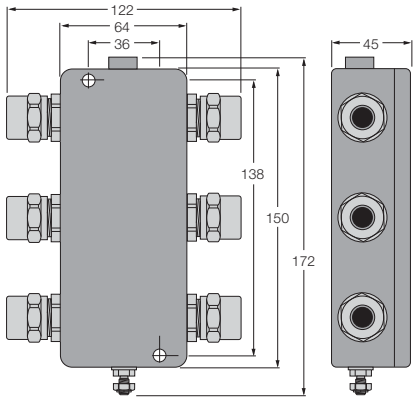
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-T415/3G

Industrial Automation

Type	JBBS-49SC-T415/3G
Ident-No.	6611440
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	4 x red
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 3 G Ex nA II T4 ⟨Ex⟩ II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 6...12 mm)
Segment OUT	1 x M20 x 1.5 (Ø 6...12 mm)
Drop line	4 x M20 x 1.5 (Ø 6...12 mm)
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



Pin Configuration

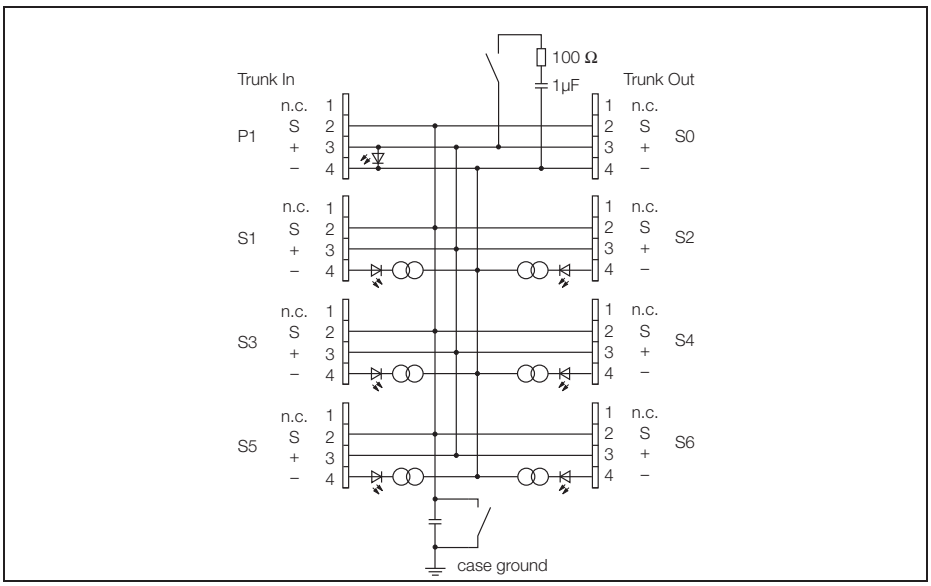
1 2 3 4

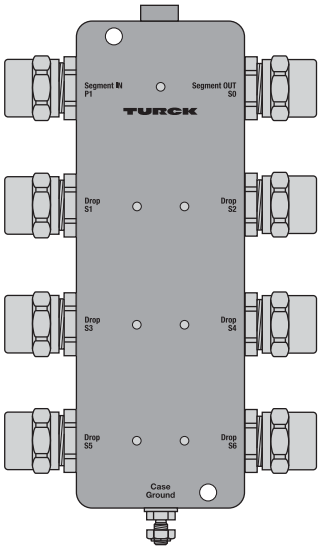
1 = n.c.
2 = shield
3 = +
4 = –

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-T615/3G

Industrial Automation





The 6-channel Ex junction box, type JBBS-49SC-T615/3G is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with PVC cable glands M20 x 1.5**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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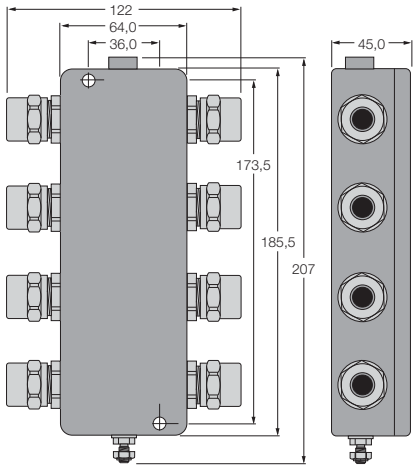
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-T615/3G

Industrial Automation

Type	JBBS-49SC-T615/3G
Ident-No.	6611442
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	6 x red
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 3 G Ex nA II T4 ⟨Ex⟩ II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 6...12 mm)
Segment OUT	1 x M20 x 1.5 (Ø 6...12 mm)
Drop line	6 x M20 x 1.5 (Ø 6...12 mm)
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions



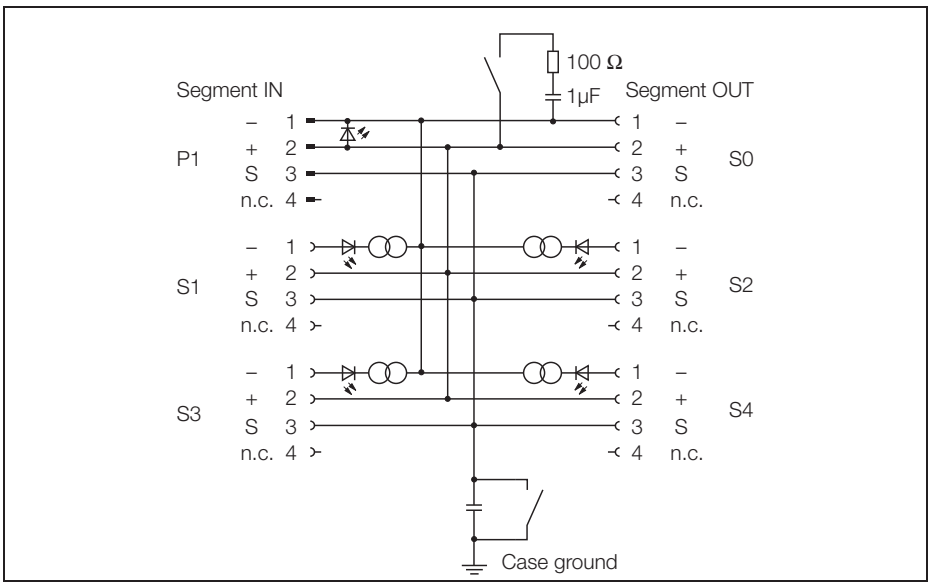
Pin Configuration

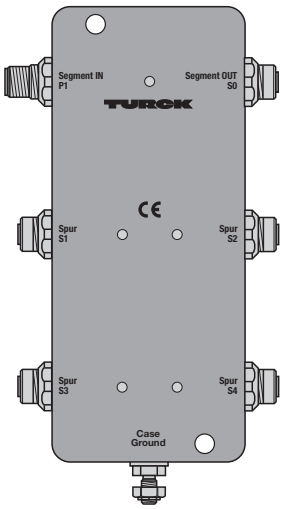
1 = n.c.
2 = shield
3 = +
4 = –

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-E413/3G

Industrial Automation





The 4-channel Ex junction box, type JBBS-49SC-E413/3G is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with stainless steel M12 flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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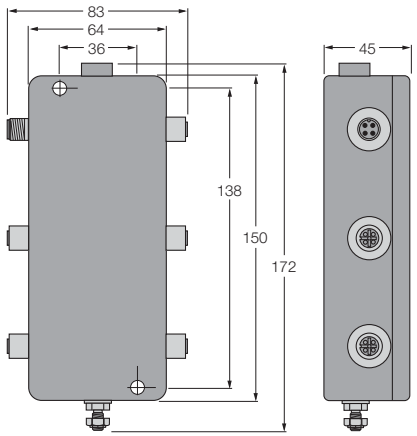
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-E413/3G

Industrial Automation

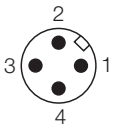
Type	JBBS-49SC-E413/3G
Ident-No.	6611432
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	4 x red
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 3 G Ex nA II T4 ⟨Ex⟩ II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	M12 flange connection
Segment IN	1 x M12 - connector
Segment OUT	1 x M12 - female connector
Drop line	4 x M12 - female connector
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



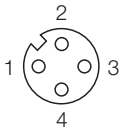
Pin Configuration

M12 x 1
Segment in



1 = V –
2 = V +
3 = shield
4 = n.c.

M12 x 1
Segment out, Spur

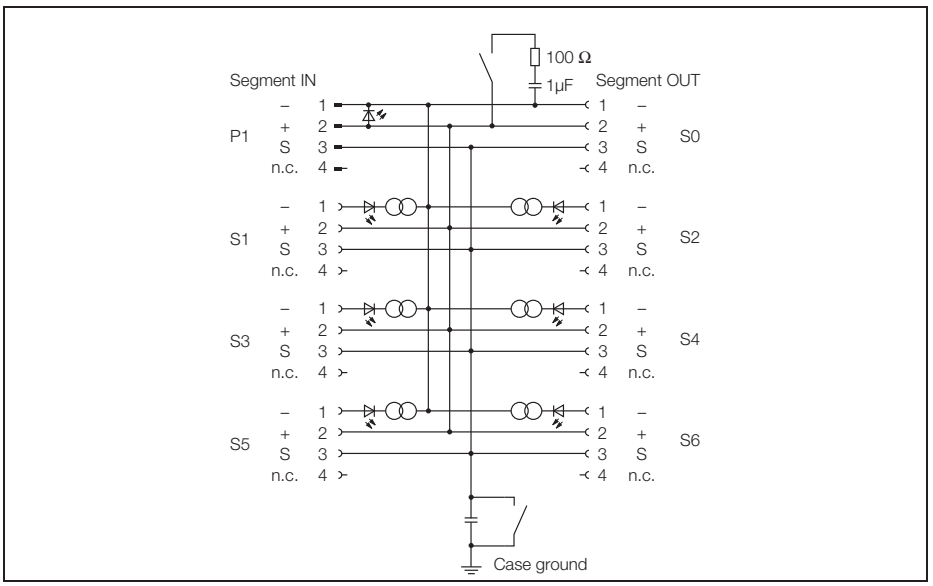


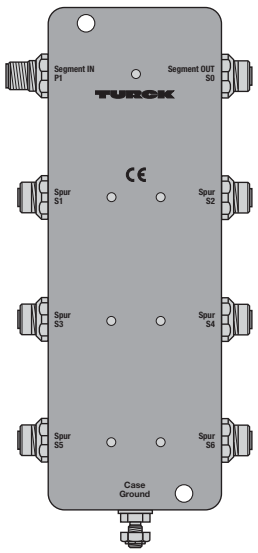
nominal values: 4 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-E613/3G

Industrial Automation





The 6-channel Ex junction box, type JBBS-49SC-E613/3G is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with stainless steel M12 flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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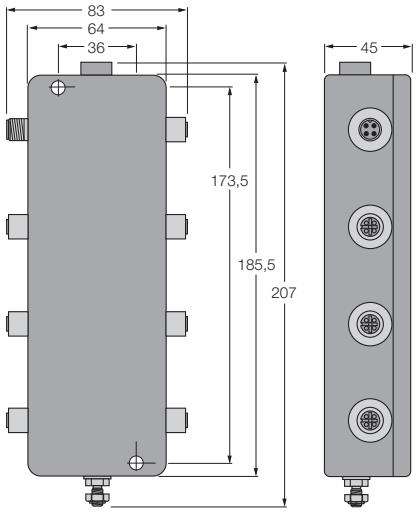
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-E613/3G

Industrial Automation

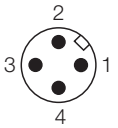
Type	JBBS-49SC-E613/3G
Ident-No.	6611434
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	6 x red
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 3 G Ex nA II T4 ⟨Ex⟩ II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	M12 flange connection
Segment IN	1 x M12 - connector
Segment OUT	1 x M12 - female connector
Drop line	6 x M12 - female connector
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions



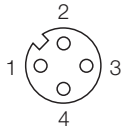
Pin Configuration

M12 x 1
Segment in



1 = V –
2 = V +
3 = shield
4 = n.c.

M12 x 1
Segment out, Spur

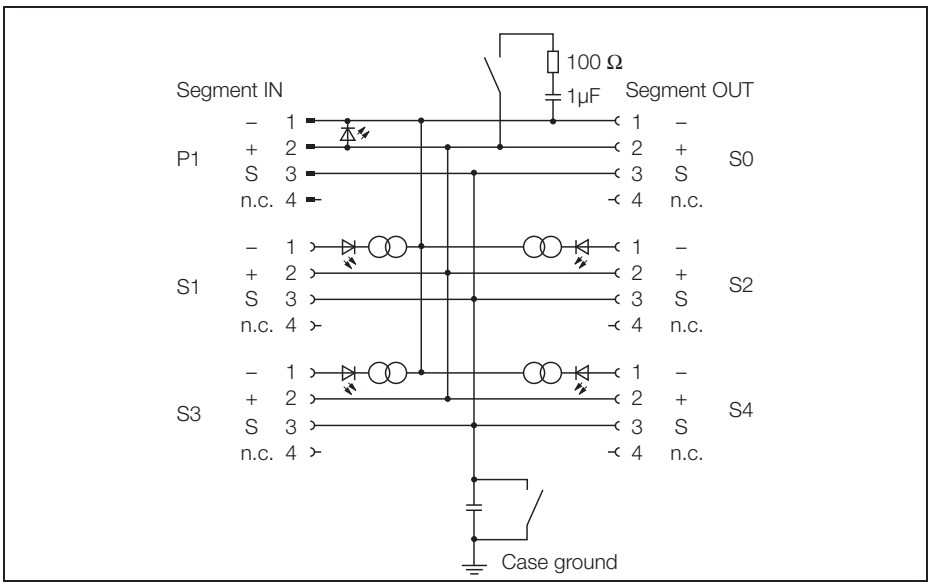


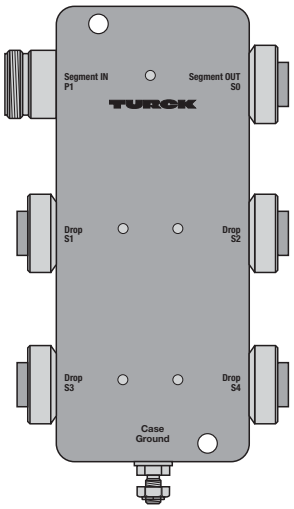
nominal values: 4 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-M413/3G

Industrial Automation





The 4-channel Ex junction box, type JBBS-49SC-M413/3G is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with stainless steel 7/8" flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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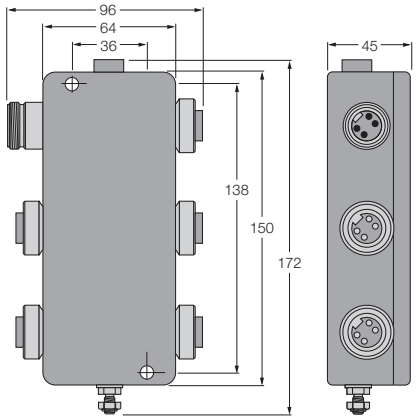
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-M413/3G

Industrial Automation

Type	JBBS-49SC-M413/3G
Ident-No.	6611436
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	4 x red
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 3 G Ex nA II T4 Ⓔx II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	7/8" flange connection
Segment IN	1 x 7/8 "- plug
Segment OUT	1 x 7/8 "- coupling
Drop line	4 x 7/8 "- plug
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



Pin Configuration

7/8
Segment in

1 = V –
2 = V +
3 = shield
4 = n.c.

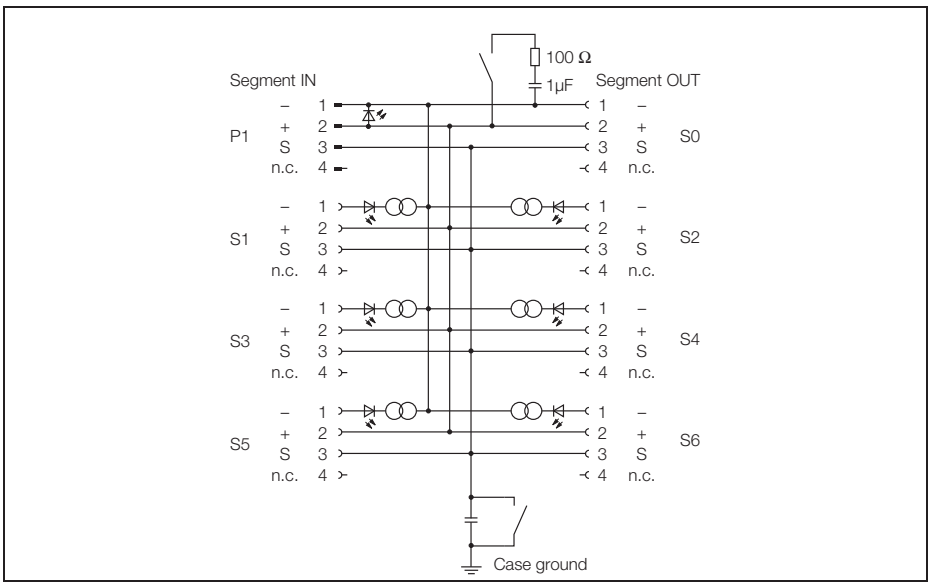
7/8"
Segment out, Spur

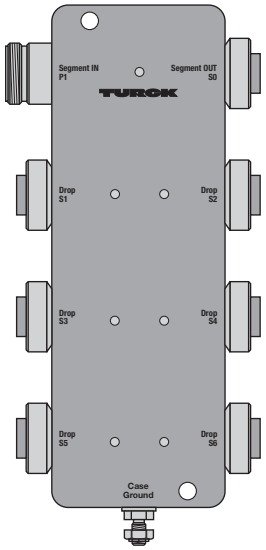
nominal values: 9 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-M613/3G

Industrial Automation





The 6-channel Ex junction box, type JBBS-49SC-M613/3G is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with stainless steel 7/8" flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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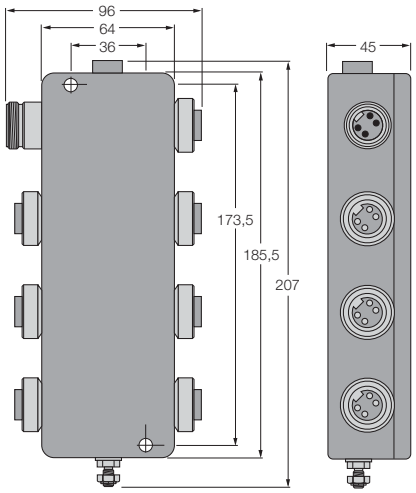
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-M613/3G

Industrial Automation

Type	JBBS-49SC-M613/3G
Ident-No.	6611438
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	6 x red
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 3 G Ex nA II T4 ⟨Ex⟩ II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	7/8" flange connection
Segment IN	1 x 7/8 "- plug
Segment OUT	1 x 7/8 "- coupling
Drop line	6 x 7/8 "- plug
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions

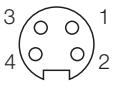


Pin Configuration

7/8
Segment in

1 = V –
2 = V +
3 = shield
4 = n.c.

7/8"
Segment out, Spur

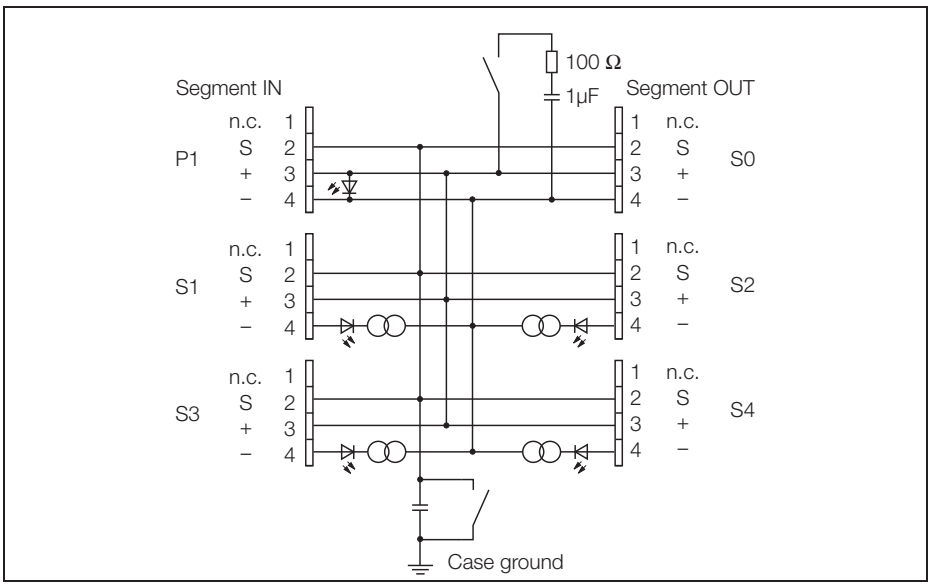


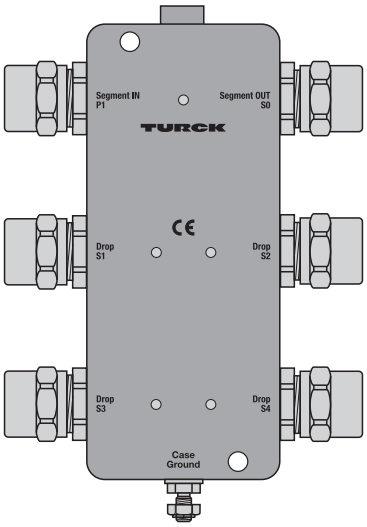
nominal values: 9 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-T415B/EX

Industrial Automation





The 4-channel Ex junction box, type JBBS-49SC-T415B/EX is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with PVC cable glands M20 x 1.5**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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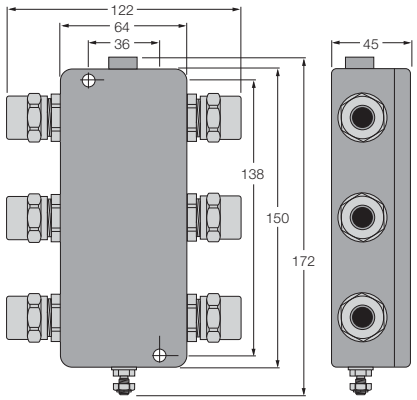
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-T415B/EX

Industrial Automation

Type	JBBS-49SC-T415B/EX
Ident-No.	6611441
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	4 x red
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 2 G EEx ib IIC/IIB T4 ⟨Ex⟩ II 2 (1) G EEx ia IIC/IIB T4 ⟨Ex⟩ II 2 G (2D) [Ex ibD] EEx ib IIB T4 ⟨Ex⟩ II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 6...12 mm)
Segment OUT	1 x M20 x 1.5 (Ø 6...12 mm)
Drop line	4 x M20 x 1.5 (Ø 6...12 mm)
Connection cross-section	2.5 mm²
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



Pin Configuration

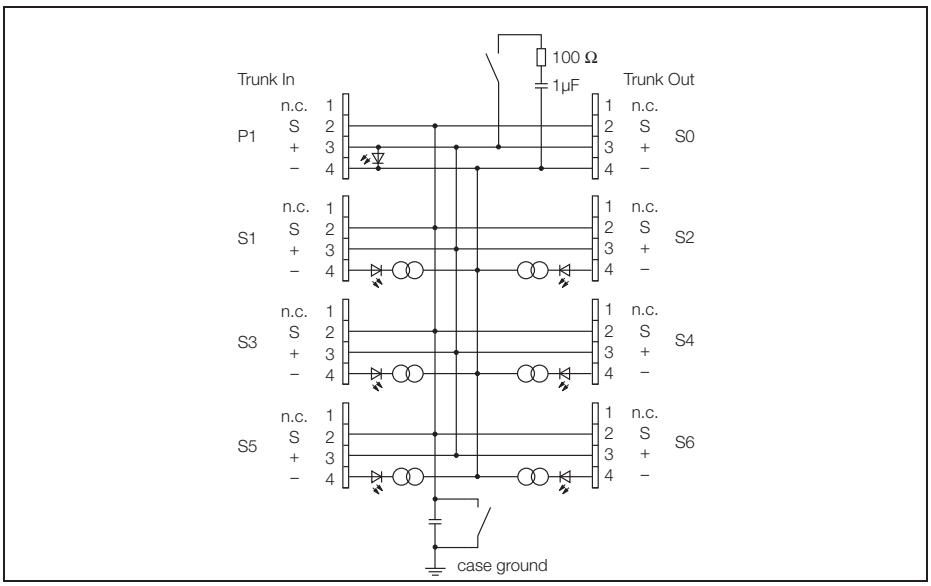
1 2 3 4

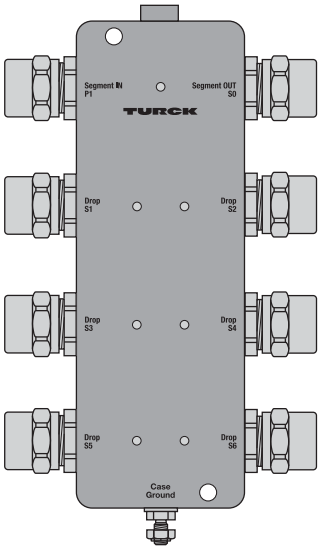
1 = n.c.
2 = shield
3 = +
4 = –

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-T615B/EX

Industrial Automation





The 6-channel Ex junction box, type JBBS-49SC-T615B/EX is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with PVC cable glands M20 x 1.5**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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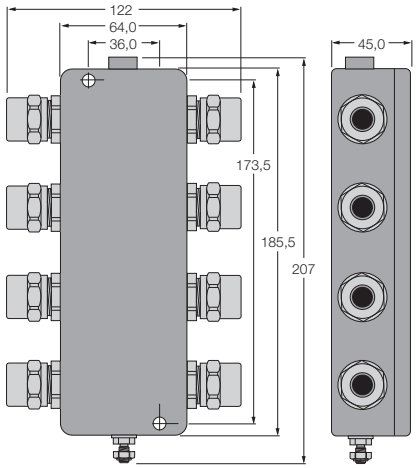
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-T615B/EX

Industrial Automation

Type	JBBS-49SC-T615B/EX
Ident-No.	6611443
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	6 x red
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 2 G EEx ib IIC/IIB T4 ⟨Ex⟩ II 2 (1) G EEx ia IIC/IIB T4 ⟨Ex⟩ II 2 G (2D) [Ex ibD] EEx ib IIB T4 ⟨Ex⟩ II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 6...12 mm)
Segment OUT	1 x M20 x 1.5 (Ø 6...12 mm)
Drop line	6 x M20 x 1.5 (Ø 6...12 mm)
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions

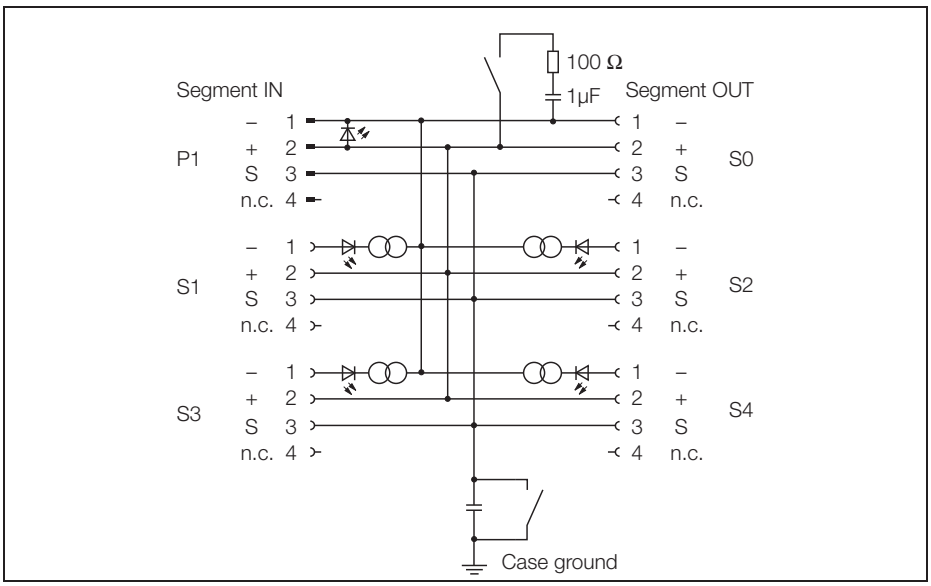


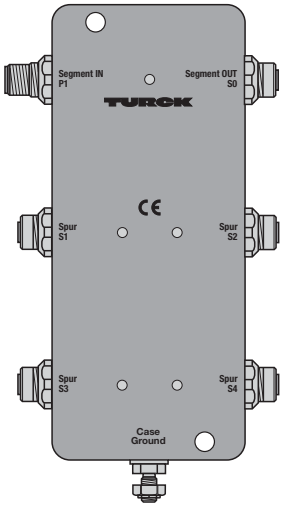
Pin Configuration

1 = n.c.
2 = shield
3 = +
4 = –

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-E413/EX





The 4-channel Ex junction box, type JBBS-49SC-E413/EX is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with stainless steel M12 flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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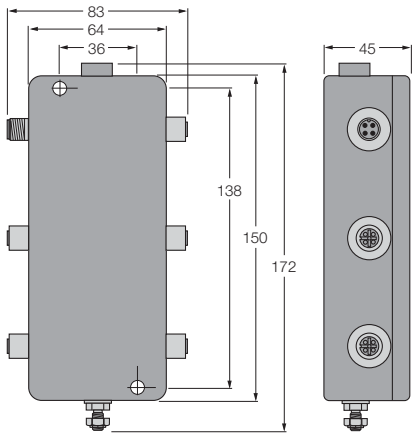
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-E413/EX

Industrial Automation

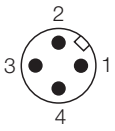
Type	JBBS-49SC-E413/EX
Ident-No.	6611433
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	4 x red
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 2 G EEx ib IIC/IIB T4 ⟨Ex⟩ II 2 (1) G EEx ia IIC/IIB T4 ⟨Ex⟩ II 2 G (2D) [Ex ibD] EEx ib IIB T4 ⟨Ex⟩ II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	M12 flange connection
Segment IN	1 x M12 - connector
Segment OUT	1 x M12 - female connector
Drop line	4 x M12 - female connector
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



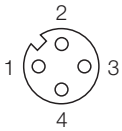
Pin Configuration

M12 x 1
Segment in



1 = V –
2 = V +
3 = shield
4 = n.c.

M12 x 1
Segment out, Spur

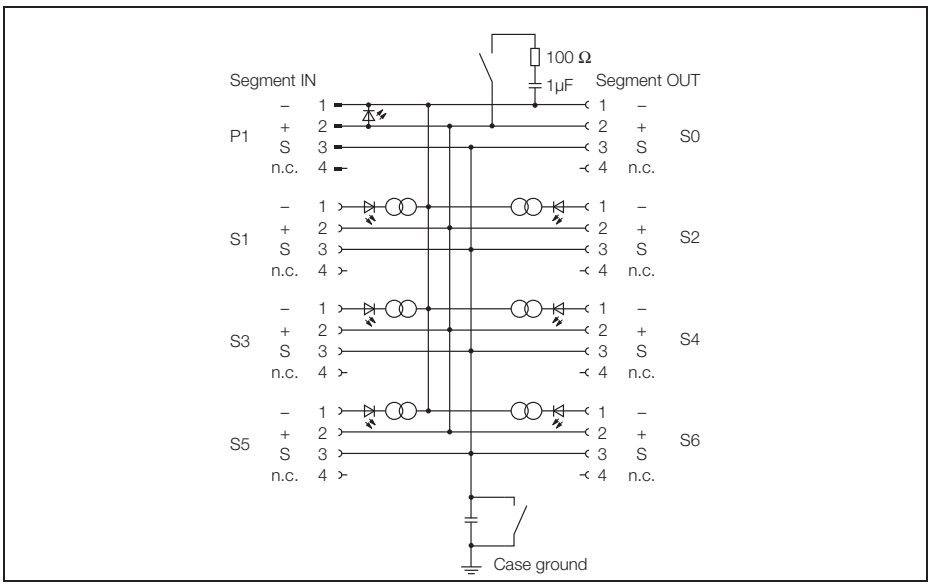


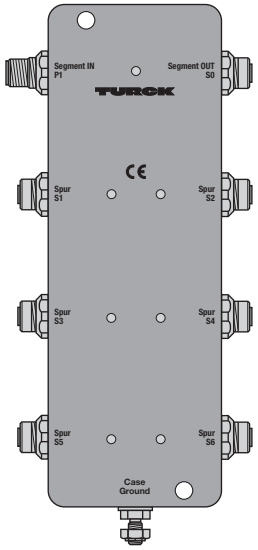
nominal values: 4 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-E613/EX

Industrial Automation





The 6-channel Ex junction box, type JBBS-49SC-E613/EX is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with stainless steel M12 flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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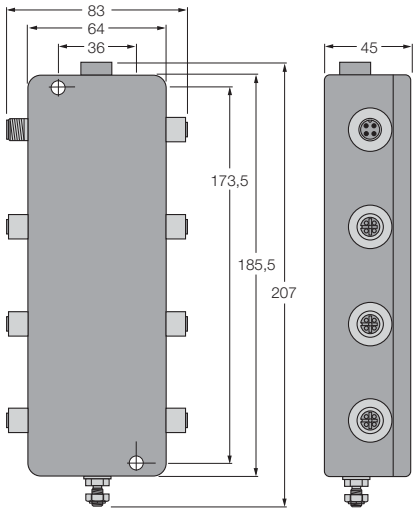
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-E613/EX

Industrial Automation

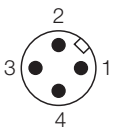
Type	JBBS-49SC-E613/EX
Ident-No.	6611435
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	6 x red
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 2 G EEx ib IIC/IIB T4 Ⓔx II 2 (1) G EEx ia IIC/IIB T4 Ⓔx II 2 G (2D) [Ex ibD] EEx ib IIB T4 Ⓔx II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	M12 flange connection
Segment IN	1 x M12 - connector
Segment OUT	1 x M12 - female connector
Drop line	6 x M12 - female connector
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions



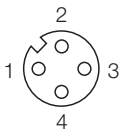
Pin Configuration

M12 x 1
Segment in



1 = V –
2 = V +
3 = shield
4 = n.c.

M12 x 1
Segment out, Spur

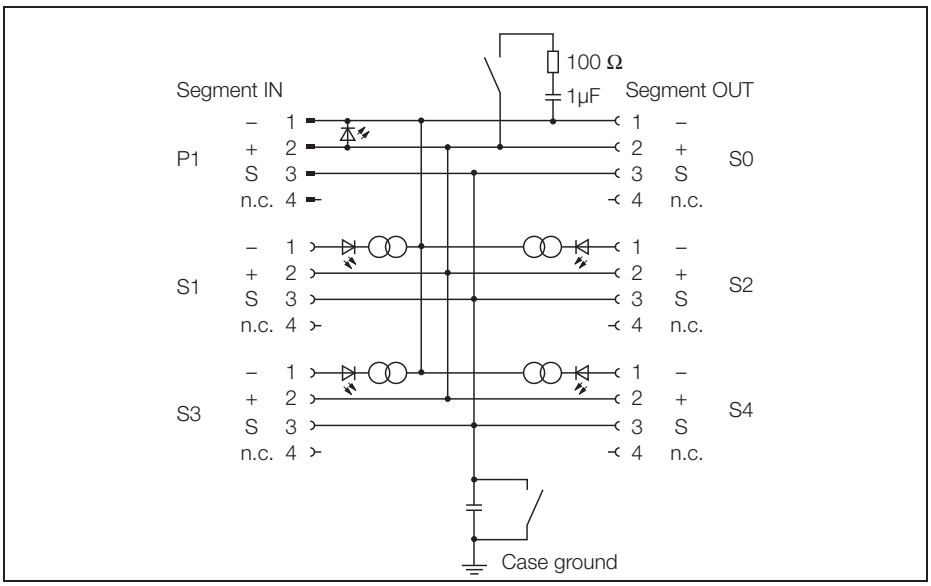


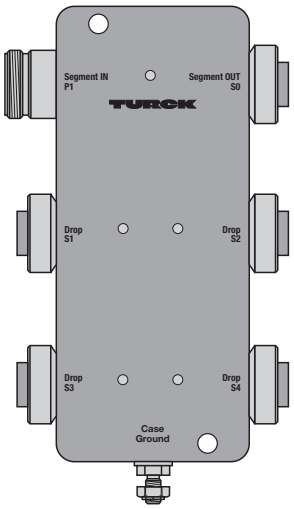
nominal values: 4 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-M413/EX

Industrial Automation





The 4-channel Ex junction box, type JBBS-49SC-M413/EX is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with stainless steel 7/8" flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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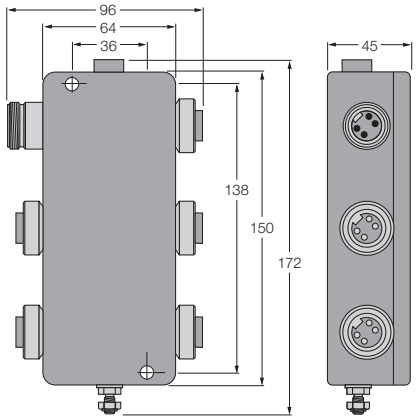
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49SC-M413/EX

Industrial Automation

Type	JBBS-49SC-M413/EX
Ident-No.	6611437
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	4 x red
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 2 G EEx ib IIC/IIB T4 ⟨Ex⟩ II 2 (1) G EEx ia IIC/IIB T4 ⟨Ex⟩ II 2 G (2D) [Ex ibD] EEx ib IIB T4 ⟨Ex⟩ II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	7/8" flange connection
Segment IN	1 x 7/8 "- plug
Segment OUT	1 x 7/8 "- coupling
Drop line	4 x 7/8 "- plug
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



Pin Configuration

7/8
Segment in

1 = V –
2 = V +
3 = shield
4 = n.c.

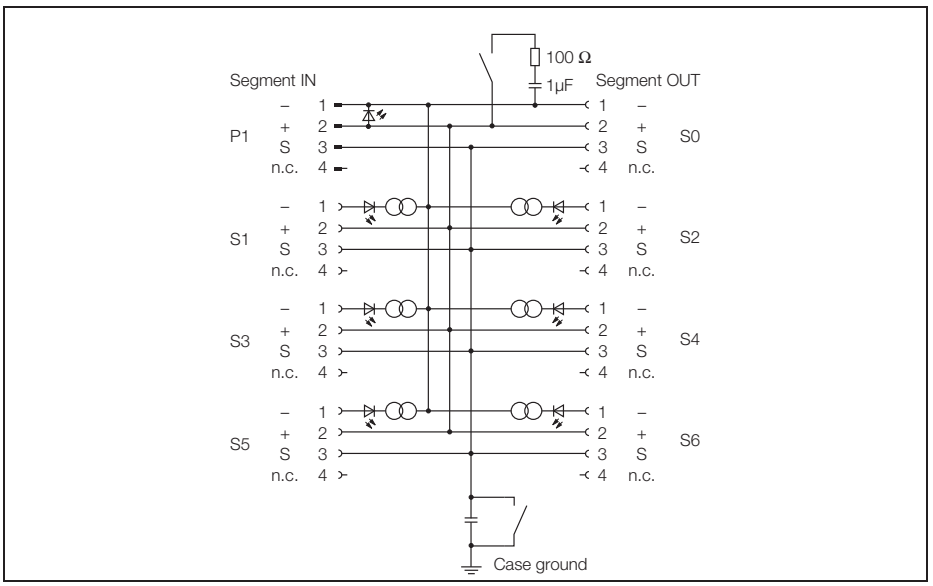
7/8"
Segment out, Spur

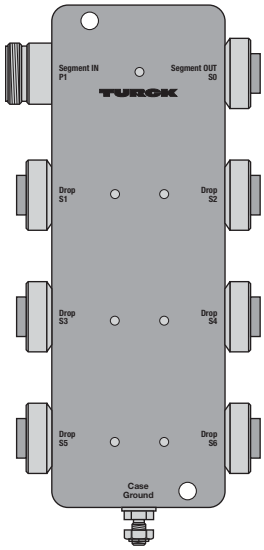
nominal values: 9 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-M613/EX

Industrial Automation





The 6-channel Ex junction box, type JBBS-49SC-M613/EX is designed for the FOUNDATION fieldbus™.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with stainless steel 7/8" flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **With drop line short-circuit protection**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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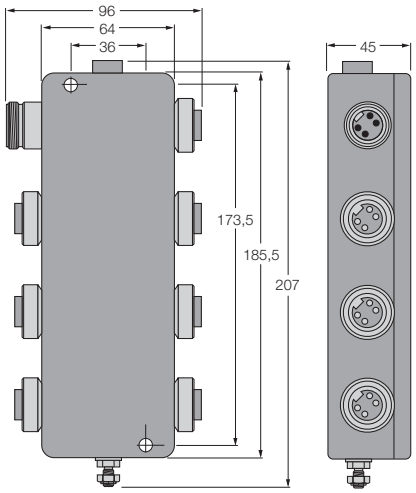
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49SC-M613/EX

Industrial Automation

Type	JBBS-49SC-M613/EX
Ident-No.	6611439
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	6 x red
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 2 G EEx ib IIC/IIB T4 Ⓔx II 2 (1) G EEx ia IIC/IIB T4 Ⓔx II 2 G (2D) [Ex ibD] EEx ib IIB T4 Ⓔx II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	7/8" flange connection
Segment IN	1 x 7/8 "- plug
Segment OUT	1 x 7/8 "- coupling
Drop line	6 x 7/8 "- plug
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions

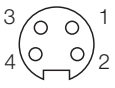


Pin Configuration

7/8
Segment in

1 = V –
2 = V +
3 = shield
4 = n.c.

7/8"
Segment out, Spur

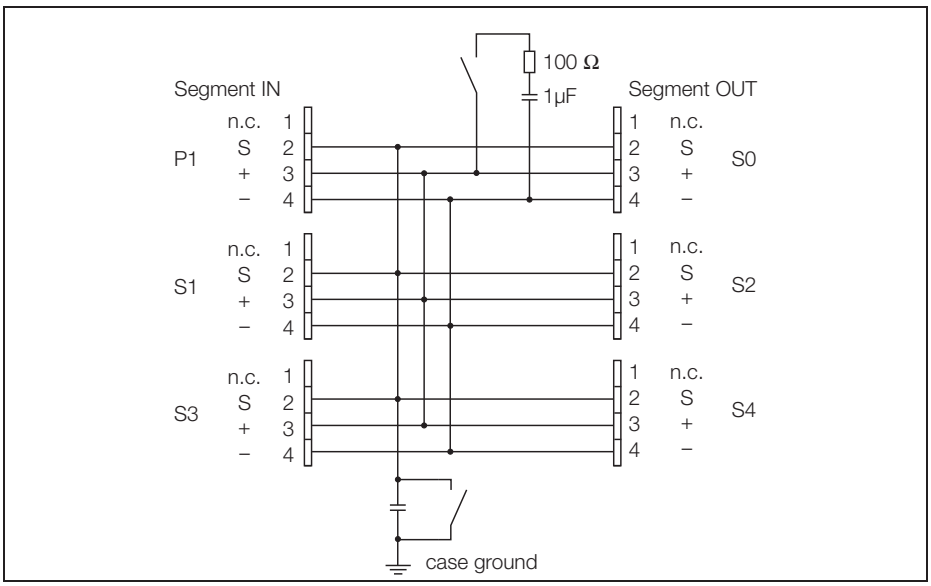


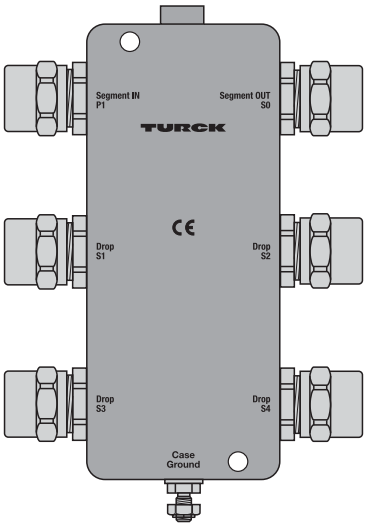
nominal values: 9 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-T415/3G

Industrial Automation





The 4-channel Ex junction box, type JBBS-49-T415/3G is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with PVC cable glands M20 x 1.5**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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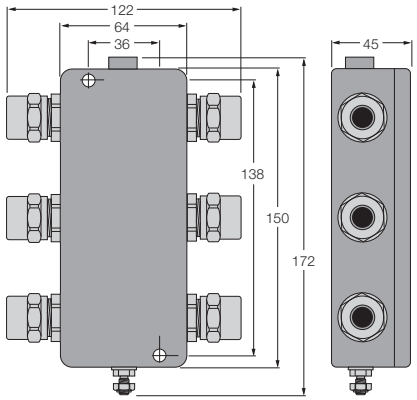
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-T415/3G

Industrial Automation

Type	JBBS-49-T415/3G
Ident-No.	6611444
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 3 G Ex nA II T4 Ⓔx II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 6...12 mm)
Segment OUT	1 x M20 x 1.5 (Ø 6...12 mm)
Drop line	4 x M20 x 1.5 (Ø 6...12 mm)
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



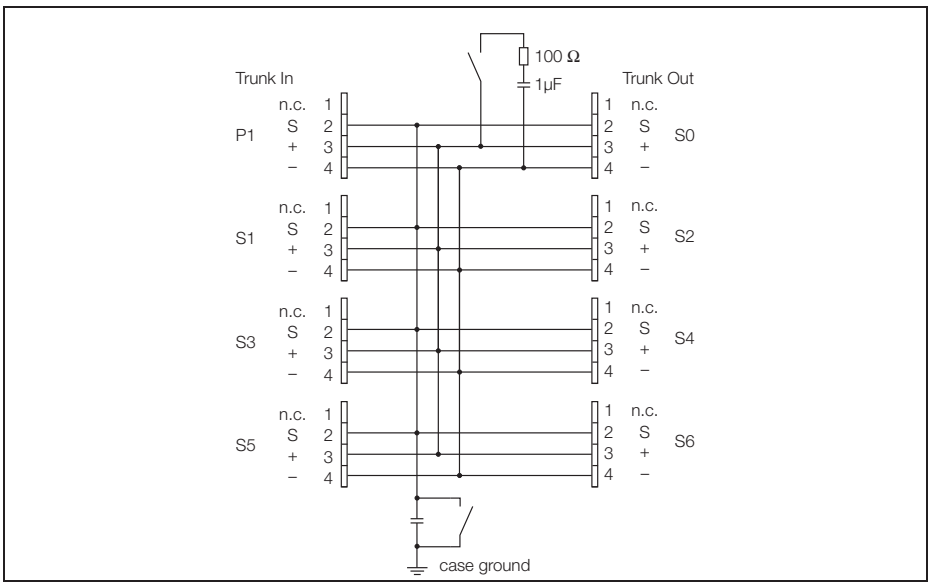
Pin Configuration

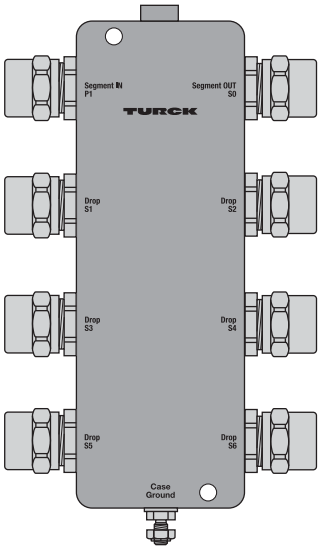
1 = n.c.
2 = shield
3 = +
4 = –

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-T615/3G

Industrial Automation





The 6-channel Ex junction box, type JBBS-49-T615/3G is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with PVC cable glands M20 x 1.5**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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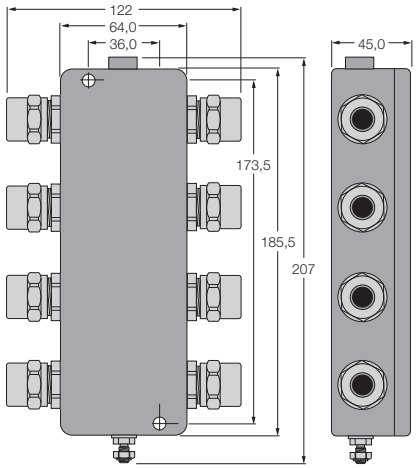
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-T615/3G

Industrial Automation

Type	JBBS-49-T615/3G
Ident-No.	6611446
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 3 G Ex nA II T4 ⟨Ex⟩ II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 6...12 mm)
Segment OUT	1 x M20 x 1.5 (Ø 6...12 mm)
Drop line	6 x M20 x 1.5 (Ø 6...12 mm)
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions



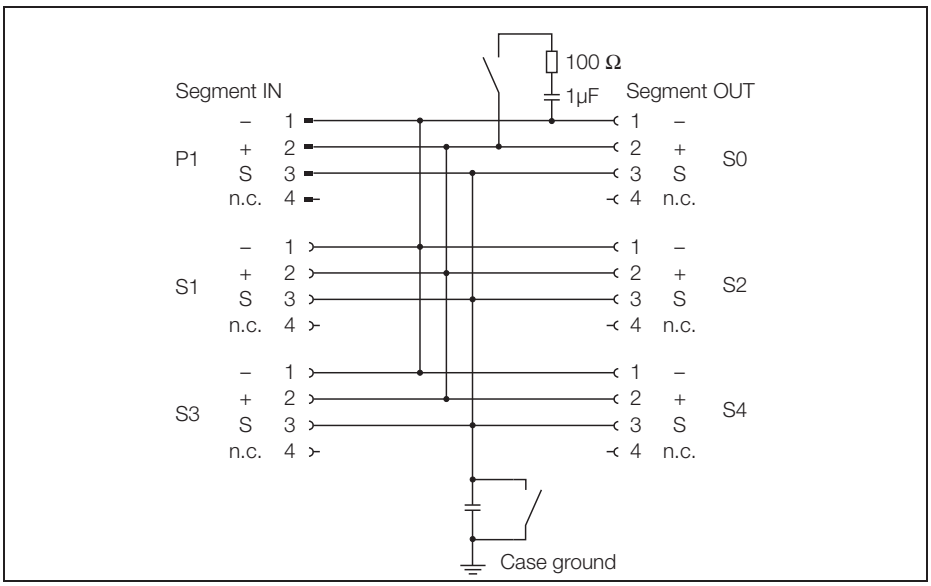
Pin Configuration

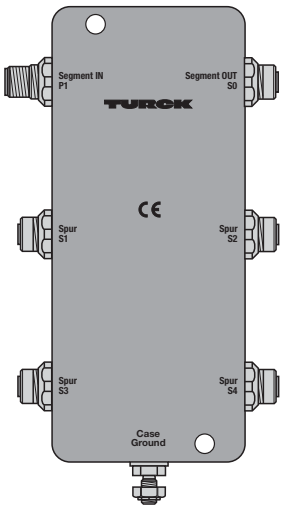
1 = n.c.
2 = shield
3 = +
4 = –

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-E413/3G

Industrial Automation





The 4-channel Ex junction box, type JBBS-49-E413/3G is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with stainless steel M12 flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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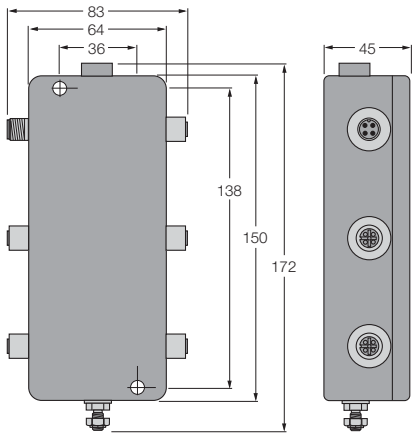
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-E413/3G

Industrial Automation

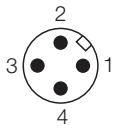
Type	JBBS-49-E413/3G
Ident-No.	6611424
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc.to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 3 G Ex nA II T4 Ⓔx II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	M12 flange connection
Segment IN	1 x M12 - connector
Segment OUT	1 x M12 - female connector
Drop line	4 x M12 - female connector
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



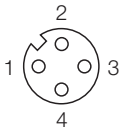
Pin Configuration

M12 x 1
Segment in



1 = V –
2 = V +
3 = shield
4 = n.c.

M12 x 1
Segment out, Spur

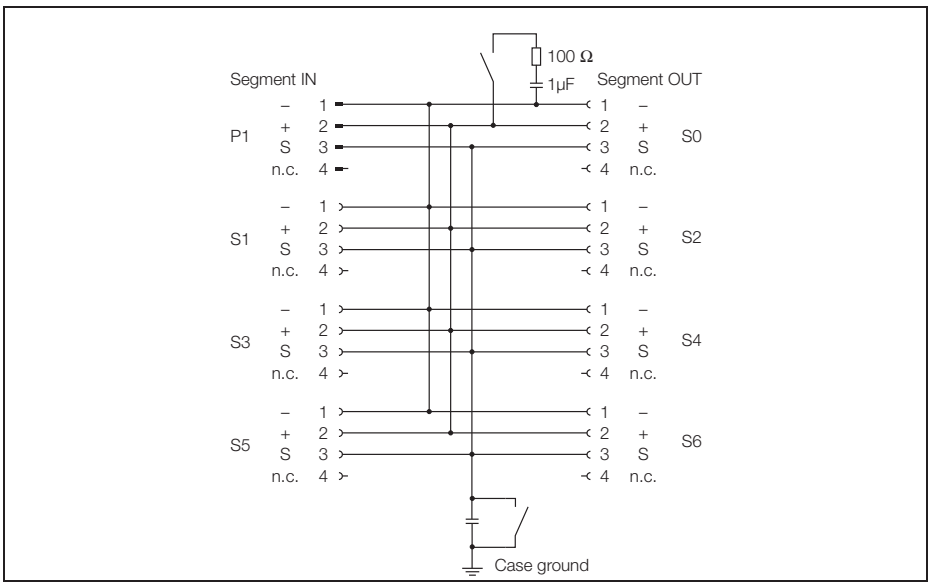


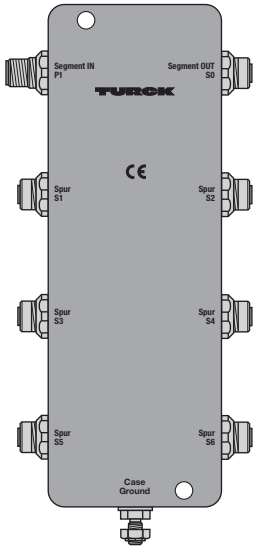
nominal values: 4 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-E613/3G

Industrial Automation





The 6-channel Ex junction box, type JBBS-49-E613/3G is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with stainless steel M12 flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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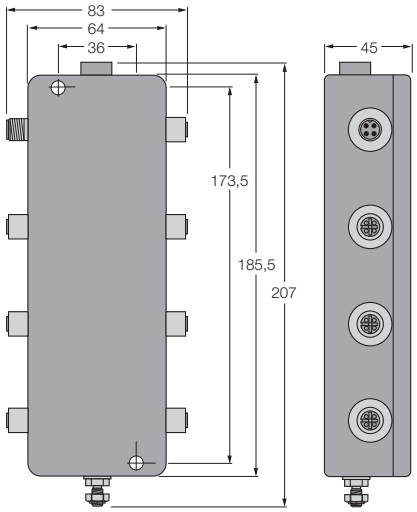
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-E613/3G

Industrial Automation

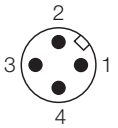
Type	JBBS-49-E613/3G
Ident-No.	6611426
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 3 G Ex nA II T4 ⟨Ex⟩ II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	M12 flange connection
Segment IN	1 x M12 - connector
Segment OUT	1 x M12 - female connector
Drop line	6 x M12 - female connector
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions



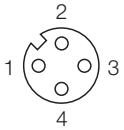
Pin Configuration

M12 x 1
Segment in



1 = V –
2 = V +
3 = shield
4 = n.c.

M12 x 1
Segment out, Spur

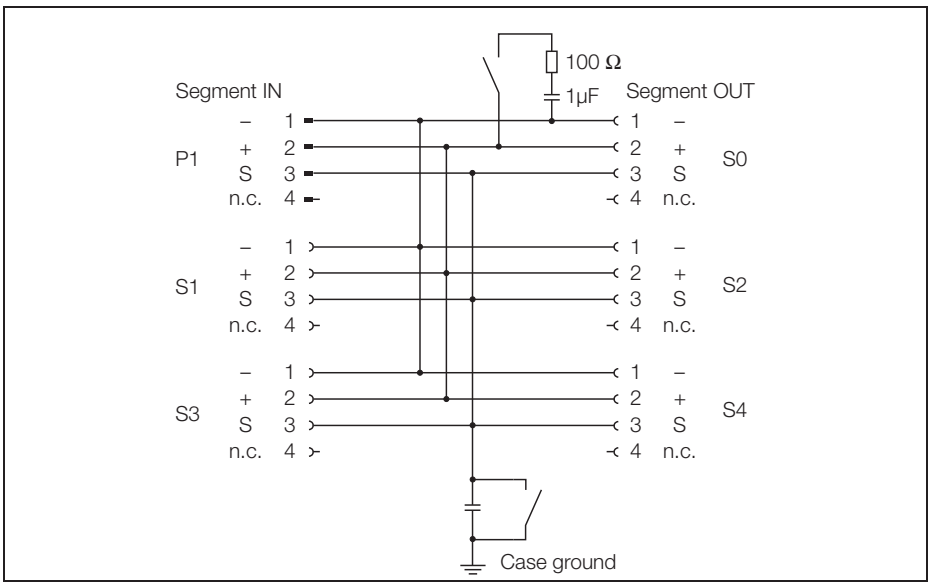


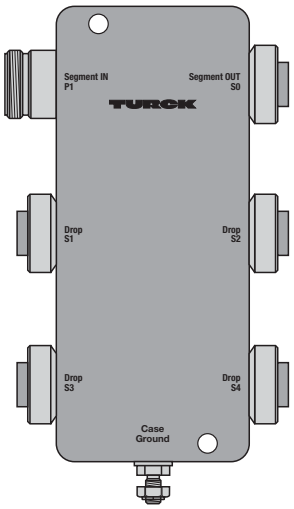
nominal values: 4 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-M413/3G

Industrial Automation





The 4-channel Ex junction box, type JBBS-49-M413/3G is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with stainless steel 7/8" flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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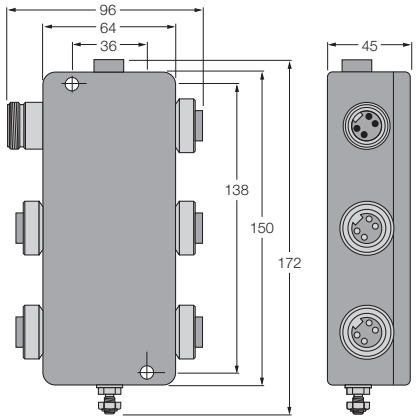
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-M413/3G

Industrial Automation

Type	JBBS-49-M413/3G
Ident-No.	6611428
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	⟨Ex⟩ II 3 G Ex nA II T4 ⟨Ex⟩ II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	7/8" flange connection
Segment IN	1 x 7/8 "- plug
Segment OUT	1 x 7/8 "- coupling
Drop line	4 x 7/8 "- plug
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



Pin Configuration

7/8
Segment in

1 = V +
2 = n.c.
3 = V –
4 = shield

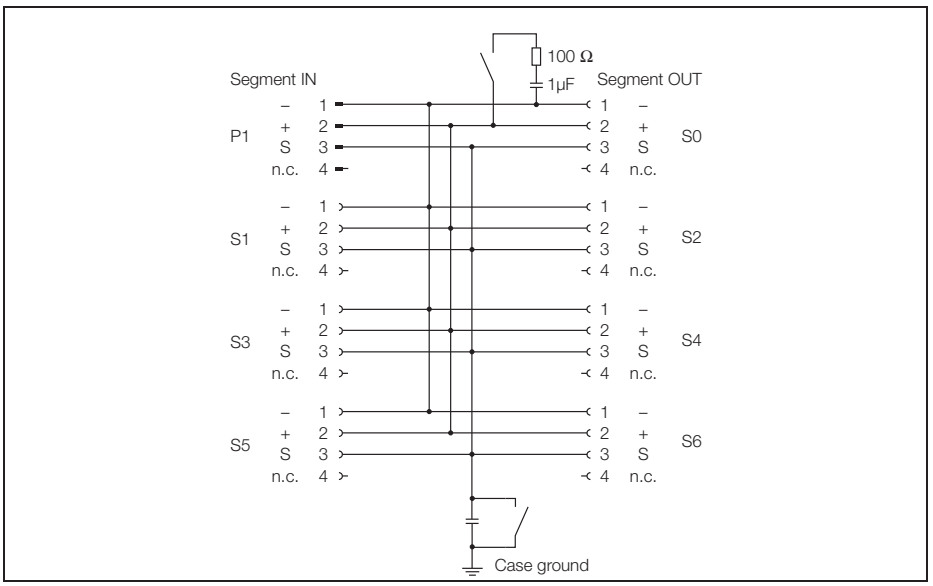
7/8"
Segment out, Drop

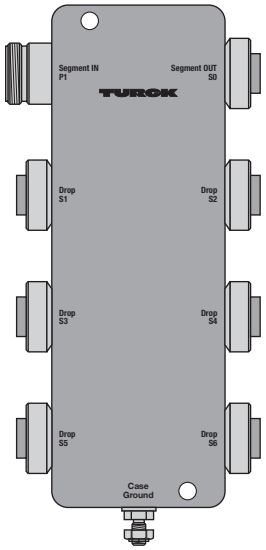
nominal values: 9 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-M613/3G

Industrial Automation





The 6-channel Ex junction box, type JBBS-49-M613/3G is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FNICO compliance acc. to IEC TS 60079-27**
- **Mounting in zone 2 possible**
- **Junction box for wall mounting with stainless steel 7/8" flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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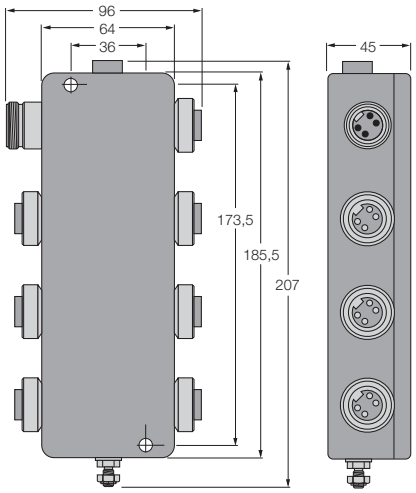
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-M613/3G

Industrial Automation

Type	JBBS-49-M613/3G
Ident-No.	6611430
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 07 ATEX 2017 X
Entity Parameter	
Max.output voltage U_o	≤ 32 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 2100 mW
Max. input voltage U_i	≤ 32 V
Max. input current I_i	≤ 3000 mA
FNICO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 63 mA
Max. output power P_o	≤ 1100 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 513 mA
Max. input power P_i	≤ 7250 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 3 G Ex nA II T4 Ⓔx II 3 G Ex nA [nL] IIC T4 FNICO / Entity field device
Connection	7/8" flange connection
Segment IN	1 x 7/8 "- plug
Segment OUT	1 x 7/8 "- coupling
Drop line	6 x 7/8 "- plug
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions

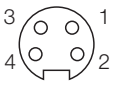


Pin Configuration

7/8
Segment in

1 = V –
2 = V +
3 = shield
4 = n.c.

7/8"
Segment out, Spur

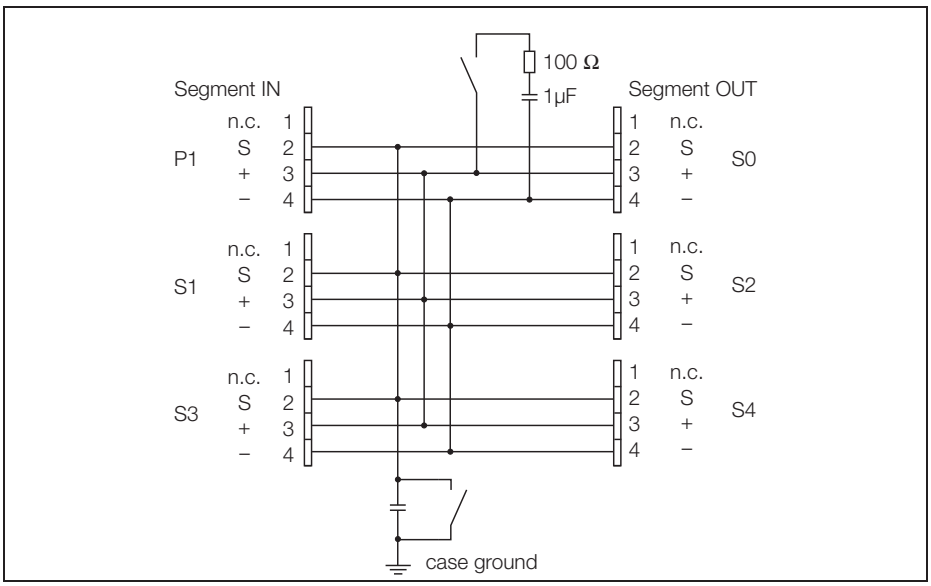


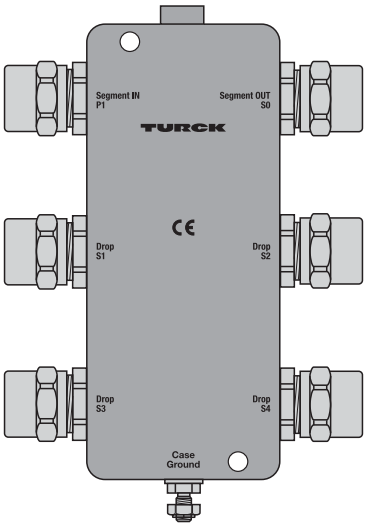
nominal values: 9 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-T415B/EX

Industrial Automation





The 4-channel Ex junction box, type JBBS-49-T415B/EX is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with PVC cable glands M20 x 1.5**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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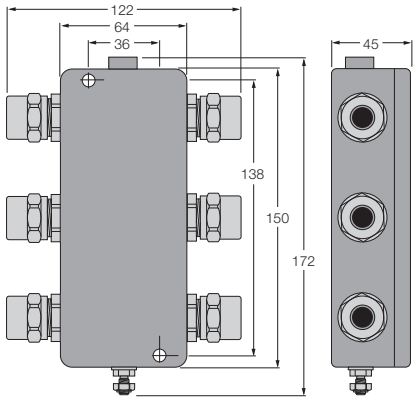
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-T415B/EX

Industrial Automation

Type	JBBS-49-T415B/EX
Ident-No.	6611445
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 2 G EEx ib IIC/IIB T4 Ⓔx II 2 (1) G EEx ia IIC/IIB T4 Ⓔx II 2 G (2D) [Ex ibD] EEx ib IIB T4 Ⓔx II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 6...12 mm)
Segment OUT	1 x M20 x 1.5 (Ø 6...12 mm)
Drop line	4 x M20 x 1.5 (Ø 6...12 mm)
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



Pin Configuration

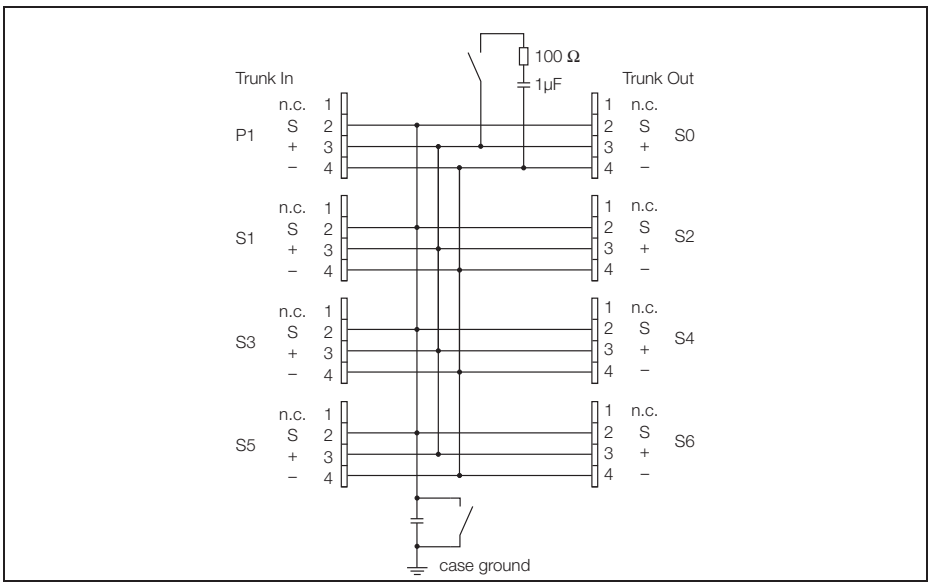
1 2 3 4

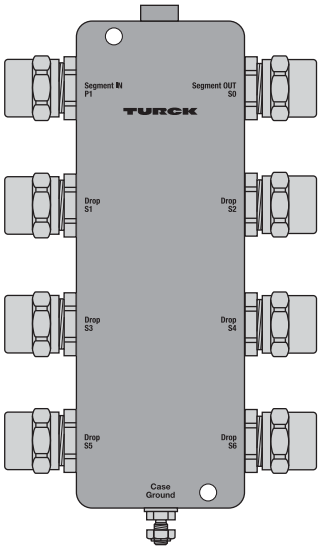
1 = n.c.
2 = shield
3 = +
4 = –

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-T615B/EX

Industrial Automation





The 6-channel Ex junction box, type JBBS-49-T615B/EX is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with PVC cable glands M20 x 1.5**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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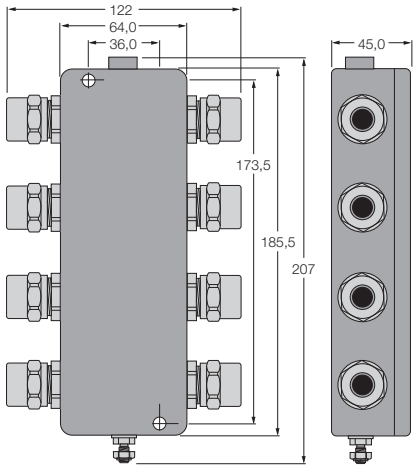
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-T615B/EX

Industrial Automation

Type	JBBS-49-T615B/EX
Ident-No.	6611447
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 2 G EEx ib IIC/IIB T4 Ⓔx II 2 (1) G EEx ia IIC/IIB T4 Ⓔx II 2 G (2D) [Ex ibD] EEx ib IIB T4 Ⓔx II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	cable glands
Segment IN	1 x M20 x 1.5 (Ø 6...12 mm)
Segment OUT	1 x M20 x 1.5 (Ø 6...12 mm)
Drop line	6 x M20 x 1.5 (Ø 6...12 mm)
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions



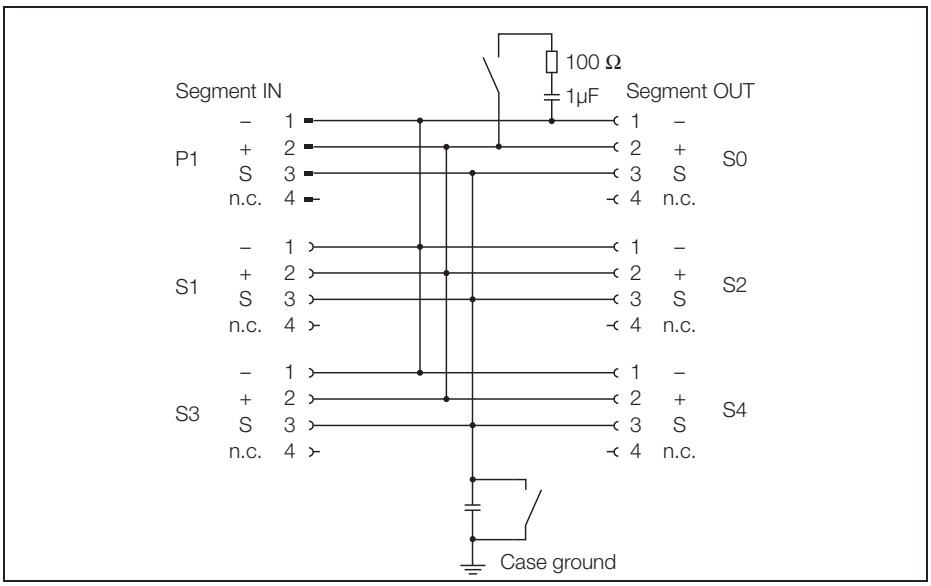
Pin Configuration

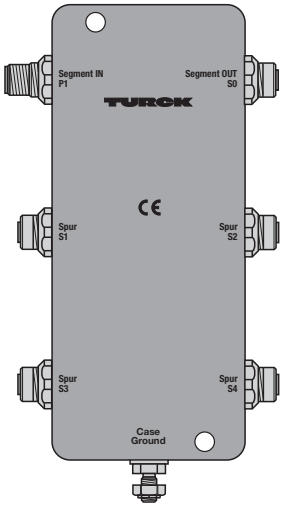
1 = n.c.
2 = shield
3 = +
4 = –

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-E413/EX

Industrial Automation





The 4-channel Ex junction box, type JBBS-49-E413/EX is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with stainless steel M12 flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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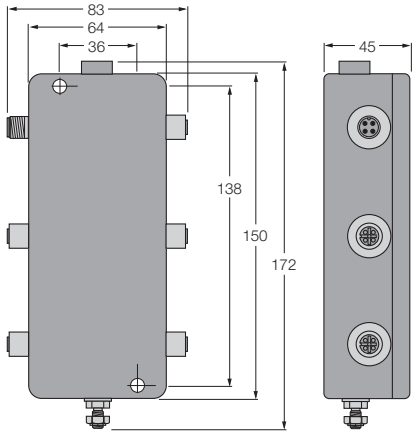
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-E413/EX

Industrial Automation

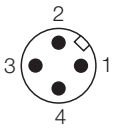
Type	JBBS-49-E413/EX
Ident-No.	6611425
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 2 G EEx ib IIC/IIB T4 Ⓔx II 2 (1) G EEx ia IIC/IIB T4 Ⓔx II 2 G (2D) [Ex ibD] EEx ib IIB T4 Ⓔx II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	M12 flange connection
Segment IN	1 x M12 - connector
Segment OUT	1 x M12 - female connector
Drop line	4 x M12 - female connector
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



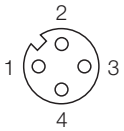
Pin Configuration

M12 x 1
Segment in



1 = V –
2 = V +
3 = shield
4 = n.c.

M12 x 1
Segment out, Spur

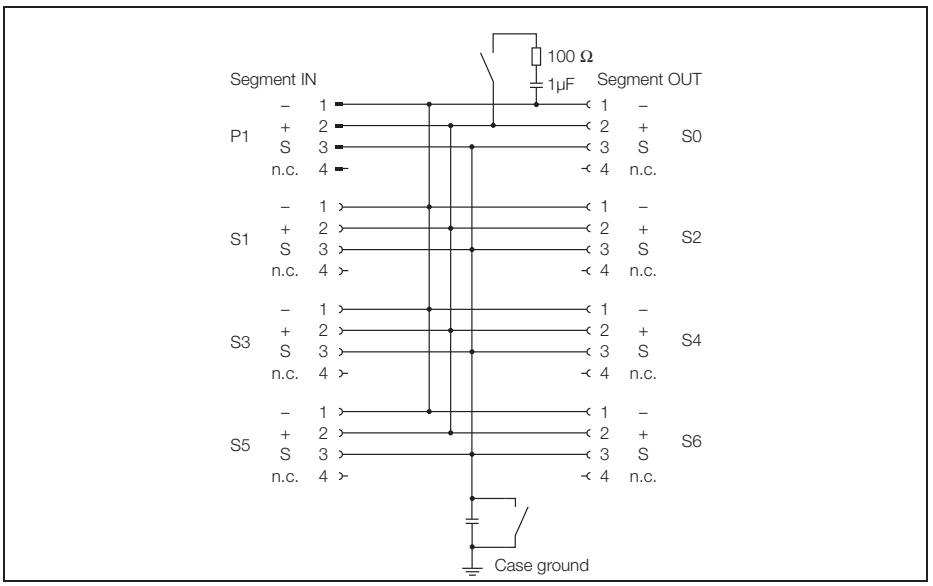


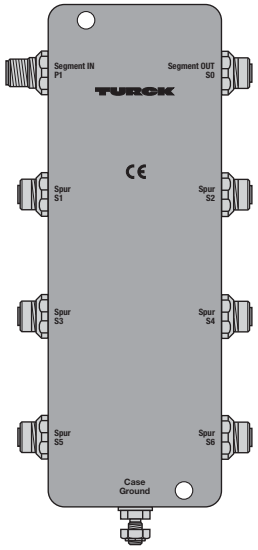
nominal values: 4 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-E613/EX

Industrial Automation





The 6-channel Ex junction box, type JBBS-49-E613/EX is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with stainless steel M12 flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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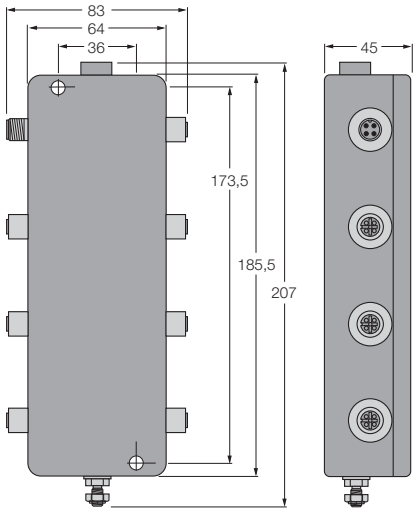
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-E613/EX

Industrial Automation

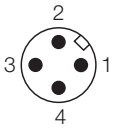
Type	JBBS-49-E613/EX
Ident-No.	6611427
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 2 G EEx ib IIC/IIB T4 Ⓔx II 2 (1) G EEx ia IIC/IIB T4 Ⓔx II 2 G (2D) [Ex ibD] EEx ib IIB T4 Ⓔx II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	M12 flange connection
Segment IN	1 x M12 - connector
Segment OUT	1 x M12 - female connector
Drop line	6 x M12 - female connector
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions



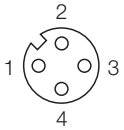
Pin Configuration

M12 x 1
Segment in



1 = V –
2 = V +
3 = shield
4 = n.c.

M12 x 1
Segment out, Spur

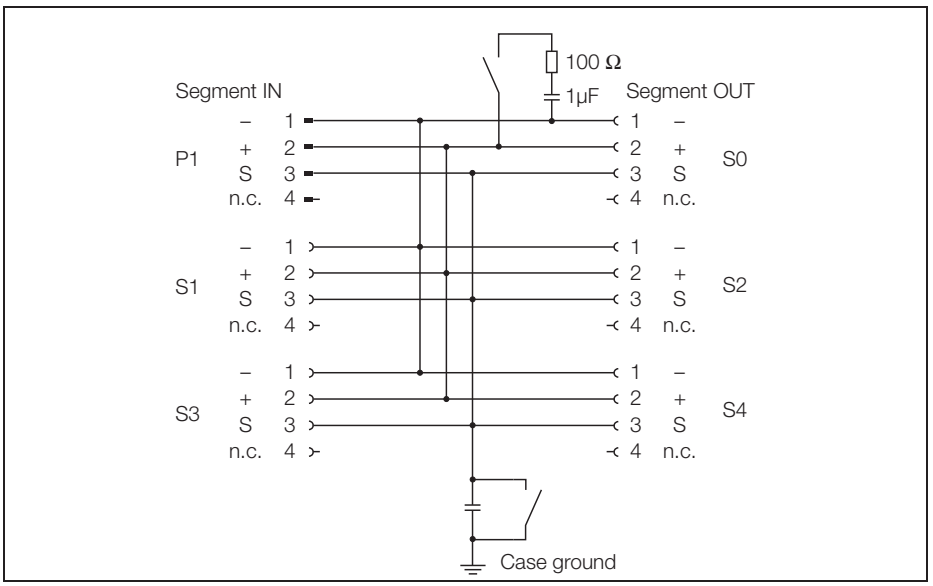


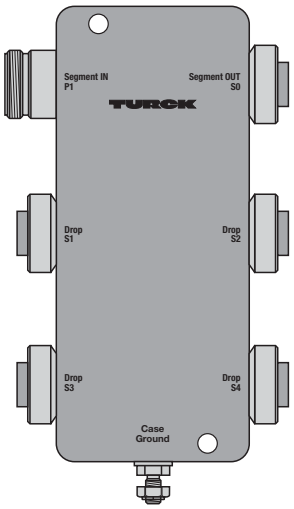
nominal values: 4 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-M413/EX

Industrial Automation





The 4-channel Ex junction box, type JBBS-49-M413/EX is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with stainless steel 7/8" flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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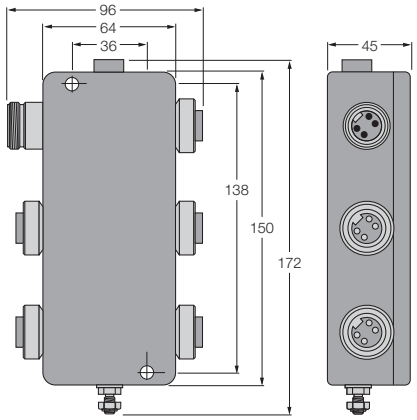
FOUNDATION fieldbus™
IP67 junction box, 4-channel
JBBS-49-M413/EX

Industrial Automation

Type	JBBS-49-M413/EX
Ident-No.	6611429
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 2 G EEx ib IIC/IIB T4 Ⓔx II 2 (1) G EEx ia IIC/IIB T4 Ⓔx II 2 G (2D) [Ex ibD] EEx ib IIB T4 Ⓔx II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	7/8" flange connection
Segment IN	1 x 7/8 "- plug
Segment OUT	1 x 7/8 "- coupling
Drop line	4 x 7/8 "- plug
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 150 x 45 mm
Connection mode	wall mounting

Dimensions



Pin Configuration

7/8
Segment in

1 = V +
2 = n.c.
3 = V –
4 = shield

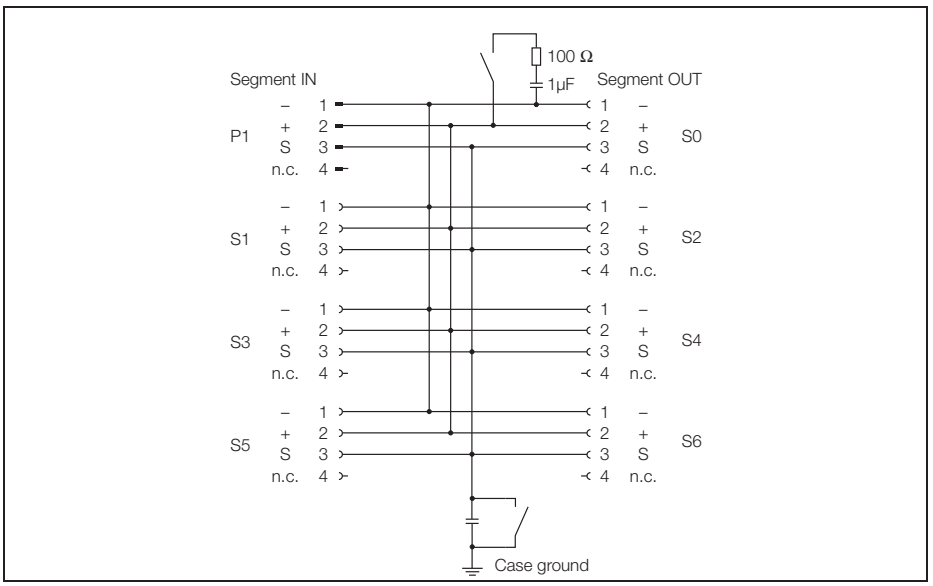
7/8"
Segment out, Drop

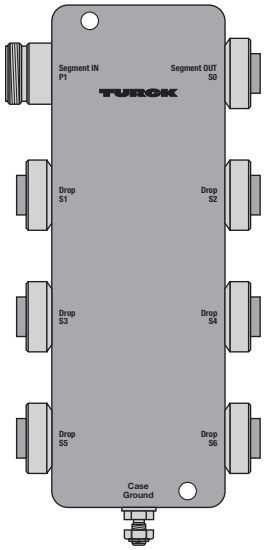
nominal values: 9 A, 300 V

4

FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-M613/EX

Industrial Automation





The 6-channel Ex junction box, type JBBS-49-M613/EX is designed for the FOUNDATION fieldbus™.

The housing is made of robust die-cast aluminium and features protection degree IP67.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

To avoid condensation build-up in the housing, the devices are equipped with a condensate drain.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

- **Entity and FISCO compliance acc. to IEC TS 60079-27**
- **Junction box for wall mounting with stainless steel 7/8" flange connections**
- **Powder-coated die-cast aluminium housing**
- **Pressure compensation element for protection against condensation water**
- **Connection of the housing potential via an M5 x 1 bolt**
- **Temperature range: -25...+70 °C (-13...+158 °F)**
- **Integrated terminating resistor (switch-in)**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Isolated support terminal for optional protective conductor incorporated in cable**

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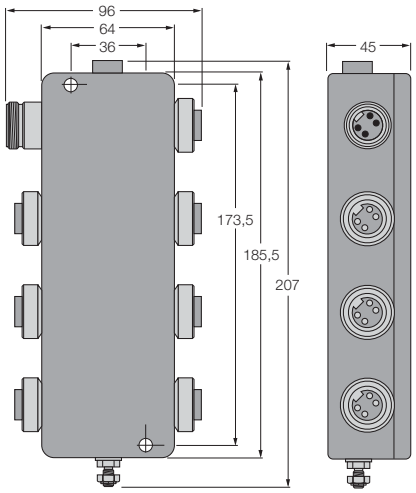
FOUNDATION fieldbus™
IP67 junction box, 6-channel
JBBS-49-M613/EX

Industrial Automation

Type	JBBS-49-M613/EX
Ident-No.	6611431
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	PTB 03 ATEX 2236
Entity Parameter	
Max.output voltage U_o	≤ 24 V
Max. output current I_o	≤ 250 mA
Max. output power P_o	≤ 2560 mW
Max. input voltage U_i	≤ 24 V
Max. input current I_i	≤ 250 mA
Max. input power P_i	≤ 2560 mW
FISCO parameter acc. to IEC TS 60079-27	
Max.output voltage U_o	≤ 17.5 V
Max. output current I_o	≤ 380 mA
Max. output power P_o	≤ 5320 mW
Max. input voltage U_i	≤ 17.5 V
Max. input current I_i	≤ 380 mA
Max. input power P_i	≤ 5320 mW
External inductances/capacitances L_i/C_i	trunk (in/out): negligible / ≤ 5.00 nF per field current circuit: negligible / ≤ 0.47 nF Σ field current circuits: negligible / ≤ 5.00 nF
Marking of the device	Ⓔx II 2 G EEx ib IIC/IIB T4 Ⓔx II 2 (1) G EEx ia IIC/IIB T4 Ⓔx II 2 G (2D) [Ex ibD] EEx ib IIB T4 Ⓔx II 2 (1) G (1D) [Ex iaD] EEx ia IIB T4 FISCO / Entity field device
Connection	7/8" flange connection
Segment IN	1 x 7/8 "- plug
Segment OUT	1 x 7/8 "- coupling
Drop line	6 x 7/8 "- plug
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-25...+70 °C
Housing material	powder-coated die-cast aluminium
Housing colour	black/yellow
Dimensions	64 x 185.5 x 45 mm
Connection mode	wall mounting

Dimensions



Pin Configuration

7/8
Segment in

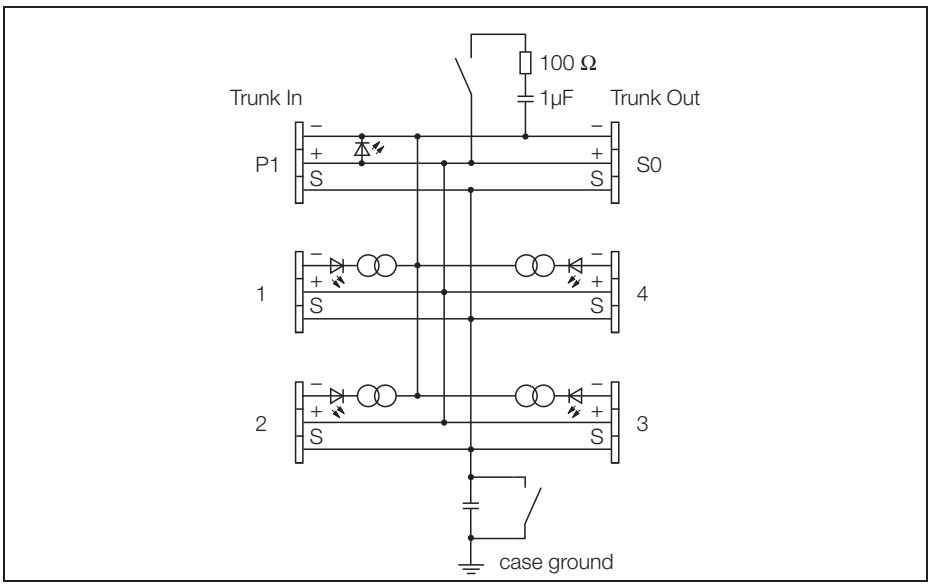
1 = V –
2 = V +
3 = shield
4 = n.c.

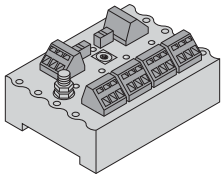
7/8"
Segment out, Spur

nominal values: 9 A, 300 V

4

FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 4-channel
JRBS-40SC-4C/EX





The 4-channel junction box, type JRBS-40SC-4C/EX is designed for fieldbus systems according to IEC 61158-2, i.e. FOUNDATION fieldbus™ and PROFIBUS-PA.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP20.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

Accessories: To increase the degree of protection, there are various aluminium and stainless steel housings with IP6x rating and various cable glands available on request.

- **Junction box for DIN hat-rail mounting**
- **Aluminium housing**
- **For explosion hazardous area applications: -25...+70 °C (-13...+158 °F); for non-Ex applications: -40...+70 °C (-40...+158 °F)**
- **With drop line short-circuit protection**
- **Switch-in terminating resistor**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Temperature range: -25...+70 °C (-13...+158 °F)**

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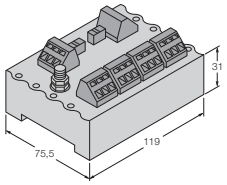
FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 4-channel
JRBS-40SC-4C/EX

Industrial Automation

Type	JRBS-40SC-4C/EX
Ident-No.	6611451
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	4 x red
Ex approval acc. to conformity certificate	pending
Connection	cage-clamp terminals
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Housing material	aluminium
Housing colour	black
Dimensions	119 x 31 x 75.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions

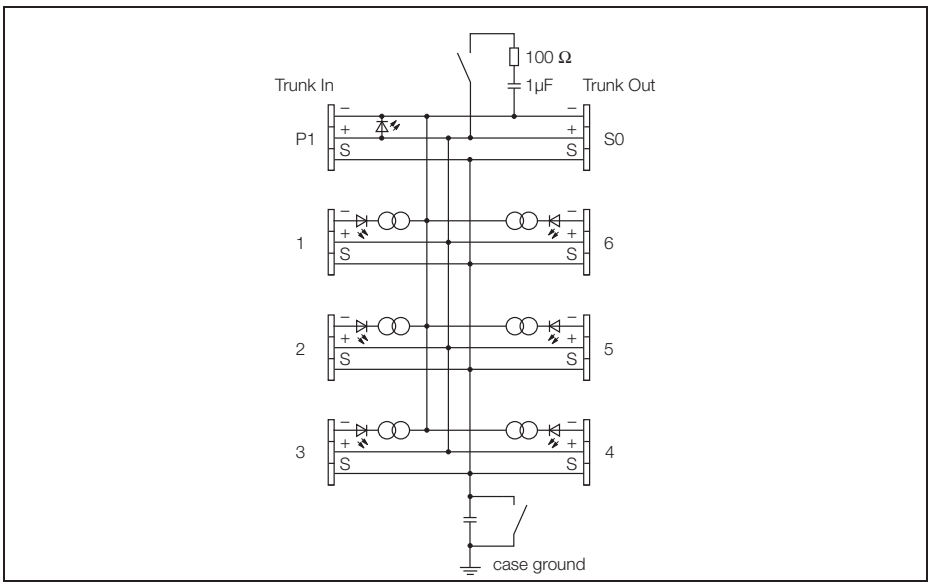


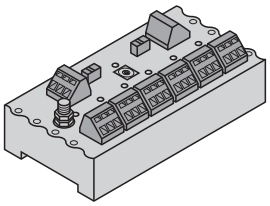
Pin Configuration

1 = –
2 = +
3 = S

4

FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 6-channel
JRBS-40SC-6C/EX





The 6-channel junction box, type JRBS-40SC-6C/EX is designed for fieldbus systems according to IEC 61158-2, i.e. FOUNDATION fieldbus™ and PROFIBUS-PA.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP20.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

Accessories: To increase the degree of protection, there are various aluminium and stainless steel housings with IP6x rating and various cable glands available on request.

- **Junction box for DIN hat-rail mounting**
- **Aluminium housing**
- **For explosion hazardous area applications: -25...+70 °C (-13...+158 °F); for non-Ex applications: -40...+70 °C (-40...+158 °F)**
- **With drop line short-circuit protection**
- **Switch-in terminating resistor**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Temperature range: -25...+70 °C (-13...+158 °F)**

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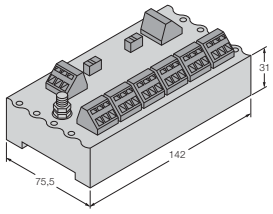
FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 6-channel
JRBS-40SC-6C/EX

Type	JRBS-40SC-6C/EX
Ident-No.	6611452
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	6 x red
Ex approval acc. to conformity certificate	pending
Connection	cage-clamp terminals
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Housing material	aluminium
Housing colour	black
Dimensions	142 x 31 x 75.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions



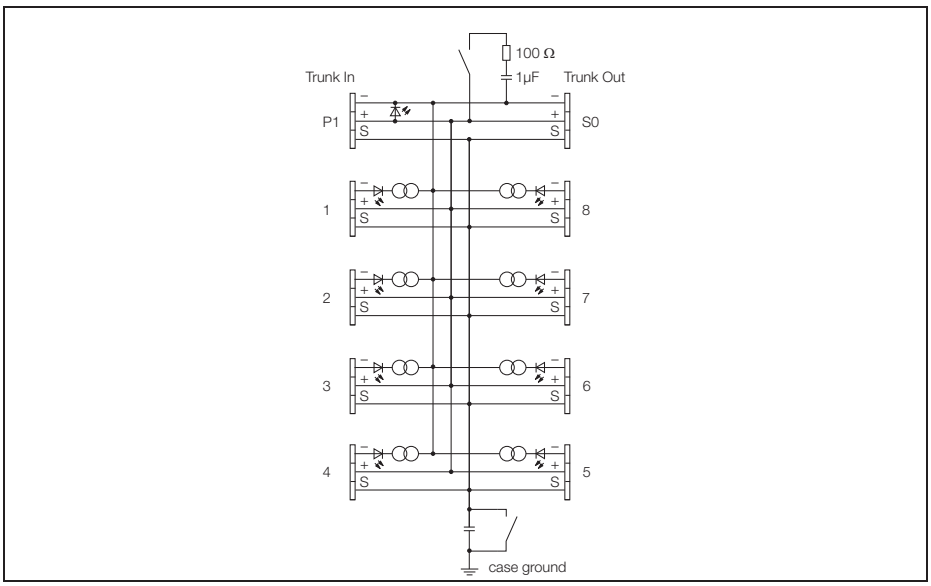
Pin Configuration

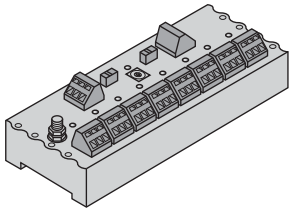
1 = –
2 = +
3 = S

4

FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 8-channel
JRBS-40SC-8C/EX

Industrial Automation





The 8-channel junction box, type JRBS-40SC-8C/EX is designed for fieldbus systems according to IEC 61158-2, i.e. FOUNDATION fieldbus™ and PROFIBUS-PA.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP20.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

Accessories: To increase the degree of protection, there are various aluminium and stainless steel housings with IP6x rating and various cable glands available on request.

- **Junction box for DIN hat-rail mounting**
- **Aluminium housing**
- **For explosion hazardous area applications: -25...+70 °C (-13...+158 °F); for non-Ex applications: -40...+70 °C (-40...+158 °F)**
- **With drop line short-circuit protection**
- **Switch-in terminating resistor**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Temperature range: -25...+70 °C (-13...+158 °F)**

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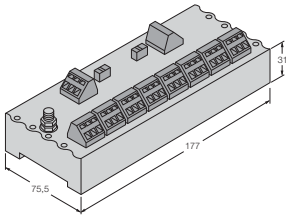
FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 8-channel
JRBS-40SC-8C/EX

Industrial Automation

Type	JRBS-40SC-8C/EX
Ident-No.	6611453
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	8 x red
Ex approval acc. to conformity certificate	pending
Connection	cage-clamp terminals
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Housing material	aluminium
Housing colour	black
Dimensions	177 x 31 x 75.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions

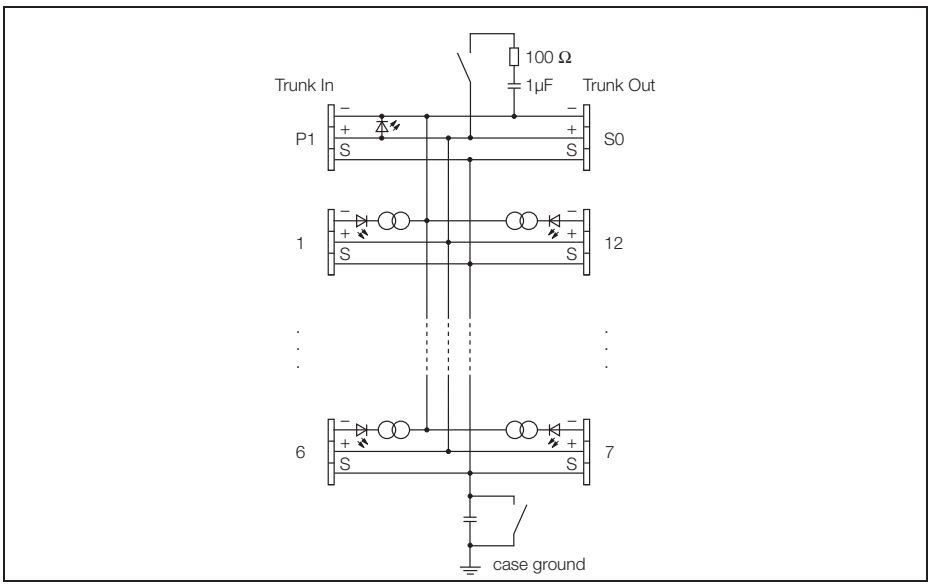


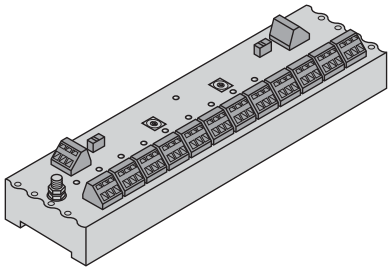
Pin Configuration

1 = –
2 = +
3 = S

4

FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction module, 12-channel
JRBS-40SC-12C/EX





The 12-channel junction box, type JRBS-40SC-12C/EX is designed for fieldbus systems according to IEC 61158-2, i.e. FOUNDATION fieldbus™ and PROFIBUS-PA.

The junction box features an adjustable short-circuit limit. The max. current limitation is selected for all channels via a rotary switch. The following values can be selected: 30, 35, 45 and 60 mA.

The housing is made of robust die-cast aluminium and features protection degree IP20.

The junction box is equipped with a selectable bus terminating resistor.

The according switch is integrated in the housing on the board.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

Accessories: To increase the degree of protection, there are various aluminium and stainless steel housings with IP6x rating and various cable glands available on request.

- **Junction box for DIN hat-rail mounting**
- **Aluminium housing**
- **For explosion hazardous area applications: -25...+70 °C (-13...+158 °F); for non-Ex applications: -40...+70 °C (-40...+158 °F)**
- **With drop line short-circuit protection**
- **Switch-in terminating resistor**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Temperature range: -25...+70 °C (-13...+158 °F)**

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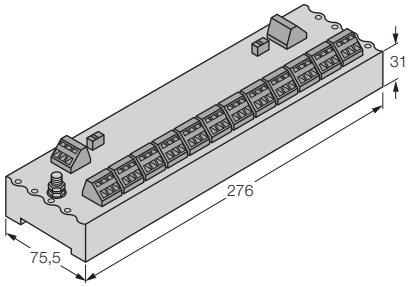
FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction module, 12-channel
JRBS-40SC-12C/EX

Type	JRBS-40SC-12C/EX
Ident-No.	6611455
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	12...32 VDC
Current self-consumption	≤ 7 mA
Voltage drop	≤ 0.3 V
Short-circuit protection	≤ 30, 35, 45, 60 mA
Indication	
Operational readiness	1 x green
Short-circuit message	12 x red
Ex approval acc. to conformity certificate	pending
Connection	cage-clamp terminals
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Housing material	aluminium
Housing colour	black
Dimensions	276 x 31 x 75.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions

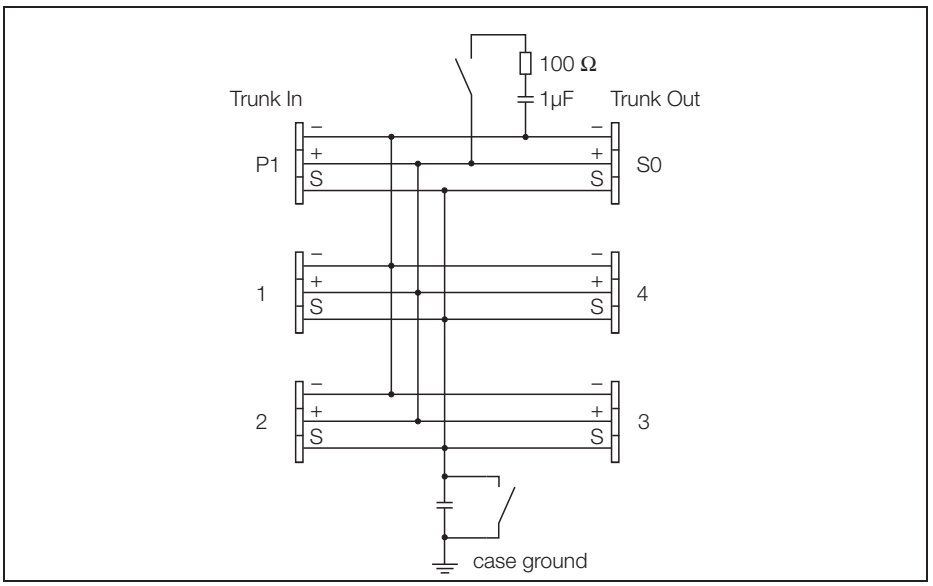


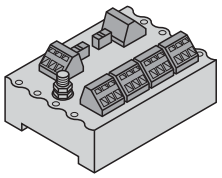
Pin Configuration

1 = –
2 = +
3 = S

4

FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 4-channel
JRBS-40-4C/EX





The 4-channel junction box, type JRBS-40-4C/EX is designed for fieldbus systems according to IEC 61158-2, i.e. FOUNDATION fieldbus™ and PROFIBUS-PA.

The housing is made of robust die-cast aluminium and features protection degree IP20.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

Accessories: To increase the degree of protection, there are various aluminium and stainless steel housings with IP6x rating and various cable glands available on request.

- **Junction box for DIN hat-rail mounting**
- **Aluminium housing**
- **For explosion hazardous area applications: -25...+70 °C (-13...+158 °F); for non-Ex applications: -40...+70 °C (-40...+158 °F)**
- **With drop line short-circuit protection**
- **Switch-in terminating resistor**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Temperature range: -25...+70 °C (-13...+158 °F)**

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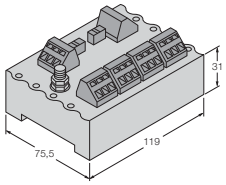
FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 4-channel
JRBS-40-4C/EX

Industrial Automation

Type	JRBS-40-4C/EX
Ident-No.	6611448
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	pending
Connection	cage-clamp terminals
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Housing material	aluminium
Housing colour	black
Dimensions	119 x 31 x 75.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions



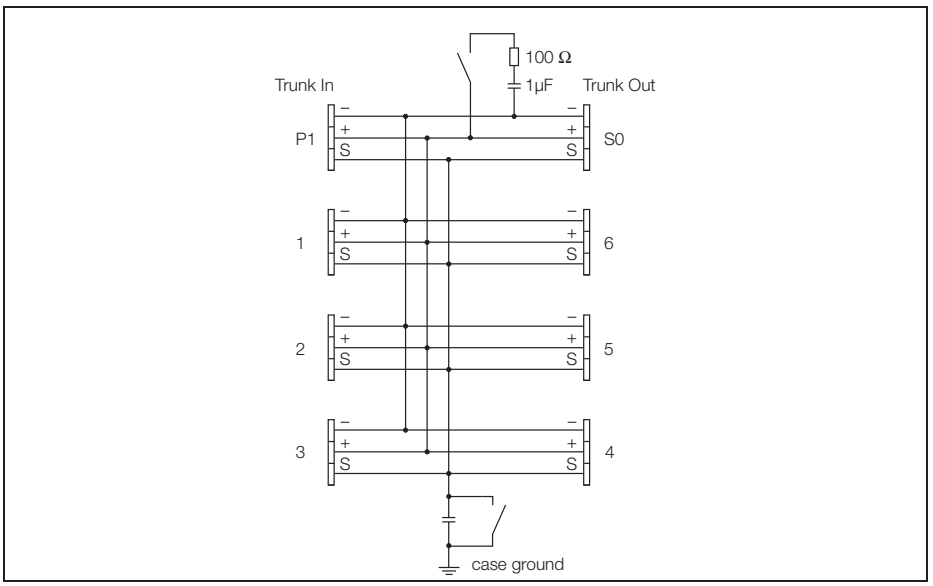
Pin Configuration

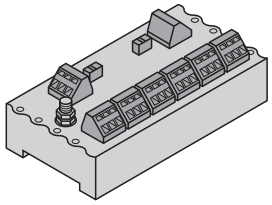
1 = –
2 = +
3 = S

4

FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 6-channel
JRBS-40-6C/EX

Industrial Automation





The 6-channel junction box, type JRBS-40-6C/EX is designed for fieldbus systems according to IEC 61158-2, i.e. FOUNDATION fieldbus™ and PROFIBUS-PA.

The housing is made of robust die-cast aluminium and features protection degree IP20.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

Accessories: To increase the degree of protection, there are various aluminium and stainless steel housings with IP6x rating and various cable glands available on request.

- **Junction box for DIN hat-rail mounting**
- **Aluminium housing**
- **For explosion hazardous area applications: -25...+70 °C (-13...+158 °F); for non-Ex applications: -40...+70 °C (-40...+158 °F)**
- **With drop line short-circuit protection**
- **Switch-in terminating resistor**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Temperature range: -25...+70 °C (-13...+158 °F)**

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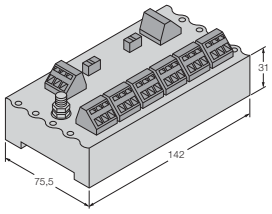
FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 6-channel
JRBS-40-6C/EX

Type	JRBS-40-6C/EX
Ident-No.	6611449
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	pending
Connection	cage-clamp terminals
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Housing material	aluminium
Housing colour	black
Dimensions	142 x 31 x 75.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions



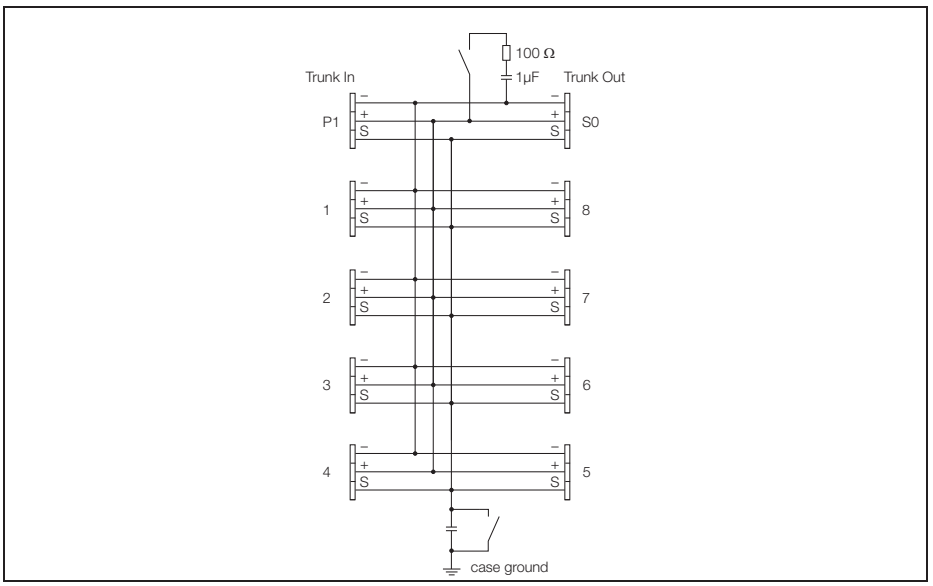
Pin Configuration

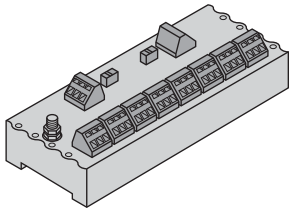
1 = –
2 = +
3 = S

4

FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 8-channel
JRBS-40-8C/EX

Industrial Automation





The 8-channel junction box, type JRBS-40-8C/EX is designed for fieldbus systems according to IEC 61158-2, i.e. FOUNDATION fieldbus™ and PROFIBUS-PA.

The housing is made of robust die-cast aluminium and features protection degree IP20.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

Accessories: To increase the degree of protection, there are various aluminium and stainless steel housings with IP6x rating and various cable glands available on request.

- **Junction box for DIN hat-rail mounting**
- **Aluminium housing**
- **For explosion hazardous area applications: -25...+70 °C (-13...+158 °F); for non-Ex applications: -40...+70 °C (-40...+158 °F)**
- **With drop line short-circuit protection**
- **Switch-in terminating resistor**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Temperature range: -25...+70 °C (-13...+158 °F)**

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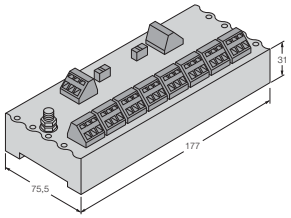
FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction box, 8-channel
JRBS-40-8C/EX

Industrial Automation

Type	JRBS-40-8C/EX
Ident-No.	6611450
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	pending
Connection	cage-clamp terminals
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Housing material	aluminium
Housing colour	black
Dimensions	177 x 31 x 75.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions

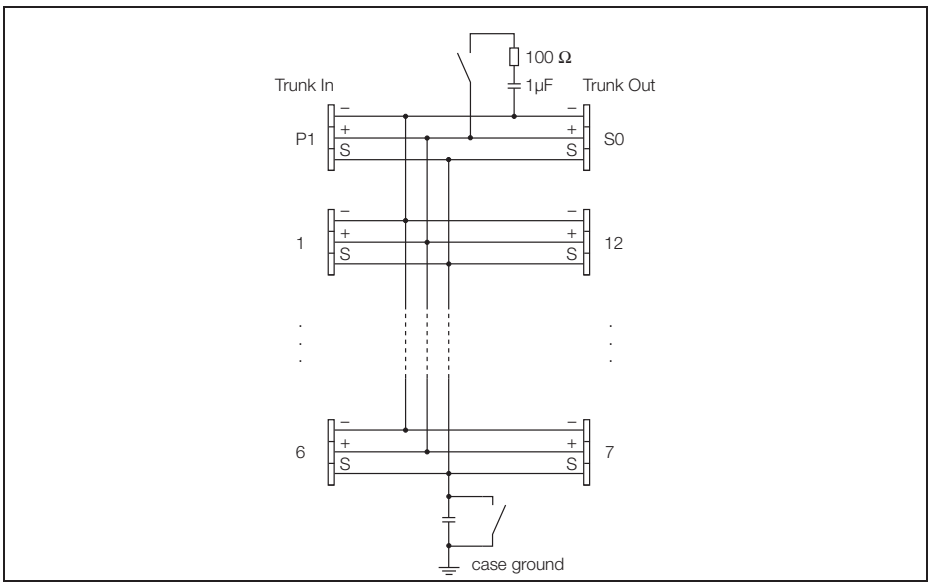


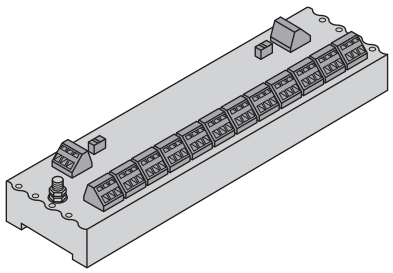
Pin Configuration

1 = –
2 = +
3 = S

4

FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction module, 12-channel
JRBS-40-12C/EX





The 12-channel junction box, type JRBS-40-12C/EX is designed for fieldbus systems according to IEC 61158-2, i.e. FOUNDATION fieldbus™ and PROFIBUS-PA.

The housing is made of robust die-cast aluminium and features protection degree IP20.

The junction box is equipped with a selectable bus terminating resistor. The according switch is integrated in the housing on the board.

The shield is capacitively coupled to the housing potential. A switch for direct coupling of the shield and housing is implemented.

Attention: Sufficient equipotential bonding of the installation must be ensured. The device is connected via the M5 x 1 bolt of the housing to the system's potentializer.

Accessories: To increase the degree of protection, there are various aluminium and stainless steel housings with IP6x rating and various cable glands available on request.

- **Junction box for DIN hat-rail mounting**
- **Aluminium housing**
- **For explosion hazardous area applications: -25...+70 °C (-13...+158 °F); for non-Ex applications: -40...+70 °C (-40...+158 °F)**
- **With drop line short-circuit protection**
- **Switch-in terminating resistor**
- **Cable shielding: capacitive or direct connection to housing potential selectable via switch**
- **Temperature range: -25...+70 °C (-13...+158 °F)**

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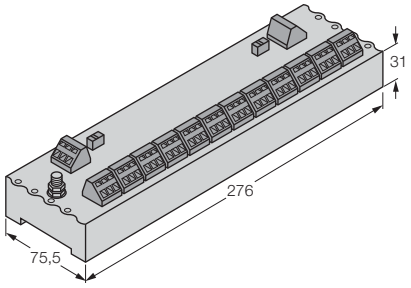
FOUNDATION fieldbus™ and PROFIBUS-PA
IP20 junction module, 12-channel
JRBS-40-12C/EX

Industrial Automation

Type	JRBS-40-12C/EX
Ident-No.	6611454
Fieldbus standard	IEC 61158-2
Operating voltage (Pwr)	9...32 VDC
Ex approval acc. to conformity certificate	pending
Connection	cage-clamp terminals
Connection cross-section	2.5 mm^2
Earthing bolt	M5 x 1
Protection degree	IP20
Housing material	aluminium
Housing colour	black
Dimensions	276 x 31 x 75.5 mm
Connection mode	snap-on DIN rail (DIN 50022)

Dimensions



Pin Configuration

1 = –
2 = +
3 = S

4

FOUNDATION fieldbus™
Cable technology – Basics

A two or three wire cable is prescribed by IEC 61158-2 as the transmission medium for transferring energy and data.

Cable parameters
Electrical data and permissible cable types are not prescribed. Cable parameters determine the achievable fieldbus properties such as the distances to be covered, number of connectable stations and electromagnetic compatibility.

In the following table (Tab. 1) we compare the four standard cable types (at 25 °C):

	Type A (Reference)	Type B	Type C	Type D
Cable design	Twisted conductor pair	One or multiple twisted conductor pairs, overall shield	Multiple twisted pairs, not shielded	Multiple non-twisted pairs not shielded
Conductor cross-section (nominal)	0.8 mm^2 (AWG 18)	0.32 mm^2 (AWG 22)	0.13 mm^2 (AWG 26)	1.25 mm^2 (AWG 16)
Loop impedance (DC current)	44 Ω/km	112 Ω/km	264 Ω/km	40 Ω/km
Wave resistance at 31.25 kHz	100 Ω ± 20 %	100 Ω ± 30 %	not specified	not specified
Wave attenuation at 39 kHz	3 dB/km	5 dB/km	8 dB/km	8 dB/km
Capacitive asymmetry	2 nF/km	2 nF/km	not specified	not specified
Group delay distortion (7,9...39 kHz)	1.7 µs/km	not specified	not specified	not specified
Degree of shield coverage	90 %	not specified	not specified	not specified
Recommended network expansion (incl. spur lines)	1900 m	1200 m	400 m	200 m

Tab. 1 Cable types to IEC 61158-2

Use of the individual cable types
Cables conforming to the minimum requirements of type A, should be used for new installations. Cable types C and D should only be used in so-called "Retrofit Applications" (usage of cable already installed) involving only very limited network extensions. It is necessary to consider that in these cases the immunity to interference during data transmission may not meet the demands described in the standard.

Installations conform to the FISCO model
Installations conform to the FISCO model are not subject to any technical safety limitations, if the limit values defined in Tab. 1 are observed. Operation outside of these limit values is not generally excluded, but requires that each case is considered individually.
For example, the TURCK long distance "Cable FBY../LD" is not comparable with the types and limit values listed in Tab. 1, but its particularly suitable for FOUNDATION fieldbus™ and PROFIBUS-PA fieldbus systems. All of TURCK's cables for fieldbuses compliant with IEC 61158-2 feature optimum quality even exceeding type A requirements.

Maximum cable lengths, spur lines
Each fieldbus installation must follow a defined set of rules, the "Network configuration rules" (see IEC 61158-2, Chap. 11.2.2). The following limit values for permissible attenuation, reflection and distortion (Rule 8), as well as the maximum signal delay (Rule 4) are listed (see Tab. 2).

Attenuation between any two bus interfaces (at 31.25 kHz)	10.5 dB
Attenuation distortion a (f = 39 kHz) – a (f = 7.8 kHz), monotonic increasing with frequency	6 dB
Reflection factor at any point (7.8...39 kHz)	0.2
Signal delay between any two bus interfaces	640 µs

Tab. 2 Limit values for attenuation, distortion, reflection and propagation delay

Topology
If the limit values listed on the previous page are taken into consideration, various topologies such as star, tree or linear structures, as well as every cable is permissible.

An individual calculation of the four variables listed in Tab. 2 for all possible connections between two bus interfaces is associated with a very high effort. It is advisable to define rules which set down an optimum basic topology. These rules should ensure that the limit values stated cannot be exceeded.

The basis for a network should be a tree or linear topology or a combination of both.
A network of this type consists of a main cable (trunk line), a number of spur lines (spur), connection elements (connectors or junction boxes) and a terminating resistor (see Fig. 1).

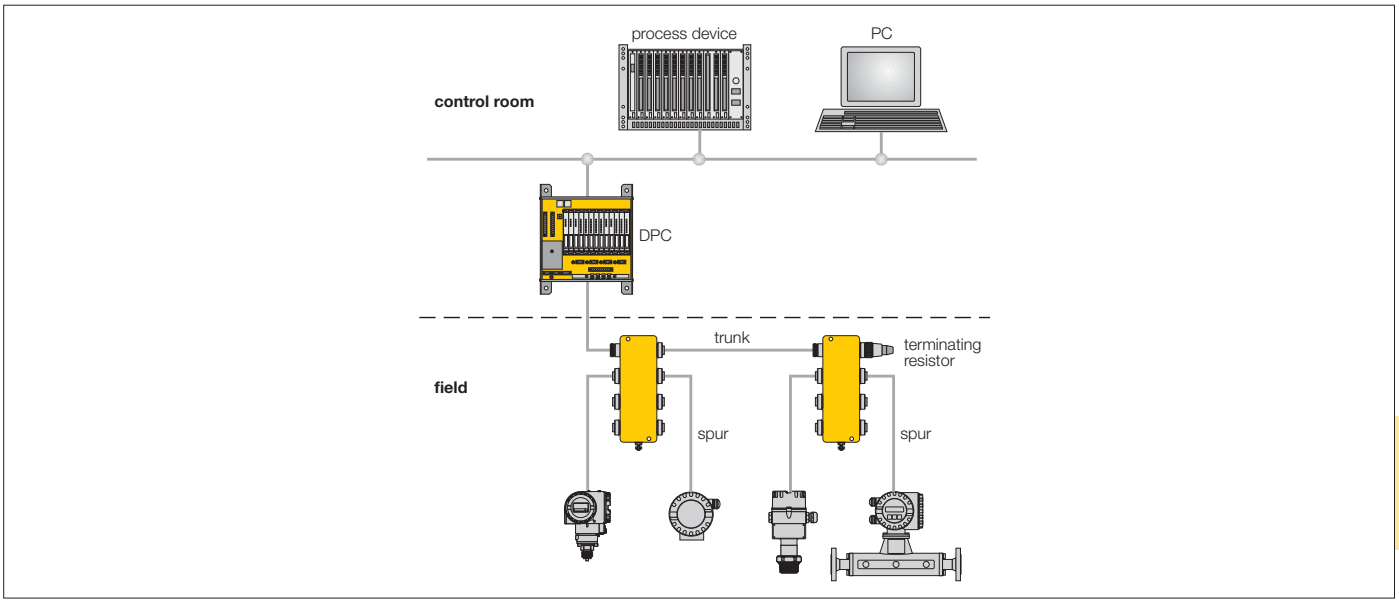


Fig. 1 Network topology

Maximum cable lengths
The sum of main cable lengths and all spur line lengths results in the overall cable length, as already defined in Tab. 1 as the network expansion (see Tab. 3).

Cable	Max. cable lengths (incl. spur lines)
Type A	1900 m
Type B	1200 m
Type C	400 m
Type D	200 m

Tab. 3 Maximum cable lengths (main cable and spur lines)

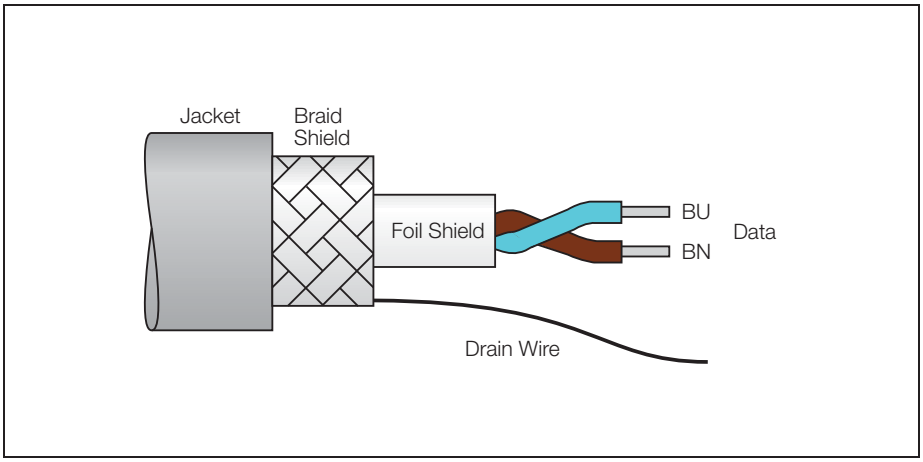
Maximum spur cable lengths
The maximum spur cable length depends on the number of field devices per spur line and is listed in Tab. 4.

Number of devices	1 device per spur line	2 devices per spur line	3 devices per spur line	4 devices per spur line
25...32	1 m	1 m	1 m	1 m
19...24	30 m	1 m	1 m	1 m
15...18	60 m	30 m	1 m	1 m
13...14	90 m	60 m	30 m	1 m
1...12	120 m	90 m	60 m	30 m

Tab. 4 Maximum spur line lengths

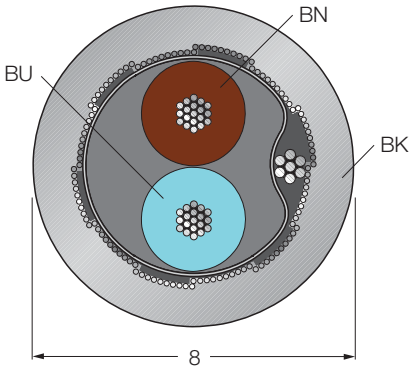
Instrumentation to FISCO
With FISCO conform EEx i instrumentation, the maximum expansion of the trunk line in the explosion hazardous area is 1000 m. A maximum spur line length of 60 m may not be exceeded.

Fieldbus cables for fieldbus systems
According to IEC61158-2
CABLE FBY-.../SD-...M



- **Fieldbus cables, type A, IEC 61158-2**
- **PVC cable jacket, colour blue, black, yellow or orange**
- **Oil, gas and sunlight resistant**
- **Temperature range -40... +75 °C**
- **Cable conductor cross section: 18/7 AWG (0.8 mm^2)**

Conductor cross-section



Type	CABLE FBY-.../SD-...M
Ident-No.	depending on length and colour, Ident-No. on request
Cable	18/7 AWG (0.8 mm^2), stranded plain copper
Cable jacket	PVC (blue, black, yellow or orange)
Shield	aluminium foil, tinned copper braid and stranded filler litz wire
Max. tensile strength	≤ 90 N
Bending radius	minimum 5 x cable diameter
Core insulation material	PE-foam with PE-casing
Core insulation colours	BN, BU
Core cross-section	2 x 0.8 mm^2
DC resistance (loop)	43.6 Ω/km
Shield resistance	nom. 9 Ω/km
Nom. Impedance	100 ± 20 (31.25 kBit/s) Ω
Working capacitance	nom. 60 nF/km
Capacitive earthing	max. 2 nF/km
Dampening	max. 3.0 dB/km (with f = 39 kHz]
Skew	max. 1.7 µs/km (7.9 kHz -39 kHz)
Inductivity	nom. 0.7 mH/km
Rated voltage	max. 300 V
Ambient temperature	
At rest	-40... + 75 °C
In moving state	-5... + 50 °C
Approvals	UL
UV resistance	according to UL 1581, section 1200
Resistance to oil	according to ICEA S82-552
Flame retardant	according to IEC 60332-1

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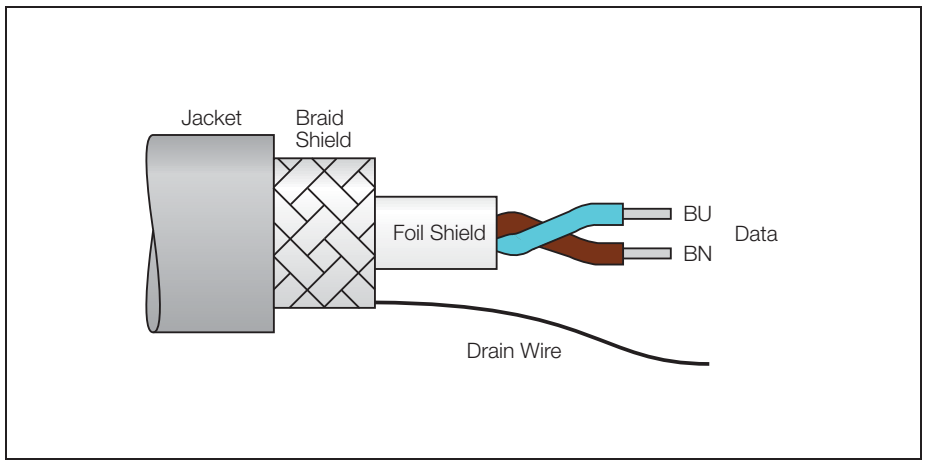
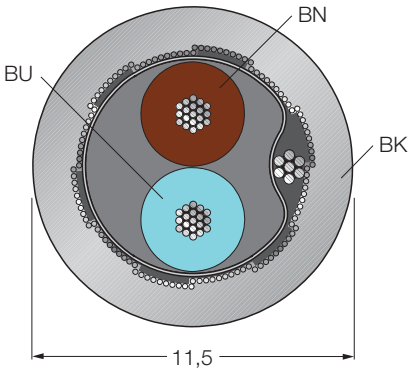
Fieldbus cables for fieldbus systems
According to IEC61158-2
CABLE FBY-BK/LD-...M



- **Long-distance fieldbus cables, type A, acc.IEC 61158-2**
- **PVC cable jacket, colour black**
- **Oil, gas and sunlight resistant**
- **Temperature range -40... +75 °C**
- **Cable conductor cross section: 14/ 7AWG (2.1 mm²)**

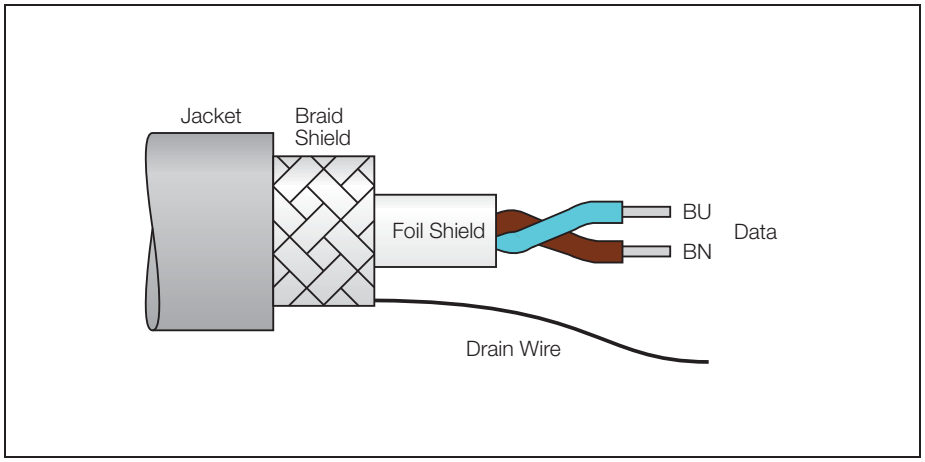
Conductor cross-section



Type	CABLE FBY-BK/LD-...M
Ident-No.	depending on the length, Ident-No. on request
Cable	14/7 AWG (2.1 mm²), stranded plain copper
Cable jacket	PVC, black
Shield	aluminium foil, tinned copper braid and stranded filler litz wire
Max. tensile strength	≤ 90 N
Bending radius	minimum 5 x cable diameter
Core insulation material	PE-foam with PE-casing
Core insulation colours	BN, BU
Core cross-section	2 x 2.1 mm²
DC resistance (loop)	17.2 Ω/km
Shield resistance	nom. 6 Ω/km
Nom. Impedance	100 ± 20 (31.25 kBit/s) Ω
Working capacitance	nom. 60 nF/km
Capacitive earthing	max. 2 nF/km
Dampening	max. 3.0 dB/km (with f = 39 kHz]
Skew	max. 1.7 µs/km (7.9 kHz -39 kHz)
Inductivity	nom. 0.7 mH/km
Rated voltage	max. 300 V
Ambient temperature	
At rest	-40... + 75 °C
In moving state	-5... + 50 °C
Approvals	UL
UV resistance	according to UL 1581, section 1200
Resistance to oil	according to ICEA S82-552
Flame retardant	according to IEC 60332-1

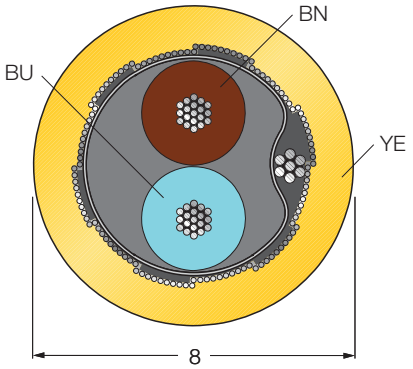
5

Fieldbus cables for fieldbus systems
According to IEC61158-2
CABLE FBH-YE/SD-...M



- **Fieldbus cables, type A, acc. to IEC 61158-2**
- **LSZH (low smoke zero halogen) mix**
- **PVC cable jacket, colour yellow**
- **Oil, gas and sunlight resistant**
- **Temperature range -40 ... +75 °C**
- **Cable cross section: 18/7 AWG (0.8 mm²)**

Conductor cross-section



Type	CABLE FBH-YE/SD-...M
Ident-No.	depending on the length, Ident-No. on request
Cable	18/7 AWG (0.8 mm²), stranded plain copper
Cable jacket	LSZH (low smoke zero halogen) mix, yellow
Shield	aluminium foil, tinned copper braid and stranded filler litz wire
Max. tensile strength	≤ 90 N
Bending radius	minimum 5 x cable diameter
Core insulation material	PE-foam with PE-casing
Core insulation colours	BN, BU
Core cross-section	2 x 0.8 mm²
DC resistance (loop)	43.6 Ω/km
Shield resistance	nom. 9 Ω/km
Nom. Impedance	100 ± 20 (31.25 kBit/s) Ω
Working capacitance	nom. 60 nF/km
Capacitive earthing	max. 2 nF/km
Dampening	max. 3.0 dB/km (with f = 39 kHz]
Skew	max. 1.7 µs/km (7.9 kHz - 39 kHz)
Inductivity	nom. 0.7 mH/km
Rated voltage	max. 300 V
Ambient temperature	
At rest	-40... + 75 °C
In moving state	-5... + 50 °C
Approvals	UL
UV resistance	according to UL 1581, section 1200
Resistance to oil	according to ICEA S82-552
Flame retardant	yes
Halogen-free	yes

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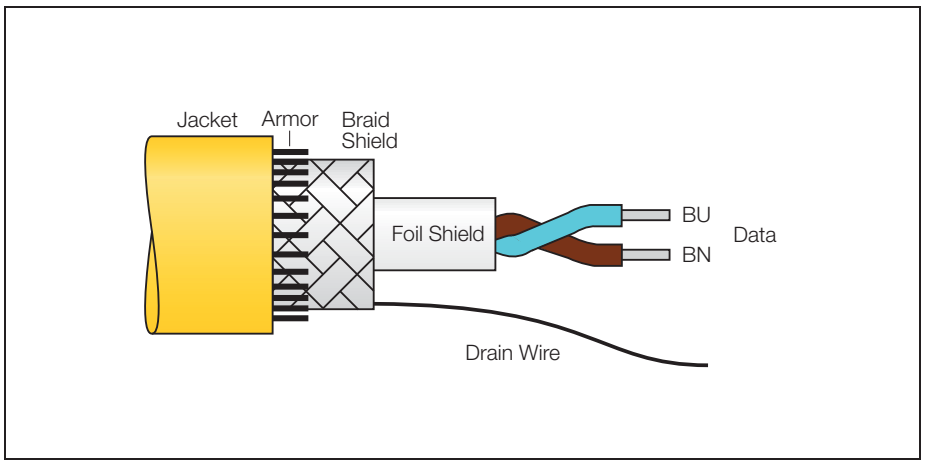
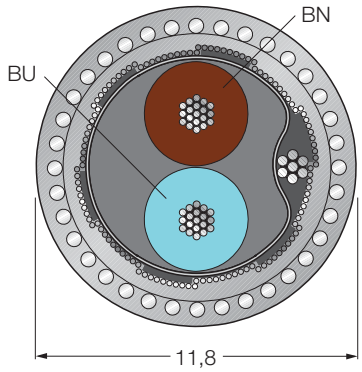
Fieldbus cables for fieldbus systems
According to IEC61158-2
CABLE FBA-YE/SD...M



- **Fieldbus cables, type A, acc. to IEC 61158-2**
- **PVC cable jacket, colour yellow**
- **Armouring Steel round wire**
- **Oil, gas and sunlight resistant**
- **Temperature range -40 ... +75 °C**
- **Cable conductor cross section: 18/7 AWG (0.8 mm²)**

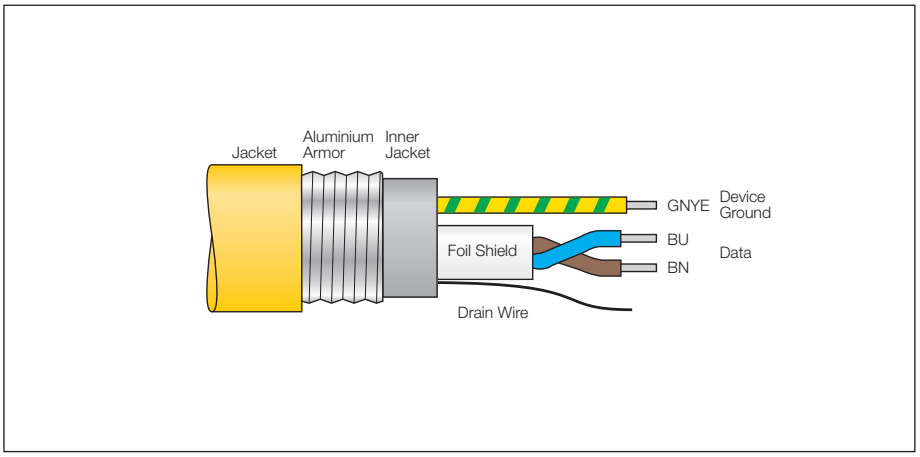
Conductor cross-section



Type	CABLE FBA-YE/SD...M
Ident-No.	depending on the length, Ident-No. on request
Cable	18/7 AWG (0.8 mm²), stranded plain copper
Cable jacket	PVC, yellow
Shield	aluminium foil, tinned copper braid and stranded filler litz wire
Max. tensile strength	≤ 90 N
Core insulation material	PE-foam with PE-casing
Core insulation colours	BN, BU
Core cross-section	2 x 0.8 mm²
DC resistance (loop)	43.6 Ω/km
Armouring	zinc-plated steel round wire
Diameter	0.9 mm
Shield resistance	nom. 9 Ω/km
Nom. Impedance	100 ± 20 (31.25 kBit/s) Ω
Working capacitance	nom. 60 nF/km
Capacitive earthing	max. 2 nF/km
Dampening	max. 3.0 dB/km (with f = 39 kHz]
Skew	max. 1.7 µs/km (7.9 kHz - 39 kHz)
Inductivity	nom. 0.7 mH/km
Rated voltage	max. 300 V
Ambient temperature	
At rest	-40... + 75 °C
In moving state	-5... + 50 °C
Approvals	UL
UV resistance	according to UL 1581, section 1200
Resistance to oil	according to ICEA S82-552
Flame retardant	according to IEC 60332-1

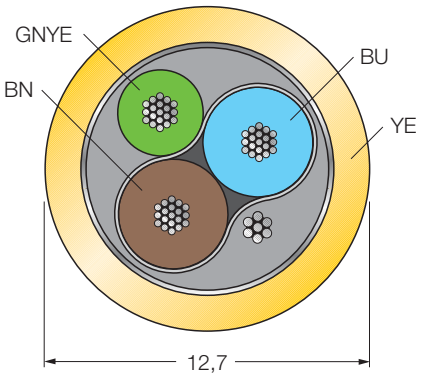
5

Fieldbus cables for fieldbus systems
According to IEC 61158-2
Cable 492A-...M, 492BA-...M



- **Fieldbus cables, type A, IEC 61158-2**
- **Suitable for harsh environmental conditions**
- **Aluminium armouring**
- **Suitable for 7/8” male connector**
- **UV resistant**
- **Temperature range -40...+75 °C**
- **Cable conductor cross section 18/7 AWG (0.8 mm²)**
- **Cable 492A with yellow cable jacket**
- **Cable 492BA with blue cable jacket**

Conductor cross-section



Type designation and Ident-No.	
Type Cable 492A-...M	depending on the length, Ident-No. on request
Type Cable 492BA-...M	depending on the length, Ident-No. on request

Cable	18/7 AWG (0.8 mm²), stranded bare copper
Insulation	XLPE foam
Colour code	A-conductor: brown; B-conductor: blue; ground: green/yellow
Shield	aluminium foil, metallic external surface with contact to the tinned copper braid and stranded drain wire
Jacket	Polyvinyl chloride (PVC)
Armoured	Aluminium
Overall diameter	approx. 12.7 mm

Physical properties/ fire resistance	
Minimum bending radius	once: 40 mm/repeated: 60 mm
Ambient temperature	
At rest	-40 ... +75 °C
In moving state	-5 ... +50 °C
UV resistance	conform to UL 1581, section 1200
Flame retardant	PLTC cable, flame resistant conform to CSA-FT4

Electrical properties at 20° C	
Inductance	max. 0.44 mH/km
Total capacitance	max. 52.43 nF/km
Impedance (at 31.25 kBit/s)	100 Ω /± 20 Ω
DC resistance	2 x 21.3 Ω/Km
High voltage test (conductor/conductor and conductor/shield)	1500 V
Operational voltage	max. 300 V

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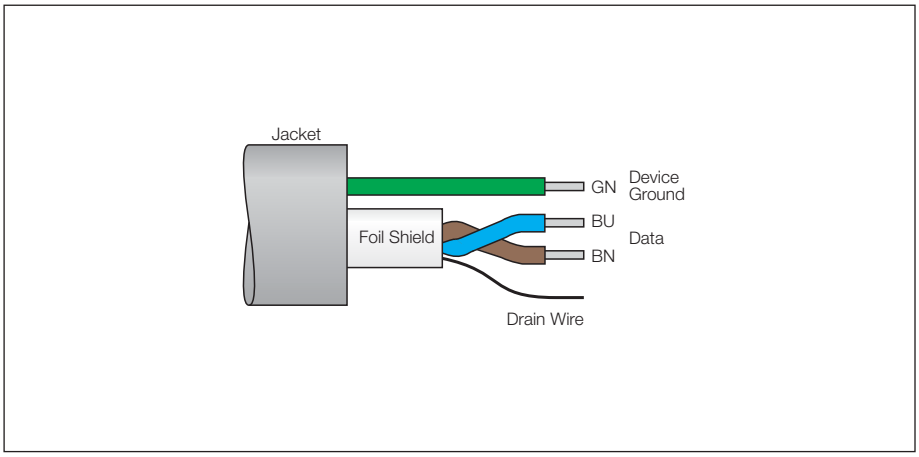
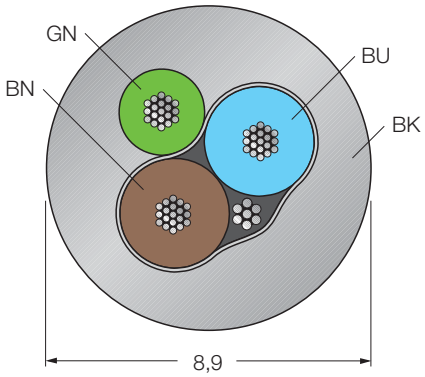
Fieldbus cables for fieldbus systems
According to IEC 61158-2
Cable FB4910-BK...M



Type	Cable FB4910-BK-...M
Ident-No.	depending on the length, Ident-No. on request
Cable	18/7 AWG (0.8 mm²), stranded bare copper
Insulation	XLPE foam
Colour code	A-conductor: brown; B-conductor: blue; ground: green
Shield	aluminium foil, metallic external surface with contact to the tinned copper braid and stranded drain wire
Jacket	TPE
Overall diameter	approx. 8.9 mm
Physical properties/fire resistance	
Minimum bending radius	once: 40 mm/repeated: 60 mm
Ambient temperature	
At rest	-40 ... +90 °C
In moving state	-50 ... +50 °C
UV resistance	conform to UL 1581, section 1200
Resistance to oils	conform to ICEA S61-402
Flame resistance	conform to IEC 60332, part 3
Electrical properties at 20° C	
Inductance	max. 0.44 mH/km
Total capacitance	max. 52.43 nF/km
Impedance (at 31.25 kBit/s)	100 Ω /± 20 Ω
DC resistance	2 x 21.3 Ω/Km
High voltage test (conductor/conductor and conductor/shield)	1500 V
Operational voltage	max. 300 V

- **Fieldbus cables, type A, IEC 61158-2**
- **Special cable for FOUNDATION fieldbus™**
- **Area of application:**
  - **offshore**
  - **extremely cold regions**
  - **tropical regions**
- **Resistant to oil, gases and sunlight**
- **Excellent tensile strength and abrasion resistance**
- **Highly flame resistant conform to IEEE 1202/FT4 and IEC 332-3, category A**
- **Temperature range -50..+90 °C**
- **Cable conductor cross section 18/7 AWG (0.8 mm²)**
- **Approvals**
  UL 1309 (Marine Shipboard) and CSA 222 No. 245

Conductor cross-section



5

Just In Time!

Ideally the length of the cord set is adjusted according to the requirements of the plant. For this reason TURCK now offers a Just-in-Time-delivery service (JIT) for premoulded cables.

The new JIT-5D-Programme for perfect connections:

- Just-in-Time delivery within 5 days only
- Free choice of cable length
- Premoulded fieldbus and power cables
- High flexibility with respect to planning and mounting of your application
- High cost savings

* valid for deliveries within the European Union (EU)

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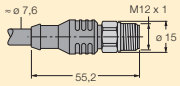
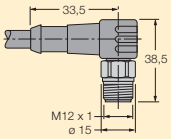
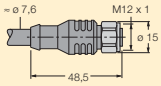
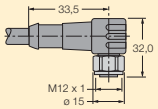
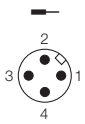
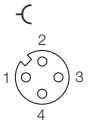
M12 x 1	Type designation cable type FBY49x, x = colour (BU, BK, OG, YE), *M = variable length in m				
	one-sided premoulded	RSCV 	WSCV 	RKCV 	WKCV 
RSCV	RSCV-FBY49x-*M/5D	RSCV-RSCV-FBY49x-*M/5D	—	RSCV-RKCV-FBY49x-*M/5D	—
WSCV	WSCV-FBY49x-*M/5D	—	WSCV-WSCV-FBY49x-*M/5D	—	WSCV-WKCV-FBY49x-*M/5D
RKCV	RKCV-FBY49x-*M/5D	—	—	RKCV-RKCV-FBY49x-*M/5D	—
WKCV	WKCV-FBY49x-*M/5D	—	—	—	WKCV-WKCV-FBY49x-*M/5D

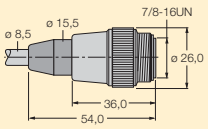
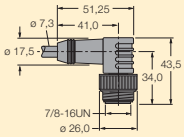
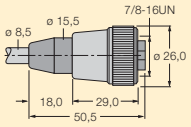
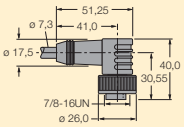
Pin configuration:
Male
Female



1 = + (BN)
2 = - (BU)
3 = S (Shield)
4 = n.c.

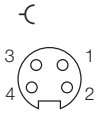


1 = + (BN)
2 = - (BU)
3 = S (Shield)
4 = n.c.

7/8“	Type designation cable type FBY49x, x = colour (BU, BK, OG, YE), *M = variable length in m				
	one-sided premoulded	RSV 	WSV 	RKV 	WKV 
RSV	RSV-FBY49x-*M/5D	RSV-RSV-FBY49x-*M/5D	—	RSV-RKV-FBY49x-*M/5D	—
WSV	WSV-FBY49x-*M/5D	—	WSV-WSV-FBY49x-*M/5D	—	WSV-WKV-FBY49x-*M/5D
RKV	RKV-FBY49x-*M/5D	—	—	RKV-RKV-FBY49x-*M/5D	—
WKV	WKV-FBY49x-*M/5D	—	—	—	WKV-WKV-FBY49x-*M/5D

Pin configuration:
Male
Female

1 = + (BN)
2 = - (BU)
3 = S (Shield)
4 = n.c.



1 = + (BN)
2 = - (BU)
3 = S (Shield)
4 = n.c.

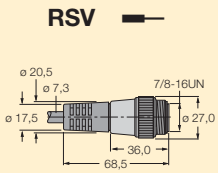
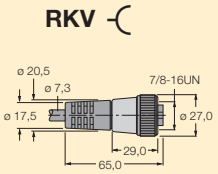
Connectors

Coupling nut:	Stainless steel
Contacts:	Gold-plated
Grip:	PA
Protection degree:	IP67

Cable layout

Outer jacket:	Polyvinyl chloride (PVC)
Core isolation:	PE-foam with PR-jacket
Colour code:	BN, BU
Insolation:	Extruded special compound
Shield:	One side plastic coated with aluminium strip, metal exterior with contact to tin-plated copper braid and stranded drain wire
Diameter:	≤ 8 mm
Conductor:	18/7 AWG (0.8 mm²), stranded blank copper

6

7/8“	Type designation armoured cable type 492A, 492 BA, *M = variable length in m				
	one-sided premoulded	RSV 	RKV 		
RSV	RSV492A-*M RSV492BA-*M	—	RSV-RKV492A-*M RSV-RKV492BA-*M		
RKV	RKV492A-*M RKV492BA-*M	—	—		

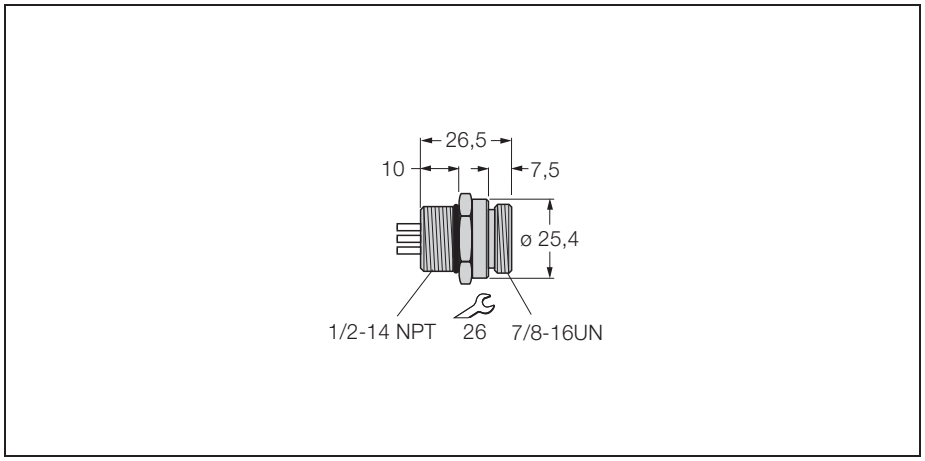
Pin configuration:
Male
Female

1 = – (BU)
2 = + (BN)
3 = S (Shield)
4 = Ground (GNYE)

1 = – (BU)
2 = + (BN)
3 = S (Shield)
4 = Ground (GNYE)

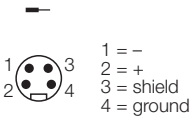
Note: This field-wireable fieldbus cable is not included in the JIT-5D-Programme.

Accessories for fieldbus systems
Flange connector
RSFV49



- **Version: male 7/8" connector**
- **1/2˝-14 NPT screw-in thread**
- **Stainless steel flange housing**
- **4-pole, solderable**
- **For use in FOUNDATION fieldbus™ applications**

FOUNDATION fieldbus™ connection



Type	RSFV49
Ident-No.	6602199
Connector	male flange connector, 7/8''
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PUR, black
Screw-in thread seal	NBR
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	1/2-14 NPT
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Rated voltage	max. 600 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 105 °C

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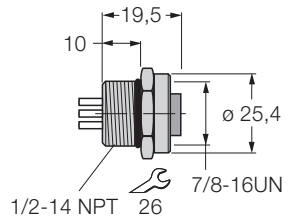
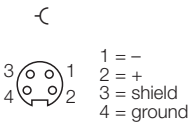
Accessories for fieldbus systems
Flange connector
RKFV49



- **Version: female 7/8" connector**
- **1/2´´-14 NPT screw-in thread**
- **Stainless steel flange housing**
- **4-pole, solderable**
- **For use in FOUNDATION fieldbus™ applications**

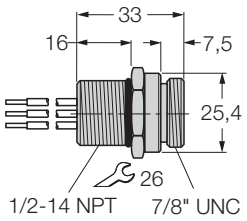
FOUNDATION fieldbus™ connection



Type	RKFV49
Ident-No.	6602198
Connector	female flange connector, 7/8''
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PUR, black
Screw-in thread seal	NBR
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	1/2-14 NPT
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Rated voltage	max. 600 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40 °C

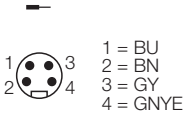
7

Accessories for fieldbus systems
Flange connector
RSFV49-0,3M/14,5/C1117

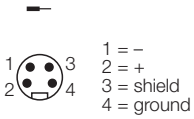


- **Version: male 7/8" connector**
- **1/2´´-14 NPT screw-in thread**
- **Stainless steel flange housing**
- **4-pole, litz wire length 0.3 m**
- **For use in FOUNDATION fieldbus™ applications**

Pin configuration



FOUNDATION fieldbus™ connection



Type	RSFV49-0,3M/14,5/C1117
Ident-No.	6603396
Connector	male flange connector, 7/8'', with litz wire
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PUR, black
Screw-in thread seal	NBR
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	1/2-14 NPT
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Litz wire length	0.3 m
Core insulation material	PVC
Core insulation colours	BU, BN, GY, GNYE
Core cross-section	4 x 0.8 mm^2
Rated voltage	max. 600 V
Insulation resistance	$\geq 10^9\ \Omega$
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 105 °C

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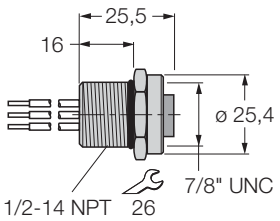
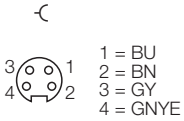
Accessories for fieldbus systems
Flange connector
RKFV49-0,3M/14,5

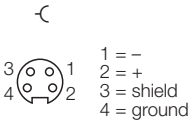


- **Version: female 7/8" connector**
- **1/2´´-14 NPT screw-in thread**
- **Stainless steel flange housing**
- **4-pole, litz wire length 0.3 m**
- **For use in FOUNDATION fieldbus™ applications**

Pin configuration



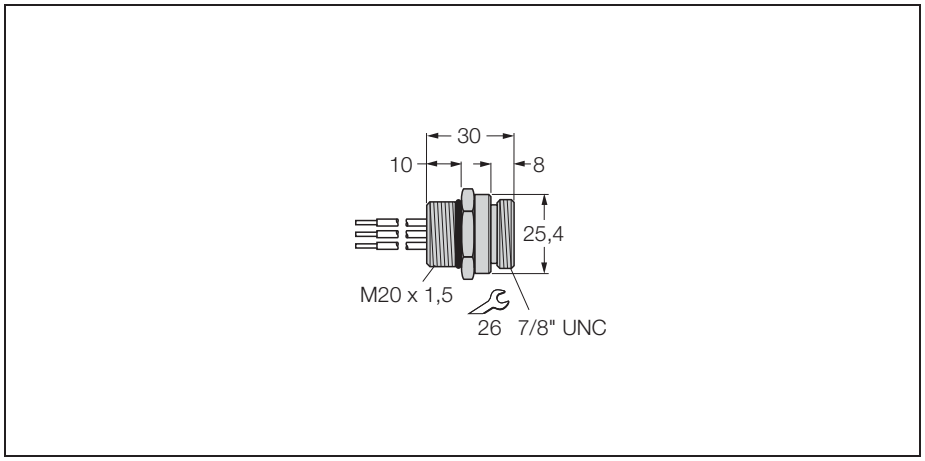
FOUNDATION fieldbus™ connection



Type	RKFV49-0,3M/14,5
Ident-No.	6602475
Connector	female flange connector, 7/8'', with litz wire
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PUR, black
Screw-in thread seal	NBR
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	1/2-14 NPT
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Litz wire length	0.3 m
Core insulation material	PVC
Core insulation colours	BU, BN, GY, GNYE
Core cross-section	4 x 0.8 mm^2
Rated voltage	max. 600 V
Insulation resistance	$\geq 10^9$ Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 105 °C

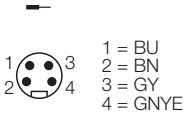
7

Accessories for fieldbus systems
Flange connector
RSFV49-0,3M/M20/C1117

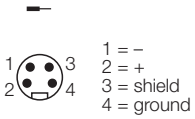


- **Version: male 7/8" connector**
- **M20 x 1.5 screw-in thread**
- **Stainless steel flange housing**
- **4-pole, litz wire length 0.3 m**
- **For use in FOUNDATION fieldbus™ applications**

Pin configuration



PROFIBUS-PA connection



Type	RSFV49-0,3M/M20/C1117
Ident-No.	6603583
Junction box	male flange connector, 7/8'', with litz wire
Polarity	4-pole
Contact carriers	plastic, PUR, black
Contacts	metal, CuZn, gold-plated
Protection degree	IP67, only with screws tightened
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Flange housing	stainless steel, 1.4404
Core insulation material	PVC
Core insulation colours	BU, BN, GY, GNYE
Core cross-section	4 x 0.8 mm^2
Rated voltage	max. 600 V
Current carrying capacity	9 A
Forward resistance	5 mΩ
Insulation resistance	≥ 10^9 Ω
Junction ambient temperature	-40 ...+ 105 °C

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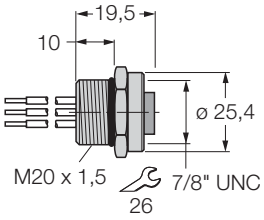
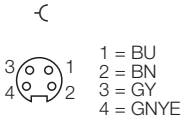
Accessories for fieldbus systems
Flange connector
RKFV49-0,3M/M20

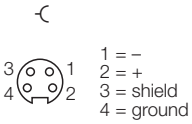


- **Version: female 7/8" connector**
- **M20 x 1.5 screw-in thread**
- **Stainless steel flange housing**
- **4-pole, litz wire length 0.3 m**
- **For use in FOUNDATION fieldbus™ applications**

Pin configuration



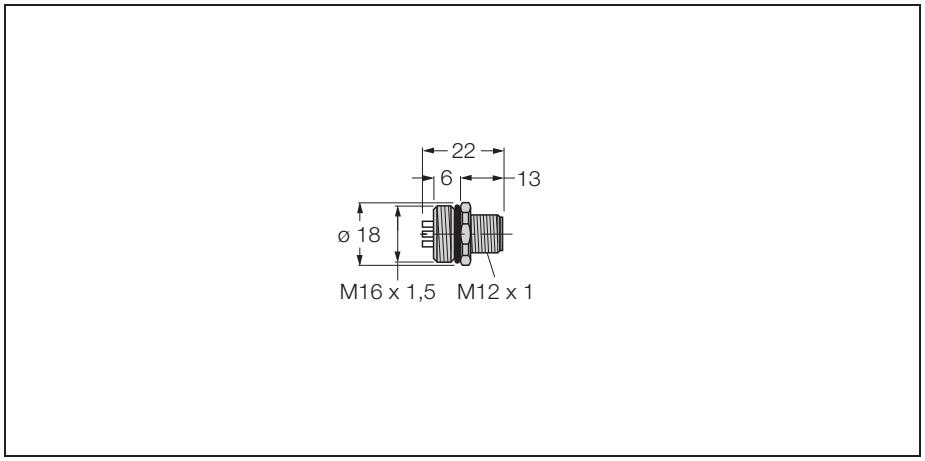
FOUNDATION fieldbus™ connection



Type	RKFV49-0,3M/M20
Ident-No.	6603584
Connector	female flange connector, 7/8'', with litz wire
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PUR, black
Screw-in thread seal	NBR
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	M20 x 1,5
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Litz wire length	0.3 m
Core insulation material	PVC
Core insulation colours	BU, BN, GY, GNYE
Core cross-section	4 x 0.8 mm^2
Rated voltage	max. 600 V
Insulation resistance	$\geq 10^9\ \Omega$
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40 ...+ 105 °C

7

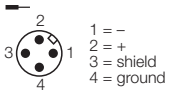
Accessories for fieldbus systems
Flange connector
FSV49



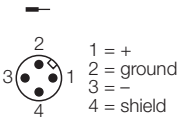
- **Version: male M12 connector**
- **M20 x 1.5 screw-in thread**
- **Stainless steel flange housing**
- **4-pole, solderable**
- **For use in FOUNDATION fieldbus™ and PROFIBUS-PA applications**

Type	FSV49
Ident-No.	6604378
Connector	male flange connector, M12 x 1
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PA, black
Screw-in thread seal	plastic
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	PG 9
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 90 °C

FOUNDATION fieldbus™ connection



PROFIBUS-PA connection



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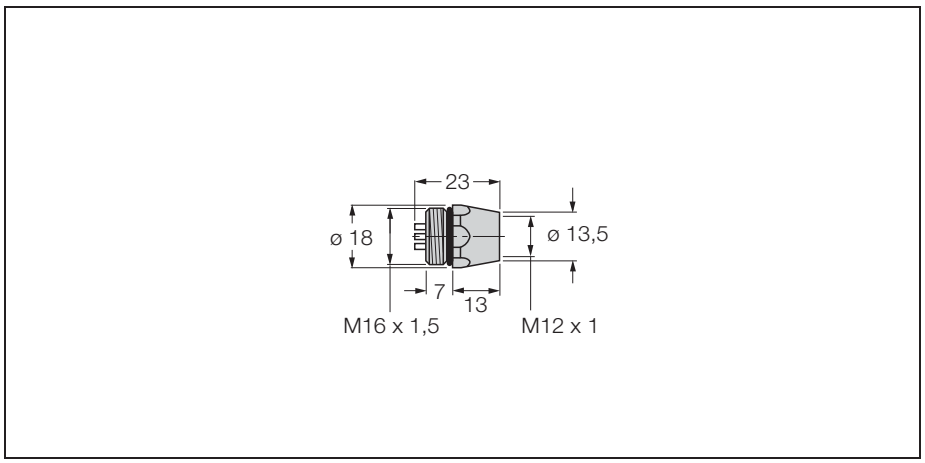
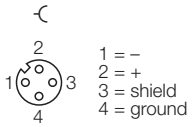
Accessories for fieldbus systems
Flange connector
FKV49

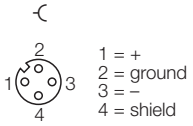


- **Version: female M12 connector**
- **M20 x 1.5 screw-in thread**
- **Stainless steel flange housing**
- **4-pole, solderable**
- **For use in FOUNDATION fieldbus™ and PROFIBUS-PA applications**

FOUNDATION fieldbus™ connection



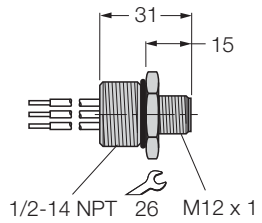
PROFIBUS-PA connection



Type	FKV49
Ident-No.	6603426
Connector	female flange connector, M12 x 1
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PA, black
Screw-in thread seal	plastic
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	PG 9
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	$\geq 10^9\ \Omega$
Current carrying capacity	4 A
Forward resistance	5 mΩ
Ambient temperature connector	-40 ...+ 90 °C

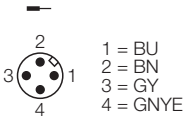
Accessories for fieldbus systems
Flange connector
FSV49-0,3M/14,5/C1117

Industrial Automation

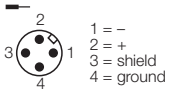


- **Version: male M12 connector**
- **1/2´´-14 NPT screw-in thread**
- **Stainless steel flange housing**
- **4-pole, litz wire length 0.3 m**
- **For use in FOUNDATION fieldbus™ applications**

Pin configuration



FOUNDATION fieldbus™ connection



Type	FSV49-0,3M/14,5/C1117
Ident-No.	6602107
Connector	male flange connector, M12 x 1, with litz wire
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PA, black
Screw-in thread seal	plastic
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	1/2-14 NPT
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Litz wire length	0.3 m
Core insulation material	PVC
Core insulation colours	BU, BN, GY, GNYE
Core cross-section	4 x 0.8 mm^2
Rated voltage	max. 600 V
Insulation resistance	$\geq 10^9\ \Omega$
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 105 °C

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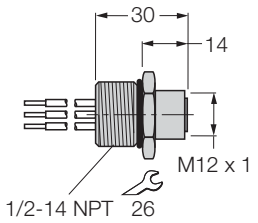
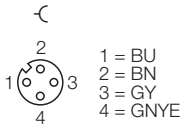
Accessories for fieldbus systems
Flange connector
FKV49-0,3M/14,5/C1117

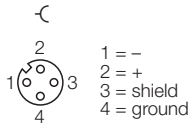


- **Version: female M12 connector**
- **1/2´´-14 NPT screw-in thread**
- **Stainless steel flange housing**
- **4-pole, litz wire length 0.3 m**
- **For use in FOUNDATION fieldbus™ applications**

Pin configuration



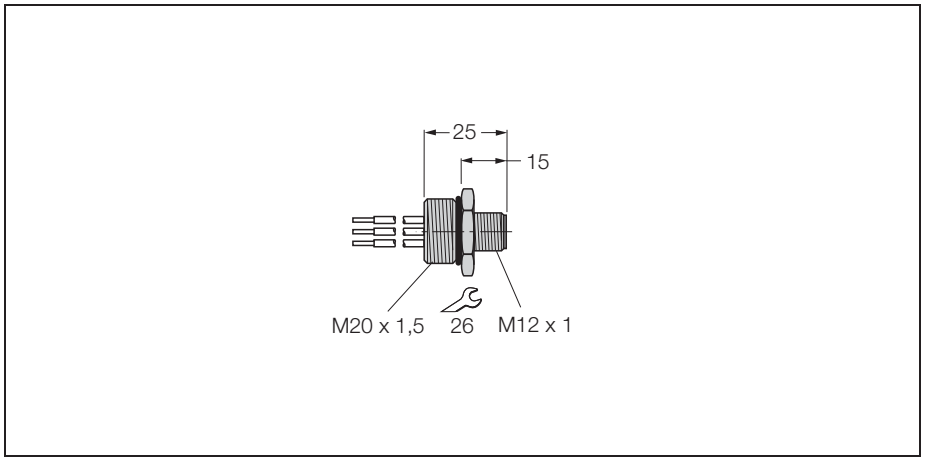
FOUNDATION fieldbus™ connection



Type	FKV49-0,3M/14,5/C1117
Ident-No.	6603298
Connector	female flange connector, M12 x 1, with litz wire
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PA, black
Screw-in thread seal	plastic
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	1/2-14 NPT
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Litz wire length	0.3 m
Core insulation material	PVC
Core insulation colours	BU, BN, GY, GNYE
Core cross-section	4 x 0.8 mm^2
Rated voltage	max. 300 V
Insulation resistance	$\geq 10^9\ \Omega$
Current carrying capacity	4 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 105 °C

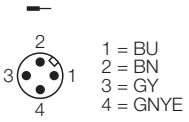
7

Accessories for fieldbus systems
Flange connector
FSV49-0,3M/M20/C1117

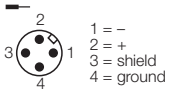


- **Version: male M12 connector**
- **M20 x 1.5 screw-in thread**
- **Stainless steel flange housing**
- **4-pole, litz wire length 0.3 m**
- **For use in FOUNDATION fieldbus™ applications**

Pin configuration



FOUNDATION fieldbus™ connection



Type	FSV49-0,3M/M20/C1117
Ident-No.	6603682
Connector	male flange connector, M12 x 1, with litz wire
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PA, black
Screw-in thread seal	plastic
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	M20 x 1,5
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Litz wire length	0.3 m
Core insulation material	PVC
Core insulation colours	BU, BN, GY, GNYE
Core cross-section	4 x 0.8 mm^2
Rated voltage	max. 600 V
Insulation resistance	$\geq 10^9\ \Omega$
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 105 °C

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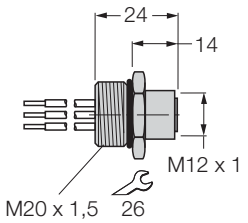
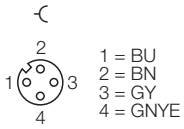
Accessories for fieldbus systems
Flange connector
FKV49-0,3M/M20/C1117

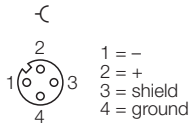


- **Version: female M12 connector**
- **M20 x 1.5 screw-in thread**
- **Stainless steel flange housing**
- **4-pole, litz wire length 0.3 m**
- **For use in FOUNDATION fieldbus™ applications**

Pin configuration



FOUNDATION fieldbus™ connection

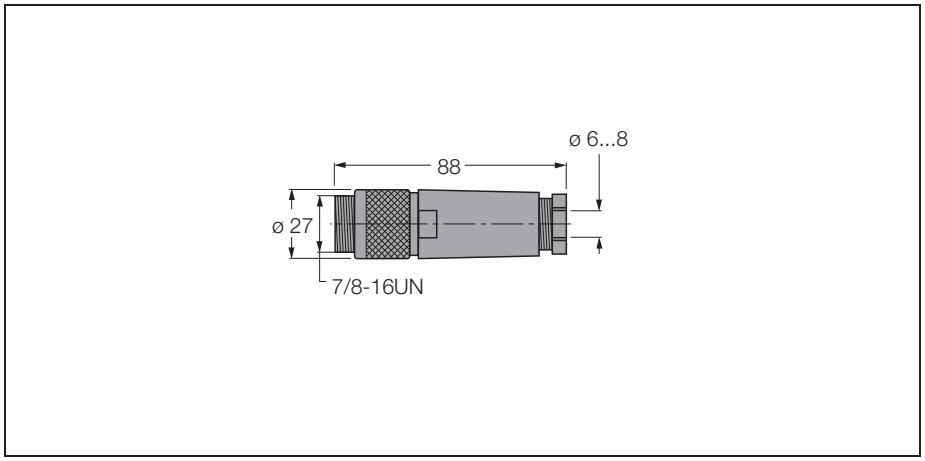


Type	FKV49-0,3M/M20/C1117
Ident-No.	6603683
Connector	female flange connector, M12 x 1, with litz wire
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PA, black
Screw-in thread seal	plastic
Flange housing	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Screw-in thread	M20 x 1,5
Mechanical lifespan	min. 100 contact durability
Pollution degree	3
Litz wire length	0.3 m
Core insulation material	PVC
Core insulation colours	BU, BN, GY, GNYE
Core cross-section	4 x 0.8 mm^2
Rated voltage	max. 300 V
Insulation resistance	$\geq 10^9\ \Omega$
Current carrying capacity	4 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 105 °C

7

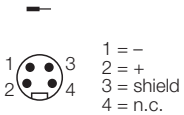
Accessories for fieldbus systems
Field wireable connectors
BS4149-0/9

Industrial Automation



- **Version: male connector**
- **Round connector 7/8"**
- **Field-wireable**
- **Screw-terminal connection**
- **4-pole, straight anodised aluminium coupling nut**
- **Cable exit 6 ... 8 mm**
- **For use in FOUNDATION fieldbus™ applications**

FOUNDATION fieldbus™ connection



Type	BS4149-0/9
Ident-No.	6914521
Connector	field-wireable male connector, 7/8'', straight
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, TPU, black
Grip	plastic, PA, black
Coupling nut/screw	metal, Al, anodized
Seal	plastic, NBR
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	6... 8 mm
Core cross-section/clamping ability	max. 1 mm^2
Screw-in thread	PG 9
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 90 °C

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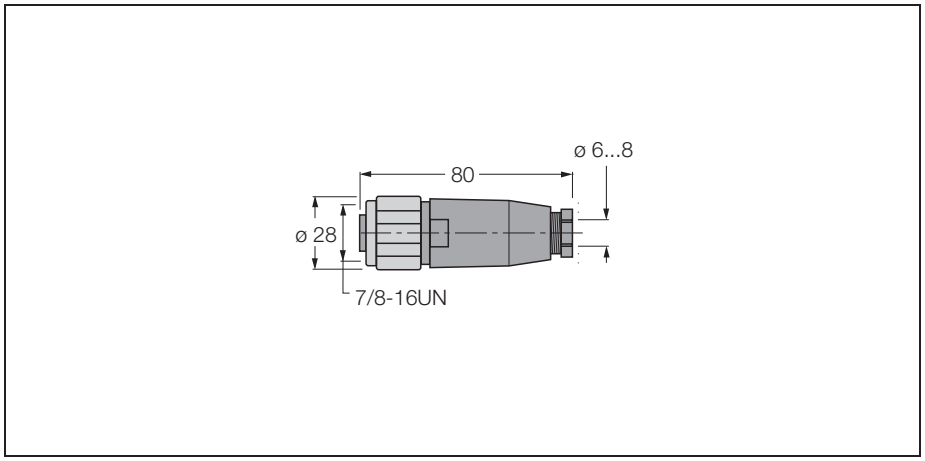
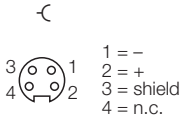
Accessories for fieldbus systems
Field wireable connectors
BV4149-0/9



- **Version: female connector**
- **Round connector 7/8"**
- **Field-wireable**
- **Screw-terminal connection**
- **4-pole, straight stainless steel coupling nut**
- **Cable exit 6 ... 8 mm**
- **For use in FOUNDATION fieldbus™ applications**

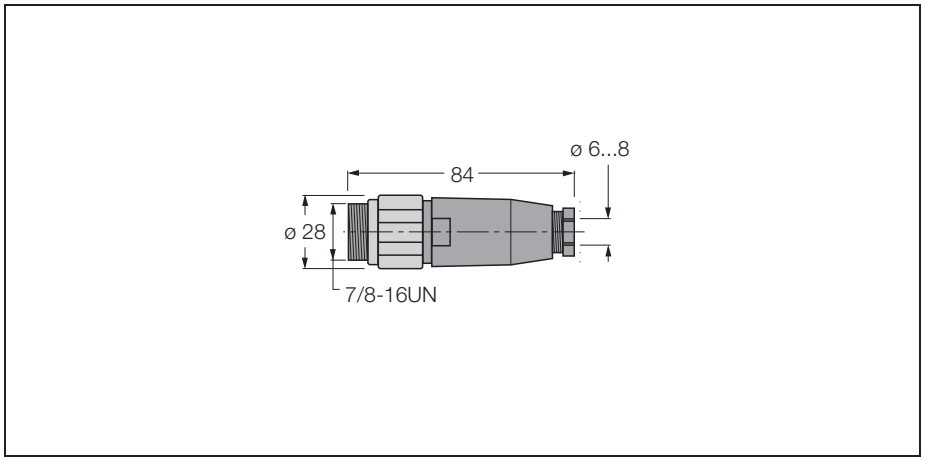
FOUNDATION fieldbus™ connection



Type	BV4149-0/9
Ident-No.	6914514
Connector	field-wireable female connector, 7/8'', straight
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, TPU, black
Grip	plastic, PA, black
Coupling nut/screw	stainless steel, 1.4404
Seal	plastic, NBR
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	6... 8 mm
Core cross-section/clamping ability	max. 1 mm^2
Screw-in thread	PG 9
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 90 °C

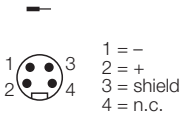
8

Accessories for fieldbus systems
Field wireable connectors
BSV4149-0/9



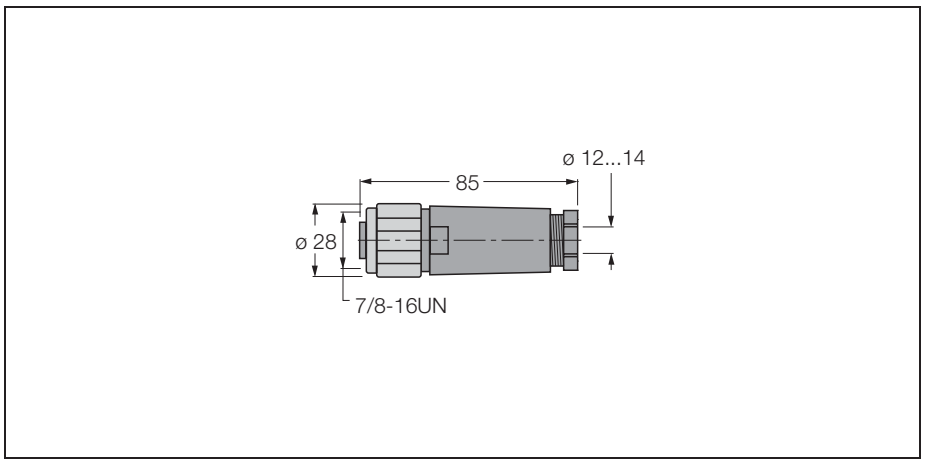
- **Version: male connector**
- **Round connector 7/8"**
- **Field-wireable**
- **Screw-terminal connection**
- **4-pole, straight stainless steel coupling nut**
- **Cable exit 6 ... 8 mm**
- **For use in FOUNDATION fieldbus™ applications**

FOUNDATION fieldbus™ connection



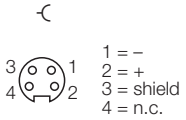
Type	BSV4149-0/9
Ident-No.	6914515
Connector	field-wireable male connector, 7/8'', straight
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, TPU, black
Grip	plastic, PA, black
Coupling nut/screw	stainless steel, 1.4404
Seal	plastic, NBR
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	6... 8 mm
Core cross-section/clamping ability	max. 1 mm^2
Screw-in thread	PG 9
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40...+ 90 °C

Accessories for fieldbus systems
Field wireable connectors
BV4149-0/16



- **Version: female connector**
- **Round connector 7/8"**
- **Field-wireable**
- **Screw-terminal connection**
- **4-pole, straight stainless steel coupling nut**
- **Cable exit 12 ... 14 mm**
- **For use in FOUNDATION fieldbus™ applications**

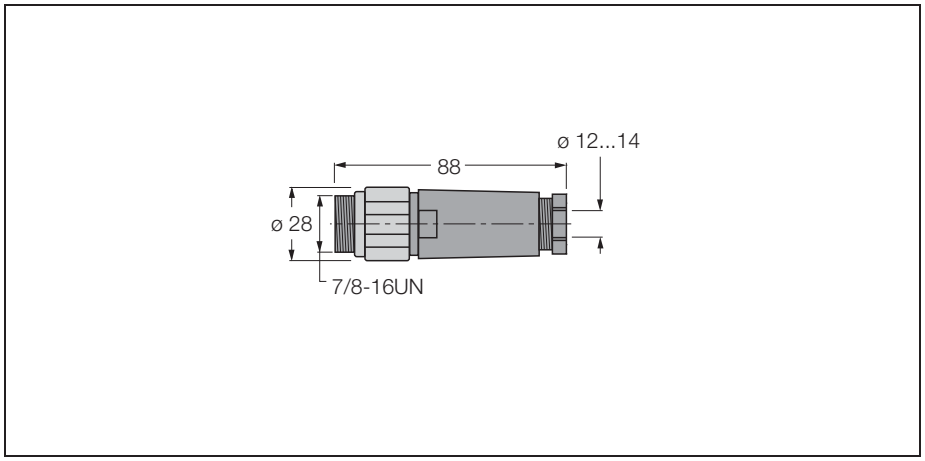
FOUNDATION fieldbus™ connection



Type	BV4149-0/16
Ident-No.	6914532
Connector	field-wireable female connector, 7/8'', straight
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, TPU, black
Grip	plastic, PA, black
Coupling nut/screw	stainless steel, 1.4404
Seal	plastic, NBR
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	12... 14 mm
Core cross-section/clamping ability	max. 1 mm^2
Screw-in thread	PG 16
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40 ...+ 90 °C

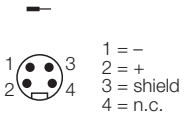
8

Accessories for fieldbus systems
Field wireable connectors
BSV4149-0/16



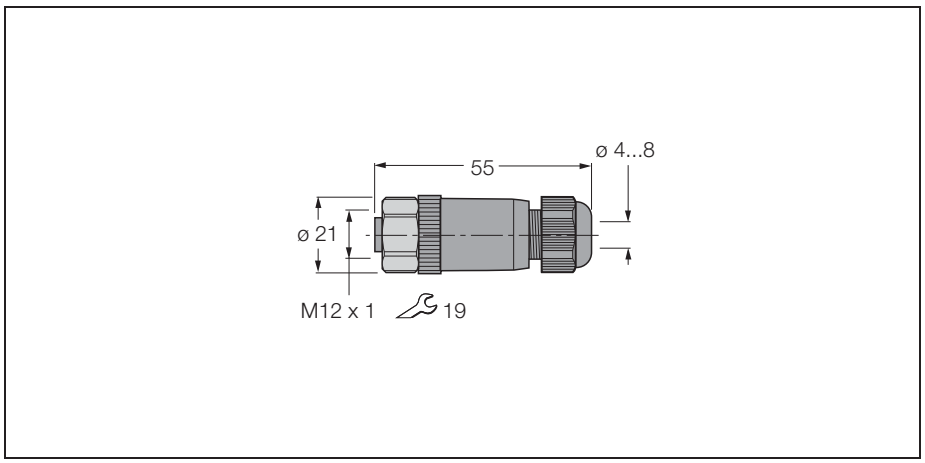
- **Version: male connector**
- **Round connector 7/8"**
- **Field-wireable**
- **Screw-terminal connection**
- **4-pole, straight stainless steel coupling nut**
- **Cable exit 12 ... 14 mm**
- **For use in FOUNDATION fieldbus™ applications**

FOUNDATION fieldbus™ connection



Type	BSV4149-0/16
Ident-No.	6914533
Connector	field-wireable male connector, 7/8'', straight
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, TPU, black
Grip	plastic, PA, black
Coupling nut/screw	stainless steel, 1.4404
Seal	plastic, NBR
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	12... 14 mm
Core cross-section/clamping ability	max. 1 mm^2
Screw-in thread	PG 16
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	9 A
Forward resistance	5 mΩ
Ambient temperature connector	-40 ...+ 90 °C

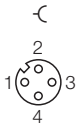
Accessories for fieldbus systems
Field wireable connectors
BKV8140-0/9



Type	BKV8140-0/9
Ident-No.	6914538
Connector	field-wireable female connector, M12 x 1, straight
Polarity	4-pole
Contacts	metal, CuZn, CuSnZn, Optalloy coated
Contact carriers	plastic, PA, black
Grip	plastic, PA, black
Coupling nut/screw	stainless steel, 1.4404
Seal	plastic, FKM/FPM
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	4... 8 mm
Core cross-section/clamping ability	0.14... 0.75 mm^2
Screw-in thread	M12 x 1
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	$\geq 10^9$ Ω
Current carrying capacity	4 A
Forward resistance	5 mΩ
Ambient temperature connector	-25...+ 90 °C

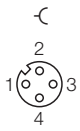
- **Version: female M12 connector**
- **Field-wireable**
- **4-pole, straight stainless steel coupling nut**
- **Cable exit 4 ... 8 mm**
- **For use in PROFIBUS-PA and FOUNDATION fieldbus™ applications**

PROFIBUS-PA connection



1 = +
2 = n.c.
3 = –
4 = shield

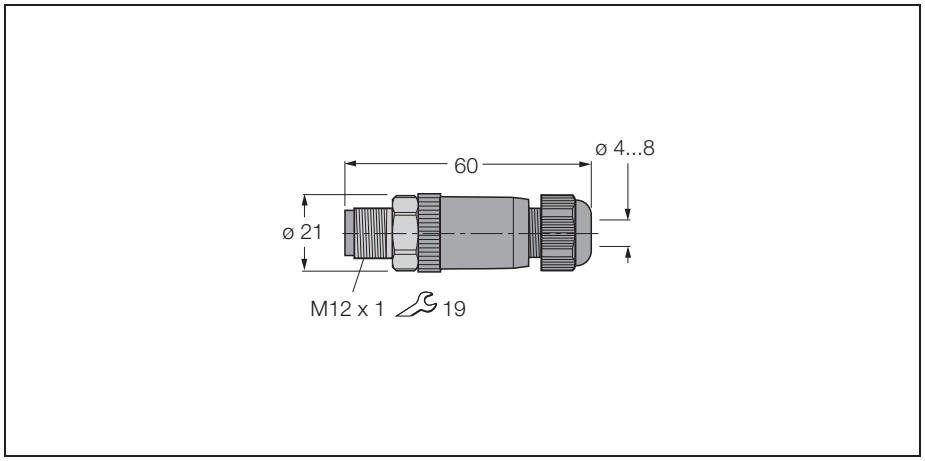
FOUNDATION fieldbus™ connection



1 = –
2 = +
3 = shield
4 = n.c.

8

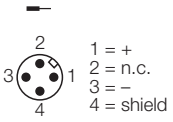
Accessories for fieldbus systems
Field wireable connectors
BSV8140-0/9



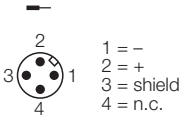
- **Version: male M12 connector**
- **Field-wireable**
- **4-pole, straight stainless steel coupling nut**
- **Cable exit 4 ... 8 mm**
- **For use in PROFIBUS-PA and FOUNDATION fieldbus™ applications**

Type	BSV8140-0/9
Ident-No.	6914537
Connector	field-wireable male connector, M12 x 1, straight
Polarity	4-pole
Contacts	metal, CuZn, CuSnZn, Optalloy coated
Contact carriers	plastic, PA, black
Grip	plastic, PA, black
Coupling nut/screw	stainless steel, 1.4404
Seal	plastic, FKM/FPM
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	4... 8 mm
Core cross-section/clamping ability	0.14... 0.75 mm^2
Screw-in thread	M12 x 1
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	4 A
Forward resistance	5 mΩ
Ambient temperature connector	-25...+ 90 °C

PROFIBUS-PA connection



FOUNDATION fieldbus™ connection



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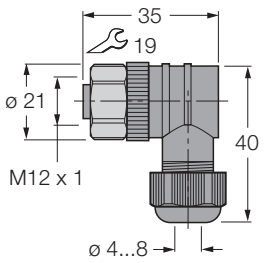
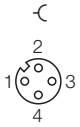
Accessories for fieldbus systems
Field wireable connectors
BKV8240-0/9



Type	BKV8240-0/9
Ident-No.	6914540
Connector	field-wireable female connector, M12 x 1, angled
Polarity	4-pole
Contacts	metal, CuZn, CuSnZn, Optalloy coated
Contact carriers	plastic, PA, black
Grip	plastic, PA, black
Coupling nut/screw	stainless steel, 1.4404
Seal	plastic, FKM/FPM
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	4... 8 mm
Core cross-section/clamping ability	0.14... 0.75 mm^2
Screw-in thread	M12 x 1
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	$\geq 10^9\ \Omega$
Current carrying capacity	4 A
Forward resistance	5 mΩ
Ambient temperature connector	-25...+ 90 °C

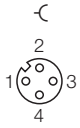
- **Version: female M12 connector**
- **Field-wireable**
- **4-pole, angled, stainless steel coupling nut**
- **Cable exit 4 ... 8 mm**
- **For use in PROFIBUS-PA and FOUNDATION fieldbus™ applications**

PROFIBUS-PA connection



1 = +
2 = n.c.
3 = –
4 = shield

FOUNDATION fieldbus™ connection

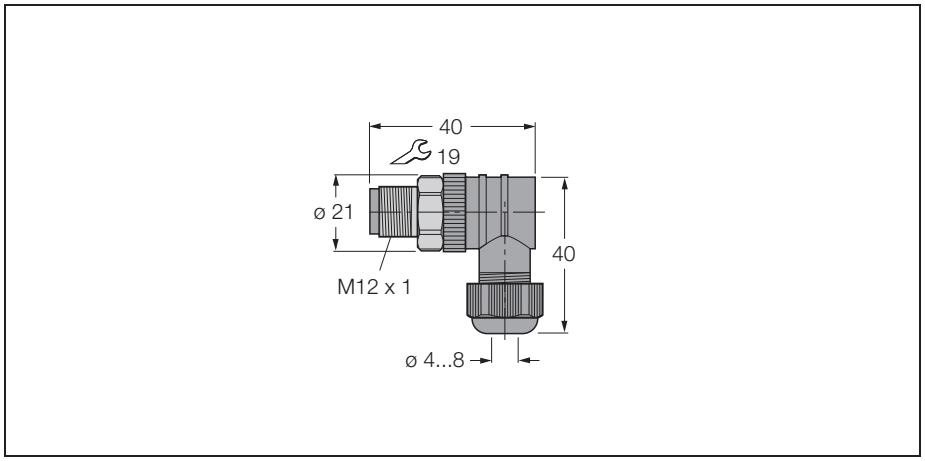


1 = –
2 = +
3 = shield
4 = n.c.

8

Accessories for fieldbus systems
Field wireable connectors
BSV8240-0/9

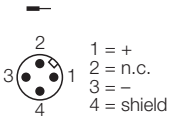
Industrial Automation



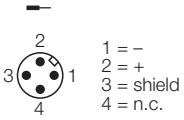
- **Version: male M12 connector**
- **Field-wireable**
- **4-pole, angled, stainless steel coupling nut**
- **Cable exit 4 ... 8 mm**
- **For use in PROFIBUS-PA and FOUNDATION fieldbus™ applications**

Type	BSV8240-0/9
Ident-No.	6914539
Connector	field-wireable male connector, M12 x 1, angled
Polarity	4-pole
Contacts	metal, CuZn, CuSnZn, Optalloy coated
Contact carriers	plastic, PA, black
Grip	plastic, PA, black
Coupling nut/screw	stainless steel, 1.4404
Seal	plastic, FKM/FPM
Screw-in thread seal	plastic, NBR
Protection degree	IP67, only with screws tightened
External diameter of the cable	4... 8 mm
Core cross-section/clamping ability	0.14... 0.75 mm^2
Screw-in thread	M12 x 1
Connection mode	screw terminals
Pollution degree	3
Rated voltage	max. 250 V
Insulation resistance	≥ 10^9 Ω
Current carrying capacity	4 A
Forward resistance	5 mΩ
Ambient temperature connector	-25 ...+ 90 °C

PROFIBUS-PA connection



FOUNDATION fieldbus™ connection



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FOUNDATION fieldbus™
Bus termination resistors

Data transmission on bus cables is frequently influenced by signal reflection, which can occur when the bus ends are not terminated.
The fieldbus must be provided with a termination resistor at both ends in order to avoid signal reflection.

TURCK offers plug-in termination resistors, type M12 × 1 and 7/8“, for intrinsically safe and non-intrinsically safe circuits.

Specification

Connector	PUR housing material and contact carriers, oil resistant, 300 V rating
Coupling nut	stainless steel
Protection degree (IEC 60529/EN 60529)	IP67 and NEMA 1, 3, 4, 6P
Max. ratings	
– RSV49-TR, RSEV49-TR	U_{max} = 50 VDC T_a = -40...+80 °C
– RSV-49-TR-Ex	U_i = 25 VDC, I_i = 250 mA, P_i =1.2 W T_a = -40...70 °C (EEx ia IIC T4) -40...40 °C (EEx ia IIC T6)

Use of the intrinsically-safe version
The intrinsically-safe fieldbus termination resistors feature protection class “intrinsic safety” and may be used in the explosion hazardous area category 1 G (zone 0), 2 G (zone 1) or 3 G (zone 2).

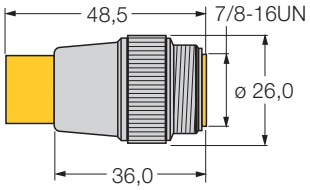
In zone 0 the power supply circuit must conform to protection class “ia”.

The RS-49-TR-Ex termination resistor can be used in networks, which are designed conform to the FISCO model.

CAUTION
The EC type test examination certificate and the manufacturer’s declaration of conformity must be observed.
It is essential that the “special conditions” in the EU type test examination certificate are observed.

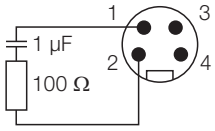
NOTE
The TURCK JBBS... junctions to IP67 (4 and 6 channels) and JRBS... to IP20 are already provided with integrated switch-in bus termination resistors.
Special versions excepted.

Accessories for fieldbus systems
Bus termination resistor
RSV49-TR



- **Version: male 7/8" connector**
- **4-pole, straight stainless steel coupling nut**
- **For use in FOUNDATION fieldbus™ networks**

Wiring diagram



Type	RSV49-TR
Ident-No.	6602094
Connector	connector, 7/8''
Polarity	2-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PUR, black
Grip	plastic, PUR, yellow
Coupling nut/screw	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Ambient temperature	-40...+ 70 °C

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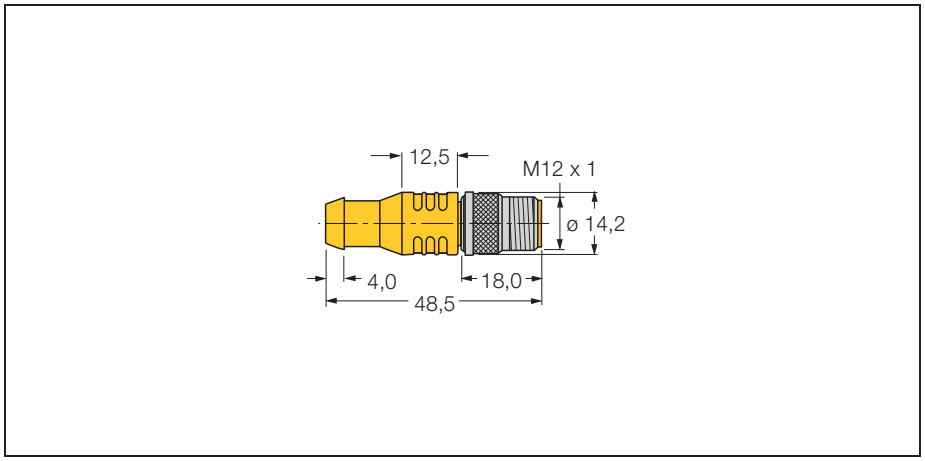
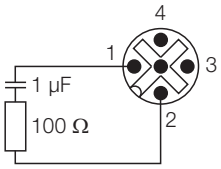
Accessories for fieldbus systems
Bus termination resistor
RSEV49-TR



- **Version: M12 connector**
- **4-pole, straight stainless steel coupling nut**
- **For use in FOUNDATION fieldbus™ networks**

Wiring diagram



Type	RSEV49-TR
Ident-No.	6602096
Connector	connector, M12 x 1
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PUR, black
Grip	plastic, PUR, black
Coupling nut/screw	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Ambient temperature	-40...+ 70 °C

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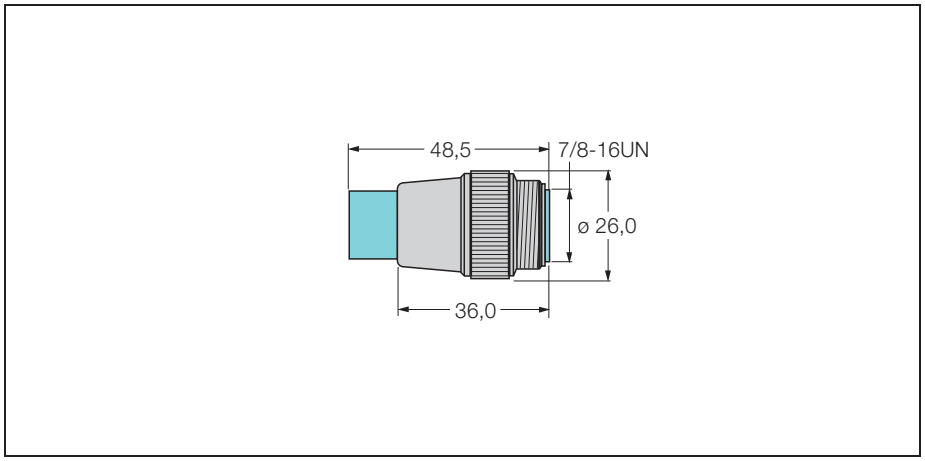
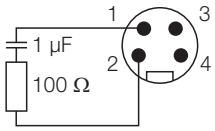
Accessories for fieldbus systems
Bus termination resistor
RSV-49TR-EX



- **FISCO compliance according to IEC TS 60079-27**
- **Version: male 7/8" connector**
- **4-pole, straight stainless steel coupling nut**
- **For use in FOUNDATION fieldbus™ networks**

Wiring diagram



Type	RSV-49TR-EX
Ident-No.	6602709
Connector	connector, M12 x 1
Polarity	4-pole
Contacts	metal, CuZn, gold-plated
Contact carriers	plastic, PUR, black
Grip	plastic, PUR, blue
Coupling nut/screw	stainless steel, 1.4404
Protection degree	IP67, only with screws tightened
Ambient temperature	-40...+ 70 °C
Ex approval acc. to conformity certificate	TÜV 03 ATEX 2379 X
Max. input voltage U_i	25 V
Max. input current I_i	250 mA
Max. input power P_i	1200 mW
Internal inductance/ capacitance L_i/C_i	negligible
Marking of the device	⟨Ex⟩ II 1 G EEx ia IIC T6 FISCO / Entity field device

9

Accessories for fieldbus systems
IP67 stainless steel housing
EG-VA2020/BV67-T105

The stainless steel housing EG-VA2020/BV67-T105 is used for the installation of TURCK junction boxes type JRBS-...

The robust model is especially suited for rough and aggressive environmental conditions.

Inside the housing a hat rail is located used for retaining a 4, 6 or 8 channel JRBS junction box with a maximum width of 180 mm.

The connection of the cables is attained with ten M20 × 1.5-cable glands.

With a pressure compensation element (Protection degree IP67) a continuous and reliable ventilation is ensured. This way condensation and accumulation of water is avoided.

Note: Ensure sufficient equipotential bonding of the installation. The housing is connected to the equipotential bond via an M5 x 1 connector.

- **Stainless steel housing to accommodate the TURCK IP20 junction boxes**
- **Protection degree IP67 (IEC/EN 60529)**
- **10 plastic cable glands M20 x 1.5 for cable guides**
- **Insulated shield terminals**
- **Wall mounting**
- **Pressure compensation element**
- **Connection of the housing potential via an M5 x 1 bolt**

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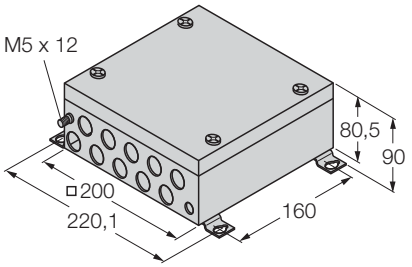
Accessories for fieldbus systems
IP67 stainless steel housing
EG-VA2020/BV67-T105

Type	EG-VA2020/BV67-T105
Ident-No.	6884135
Connection	cable glands 10 x M20 x 1.5 (Ø 6...13 mm); plastic, black
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-30...+80 °C
Relative humidity	95 %, non condensing
Housing material	stainless steel 1.430/AISI304
Wall thickness	1.5 mm
Housing surface	grinded and polished (240 grain size distribution)
Housing colour	silver
Material sealing	PUR
Dimensions	200 x 200 x 80.5 mm
Connection mode	wall mounting

Dimensions



10

Accessories for fieldbus systems
IP67 stainless steel housing
EG-VA2020/BV67-T103

The stainless steel housing EG-VA2020/BV67-T103 is used for the installation of TURCK junction boxes type JRBS-...

The robust model is especially suited for rough and aggressive environmental conditions.

Inside the housing a hat rail is located used for retaining a 4, 6 or 8 channel JRBS junction box with a maximum width of 180 mm.

The connection of the cables is attained with ten M20 × 1.5-cable glands.

With a pressure compensation element (Protection degree IP67) a continuous and reliable ventilation is ensured. This way condensation and accumulation of water is avoided.

Note: Ensure sufficient equipotential bonding of the installation. The housing is connected to the equipotential bond via an M5 x 1 connector.

- **Stainless steel housing to accommodate the TURCK IP20 junction boxes**
- **Protection degree IP67 (IEC/EN 60529)**
- **10 stainless steel cable glands M20 x 1.5 for cable guides**
- **Insulated shield terminals**
- **Wall mounting**
- **Pressure compensation element**
- **Connection of the housing potential via an M5 x 1 bolt**

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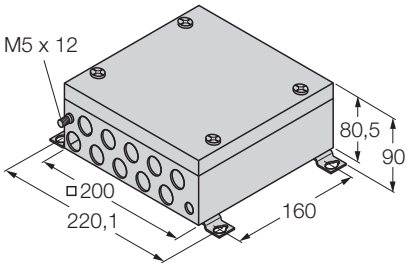
Accessories for fieldbus systems
IP67 stainless steel housing
EG-VA2020/BV67-T103

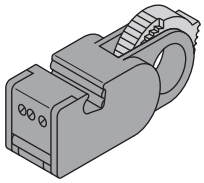
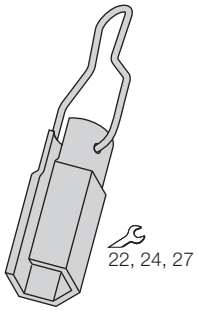
Type	EG-VA2020/BV67-T103
Ident-No.	6884136
Connection	cable glands 10 x M20 x 1.5 (Ø 6...13 mm); stainless steel
Earthing bolt	M5 x 1
Protection degree	IP67
Ambient temperature	-30...+80 °C
Relative humidity	95 %, non condensing
Housing material	stainless steel 1.430/AISI304
Wall thickness	1.5 mm
Housing surface	grinded and polished (240 grain size distribution)
Housing colour	silver
Material sealing	PUR
Dimensions	200 x 200 x 80.5 mm
Connection mode	wall mounting

Dimensions

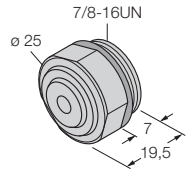
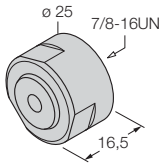
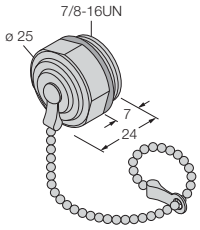
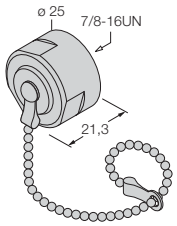
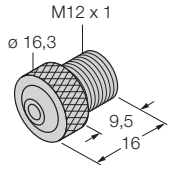
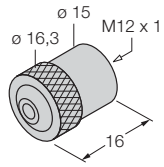


10

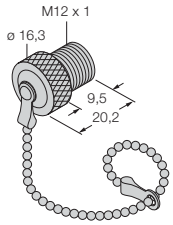
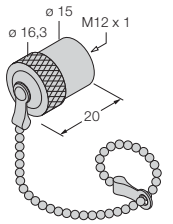
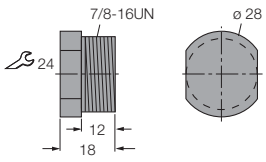
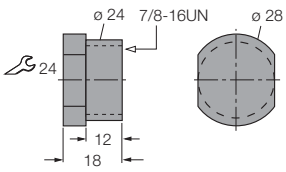
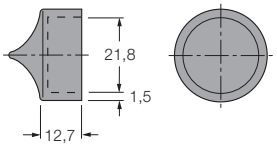
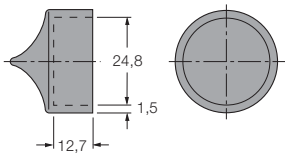
FOUNDATION fieldbus™
Accessories for fieldbus systems

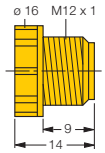
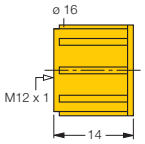
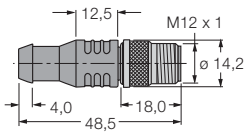
Dimensions	Application	Type designation	Ident-No.
	Stripping the insulation from round (shielded) data cables from Ø 2.5...8 mm (also for FastConnect®/ Fast Assembly™), 1, 2 and 3-stage cable stripping in a single operation; Adjustment block provided for fast preadjustment of the depth, cutting edges can be used on both sides	**TCS wire stripping tool**	6900454
	Special tool for cable glands on multibarriers, *excom*®-housings[1]) and junctions. Open and close cable glands from various positions. Also work in difficult positions using the swivelling handle. Use is simplified by the slot provided in the tube (the cables fed through the cable gland are pushed through the slot on the tube). Tool sizes 22, 24 and 27, special sizes are available on request	**VSTS22 (AF 22)** **VSTS24 (AF 24)** **VSTS27 (AF 27)**	6884043 6900462 6884073

[1]) *excom*® is the TURCK Ex remote I/O system for use in zones 1 and 2. More detailed information can be found in the product catalogue.

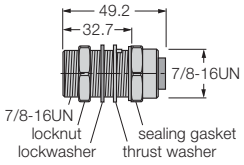
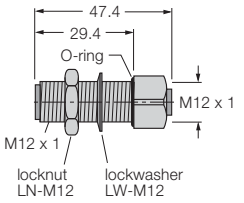
Dimensions	Application	Material and colour	Type designation	Ident-No.
	7/8“ closure cap, male, oil resistant, IP67 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P	stainless steel	**RSMV BC**	6603783
	7/8“ closure cap, female, oil resistant, IP67 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P	stainless steel	**RKMV BC**	6603784
	7/8“ closure cap, male, oil resistant, IP67 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P, with chain	stainless steel	**RSMV-CC**	6604030
	7/8“ closure cap, female, oil resistant, IP67 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P, with chain	stainless steel	**RKMV-CC**	6604038
	M12 × 1 closure cap, male, oil resistant, IP67 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P	stainless steel	**RSEV-BC**	6902305
	M12 × 1 closure cap, female, oil resistant, IP67 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P	stainless steel	**RKEV-BC**	6902304

FOUNDATION fieldbus™
Accessories for fieldbus systems

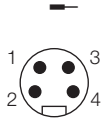
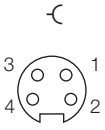
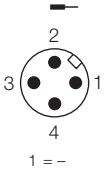
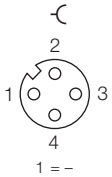
Dimensions	Application	Material and colour	Type designation	Ident-No.
	Sealing cap for M12 male connector, with chain	stainless steel	**RSEV-CC**	6604174
	Sealing cap for M12 female connector, with chain	stainless steel	**RKEV-CC**	6604176
	Screw on cap for 7/8“ female connectors, no internal wiring	polyamide black	**VZ8**	8018816
	Screw on cap for 7/8“ male connectors, no internal wiring	polyamide black	**VK-7/8**	6999027
	Dust cap for 7/8“ flange fitting, for male flanges, no internal wiring	polyamide black	**RSM-DUST-CAP**	6914862
	Dust cap for 7/8“ flange fitting, for female flanges, no internal wiring	polyamide black	**RKM-DUST-CAP**	6914863

Dimensions	Application	Material and colour	Type designation	Ident-No.
	M12 × 1 closure cap, male, oil resistant, IP54 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P	PUR yellow	**VS-M12**	6999003
	M12 × 1 closure cap, female, oil resistant, IP54 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P	PUR yellow	**VK-M12**	6999025
	M12 × 1 closure cap, male oil resistant, IP67 to IEC 60529/ EN 60529 and NEMA 1, 3, 4, 6P	stainless steel/PUR grey	**RSEV49-CC**	6603489

FOUNDATION fieldbus™
Accessories for fieldbus systems

Dimensions	Application	Connection technology Fig. (Fxxx)	Type designation	Ident-No.
	7/8“ feed-through receptacles, male/female, IP67 to IEC 60529/EN 60529 and NEMA 1, 3, 4, 6, stainless steel	1 × 7/8“ (F015) 1 × 7/8“ (F016)	**RSFV-RKFV49/22**	6602357
	M12 × 1 feed-through receptacles, male/female, IP67 to IEC 60529/EN 60529 and NEMA 1, 3, 4, 6, stainless steel	1 × M12 (F040) 1 × M12 (F041)	**FKV-FSV49/M12**	6603678

Pin assignment

(F015)	(F016)	(F040)	(F041)
			
1 = – 2 = + 3 = shield 4 = earth	1 = – 2 = + 3 = shield 4 = earth	1 = – 2 = + 3 = shield 4 = earth	1 = – 2 = + 3 = shield 4 = earth

Type index

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