

MEASUREMENT TYPE

ALTERNATING VOLTAGE MEASUREMENT

- Range 0-500 V~ (minimum 20V~);
- Peak factor: 1.43;
- Frequency range: 50-65 Hz.

ALTERNATING CURRENT MEASUREMENT

- Range 0-5 A~ (minimum 0.3 A~) with possibility of adding an external CT with maximum ratio of 400 (1.999 A~);
- Peak factor: 2;
- Frequency range: 50-65 Hz.

FREQUENCY MEASUREMENT

- Range 0-500 Hz (minimum 38 Hz).

NOTE: During normal operating the main measurement that the instrument is performing is displayed. If the instrument measures a value that exceeds the specified range, the label "Orn" will be displayed

USER INTERFACE

The user has a display, a LED and four buttons for controlling instrument status and programming. At Start-up the instrument performs a Lamp Test; all the display segments and LEDs light up for a few seconds to check that they are working correctly. The instrument also has two main menus: the Machine Status menu and the Programming menu.

BUTTONS AND MENUS

UP Button		Scrolls through menu items Increases values Displays Max and Min values*
DOWN button		Scrolls through menu items Decreases values
fnc button		ESC function (quit) Modifies the tAr**
Set point button		Accesses Menus Confirms commands Resets values

* The "UP" button is used to display the maximum and minimum values recorded by the instrument since it was last switched on (see UP button-Displaying Max and Min values).

** The "fnc" button is used to:

- display the "tAr" (current transformer) value;
- change this value by pressing the button during the lamp-test (see Modifying Current TRS).

UP button-

Displaying Max & Min values

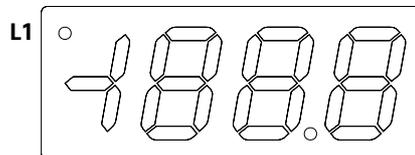
Operating in Normal display mode (the instrument displays the selected quantity). To display the maximum and minimum values recorded by the instrument for the specific quantity (current/voltage/frequency) press the "UP" for more than 5 seconds. The "Lo" label appears (minimum recorded value). If you press the "UP" or "DOWN" button the "Hi" label appears (maximum recorded value). To read its value, press the "set" button. If you press the "set" button again for more than 5 seconds the measurement that the instrument is performing is updated and the old value is deleted. To return to the "Lo" ("Hi") label press the "fnc" button.

fnc button-Modifying Current TRS

Switch the instrument on and hold the "fnc" down until the tAr label is displayed. To display its value, press the "set" button. The TRS value can now be modified by pressing the "UP" and "DOWN" buttons. To confirm the set value, press the "set" or "fnc" button.

NOTE: the TRS can only be modified using the "fnc" button when the instrument is switched on.

Hold the "fnc" button down for more than 5 seconds to display the "tAr" label. If you now press the "set" button the value is displayed but cannot be modified.



LED AND DECIMAL POINT

The L1 LED indicates when the instrument is being programmed (permanently on). The decimal point operates dynamically. the measurement performed is displayed with a decimal point up to 199.9 V/A/Hz. From 200 V/A/Hz and above it is displayed with no decimal point. The current is measured in tenths of Amperes on the scale 0...5° so that:
with tAr=10 resolution is 0.2A
with tAr=50 resolution is 1A
with tAr=1000 resolution is 20A

ACCESSING AND USING MENUS

The instrument resources are arranged in a menu that can be accessed by pressing and quickly releasing the "set" button (Machine Status menu) or holding down the "set" button for more than 5 seconds (Programming menu). To access the contents of each folder indicated by the relevant label, just press the "set" button once.

You can now scroll through the contents of each folder, modify it or use its functions. If you do not use the keyboard for over 15 seconds (time-out) or if you press the "fnc" button once, the last value shown on the display is confirmed and you return to the previous screen mask.

MACHINE STATUS MENU

To access the Machine Status menu, press the "set" button and quickly release it. The first measurement label to be set will appear. Use the "UP" and "DOWN" buttons to scroll through the other labels. This menu displays the labels for the measurements that the instrument is performing:

- "Cur": measured current value;
- "Uol": measured voltage value;
- "FrE": measured frequency value.

Press and immediately release the "set" button next to the label to display the current value of the associated measurement. To set the measurement that will be the main one displayed by the instrument, hold the set button down next to the displayed value for a few seconds until the associated label appears. To return to the main display press the "fnc" button.

PROGRAMMING MENU

To access the Programming menu, hold the "set" button for more than 5 seconds. If specified, the access PASSWORD will be requested (parameter "PA1") and the label of the first folder will then appear. Use the "UP" and "DOWN" buttons to scroll through the other folders. To enter the folder, press "set". The label of the first visible parameter will appear. Use the "UP" and "DOWN" buttons to scroll through the other parameters. To change the parameter press the "set" button and release it. Set the required value using the "UP" and "DOWN" buttons and confirm with the "set" button. Go on to the next parameter and repeat the procedure.

INSTALLATION

Instruments are designed to be mounted on DIN rails. Do not assemble the keyboard in excessively humid and/or dirty locations because it is designed to be used in locations with normal pollution levels.

ELECTRICAL WIRING

Attention! Always switch off machine before working on electrical connections. The instrument has screw terminals for connecting electrical cables with a max. diameter of 2.5 mm²(only one conductor per terminal for power connections).

Do not exceed the maximum current allowed. For higher loads, use a suitable contactor. Make sure that the power voltage complies with the device voltage.

TECHNICAL DATA

Front protection: IP40.
 Casing: 3 module box for DIN Omega rail.
 Mounting: on DIN-omega rail.
 Operating temperature: -5...60 °C.
 Storage temperature: -30...75 °C.
 Usage ambient humidity: 10...90 % RH (non-condensing).
 Storage ambient humidity: 10...90% RH (non-condensing).
 Cooling frequency: 1 Hz.
 Harmonic content: up to 30% third harmonic, up to 10% seventh harmonic.
 Insulation class: 2.
 Accuracy: (see table)
 Display Range and Measurement Range: see paragraph on LEDS AND DECIMAL POINT.
 Consumption: 1.5 VA
 Power supply: 230V~.

Warning: check the power supply specified on the instrument label; for information on power supplies contact the Sales Office).

tAr parameter (“tA ratio”):

tAr equals the maximum value on the CT primary.

Example: if a 100/5 transformer is used then the setting tAr=100A is necessary.

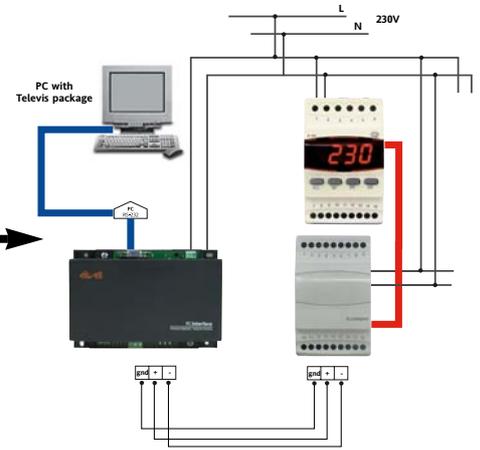
TELEVIS SYSTEM (LX MODELS ONLY)

The Televis remote control systems can be connected using the TTL serial port.

The TTL- RS 485 interface module must be used:

- BUS ADAPTER 150.

To configure the instrument to do this, you need to access the folder with the “PcO” label and use the “dEA” and “FAA” parameters.



Accuracy	Analogue input	Minimum Value
±1%	VA2	20V
±1%	IA2	0.3A
±1%	VF1	38Hz

Accuracy is ±1% full scale for values above the minimum value, for lower values it is not guaranteed

CONDITIONS OF USE

PERMITTED USE

For safety reasons the instrument must be installed and used in accordance with the instructions supplied. Users must not be able to access parts with dangerous voltage levels under normal operating conditions. The device must be adequately protected from water and dust depending on the specific application and only be accessible using special tools (except for the front panel). The device is ideally suited for household use and/or similar in the refrigeration sector and has been tested with regard to safety in accordance with the European harmonized reference standards: It is classified as follows:

- according to its manufacture: as an automatic electronic control device to be independently mounted;
- According to its automatic operating features as a 1 B-type operated control type device
- as a Class A device with regard to the software category and structure.

UNPERMITTED USE

The use of the unit for applications other than those described is forbidden. It should be noted that the relay contacts supplied with the device are functional and therefore exposed to potential faults. Any protection devices required to comply with product requirements or dictated by common sense due to obvious safety reasons should be installed externally.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell & Controlli s.r.l. shall not be liable for any damages deriving from:

- installation/use other than that prescribed and, in particular, which does not comply with the safety standards specified in the regulations and/or those given herein;
- use on equipment that does not guarantee adequate protection against electric shock, water or dust when assembled.
- use on equipment that allows dangerous parts to be accessed without the use of tools;
- tampering with and/or alteration of the product;
- use on equipment that does not comply with the standards and regulations in force.

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Tab. 1 Description and value of parameters table

PARAMETER	DESCRIPTION	RANGE	DEFAULT	VALUE*	U.M.
HSL	DISPLAY (folder with "diS" label) maximum displayable value Used to set the maximum measurement display value. The unit of measurement depends on the quantity displayed (Hertz/Ampere/Volt)	0...1999	1000		Hz/A/V
LSL	minimum displayable value Used to set the minimum measurement display value. The unit of measurement depends on the quantity displayed (Hertz/Ampere/Volt)	0...1999	0		Hz/A/V
PA1	PAssword 1 Parameter for setting the programming password	0..255	0		num
dEA**	dEvice Address. Device address in family	0...14	0		num
FAA**	FAMily Address. Device family	0...14	0		num
CONFIGURATION (folder with "CnF" label)					
rel	Release	0...999	/		num
tab	Index	0...999	/		num
CONFIGURATION (folder with "inP" label)					
tAr	input current of external CT Parameter for setting value of current transformer in use.	5...1999	5		Amperes
CAF	frequency measurement calibration Used for calibration of frequency measurement reading	-12.0...12.0	0		Hertz
CAu	voltage measurement calibration Used for calibration of voltage measurement reading	-12.0...12.0	0		Volts
CAA	current measurement calibration Used for calibration of current measurement reading	-12.0...12.0	0		Amperes

* VALUE column: to be compiled manually with any custom settings (if different from default value).
 ** The pair of values FAA and dEA represents the device network address and is indicated as "FF.DD" (where FF=FAA and DD=dEA).

Connection Diagram

TERMINALS

4 - 5 - 6 Alternating **indirect** measurement
 14 - 15 Power supply

L Line
 N Neutral

LX MODELS ONLY

A TTL input for connection to **TelevisSystem**

NOTE: the 3 specially supplied self-adhesive labels must be affixed to the instrument to indicate the type of measurement that needs to be performed.



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