96 RS485

INSTALLATION GUIDE

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WARRANTY

This product is covered by a warranty against material and manufacturing defects for a 24 months period from the manufacturing date.

The warranty does not cover the defects that are due to:

- · Negligent and improper use
- Failures caused by atmospheric hazards
- Acts of vandalism
- Wear out of materials
- Firmware upgrades

Akse reserves the right, at its discretion, to repair or substitute the faulty products

The warranty is not applicable to the products that will result defective in consequence of a negligent and improper use or an operating procedure not contemplated in this manual.

RETURN AND REPAIR FORMALITIES

Akse accepts the return of instruments for repair only when authorized in advance. The transport costs are at customer charge.

RE-SHIPPING OF REPAIRED PRODUCT

The terms for re-shipment of repaired products are ex-works, i.e. the transport costs are at customer charge.

Products returned as detective but found to be perfectly working by our laboratories, will be charged a flat fee to account for checking and testing time irrespective of the warranty terms

SAFFTY

This instrument was manufactured and tested in compliance with IEC 61010-1 CAT III - 300V class 2 standards for operating voltages up to 300 VAC rms phase to neutral. In order to maintain this condition and to ensure safe operation, the user must comply with

- the indications and markings contained in the following instructions:
 When the instrument is received, before starting its installation, check that it is intact and no damage occurred during transport.
 - Before mounting, ensure that the instrument operating voltages and the mains voltage are compatible then proceed with the installation.
- \wedge :
- The instrument power supply needs no earth connection.
 The instrument is not equipped with a power supply fuse; a suitable external protection fuse must be foreseen by the contractor.
 - Maintenance and/or repair must be carried out only by qualified, authorized personnel
 - If there is ever the suspicion that safe operation is no longer possible, the instrument must be taken out of service and precautions taken against its accidental use.

Operation is no longer safe when:

- There is clearly visible damaged.
- The instrument no longer functions.
 After lengthy storage in unfavorable conditions.
- After serious damage occurred during transport

The instruments must be installed in respect of all the local regulations.

OPERATOR SAFETY

Warning: Failure to observe the following instructions may lead to a serious danger of death

- During normal operation dangerous voltages can occur on instrument terminals and on voltage and current transformers. Energized voltage and current transformers may generate lethal voltages. Follow carefully the standard safety precautions while carrying out any installation or service operation.
- The terminals of the instrument must not be accessible by the user after the installation.
 The user should only be allowed to access the instrument front panel where the display is located.
- Do not use the digital outputs for protection functions nor for power limitation functions.
 The instrument is suitable only for secondary protection functions.
- The instrument must be protected by a breaking device capable of interrupting both the power supply and the measurement terminals. It must be easily reachable by the operator and well identified as instrument cut-off device.
- The instrument and its connections must be carefully protected against short-circuit.

Precautions: Failure to respect the following instructions may irreversibly damage to the instrument.

- The outputs and the options operate at low voltage level; they cannot be powered by any unspecified external voltage.
- The application of currents not compatible with the current inputs levels will damage to the instrument.

Further documentation may be downloaded from our web site www.electrex.it.

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DECLARATION OF CONFORMITY

Akse hereby declares that its range of products complies with the following directives EMC 2014/30/EU, 2014/35/EU and complies with the following product's standard CEI EN 61326 - Ed. 2.0 (2012) – IEC 61326 - Ed. 2.0 (2012) CEI EN 61010 Ed. 3 (2010) – IEC 61010 Ed. 3 (2010). The product has been tested in the typical wiring configuration and with peripherals conforming to the EMC directive and the LV directive.

READINGS



Keep pressed for 2 seconds to display:

- Type of instrument
- Firmware version
- Serial number
- RS485 address

MEASURE LIST TABLE

(The parameters available vary according to instrument configuration)

(The pare	inicicio a	valiable ve	ny accordi	ing to motion	ment com,	guiutioni	
U	I ▼	P/PF ◀	CNT				
ULN	I	Р	Ea + MAIN	Er + L MAIN	Es + MAIN	C1 MAIN	t MAIN
ULL	IΣ	PΣ	Ea - MAIN	Er - L MAIN	Es - MAIN	C2 MAIN	t P1
ULN THD	I THD	P AVG +	Ea + Fase	Er + C MAIN	Es + Fase	C3 MAIN	t P2
ULL THD	I MAX	P AVG -	Ea - Fase	Er - C MAIN	Es - Fase	C4 MAIN	t P3
ULN MIN	I AVG	P MD +	Ea + P1	Er + L Fase	Es + P1	C1 P1	t LIFE
ULL MIN	I MD	PMD -	Ea - P1	Er - L Fase	Es - P1	C2 P1	
ULN MAX		Q	Ea + P2	Er + C Fase	Es + P2	C3 P1	
ULL MAX		QΣ	Ea - P2	Er - C Fase	Es - P2	C4 P1	
		Q AVG +	Ea + P3	Er + L P1	Es + P3	C1 P2	
		Q AVG -	Ea - P3	Er - L P1	Es - P3	C2 P2	
		Q MD +		Er + C P1		C3 P2	
		Q MD -		Er - C P1		C4 P2	
		S		Er + L P2		C1 P3	
		SΣ		Er - L P2		C2 P3	
		S AVG +		Er + C P2		C3 P3	
		S AVG -		Er - C P2		C4 P3	
		S MD +		Er + L P3			
		S MD -		Er - L P3			
		PF		Er + C P3			
		PF ∑		Er - C P3			

LEGEND OF PARAMETERS AND SYMBOLS

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U	Voltage	THD	Total Harmonic Distortion
LN	Phase Neutral	AVG	Average (rolling) value
LL	Phase Phase	MD	Maximum Demand
I	Current	MIN	Minimum values (10 cycles time base)
In	Neutral current	MAX	Maximum values (10 cycles time base)
Р	Active Power	+	Imported value
Q	Reactive Power	-	Exported value
s	Apparent Power	Er L	Inductive
PF	Power Factor	Er C	Capacitive
F	Frequency	t	Time counter
Ea	Active Energy	С	Pulse count
Er	Reactive Energy	MAIN	Total
Es	Apparent Energy	P1,P2,P3	Partial 1,2,3
		LIFE	Device lifetime

MECHANICAL CHARACTERISTICS				
Case	Self-extinguishing plastic material class V0			
Protection degree	IP40 on front panel, IP20 terminals side			
Size	96 x 96 x 72 mm			
VOLTAGE INPUTS				
Direct insertion	Up to 300 Vrms phase-neutral or 520 Vrms phase to phase			
With external VT:	Primary: programmable (max. 400 kV)			
	Secondary: programmable (max. 300 V)			
	Overload: 900 Vrms phase to phase for 1 sec			
Aux. power supply	230/240Vac +/- 10% 50/60Hz			
Self consumption:	< 2,5VA			
MODELS				
PFAEC11-62-B				

			DEVICE	SE	TUP			
	ENTER THE SETUP	/ SAVE			EXIT THE SETUP	WITHO	UT SAVING	
	ush for seconds	MENU ENTER	ין		Push for 2 seconds		ESC	
					2 30001143			
JESCR	RIPTION OF KEY	15	<u> </u>		P/PF		CNT	
	U 🛕		□		P/PF ◀		CNT	
Click	Modify parameter	Modi	ify paramet	ter	Go to previous valu	ie G	Go to next valu	ie
Click 2 sec					Go to previous pag	е (Go to next pag	е
	SEQUENCE							
	PARAMETERS		VALUES	AVA	ILABLE		DEFA	ULT
PASSWO								
BASIC SE	PASSWORD ETTINGS		0000 99	999			(0000
	WIRING (note n.1)				P2W, 3I, 3P3W-B-3I 3W-B, 3P4W-B, 3P3		31	P4W
	QUADRANTS		2Q, 4Q	, JO	3VV-B, 31 4VV-B, 31 C	JVV		2Q
	CT PRIMARY CT SECONDARY		110000 15				00	5
	VT PRIMARY VT SECONDARY		1400000)			000	0001
	P-AVG WINDOW (no		160 (mir					15
	I-AVG WINDOW (not		<u> 160 (mir</u> BASIC S		INGS			80
		WIRING	;	3P4W				
		QUADR CT PR	IMARY	20 0000	5			
		CT SE		5 0000	01			
		VT SE	CONDARY	001 15				
			MINDOM	08				
OMUNIC	CATION							
J	ADDRESS		1 247	0.000	00 40000 00400			027
	BAUDRATE DATA BITS		7, 8		00, 19200, 38400		38	8400
	PARITY STOP BITS		N = none, 1 o 2	E = e	ven, O = odd			N 2
	SILENT TIME		01000 (r		teps of 10ms)		(0100
		ADDRE	COMUNI ss	027 027	ION			
		BAUDR DATA		3846 8	0			
		PARITY	7	Н				
		STOP :	BITS T TIME	2 0100				
I ARM 1								
(E-111111 I	(note n.7)		NORMAL	UNB	AL%. UNBAL.			
CEARCH I	MODE (note n.3)	4)	3-OF-3, 1-	-OF-3	AL%, UNBAL,		NOR	
	MODE (note n.3) DIRECTION (note n.4)		3-OF-3, 1- MAX, MIN Controlled	-OF-3 I I meas	sure. See table n.1 fo	or		MIN
XL-XXXIII	MODE (note n.3) DIRECTION (note n.4) DATA ADDRESS (note	te n.5)	3-OF-3, 1- MAX, MIN Controlled register se	-OF-3 I I meas electio	sure. See table n.1 fo	or		MIN 276
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DISPLAY					
	CONTRAST	0 15			06
	PASSWORD			00	00
	LIGHT HIGH	1 15			10
	LIGHT LOW	0 15			03
		DIS	PLAY	·	
	CON	TRAST	06		
		SWORD	0000		
	LIG	HT HIGH	10		
	LIG	HT LOW	03		
FACTORY	DESET				_
FACTURE	RESEI	NO, YES			NO
OL EAD D	EGISTERS	INO, TES			10
CLEAR R	COUNTER-PHASE	NONE A	1.1	4014	II.
	MD POWER	NONE, A		NON NON	
		NONE, A			
	MD CURRENT	NONE, A		NON	
	PEAKS	NONE, A		NON	
	COUNTER-MAIN	NONE, A		NON	
	COUNTER-P1	NONE, A		NON	
	COUNTER-P2	NONE, A		NON	
	COUNTER-P3	NONE, A	LL	NON	٧E
		CLEAR R	EGISTERS		
	COU	INTER-PHASE	NONE		
		POWER	NONE		
	MD	CURRENT	NONE		
	PEA	KS	NONE		
	COU	NTER-MAIN	NONE		
		NTER-P1	NONE		
		NTER-P2	NONE		
	COU	NTER-P3	NONE		

TABLE n.1 - Part of ModBus Registers; for e.g. alarm configuration. (Contact us for the full list).

(Contact us for the full list).				
REGISTER	DESCRIPTION	SYMBOL	UNIT	
218	Frequency of U1N	f	[Hz]	
220	Phase to Neutral Voltage, RMS Amplitude	U1N	[V]	
222	Phase to Neutral Voltage, RMS Amplitude	U2N	[V]	
224	Phase to Neutral Voltage, RMS Amplitude	U3N	[V]	
226	Phase to Phase Voltage, RMS Amplitude	U12	[V]	
228	Phase to Phase Voltage, RMS Amplitude	U23	[V]	
230	Phase to Phase Voltage, RMS Amplitude	U31	[V]	
232	Phase Current, RMS Amplitude	l1	[A]	
234	Phase Current, RMS Amplitude	12	[A]	
236	Phase Current, RMS Amplitude	13	[A]	
238	Neutral Current, RMS Amplitude	IN	[A]	
240	Phase Active Power (Imp/Exp)	P1	[W]	
242	Phase Active Power (Imp/ Exp)	P2	[W]	
244	Phase Active Power (Imp/Exp)	P3	[W]	
246	Phase Reactive Power (Imp/Exp)	Q1	[var]	
248	Phase Reactive Power (Imp/Exp)	Q2	[var]	
250	Phase Reactive Power (Imp/Exp)	Q3	[var]	
252	Phase Apparent Power	S1	[VA]	
254	Phase Apparent Power	S2	[VA]	
256	Phase Apparent Power	S3	[VA]	
258	Phase Power Factor (Imp/ Exp)	PF1	[-]	
260	Phase Power Factor (Imp/Exp)	PF2	[-]	
262	Phase Power Factor (Imp/Exp)	PF3	[-]	
270	Phase to Neutral Voltage, Mean RMS Amplitude	UI	[V]	
272	Phase to Phase Voltage, Mean RMS Amplitude	UD	ĺνί	
274	Three phase current, RMS Amplitude	ı	[Α]	
276	Total active power (Imp/ Exp)	PS	[W]	
278	Total reactive power (Imp/ Exp)	QS	[var]	
280	Total apparent power	SS	[VA]	
282	Total power factor (Imp/ Exp)	PFS	[-]	
332	Phase Current, RMS Amplitude, AVG	I1 AVG	[A]	
334	Phase Current, RMS Amplitude, AVG	I2 AVG	[Α]	
336	Phase Current, RMS Amplitude, AVG	I3 AVG	[A]	
344	Total imported active power, AVG	P Imp AVG	[W]	
346	Total imported inductive power, AVG	Qind Imp AVG	[var]	
348	Total imported capacitive power, AVG	Qcap Imp AVG		
350	Total imported apparent power, AVG	S Imp AVG	[VA]	
352	Total exported active power, AVG	P Exp AVG	[W]	
354	Total exported inductive power, AVG	Qind Exp AVG		
356	Total exported capacitive power, AVG	Qcap Exp AVG		
358	Total exported apparent power, AVG	S Exp AVG	[VA]	

NOTE n.1	10.1					
3P4W	3 phases 4 wires	Star				
2P2W	2 phases 2 wires	Two-phases				
1P2W	1 phases 2 wires	Single phase				
31	3 phases 2 wires	3 Current Inputs single phase o three phases				
3P3W-B-3U	1 phases 3 wires	Balanced triangle				
3P4W-B-3U	1 phases 4 wires	Balanced star				
3P3W-B	1 phases 2 wires	Balanced triangle				
3P4W-B	1 phases 2 wires	Balanced star				
3P3W	2 phases 3 wires	Triangle				
NOTE n.2	z pridoco o wiroc	Thangio				
POWERS	Integration time of the	ne average value (AVG) and peak value (MD) for				
	Power (from 1 to 60) minutes).				
CURRENTS	Integration time of the average value (AVG) and peak value (MD) for Current (from 1 to 60 minutes).					
NOTE n.3	*	,				
NORMAL	Classic Alarm with	reference to a fixed threshold or to maximum and				
		applicable hysteresis. "AVG" parameter is not used.				
UNBAL%		2 following registers of the selected one in "MEAS".				
0.12/12/0		becomes a % value. Alarm goes on when one of the				
		erent from the percentage set on "THRE" comply with				
		the three read register if "MAX" is set on "TYPE", or				
		er value of the three register if "MIN" is set on "TYPE"				
	With delay and appl					
UNBAL		2 following registers of the selected one in "MEAS".				
	"THRE" parameter	becomes a value. Alarm goes on when one of the				
	three register is diffe	erent from the percentage set on "THRE" comply with				
		the three read register if "MAX" is set on "TYPE", or				
		er value of the three register if "MIN" is set on "TYPE"				
	With delay and appl	9				
3-OF-3		2 following registers of the selected one in "MEAS".				
3-UF-3						
		ked max or min threshold with delay and applicable				
	,	Il the three registers exceed the threshold the alarm				
	goes ON. "AVG" par	rameter is not used.				
1-OF-3	Considers also the	2 following registers of the selected one in "MEAS".				
	It operates on a fix	red max or min threshold with delay and applicable				
	hysteresis. If one of	f the three registers exceeds the threshold the alarm				
I	ages ON "AVC" nai	rameter is not used				
NOTE n 4	goes ON. "AVG" par	rameter is not used.				
NOTE n.4						
MAX	Alarm setting in exc	ess or in decrease compared with the predefined				
	Alarm setting in exc	ess or in decrease compared with the predefined				
MAX MIN	Alarm setting in exc					
MAX MIN NOTE n.5	Alarm setting in exc conditions. With the exception of	ess or in decrease compared with the predefined of "UNBAL and UNBAL%".				
MAX MIN	Alarm setting in exc conditions. With the exception of	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to.				
MAX MIN NOTE n.5 MEAS	Alarm setting in exc conditions. With the exception of Indicates which regise table N.1 Input	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register.				
MAX MIN NOTE n.5	Alarm setting in exc conditions. With the exception of Indicates which regise table N.1 Input	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to.				
MAX MIN NOTE n.5 MEAS	Alarm setting in exconditions. With the exception of Indicates which regise table N.1 Input Alarm threshold in a	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register.				
MAX MIN NOTE n.5 MEAS	Alarm setting in exconditions. With the exception of Indicates which regise table N.1 Input Alarm threshold in a	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL"				
MAX MIN NOTE n.5 MEAS THRE	Alarm setting in exc conditions. With the exception of Indicates which regi See table N.1 Input Alarm threshold in a in which the value in	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL"				
MAX MIN NOTE n.5 MEAS THRE	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL" asserted becomes a percentage.				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL"". ster (measure) the alarm is related to. Register. ibsolute value, with the exception made for "UNBAL" is related becomes a percentage. e during the duration of the event. It restores auto-				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL" asserted becomes a percentage.				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL" isserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus.				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL" asserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present)				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL" aserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present)				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL" aserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present)				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. absolute value, with the exception made for "UNBAL" asserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present)				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bbsolute value, with the exception made for "UNBAL" isserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) ssociated with output 4 if present)				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bsolute value, with the exception made for "UNBAL" nserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) ssociated with output 4 if present)				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bsolute value, with the exception made for "UNBAL" nserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) The instrument's LED remains off The instrument's LED remains off				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bsolute value, with the exception made for "UNBAL" nserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) The instrument's LED remains off				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bbsolute value, with the exception made for "UNBAL" isserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. esociated with output 1 if present) esociated with output 2 if present) esociated with output 3 if present) esociated with output 4 if present) esociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bisolute value, with the exception made for "UNBAL" inserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. esociated with output 1 if present) esociated with output 2 if present) esociated with output 3 if present) esociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator ive Imported / Exported				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bsolute value, with the exception made for "UNBAL" nserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) ssociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator ive Imported / Exported active Inductive Imported / Exported				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA ER L	Alarm setting in exconditions. With the exception of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bisolute value, with the exception made for "UNBAL" inserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. esociated with output 1 if present) esociated with output 2 if present) esociated with output 3 if present) esociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator ive Imported / Exported				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA ER L ER C	Alarm setting in exconditions. With the exception of the set of th	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. Absolute value, with the exception made for "UNBAL" aserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator ive Imported / Exported active Inductive Imported / Exported active Capacitive Imported / Exported				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA ER L ER C ES	Alarm setting in exconditions. With the exception of the conditions. With the exception of the conditions. With the exception of the conditions of the conditions. Indicates which register that the conditions of the conditions of the conditions of the conditions. Indicates which register that the conditions of the c	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bissolute value, with the exception made for "UNBAL" inserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) ssociated with output 4 if present) stociated with output 5 if present) ssociated with output 6 if present) ssociated with output 7 if present) ssociated with output 8 if present) ssociated with output 9 if present) stociated with output 1 if present) stociated with output 1 if present) stociated with output 2 if present) stociated with output 4 if present) stociated with output 6 if present in stociated with output 6 if present in stociated with output 6 if present in stociated with output 7 if present in stociated with output 8 if present in stociated with output 9 if present 9 if				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA ER L ER C ES EA+	Alarm setting in exconditions. With the exception of the conditions. With the exception of the conditions. With the exception of the conditions. With the exception of the condition of the condi	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bbsolute value, with the exception made for "UNBAL" nserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. sociated with output 1 if present) sociated with output 2 if present) sociated with output 3 if present) sociated with output 4 if present) sociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator ive Imported / Exported active Capacitive Imported / Exported arent Imported / Exported ive Imported ive Imported ive Imported ive Imported				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA ER L ER C ES EA+ ER L+	Alarm setting in exconditions. With the exception of the conditions. With the exception of the conditions. With the exception of the conditions. With the exception of the condition of the condi	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bisolute value, with the exception made for "UNBAL" inserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. esociated with output 1 if present) esociated with output 2 if present) esociated with output 3 if present) esociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator ive Imported / Exported factive Inductive Imported / Exported foreit Inductive Reactive				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA ER L ER C ES EA+ ER C ES L+ ER C+	Alarm setting in exconditions. With the exception of conditions. With the exception of the conditions. With the exception of the conditions of the condition	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bisolute value, with the exception made for "UNBAL" is related becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) ssociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator ive Imported / Exported active Capacitive Imported / Exported sorted Inductive Reactive ported Reactive Capacitive				
MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA ER L ER C ES EA+ ER L+ ER C+ ES+	Alarm setting in exconditions. With the exception of the conditions. With the exception of the conditions. With the exception of the conditions. With the exception of the condition of the condi	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. dissolute value, with the exception made for "UNBAL" isserted becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. ssociated with output 1 if present) ssociated with output 2 if present) ssociated with output 3 if present) ssociated with output 4 if present) ssociated with output 4 if present) ssociated with output 5 if present) ssociated with output 6 if present) ssociated with output 7 if present is sociated with output 8 if present is sociated with output 9 if present is sociated with output 1 if present is sociated with output 1 if present is sociated with output 2 if present is sociated with output 4 if present is sociated with output 6 if present is sociated with output 6 if present is sociated with output 6 if present is sociated with output 7 if present is sociated with output 8 if present is sociated with output 9 if present is sociated with output 9 if present is sociated with output 1 if present is sociated with output 2 if present is sociated with output 3 if present is sociated with output 2 if present is sociated with output 3 if present is sociated with output 4 if present is sociated with output 2 if present is sociated with output 3 if present is sociated with output 3 if present is sociated with output 4 if present is sociated with output 3 if present is sociated with output 3 if present is sociated with output 4 if present is sociated with output 3 if present is sociated with output 4 if present is sociated with output 4 if present is sociated with ou				
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MAX MIN NOTE n.5 MEAS THRE NOTE n.6 NORMAL HOLD NOTE n.7 ALARM 1 ALARM 2 ALARM 3 ALARM 4 NOTE n.8 LED-1 NOTE n.9 EA ER L ER C ES EA+ ER L+ ER C+ ES+ EA+ ER C+ ES+ EA- ER L- ER C-	Alarm setting in exconditions. With the exception of conditions. With the exception of the conditions. With the exception of the conditions. Indicates which regise table N.1 Input Alarm threshold in a in which the value in the condition of the	ess or in decrease compared with the predefined of "UNBAL and UNBAL%". ster (measure) the alarm is related to. Register. bisolute value, with the exception made for "UNBAL" is related becomes a percentage. e during the duration of the event. It restores auto- e until the manual reset via Modbus. sociated with output 1 if present) sociated with output 2 if present) sociated with output 3 if present) sociated with output 4 if present) The instrument's LED remains off The instrument's LED flashes according to the selected pulse generator ive Imported / Exported active Capacitive Imported / Exported sorted Inductive Reactive				
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ALARM SETUP EXAMPLE

Alarm (latching) when the average active power (MEAS 344) exceeds the value of 100 kW, hysteresis of 5% and delay of 5 seconds; set the parameters as in the table:

ALARM 1 (note n.7)		
MODE (note n.3)	NORMAL, UNBAL%, UNBAL, 3-OF-3, 1-OF-3	NORMAL
DIRECTION (note n.4)	MAX, MIN	MAX
DATA ADDRESS (note n.5)	Controlled measure. See table n.1 for register selection	344
THRESHOLD (note n.5)	Threshold value	+100.0 K
HYSTERESIS	199 (%)	05
ON DELAY	1 sec99 minutes	05 SEC
OFF DELAY	1 sec99 minutes	01 SEC
OUT MODE (note n.6)	NORMAL, HOLD	NORMAL

ANALOG OUTPUT

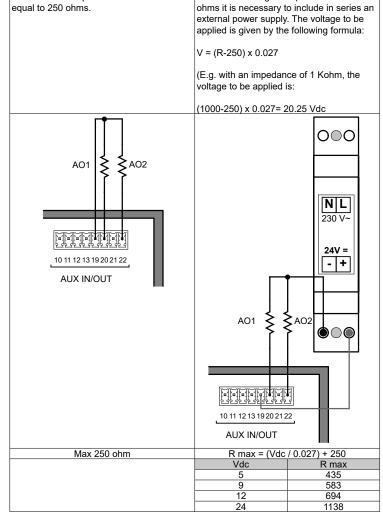
SETUP SEQUENCE

For loads with impedance less than or

PAGE	PARAMETERS	VALUES AVAILABLE	DEFAULT
ANALOG OUT 1			
ANALOG OUT 1	DATA ADDRESS (note A)	Controlled measure. See table n.1 for register selection	000
MEAS 200	MODE	0-20, 4-20	4-20
MODE 4-20 MIN 0.000	MIN (note B)		0.000
MAX 0.000	MAX (note B)		0.000
ANALOG OUT 2 (see ANAL	LOG OUT 1)		

Anal	og o	utput			
10			19	С	Common (negative)
11			20	1	Output 1 (positive)
12			21	2	Output 2 (positive)

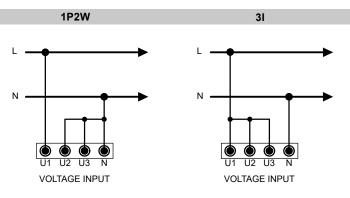
For loads with higher impedance of 250

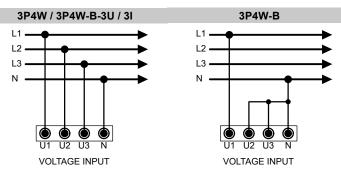


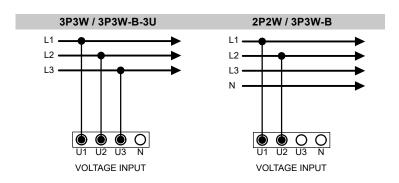
NOTE: A	
MEAS	Indicates which register (and thus measure) the alarm is related to.
	See Table N.1 (Input registers).
NOTE: B	
MIN	Associated scale value starts at 0 and 4 mA
MAX	Full scale value associated with 20 mA

VOLTAGE CONNECTION

Use cables with max cross-section of 2,5 $\,\mathrm{mm^2}$ if stranded, 4 $\,\mathrm{mm^2}$ if rigid and connect them to the clamps marked VOLTAGE INPUT on the instrument according to the applicable diagrams that follow.

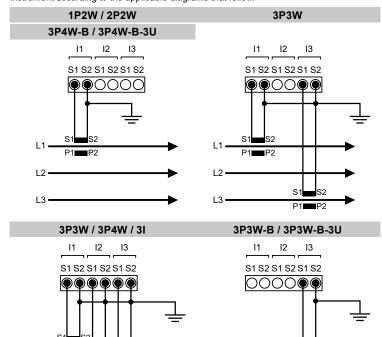






CURRENT CONNECTION

Connect the CT outputs to the terminals marked I1, I2, I3 (CURRENT INPUT) of the instrument according to the applicable diagrams that follow.



Note: Scrupulously respect the matching of phase between the voltage signals and current signals. Failure to comply with this correspondence and connection diagrams gives rise to measurement errors.

S

	PHASE SEQUENCE
1-2-3	Correct sequence
1-3-2	Incorrect sequence
	Indicates that the device is not able to define the sequence

Please consider that:

- only the voltage sequence is detected;
- the detection considers the hypothesis that the tensions are sinusoidal (or at least slightly distorted) and belonging to a symmetrical (or almost) triad;
- independently from the insertion 3W/4W, it is considered exclusively the sign of voltage 2 and 3 in the zero-crossing of voltage for phase 1 - it is not calculated the effective phase of the voltage fundamentals;
- the phase sequence is indicated with the "L123", "L132", "L—" symbols next to frequency, in the voltages displaying page.

It is assumed:

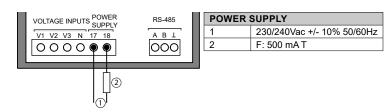
L1 is the voltage with phase 0°

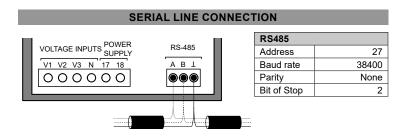
L2 is the voltage with phase 240° (in delay to L1)

L3 is the voltage with phase 120° (in advance to L1)

POWER SUPPLY

The instrument is equipped with a separate power supply. The power supply terminals are numbered (17) and (18). Use cables with max cross-section of 2,5 mm² if stranded,





Max cable length: 1000 meters.

