Klemsan

Electronic & Energy Management Products

MED/EMD 1-2 Series Energy Meters

The MED and EMD 1-2 series energy meters, designed in rail-mounted enclosures of 18 mm and 36 mm, enable the measurement and monitoring of basic electrical parameters in addition to energy consumption for single-phase systems.
With optional MID approval, they offer effective and competitive solutions for billing needs in applications such as marinas and shopping centers.
Equipped with digital outputs and an RS485 (Modbus RTU) interface, the devices can meet different requirements while directly participating in energy monitoring applications.
Accepting current inputs up to 45A and 80A, the devices eliminate the need for current transformers in projects.

- Optional MID Approval
- Direct connection up to 45A and 80A in addition to current transformer models
- High Measurement Accuracy
- 4 sub-tariffs with real-time clock in addition to 2 main tariffs
- RS485 (Modbus RTU) Option
- 2 Digital Output Options
- Free user interface software

Product Name	Order No	Definition	MID Approval	Basic Electrical Parameters	Only Import Active Energy	4 Quadrant Energy Measurement	Measuring Accuracy	Min / Max Data Logging	Total Harmonic Distortion (THD)	Individual Harmonics (up to 31st)	Demand	Alarm Setting	LCD Screen	Digital Outputs (2 Qty)	Main Tariff	Sub-tariffs	RS485 (Modbus RTU)	85-300 V DC/DC	45Amps Direct Connection	80Amps Direct Connection	X/1 & X/5	Enclosure Dimension	Rail Mount
B45-0W-01	606357	MED1	√		√		Class B						√	1	1			√	√			18 mm	√
B45-1M-V1	606358	MED1	√	√		√	Class B				√		√	2	2		√	√	√			18 mm	√
B45-0M-01	606359	MED1	√	√		√	Class B						√	1	1			√	√			18 mm	√
145-0W-01	606360	EMD1			√		Class 1	√	√	√			√	1	1			√	√			18 mm	√
145-1M-V2	606361	EMD1		√		√	Class 1	√	√	√	√	√	√		2		√	√	√			18 mm	√
145-0M-01	606362	EMD1		√		√	Class 1	√	√	√			√	1	1			√	√			18 mm	√
C80-1M-V3CT	606363	MED2	√	√		√	Class C				√		√	2	2	4	√	√			√	36 mm	√
B80-1M-V2CT	606364	MED2	√	√		√	Class B				√		√	2	2		√	√			√	36 mm	√
C80-1M-V3	606365	MED2	√	√		√	Class C				√		√	2	2	4	√	√		√		36 mm	√
B80-1M-V2	606366	MED2	√	√		√	Class B				√		√	2	2		√	√		√		36 mm	√
B80-0M-02	606367	MED2	√	√		√	Class B						√	2	1			√		√		36 mm	√
B80-0M-02P	606368	MED2	√	√		√	Class B						√	2	1			√		√		36 mm	√
B80-0W-01	606369	MED2	√		√		Class B						√	1	1			√		√		36 mm	√
580-1M-V4CT	606370	EMD2		√		√	Class 0.5	√	√	√	√	√	√		2	4	√	√			√	36 mm	√
180-0M-V1CT	606371	EMD2		√		√	Class 1	√	√	√			√	2	1			√			√	36 mm	√
180-0W-01	606372	EMD2			√		Class 1	√	√	√			√	1	1			√		√		36 mm	√
580-1M-V3	606373	EMD2		√		√	Class 0.5	√	√	√	√	√	√	2	2	4	√	√		√		36 mm	√
180-0M-02	606374	EMD2		√		√	Class 1	√	√	√			√	2	1			√		√		36 mm	√
180-1M-V2	606375	EMD2		√		√	Class 1	√	√	√	√	√	√		2		√	√		√		36 mm	√

Electronic Products

MED/EMD 4 Series 3-Phase Energy Meters

The MED4 and EMD4 series are optionally MID-approved energy meters, designed in 72mm rail-mounted enclosures, allow for the measurement and monitoring of energy consumption and basic electrical parameters for three-phase systems. Equipped with digital inputs/outputs and an RS485 (Modbus RTU) interface, the devices can meet different requirements while directly participating in energy monitoring applications. Accepting current inputs up to 100A, the devices eliminate the need for current transformers in projects.

- Optional MID Approval
- Direct connection up to 100A in addition to current transformer models
- High Measurement Accuracy
- 3 Tariffs Option
- RS485 (Modbus RTU) Option
- 2 Digital Output Options
- 2 Digital Input Options
- Free user interface software

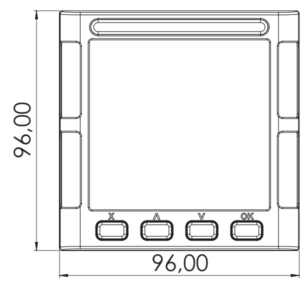
Product Name	Order No	Definition	Voltage, Current and Frequency	4 Quadrant Energy Measurement	2 Quadrant Reactive Energy Monitoring	4 Quadrant Reactive Energy Monitoring	Measuring Accuracy	Min / Max Data Logging	Total Harmonic Distortion (THD)	Individual Harmonics (up to 31st)	Demand	Alarm Setting	LCD Screen	Digital Outputs	Digital Inputs	Main Tariff	RS485 (Modbus RTU)	85-300 V DC/DC	80Amps Direct Connection	X/1 & X/5	Enclosure Dimension	Rail Mount
C100-1M-V4	606 800	MED4	√	√	√		Class B		√		√		√	2	2	2	√	√	√		72 mm	√
C100-1M-V2	606 801	MED4	√	√	√		Class B		√		√		√	0	0	1	√	√	√		72 mm	√
B100-0M-V3	606 802	MED4	√	√	√		Class B		√		√		√	2	2	2		√	√		72 mm	√
B100-0M-V1	606 803	MED4	√	√	√		Class B		√		√		√	2	0	2		√	√		72 mm	√
C100-1M-V4CT	606 804	MED4	√	√	√		Class B		√		√		√	2	2	2	√	√		√	72 mm	√
C100-1M-V2CT	606 805	MED4	√	√	√		Class B		√		√		√	0	0	1	√	√		√	72 mm	√
B100-0M-V3CT	606 806	MED4	√	√	√		Class B		√		√		√	2	2	2		√		√	72 mm	√
B100-0M-V1CT	606 807	MED4	√	√	√		Class B		√		√		√	2	0	2		√		√	72 mm	√
5100-1M-V1CT	606 808	EMD4	√	√	√		Class 0.5	√	√	√	√	√	√	0	0	1	√	√		√	72 mm	√
5100-1M-V2CT	606 809	EMD4	√	√	√		Class 0.5	√	√	√	√	√	√	2	2	3	√	√		√	72 mm	√
5100-1Q-V1	606 810	EMD4	√	√		√	Class 0.5	√	√	√	√	√	√	0	0	1	√	√	√		72 mm	√
5100-1Q-V2	606 811	EMD4	√	√		√	Class 0.5	√	√	√	√	√	√	2	2	3	√	√	√		72 mm	√
B100-0W-01	606 812	MED4	√	√	√		Class B						√	1	0	1		√	√		72 mm	√
C100-1Q-V3	606 814	MED4	√	√		√	Class B		√		√		√	2	2	2	√	√	√		72 mm	√
B100-1Q-V2	606 815	MED4	√	√		√	Class B		√		√		√	1	0	1	√	√	√		72 mm	√
C100-1Q-V3CT	606 816	MED4	√	√		√	Class B		√		√		√	2	2	2	√	√		√	72 mm	√
5100-1Q-V2CT	606 817	EMD4	√	√		√	Class 0.5	√	√	√	√	√	√	2	2	3	√	√		√	72 mm	√

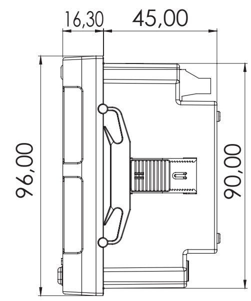
Electronic Products

ECRAS 3-4 Multimeter Series

The new ECRAS series multimeters with ghost screen technology are designed to measure current, voltage, frequency, and power parameters in 3-phase electrical systems. The new ECRAS series, which offers 45 mm depth and vertical cable connection, is most suitable for use in narrow panels.

- Ghost Screen Technology with 4.2 inches Width
- IP54 protection class for front panel
- 45 mm Depth
- x/1 and x/5 Current Transformer Support
- Current connection terminals with 4 mm² cross-section
- High Measurement Accuracy
- RS485 (Modbus RTU) Option
- 2 SPST Relay Output Options
- Free user interface software



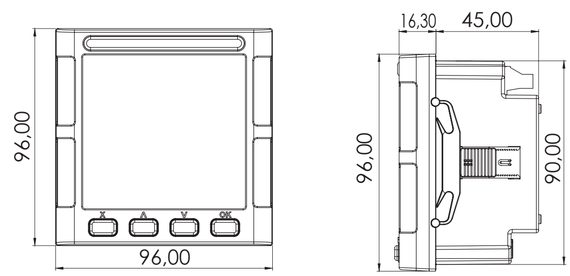


Product Name	Order No	Definition	Voltage, Current and Frequency	Power (P, Q, S) and Power Factor (PF)	Total Harmonic Distortion (THD)	Demand	Alarm Setting	Relay Outputs (2 pcs)	RS485 (Modbus RTU)	85-300 V DC/DC	X/1 & X/5	Panel Mount	Ghost Screen
ECRAS 300	606 500	Electronic Multimeter	√							√	√	√	√
ECRAS 301	606 501	Electronic Multimeter	√				√	√		√	√	√	√
ECRAS 400	606 502	Electronic Multimeter	√	√						√	√	√	√
ECRAS 400R	606 503	Electronic Multimeter	√	√			√		√	√	√	√	√
ECRAS 411R	606 504	Electronic Multimeter	√	√	√	√	√	√	√	√	√	√	√

KLEA 4 Series Energy Analyzer

The new KLEA 4 series energy analyzers are devices designed to analyze 3-phase electrical systems. The new KLEA 4 series, which offers 45 mm depth and vertical cable connection, is most suitable for use in narrow panels. It can also be used in remote monitoring projects thanks to the optional RS485 (Modbus RTU) interface on the devices. Thanks to their optional digital outputs, pulse outputs can be created according to the measured energy values. Digital inputs can be used as pulse counters or tariff activation.

- 4.2 inch Ghost Screen
- IP54 protection class
- 45 mm Depth
- x/1 and x/5 Current Transformer Support
- Current connection terminals with 4 mm² cross-section
- High Measurement Accuracy
- RS485 (Modbus RTU) Option
- 2 SPST Relay Output Options
- 2 Digital Input/Output Options
- Free user interface software



Product Name	Order No	V, C, F	P, Q, S, PF	Min / Max Data Log.	4Q. Energy Measur.	2Q Reactive Energy Monit.	THD	Individual Harmonics (up to 31st)	Demand	On Hour, Run Hour, Pow. Interruption Count.	Alarm Setting	Ghost Screen	Relay Outputs (2 pcs)	Digital Outputs (2 Qty)	Digital Inputs (2 Qty)	Tariff	RS485 (Modbus RTU)	85-300 V DC/DC	X/1& X/5	Panel Mount
KLEA 400R	606700	√	√	√	√	√			√	√	√	√				1	√	√	√	√
KLEA 405	606705	√	√	√	√	√			√	√		√		√	√	2		√	√	√
KLEA 405R	606701	√	√	√	√	√			√	√	√	√		√	√	2	√	√	√	√
KLEA 406R	606702	√	√	√	√	√			√	√	√	√	√	√	√	2	√	√	√	√
KLEA 411R	606706	√	√	√	√	√	√	√	√	√	√	√	√			1	√	√	√	√

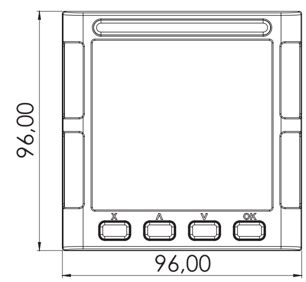
Electronic Products

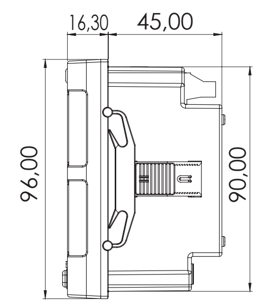
KLEA 5 Series Energy Analyzer

The new KLEA 5 series energy analyzers are devices designed to analyze 3-phase electrical systems. The new KLEA 5 series, which offers 45 mm depth and vertical cable connection, is most suitable for use in narrow panels. It can also be used in remote monitoring projects thanks to the optional Ethernet (Modbus TCP) port in addition to the RS485 (Modbus RTU) interface on the devices. Thanks to their optional digital outputs, pulse outputs can be created according to the measured energy values. Digital inputs can be used as pulse counters or tariff activation.

With the model-based "Gateway Feature", the data of other serial devices connected to KLEA can be transferred to the related platforms without the need for an external gateway.

- 4.2 inch LCD Screen
- IP54 protection class
- 45 mm Depth
- X/1 and X/5 Current Transformer Support
- Current connection terminals with 4mm² cross-section
- High Measurement Accuracy
- RS485 (Modbus RTU) Option
- Ethernet (Modbus TCP) Option
- 2 SPST Relay Output Options
- 2 Digital Input/Output Options
- Free user interface software





Product Name	Order No	V, C, F	P, Q, S, PF	Min / Max Data Logging	4Q. Energy Measur.	4Q Reactive Energy Monit.	THD	Individual Harmonics (up to 31st)	Demand	On Hour, Run Hour, Power Interruption Counters	Alarm Setting	LCD Screen	RO (2 pcs)	DO (2 pcs)	DI (2 pcs)	Tariff	RS485 (Modbus RTU)	Ethernet (Modbus TCP)	Gateway Feature	85-300 V DC/ DC	X/1 & X/5	Panel Mount
KLEA 500R	606703	√	√	√	√	√	√	√	√	√	√	√				1	√			√	√	√
KLEA 506R	606704	√	√	√	√	√	√	√	√	√	√	√	√	√	√	3	√			√	√	√
KLEA 500RE	606707	√	√	√	√	√	√	√	√	√	√	√				1	√	√		√	√	√
KLEA 506RE	606708	√	√	√	√	√	√	√	√	√	√	√	√	√	√	3	√	√		√	√	√
KLEA 516RE	606709	√	√	√	√	√	√	√	√	√	√	√	√	√	√	3	√	√	√	√	√	√

KLEA 1-2-3 Series Energy Analyzer





Type			KLEA 320P	KLEA 370P	KLEA 322P	KLEA 324P	KLEA 320P-D
Definiton			3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer
Order Number			606100	606101	606102	606103	606130
General	Seven Segment Display		-	-	-	-	-
	LCD		Available	Available	Available	Available	Available
	Language Support		Turkish, English, Russian	Turkish, English, Russian	Turkish, English, Russian	Turkish, English, Russian	Turkish, English, Russian
	Battery		Available	Available	Available	Available	Available
	Real Time Clock		Available	Available	Available	Available	Available
	Password Protection		Available	Available	Available	Available	Available
	Current Transformer Ratio		1-5000	1-5000	1-5000	1-5000	1-5000
	Voltage Transformer Ratio		1-5000	1-5000	1-5000	1-5000	1-5000
	Demand Period		1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable
	Connection Type		3P4W, 3P3W, Aron	3P4W, 3P3W, Aron	3P4W, 3P3W, Aron	3P4W, 3P3W, Aron	3P4W, 3P3W, Aron
	Measurement in Quadrants		4	4	4	4	4
	Number of Measurement in a period		512	512	512	512	512
	LCD/Display Refresh Period		1 sec	1 sec	1 sec	1 sec	1 sec
	Networks		TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT
	Phasor Diagram		Available	Available	Available	Available	Available
	Signal Waveforms		Available	Available	Available	Available	Available
	Min/Max/Demand Values		Available	Available	Available	Available	Available
Energy Measurement	Number of Tariffs		2	2	2	2	2
	Multi Sub-Tariffs (Peak, Day and Off-Peak)		Available	Available	Available	Available	Available
	1Ø Phase Energy Meters		Available	Available	Available	Available	Available
	3Ø Phase Energy Meters		Available	Available	Available	Available	Available
	4-Quadrant Reactive Energy Meters		-	-	-	-	Available
Current Measurement Input	Measurement Range		10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC
	Overvoltage Category		300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II
	Measurement Surge Voltage		2 kV	2 kV	2 kV	2 kV	2 kV
	Power Consumption		<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA
	intermittent overload		100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec
	Sampling Freq.between 45-65 Hz		25,6 kHz	25,6 kHz	25,6 kHz	25,6 kHz	25,6 kHz
Voltage Measurement Input	Overvoltage Category		300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III
	Measured Range L-N		1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms
	Measured Range L-L		2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms
	Measured Frequency Range		45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz
	Power Consumption		<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA
	Sampling Freq.between 45-65 Hz		25,6 kHz	25,6 kHz	25,6 kHz	25,6 kHz	25,6 kHz
Power Quality Measurements	Harmonics for current and voltage phases		Upto 51st	Upto 51st	Upto 51st	Upto 51st	Upto 51st
	THD-Voltage in %		Available	Available	Available	Available	Available
	THD-Current in %		Available	Available	Available	Available	Available
Other Measurements	Run Hour (Operating time for load in hours)		Available	Available	Available	Available	Available
	On Hour (Operating time for meter in hours)		Available	Available	Available	Available	Available
	Int Counter (Number of power interruptions)		Available	Available	Available	Available	Available
Measurement Accuracy	According to IEC 61557-12	Total Active Power	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Total Reactive Power	Class 1	Class 1	Class 1	Class 1	Class 1
		Total Apparent Power	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Total Active Energy	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Total Reactive Energy	Class 2	Class 2	Class 2	Class 2	Class 2
		Frequency	Class 0.05	Class 0.05	Class 0.05	Class 0.05	Class 0.05
		Current	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Neutral Current (calculated)	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Voltage	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Power factor	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		THDV, THDI	Class 1	Class 1	Class 1	Class 1	Class 1
	According to IEC 62053-22	Total Active Energy	Class 0.2S	Class 0.2S	Class 0.2S	Class 0.2S	Class 0.2S
	Accoding to IEC 62053-23	Total Reactive Energy	Class 2	Class 2	Class 2	Class 2	Class 2

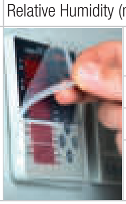
KLEA 1-2-3 Series Energy Analyzer

KLEA 370P-D	KLEA 220P	KLEA 110P	KLEA-370P-VSM	KLEA-320P-DC	KLEA-220P-DC	KLEA 220P-B
3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer
606131	606160	606180	606121	606150	606190	606163
-	-	Available	-	-	-	-
Available	Available	-	Available	Available	Available	Available
Turkish, English, Russian	-	-	Turkish, English, Russian	Turkish, English, Russian	-	-
Available	-	-	Available	Available	-	-
Available	-	-	Available	Available	-	-
Available	Available	Available	Available	Available	Available	Available
1-5000	1-5000	1-5000	1 - 5.000	1 - 5.000	1 - 5.000	1-5000
1-5000	1-5000	1-5000	1 - 5.000	1 - 5.000	1 - 5.000	1-5000
1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable
3P4W, 3P3W, Aron	3P4W, 3P3W	3P4W, 3P3W	3P4W, 3P3W, Aron	3P4W, 3P3W, Aron	3P4W, 3P3W	3P4W, 3P3W
4	4	4	4	4	4	4
512	256	256	512	512	256	256
1 sec	1 sec	1 sec	1 sec	1 sec	1 sec	1 sec
TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT
Available	-	-	Available	Available	-	-
Available	-	-	Available	Available	-	-
Available	Available	Available	Available	Available	Available	Available
2	2	2	2 + 7 different energy meters	2	2	1
Available	-	-	Available	Available	-	-
Available	-	-	Available	Available	-	-
Available	Available	Available	Available	Available	Available	Available
Available	-	-	-	-	-	-
10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC
300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II
2 kV	2 kV	2 kV	2 kV	2 kV	2 kV	2 kV
<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA
100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec
25,6 kHz	12,8 kHz	12,8 kHz	25,6 kHz	25,6 kHz	12,8 kHz	12,8 kHz
300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III
1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms
2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms
45-65 Hz	45-65 Hz	45-65 Hz	45...65 Hz	45...65 Hz	45...65 Hz	45-65 Hz
<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA
25,6 kHz	12,8 kHz	12,8 kHz	25,6 kHz	25,6 kHz	12,8 kHz	12,8 kHz
Upto 51st	Upto 31st	Upto 31st	Upto 51st	Upto 51st	Upto 31st	Upto 31st
Available	Available	Available	Available	Available	Available	Available
Available	Available	Available	Available	Available	Available	Available
Available	Available	Available	Available	Available	Available	Available
Available	Available	Available	Available	Available	Available	Available
Available	Available	Available	Available	Available	Available	Available
Class 0.2	Class 0.5	Class 0.5	Class 0.2	Class 0.2	Class 0.5	Class 0.5
Class 1	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Class 0.2	Class 0.5	Class 0.5	Class 0.2	Class 0.2	Class 0.5	Class 0.5
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 2	Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
Class 0.05	Class 0.1	Class 0.1	Class 0.05	Class 0.05	Class 0.1	Class 0.1
Class 0.2	Class 0.5	Class 0.5	Class 0.2	Class 0.2	Class 0.5	Class 0.5
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 1	Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Class 0.2S	Class 0.5S	Class 0.5S	Class 0.2S	Class 0.2S	Class 0.5S	Class 0.5S
Class 2	Class 2	Class 2	Class 2	Class 2	Class 2	Class 2

Electronic Products

KLEA 1-2-3 Series Energy Analyzer

Type			KLEA 320P	KLEA 370P	KLEA 322P	KLEA 324P	KLEA 320P-D
Inputs and Outputs	Alarm Relay Outputs	Number of outputs	2 pcs.	2 pcs.	2 pcs.	2 pcs.	2 pcs.
		Type	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)
		Max. Switching Current	5 A	5 A	5 A	5 A	5 A
		Max. Switching Voltage	250 V AC	250 V AC	250 V AC	250 V AC	250 V AC
		Max. Switching Power	1250 VA	1250 VA	1250 VA	1250 VA	1250 VA
Inputs and Outputs	Digital Inputs	Number of inputs	2 pcs.	7 pcs.	2 pcs.	2 pcs.	2 pcs.
		Frequency	100 Hz, 10 ms	100 Hz, 10 ms	100 Hz, 10 ms	100 Hz, 10 ms	100 Hz, 10 ms
		Input Present or Not	Dry Contact	Dry Contact	Dry Contact	Dry Contact	Dry Contact
		Isolation Level	5000 Vrms	5000 Vrms	5000 Vrms	5000 Vrms	5000 Vrms
	Digital Outputs	Number of outputs	2 pcs.	7 pcs.	2 pcs.	2 pcs.	2 pcs.
		Output type	Transistor	Transistor	Transistor	Transistor	Transistor
		Switching Voltage Range	5-30 VDC	5-30 VDC	5-30 VDC	5-30 VDC	5-30 VDC
		Frequency	20 Hz, 50 ms	20 Hz, 50 ms	20 Hz, 50 ms	20 Hz, 50 ms	20 Hz, 50 ms
		Isolation Level	5000 Vrms	5000 Vrms	5000 Vrms	5000 Vrms	5000 Vrms
	Analog Outputs	Range of Outputs 0-5 V, 0-10 V, -5-5 V, -10-10V, 0-20 mA, 4-20 mA	-	-	2	4	-
		Isolation	-	-	Available	Available	-
Supply	Voltage	AC	85-300V	85-300V	85-300V	85-300V	85-300V
		DC	85-300V	85-300V	85-300V	85-300V	85-300V
	Consumption	AC	< 3VA	< 3VA	< 3VA	< 3VA	< 3VA
		DC	<2.5W	<2.5W	<2.5W	<2.5W	<2.5W
	Frequency		45-65Hz	45-65Hz	45-65Hz	45-65Hz	45-65Hz
Data Logging with timestamp	Min/max/avg Values	Hourly records	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters
		Daily records	240 days x 68 different paramaters	240 days x 68 different paramaters	240 days x 68 different paramaters	240 days x 68 different paramaters	240 days x 68 different paramaters
		Monthly records	36 months x 68 different parameters	36 months x 68 different parameters	36 months x 68 different parameters	36 months x 68 different parameters	36 months x 68 different parameters
	Demand		4 months x 16 different parameters	4 months x 16 different parameters	4 months x 16 different parameters	4 months x 16 different parameters	4 months x 16 different parameters
	Alarm records		50	50	50	50	50
Communication	Protocol		Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU
	Baud rate		2400-115200 bps adjustable	2400-115200 bps adjustable	2400-115200 bps adjustable	2400-115200 bps adjustable	2400-115200 bps adjustable
	Parity number		None	None	None	None	None
	Stop bit		1	1	1	1	1
	Address		1-247	1-247	1-247	1-247	1-247
	Isolation		2750V RMS	2750V RMS	2750V RMS	2750V RMS	2750V RMS
Mechanical Properties	Weight(g)		404	428	428	428	404
	Protection Class		Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)
	Assembly Type		Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount
Cable Cross Sections	Supply, Voltage, Current, Relay Outputs	Stranded	2,5 mm^2 - 14AWG	2,5 mm^2 - 14AWG	2,5 mm^2 - 14AWG	2,5 mm^2 - 14AWG	2,5 mm^2 - 14AWG
		Solid	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG
	Digital I/O, RS 485, Analog Output	Stranded	1,5 mm^2-16AWG	1,5 mm^2-16AWG	1,5 mm^2-16AWG	1,5 mm^2-16AWG	1,5 mm^2-16AWG
		Solid	1.5 mm^2-16 AWG, 2x0.75 mm^2-2x18 AWG	1.5 mm^2-16 AWG, 2x0.75 mm^2-2x18 AWG	1.5 mm^2-16 AWG, 2x0.75 mm^2-2x18 AWG	1.5 mm^2-16 AWG, 2x0.75 mm^2-2x18 AWG	1.5 mm^2-16 AWG, 2x0.75 mm^2-2x18 AWG
Ambient Conditions	Operating Temperature		-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C
	Storage Temperature		-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C
	Relative Humidity (no condensation)		Max.95%	Max.95%	Max.95%	Max.95%	Max.95%
Accessories		Type	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)
		Definition	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER
		Order Number	250 001	250 001	250 001	250 001	250 001
		Packaging unit	2	2	2	2	2

KLEA 1-2-3 Series Energy Analyzer

KLEA 370P-D	KLEA 220P	KLEA 110P	KLEA-370P-VSM	KLEA-320P-DC	KLEA-220P-DC	KLEA 220P-B
2 pcs.	2 pcs.	2 pcs.	2 pcs.	2 pcs.	2 pcs.	-
NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)	-
5 A	10 A AC / 5 A DC	10 A AC / 5 A DC	5 A	5 A	10 A AC / 5 A DC	-
250 V AC	250 V AC / 30 V DC	250 V AC / 30 V DC	250 V AC	250 V AC	250 V AC / 30 V DC	-
1250 VA	1250 VA / 150 W	1250 VA / 150 W	1250 VA	1250 VA	1250 VA / 150 W	-
2 pcs.	2 pcs.	1 pc.	7 pcs.	2 pcs.	2 pcs.	-
100 Hz, 10 ms	100 Hz, 10 ms	100 Hz, 10 ms	100 Hz, 10 ms	100 Hz, 10 ms	100 Hz, 10 ms	-
Dry Contact	Dry Contact	Dry Contact	Dry Contact	Dry Contact	Dry Contact	-
5000 Vrms	5000 Vrms	5000 Vrms	5000 Vrms	5000 Vrms	5000 Vrms	-
2 pcs.	2 pcs.	2 pcs.	7 pcs.	2 pcs.	2 pcs.	-
Transistor	Transistor	Transistor	Transistor	Transistor	Transistor	-
5-30 VDC	5-30 VDC	5-30 VDC	5-30 VDC	5-30 VDC	5-30 VDC	-
20 Hz, 50 ms	20 Hz, 50 ms	20 Hz, 50 ms	5000 Vrms	5000 Vrms	5000 Vrms	-
5000 Vrms	5000 Vrms	5000 Vrms	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
85-300V	85-300V	85-300V	85-300V	-	-	85-300V
85-300V	85-300V	85-300V	85-300V	18-60VDC	18-60VDC	85-300V
< 3VA	<4.5VA	<6VA	< 3VA	-	-	<4.5VA
<2.5W	<2W	<3W	<2.5W	<2.5W	<2.2W	<2W
45-65Hz	45-65Hz	45-65Hz	45-65Hz	-	-	45-65Hz
1920 hours x 68 different paramaters	-	-	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters	-	-
240 days x 68 different paramaters	-	-	240 days x 68 different paramaters	240 days x 68 different paramaters	-	-
36 months x 68 different parameters	-	-	36 months x 68 different parameters	36 months x 68 different parameters	-	-
4 months x 16 different parameters	-	-	4 months x 16 different parameters	4 months x 16 different parameters	-	-
50	-	-	50	50	-	-
Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU
2400-115200 bps adjustable	1200-57600 bps adjustable	1200-57600 bps adjustable	2400-115200 bps adjustable	2400-115200 bps adjustable	1200-57600 bps adjustable	1200-57600 bps adjustable
None	Odd, Even, None	Odd, Even, None	Odd,Even,None	Odd,Even,None	Odd,Even,None	Odd, Even, None
1	1	1	1	1	1	1
1-247	1-247	1-247	1-247	1-247	1-247	1-247
2750V RMS	2750V RMS	2750V RMS	2750V RMS	2750V RMS	2750V RMS	2750V RMS
428	378	323	428	428	378	378
Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)
Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount
2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2.5mm² - 14AWG	2.5mm² - 14AWG	2.5mm² - 14AWG	2,5 mm² - 14AWG
4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG
1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG
1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²- 2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²- 2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²- 2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG
-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C
-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30°C +80°C	-30°C +80°C	-30°C +80°C	-30 to +80 °C
Max.95%	Max.95%	Max.95%	Maks. 95%	Maks. 95%	Maks. 95%	Max.95%
IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)
SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER
250 001	250 001	250 001	250 001	250 001	250 001	250 001
2	2	2	2	2	2	2

ECRAS 1-2 Multimeter Series



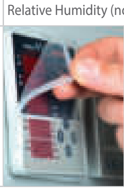


Type			ECRAS 100	ECRAS 120	ECRAS 200	ECRAS 220	ECRAS 100 VCF
Defniton			3Ø Multimeter	3Ø Multimeter	3Ø Multimeter	3Ø Multimeter	3Ø Multimeter
Order Number			606210	606211	606212	606213	606218
General	Seven Segment Display		Available	Available	Available	Available	Available
	LCD		-	-	-	-	-
	Language Support		-	-	-	-	-
	Battery		-	-	-	-	-
	Real Time Clock		-	-	-	-	-
	Password Protection		Available	Available	Available	Available	Available
	Current Transformer Ratio		1-5000	1-5000	1-5000	1-5000	1 - 5.000
	Voltage Transformer Ratio		1-5000	1-5000	1-5000	1-5000	1 - 5.000
	Demand Period		1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	-
	Connection Type		3P4W, 3P3W	3P4W, 3P3W	3P4W, 3P3W	3P4W, 3P3W	3P4W, 3P3W
	Measurement in Quadrants		4	4	4	4	-
	Number of Measurement in a period		256	256	256	256	256
	LCD/Display Refresh Period		1 sec	1 sec	1 sec	1 sec	1 sec.
	Networks		TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT
	Phasor Diagram		-	-	-	-	-
	Signal Waveforms		-	-	-	-	-
	Min/Max/Demand Values		Available	Available	Available	Available	-
Energy Measurement	Number of Tariffs		1	1	1	1	-
	Multi Sub-Tariffs(Peak, Day and Off-Peak)		-	-	-	-	-
	1Ø Phase Energy Meters		Available	Available	Available	Available	-
	3Ø Phase Energy Meters		Available	Available	Available	Available	Available
	4-Quadrant Reactive Energy Meters		-	-	-	-	-
Current Measurement Input	Measurement Range		10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC
	Overvoltage Category		300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II
	Measurement Surge Voltage		2 kV	2 kV	2 kV	2 kV	2 kV
	Power Consumption		<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA
	intermittent overload		100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec
	Sampling Freq.between 45-65 Hz		12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz
Voltage Measurement Input	Overvoltage Category		300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III
	Measured Range L-N		1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms
	Measured Range L-L		2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms
	Measured Frequency Range		45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz
	Power Consumption		<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA
	Sampling Freq.between 45-65 Hz		12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz
Power Quality Measurements	Harmonics for current and voltage phases		Upto 31st	Upto 31st	Upto 31st	Upto 31st	-
	THD-Voltage in %		Available	Available	Available	Available	-
	THD-Current in %		Available	Available	Available	Available	-
Other Measurements	Run Hour (Operating time for load in hours)		Available	Available	Available	Available	-
	On Hour (Operating time for meter in hours)		Available	Available	Available	Available	-
	Int Counter (Number of power interruptions)		Available	Available	Available	Available	-
Measurement Accuracy	According to IEC 61557-12	Total Active Power	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Total Reactive Power	Class 1	Class 1	Class 1	Class 1	Class 1
		Total Apparent Power	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Total Active Energy	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Total Reactive Energy	Class 2	Class 2	Class 2	Class 2	Class 2
		Frequency	Class 0.1	Class 0.1	Class 0.1	Class 0.1	Class 0.1
		Current	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Neutral Current (calculated)	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Voltage	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Power factor	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		THDV, THDI	Class 1	Class 1	Class 1	Class 1	Class 1
	According to IEC 62053-22	Total Active Energy	Class 0.5S	Class 0.5S	Class 0.5S	Class 0.5S	Class 0.5S
	Accoding to IEC 62053-23	Total Reactive Energy	Class 2	Class 2	Class 2	Class 2	Class 2
Inputs and Outputs	Alarm Relay Outputs	Number of outputs	-	2 pcs.	-	2 pcs.	-
		Type		NO (SPST)		NO (SPST)	-
		Max. Switching Current	-	10 A AC / 5 A DC	-	10 A AC / 5 A DC	-
		Max. Switching Voltage	-	250 V AC / 30 V DC	-	250 V AC / 30 V DC	-
		Max. Switching Power	-	1250 VA / 150 W	-	1250 VA / 150 W	-

ECRAS 1-2 Multimeter Series





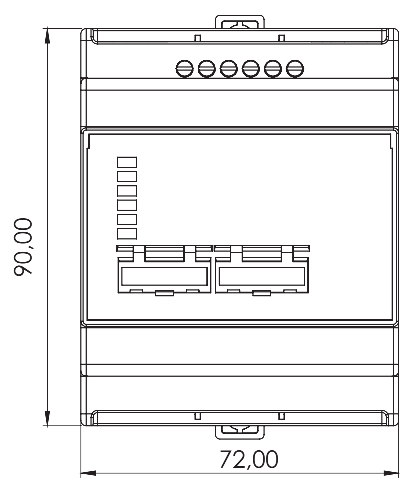
Type			ECRAS 100	ECRAS 120	ECRAS 200	ECRAS 220	ECRAS 100 VCF
Inputs and Outputs	Digital Inputs	Number of inputs	-	-	-	-	-
		Minimum Counting Frequency	-	-	-	-	-
		Input Present or Not	-	-	-	-	-
		Isolation Level	-	-	-	-	-
	Digital Outputs	Number of outputs	-	-	-	-	-
		Type	-	-	-	-	-
		Switching Voltage Range	-	-	-	-	-
		Minimum Switching Frequency	-	-	-	-	-
		Isolation Level	-	-	-	-	-
	Analog Outputs	Number of outputs	-	-	-	-	-
		Range of Outputs 0-5 V, 0-10 V, -5-5 V, -10-10V, 0-20 mA, 4-20 mA	-	-	-	-	-
		Isolation	-	-	-	-	85-300V
Supply	Voltage	AC	85-300V	85-300V	85-300V	85-300V	85-300V
		DC	85-300V	85-300V	85-300V	85-300V	85-300V
	Consumption	AC	<6VA	<6VA	<6VA	<6VA	<6VA
		DC	<3W	<3W	<3W	<3W	<3W
	Frequency		45-65Hz	45-65Hz	45-65Hz	45-65Hz	45-65Hz
Data Logging with timestamp	Min/max/avg Values	Hourly records	-	-	-	-	-
		Daily records	-	-	-	-	-
		Monthly records	-	-	-	-	-
	Demand		-	-	-	-	-
	Alarm records		-	-	-	-	-
Communication	Protocol		-	-	Modbus RTU	Modbus RTU	-
	Baud rate		-	-	1200-57600 bps adjustable	1200-57600 bps adjustable	-
	Parity number		-	-	Odd, Even, None	Odd, Even, None	-
	Stop bit		-	-	1	1	-
	Address		-	-	1-247	1-247	-
	Isolation		-	-	2750V RMS	2750V RMS	-
Mechanical Properties	Weight(g)		272	290	296	316	221
	Protection Class		Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)
	Assembly Type		Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount
Cable Cross Sections	Supply, Voltage, Current, Relay Outputs	Stranded:	2,5 mm^2 - 14AWG	2,5 mm^2 - 14AWG	2,5 mm^2 - 14AWG	2,5 mm^2 - 14AWG	2.5mm^2 - 14AWG
		Solid:	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG	4mm^2-12 AWG, 2x1.5 mm^2-2x16 AWG	4mm^2 - 12AWG, 2x1.5mm^2 - 2x16AWG
	Digital I/O, RS 485, Analog Output	Stranded:	-	-	1,5 mm^2-16AWG	1,5 mm^2-16AWG	-
		Solid:	-	-	1.5 mm^2-16 AWG, 2x0.75 mm^2-2x18 AWG	1.5 mm^2-16 AWG, 2x0.75 mm^2-2x18 AWG	-
Ambient Conditions	Operating Temperature		-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C
	Storage Temperature		-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30°C +80°C
	Relative Humidity (no condensation)		Max.95%	Max.95%	Max.95%	Max.95%	Maks. 95%
Accessories		Type	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)
		Definition	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER
		Order Number	250 001	250 001	250 001	250 001	250 001
		Packaging unit	2	2	2	2	2

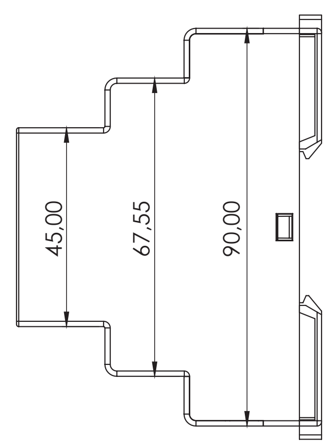
POWYS 4-5-6 Series Energy Analyzers

The POWYS series power analyzers, designed in new enclosures with widths of 72mm and 126mm, are devices intended for analyzing three-phase electrical systems. Offering users options of screenless, 7-segment, and LCDs, the POWYS series provides a competitive solution through its screenless models and free user interface software. Equipped with an RS485 (Modbus RTU) interface, the devices provide data for remote monitoring projects. Communication settings can be easily configured via the dip switches located on the top cover.

With optional digital outputs, pulse signals can be generated based on the measured energy values. The digital inputs can be used as pulse counters or tariff activations. Through alarm relay outputs, alarm management can be established without the need for additional devices.

- Screenless, 7 segment, and LCD options
- Options for enclosure widths of 72 mm and 126 mm
- Support for x/1 and x/5 Current Transformer
- High Measurement Accuracy
- RS485 (Modbus RTU) Option
- 2 SPST Relay Output Options
- 2 Digital Input/Output Options
- Free user interface software





POWYS 4-5-6 Series Energy Analyzers

Product Name	Order No	V, C, F	P, Q, S, PF	Min / Max Data Logging	4Q. Energy Measur.	4Q Reactive Energy Monit.	THD	Individual Harmonics (up to 31st)	Demand	On Hour, Run Hour, Power Interruption Counters	Alarm Setting	Screnless	7 Segment	LCD Screen	RO (2 pcs)	DO (2 pcs)	DI (2 pcs)	Tariff	RS485 (Modbus RTU)	85-300 V DC/DC	X/1 & X/5	Rail Mount
POWYS 400R	606600	√	√	√	√	√	√	√	√	√	√	√						2	√	√	√	√
POWYS 405R	606601	√	√	√	√	√	√	√	√	√	√	√				√	√	2	√	√	√	√
POWYS 506RD	606602	√	√	√	√	√			√	√	√	√			√	√	√	2	√	√	√	√
POWYS 506RS	606603	√	√	√	√	√			√	√	√		√		√	√	√	2	√	√	√	√
POWYS 606R	606604	√	√	√	√	√	√	√	√	√	√			√	√	√	√	3	√	√	√	√

Electronic Products

POWYS 1-3 Series Energy Analyzers

Type			DNPT	DNPT-B	POWYS 3121	POWYS 3111	POWYS 3101
Definiton			3Ø Power Transducer	3Ø Power Transducer	3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer
Order Number			606400	606 401	606305	606304	606303
General	Seven Segment Display		-	-	-	Available	-
	LCD		-	-	Available	-	-
	Language Support		-	-	-	-	-
	Battery		Available	Available	-	-	-
	Real Time Clock		Available	Available	-	-	-
	Password Protection		-	-	Available	Available	Available
	Current Transformer Ratio		1-5000	1-5000	1-5000	1-5000	1-5000
	Voltage Transformer Ratio		1-5000	1-5000	1-5000	1-5000	1-5000
	Demand Period		1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable
	Measurement in Quadrants		4	4	4	4	4
	Number of Measurement in a period		512	512	256	256	256
	LCD/Display Refresh Period		-	-	1 sec	1 sec	-
	Network		TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT
	Wiring		3P4W, 3P3W, Aron	3P4W, 3P3W, Aron	3P4W, 3P3W	3P4W, 3P3W	3P4W, 3P3W
	Phasor Diagram		-	-	-	-	-
	Signal Waveforms		-	-	-	-	-
	Min/Max/Demand Values		Available	Available	Available	Available	Available
Energy Measurement	Number of Tariffs		2	2	2	2	2
	Multi Sub-Tariffs(Peak, Day and Off-Peak)		Available	Available	-	-	-
	1Ø Phase Energy Meters		-	-	Available	Available	Available
	3Ø Phase Energy Meters		Available	Available	Available	Available	Available
	4 Quadrant Reactive Energy Meters		-	-	-	-	-
Current Measurement Input	Measurement Range		10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC
	Overvoltage Category		300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II
	Measurement Surge Voltage		2 kV	2 kV	2 kV	2 kV	2 kV
	Power Consumption		<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA
	intermittent overload		100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec
	Sampling Freq.between 45-65 Hz		25.6 kHz	25.6 kHz	12,8 kHz	12,8 kHz	12,8 kHz
Voltage Measurement Input	Overvoltage Category		300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III
	Measured Range L-N		1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms	1-300 Vrms
	Measured Range L-L		2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms	2-500 Vrms
	Measured Frequency Range		45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz
	Power Consumption		<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA
	Sampling Freq.between 45-65 Hz		25.6 kHz	25.6 kHz	12,8 kHz	12,8 kHz	12,8 kHz
Power Quality Measurements	Harmonics for current and voltage phases		Upto 51st	Upto 51st	Upto 31st	Upto 31st	Upto 31st
	THD-Voltage in %		Available	Available	Available	Available	Available
	THD-Current in %		Available	Available	Available	Available	Available
Other Measurements	Run Hour (Operating time for load in hours)		-	-	Available	Available	Available
	On Hour (Operating time for meter in hours)		-	-	Available	Available	Available
	Int Counter (Number of power interruptions)		-	-	Available	Available	Available
Measurement Accuracy	According to IEC 61557-12	Total Active Power	Class 0.2	Class 0.2	Class 0.5	Class 0.5	Class 0.5
		Total Reactive Power	Class 1	Class 1	Class 1	Class 1	Class 1
		Total Apparent Power	Class 0.2	Class 0.2	Class 0.5	Class 0.5	Class 0.5
		Total Active Energy	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Total Reactive Energy	Class 2	Class 2	Class 2	Class 2	Class 2
		Frequency	Class 0.05	Class 0.05	Class 0.1	Class 0.1	Class 0.1
		Current	Class 0.2	Class 0.2	Class 0.5	Class 0.5	Class 0.5
		Neutral Current	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Voltage	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Power factor	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		THDV, THDI	Class 1	Class 1	Class 1	Class 1	Class 1
	According to IEC 62053-22	Total Active Energy	Class 0.2S	Class 0.2S	Class 0.5S	Class 0.5S	Class 0.5S
	According to IEC 62053-23	Total Reactive Energy	Class 2	Class 2	Class 2	Class 2	Class 2

POWYS 1-3 Series Energy Analyzers





POWYS 3100	POWYS 1110	POWYS 1120	POWYS 1012	POWYS 1022
3Ø Energy Analyzer	1Ø Energy Analyzer	1Ø Energy Analyzer	1Ø Energy Analyzer	1Ø Energy Analyzer
606300	606351	606352	606354	606355
-	Available	-	Available	-
-	-	Available	-	Available
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
Available	Available	Available	Available	Available
1-5000	1-5000	1-5000	1-5000	1-5000
1-5000	1-5000	1-5000	1-5000	1-5000
1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable
4	4	4	4	4
256	256	256	256	256
-	1 sec	1 sec	1 sec	1 sec
TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT
3P4W, 3P3W	Single-phase with neutral and 1 CT	Single-phase with neutral and 1 CT	Single-phase with neutral and 1 CT	Single-phase with neutral and 1 CT
-	-	-	-	-
-	-	-	-	-
Available	Available	Available	Available	Available
1	1	1	1	1
-	-	-	-	-
Available	Available	Available	Available	Available
Available	-	-	-	-
-	-	-	-	-
10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC
300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II
2 kV	2 kV	2 kV	2 kV	2 kV
<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA
100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec
12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz
300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III
1-300 Vrms	10-500 Vrms	10-500 Vrms	10-500 Vrms	10-500 Vrms
2-500 Vrms	-	-	-	-
45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz
<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA
12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz
Upto 31st	Upto 31st	Upto 31st	Upto 31st	Upto 31st
Available	Available	Available	Available	Available
Available	Available	Available	Available	Available
Available	Available	Available	Available	Available
Available	Available	Available	Available	Available
Available	Available	Available	Available	Available
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 1	Class 1	Class 1	Class 1	Class 1
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 2	Class 2	Class 2	Class 2	Class 2
Class 0.1	Class 0.1	Class 0.1	Class 0.1	Class 0.1
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 1	Class 1	Class 1	Class 1	Class 1
Class 0.5S	Class 0.5S	Class 0.5S	Class 0.5S	Class 0.5S
Class 2	Class 2	Class 2	Class 2	Class 2

POWYS 1-3 Series Energy Analyzers

Type			DNPT	DNPT-B	POWYS 3121	POWYS 3111	POWYS 3101
Inputs and Outputs	Alarm Relay Outputs	Number of outputs	2 pcs.	-	2 pcs.	2 pcs.	2 pcs.
		Type	NO (SPST)	-	NO (SPST)	NO (SPST)	NO (SPST)
		Max. Switching Current	5 A	-	10 A AC / 5 A DC	10 A AC / 5 A DC	10 A AC / 5 A DC
		Max. Switching Voltage	250 V AC	-	250 V AC / 30 V DC	250 V AC / 30 V DC	250 V AC / 30 V DC
		Max. Switching Power	1250 VA	-	1250 VA / 150 W	1250 VA / 150 W	1250 VA / 150 W
	Digital Inputs	Number of inputs	2 pcs.	-	2 pcs.	2 pcs.	2 pcs.
		Minimum Counting Frequency	100 Hz, 10 ms	-	100 Hz, 10 ms	100 Hz, 10 ms	100 Hz, 10 ms
		Input Present or Not	Dry Contact	-	Dry Contact	Dry Contact	Dry Contact
		Isolation Level	5000 Vrms	-	5000 Vrms	5000 Vrms	5000 Vrms
	Digital Outputs	Number of outputs	2 pcs.	-	2 pcs.	2 pcs.	2 pcs.
		Type	Transistor	-	Transistor	Transistor	Transistor
		Switching Voltage Range	5-30 VDC	-	5-30 VDC	5-30 VDC	5-30 VDC
		Minimum Switching Frequency	20 Hz, 50 ms	-	20 Hz, 50 ms	20 Hz, 50 ms	20 Hz, 50 ms
		Isolation Level	5000 Vrms	-	5000 Vrms	5000 Vrms	5000 Vrms
	Analog Outputs	Number of outputs	4	-	-	-	-
		Range of Outputs 0-5 V, 0-10 V, -5-5 V, -10-10V, 0-20 mA, 4-20 mA	Available	-	-	-	-
		Isolation	isolated		-	-	-
Supply	Voltage	AC	85-300V	85-300V	85-300V	85-300V	85-300V
		DC	85-300V	85-300V	85-300V	85-300V	85-300V
	Consumption	AC	< 3VA	< 3VA	<4.5VA	<6VA	<6VA
		DC	<2.5W	<2.5W	<2W	<3W	<3W
	Frequency		45-65Hz	45-65Hz	45-65Hz	45-65Hz	45-65Hz
Data Logging with timestamp	Min/max/avg Values	Hourly records	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters	-	-	-
		Daily records	240 days x 68 different paramaters	240 days x 68 different paramaters	-	-	-
		Monthly records	36 months x 68 different parameters	36 months x 68 different parameters	-	-	-
	Demand		4 months x 16 different parameters	4 months x 16 different parameters	-	-	-
	Alarm records		50	50	-	-	-
Communication	Protocol		Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU
	Baud rate		2400-115200 bps adjustable	2400-115200 bps adjustable	1200-57600 bps adjustable	1200-57600 bps adjustable	1200-57600 bps adjustable
	Parity number		None	None	Odd, Even, None	Odd, Even, None	Odd, Even, None
	Stop bit		1	1	1	1	1
	Address		1-247	1-247	1-247	1-247	1-247
	Isolation		2750V RMS	2750V RMS	2750V RMS	2750V RMS	2750V RMS
Mechanical Properties	Weight(g)		335	335	340	330	278
	Protection Class		IP20	IP20	IP20	IP20	IP20
	Assembly Type		Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount
Cable Cross Sections	Supply, Voltage, Current, Relay Outputs	Stranded:	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG
		Solid:	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG
	Digital I/O, RS 485, Analog Output	Stranded:	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG
		Solid:	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG
Ambient Conditions	Operating Temperature		-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C
	Storage Temperature		-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C
	Relative Humidity (no condensation)		Max.95%	Max.95%	Max.95%	Max.95%	Max.95%

POWYS 3100	POWYS 1110	POWYS 1120	POWYS 1012	POWYS 1022
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	2 pcs.	2 pcs.
-	-	-	Transistor	Transistor
-	-	-	5-30 VDC	5-30 VDC
-	-	-	20 Hz, 50 ms	20 Hz, 50 ms
-	-	-	5000 Vrms	5000 Vrms
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
85-300V	85-300V	85-300V	85-300V	85-300V
85-300V	85-300V	85-300V	85-300V	85-300V
<6VA	<4VA	<4VA	<4VA	<4VA
<3W				
45-65Hz	45-65Hz	45-65Hz	45-65Hz	45-65Hz
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
Modbus RTU	Modbus RTU	Modbus RTU	-	-
1200-57600 bps adjustable	1200-57600 bps adjustable	1200-57600 bps adjustable	-	-
Odd, Even, None	Odd, Even, None	Odd, Even, None	-	-
1	1	1	-	-
1-247	1-247	1-247	-	-
2750V RMS	2750V RMS	2750V RMS	-	-
259	135	135	135	135
IP20	IP20	IP20	IP20	IP20
Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount
2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG
4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG
1,5 mm²-16AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG
1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG
-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C
-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C
Max.95%	Max.95%	Max.95%	Max.95%	Max.95%

RAPIDUS Series Power Factor Controllers




Type			RAPIDUS 231R-E	RAPIDUS 211R	RAPIDUS 232R-E	RAPIDUS 212R
Definiton			Power Factor Controller (3Ø-12steps)	Power Factor Controller (1Ø-12steps)	Power Factor Controller (3Ø-24steps)	Power Factor Controller (1Ø-24steps)
Order Number			606005	606011	606007	606014
General	Measuring system		3Ø	1Ø	3Ø	1Ø
	LCD Sreen		Available	Available	Available	Available
	Language Support		Turkish, English, Russian	Turkish, English, Russian	Turkish, English, Russian	Turkish, English, Russian
	Battery		Available	Available	Available	Available
	Real Time Clock		Available	Available	Available	Available
	Password Protection		Available	Available	Available	Available
	Current Transformer Ratio		1-5000	1-5000	1-5000	1-5000
	Voltage Transformer Ratio		1-5000	1-5000	1-5000	1-5000
	Demand Period		1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable	1-60 minutes adjustable
	Connection Type		3P4W	Single phase(L-L or L-N) voltage connection with 1 CT	3P4W	Single phase(L-L or L-N) voltage connection with 1 CT
	Measurement in Quadrants		4	4	4	4
	Number of Measurement in a period		512	512	512	512
	LCD/Display Refresh Period		1 sec	1 sec	1 sec	1 sec
	Networks		TT, TN, IT	TT, TN, IT	TT, TN, IT	TT, TN, IT
	Phasor Diagram		Available	Available	Available	Available
	Signal Waveforms		-	-	-	-
	Min/Max/Demand Values		Available	Available	Available	Available
Control Operations and Functions	Compensation Modes	Rapidus (Intelligent control mode)	Available	Available	Available	Available
		Sequential	Available	Available	Available	Available
		Linear	Available	Available	Available	Available
		Circular	Available	Available	Available	Available
		Manual	Available	Available	Available	Available
	Step Conf igurations	Manually Assign	Available	Available	Available	Available
		Predef ined	1-1-1-1, 1-1-2-2, 1-2-2-4, 1-2-3-3, 1-2-4-4, 1-1-2-4, 1-2-3-4, 1-2-4-8, 1-1-2-3	1-1-1-1, 1-1-2-2, 1-2-2-4, 1-2-3-3, 1-2-4-4, 1-1-2-4, 1-2-3-4, 1-2-4-8, 1-1-2-3	1-1-1-1, 1-1-2-2, 1-2-2-4, 1-2-3-3, 1-2-4-4, 1-1-2-4, 1-2-3-4, 1-2-4-8, 1-1-2-3	1-1-1-1, 1-1-2-2, 1-2-2-4, 1-2-3-3, 1-2-4-4, 1-1-2-4, 1-2-3-4, 1-2-4-8, 1-1-2-3
		DCM	Available	Available	-	-
		Fixed Step Assigment	Available	Available	Available	Available
		Power(kVAr)	0.00-1000 adjustable	0.00-1000 adjustable	0.00-1000 adjustable	0.00-1000 adjustable
		Type	3Ø capacitor,3Ø shunt reactor,1Ø capacitor or 1Ø shunt reactor adjustable	3Ø capacitor, 3Ø shunt reactor adjustable	3Ø capacitor,3Ø shunt reactor,1Ø capacitor or 1Ø shunt reactor adjustable	3Ø capacitor, 3Ø shunt reactor adjustable
	Power factor settings	Target 1 cosØ	0.8cap. to 0.8ind. adjustable	0.8cap. to 0.8ind. adjustable	0.8cap. to 0.8ind. adjustable	0.8cap. to 0.8ind. adjustable
		Target 2 cosØ	0.8cap. to 0.8ind. adjustable	0.8cap. to 0.8ind. adjustable	0.8cap. to 0.8ind. adjustable	0.8cap. to 0.8ind. adjustable
	Learning Step Powers and Connections		Available	Available	Available	Available
	Dual cosØ target		Available	Available	Available	Available
	4 Quadrant operation for generators		Available	Available	Available	Available
	Time delays	Step activation time	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable
		Step deactivation time	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable
		Step discharge time	3-1000 sec adjustable	3-1000 sec adjustable	3-1000 sec adjustable	3-1000 sec adjustable
	Phase shift angle		±45 degree adjustable	±45 degree adjustable	±45 degree adjustable	±45 degree a adjustable
	Averaging time		Off, 5sec, 10sec, 20sec, 30sec, 40sec, 50sec, 60sec adjustable	Off, 5sec, 10sec, 20sec, 30sec, 40sec, 50sec, 60sec adjustable	Off, 5sec, 10sec, 20sec, 30sec, 40sec, 50sec, 60sec adjustable	Off, 5sec, 10sec, 20sec, 30sec, 40sec, 50sec, 60sec adjustable
Energy Meters	Number of Tariffs		1	1	1	1
	Multi Sub-Tariffs(Peak, Day and Off-Peak)		-	-	-	-
	1Ø Phase Energy Meter		-	-	-	-
	3Ø Phase Energy Meters		Available	Available	Available	Available
	4 Quadrant Reactive Energy Meters		-	-	-	-

RAPIDUS Series Power Factor Controllers

RAPIDUS 218R	RAPIDUS 114	RAPIDUS 114R	RAPIDUS 116	RAPIDUS 116R	RAPIDUS 118
Power Factor Controller (1Ø-8steps)	Power Factor Controller (1Ø-4steps)	Power Factor Controller (1Ø-4steps)	Power Factor Controller (1Ø-6steps)	Power Factor Controller (1Ø-6steps)	Power Factor Controller (1Ø-8steps)
606021	606060	606061	606062	606063	606064
1Ø	1Ø	1Ø	1Ø	1Ø	1Ø
Available	Custom LCD	Custom LCD	Custom LCD	Custom LCD	Custom LCD
Turkish, English, Russian	Turkish, English	Turkish, English	Turkish, English	Turkish, English	Turkish, English
Available	-	-	-	-	-
Available	-	-	-	-	-
Available	Available	Available	Available	Available	Available
1-5000	1 - 5.000	1 - 5.000	1 - 5.000	1 - 5.000	1 - 5.000
1-5000	1 - 999.9	1 - 999.9	1 - 999.9	1 - 999.9	1 - 999.9
1-60 minutes adjustable	-	-	-	-	-
Single phase(L-L or L-N) voltage connection with 1 CT	L-L/L-N	L-L/L-N	L-L/L-N	L-L/L-N	L-L/L-N
4	-	-	-	-	-
512	512	512	512	512	512
1 sec	<0.5 sec.	<0.5 sec.	<0.5 sec.	<0.5 sec.	<0.5 sec.
TT, TN, IT	TT, TN	TT, TN	TT, TN	TT, TN	TT, TN
Available	-	-	-	-	-
-	-	-	-	-	-
Available	-	-	-	-	-
Available	Available	Available	Available	Available	Available
Available	-	-	-	-	-
Available	-	-	-	-	-
Available	-	-	-	-	-
Available	Available	Available	Available	Available	Available
Available	Available	Available	Available	Available	Available
1-1-1-1, 1-1-2-2, 1-2-2-4, 1-2-3-3, 1-2-4-4, 1-1-2-4, 1-2-3-4, 1-2-4-8, 1-1-2-3	1-1-1-1, 1-2-2-2, 1-2-4-4	1-1-1-1, 1-2-2-2, 1-2-4-4	1-1-1-1, 1-2-2-2, 1-2-4-4	1-1-1-1, 1-2-2-2, 1-2-4-4	1-1-1-1, 1-2-2-2, 1-2-4-4
Available	-	-	-	-	-
Available	-	-	-	-	-
0.00-1000 adjustable	0.00-1000 adjustable	0.00-1000 adjustable	0.00-1000 adjustable	0.00-1000 adjustable	0.00-1000 adjustable
3Ø capacitor, 3Ø shunt reactor adjustable	3Ø capacitor or 1Ø capacitor	3Ø capacitor or 1Ø capacitor	3Ø capacitor or 1Ø capacitor	3Ø capacitor or 1Ø capacitor	3Ø capacitor or 1Ø capacitor
0.8cap. to 0.8ind. adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable
0.8cap. to 0.8ind. adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable
Available	-	-	-	-	-
Available	Available	Available	Available	Available	Available
Available	-	-	-	-	-
1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable
1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable
3-1000 sec adjustable	3-600 sec adjustable	3-600 sec adjustable	3-600 sec adjustable	3-600 sec adjustable	3-600 sec adjustable
±45 degree adjustable	-	-	-	-	-
Off, 5sec, 10sec, 20sec, 30sec, 40sec, 50sec, 60sec adjustable	-	-	-	-	-
1	1	1	1	1	1
-	-	-	-	-	-
-	Available	Available	Available	Available	Available
Available	-	-	-	-	-
-	-	-	-	-	-

RAPIDUS Series Power Factor Controllers

Type			RAPIDUS 231R-E	RAPIDUS 211R	RAPIDUS 232R-E	RAPIDUS 212R
Current Measurement Input	Measurement Range		10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC
	Overvoltage Category		300 V Cat II	300 V Cat II	300 V Cat II	300 V Cat II
	Measurement Surge Voltage		2 kV	2 kV	2 kV	2 kV
	Power Consumption		<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA
	intermittent overload		100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec
	Sampling Freq.between 45-65 Hz		25,6 kHz	25,6 kHz	25,6 kHz	25,6 kHz
Voltage Measurement Input	Overvoltage Category		300 V Cat III	300 V Cat III	300 V Cat III	300 V Cat III
	Measured Range L-N		95-272 VAC ±10%	95-410VAC ±10%	95-272 VAC ±10%	95-410VAC ±10%
	Measured Range L-L		164-471 VAC ±10%	95-410VAC ±10%	164-471 VAC ±10%	95-410VAC ±10%
	Measured Frequency Range		45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz
	Power Consumption		<0.1 VA	<0.1 VA	<0.1 VA	<0.1 VA
	Sampling Freq.between 45-65 Hz		25,6 kHz	25,6 kHz	25,6 kHz	25,6 kHz
Power Quality Measurements	Harmonics / current and voltage		Upto 51st	Upto 51st	Upto 51st	Upto 51st
	THD-Voltage in %		Available	Available	Available	Available
	THD-Current in %		Available	Available	Available	Available
Measurement Accuracy	According to IEC 61557-12	Total Active Power	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Total Reactive Power	Class 1	Class 1	Class 1	Class 1
		Total Apparent Power	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Total Active Energy	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Total Reactive Energy	Class 2	Class 2	Class 2	Class 2
		Frequency	Class 0.05	Class 0.05	Class 0.05	Class 0.05
		Current	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Neutral Current	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		Voltage	Class 0.2	Class 0.2	Class 0.2	Class 0.2
		Power factor	Class 0.5	Class 0.5	Class 0.5	Class 0.5
		THDV, THDI	Class 1	Class 1	Class 1	Class 1
	According to IEC 62053-22	Total Active Energy	Class 0.2S	Class 0.2S	Class 0.2S	Class 0.2S
	Accoding to IEC 62053-23	Total Reactive Energy	Class 2	Class 2	Class 2	Class 2
Input and Outputs	Compensation Relay Outputs	Number of outputs	12 pcs.	12 pcs.	24 pcs.	24 pcs.
		Type	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)
		Max. Switching Current	2 A	2 A	2 A	2 A
		Max. Switching Voltage	250 VAC	250 VAC	250 VAC	250 VAC
		Max. Switching Power	500 VA	500 VA	500 VA	500 VA
		Mechanical life time	≥ 10^7 operations	≥ 10^7 operations	≥ 10^7 operations	≥ 10^7 operations
		Electrical life time operations (for NO side)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)
	Alarm Relay Outputs	Number of outputs	2 pcs.	2 pcs.	2 pcs.	2 pcs.
		Type	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)
		Max. Switching Current	4 A	4 A	4 A	4 A
		Max. Switching Voltage	250 VAC	250 VAC	250 VAC	250 VAC
		Max. Switching Power	1000 VA	1000 VA	1000 VA	1000 VA
		Mechanical life time	≥ 10^7 operations	≥ 10^7 operations	≥ 10^7 operations	≥ 10^7 operations
		Electrical life time operations (for NO side)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)
	Generator/ Day-Night Input	Number of inputs	1 pc.	1 pc.	1 pc.	1 pc.
		Frequency	45-65Hz	45-65Hz	45-65Hz	45-65Hz
		Input Present or Not	95-240VAC	95-240VAC	95-240VAC	95-240VAC
	Digital Outputs		-	-	-	-
	Analog Outputs		-	-	-	-

RAPIDUS 218R	RAPIDUS 114	RAPIDUS 114R	RAPIDUS 116	RAPIDUS 116R	RAPIDUS 118
10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC	10mA-6A AC
300 V Cat II	510V CAT II	510V CAT II	510V CAT II	510V CAT II	510V CAT II
2 kV	2 kV	2 kV	2 kV	2 kV	2 kV
<0.2 VA	<0.3 VA	<0.3 VA	<0.3 VA	<0.3 VA	<0.3 VA
100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec	100A for 1 sec
25,6 kHz	12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz
300 V Cat III	510V CAT III	510V CAT III	510V CAT III	510V CAT III	510V CAT III
95-410VAC ±10%	120-510V AC ±10%	120-510V AC ±10%	120-510V AC ±10%	120-510V AC ±10%	120-510V AC ±10%
95-410VAC ±10%	120-510V AC ±10%	120-510V AC ±10%	120-510V AC ±10%	120-510V AC ±10%	120-510V AC ±10%
45-65 Hz	45...65 Hz	45...65 Hz	45...65 Hz	45...65 Hz	45...65 Hz
<0.1 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA	<0.2 VA
25,6 kHz	12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz	12,8 kHz
Upto 51st	-	-	-	-	-
Available	Available	Available	Available	Available	Available
Available	Available	Available	Available	Available	Available
Class 0.2	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Class 0.2	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
Class 0.05	Class 0.1	Class 0.1	Class 0.1	Class 0.1	Class 0.1
Class 0.2	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2	Class 0.2
Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5	Class 0.5
Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Class 0.2S	Class 0.5S	Class 0.5S	Class 0.5S	Class 0.5S	Class 0.5S
Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
8+2(If alarm relay outputs are used for compensation) pcs.	4	4	6	6	8
NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)
2 A	2A	2A	2A	2A	2A
250 VAC	250VAC	250VAC	250VAC	250VAC	250VAC
500 VA	500 VA	500 VA	500 VA	500 VA	500 VA
≥ 10^7 operations	≥ 10.0000000 operations	≥ 10.0000000 operations	≥ 10.0000000 operations	≥ 10.0000000 operations	≥ 10.0000000 operations
5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)
2 pcs.	2	2	2	2	2
NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)	NO (SPST)
4 A	4A	4A	4A	4A	4A
250 VAC	250 VAC	250 VAC	250 VAC	250 VAC	250 VAC
1000 VA	1000 VA	1000 VA	1000 VA	1000 VA	1000 VA
≥ 10^7 operations	≥ 10.0000000 operations	≥ 10.0000000 operations	≥ 10.0000000 operations	≥ 10.0000000 operations	≥ 10.0000000 operations
5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)
1 pc.	1	1	1	1	1
45-65Hz	45-65Hz	45-65Hz	45-65Hz	45-65Hz	45-65Hz
95-240VAC	95-240VAC	95-240VAC	95-240VAC	95-240VAC	95-240VAC
-	-	-	-	-	-
-	-	-	-	-	-

RAPIDUS Series Power Factor Controllers

Type			RAPIDUS 231R-E	RAPIDUS 211R	RAPIDUS 232R-E	RAPIDUS 212R
Supply	Auxilary supply input		No	No	No	No
	Voltage		95-272VAC ±10% from L1-N	95-410VAC ±10% from La-Lb	95-272VAC ±10% from L1-N	95-410VAC ±10% from La-Lb
	Frequency		45-65Hz	45-65Hz	45-65Hz	45-65Hz
	Consumption	AC	< 10VA	< 10VA	< 10VA	< 10VA
		DC	-	-	-	-
Data Logging with timestamp	Min/max/avg Values	Hourly records	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters	1920 hours x 68 different paramaters
		Daily records	240 days x 68 different paramaters	240 days x 68 different paramaters	240 days x 68 different paramaters	240 days x 68 different paramaters
		Monthly records	36 hours x 68 different paramaters	36 hours x 68 different paramaters	36 hours x 68 different paramaters	36 hours x 68 different paramaters
	Demand		4 months x 16 different parameters	4 months x 16 different parameters	4 months x 16 different parameters	4 months x 16 different parameters
	Alarm records		50	50	50	50
Communication	Protocol		Modbus RTU	Modbus RTU	Modbus RTU	Modbus RTU
	Baud rate		2400-115200 bps adjustable	2400-115200 bps adjustable	2400-115200 bps adjustable	2400-115200 bps adjustable
	Parity number		None	None	None	None
	Stop bit		1	1	1	1
	Address		1-247 adjustable	1-247 adjustable	1-247	1-247
	Isolation		2000V RMS	2000V RMS	2000V RMS	2000V RMS
Mechanical Properties	Weight(g)		670	663	765	750
	Protection Class		Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)
	Assembly Type		Panel Mount	Panel Mount	Panel Mount	Panel Mount
Cable Cross Sections	Voltage, Current, All Relay Outputs, Gen Input	Stranded:	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG	2,5 mm² - 14AWG
		Solid:	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm²-12 AWG, 2x1.5 mm²-2x16 AWG
	RS 485	Stranded:	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG	1,5 mm²-16AWG
		Solid:	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG
Ambient Conditions	Operating Temperature	-20 to +55 °C	-20 to +55 °C	-20 to +55 °C	-20 to +55 °C	-20 to +55 °C
	Storage Temperature	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C	-30 to +80 °C
	Relative Humidity (no condensation)	Max.95%	Max.95%	Max.95%	Max.95%	Max.95%
Accessories		Type	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)
		Definition	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER
		Order Number	250 001	250 001	250 001	250 001
		Packaging unit	2	2	2	2

RAPIDUS Series Power Factor Controllers

RAPIDUS 218R	RAPIDUS 114	RAPIDUS 114R	RAPIDUS 116	RAPIDUS 116R	RAPIDUS 118
No	-	-	-	-	-
95-410VAC ±10% from La-Lb	120...510V AC ±10% from L1-N	120...510V AC ±10% from L1-N	120...510V AC ±10% from L1-N	120...510V AC ±10% from L1-N	120...510V AC ±10% from L1-N
45-65Hz	45-65Hz	45-65Hz	45-65Hz	45-65Hz	45-65Hz
< 10VA	< 10VA	< 10VA	< 10VA	< 10VA	< 10VA
-	-	-	-	-	-
1920 hours x 68 different paramaters	-	-	-	-	-
240 days x 68 different paramaters	-	-	-	-	-
36 hours x 68 different paramaters	-	-	-	-	-
4 months x 16 different parameters	-	-	-	-	-
50	-	-	-	-	-
Modbus RTU	-	Modbus RTU	-	Modbus RTU	-
2400-115200 bps adjustable	-	1200-38400 bps adjustable	-	1200-38400 bps adjustable	-
None	-	Odd, Even, None	-	Odd, Even, None	-
1	-	1	-	1	-
1-247	-	1-247	-	1-247	-
2000V RMS	-	2000V RMS	-	2000V RMS	-
415	309	314	319	324	329
Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)
Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount	Panel Mount
2,5 mm² - 14AWG	2.5mm² - 14AWG	2.5mm² - 14AWG	2.5mm² - 14AWG	2.5mm² - 14AWG	2.5mm² - 14AWG
4mm²-12 AWG, 2x1.5 mm²-2x16 AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG
1,5 mm²-16AWG	-	1.5mm² - 16AWG	-	1.5mm² - 16AWG	-
1.5 mm²-16 AWG, 2x0.75 mm²-2x18 AWG	-	1.5mm² - 16AWG, 2x0.75mm² - 2x18AWG	-	1.5mm² - 16AWG, 2x0.75mm² - 2x18AWG	-
-20 to +55 °C	-20°C +55°C	-20°C +55°C	-20°C +55°C	-20°C +55°C	-20°C +55°C
-30 to +80 °C	-30°C +80°C	-30°C +80°C	-30°C +80°C	-30°C +80°C	-30°C +80°C
Max.95%	Maks. 95%	Maks. 95%	Maks. 95%	Maks. 95%	Maks. 95%
IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)	IP66 Silicone Cover (96x96mm)
SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER	SILICONE COVER
250 001	250 001	250 001	250 001	250 001	250 001
2	2	2	2	2	2

Electronic Products

RAPIDUS Series Power Factor Controllers



Type			RAPIDUS 118R	RAPIDUS 110	RAPIDUS 110R
Definiton			Power Factor Controller (1Ø-8steps)	Power Factor Controller (1Ø-10steps)	Power Factor Controller (1Ø-10steps)
Order Number			606065	606070	606071
General	Measuring system		1Ø	1Ø	1Ø
	LCD Sreen		Custom LCD	Custom LCD	Custom LCD
	Language Support		Turkish, English	Turkish, English	Turkish, English
	Battery		-	-	-
	Real Time Clock		-	-	-
	Password Protection		Available	Available	Available
	Current Transformer Ratio		1 - 5.000	1 - 5.000	1 - 5.000
	Voltage Transformer Ratio		1 - 999.9	1 - 999.9	1 - 999.9
	Demand Period		-	-	-
	Connection Type		L-L/L-N	L-L/L-N	L-L/L-N
	Measurement in Quadrants		-	-	-
	Number of Measurement in a period		256	256	256
	LCD/Display Refresh Period		<0.5 sec.	<0.5 sec.	<0.5 sec.
	Networks		TT, TN	TT, TN	TT, TN
	Phasor Diagram		-	-	-
	Signal Waveforms		-	-	-
	Min/Max/Demand Values		-	-	-
Control Operations and Functions	Compensation Modes	Rapidus (Intelligent control mode)	Available	Available	Available
		Sequential	-	-	-
		Linear	-	-	-
		Circular	-	-	-
		Manual	Available	Available	Available
	Step Conf igurations	Manually Assign	Available	Available	Available
		Predef ined	1-1-1-1, 1-2-2-2, 1-2-4-4	1-1-1-1, 1-2-2-2, 1-2-4-4	1-1-1-1, 1-2-2-2, 1-2-4-4
		DCM	-	-	-
		Fixed Step Assigment	-	-	-
		Power(kVAr)	0.00-1000 adjustable	0.00-1000 adjustable	0.00-1000 adjustable
		Type	3Ø capacitor or 1Ø capacitor	3Ø capacitor or 1Ø capacitor	3Ø capacitor or 1Ø capacitor
	Power factor settings	Target 1 cosØ	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable
		Target 2 cosØ	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable
	Learning Step Powers and Connections		-	-	-
	Dual cosØ target		Available	Available	Available
	4 Quadrant operation for generators		-	-	-
	Time delays	Step activation time	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable
		Step deactivation time	1-600 sec adjustable	1-600 sec adjustable	1-600 sec adjustable
		Step discharge time	3-600 sec adjustable	3-600 sec adjustable	3-600 sec adjustable
	Phase shift angle		-	-	-
	Averaging time		-	-	-
Energy Meters	Number of Tariffs		1	1	1
	Multi Sub-Tariffs(Peak, Day and Off-Peak)		-	-	-
	1Ø Phase Energy Meter		Available	Available	Available
	3Ø Phase Energy Meters		-	-	-
	4 Quadrant Reactive Energy Meters		-	-	-
Current Measurement Input	Measurement Range		10mA-6A AC	10mA-6A AC	10mA-6A AC
	Overvoltage Category		510V CAT II	510V CAT II	510V CAT II
	Measurement Surge Voltage		2 kV	2 kV	2 kV
	Power Consumption		<0.3 VA	<0.3 VA	<0.3 VA
	intermittent overload		100A for 1 sec	100A for 1 sec	100A for 1 sec
	Sampling Freq.between 45-65 Hz		12,8 kHz	12,8 kHz	12,8 kHz
Voltage Measurement Input	Overvoltage Category		510V CAT III	510V CAT III	510V CAT III
	Measured Range L-N		120-510V AC ±10%	120-510V AC ±10%	120-510V AC ±10%
	Measured Range L-L		120-510V AC ±10%	120-510V AC ±10%	120-510V AC ±10%
	Measured Frequency Range		45...65 Hz	45...65 Hz	45...65 Hz
	Power Consumption		<0.2 VA	<0.2 VA	<0.2 VA
	Sampling Freq.between 45-65 Hz		12,8 kHz	12,8 kHz	12,8 kHz

RAPIDUS Series Power Factor Controllers

RAPIDUS 111	RAPIDUS 111R
Power Factor Controller (1Ø-12steps)	Power Factor Controller (1Ø-12steps)
606072	606073
1Ø	1Ø
Custom LCD	Custom LCD
Turkish, English	Turkish, English
-	-
-	-
Available	Available
1 - 5.000	1 - 5.000
1 - 999.9	1 - 999.9
-	-
L-L/L-N	L-L/L-N
-	-
512	512
<0.5 sec.	<0.5 sec.
TT, TN	TT, TN
-	-
-	-
-	-
Available	Available
-	-
-	-
-	-
Available	Available
Available	Available
1-1-1-1, 1-2-2-2, 1-2-4-4	1-1-1-1, 1-2-2-2, 1-2-4-4
-	-
-	-
0.00-1000 adjustable	0.00-1000 adjustable
3Ø capacitor or 1Ø capacitor	3Ø capacitor or 1Ø capacitor
0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable
0.8cap. to 0.8ind. Adjustable	0.8cap. to 0.8ind. Adjustable
-	-
Available	Available
-	-
1-600 sec adjustable	1-600 sec adjustable
1-600 sec adjustable	1-600 sec adjustable
3-600 sec adjustable	3-600 sec adjustable
-	-
-	-
1	1
-	-
Available	Available
-	-
-	-
10mA-6A AC	10mA-6A AC
510V CAT II	510V CAT II
2 kV	2 kV
<0.3 VA	<0.3 VA
100A for 1 sec	100A for 1 sec
12,8 kHz	12,8 kHz
510V CAT III	510V CAT III
120-510V AC ±10%	120-510V AC ±10%
120-510V AC ±10%	120-510V AC ±10%
45...65 Hz	45...65 Hz
<0.2 VA	<0.2 VA
12,8 kHz	12,8 kHz

RAPIDUS Series Power Factor Controllers

Type			RAPIDUS 118R	RAPIDUS 110	RAPIDUS 110R
Power Quality Measurements	Harmonics / current and voltage		-	-	-
	THD-Voltage in %		Available	Available	Available
	THD-Current in %		Available	Available	Available
Type			RAPIDUS 118R	RAPIDUS 110	RAPIDUS 110R
Measurement Accuracy	According to IEC 61557-12	Total Active Power	Class 0.5	Class 0.5	Class 0.5
		Total Reactive Power	Class 1	Class 1	Class 1
		Total Apparent Power	Class 0.5	Class 0.5	Class 0.5
		Total Active Energy	Class 0.5	Class 0.5	Class 0.5
		Total Reactive Energy	Class 2	Class 2	Class 2
		Frequency	Class 0.1	Class 0.1	Class 0.1
		Current	Class 0.5	Class 0.5	Class 0.5
		Neutral Current	Class 0.5	Class 0.5	Class 0.5
		Voltage	Class 0.2	Class 0.2	Class 0.2
		Power factor	Class 0.5	Class 0.5	Class 0.5
		THDV, THDI	Class 1	Class 1	Class 1
	According to IEC 62053-22	Total Active Energy	Class 0.5S	Class 0.5S	Class 0.5S
	Accoding to IEC 62053-23	Total Reactive Energy	Class 2	Class 2	Class 2
Input and Outputs	Compensation Relay Outputs	Number of outputs	8	10	10
		Type	NO (SPST)	NO (SPST)	NO (SPST)
		Max. Switching Current	2A	2A	2A
		Max. Switching Voltage	250VAC	250VAC	250VAC
		Max. Switching Power	500 VA	500 VA	500 VA
		Mechanical life time	≥ 10.0000000 operations	≥ 10.0000000 operations	≥ 10.0000000 operations
		Electrical life time operations (for NO side)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)
	Alarm Relay Outputs	Number of outputs	2	2	2
		Type	NO (SPST)	NO (SPST)	NO (SPST)
		Max. Switching Current	4A	4A	4A
		Max. Switching Voltage	250 VAC	250 VAC	250 VAC
		Max. Switching Power	1000 VA	1000 VA	1000 VA
		Mechanical life time	≥ 10.0000000 operations	≥ 10.0000000 operations	≥ 10.0000000 operations
		Electrical life time operations (for NO side)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)
	Generator/ Day-Night Input	Number of inputs	1	1	1
		Frequency	45-65Hz	45-65Hz	45-65Hz
		Input Present or Not	95-240VAC	95-240VAC	95-240VAC
	Digital Outputs		-	-	-
	Analog Outputs		-	-	-
Supply	Auxilary supply input		-	-	-
	Voltage		120...510V AC ±10% from L1-N	120...510V AC ±10% from L1-N	120...510V AC ±10% from L1-N
	Frequency		45-65Hz	45-65Hz	45-65Hz
	Consumption	AC	< 10VA	< 10VA	< 10VA
		DC	-	-	-
Data Logging with timestamp	Min/max/avg Values	Hourly records	-	-	-
		Daily records	-	-	-
		Monthly records	-	-	-
	Demand		-	-	-
	Alarm records		-	-	-
Communication	Protocol		Modbus RTU	-	Modbus RTU
	Baud rate		1200-38400 bps adjustable	-	1200-38400 bps adjustable
	Parity number		Odd, Even, None	-	Odd, Even, None
	Stop bit		1	-	1
	Address		1-247	-	1-247
	Isolation		2000V RMS	-	2000V RMS
Mechanical Properties	Weight(g)		334	365	369
	Protection Class		Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)
	Assembly Type		Panel Mount	Panel Mount	Panel Mount
Cable Cross Sections	Voltage, Current, All Relay Outputs, Gen Input	Stranded:	2.5mm² - 14AWG	2.5mm² - 14AWG	2.5mm² - 14AWG
		Solid:	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG
	RS 485	Stranded:	1.5mm² - 16AWG	-	1.5mm² - 16AWG
		Solid:	1.5mm² - 16AWG, 2x0.75mm² - 2x18AWG	-	1.5mm² - 16AWG, 2x0.75mm² - 2x18AWG
Ambient Conditions	Operating Temperature	-20 to +55 °C	-20°C +55°C	-20°C +55°C	-20°C +55°C
	Storage Temperature	-30 to +80 °C	-30°C +80°C	-30°C +80°C	-30°C +80°C
	Relative Humidity (no condensation)	Max.95%	Maks. 95%	Maks. 95%	Maks. 95%

RAPIDUS 111	RAPIDUS 111R
-	-
Available	Available
Available	Available
RAPIDUS 111	RAPIDUS 111R
Class 0.5	Class 0.5
Class 1	Class 1
Class 0.5	Class 0.5
Class 0.5	Class 0.5
Class 2	Class 2
Class 0.1	Class 0.1
Class 0.5	Class 0.5
Class 0.5	Class 0.5
Class 0.2	Class 0.2
Class 0.5	Class 0.5
Class 1	Class 1
Class 0.5S	Class 0.5S
Class 2	Class 2
12	12
NO (SPST)	NO (SPST)
2A	2A
250VAC	250VAC
500 VA	500 VA
≥ 10.0000000 operations	≥ 10.0000000 operations
5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)
2	2
NO (SPST)	NO (SPST)
4A	4A
250 VAC	250 VAC
1000 VA	1000 VA
≥ 10.0000000 operations	≥ 10.0000000 operations
5×104(5A@250VAC) 1×105(5A@30VDC)	5×104(5A@250VAC) 1×105(5A@30VDC)
1	1
45-65Hz	45-65Hz
95-240VAC	95-240VAC
-	-
-	-
-	-
120...510V AC ±10% from L1-N	120...510V AC ±10% from L1-N
45-65Hz	45-65Hz
< 10VA	< 10VA
-	-
-	-
-	-
-	-
-	-
-	-
-	Modbus RTU
-	1200-38400 bps adjustable
-	Odd, Even, None
-	1
-	1-247
-	2000V RMS
374	379
Front IP40 / Rear IP20 (IP66 with accessory)	Front IP40 / Rear IP20 (IP66 with accessory)
Panel Mount	Panel Mount
2.5mm² - 14AWG	2.5mm² - 14AWG
4mm² - 12AWG, 2x1.5mm² - 2x16AWG	4mm² - 12AWG, 2x1.5mm² - 2x16AWG
-	1.5mm² - 16AWG
-	1.5mm² - 16AWG, 2x0.75mm² - 2x18AWG
-20°C +55°C	-20°C +55°C
-30°C +80°C	-30°C +80°C
Maks. 95%	Maks. 95%

Electronic Products

Time Relays Series

Klemsan new Z1x series time relays offer optimum solutions in various industrial applications with different function options and with 12-240 V AC/DC (universal input) wide supply range.

It is suitable for use in narrow panels with its new body design under the DIN norm.

In addition to single-function devices, there are up to 10 function options that can be controlled via trigger input, based on the model. Time settings can be made easily with the trimpots on the device between 0.1 sec to 10 days.

Special functional relays such as star-delta, left-right, etc are also available in the product portfolio.

- 12-240 V AC/DC universal supply range
- 18 mm enclosure design under DIN Norm and design under IEC 61812-1 standard
- Support for up to 10 functions based on model
- 0.1sec – 10 days wide time range
- Power-off delay function adjustable for up to 2 hours
- Relay output (10A)
- High mechanical endurance
- Function control via trigger input
- LED notifications

TIME RELAYS SERIES

Product Name	Order No	Definition	Trigger Input	On Delay (ND)	Off Delay (FD)	Power Off Delay (PFD)	Off Flasher (FDF)	On Flasher (NDF)	On - Off Delay (NFD)	On Delay with Trigger (yND)	Off Delay with Trigger (yFD)	On and Off Delay with Trigger (yMF)	Pulse Delayed with Control Signal (yN)	Pulse Output with Control Signal (yP)	Additive on Delay (yNA)	On Delay with Maintened Control Signal (yMN)	Off Delay with Maintened Control Signal (yMF)	Interval with Control Signal On (yIR)	Interval with Control Signal Off (yIF)	Star Delta (SD)	Left - Right (LR)	Relay Qty	Time Adjustment	12..240 V AC/DC	24..240 V AC/DC	150..500 V AC
Z1A-ND30s	261025	Timer Relay		√																		1 C/O	1 sec .. 30 sec		√	
Z1A-ND100s	261023	Timer Relay		√																		1 C/O	1 sec .. 100 sec		√	
Z1T-ND100s	261010	Timer Relay (Sensitive)		√																		1 C/O	1 sec .. 100 sec	√		
Z1T-PFD120m-24	261011	Power Off Delay				√																1 C/O	1sec .. 120min		√	
Z1T-FDF	261013	Timer Relay					√															1 C/O	0.1 sec .. 10 day	√		
Z1T-NDF	261014	Timer Relay						√														1 C/O	0.1 sec .. 10 day	√		
Z1T-ND100s.2	261026	Timer Relay		√																		2 C/O	1 sec .. 100 sec	√		
Z1T-M2	261015	Multi-Func Time Relay		√	√																	1 C/O	0.1 sec .. 99.9 saat	√		
Z1K-M2A	261016	Multi-Func Time Relay	√						√	√												1 C/O	0.1 sec .. 99.9 saat	√		
Z1T-M4	261017	Multi-Func Time Relay		√	√		√	√														1 C/O	1 sec .. 10 day	√		
Z1T-M5	261018	Multi-Func Time Relay		√	√		√	√	√													1 C/O	1 sec .. 10 day	√		
Z1K-M10	261019	Multi-Func Time Relay	√	√	√		√					√		√	√	√	√	√	√			1 C/O	0.1 sec .. 10 day	√		
Z1K-M10A	261024	Multi-Func Time Relay	√	√	√		√					√	√	√		√	√	√	√			1 C/O	0.1 sec .. 10 day	√		
Z1T-LR.2	261020	Left-Right Timer																			√	2 C/O	0.1 sec .. 10 day	√		
Z1T-SD	261021	Star-Delta Timer Relay																		√		2 C/O	0.1 sec .. 30 sec, 20 .. 500msec	√		
Z1T-SD-500	261022	Star-Delta Timer Relay																		√		2 C/O	0.1 sec .. 30 sec, 20 .. 500msec			√

NOTE: See product manuals for function descriptions.

Electronic Products

Protection & Monitoring Relays Series

Klemsan protection and monitoring relays in new enclosures under the DIN norm, are designed to protect your system against problems caused by voltage, frequency, and temperature in single-phase and three-phase electrical systems.

In addition to fixed protection models that do not require any adjustments, some products allow asymmetry, voltage protection, protection parameter selection, and time setting adjustment over trimpots on the device

- System errors can be monitored thanks to the LED notifications that indicate errors.
- Product design under TS EN 60255 standard,
- 18mm thin product body under DIN standard,
- TRMS measurement,
- Red LED indicators for error notification,
- Orange LED indicator for relay status,
- Adjustable pots for time and limit values,
- 5A SPDT relay output,
- Optionally Asymmetry, Phase Sequence, Absence of Phase, High - Low Voltage, High - Low Frequency, PTC, Neutral break protection,
- Liquid level and light intensity monitoring functions
- Star, delta, and single-phase connection options,
- High precision and high mechanical durability.

FIXED PRODUCTION RELAYS

Product Name	Order No	Definition	3P4W	3P3W	Phase-Loss Protection	Phase Sequence Protection	Asymmetry Protection	PTC Input	1 C/O	1 NO	85-300 VAC (VLN)	180-265 VAC (VLN)	145-520 VAC (VLL)
FP1Y-ASF 230	270271	Motor Protection Relay	√		√	√	20%		√		√		
FP1D-ASF 400	270272	Motor Protection Relay		√	√	√	20%		√			√	
FP1Y-ASF8 230	270273	Motor Protection Relay	√		√	√	40%		√				
FP1Y-ASF8.3 230	270274	Motor Protection Relay	√		√	√	40%			√	√		
FP1Y-AF 230	270275	Motor Protection Relay	√		√		20%		√		√		
FP1Y-SF 230	270276	Motor Protection Relay	√		√	√			√		√		
FP1Y-SFP 230	270284	Motor Protection Relay	√		√	√		√	√		√		
FP1D-SFP 400	270285	Motor Protection Relay		√	√	√		√	√			√	
FP1YA-ASF8 230	270300	Motor Protection Relay	√		√	√	20%		√				√
FP1YA-ASF8.3 230	270301	Motor Protection Relay	√		√	√	20%		√				√
FP1D-SF 400	270302	Motor Protection Relay		√	√	√			√			√	

ADJUSTABLE PROTECTION RELAYS

Product Name	Order No	Definition	3P4W	3P3W	Phase-Loss Protection	Phase Sequence Protection	Asymmetry Protection	Low Voltage Protection	High Voltage Protection	Low - High Voltage Protection (Same Trimpot)	Neutral Loss Protection	Nominal Voltage (Un)	PTC Input	Adjustable On Delay	Adjustable Off Delay	1 C/O	75-250 VAC (VLN)	85-300 VAC (VLN)	130-430 VAC (VLL)	145-520 VAC (VLL)
P1Y-ASF 230	270277	Motor Protection Relay	√		√	√	±(5-30%)/Off					230V			0.1-10 sec	√		√		
P1D-ASF 400	270278	Motor Protection Relay		√	√	√	±(5-30%)/Off					400V			0.1-10 sec	√				√
P1Y-M1WASFN 170-280	270282	Motor Protection Relay	√		√	√	±(5-30%)/Off			±(5-30%)/Off	√	170-280V			0.1-10 sec	√		√		
P1D-M1WASF 295-480	270283	Motor Protection Relay		√	√	√	±(5-30%)/Off			±(5-30%)/Off		295-480V			0.1-10 sec	√				√
P1Y-M2WSP 170-280	270286	Motor Protection Relay	√		√			-(5-30%)/Off	+(5-30%)/Off			170-280V	√		0.1-10 sec	√		√		
P1D-M2WSP 295-480	270287	Motor Protection Relay		√	√	√		-(5-30%)/Off	+(5-30%)/Off			295-480V	√		0.1-10 sec	√				√
P1Y-M1WASFN 100-200	270288	Motor Protection Relay	√		√	√	±(5-30%)/Off			±(5-30%)/Off	√	100-200V			0.1-10 sec	√	√			
P1D-M1WASF 175-345	270289	Motor Protection Relay		√	√	√	±(5-30%)/Off			±(5-30%)/Off		175-345V			0.1-10 sec	√			√	
P1Y-M2WSP 100-200	270290	Motor Protection Relay	√		√	√		-(5-30%)/Off	+(5-30%)/Off			100-200V	√		0.1-10 sec	√	√			
P1D-M2WSP 175-345	270291	Motor Protection Relay		√	√	√		-(5-30%)/Off	+(5-30%)/Off			175-345V	√		0.1-10 sec	√			√	
FP1D-SF 400	270302	Motor Protection Relay		√	√	√			√			√								

Electronic Products

Protection & Monitoring Relays Series

VOLTAGE MONITORING RELAYS

Product Name	Order No	Definition	1P2W	3P4W	3P3W	Phase-Loss Protection	Phase Sequence Protection	Low Voltage Protection	High Voltage Protection	Low - High Voltage Protection (Same Trimpot)	Neutral Loss Protection	Nominal Voltage (Un)	Adjustable On Delay	Adjustable Off Delay	1 C/O	75-250 VAC (VLN)	85-300 VAC (VLN)	130-430 VAC (VLL)	145-520 VAC (VLL)
V1Y-WFN 230	270279	Voltage Monitoring Relay		√		√		150-210V	240-300V		√	230V	0.1-10 sec	0.1-10 sec	√		√	√	
V1Y-WS 300	270280	Voltage Monitoring Relay		√		√	√	150-210V	240-300V			230V	0.1-10 sec	0.1-10 sec	√		√		
V1D-WS 520	270281	Voltage Monitoring Relay			√	√	√	260-360V	415-520V			400V	0.1-10 sec	0.1-10 sec	√				√
V1Y-WUN 120-480	270292	Voltage Monitoring Relay		√		√	√			±(5-30%)/Off	√	120-277V	2 sec	0.1-15 sec	√		√		
V1Y-WUN.9 120-480	270293	Voltage Monitoring Relay		√		√	√			±(5-30%)/Off	√	120-277V	2 sec	0.1-15 mins	√		√		
V1U-M2W 230	270295	Voltage Monitoring Relay	√			√		(90-115%)Un	(80-130%)Un			230V	0.1-10 sec	0.1-10 sec	√		√		
V1U-M2W 120	270296	Voltage Monitoring Relay	√			√		(75-115%)Un	(80-130%)Un			120V	0.1-10 sec	0.1-10 sec	√	√			

SPECIAL FUNCTIONAL MONITORING RELAYS

Product Name	Order No	Definition	PTC Monitoring	Frequency Monitoring Range	Frequency Monitoring Voltage	Light Intensity Monitoring Range	Liquid Level Sensitivity Range	Liquid Level Probe Qty	Adjustable On Delay	Adjustable Off Delay	1 C/O	24-265 VAC/DC (VLN)	115VAC & 230VAC
K1F-WL6 50/60	270294	Frequency Monitoring		45-65Hz	85-300VLN					0.1-10 sec	√	√	
FK1T-P 24-265	270297	Temperature Monitoring	√								√	√	
K1TW-D7 20K	270298	Light Intensity				1-20 lux				0.1-10 sec	√	√	
K2LC-D2 115-230	270299	Liquid Level Monitoring					1-75kohm	6	0.1-10 sec	0.1-10 sec	√		√

Electronic Products

MEASTRO Series Astronomical Timers

MEASTRO-R
Infrared Controller

Order Number: 270 720

Type		MEASTRO0110	MEASTRO0120	MEASTRO0121	MEASTRO0221	MEASTRO0321	MEASTRO0122	MEASTRO0222	MEASTRO0322
Definition		Digital Timer	Digital Timer	Astronomical Timer	Astronomical Timer	Astronomical Timer	Astronomical Timer	Astronomical Timer	Astronomical Timer
Order Number		270 700	270 701	270 702	270 703	270 704	270 705	270 706	270 707
Casing Width(mm)		36mm	36mm	36mm	36mm	36mm	36mm	36mm	36mm
Connections		Screw Terminal	Screw Terminal	Screw Terminal	Screw Terminal	Screw Terminal	Screw Terminal	Screw Terminal	Screw Terminal
Mounting		Rail Mount	Rail Mount	Rail Mount	Rail Mount	Rail Mount	Rail Mount	Rail Mount	Rail Mount
	Digital time clock	√	√	√	√	√	√	√	√
	Astronomical time clock	-	-	√	√	√	-	√	√
Functions	Prayer program	-	-	-	-	√	-	-	√
	Infrared	-	-	√	√	√	-	-	-
	Programming with controller	-	-	√	√	√	-	-	-
	RS485 (Modbus RTU)	-	-	-	-	-	√	√	√
	Display	Type	LCD	LCD	LCD	LCD	LCD	LCD	LCD
	Dimensions	1.5"	1.5"	1.5"	1.5"	1.5"	1.5"	1.5"	1.5"
		Renewal time	0.5sec	0.5sec	0.5sec	0.5sec	0.5sec	0.5sec	0.5sec
Number of Program		100	100	100	100	100	100	100	100
Infrared Distance		550 mm	550 mm	550 mm	550 mm	550 mm	550 mm	550 mm	550 mm
Accuracy		±1sec/day							
Battery Life		7 years	7 years	7 years	7 years	7 years	7 years	7 years	7 years
		Relay	Relay	Relay	Relay	Relay	Relay	Relay	Relay
	Relay Outputs	Number of Contacts	1	2	2	2	2	2	2
Type of Output	Type	1 C/O (SPDT)	2 C/O (SPDT)	2 C/O (SPDT)	2 C/O (SPDT)	2 C/O (SPDT)	2 C/O (SPDT)	2 C/O (SPDT)	2 C/O (SPDT)
	Max. Ratings -AC	16A / 250VAC	16A / 250VAC	16A / 250VAC	16A / 250VAC	16A / 250VAC	16A / 250VAC	16A / 250VAC	16A / 250VAC
	Max. Switching Power	1250VA	1250VA	1250VA	1250VA	1250VA	1250VA	1250VA	1250VA
	Mechanical Life Time	≥ 10^7	≥ 10^7	≥ 10^7	≥ 10^7	≥ 10^7	≥ 10^7	≥ 10^7	≥ 10^7
	Electrical Life Time	5x10^4	5x10^4	5x10^4	5x10^4	5x10^4	5x10^4	5x10^4	5x10^4
	Supply Voltage	Supply Voltage	DC	-	-	-	-	-	-
		AC	180…265 V AC	180…265 V AC	180…265 V AC	180…265 V AC	180…265 V AC	180…265 V AC	180…265 V AC
	Supply Frequency		50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz
	Permissible Ambient Temperature	During Operation	-20°C..+70°C	-20°C..+70°C	-20°C..+70°C	-20°C..+70°C	-20°C..+70°C	-20°C..+70°C	-20°C..+70°C
		During Storage	-30°C..+80°C	-30°C..+80°C	-30°C..+80°C	-30°C..+80°C	-30°C..+80°C	-30°C..+80°C	-30°C..+80°C
Relative Humidity		Max.95% (no condensation)	Max.95% (no condensation)	Max.95% (no condensation)	Max.95% (no condensation)	Max.95% (no condensation)	Max.95% (no condensation)	Max.95% (no condensation)	Max.95% (no condensation)
Operating Frequency		50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz
Degree of Protection		IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20
	Power Consumption	DC	-	-	-	-	-	-	-
	AC	<11VA	<11VA	<11VA	<11VA	<11VA	<11VA	<11VA	<11VA