



ELECTRONIC KILOWATT-HOUR METERS LP-KWC WITH OPTIONAL MODBUS® RS485 LP-KWM



Single phase and three-phase kWh check meters.

Semiconductor technology is used to produce very compact electronic kWh meters as a replacement for electro-mechanical check meters. The meter range has variations for single phase, two phase, three phase 3/4 wire balanced and 3/4 wire unbalanced systems. In addition to the LCD display of kWhrs there is a galvanically isolated pulse output for use with separate counters, data loggers or similar electronic recorders or controllers. The compact circuitry employed allows these meters to be housed in a standard 3M or 4M DIN rail mount case.

Current signals to the meter are via current transformers (CTs). The CT ratio setting of the meter can be changed by the end user to a choice of ratio from 40/5A to 5000/5A. The display and output pulses are whole kWh for ct ratios above 800/5, and 0.1 kWh for 800/5 and below. Alternatively the meter can be supplied with low cost CT10-3 CTs suitable for supplies up to 80A.

The meter is provided with a non-volatile memory system that ensures that the readings are not lost or altered when the unit is switched off or supply difficulties are experienced.

An optional galvanically isolated RS485 bus signal employing MODBUS® protocol is available, models LP-KWM.

Specifications

Input	AC current and voltage, single phase, two phase, 3 phase 3 or 4 wire, balanced or unbalanced load
	Current : 5A (1A optional) CTs, or CT10-3 miniature CT up to 80A
	Current burden : < 0.1VA
	Voltage : 3 x 230V Ph-N (others on request)
	Voltage burden : <2VA
	Frequency : 50Hz or 60Hz - specify when ordering
	Cutoff : <1 Watt x CT ratio
	Dynamic range : >500:1
Outputs	: Integral 8 digit LCD display 0.1 or 1 kWh units
	: NPN open collector optocoupler or dry contact relay both with 200msec pulses
	: 0.1 kWh or 1 kWh units depending on selected CT ratio
MODBUS® option (LP-KWM)	: Opto coupler isolated RS485 standard on twisted pair cable
Protocol	: MODBUS® RTU slave with node addressing 1 to 247
Data register	: 32 bit double register, unsigned long integer on register 40001, first word high
	Only 24 bits are used due to display limitations.
	For CT ratios greater 800/5 the reading is in kWh units
	For CT ratios of 800/5 and below the reading is in 0.1kWh units
Data format	: 9600 Baud 8 bit no parity 1 stop bit, 19200 Baud on request
Accuracy	: Class 1 to IEC 61036
Accurate range	: 0 - 120%
Overload	Current input : 2 x nominal continuous
	: 20 x nominal for 3 seconds
Voltage inputs	: 1.2 x nominal continuous
	: 1.5 x nominal for 10 seconds
Isolation	Galvanic isolation between inputs and output circuit
Current inputs	: 4kV rms 50Hz for 1 minute, Impulse 5kV 1.2/50µsec waveform
Voltage inputs to output	: 2kV rms 50Hz for 1 minute
Temperature	Operating : 0°C to ±23°C to +60°C
Storage	: -25°C to +70°C long term
	: -55°C to +85°C short term
EMC Compliance	: AS/NZS 61000.6.3:2012

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LP-1KW1M/3KW4M INSTRUCTIONS

1. Changing the Current Transformer (CT) Ratio

The default CT ratio is 100/5A. To change it to another value proceed as follows: Remove the upper terminal cover. Use the DIP switch on the right hand side to view and change the set current. Move switch 1 to position ON. The display will now change from the kWh reading to show the set CT primary current. To increase the current setting by one step flick switch 2 to ON then back to OFF. To decrease the current use the same procedure with switch 3. When the required current is reached place all switches in the OFF position. The display and output pulses are whole kWh for ct ratios above 800/5, and 0.1 kWh for ct ratios of 800/5 and below.

The following ratios are available.

40/5
50/5
60/5
75/5
100/5
120/5
125/5
150/5
160/5
200/5
250/5
300/5
400/5
500/5
600/5
630/5
800/5
960/5
1000/5
1200/5
1500/5
1600/5
2000/5
2500/5
3000/5
4000/5
4800/5
5000/5

2. Changing the MODBUS® address (MODBUS® version only)

The default address is 1. To change to another value proceed as follows: Remove the upper terminal cover. Use the DIP switch on right hand side. Move switch 4 to the ON position. The display will now show the set address from 1 to 246. Use switch 2 to increase the address and switch 3 to decrease the address one step at a time. When the required address is reached return all switches in the OFF position.

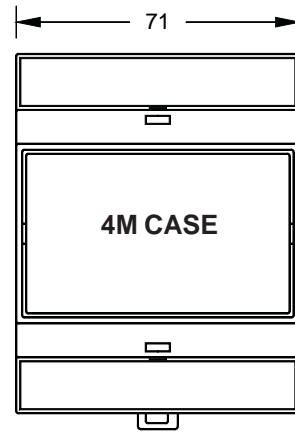
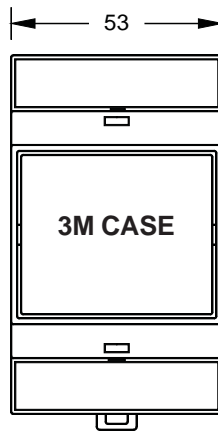
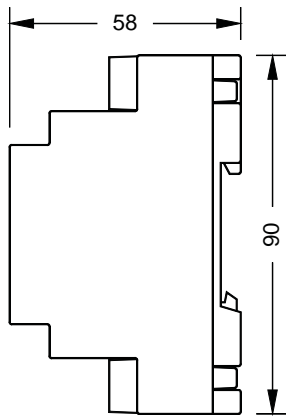
3. Resetting the recorded kWh reading

Remove the upper terminal cover. Use the DIP switch on right hand side. Move all four switches to the ON position to reset the recorded kWh reading. The display will show RESET KWH. Return all switches to the OFF position.

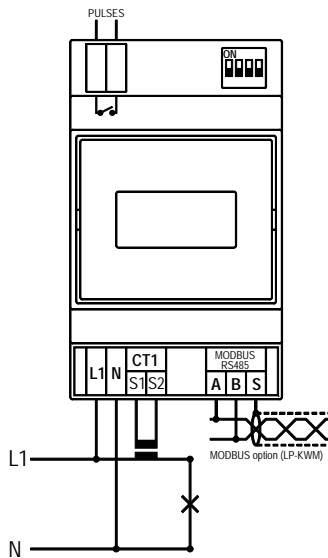


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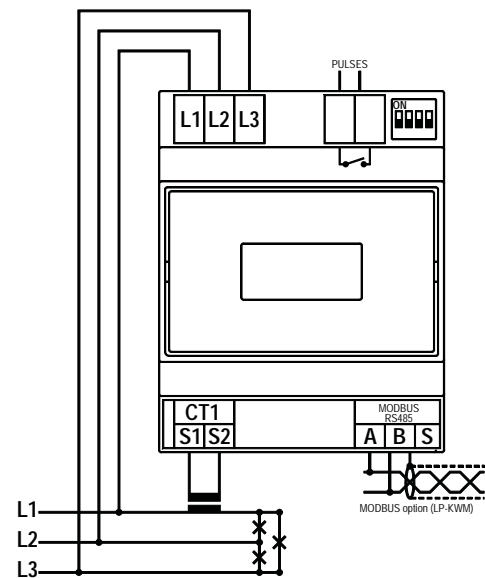
Dimensions



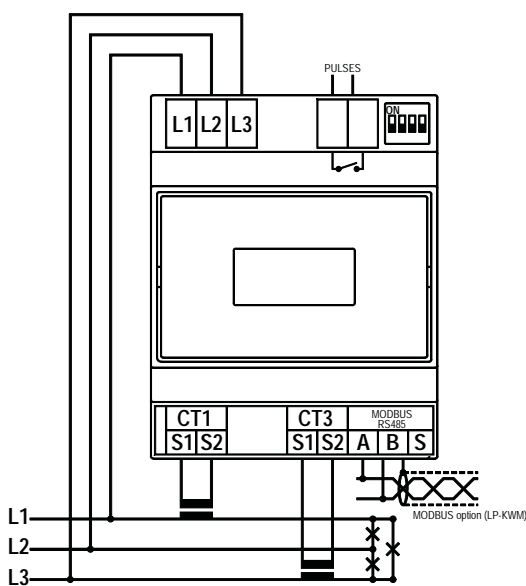
Connections



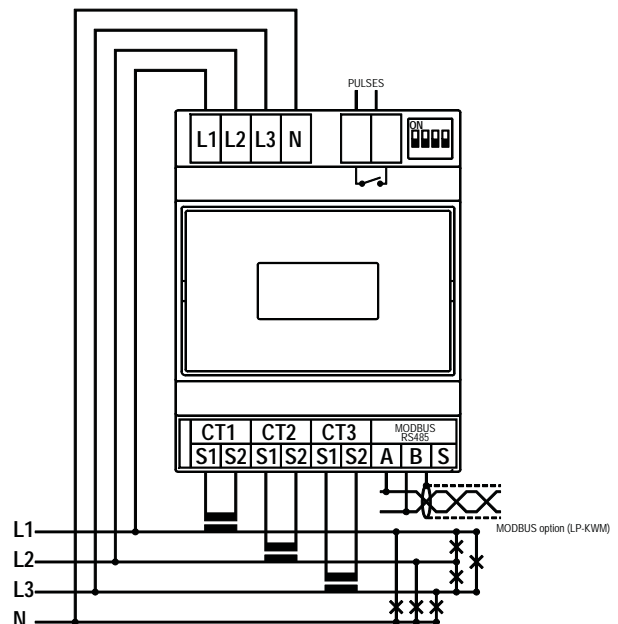
LP-1KW1C/M - Single phase
LP-1KW4C/M - 3-phase 4 wire balanced load



LP-1KW3C/M - 3-phase 3 wire balanced load



LP-2KW3C/M - 3-phase 3 wire unbalanced load



LP-3KW4C/M - 3-phase 4 wire unbalanced load