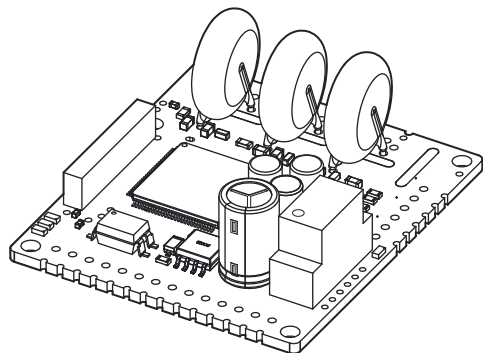


EKM-Omnimeter Mini v.4 Spec Sheet



Technical Specifications:

- Nominal Voltage Ranges:
 - 120V to 415V, 2-wire, Single-phase, One Line & Neutral
 - 120V to 415V, 2-wire, Single-phase, Two Hot Lines
 - 120V to 480V, 3-wire, Single-phase, 2 Lines & Neutral
 - 120V to 415V, 3-wire, 3-phase, 3 Lines, No Neutral
 - 120V to 480V, 4-wire, 3-phase, 3 Lines and Neutral
- Range of allowable environmental conditions: Pollution Degree 2, Measurement Category III, Altitude rating 2000 meters max. Maximum Temperature Range: -30 Deg. C to 70 Deg. C. Relative humidity should be $\leq 85\%$. Tamper Detection Class 1.
- Accuracy Class 0.5
- Rated Frequency: 50Hz/60Hz
- Red LED on the LCD display flashes 800 times/kWh. 1 flash = 1.25Wh.

Working Principle:

When the meter is working, the energy consumed by the user is transformed into voltage and current signals, which are sampled by sample circuits. A pulse signal is then produced by a specialized IC. The Pulse signal is directly proportional to power consumption. The MCU records and stores the corresponding energy use. The LCD screen displays the energy use. Recorded information and data can be transferred using the RS485 interface.

For All Systems:

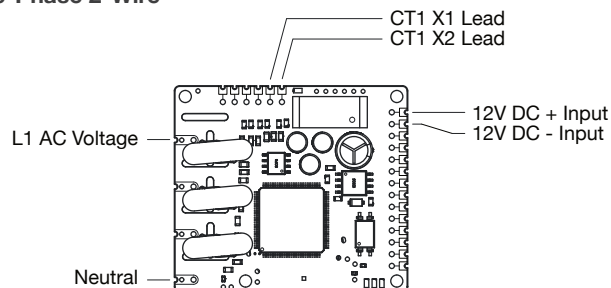
1. This meter is powered by an external 12VDC power supply.
2. The PCB includes castellated edges so it can be solder mounted onto your own PCB. Alternatively, headers can be added to all of the connection points so the meter can be connected to your PCB that way instead.
3. Metering electricity requires both measuring amperage, via current transformers (CTs) and measuring voltage, on each phase. The quantity of CTs and voltage references required is determined by the electrical load being metered.

Load current	Power factor COS θ	Basic error %	
		Class 0.5	Class 1
0.05I _b	1.0	± 1.0	± 1.5
0.1I _b ~I _{max}	1.0	± 0.5	± 1.0
0.1I _b	0.5(L)	± 1.0	± 1.5
	0.8(C)	± 1.0	± 1.5
0.2I _b ~I _{max}	0.5(L)	± 0.5	± 1.0
	0.8(C)	± 0.5	± 1.0

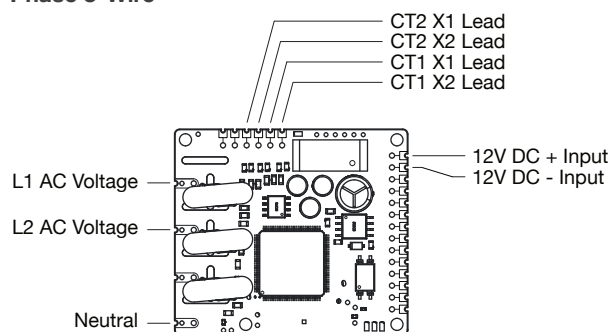
EKM Omnimeter accuracy class 0.5%

(Fig 1)

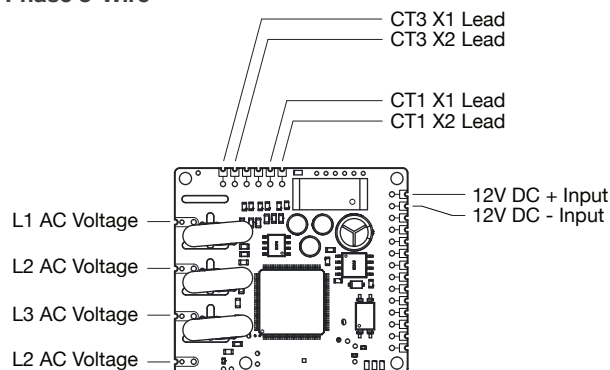
Single-Phase 2-Wire



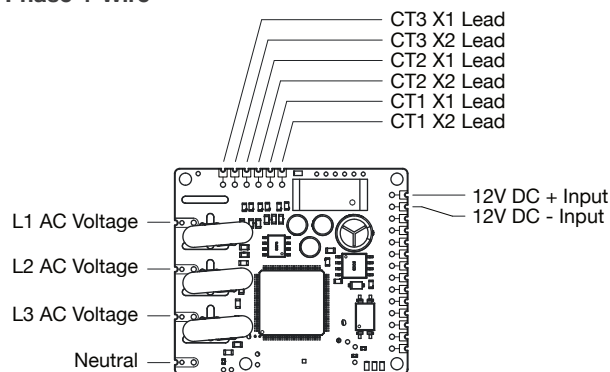
Single-Phase 3-Wire

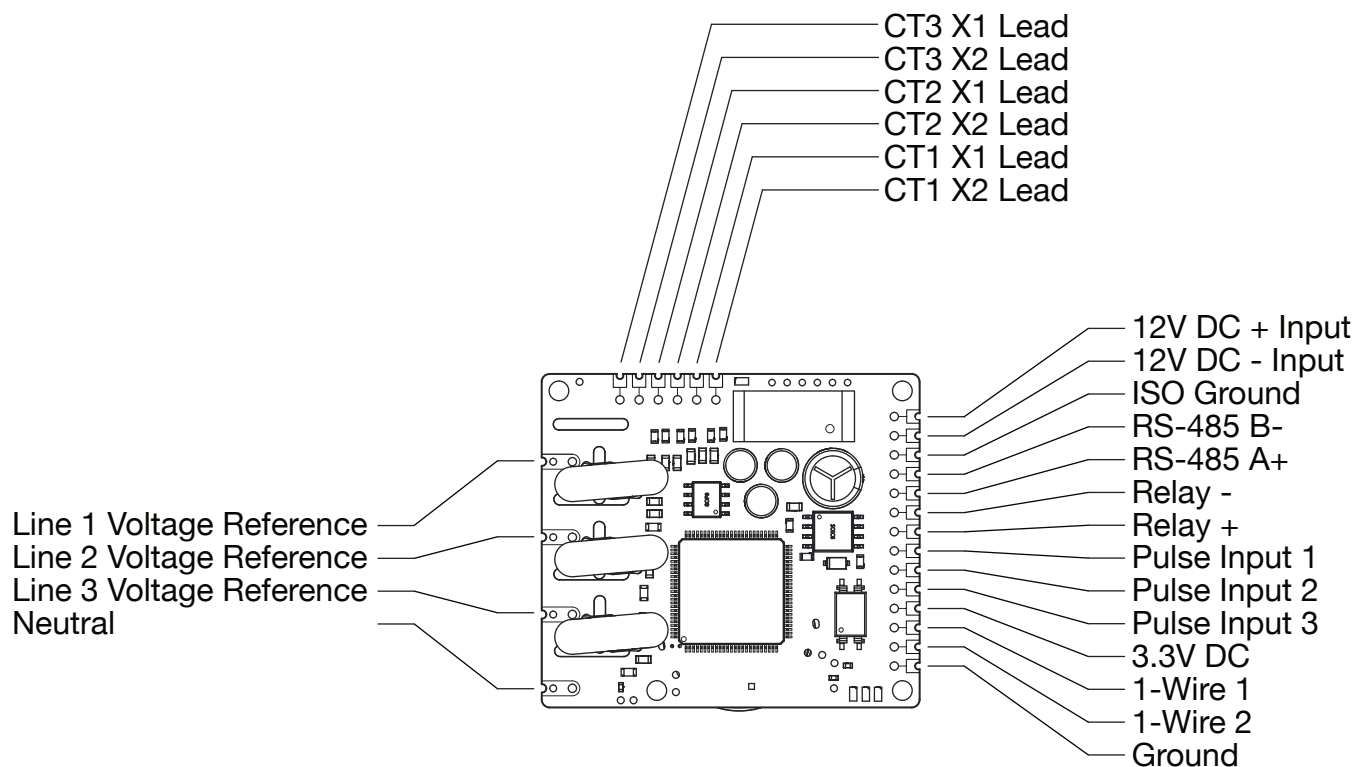


Three-Phase 3-Wire



Three-Phase 4-Wire





RS-485

Terminal A+ connects to RS-485+ or A+ on the RS-485 network. Terminal B- connects to RS-485- or B-. Terminal ISO Gnd is used for the RS-485 network (signal) ground if needed. Observe proper RS-485 network topology. Twisted pair wiring is recommended. Shielded twisted pair may be beneficial in electrically noisy environments or for very long runs. RS-485 supports up to 256 devices on up to 4000 feet wire. Terminating resistors may be helpful.

Pulse Output:

Like all of our meters, the Omnimeter Mini v.4 has a Pulse Output. The Pulse Output 1 pulses at a rate of 800 pulses per kilowatt hour when set to 200 amp current transformers. This is the same rate that the red LED flashes on the LCD screen – 800 times/kWh. Pulse Width 90ms, Polarity Sensitive, max 27VDC, max 27mA. (Fig 10)

CT Ratio	Impulse Constant
100/26.6	1600/kWh
200/26.6	800/kWh
400/26.6	400/kWh
600/26.6	800/3 kWh
800/26.6	200/kWh
1500/26.6	320/3 kWh
3000/26.6	160/3 kWh
5000/26.6	32/kWh

Pulse Input:

The Omnimeter Pulse v.4 can also count the pulses from up to 3 separate pulse output devices. These could be pulses from our Pulse Output Water and Gas Meters or from any other unpowered dry contact pulse output device. Pulse Input ratios can be set in software from 1 to 9999 pulses per increment. The state of the 3 Inputs can also be polled in software, the Omnimeter Pulse v.4 will return a High or Low state for each pin in real-time (use this for sensing switch states, open or closed doors, etc).

Relay Control:

The Omnimeter Pulse v.4 comes with 2 controllable relay outputs. These can be controlled via software. You can set the outputs to be high or low to drive an external relay. The outputs are both 50 mA at 12 volts DC. Control lights, motors, etc by controlling relays. The Relay Control Outputs can also be set to go on or off from 1 to 9999 seconds. The realtime state of the outputs can also be polled via software, such as our EKM Dash.

Warranty:

Within two years from the date of sale, and on the condition that the user abide by the specifications and installation instructions listed here, and the sealing is kept completely intact. If the meter does not correspond with the rule of the enterprise standard, the meter shall be repaired free or replaced.

Data:

The LCD display (optional) shows up to 51 data values. Every five seconds the LCD screen will display a new piece of data. Please note that Measurement Canada requires that only Forward kWh data be used for trade or revenue purposes, so meters programmed for Measurement Canada will only display Forward kWh on the LCD screen. The meter also provides max demand (Watts) data and the demand period can be set to one of three intervals: 15minutes, 30 minutes, or 60 minutes. The max demand can be reset to zero in software over RS485. The meter has four time-of-use tariffs (T1, T2, T3, T4) to calculate the power during different time periods, and it can set up to four time periods per day, and specify the number of the tariff for that period (from T1 to T4). The meter time can be set using the RS485 interface. By design the main kWh registers 01 and 02 cannot be reset, though registers 39 and 40 can be reset. The meter will go at least 30 years without power and still keep its kWh readings. In other words, the memory will not be erased if there is no power. See Fig 8 and 9 below for lists of all LCD register values.

#	LCD Display Data	#	LCD Display Data	#	LCD Display Data
01	Total kWh	17	T2 kWh	33	Reverse kWh on L1
02	Reverse kWh	18	T3 kWh	34	kWh on L2
03	Volts L1 (Line 1)	19	T4 kWh	35	Reverse kWh on L2
04	Volts L2	20	Reverse T1 kWh	36	kWh on L3
05	Volts L3	21	Reverse T2 kWh	37	Reverse kWh on L3
06	Amps L1	22	Reverse T3 kWh	38	Total KVARh (Reactive Total kWh)
07	Amps L2	23	Reverse T4 kWh	39	Resettable kWh
08	Amps L3	24	VARs L1 (Reactive)	40	Resettable Reverse kWh
09	Watts L1	25	VARs L2	41	3 Inputs High/Low
10	Watts L2	26	VARs L3	42	Maximum Demand
11	Watts L3	27	VARs Total	43	Resettable Pulse Count 1
12	Watts Total	28	Frequency (Hz)	44	Resettable Pulse Count 2
13	Cos θ L1 (Power Factor)	29	Pulse Count 1	45	Resettable Pulse Count 3
14	Cos θ L2	30	Pulse Count 2	46	Modbus Address
15	Cos θ L3	31	Pulse Count 3	47	CT Ratio
16	T1 kWh (Time of Use 1)	32	kWh on L1 (Line 1)	51	Forward kWh

