


EKM-Omnimeter Pulse v.4 Spec Sheet



Nominal Voltage Ranges:

- 120V to 480V, 2-wire, Single-phase, One Line & Neutral
- 120V to 480V, 3-wire, Single-phase, 2 Lines & Neutral
- 120V to 480V, 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. Tamper Detection Class 1.

- The equipment is protected throughout by double insulation as indicated by this symbol: 

- Accuracy Class 0.5
- Rated Frequency: 50Hz/60Hz

Safety Precautions:

- Meter should be installed by a qualified electrician.
- Turn off all power supplying the equipment before performing any wiring. Use a properly rated volt meter to confirm power is off.
- Use of this device inconsistent with this manual can cause permanent damage to the unit and/or serious harm to the operator.

Tools/Materials List:

- Volt meter
- Small standard screwdriver
- Wire stripper
- DIN-Rail
- 16-22 AWG UL rated stranded copper wire
- UL rated inline fuse holder with maximum 1Amp UL Listed fuse
- UL Listed Type 4 Enclosure (with appropriately rated conduit and fittings) is required if meter will be installed outdoors

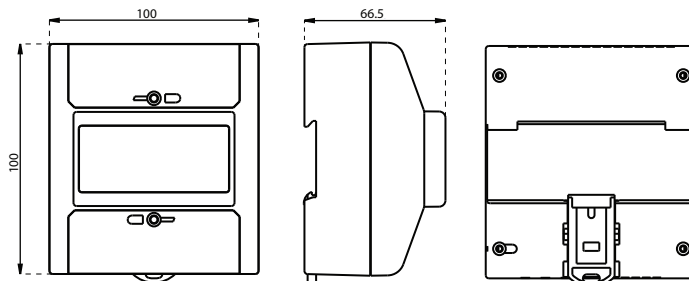
Installation Instructions

For All Systems:

- Disconnect or switch power off before attempting to install, connect, disconnect or service the meter or the external current transformers (CTs). ALL POWER MUST BE DISCONNECTED!
- Mount the meter using 35mm DIN Rail in a protected indoor location. If installing outdoors, a UL Listed Type 4 Enclosure is required.
- IMPORTANT: Distinguish and then identify the Neutral and the Line(s) ('hot' wire(s), usually black or red). Label the Neutral and then, depending on your electrical system, assign labels as described below.

4. Tightening torque of terminals:

Terminals 7,8,9 (Line) and 10 (Neutral): 10.6 to 13.2 in-lb. (1.2 to 1.5 Nm)
All other terminals: 4.4 to 5.3 in-lb. (0.5 to 0.6 Nm)



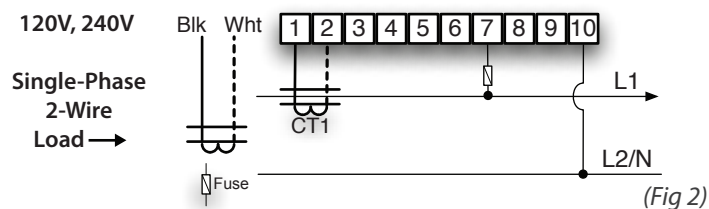
Load current	Power factor COSθ	Basic error %	
		Class 0.5	Class 1
0.05I _b	1.0	±1.0	±1.5
0.1I _b ~I _{max}	1.0	±0.5	±1.0
	0.5(L)	±1.0	±1.5
0.2I _b ~I _{max}	0.8(C)	±1.0	±1.5
	0.5(L)	±0.5	±1.0
	0.8(C)	±0.5	±1.0

(Fig 1)

EKM Omnimeter accuracy class 0.5%

120V, 2-Wire, Single Phase:

- Label Line 1 as L1.
- Fit CT1 around L1. Make sure the arrow is facing towards the load (in the direction of flow). (Fig 2)
- Black CT wire connects to Port 1 on the Omnimeter. White CT wire connects to Port 2. (Fig 2)
- With split core CTs, clamp together until the buttons pop out. Use a zip tie to ensure the CT remains securely closed.
- To power the meter and get a voltage reference: Use a maximum 1.0 Amp inline fuse on L1. Connect one fuse holder pigtail to the breaker, lug or an appropriate line-tap device, and connect the other pigtail to 16-22 AWG UL rated stranded copper wire for connection to the meter.
- L1 connects to Port 7 on the Omnimeter, Neutral to Port 10. (Fig 2)
- Once the meter is properly mounted to the DIN Rail or enclosure and all wiring is completed, with terminal block covers installed, power can be turned back on.
- Meter will then begin cycling through all meter values. For details, go to: http://www.ekmmetering.com/LCD_Display_Register_Values.html
- A video of proper install of a 120V system can be found here: <http://www.youtube.com/watch?v=ky9sgr1LTMk>

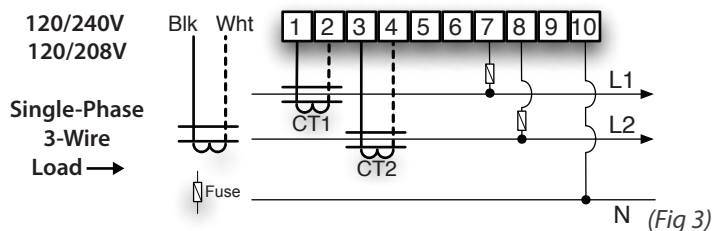


(Fig 2)

120/240V, 120/208V, Single Phase, 3-Wire:

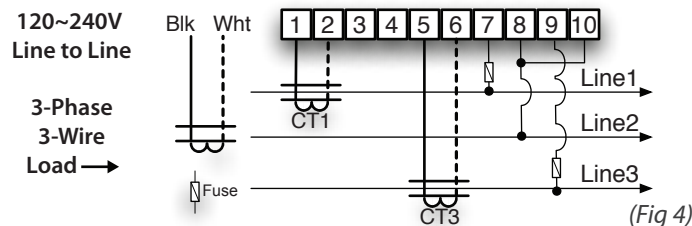
- Label L1 and L2. (Arbitrarily assign labels.)
- You will be using 2 CTs for this install. Label them CT1 and CT2.
- Fit CT1 around L1. Make sure the arrow is facing towards the load (in the direction of flow).
- Fit CT2 around L2.

- Black wire from CT1 connects to Port 1 on the Omnimeter. White wire from CT1 connects to Port 2. (Fig 3)
- Black wire from CT2 connects to Port 3. White wire from CT2 connects to Port 4. (Fig 3)
- With split core CTs, clamp together until buttons pop out. Use a zip tie to ensure the CTs remain securely closed.
- To power the meter and get a voltage reference: Use a maximum 1 Amp inline fuse on L1 and L2. Connect one fuse holder pigtail to the breaker, lug or an appropriate line-tap device, connect the other pigtail to 16-22 AWG UL rated stranded copper wire.
- Tap into L1 at the breaker panel, with small stranded copper wire. This L1 tap connects to Port 7 on the Omnimeter. (Fig 3)
- Tap into L2 at the breaker panel with small stranded copper wire. This L2 tap connects to Port 8 on the Omnimeter. (Fig 3)
- Neutral connects to Port 10.
- Once the meter is properly mounted to the DIN Rail or enclosure and all wiring is completed, with terminal block covers installed, power can be turned back on.
- Meter will then begin cycling through all meter values. For details, go to: http://www.ekmmetering.com/LCD_Display_Register_Values.html
- A video of a proper install of a 120V/240V system can be found here: <http://www.youtube.com/watch?v=ky9sgr1LTMk>



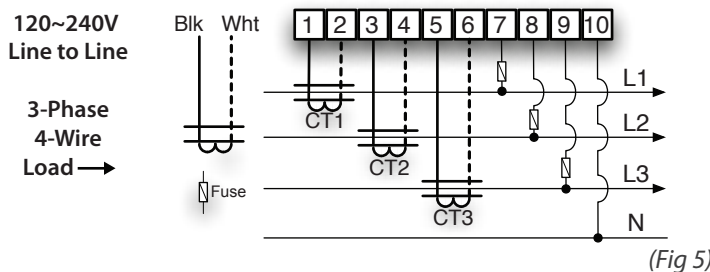
120V-415V, 3-Phase, 3-Wire:

- Label L1, L2 and L3. (Arbitrarily assign labels.)
- You will be using 2 CTs for this install. Label them CT1 and CT3.
- Fit CT1 around L1. Make sure the arrow is facing towards the load (in the direction of flow).
- Fit CT3 around L3.
- Black wire from CT1 connects to Port 1 on the Omnimeter. White wire from CT1 connects to Port 2. (Fig 4)
- Black wire from CT3 connects to Port 5 on the Omnimeter. White wire from CT3 connects to Port 6. (Fig 4)
- With split core CTs, clamp together until buttons pop out. Use a zip tie to ensure the CTs remain securely closed.
- To protect the meter and wiring, use a maximum 1.0 Amp inline fuse on each line.
- To power the meter and get a voltage reference: Tap into L1 at the breaker panel. Connect one fuse holder pigtail to the breaker, lug or an appropriate line-tap device, and connect the other pigtail to 16-22 AWG UL rated stranded copper wire for connection to the meter. This L1 tap connects to Port 7 on the Omnimeter. Tap into L2 and L3 and repeat the connection process. L2 tap connects to Port 8. Be sure to add a jumper to Port 10. (Fig 4) L3 tap connects to Port 9.
- Once the meter is properly mounted to the DIN Rail or enclosure and all wiring is completed, with terminal block covers installed, power can be turned back on.
- Meter will then begin cycling through all meter values. For details, go to: http://www.ekmmetering.com/LCD_Display_Register_Values.html
- A video of a proper 120V-208V, 3-Wire, 3-Phase system can be found here: <http://www.youtube.com/watch?NR=1&v=upNgFNV6EDM>



120V-480V, 3-Phase, 4-Wire:

- Label L1, L2 and L3. (Arbitrarily assign labels.)
- You will be using 3 CTs for this install. Label them CT1, CT2 and CT3.
- Fit CT1 around L1. Make sure the arrow is facing towards the load (in the direction of flow).
- Fit CT2 around L2.
- Fit CT3 around L3.
- Black wire from CT1 connects to Port 1 on the Omnimeter. White wire from CT1 connects to Port 2. (Fig 5)
- Black wire from CT2 connects to Port 3 on the Omnimeter. White wire from CT2 connects to Port 4. (Fig 5)
- Black wire from CT3 connects to Port 5 on the Omnimeter. White wire from CT3 connects to Port 6. (Fig 5)
- With split core CTs, clamp together until buttons pop out. Use a zip tie to ensure the CTs remain securely closed.
- Use a max 1.0 Amp inline fuse on each line to protect the meter.
- To power the meter and get a voltage reference: Tap into L1 at the breaker panel. Connect one fuse holder pigtail to the breaker, lug or an appropriate line-tap device, and connect the other pigtail to 16-22 AWG UL rated stranded copper wire for connection to the meter. L1 connects to Port 7. Tap into L2 and L3 and repeat the connection process. L2 connects to Port 8. L3 connects to Port 9. Neutral connects to Port 10. (Fig 5)
- Once the meter is properly mounted to the DIN Rail or enclosure and all wiring is completed, with terminal block covers installed, power can be turned back on.
- Meter will then begin cycling through all meter values. For details, go to: http://www.ekmmetering.com/LCD_Display_Register_Values.html
- A video of proper install of a 120V-208V, 3-Phase, 4-Wire system can be found here: <http://www.youtube.com/watch?v=DeKiZddR0K8>



RS-485 and Pulse Output:

- Terminal 20 (A) connects to RS-485+ or T+ on the RS-485 network. Terminal 21 (B) connects to RS-485- or T-. Terminal 22 (G) 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 beneficial.
- Terminals 15 and 16 are for pulse output. Pulse rate: 800 Impulse/kWh. Polarity sensitive. Maximum 27VDC, 27mA.
- Red LED on the meter face flashes 800 times/kWh. 1 flash = 1.25Wh.

Pulse Output:

Like all of our meters, the Omnimeter Pulse v.4 has a Pulse Output. The Pulse Output 1 pulses at a rate of 800 pulses per kWh when set to 200 amp CTs. It also has a Settable Pulse Output (S02). The Programmable Pulse output can be set in software to pulse anywhere from 1 pulse per kWh to 800 pulses per kWh (limits are dependent on CT ratio). These are unpowered electronic dry contact pulses that can be counted by standard electronic pulse counters. Pulse counters can be located up to 200 feet away from the Omnimeter Pulse v.4. Connect Pulse Counter to port 16 and port 14 (ground) for the Fixed Pulse Output (this pulses at the same rate as the red pulse output LED on the face of the meter) or port 15 and port 14 (ground) for the Settable Pulse Output. Pulse Width 90ms, Polarity Sensitive, max 27VDC, max 27mA.

Pulse Input:

The Omnimeter Pulse v.4 can also count the pulses from up to 3 different 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). Connect Pulse Generator or Switching Sensor to each of the 3 Pulse Inputs. Connect all grounds to port 14 and each of up to 3 Pulse Generators to ports 11, 12, or 13.

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. 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. The outputs can also be used to power an external device (Wireless 485Bee Module, sensors, etc). Connect 12VDC (50mA max) relays, LED indicators, or buzzers to port 17 (ground) and port 19 for Output1 or port 17 (ground) and port 18 for Output2.