EKM-353EDM-N v.2 Spec Sheet

(Fig 1)

Technical Specifications:
• Three phase, three wire kWh meter
• Rated Voltages: 3*208V, 3*240V, 3*480V
• Rated current: 10(200)A
• Pulse output impulse constant: 800imp/kWh
• 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 *(Fig 3)*
• Rated Frequency: 50Hz/60Hz
• Start current: 0.4% Ib. (1.0)
• Power consumption: ≤1W (when 220V, 20A)
• Weight: 0.32kg
• Outside dimensions: 78x100x65mm *(Fig 1)*

Safety Precautions:
• Meter should be installed by a qualified electrician.
• Turn off all power supplying the equipment before preforming any installation or service. Use a 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 installer or 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

Functions:
• Long-term active electricity measuring without adjustment.
• Meets IEC 62053-21 and IEC 62052-11 standards (static AC active meter)
• With RS485 communication, index in accordance with IEC 62056-21(A mode), which focuses on convenient intelligent energy management.
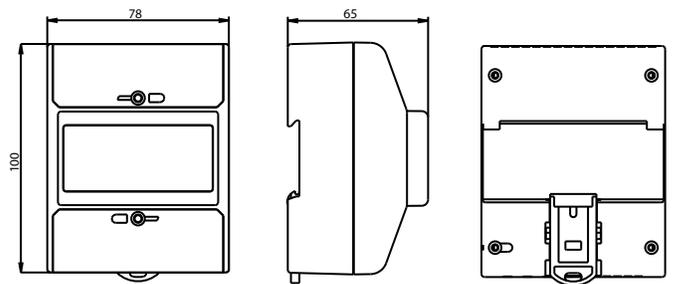
Installation Instructions:
1. Disconnect or switch power off before attempting to install, connect, disconnect, or service the meter or the external current transformers (CTs). ALL POWER MUST BE TURNED OFF!
2. Mount the meter using 35mm DIN Rail in a protected indoor location. If installing outdoors, a UL Listed Type 4 Enclosure is required.
3. IMPORTANT: Distinguish and then identify the hot Lines. Label all three: L1, L2, and L3.
4. Place one current transformer around line1 and connect the white CT lead to terminal 1 and the black CT lead to terminal 2. Place a second CT around line 3 and connect the white CT lead to terminal 5 and the black CT lead to terminal 6. *(Fig 1)*
5. For voltage reference and to power the meter: tap into the hot line 1 and run a wire, with an inline 1A fuse, to terminal 7. Tap into the hot line 2 and run a wire, with an inline 1A fuse, to terminal 8. Tap into the hot line 3 and run a wire, with an inline 1A fuse, to terminal 9. *(Fig 1)*
6. Once the above steps are completed and you are ready, you can turn the power back on and begin to read your meter.

RS-485 and Pulse Output*(Fig 2)*:
• Terminal 11 (A) connects to RS-485+ or T+ on the RS-485 network. Terminal 12 (B) connects to RS-485- or T-. Terminal 13 (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 14 and 15 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.
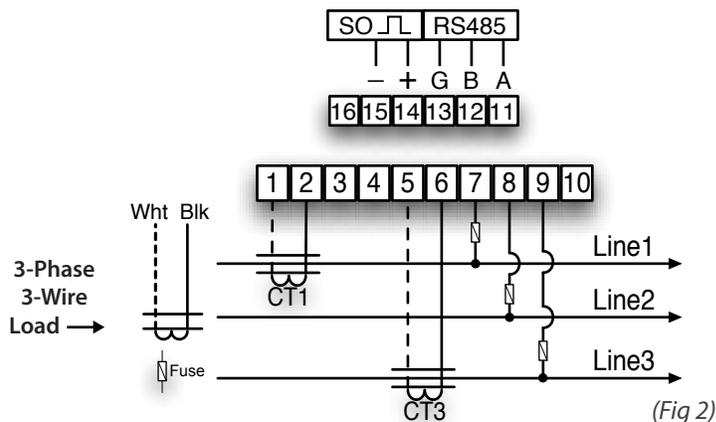
(Fig 2)

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.

Data:
The LCD display shows twelve pieces of data: total electricity consumed(kWh), reverse kWh, L1 voltage, L2 voltage, L3 voltage, L1 current(amps), L3 current, L1 total power(watts), L3 total power, L1 COSθ(power factor), and L3 COSθ. Every five seconds the LCD screen will display a new piece of data. The meter also provides max demand(kW) 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 kWh cannot be reset. This meter requires two external CTs(26.6mA) to operate.

Transport and Handling:
The meter should be handled with care, as there are precision components inside that could break and/or cause faulty readings should the meter become damaged. The process of transportation, handling, and installation should be done according to the transportation and storage rule of GB/T15464-1995. Keep the meter in the original packaging when stored. The storage temperature range should be 0–40ºC. The relative humidity should be ≤85%. There should be no toxic chemicals present and no corrosive substances or gases in the air. The meters should be stacked on a platform no more than ten units high.

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.

Load current	Power factor COSθ	Basic error %		
		Class 0.5	Class 1	Class 2
0.05Ib	1.0	±1.0	±1.5	±2.5
0.1Ib~Imax	1.0	±0.5	±1.0	±2.0
0.1Ib	0.5(L)	±1.0	±1.5	±2.5
	0.8(C)	±1.0	±1.5	---
0.2Ib~Imax	0.5(L)	±0.5	±1.0	±2.0
	0.8(C)	±0.5	±1.0	---

(Fig 3)