

Energy Meter EM330



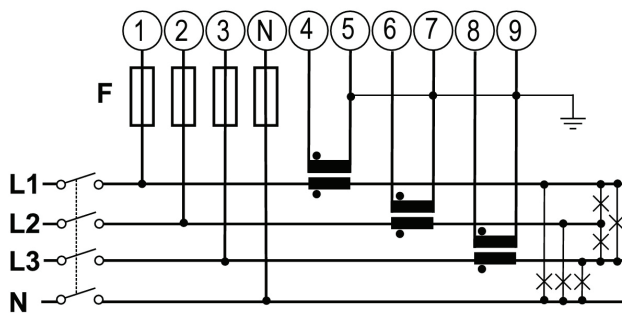
EM330 - Three-phase energy meter with backlit LCD display with integrated touch keypad. Current measured by current transformers with secondary current AAC. Measuring all relevant parameters including voltage (V), current (A), active power (kW) and active energy (kWh). EM330 is retransmitting measured values by RS485 Modbus serial communication.

Split core current transformer

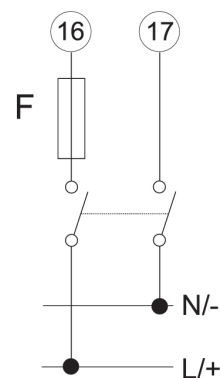


CTA - Split core current transformers are delivered with primary currents from 100 to 600AAC. Secondary current is 5AAC. Connection cable 2-wire with length 1m.

Wiring diagram



Current and voltage inputs



Power supply

Please note: In some countries and regions, the interconnection between 5, 7, 9 and connection to earth is not necessary.

When using current transformers CTA the red wire should be connected to 4, 6 and 8 and the black wire connected to 5, 7 and 9.

Power supply 90-260VAC/DC

Important information

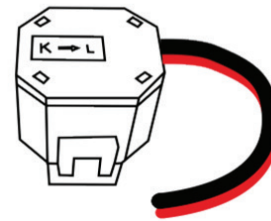
Connection of current transformers

Never disconnect or connect current transformers with primary current through it. Connect current transformers to the meter before mounting on current-carrying wires. Opening the loop with current flowing through the hole of CT could create voltage transients that could be a safety risk to people or damage the current transformer.



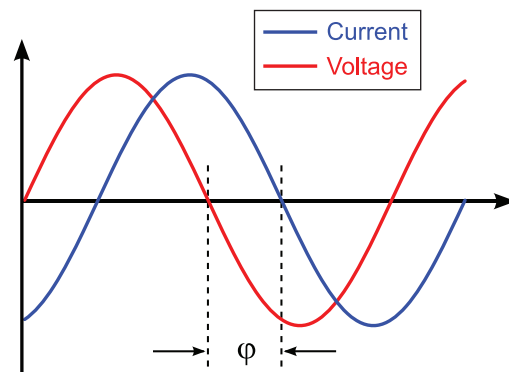
Current transformers direction

The actual current transformer is marked with an arrow. This is the direction from the supply to the load.



Correlation between voltages and currents

When measuring parameters like active power (kW) and active energy (kWh) we do not only measure voltages and currents, but also the phase angle between these values with a value called Power Factor (PF). To be able to measure correct values it must be correlation between voltages and currents. Transformer connected to 4 and 5 (L1) must be on the same phase as voltage connected to 1 (L1) and the same for the other phases. If there is a mix, totally wrong values will be calculated.



Programming

EM330 is preprogrammed with factory settings. For the actual application, the only parameter that has to be changed is the CT-ratio.

By programming CT-ratio, EM330 measures and present the correct values for parameters as current (A), active power (kW) and active energy (kWh).

CT-ratio is the relation between the primary and sec-

ondary currents on the used current transformers. To calculate this, you divide the primary current by 5.

Examples:

Current transformers 100/5A, CT-ratio = 20

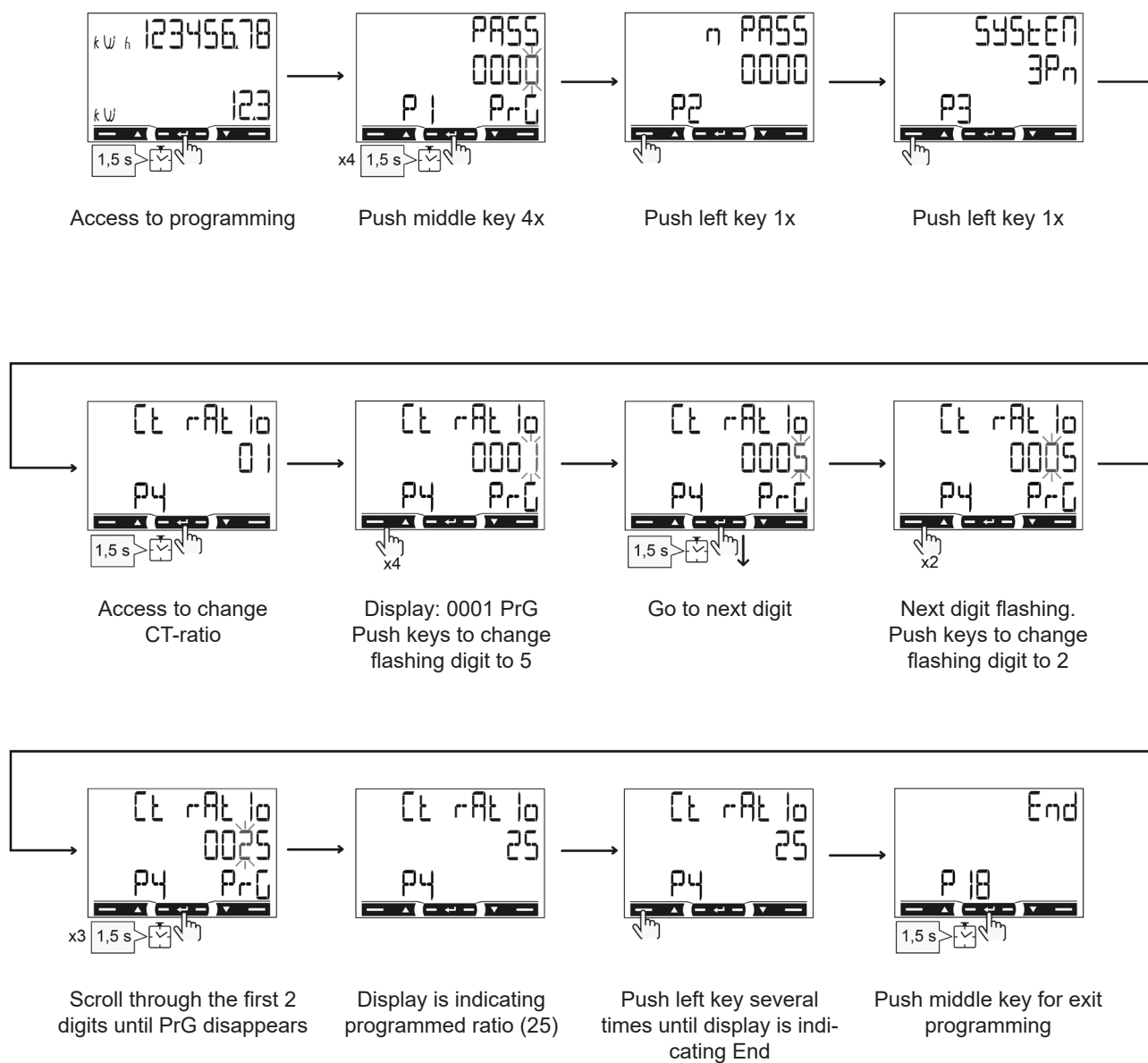
Current transformers 600/5A, CT-ratio = 120

For programming, follow the instructions in the flow chart.

Programming flow chart

Programming of CT-ratio

Example CT 125/5A, CT-ratio 25:

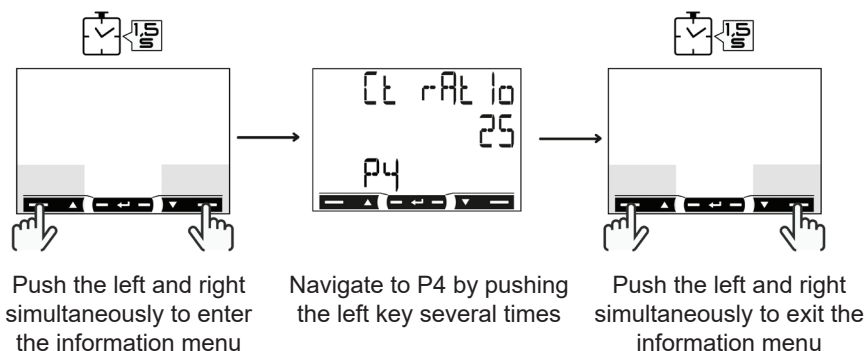


Final inspection

After connection and programming CT-ratio it is important to verify that the connection of current and voltages are ok, and programming of CT-ratio is according to the used current transformers.

Verifying that CT-ratio is ok

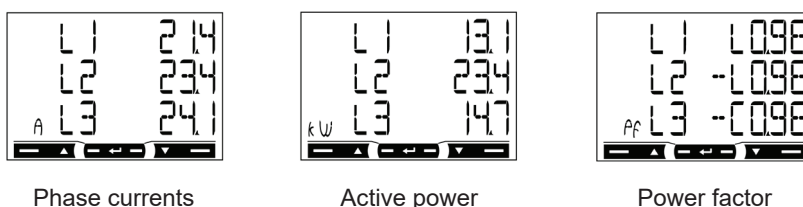
On EM330 an information menu is available. This is presenting meter information and all settings.



Verifying that current and CT-connections are ok

Verifying that current and CT-connections are ok and with correlation between currents and voltages. EM330 has many display pages with indication of all relevant electrical parameters as voltages, currents, active power, reactive power, frequency, Power Factor etc.

To verify go to the following pages using left or right keys:



1. Read the phase currents and consider if the active power values make sense. If the indication of active power is very far from what should be expected this could be a result of lacking correlation.
2. Check that there are no minus signs on the indication of active power. Minus could indicate wrong energy direction on connection of current transformers or lack of correlation.
3. Indication of power factor should normally be $> 0,75$. If you find lower values and also big differences between the values, this could be due to lack of correlation.

If you find any deviations, please correct the relevant connections and try again.