

## EMM.630(M)CT-MID (1A or 5A CT) and EMM.630MCT-RC (Rogowski coils)



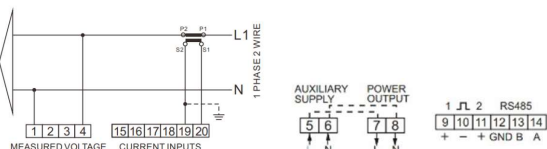
The EMM.630 (M)CT is an advanced 3 phase energy monitor with direct connection to the mains for measuring reference voltages and 3 connections for connecting the current coils 1A or 5A CT or in case of the EMM.630MCT-RC directly coupled Rogowski coils, with which consumers >100A can be measured. The meter is configured via the touch buttons on the front panel and the LCD display. The bi-directional measurement

measures consumption on mono, 3x230V or 3x380V+N power supplies. Both active and reactive power are measured. The reading of the consumption values can be done via the display or on the connected web server. The module is encased in a 4 module wide DIN rail housing. In addition to an RS485 connection, this energy meter also has 2 pulse outputs, 1 of which is adjustable.

### 1. Connect:

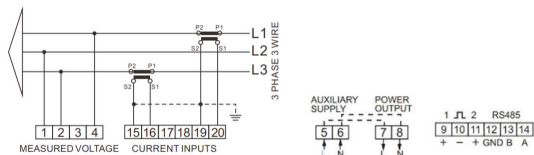
- Caution 1:** To avoid voltage surges: first connect coil conductors to the meter, only then coil to clip current conductors!! Installation of the current coil is only carried out by a qualified electrician!! Wear safety goggles every time you use the coils!!
- Caution 2:** With the EMM.630 CT-MID, the coil type can only be entered once, see point 2. Configuration on the display
- Caution 3:** After connecting the coils, check the **polarity via the display button "P"**, if the power is negative (Watt) or negative PF, then open the coil and turn it over, unless there is injection by solar panels!
- Attention 4:** The measured reference voltage and the measured current MUST be on the same phase: **ALWAYS test with voltmeter** : Voltage between conductor reference voltage and conductor current coil must be ZERO, otherwise you have a wrong measurement!! Here you can use the voltage drain terminals type UAD (see website)

#### EMM.630 (M)CT: Mono-phase connection



**On display:** Set as mono-phase: SYS 1P2  
**Reference Voltage:** Neuter on Terminal 1; Phase on Terminal 4  
**Power coil:** Keep current arrow on coil, arrow pointing to consumer! Black conductor (=GND) on Terminal 19; White Conductor on Terminal 20  
**Module supply voltage:** Neuter on Terminal 6, Phase on Terminal 5  
 Remark : Loop-Loop Clamp according to meter Clamp 7= Clamp 5; Terminal 8= Terminal 6  
**Connecting Modbus:** Terminal A (=13) and B (=14) and GROUND (=12 GND)

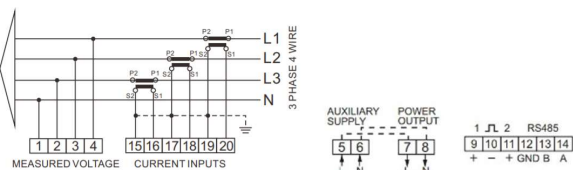
#### EMM.630 CT: 3x230V connection



**On display:** set as 3 phase/3 conductor: SYS 3P3  
**Reference Voltage:** L1 on Terminal 4; L2 on Clamp 1; L3 on Terminal 2  
**Current coil:** Keep the current arrow on the coil, the arrow points to the consumer!  
 Coil L1: Black conductor (=GND) on terminal 19; White conductor on terminal 20  
 Coil L2: Current I2 (I1+I2+I3=0) is calculated, so no need to measure and therefore no coil needed! For this reason, there is no power logged in the Memo for this phase2.  
 Coil L3: Black conductor (=GND) on terminal 15; White conductor on terminal 16  
**Supply voltage:** Neuter on Terminal 6; Phase on Terminal 5

Remark : through-loop-Clamp according to meter: Terminal 7= Terminal 5; Terminal 8= Terminal 6  
**Modbus connection:** Terminal A (=14) and B (=13) and GROUND (=12 GND)

#### EMM.630 CT: 3x380V+N connection



**On display:** Set as 3 phase/3 conductor: SYS 3P4  
**Reference Voltage:** L1 on Terminal 4; L2 on Terminal 3; L3 on Terminal 2; N=Terminal 1  
**Current coil:** Keep the current arrow on the coil, the arrow points to the consumer!  
 Coil L1: Black conductor (=GND) on Terminal 19; White Conductor on Terminal 20  
 Coil L2: Black conductor (=GND) on Terminal 17; White Conductor on Terminal 18  
 Coil L3: Black conductor (=GND) on Terminal 15; White Conductor on Terminal 16  
**Module supply voltage:** Neuter on Terminal 6; Phase on Terminal 5  
 Note: loop-through to next meter Terminal 7= Terminal 5; Terminal 8= Terminal 6  
**Connecting the modbus:** Terminal A (=14) and B (=13) and GROUND (=12 GND)

### 2: Configuration on the display:

This module is partly pre-configured, all that remains to be entered is:

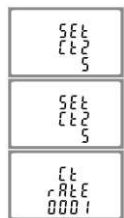
- a **UNIQUE** Modbus address, number between 1... A 247
- the type of power supply mono, 3x230V, 3x380V+N, standard at 3x380+N
- The type of coil: Be careful, this can only be done once and cannot be adjusted afterwards!! See also video <https://www.2-wire.net/product/3f-energie-meter-mid-stroomspool-modbus-emm-630-ct/>

How to get into SETUP:

Keep pressing the bottom **button 4 (enter→)** until PAS 0000 appears, enter default password PAS 1000 by pressing **button 2 (M↑)** until 1, short press button 4 (enter) for next number or long press enter to go to next setting. Use **button 3 (P↓)** to go through the set values and adjust the necessary Modbus values. Briefly press **button 1 (U/I←)** to exit menu.

The Modbus parameters to be set:

- 9600 8N1
- Modbus address : Id001... id247
  - Baud rate: b 9600
  - Parity: Prty n (parity none)
  - Data: 8 bit
  - Stop bit: 1
- Secondary amperage of the coil 1Ampere or 5Ampere: SET Ct2 5 **With the EMM.630CT-MID this can only be set once!!**
- Multiplication factor = ratio of primary / to secondary current of the coil, e.g. 100A/5A= 20: Ct rRATE 0020
- With the EMM.630CT-MID, this can only be set once!**
- In case of Rogowski: CT1 must be set to 1kA



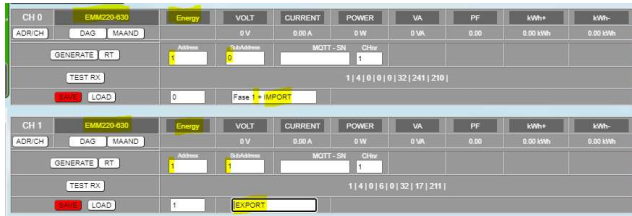
#### ATTENTION:

- The values SET Pt2 400 and Pt rATE 0001 are for high voltage and can only be adjusted once. **Leave it on DEFAULT!!**
- The backlight of the display can be set to 0/5/10/30/60/120 minutes where 0 stands for continuous illumination, avoiding this '0' setting for the sake of lifespan.



### 3: Configuration in the web server

In the webserver go to Level3 (installer level), click on the button "EDIT GROUP-CHANNELS" enter the word 'Level3' and press the button 'CANCEL', you will now see 'Level3' at the top left. In this installers Level3 you can add meters.



- Click on the "EDIT GROUP-CHANNELS" button The 'ADD CHANNEL x(Y)' button in the pop-up window will create a new CHx channel. Unless you enter 'Y' in 'Channel Nr' because then CHY will be created. Large (Y) is an unused channel in the ascending sequence of channel numbers
- Choose type 'EMM220-630' as module and select the mode 'ENERGY' (both are already selected by default)
- Enter the unique Modbus address of the module: E.g. 25 (NOT 025!!)
- Enter Modbus sub-address : '0'= IMPORT, '1'= EXPORT
- Give a name to the meter: E.g. EMM.220 F1 and press "SAVE", confirm OK and the log channel is created
- You can also make a 2nd channel to measure the injection (=export).
- Use the 'ADD CHANNEL x(X)' button to create an additional channel.
- Now, to the right of the "LOAD" button, enter the channel number of the previous configuration and press the "LOAD" button to take a copy.
- Change sub-address to '1' to measure the export and change the name to e.g. 'F1 export'
- Press "SAVE" to upload your configuration to the web server.
- With the "TEST RX" button you can test the communication between MEMo3 and the meter. In case of error: Check Modbus settings and cabling,...

**MEMo3b:** See also Memo3b manual point 9. Above is an example with CH0=phase 1+import, CH1=export. So: module=EMM220-630, mode=Energy, Modbus address and sub-address, name and then 'SAVE'. Mono-phase or 3 phase meter are configured in the same way. With a 3 phase meter you can create a 3rd channel with subaddress 2 for phase 3.

**ReMI:** Configuration as Modbus master: Channel Type "Modbus", device id will be 'Master EMM220' or 'Master EMM630' for the 3 phase meters. Para1 shows the Modbus address of the meter, para 2 shows '0' for import and '1' for export. 'Name' and 'Save' with password 'adminREMI'. Example:

Channel	Type	Device Id	Para1	Para2	Units	EPC	Name	Peak
CH12	Modbus	Master EMM220	5	0	kWh	<input type="checkbox"/> <input type="checkbox"/>	import	<input type="checkbox"/>
CH13	Modbus	Master EMM220	5	1	kWh	<input type="checkbox"/> <input type="checkbox"/>	export	<input type="checkbox"/>

### 4. Reading values on the display

There are 4 touch buttons, by pressing them briefly each time, you can read the following measured values:

**Knob1 U/I (voltage/currents):** voltages between phase-Neuter Volts→ current per phase in Ampere→ Harmonic on voltage between phase and neuter THD in %→ Harmonic on current THD in %

→**Button 2 M (frequency, PF, peak):** frequency and power factor→ power factor per phase → maximum current per phase with set sample time after reset → maximum total power set sample time after reset

**Button 3 P (powers):** current active power per phase in kW→ current reactive power per phase in kVar→ current VA per phase in kVA→ total power in kW, KVar, kVA

**Button 4 E (meter readings)\*:** meter reading total active consumption in kWh→ meter reading total reactive consumption in kVarh→ meter reading import active consumption in kWh → meter reading export active consumption in kWh → meter reading import active consumption in kVarh → meter reading export active consumption in kVarh →

\* Meter readings on 2 lines read as 1 line: 0001 04.80 kWh=104.80kWh

\*\* Meter reading total consumption refers to import + export

### 5. What values are logged.

MEMo logs every 60 seconds Total active consumption over the 3 phases:

- Meter reading import in kWh
- Meter reading export in kWh

Per phase:

- Voltage in Volts
- Current in Amperes
- Power in Watts
- Power factor
- Reactive power VAR

Please note: with a 3x230V, the calculated values (P,I) for phase 2 are not displayed in the web server, but phase 2 is counted for consumption.

### 6. General remark:

- The current meter readings import and export can be read in the web server (light green values).
- Import consumption over 3 phases is calculated with 1 hour resolution on the basis of difference counter reading and shown in the MEMo3 graph of phase 1 (Modbus sub-address 0). Export consumption can be found at phase 2 (Modbus sub-address 1), see FAQ on 2-wire.be
- Via button E on the display, ToTal Energy = Import +Export in kWh
- In the MEMo3 you can add groups and sort channels at "EDIT GROUP-CHANNELS" and with the "SORT" button, see manual MEMo3
- The web server does not show any negative graphs, so the Emeter for solar must be connected according to the direction of the current.
- If current power is set to 0 in the web server, check the flow direction of the coils via display
- Current direction is wrong if PF or power on the display is negative, In case of error, **open the coil and turn it over to avoid a power surge!!**
- Coil conductors can be extended by a few meters with the same section
- The detailed manual is available on our website

### 7. Installation instructions

Installation must be carried out by a certified installer and in accordance with the regulations in force. The module must be built into a fireproof fuse box. During installation, the following must be taken into account (non-exhaustive list):

- the applicable laws, standards and regulations.
- the state of the art at the time of installation.
- This manual, which only mentions general provisions and should be read in the context of each specific installation.
- the rules of good workmanship.
- the specified specs in this manual, otherwise there is a risk of damage to the module.

This manual must be attached to the electrical installation file. On the 2-Wire website you can always find the most recent manual of the product.

### 8. Support

Would you like to have the product repaired in case of a possible defect? Please contact your supplier or order "inspection module" online.

### 9. Warranty provisions

The warranty period is two years from the date of delivery. The delivery date is the invoice date of purchase of the product by the consumer. If no invoice is available, the production date applies. The consumer is obliged to inform Qonnex bvba in writing of the lack of conformity, and this at the latest within two months after discovery. In the event of a lack of conformity, the consumer is only entitled to a free repair or replacement of the product, which is determined by Qonnex.

Qonnex is not responsible for a defect or damage resulting from incorrect installation, improper or negligent use, incorrect operation, transformation of the product, maintenance in violation of the maintenance instructions or an external cause such as moisture damage or damage due to overvoltage. The mandatory provisions in national legislation on the sale of consumer goods and the protection of consumers in countries where Qonnex sells directly or through distributors, agents or permanent representatives take precedence over the above provisions.

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