

## EMM.120 MID and EMM120 CT



EMM.120 and EMM.120 CT are advanced mono-phase energy meters with Modbus RTU connection. The reading of the consumption values can be done via the display or on the connected web server.

The module is encased in a 1 module wide DIN rail housing with either direct current passage up to 45A (EMM.120-MID) or a connection for a

**100mVolt** current transformer for indirect current measurement. (EMM.120 CT). The coil (100mVolt) must be ordered optionally, see 2-Wire price list.

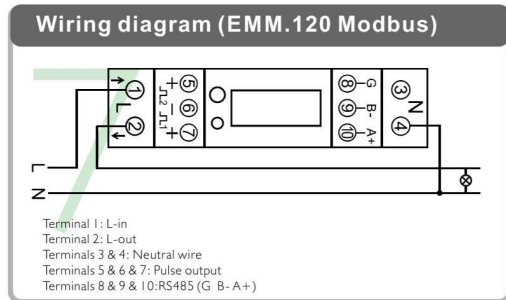
The flush current setting at EMM.120CT is preset either to 50A or to 100A, this setting can be changed via display.

The Modbus address can be read via the LCD display.

In addition to an RS485 connection, both modules also have 2 pulse outputs.

### 1. Connecting:

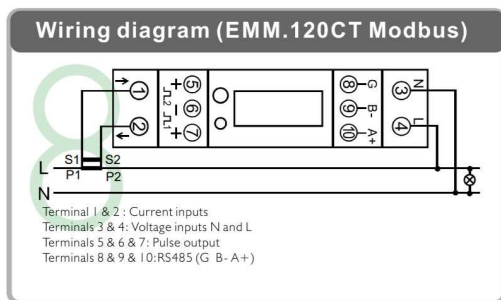
#### EMM.120



**Note:** different from EMM.120CT!!

- Power Supply:** L1-in on Terminal 1, L1-out on Terminal 2, N in/out Terminal 4
- Modbus:** Connecting G, A and B

#### EMM.120 CT SINGLE 100mVolt coil



**Please note:** different from EMM.120!!

- Spool:** on Terminal 1 and Clamp 2
- Power Supply:** L1 on Terminal 4, N on Terminal 3
- Modbus:** Connecting G, A and B

**Caution 1:** To avoid voltage surges: first connect coil conductors, only then coil to clip current conductors!! Installation of the current coil is only done by a qualified electrician!! Wear safety goggles every time you handle the coils!!

**Caution 2:** Always check polarity **on display** via display button, if negative power (Watt) or negative PF then open the coil and turn it over!

**Attention3:** In the case of mono-phase measurement in a multi-phase installation, measure voltage and current on **the same phase**:  $P(\text{power}) = U1(\text{voltage phase1}) \times I1(\text{current phase1}) \times \cos \phi$ , otherwise the measurement is NOT correct!!

## 2. Configuration on the display:

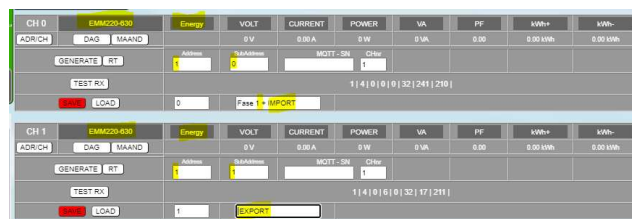
Both these modules are pre-configured, the Modbus can be read in the display. The set Modbus parameters: 9600 8N1

- Modbus address : Id001... id247
- Baud Rate: 9600 baud
- Data: 8 bit
- Parity: Prty n (parity none)
- Stop bit 1
- Extra for EMM.120CT: Amperage coil : Ct0100 (preset to 100A coil or to 50A coil)

**Note:** Some pre-set values can be changed in SET mode, pressing the button a little longer.

## 3. Configuration in the MEMo3 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 creates a new channel. Unless you enter 'Y' in 'Channel Nr', the channel small 'x' 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(Y)' button to create an additional new 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. Enter a 'Name' and press 'Save' with password 'adminREMI'. Example:

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

#### 4. Reading values on the display

1	0004188	Total active energy (kWh)
1-1	0002452	Export active energy (kWh)
1-2	0002322	Current active energy (kWh)
2	2198	Voltage (V)
3	2048	Current (A)
4	22402	Active power (W)
5	F 5000	Frequency (Hz)
6	PF 100	Power factor (PF)
7	14001	Modbus address (CT)
8	b 2400	Modbus address (CT)
9	noNE	Modbus address (CT)
10	ct0005	Modbus address (CT)

By briefly pressing the push button each time, you can read all measured values and Modbus parameters: (value CT current coil (line 10 in bitmap) only in case of EMM.120CT)

Total kWh → Import kWh → Export kWh → Voltage → Current → Power W → Frequency → Power Factor → Modbus address → Baud rate → Parity → CT value

The preset Modbus parameters: 9600 8N1

The list of all Modbus registers for linking to a Modbus reading system is available via our website.

#### 5. What values are logged.

MEMo logs every 60 seconds:

- Meter reading import in kWh
- Meter reading export in kWh
- Voltage in Volts
- Current in Amperes
- Power in Watts
- Power factor
- Reactive power in VAR

#### 6. General remarks:

- The current meter readings import and export can be read in the web server (light green values).
- In the MEMo3 you can add groups and sort channels at "EDIT GROUP-CHANNELS" and with the "SORT CHANNELS" button, see manual MEMo3
- Because the web server cannot display negative graphs, the solar panel E-meter must be connected according to the direction of the current.
- If power in the web server shows zero value, then probably the polarity of the coil is wrong
- With the help of the RG.016 module, this meter can be read wirelessly via Memo and MiLo
- The current coil should only be extended by a few meters with the same section.
- The comprehensive manual with all technical specifications, detailed configuration, Modbus registers is available via our website [www.2-wire.net](http://www.2-wire.net)

#### 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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