

Installation manual

CheckWatt CM10 and Acuvim IIR

Updated 2024-11-13

The installation of the CheckWatt CM10 and the Acuvim IIR electricity meter from Accuenergy is done according to the respective installation manuals. The following documentation specifically describes how communication is established between CheckWatt CM10 and electricity meter Acuvim IIR as well as schematic sketches for connecting the electricity meter with current transformer (CT) and rogowski coil (RC).

For more information and wiring diagram, see [installationmanual Checkwatt CM10](#) and [Accuenergys manual for Acuvim II](#).

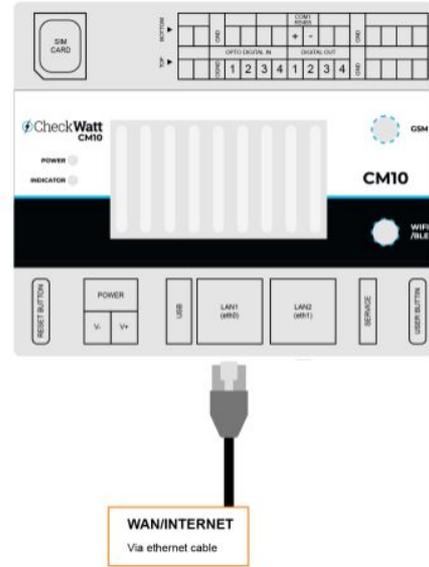


Installation: CM10 communication - Acuvim

Connect the WAN (Ethernet cable) between the property's router* and **LAN 1 (eth0)** on the CM10 for internet connection to the CM10.

* or other network equipment such as PLC-modem, wifi-repeater or network switch.

NOTE! LAN 1 and LAN 2 must not be mixed up as they have different functions.



For connecting only Acuvim to CM10

Connect the Ethernet cable from LAN2 (eth1) on the CM10 to the Acuvim Ethernet port 1 (on the bottom of the electricity meter)

CM10 provides subnet with router function via RJ45 port labeled 'LAN2' with specification:

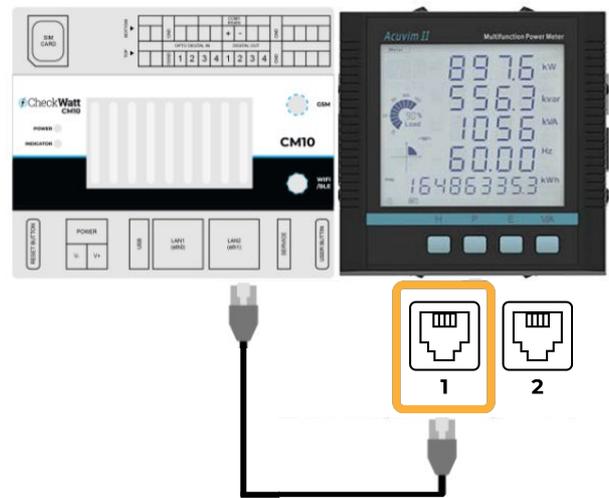
DHCP* 192.168.5.100-192.168.5.240

Static IP 192.168.5.2-192.168.5.99

Gateway 192.168.5.1

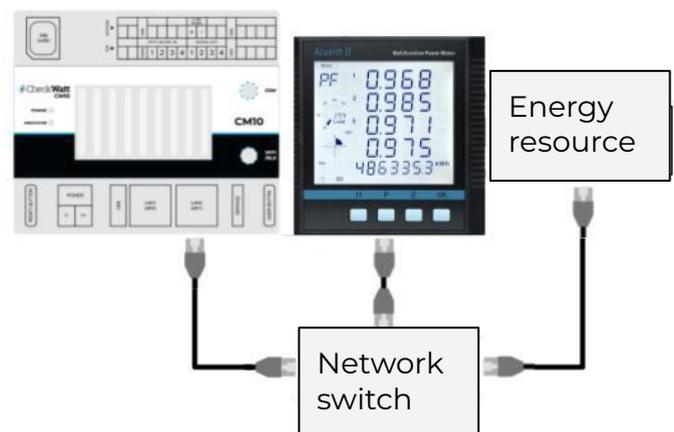
Subnet mask 255.255.255.0

NOTE! The router function works even if connection via LAN1 is down because the CM10 has a built-in modem and SIM.



For connecting Acuvim and energy resource

If several devices are to be connected to the same CM10, a network switch is needed. Connect the Ethernet cable from LAN2 on the CM10 to the network switch. Then connect the network switch to Acuvim's Ethernet port 1 (on the underside of the electricity meter).



Settings

Electricity meters purchased from CheckWatt come pre-configured. If electricity meters are ordered without accompanying current transformer (CT) or Rogowski coils (RC), the CT ratio needs to be adjusted by an electrician during installation. If the electricity meter is **not** purchased from CheckWatt, the following settings need to be made by the installer.

CT-ratio

CT can be set via the Acuvim web interface under Settings→Meter→General or directly on the electricity meter according to the supplied manual.

Static IP

Setting is set via web Interface: Settings→Communication→Network and should be:

IP: 192.168.5.71

Gateway IP for CM10: 192.168.5.1

Subnet mask for CM10: 255.255.255.0

DNS: 8.8.8.8

Fast read

Setting is set via web Interface: Settings→Communication→Network and should be:

Fast read: 'enable', '50 ms'

NOTE:

If an error message is displayed when setting the fixed read, check on the meter screen that setting - SYS - S37 is set to WEB2 and that setting - SYS - S03 BPS2 is set to 115200, if not, update the settings and restart the meter.

Disable Wifi

Setting is set via web Interface: Settings→Communication→Network and should be:

Enable wifi: *"disable"*

PT-ratio

Measurement on high voltage needs to be supplemented with a voltage transformer (PT). PT ratio can be set via Acuvim's web interface under Settings→Meter→General or directly on the electricity meter according to the supplied manual.

Realtime Reading (Only for Modbus)

Set to "Secondary". If this is set to primary, the measurement is scaled incorrectly when reading via Modbus TCP.

Schematic diagram

Electricity meters are connected to measure the total power of the controlled energy resource, e.g. battery charging and discharging. The schematic diagram below show how CT and RC are connected excluding other load/production in the plant.

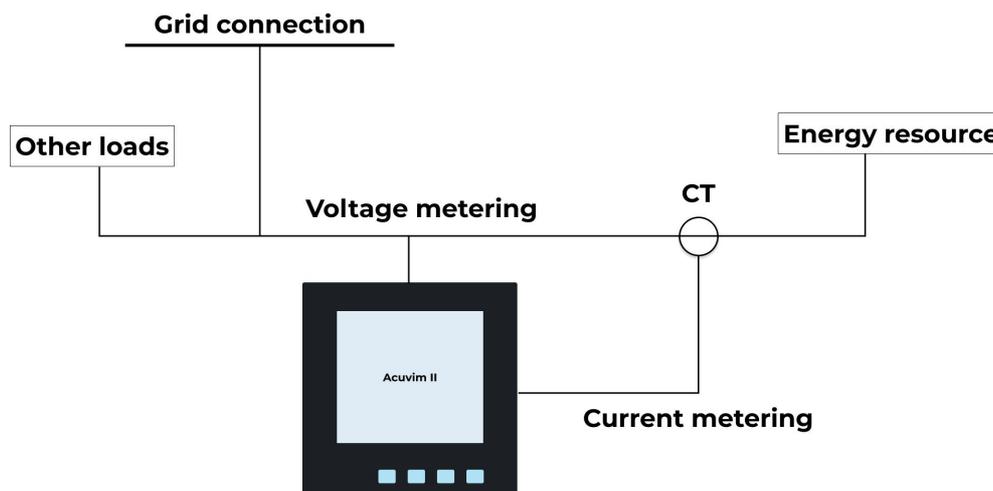


Figure 1. Schematic diagram of CT connection. For wiring diagram, see [Accuenergy manual](#).

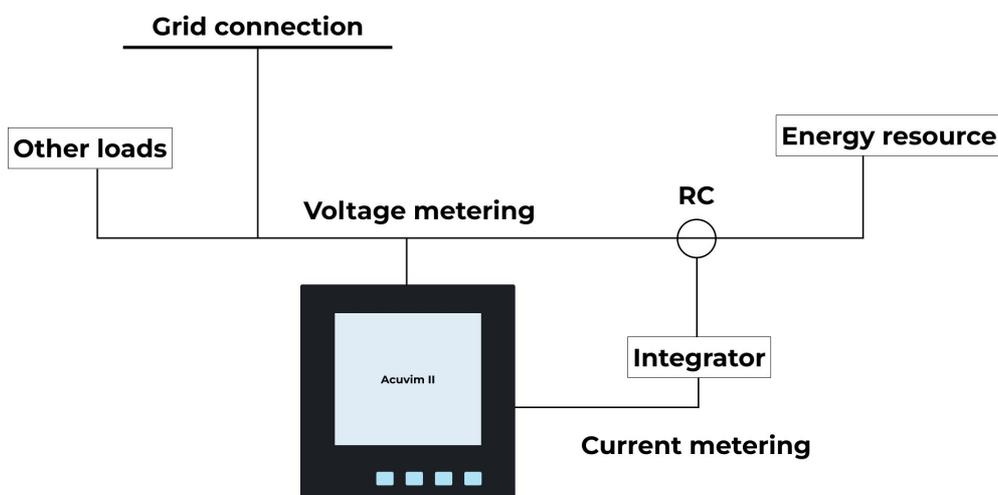
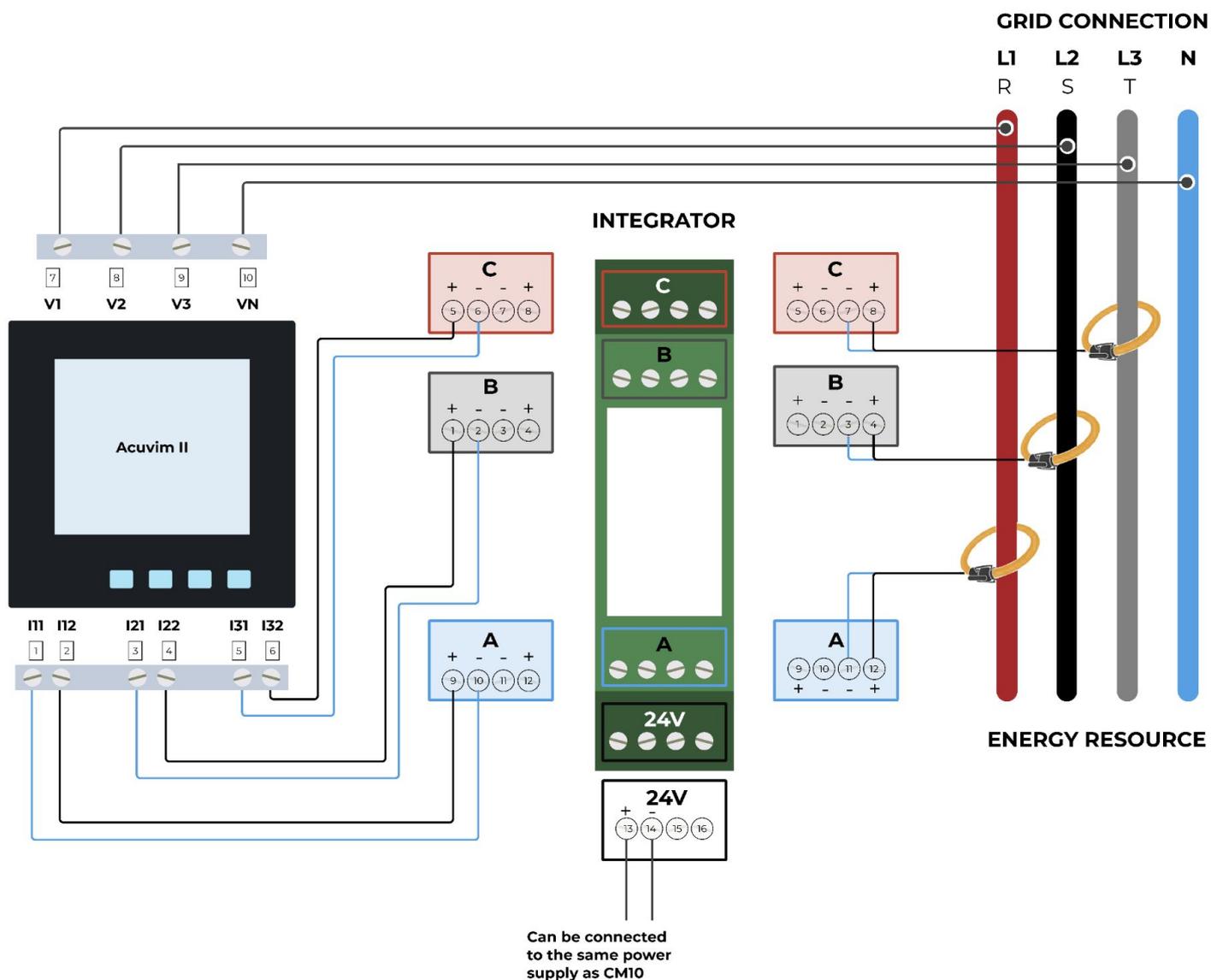


Figure 2. Schematic diagram for connection of RC via integrator. For wiring diagram, see [Accuenergy manual](#).

Wiring diagram

Electricity meters are connected to measure the total power of the controlled energy resource, e.g. battery charge and discharge. The wiring diagram below shows how Acuvim is connected via integrator with RC.

Note that the integrator can be powered by the same power supply as the CM10. Therefore, an additional power supply is not included with the purchase of Acuvim.



Checking the installation - Checklist:

For metering with CT

Carry out a load test and check that the electricity meter gives correct values. In case of deviating values, check that:

- CT clamps are installed in the same direction
- CT rate has the correct scale factor (e.g. 300/5 A)
- The order of the phases corresponds to the connected measurement of current and voltage
- Correct current per phase
- Correct voltage per phase
- Correct line-to-line per phase

Verification

The system must charge or discharge during verification.

Verification of power measurement

Press P until “P” is displayed in the top left of the window (see picture). The **power** is now presented per phase. One line per phase and the bottom line shows the total. All values should be positive or negative. If only one value is positive/negative, the clamps are not installed correctly. See left picture below.

Press P until “PF” appears in the upper left. The **Power Factor** is presented in the same sequence as for power. The values should have the same sign and be close to 1. If several values are close to 0.5, the phase sequence in voltage/current measurement is not correct. See right image below.



Figure 3. Power per phase



Figure 4. Power Factor per phase

Checking the installation - Checklist:

For metering with RC

Carry out a load test and check that the electricity meter gives correct values. In case of deviating values, check that:

- Integrator is lit and correctly installed.
- RC clamps are installed in the same direction
- CT rate has correct scale factor (ex 300/1 A)
- The order of the phases matches the connected measurement of current and voltage
- Correct current per phase
- Correct voltage per phase
- Correct line-to-line per phase
- Signal cables between integrated and Acuvim are not earthed.

Verification

The system must charge or discharge during verification.

Verification of power measurement

Press P until “**P**” is displayed in the top left of the window (see picture). The **power** is now presented per phase. One line per phase and the bottom line shows the total. All values should be positive or negative. If only one value is positive/negative, the clamps are not installed correctly. See left picture below.

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Figure 3. Power per phase



Figure 4. Power Factor per phase