ULYS MCM Quick Start (MS1-7672 Ind 01)

CHAUVIN ARNOUX
ENERGY
CHAUVIN ARNOUX ENERGY
16, rue Georges Besse
92182 ANTONY Cedex - FRANCE
Tel: +33 1 75 60 10 30
https://www.chauvin-arnoux.com/en

After-sales Service Contact:
MANUMESURE
45 route de Saint Eugène
14130 REUX
Tel: +33 2 31 64 51 55
ct.reux@manumesure.fr

This manual gives the information necessary to install and set up the ULYS MCM device.

For further information about the product and communication table, please refer to the User manual MS1-7673 available on the Chauvin Arnoux Website.

1. Characteristics

- ULYS MCM is able to measure and monitor multiple electric power loads
- Power monitoring on a maximum of 54 single phase or 18 3P4W feeders - Flexibility of settings for all feeders
- Measurement: V (L-N, L-L), A, Hz, PF, Unbalance, Power (P,Q,S), Energy
- Compatibility with current sensors: Rogowski coils and current transformers 1/3 V
- Digital output trigger on alarms: Sag / Swell / Over Current / Temp Alarm / Max Power Demand
- Temperature measurement: 1 analog input terminal (NTC)
- Support RS232 / RS485 Serial (Modbus RTU) and Ethernet (Modbus TCP) Communication

2. Specification

⚠ WARNING

ULYS MCM should be installed inside of an electric cabinet or panel to prevent access to its terminals by persons after it is installed. ULYS MCM is an indoor product, therefore care shall be taken not to expose it directly to the external environment.

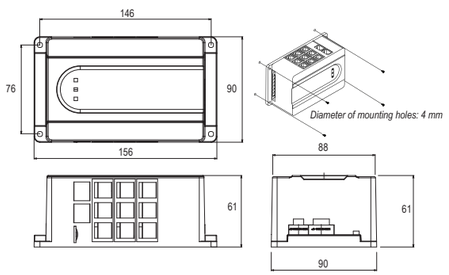
ITEM		SPEC
Power System		1P2W, 3P3W, 3P4W
Inputs Rating	Voltage (Umin - Umax)	43-690 V~ between phases
	Voltage (Vmin - Vmax)	25-400 V~ between phases and neutral
	Measurement Category	Cat III
	Frequency	45-65 Hz
	Current	0-333 mV (max 0.5 V p-p) | Impedance: 20 kΩ
	Digital Input	1 point, 230 V~, external power supply
	Temperature NTC	25°C, 10 kΩ, (β(25/85)=3,970°k)
Auxiliary Supply	Voltage	100-240 V ~
	Frequency	50-60 Hz
	Max Voltage (L-N)	Short term: 1,440 V~ - Long term: 490 V~
	Power Consumption	0.09-0.09 A
	Overvoltage Category	Cat II
Communication		Modbus RS485 Modbus TCP RS232
Output Contact		1 NO (Normally Open) SPST (Single Pole Single Throw)
Pollution Degree		2
Altitude		≤ 2,000 m
Operating Temperature Storage Temperature		-10°C to +55°C -25°C to +70°C
Maximum Humidity		5-80% RH non-condensing
IP degree of protection according to IEC 60529		IP20 IP40: front panel ULYS MCM D
For Indoor Use Only		

3. Mechanical Installation

Upon receipt of the device, check that it has not been damaged during transport. If there is any problem, please contact the After-sales Service concerning a possible repair or replacement. (Do not connect the device.)

The normal operating position of ULYS MCM is the horizontal position.

The illustrations below show the product's overall dimensions and mounting with the aid of four screws.



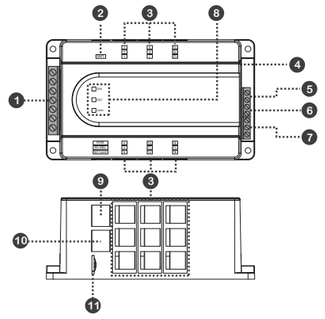
4. Electrical Installation

Before installing the device:

- Check that the electrical network is disconnected and secured in accordance with electrical safety regulations.
- Check that the voltage of use and of the network are the same.

The connection wiring must be done according to the rules of art. The communication lines and digital/analog inputs/outputs must be separated from power lines. Depending the installation, shielded cables must be used for low level signals, connecting the shielding to the reference potential.

4.1 Description of ULYS MCM



No.	Name	Description	
1	Voltage Input*	Voltage input terminal for measurement	See 4.2
2	Ethernet Port	Communication with Master (Modbus Slave) Protocol: Modbus TCP/IP Speed: 10/100 Mbps	See 5.3
3	1~18 CT Port	RJ12 connectors for current sensor connection	See 4.4
4	Temp. sensor	NTC temperature sensor It measures the present temperature by NTC at this port.	
5	DO Terminal*	Digital Output Terminal Rating is 250V~/5A, 30VDC/5A resistive DO terminal is used as described in User Manual	
6	DI Terminal*	Digital Input Terminal Rating 220 V~ latch voltage input is needed	
7	Control Power*	Supply the control power to the ULYS MCM	See 4.3
8	Status LED		See 5.1
9	PDM Port	RS232 Port to connect the computer or the ULYS MCM D remote screen	
10	RS485 Port	RS485 Port to connect the computer or external PLC	
11	SD Card Slot	Micro SD Card Slot	

**The cross-section of the connecting cables must be 0.5 mm² to 2.5 mm² (minimum AWG 26, maximum AWG 12 wires). The field wiring tightening torque is 0.4 Nm.*

4.2 Voltage measurement input

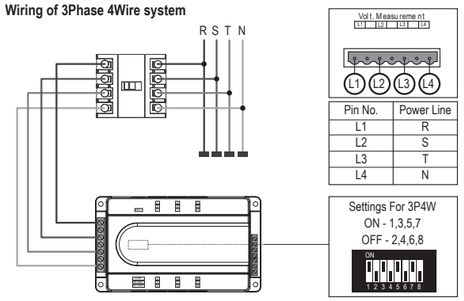
The electrical installation must ensure that measuring inputs are protected by fuses or circuit breaker.

Before switching on the measurement inputs, check that the voltage level to be connected is compatible with the electrical characteristics of the product mentioned in 2.

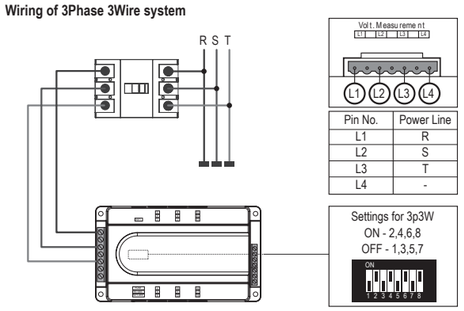
The voltage phase order must be followed to measure power correctly.

You will find below the main connection diagrams:

Wiring of 3Phase 4Wire system



Wiring of 3Phase 3Wire system



4.3 Auxiliary power supply of the product

ULYS MCM is a device powered by an auxiliary power supply, and has no switch on/off. A switch or a circuit breaker shall be included in the building installation.

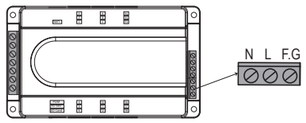
⚠ WARNING

To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

The electrical installation must:

- Ensure that power supply inputs are protected by fuses (one on the live and one on the neutral) or a circuit breaker (2A rated)
- Ensure that fuses, circuit breaker or switch are properly placed and easily accessible
- Provide that fuses, circuit breaker or switch are marked as the unit's disconnecting device

The ULYS MCM product can be powered by an AC voltage ranging from 100 to 240 V~. The electrical connection must be made as indicated below:



Pin No.	Description
L	Line (AC), + connection
N	Neutral (AC), + connection
F.G	Protective earth

4.4 Current measurement inputs

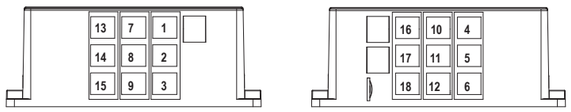
The ULYS MCM product can be connected to different types of current sensors:

- Chauvin Arnoux brand Rogowski sensors (please refer to the User Manual for full information on compatible models)
- Current transformers with a rated secondary output of 333 mV

The ULYS MCM product will need to be configured from the display or from the software to select the sensor type for each channel.

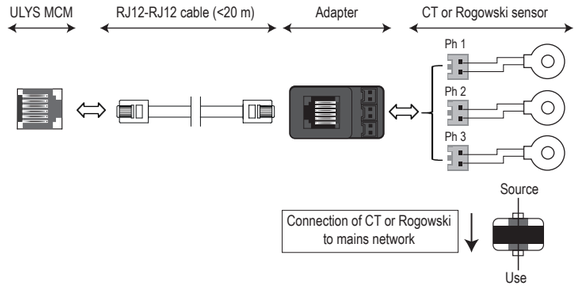
The ULYS MCM product can accommodate up to 54 single-phase feeders (3 per channel), or up to 18 three-phase feeders (1 per channel). For each feeder, the current sensors must be of the same type.

A channel is physically represented by an RJ12 connector as shown on the side views of the product below (example of the ULYS MCM 18 which has 18 physical channels (9 on each side)):



The channel number is shown on the top of the ULYS MCM (the numbering starts with the measurement channels closest to the front panel). In the case of ULYS MCM 9, channels 10 to 18 are inhibited.

For connection of current sensors to instrument a three-phase feeder, the following measuring channel is suggested:



The RJ12 connection cable must be a maximum of 20 m in length and is available from Chauvin Arnoux Energy in several length variants.

The current sensors compatible with the ULYS MCM are directly supplied with connectors compatible with the RJ12 adapter.

The connectors are equipped with a safety blank to avoid connection errors.

It is important to observe the following instructions to achieve consistent measurement by the product:

- In the case of a three-phase connection, it is important to respect the order of the phases when installing the current sensors in coherence with the phase order of the voltages previously wired (be sure to follow the numbering 1, 2 and 3 on the adapter).
- In the case of a single-phase connection, the phase must be connected to the terminal numbered 1 on the adapter.
- The direction of installation of the current sensors around the conductors to be measured must be observed (follow the direction of the arrow on the product and the diagram above).

5. Communication and interface

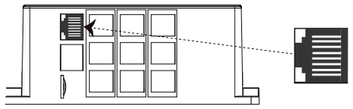
5.1 Status LED

The ULYS MCM product is equipped with 3 LEDs giving the following information concerning the correct operation of the device:

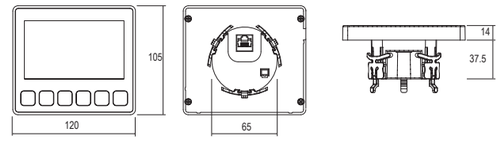
Status LED
RUN: Normal operation
STAT: Normal metering
Comm: Normal communication (flickering LED in normal status)

5.2 Remote screen

The ULYS MCM product can be associated with a ULYS MCM D remote screen to display all measurements and to configure the product.
The screen does not require a special power supply and can be connected directly to the ULYS MCM via the "PDM" connection port and a network cable.



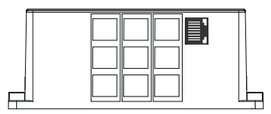
The dimensions of the screen are as follows:



5.3 Digital communication

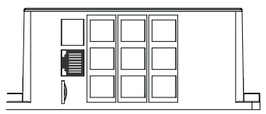
The ULYS MCM product has two means of communicating with a PLC or a supervision PC, either via an Ethernet or an RS485 connection. The communication table is provided in the User Manual available on the website. The connectors in question are shown below:

Ethernet port ("LAN"):



Default address: 192.168.0.1
Default port: 502
Mode: Communication with Master (Modbus Slave)
Protocol: Modbus TCP/IP
Speed: 10/100 Mbps Automatic selection

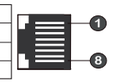
RS485 port ("RS-485"):



Communication speed (Default): 115,200 bps
Frame structure: 8 Bit, 1 Stop
Parity: None

Communication wiring:

RS-485 Pin No.	Description
1	A +
2	A -
7,8	Ground



6. Programming

The programming software, ULYS MCM Utility, is available on the Chauvin Arnoux Energy website, under Support in the Download section.

7. Appendix

7.1 Accessories

1) You have to use CTs authorized for use with ULYS MCM.
2) You have to use CTs certified by IEC/UL standards.

7.2 Explanation of symbols

Representation on product

⚠	The operator must consult the present manual whenever this symbol is encountered.	⏚	**PROTECTIVE CONDUCTOR TERMINAL**
📖	The operator must consult the present manual whenever this symbol is encountered.	~	**ALTERNATING CURRENT**
	This symbol indicates that the product at end of life must be disposed of by collection in accordance with the WEEE directive. This equipment must not be treated as household waste.	CE	The CE marking indicates compliance with the European Directive.

Representation in documentation

⚠	**WARNING** This symbol alerts that ignoring an instruction or incorrect action may cause a death or serious injury.	⚠	**CAUTION** This symbol alerts that ignoring an instruction or incorrect action may cause minor injury or damage to the product.

7.3 Safety instructions

⚠ WARNING

Improper handling of low and high voltages during installation and operation of the product can cause serious injury or death to persons.

- When power is on, hazardous voltages are always present at the PT/CT, Digital Input/Output, Control power terminals.
- Be sure to follow the safety instructions in this Quick Start Guide and the User Manual during installation and maintenance of the product. Keep the specified specifications and electric regulations to hand.
- Take care not to touch terminals and wire sheathing once the wiring is completed.

⚠ CAUTION

1) Measurement category IV is for measurements performed at the source of the low-voltage installation.
2) Measurement category III is for measurements performed in the building installation.
3) Measurement category II is for measurements performed on circuits directly connected to the low voltage installation.
4) Measurement category I is for measurements performed on circuits not directly connected to MAINS.

To clean the meter, wipe it with a clean, dry cloth.

Installation of the meter must be performed only by qualified personnel who follow standard safety precautions during all procedures. Those personnel should have appropriate training and experience with high voltage devices. Appropriate safety gloves, safety glasses and protective clothing are recommended.

- IF THE EQUIPMENT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.
- THERE IS NO REQUIRED PREVENTIVE MAINTENANCE OR INSPECTION NECESSARY FOR SAFETY. HOWEVER, ANY REPAIR OR MAINTENANCE SHOULD BE PERFORMED BY THE FACTORY.

- First of all, be sure to read this Quick Start Guide for correct use of the product.
- If you find an error or if you consider that necessary information is missing, please inform us.
- Chauvin Arnoux Energy assumes no responsibility for any direct or indirect loss or damage which may occur through use of this product, including in the event of any failure to perform on the part of this product.

For protection against electrical shock, all accessories, such as Personal Computer, etc., must be certified by IEC standard.