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ULYS MCM Quick Start (MS1-7672 Ind 04)

CHAUVIN ARNOUX

ENERGY

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

For further information about the device or Modbus register table, please refer to the User manual MS1-7673 available on the Chauvin Arnoux Energy 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 with 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 or 4-20 mA)
- Support RS-232 / RS-485 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 device, 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~ phase/phase
	Voltage (Vmin - Vmax)	25-400 V~ phase/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
Auxiliary Supply	Temperature NTC	25°C, 10 kΩ, β(25/85)=3,970°k
	Voltage	100-240 V ~
	Frequency	50-60 Hz
	Max Voltage (L-N)	Short term: 1,440 V~ - Long term: 490 V~
	Power Consumption	0.08-0.05 A
Communication	Overvoltage Category	Cat II
		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	-10°C to +55°C	
Storage Temperature	-25°C to +70°C	
Maximum Humidity	5-80% RH non-condensing	
IP degree of protection (IEC 60529)	IP20 (IP40: front panel)	
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, do not connect the device and contact the After-sales Service concerning a possible repair or replacement.

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

The illustrations below show the device's overall dimensions and location of mounting holes:

Dimensions: 146mm (width), 76mm (height), 156mm (total width), 90mm (depth), 88mm (mounting hole offset), 61mm (bottom flange height).

Diameter of mounting holes: 4 mm

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 the electrical network is in accordance with the specifications in §2.

The connection wiring must be done in accordance with good engineering practice. 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	Volt. Meas (L1, L2, L3, L4)	Voltage input terminals for measurement See 4.2
2	LAN	RJ45 Port for Ethernet communication with client (Modbus server) Protocol: Modbus TCP Speed: 10/100 Mbit/s, automatic selection See 5.3
3	Port [1-18]	RJ12 connectors for current sensor connection See 4.4
4	NTC	Analogue input for NTC or 4-20 mA temperature sensor
5	DO (A, B)*	Digital Output Terminals Rating is 250V~/5A, 30VDC/5A resistive DO terminal is used as described in User Manual
6	DI (A, B)*	Digital Input Terminals Rating 80-250 V~ latch voltage input is needed
7	POWER (N, L, F.G)	Supply the control power to the ULYS MCM See 4.3
8	Status LED	Operation status of the device See 5.1
9	PDM	RJ45 Port to connect the ULYS MCM D remote screen or a computer via RS-232
10	RS-485	RJ45 Port to connect a computer or PLC via RS-485
11	F/W UPGRADE	Micro SD Card Slot, please do not remove it (system use)

*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 inputs

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 specifications of the device 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

Pin No.	Power Line
L1	R
L2	S
L3	T
L4	N

Settings For 3P4W
ON - 1,3,5,7
OFF - 2,4,6,8

Wiring of 3Phase 3Wire system

Pin No.	Power Line
L1	R
L2	S
L3	T
L4	-

Settings for 3p3W
ON - 2,4,6,8
OFF - 1,3,5,7

4.3 Auxiliary power supply

A disconnecting device (switch or circuit breaker) shall be included in the electrical installation. The equipment shall not be positioned in such a way as to make it difficult to operate the disconnecting device.

The electrical installation must:

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

The ULYS MCM 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
N	Neutral
L	Phase
F.G	Functional Ground

4.4 Current measurement inputs

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

- Chauvin Arnoux Energy 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 will need to be configured from the remote screen (ULYS MCM D) or from the software (Ulys MCM Utility) to select the sensor type for each port.

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

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

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

Connection example of current sensors to instrument a three-phase feeder:

The RJ12 connection cable must be a maximum of 10 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 the RJ12 adapter.

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

- 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).
- 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 device and the diagram above).

5. Communication and interface

5.1 Status LED

The ULYS MCM 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 (fllickering LED in normal status)

5.2 Remote screen

The ULYS MCM device can be associated with a ULYS MCM D remote screen to display all measurements and to configure it.

The screen does not require a special power supply and is connected directly to the ULYS MCM via a network cable to the "PDM" connection port.

The general dimensions of the screen and its housing are as follows:

5.3 Digital communication

The ULYS MCM has two means of communicating with a PLC or a supervision PC, via a Modbus RTU or Modbus TCP protocol. The Modbus register table is provided in the User Manual available on the website. The RJ45 connectors in question are shown below:

Ethernet Communication: LAN

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

Serial Communication: 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	B -
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 Rogowski coils supplied by Chauvin Arnoux Energy with the ULYS MCM.
2) You have to use standardized 1/3V CTs certified by IEC standards currently in force with the Ulys MCM.

7.2 Explanation of symbols

Representation on device			
		CAUTION, hazard risk ! The operator must consult the present leaflet whenever this symbol is encountered.	
	Equipment fully protected by double insulation or reinforced insulation.		Application or withdrawal not authorized on conductors carrying dangerous voltages. Type B current sensor as per IEC 61010 2 032.
	Functional Ground		Alternating current: single-phase alternating current circuit.
	The rubbish bin with a line through indicates that the device at end of life must be disposed of by collection in accordance with the WEEE directive 2012/19/EC: it must not be treated as household waste.		The CE marking indicates compliance with European Union requirements (directives and regulations) relating to LVD, EMC, RoHS and WEEE.
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 device.

7.3 Safety instructions

WARNING

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

- When power is on, hazardous voltages are always present at the voltage inputs terminals for measurement, input/output terminals and auxiliary power terminals.
- Be sure to follow the safety instructions in this leaflet and the User Manual during installation and maintenance of the device. Keep the specified specifications and electric regulations to hand.

CAUTION

Definition of measurement categories:
Measurement category IV is for measurements performed at the source of the low-voltage installation.
Measurement category III is for measurements performed in the building installation.
Measurement category II is for measurements performed on circuits directly connected to the low voltage installation.

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 leaflet for correct use of the device.
- 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 device, including in the event of any failure to perform on the part of this device.

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