



User Manual

STCU DL2

**Reading master with datalogger
for M-Bus devices**





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INTRODUCTION

The STCU DL2 is an M-Bus network hub, designed to gather data from connected meters and memorize it. Logs may be made using the "STCU Reader" user program, provided separately.

The device has to be locally configured using the "STXM Reader" software.

The STCU DL2 has a 1 MB memory dedicated to saving the readings. The duration of the memory depends mainly on the number of devices connected to the M-Bus network, and on the frequency of the readings. With 100 devices connected to the network, after 50 readings the memory will be completely full. At that point the new data will begin to overwrite the less recent data.

TECHNICAL SPECIFICATIONS

- Power supply: 230Vac 50/60Hz, 15 W (Max.).
- M-Bus line status indicator led.
- USB port for local meter reading and configuration.
- Local reading by means of PC and "STCU Reader" software.
- M-Bus Master Port (2400 Baud) protected against overload and short-circuits.
- 1 MB of memory for saving reading logs.
- Device for 60 meters (expandable up to 500, by means of STAM amplifiers).
- Operational temperature: 0 – 45 °C.

FUNCTIONAL SPECIFICATIONS

- Meter and/or device reader with M-Bus interface.
- Saving of readings in the device's memory.
- Logs which can be read by means of PC and the dedicated software ("STCU Reader").
- Device configuration done locally by means of PC and the dedicated "STXM Reader" software.
- The possibility of using up to two schedulers for the automatic execution of the logs on a daily, weekly or monthly basis, and for saving of the count values.
- The possibility of reading the device's instantaneous values by means of PC and the dedicated software ("STCU Reader").

DIMENSIONAL CHARACTERISTICS

- Fastening: Fastening on DIN EN 607 rails.
- Color: Grey RAL 7035.
- Material: Self-extinguishing PPO.
- Dimensions: 9 DIN modules: 160mm x 90mm x 57mm

PRODUCT CODE

- STCU-032-DL2 Master M-Bus with datalogger for 32 meters.
- STCU-060-DL2 Master M-Bus with datalogger for 60 meters (expandable up to 500 with STAM amplifiers).

RELATED PRODUCTS

- ST-AM-120-01 Amplifier module for extending network to an additional 120 devices.
- ST-AM-250-01 Amplifier module for extending network to an additional 250 devices.
- ST-SWL-C01 Software for local reading of meters (STCU Reader).
- ST-SWC-C2 Software for local hub configuration (STXM Reader).

- SG-PRG-USB Mini USB B – USB A cable (provided).
- STCR-IO-001 M-Bus slave device with a relay output and an input.

For a complete list of products or updates, please visit www.telelettura.it.

CONFORMITY TO REGULATION STANDARDS

- Low Voltage Directive.
- EMC Directive.

SUPPORTED DEVICES

Currently the following meters are supported:

Manufacturer	Model
Zenner	ZELSIUS
	MULTIDATA S1
	MULTIDATA WR3
	IZM 972
	MULTIPULSE
	ZELSIUS C5
EngelMann	SensoStar 2C US
	SensoStar 2
Actaris	Integral-V MaXX
AR Therm	Excelsius
Siemens	WFN 21 e WFH 21
	AEW 310.2
	UH 50
	WFN 532
Relay	Padpulse M2
Qundis	G20
IME	CE4DT1 (M-Bus)
Aparator	ELF
Socomec	Countis E26

(Other devices, not included on the list, may have been added after the printing of this manual, or may be compatible even if not listed. Contact Sitec Srl to verify or add other devices)

DATA LOGGER MODE

The device has two Data Logger automatic schedulers, independently programmable, which read and memorize the data of the meter readings, and allow the user to see them using the specific software.

DATA LOGGER MEMORY

The STCU DL2 has a memory dedicated to saving readings. As soon as a reading occurs, the data is immediately memorized to allow the user to see it at a later time.

The Data Logger memory has a 1 MB capacity. Should it be full, the old data is overwritten by the new, thereby losing the previously saved data.

A scheduler's use of the memory mainly depends on the number of meters connected to the M-Bus network and on the length of the frames from the single meters. Moreover, the more frequent the scheduler readings, the faster the memory depletion.

Example: There are 50 devices connected to a network, each of which has a 125 byte frame. We want to do a monthly scan. To calculate the number of scans that will use up all the memory, divide its capacity by the sum of the single frames; in this case, the formula is: $50 \times 125 = 6225$ (to simplify things, we have assumed that all the meters provide equal length frames). This way, we are able to calculate the space occupied by a single scan. Divide the memory capacity by the space occupied by a single scan. Going back to the example, calculate $1.000.000 / 6225 = 160$. The 160 value indicates the number of scans necessary to deplete the memory space, in this example 160 months. To conclude, the formula for calculating the number of scans necessary for depleting the memory is as follows:

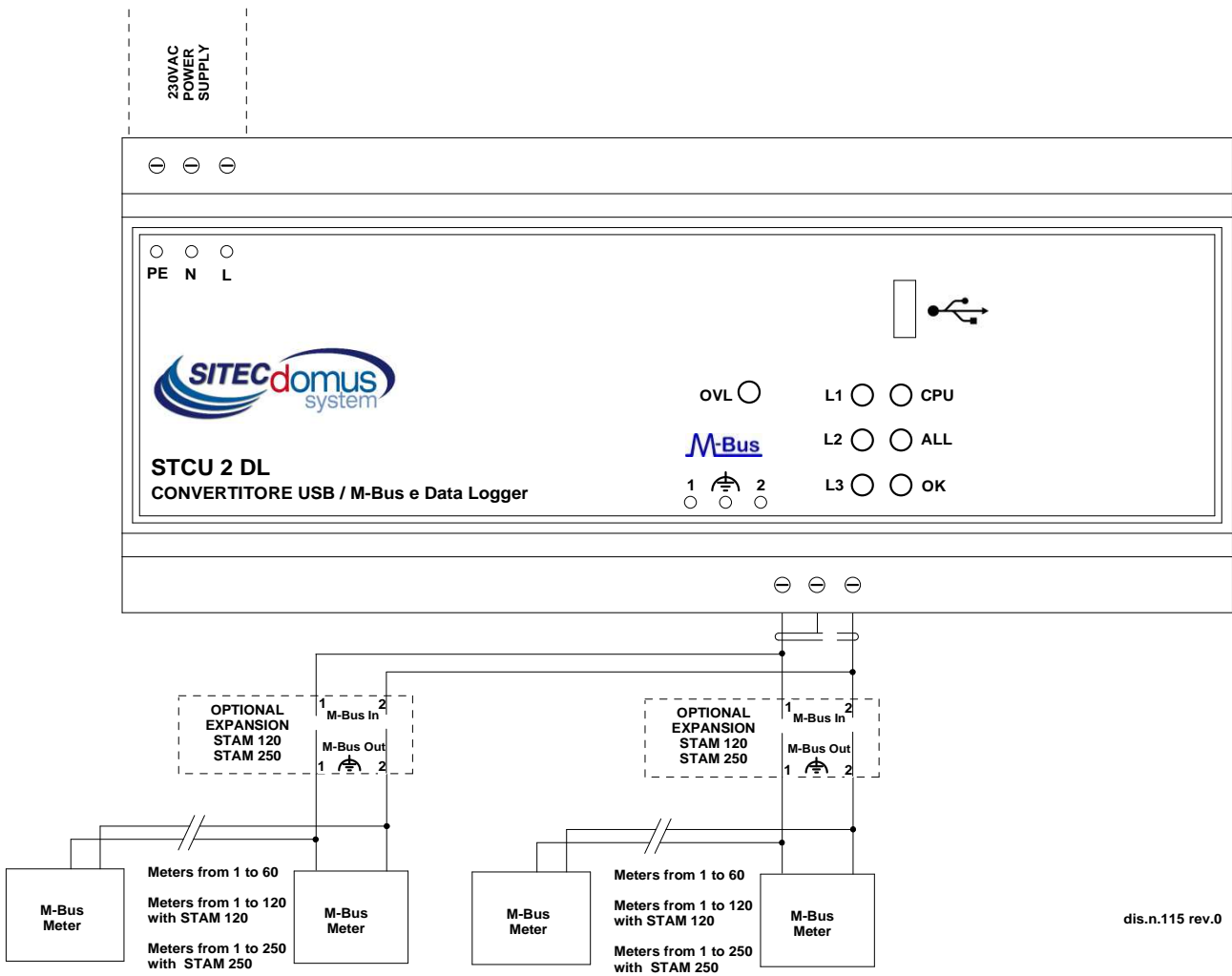
$$\text{Scans necessary} = \text{memory capacity} / (\text{Byte Frame 1} + \text{Byte Frame 2} + \dots + \text{Byte Frame N})$$


DATA LOGGER SCHEDULER

The scheduler is an instrument which allows for executing an automatic log of all meters with a certain frequency which can be selected from these various alternatives:

- "Disabled": the scheduler is not active; therefore, no meter reading will take place.
- "Daily": the scheduler executes one scan per day, at the scheduled time.
- "One time only ": the scheduler executes a single scan, on the chosen day of the month, at the scheduled time.
- "Weekly": the scheduler executes one scan a week on the chosen day, at the scheduled time. Further, in this mode, you can choose which months to execute the scan.
- "Monthly": the scheduler executes one scan a month on the desired date at the chosen hour. Further, in this mode you can choose which months to execute the scan.

FRONT PANEL, TERMINAL BOX AND CONNECTION DIAGRAMS



- Device Power Supply:
 - PE Ground.
 - N 230 V_{AC} 50 Hz Power Supply.
 - L 230 V_{AC} 50 Hz Power Supply
- Connector clips for the M-Bus network:
 - 1 M-Bus.
 -  M-Bus shielded cable (do not connect to ground).
 - 2 M-Bus.

FRONT PANEL LED DESCRIPTION

"OK" LED provides the following indications:

Status	Indication
● "OK" on (blinking every 5 seconds)	Hub is working correctly.
● "OK" fast blink	Hub is in start-up phase.
● "OK" slow blink	Hub is reading device data.

"ALL" LED (alarm) provides the following indications:

Status	Indication
● "ALL" on	Alarm event detected

CPU LED provides the following indications:

Status	Indication
● "CPU" on	CPU ok.

L1, L2, L3 LED:

Status	Indication
● "L1"	On only in start-up phase
● "L2"	
● "L3"	

OVL (Overload) LED provides the following indications:

Status	Indication	Possible causes
● Fast blink	Overload	M-Bus network with more than 60 devices. Problems in the network connection to the devices.
● On	Short-circuit	There is a short-circuit on the M-BUS network.

INSTALLATION AND TESTING

- Place hub at least two meters from power devices (pumps, inverters, etc.).
- Fasten hub using the DIN rail support.
- Make the connections following the directions in the chapter: "Front Panel, Terminal Box and Connection Diagrams".
- Verify the insulation of the M-Bus cable with respect to the ground or other voltages.
- Verify there are no short-circuits in the wiring.
- Plug in the device and wait for the green "OK" LED to stop blinking.
- Verify that the "OVL" LED is off. Otherwise, check the ground wires and other voltages, and ensure that the network is free of short-circuits;
- Using the "STxM Reader" software, which can be downloaded at the link at the end of this chapter, connect to the device using the USB port on the top. Consult the specific manual for further information.
- Set the current date and time.
- Set the name of the installation site.
- Create the list of devices.
- If necessary, associate a name with each device.
- Try to execute a data log.
- In order to automatically execute the log, set up the scheduler with the desired frequency.

M-BUS WIRING

For the M-Bus wiring, refer to EN13757-2 (Annex E M-Bus Cable installation) and standards relating to the wiring of buildings.

To connect the meters to the master via the M-Bus network, we recommend using a twisted cable of at least 2x0.8 mm wires or equivalent (JYStY N*2*0.8 mm).

M-Bus cable must not be placed in the same conduit as the power cables.

We recommend respecting a distance of at least 2m from the inverter and other power devices in order to avoid possible electrical interference.

With the cable above the total length of the wired segment can be up to 2 km with 250 Unit Loads.

The shield must only be connected to the appropriate terminal of the concentrator base (see connection diagram), but must be opened by the side of the terminal for direct current (DC) and low-frequency signals.

MANAGING OF IO M-BUS DEVICES “STCR-IO”

The devices of STCM series are able to manage the STCR-IO devices, that are M-Bus slave with one input and one digital output, configurable as needed. The management of these devices is done via the "STXM Reader" configuration software.

CONFIGURATION USING A PC

Device configuration may be done by connecting it to a PC (by means of a mini USB cable) and using the "STXM Reader" program.

WINDOWS DRIVER

When you connect the device to the PC's USB port, the installation of the Sierra Wireless driver is requested. For installing drivers refer to the help of the software "STXM Reader".

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For further technical information, contact tech service via e-mail at:
info@telelettura.it



Sitec Srl
Elettronica Industriale
Via Antonio Tomba, 15
36078 Valdagno (VI) - ITALY
Tel. +39 0445 431576 **Fax: +39 0445 439588**
Internet: www.telelettura.it **E-mail: info@sitecsrl.it**

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