Flow control unit FCU-400

- **For measurement of volume flow rate in open channels and drains**
- **Intended for an assembly with ultrasonic level meter ULM-53 with RS485/Modbus RTU output (max. 4 sensors)**
- **Data archiving in the internal memory with possibility of copying on a USB flash disc**
- **Built-in web server**
- **Displaying on a large OLED matrix display**
- **A broad choice of flow rate physical units**
- **Power supply voltage 230 V AC or 24 V DC**
- **Possibility of any conversion curve**

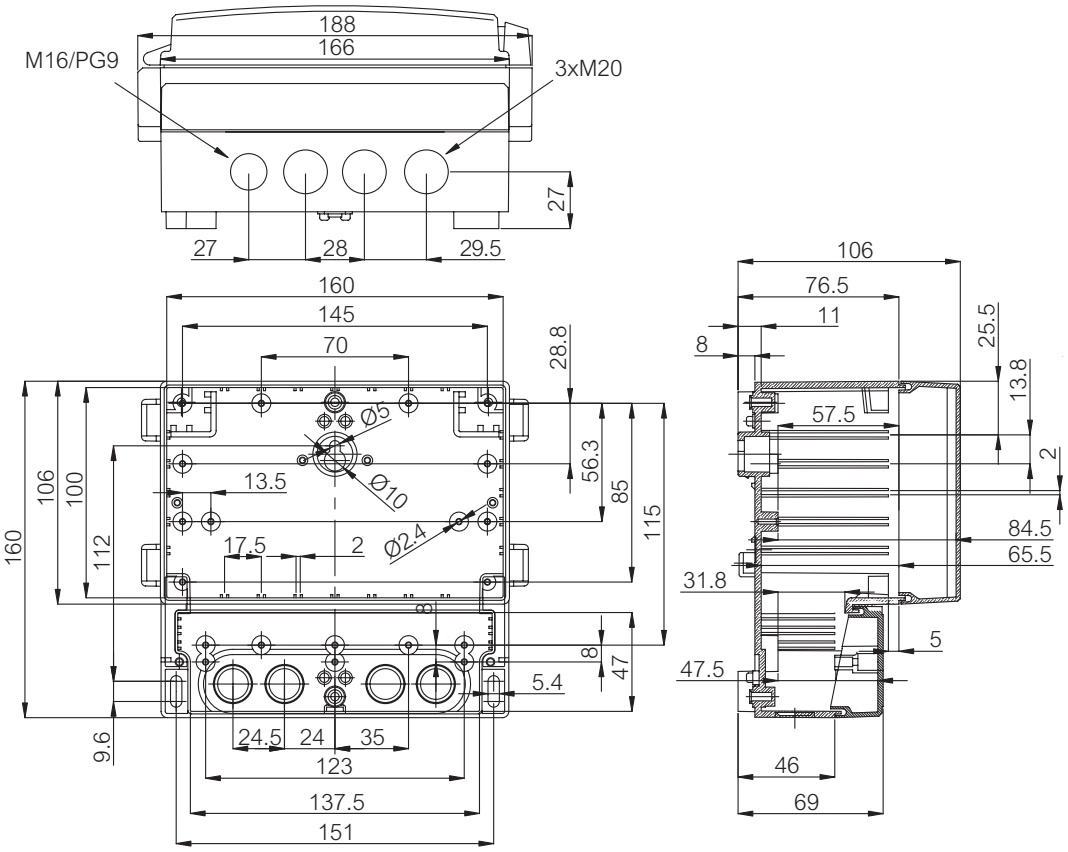
Flow control unit FCU-400 is used for measuring and displaying volume flow rate in open channels and drains. The unit forms an assembly with ultrasonic level meter ULM-53 with RS485/Modbus RTU communication output where the power supply for the indicators is provided directly from the unit with output voltage of 24V DC. The unit can measure immediate flow rates in up to 4 channels simultaneously. The unit is integrated in instrument box intended for wall mounting. Connection terminal block is positioned inside of the bottom part of the unit. There are four keys used for setting of all functions on the front panel. The units can be equipped with either two or four relay outputs. They also include RS485/Modbus RTU - Master communication interface for connection of indicators and RS 485/Modbus RTU - Slave interface for communication with the master. There is a USB input for transmission of the archived data from the unit to a flash disc or for loading of level height conversion table to the unit memory on the face panel. The customer can also select the web server. The binary input is in basic configuration. Individual types can be ordered in two power supply versions.

Features of variants

FCU–400–R0–0	**RS485/Modbus RTU - Master input (for connection of max. 4 level meters ULM-53), RS485/Modbus RTU - Slave output, without relay outputs.** Power supply of 100 - 240 V AC or 9 - 36 V DC.
FCU–400–R2–0	**RS485/Modbus RTU - Master input (for connection of max. 4 level meters ULM-53), RS485/Modbus RTU - Slave output, 2 relay outputs.** Power supply of 100 - 240 V AC or 9 - 36 V DC.
FCU–400–R4–0	**RS485/Modbus RTU - Master input (for connection of max. 4 level meters ULM-53), RS485/Modbus RTU - Slave output, 4 relay outputs.** Power supply of 100 - 240 V AC or 9 - 36 V DC.
FCU–400–R0–W	**RS485/Modbus RTU - Master input (for connection of max. 4 level meters ULM-53), RS485/Modbus RTU - Slave output, without relay outputs, web server.** Power supply of 100 - 240 V AC or 9 - 36 V DC.
FCU–400–R2–W	**RS485/Modbus RTU - Master input (for connection of max. 4 level meters ULM-53), RS485/Modbus RTU - Slave output, 2 relay outputs, web server.** Power supply of 100 - 240 V AC or 9 - 36 V DC.
FCU–400–R4–W	**RS485/Modbus RTU - Master input (for connection of max. 4 level meters ULM-53), RS485/Modbus RTU - Slave output, 4 relay outputs, web server.** Power supply of 100 - 240 V AC or 9 - 36 V DC.

Dimensional drawing

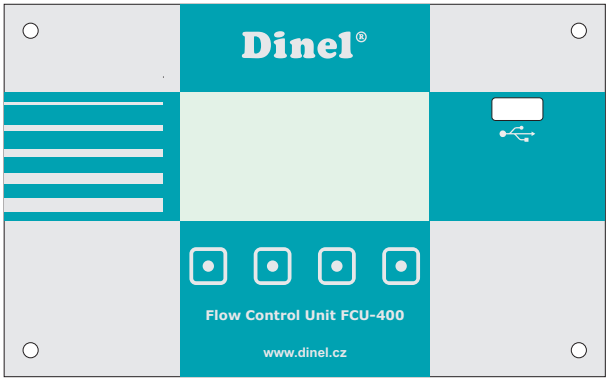
FCU-400

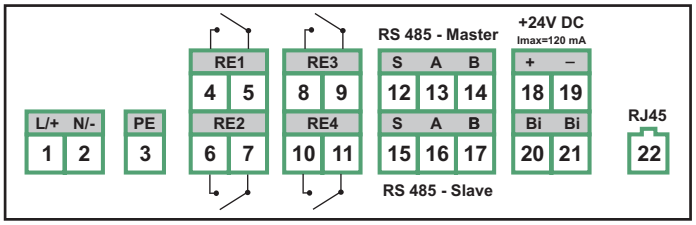


Technical specifications

		FCU-400
Casing - material		ABS
Housing dimensions		160x166x106 mm
Protection class		IP65
Ambient temperature range		-30 ... +60°C
Power supply voltage	230 V version 24 V version	100 - 240V AC 9 - 36V AC
Nominal power consumption	230 V version 24 V version	max. 10VA max. 8VA
Outputs		0, 2 or 4 SSR relays, max. 250 V AC / 100mA (alarm, comparator, impulse output functions) RS485 / Modbus RTU - Slave, galvanically isolated Ethernet / RJ45 (optional)
Inputs		RS485 / Modbus RTU - Master, electrically isolated (max. 4 level meters) Binary input for user flow rate counter resetting (for potential-free contact) USB
Internal power supply for sensors		U_S = 24 V DC / $I_{max.}$ 120 mA
Display type		Matrix OLED display 128x64 dots
Control		Membrane keyboard - 4 keys
Size of internal memory for data archiving		Continuous archiving of average 5-minute flow rates for at least 15 months
Display function		Display of current flow rate value with a bar graph graphical representation Simultaneous displaying of current flow rate and relay outputs status
Totalizer function		2 counters of total flow quantity on each channel (1x with zeroing, 1x without zeroing)
Motor hours function		Measuring time of faultless operation and time of failure state
Web server function		Displaying of currently measured values and total flow quantity on all channels
Language		English
Weight		820g

Face panel and terminal block

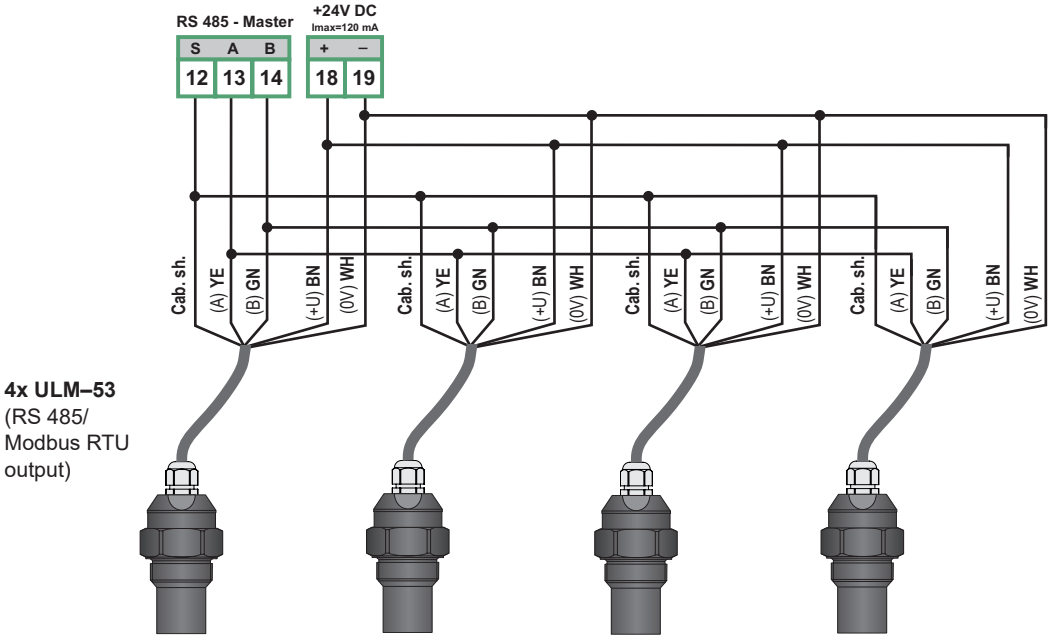




terminal no.	FCU-400
1	L / + (230 / 24 V)
2	N / - (230 / 24 V)
3	PE
4	RE 1
5	RE 1
6	RE 2
7	RE 2
8	RE 3
9	RE 3
10	RE 4
11	RE 4
12	Cable shielding (RS485 - Master)
13	A (RS485 - Master)
14	B (RS485 - Master)
15	Cable shielding (RS485 - Slave)
16	A (RS485 - Slave)
17	B (RS485 - Slave)
18	+ U_S
19	- U_S
20	Bi (binary output for zeroing)
21	Bi (binary output for zeroing)
22	RJ45/Ethernet

Example of connection

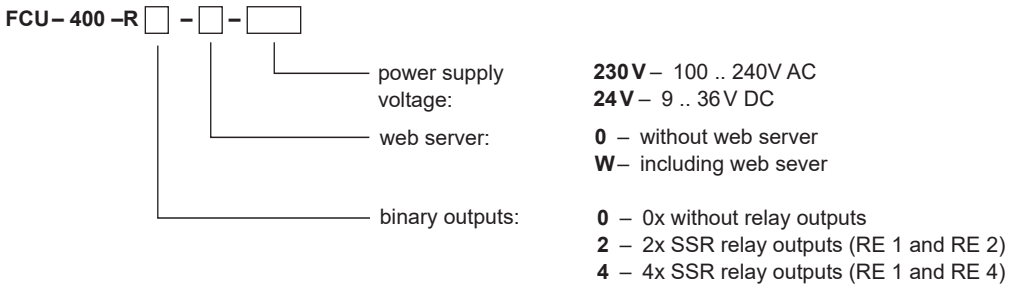
Example of connection of the flow control unit FCU–400 with ultrasonic level meter ULM-53-M is described below.



legend:

BN – Brown WH – White
YE – Yellow GN – Green
Cab. sh. – cable shielding

Order code



Correct identification examples

FCU-400-R4-W-24

(R4) SSR relay outputs; **(W)** including web server; **(24V)** power supply voltage 9 .. 36V DC.

FCU-400-R0-0-230

(R0) without relay outputs; **(0)** without web server; **(230V)** power supply voltage 100 .. 240V AC.

Accessories

Optional (at extra charge)

- Branch adapter for connection of more ultrasonic level meters ULM-53

Safety, protection and compatibility

Both power supply versions of the unit are protected with internal melting fuse.
Electric equipment with protection class II. Electric safety in accordance with ČSN EN 61010-1 standard.
Electromagnetic compatibility (EMC) is ensured by compliance with ČSN EN 55022 and ČSN EN 61000-4-2, -3, -4, -5, -6 -11 standards.

Version 10/2013

QMS ISO 9001
Dinel, s.r.o.
U Tescomy 249
760 01 Zlín, Czech Republic
Phone: +420 577 002 003
Fax: +420 577 002 007
sale@dinel.cz
www.dinel.cz