



BC-3N, BC-3 Batch controller

- Up to three (A, B, C) batching systems
- Batching mode: one or two-stage
- Dispensers may be switched on: individually or sequentially
- 5 measurement inputs
- 4 relay outputs
- Up to 2 analog 4-20mA outputs (option)
- Valve control using relay output or analog output 4-20mA
- Two totalisers for each input and dispenser
- Advanced data recording, 2GB internal memory
- USP port on front panel
- Ethernet port, server WWW, Modbus TCP
- RS485 communication port, ASCII and Modbus RTU protocols
- Two housing types: panel and wall-mounting



MEASUREMENT INPUTS

In the device there are five measuring inputs:

- 2 x I, two inputs enable connection of 0/4-20mA current loop transducers,
- 3 x I/PULS, three inputs enable connection of pulse transducer (0,001 Hz to 10 kHz) or 0/4-20mA current loop transducer.

Inputs can be used to measure flow relating to batching process or any other values.

RELAY OUTPUTS

Device is equipped with four SSR outputs 0,1 A/60 V. They can be used to control the valves or alarm signalization.

ANALOG OUTPUT 4-20mA

Device may be optionally equipped with two analog outputs for controlling valves.

FLOW MEASUREMENT

The device may work with flow meter of any type (e.g. ultrasonic, vortex, electromagnetic) using:

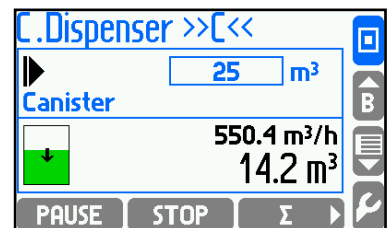
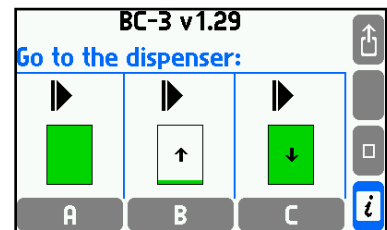
- 4-20mA or 0-20mA output signal proportional to actual flow rate,
- pulse output with constant weight per pulse,
- frequency output proportional to actual flow rate.

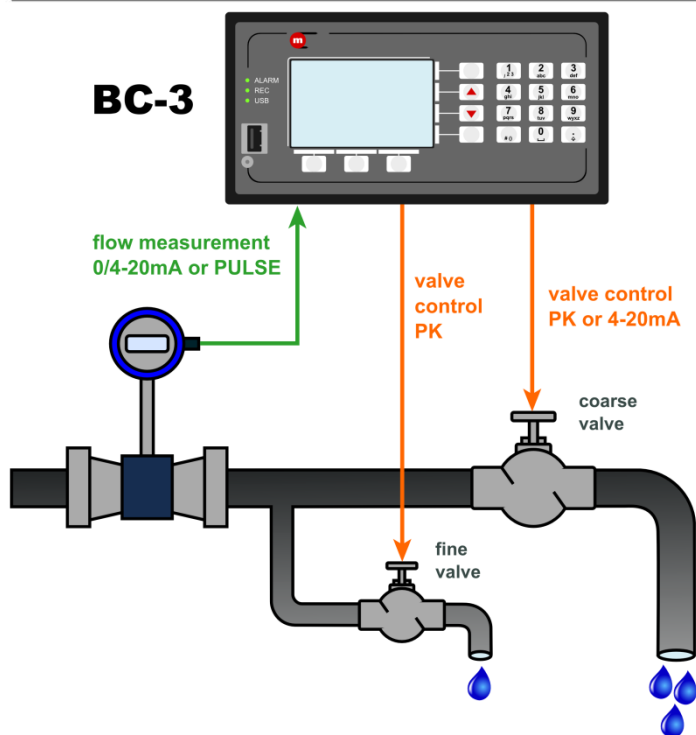
BATCHING MODES

There are two modes:

- one-step mode,
- two-step mode: in case relay outputs are used to control, two valves are being controlled: main (coarse) valve, which operates at the beginning of metering process only and fine adjustment valve, which operates all the time; in such a case two relay outputs are used. On the other hand, when current output is used to control, only one valve is being controlled, and the value of the current defines opening/ closing grade of the valve.

Batch controller have implemented learning algorithm allows increase of batching accuracy.





LAUNCHING MODES

Batching process may be activated in either mode:

- individual - each of the dispensers A, B or C is switched on separately by the user,
- sequential – once dispenser "A" has been switched on, two other units (B & C) are automatically switched on upon the set time delay.

TOTALISERS

Two totalisers may be configured for each IN1 ... IN5 input and each dispenser. The totalisers, which serve measuring inputs, count all the time, while those serving dispensers count only when metering process is ON. Selected counters are archived with a frequency of every 15 min.

ARCHIVING RESULTS

- Writing to internal 2GB memory.
- Local access to archived data via the USB port on the front panel.
- Recording frequency from 3 s to 24 h.

ALARMS

"Alarm condition" means:

- the set amount to be metered/ the amount at which metering was temporarily interrupted (Pause) has been overrun by the set value or the flow has not stopped in-spite of closing the valve within the set time
- the flow has not started within the set time from valve opening,
- the flow has started without metering command.

COMMUNICATION

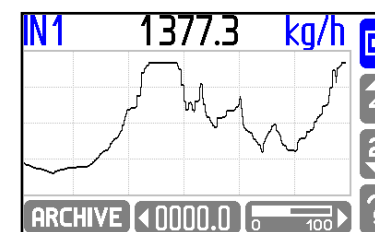
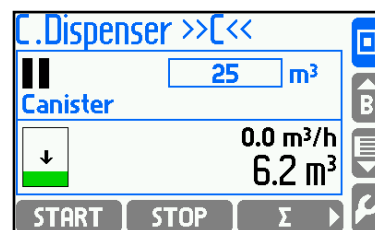
- RS485 port, ASCII and Modbus RTU protocols.
- Ethernet port, WWW server, Modbus TCP protocol.

POWER SUPPLY

- BC-3 version in panel housing, power supply 24 VAC/VDC,
- BC-3N version in wall-mounting housing, power supply 24 VAC/VDC and 230 VAC.

VERSIONS

BC-3	(N)	- x	
			Panel housing
	N		Wall-mounting housing
		- 0	Without 4-20mA outputs
		- 1	One 4-20mA output
		- 2	Two 4-20mA outputs



Device version BC-3 v1.29 / Datasheet version: 2015-05-07





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TECHNICAL DATA

User interface, front panel	
Display type	LCD TFT color, 272 x 480 pixels
Readout field size	43.8 mm x 77.4 mm
LED indication	3 two-color LEDs, red-orange-green
Keyboard	19 membrane buttons
Inputs organization	
2 x I:	IN1, IN2
3 x I / PULSE:	IN3, IN4, IN5
0/4-20mA type analog inputs	
Signal type	0-20mA or 4-20mA
Transmitter connection	Passive transmitter (supplied from measuring loop) or active converter
Input resistance	100 Ω \pm 10%
Transmitters supply	24 V DC / max 22 mA
A/D converter resolution	18 bits
Accuracy (Ta = 20 °C)	\pm 0,1% of the range (typical \pm 0,05% of the range)
Temperature drift	Max \pm 50 ppm / °C
Galvanic isolation between inputs	No, common potential GND for all inputs
Galvanic isolation to supply voltage	400 VAC
Signal type	0-20mA or 4-20mA
PULSE type inputs (pulse/frequency)	
Maximum input voltage	\pm 28 VDC
Galvanic isolation between inputs	No, common potential GND for all inputs
Galvanic isolation to supply voltage	400 VAC
Functions	Pulse counting Frequency measurement
Measuring range	0,001 Hz to 10 kHz (0,001 Hz to 1 kHz with connected filtering capacitor)
Minimum pulse width	20 μ s 0.5 ms, with filtering capacitor
Accuracy (Ta = 20 °C)	0,02%
Configuration: OC / contact (default)	
Voltage(OC)	12 V
Current (contact)	12 mA
On / off threshold	2,7 V / 2,4 V
Configuration: input voltage	
Input resistance	>10 k Ω
On / off threshold	2,7 V / 2,4 V
Voltage (open)	12 V
NAMUR configuration	
High impedance state	0,4 mA – 1 mA
Low impedance state	2,2 mA – 6,5 mA
4-20 mA analog outputs (optional)	
Number of outputs	No, 1 or 2
Output signal	4-20mA
Maximum voltage between I+ and I-	28 VDC
Loop resistance (for Ucc = 24 V)	0 .. 500 Ω
Converter resolution D/A	16 bits



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Accuracy	0,5% of the range
Current loop supply	External or from internal unit supply 24 V DC / 22 mA
Galvanic isolation to supply voltage	400 VAC
Binary outputs	
Number of outputs	4, mutually separated
Outputs type	Semiconductor relays
Maximum load current	100 mA DC/AC
Maximum voltage	60 V DC/AC
Galvanic isolation	400 VAC
RS485 serial port	
Maximum load	32 receivers / transmitters
Maximum line length	1200 m
Maximum differential voltage A(+) – B(-)	-8 V ... +13 V
Maximum total voltage A(+) – „ground” or B(-) – „ground”	-7 .. +12 V
Transmitter minimum output signal	1,5 V (at R0 = 54 Ω)
Receiver minimum sensitivity	200 mV / RWE = 12 kΩ
Minimum impedance of data transmission line	27 Ω
Internal terminating resistor	Yes, activated by short-circuit pins on terminal block
Short circuit/ thermal protection	Yes
Transmission protocol	ASCII Modbus RTU
Baud rate	1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, 115.2 kbps
Parity control	Even, Odd, None
Frame	1 start bit, 8 data bits, 1 stop bit
Galvanic isolation	No
Ethernet port	
Transmission protocol	Modbus TCP, ICMP (ping), DHCP server, http server
Interface	10BaseT Ethernet
Data buffer	300 B
Number of opened connections (simultaneously)	4
Connector type	RJ-45
LED signaling	2 (build in RJ-45 socket)
USB port	
Socket type	A type, according to USB standard
Version	USB 1.1
Socket protection class	IP-54
Data format	FAT16
Read/write signaling	Red/green/yellow LED on front panel
Archiving, internal data memory	
Memory capacity	2 GB (nonvolatile memory)
Recording format	FAT16 (within a limited scope)
Recording indication	Green-red USB LED on the front panel
BC-3 and BC-3N power supply	
Supply voltage	24 VAC (+5% / -10%) or 24 VDC (15 .. 30 VDC)
Maximum power consumption	6 VA / 6 W
BC-3N power supply	
Supply voltage	100 – 240 VAC 50/60Hz
Maximum power consumption	16 VA



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BC-3 casing - dimensions	
Casing type	For panel surface, nonflammable plastic material „Noryl”
Dimensions (height x width x depth)	96 mm x 192 mm x 63,5 mm
Housing depth with terminals (without extra space for cables)	ca. 72 mm
Panel cut-out dimensions	186 ^{+1,1} mm X 92 ^{+0,6} mm
Panel maximum thickness	5 mm
Weight	ca. 0,7 kg
Protection class from the front panel	IP-54
Protection class from the rear panel	IP-30
BC-3N casing - dimensions	
Casing type	Wall mounting, ABS
Dimensions (height x width x depth)	217 mm X 257 mm X 125 mm (without cable glands) 247 mm X 257 mm X 125 mm (with cable glands)
Weight	ca. 2,1 kg
Protection class	IP-54
Wire connection	
BC-3	Screw type terminal blocks, max. cable diameter 1,5 mm ²
BC-3N	Spring type terminal blocks, cable diameter 0,2 mm ² – 1,5 mm ² Screw type terminal block, cable diameter 0,2 mm ² – 1,5 mm ²
Climate conditions	
Ambient temperature	0 .. +40 °C
Relative humidity	0 .. 75% (without steam condensation)
Storage temperature	-20 .. +80 °C

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