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71744302
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Technical Information
RA33

Batch Controller with a current/pulse input for flow, an RTD input for temperature and a current input for density

Batch Controller for the batching and dosing of mass and volume

Applications

Recording and control of slow batch processes with a duration of longer than 10 seconds. Typical applications include:
- Food industry
- Chemical industry
- Pharmaceutical industry
- Oil and gas industry

Your benefits

- Swift commissioning and easy operation with plain text in language of your choice
- Valve control for single-stage and two-stage filling
- Automatic after-run correction for consistently accurate results
- Temperature/density compensation as per ASTM D1250-04
- Standard models are suitable for connecting and supplying all common flow transmitters, temperature sensors and density sensors.
- Detailed logging of batch reports as well as error messages, limit value violations and changes to operating parameters
- Advanced error diagnostics for leakage, fill deviation and "no flow"
- Industry-compliant compact housing for field or wall mounting, panel mounting or DIN rail mounting
- Remote control option to start and abort batch runs
- Statistics with batch quantities and batch counts by day, month, and year
- Remote readout via Ethernet and fieldbuses

Endress+Hauser
People for Process Automation

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About this document

Safety symbols

DANGER
This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

WARNING
This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

CAUTION
This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE
This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

Electrical symbols

Direct current

Alternating current

Direct current and alternating current

Ground connection
A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system

Protective earth (PE)
Ground terminals that must be connected to ground prior to establishing any other connections
The ground terminals are located on the interior and exterior of the device
- Inner ground terminal; protective earth is connected to the mains supply
- Outer ground terminal; device is connected to the plant grounding system

Symbols for certain types of information

Symbol	Meaning
	Permitted Procedures, processes or actions that are permitted.
	Preferred Procedures, processes or actions that are preferred.
	Forbidden Procedures, processes or actions that are forbidden.
	Tip Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
	Visual inspection

Symbols in graphics

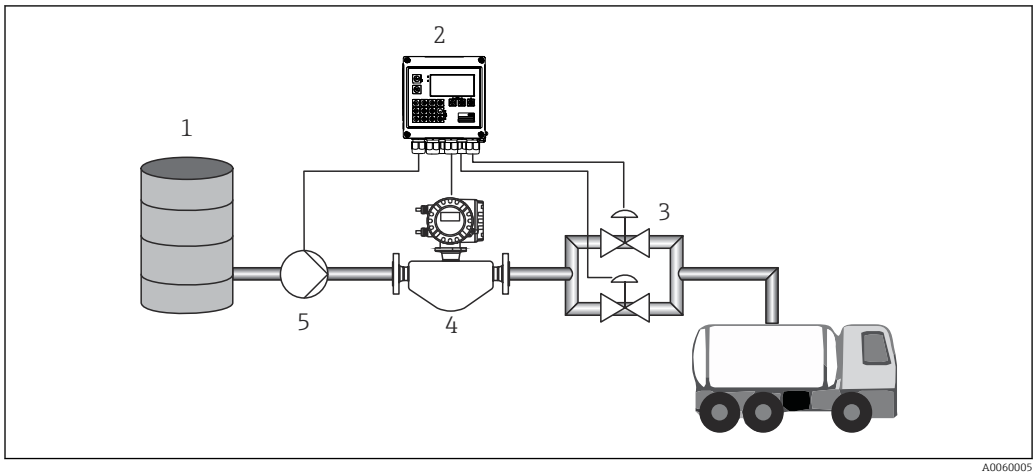
Symbol	Meaning	Symbol	Meaning
1, 2, 3,...	Item numbers	1., 2., 3...	Series of steps
A, B, C, ...	Views	A-A, B-B, C-C, ...	Sections
	Hazardous area		Safe area (non-hazardous area)

Function and system design

Measuring principle

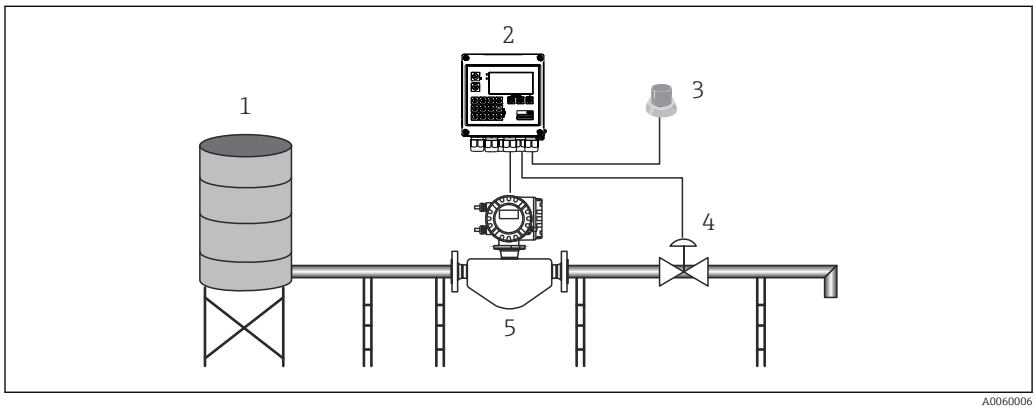
The Batch Controller RA33 is designed to record flow and control output signals for valves and pumps to ensure the exact dosing of predefined batch quantities. The calculation is based on measuring the current rate of flow and then totalizing or recording the quantity using pulses. The measured volume can be corrected with the temperature/density compensation function. Mineral oils can be corrected in accordance with the ASTM D1250-04 standard. The volume of other media can be converted using expansion coefficients, or from their mass, using a density measurement.

Measuring system



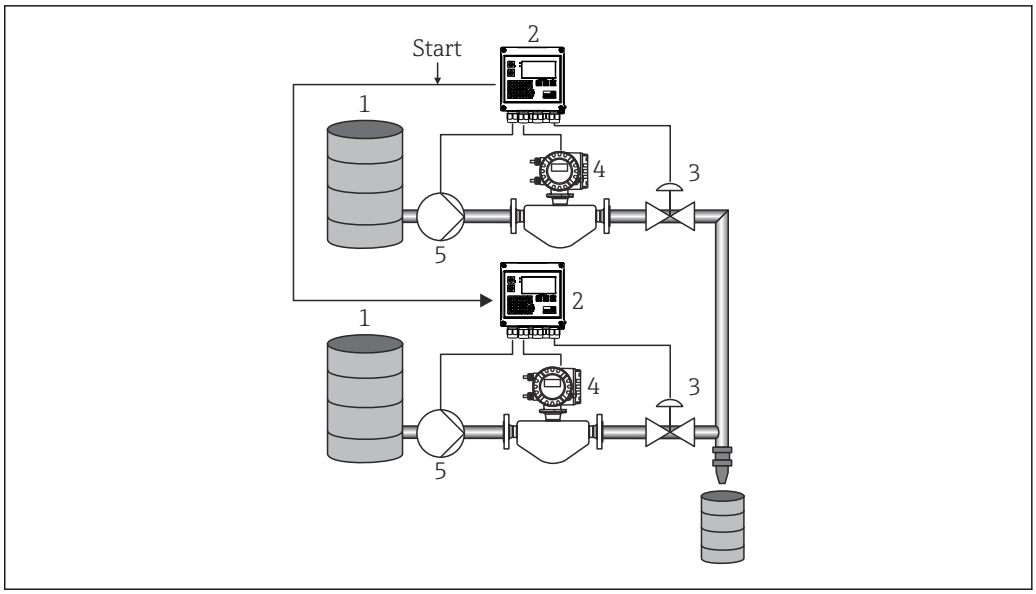
1 Application: Batch Controller RA33 with two-stage batching to fill a tank truck

1 *Supply tank*
2 *Batch Controller RA33*
3 *Valves*
4 *Flowmeter*
5 *Pump*



2 Application: manual batching without a pump with the Batch Controller RA33

1 *Supply tank*
2 *Batch Controller RA33*
3 *Start button*
4 *Valve*
5 *Flowmeter*



3 Application: blending of two liquids when batching with the Batch Controller RA33

1 Supply tank
2 Batch Controller RA33
3 Valve
4 Flowmeter
5 Pump

Functions

Batch control

The function of the Batch Controller RA33 is to control valves and pumps using the measured rate of flow and to fill a precise volume of the medium into a container.

Three different batch modes are available to perform this task:

- Standard mode: A value for the preset counter must be entered before batching commences. Batching can then be started by pressing the start button or via the digital input. The flow is measured, the counter calculates the volume and the pumps and valves are stopped as soon as the specified volume is reached. The value on the preset counter remains for the next run but can be changed manually.
- Automatic restart: In this scenario, the system repeatedly fills the selected fill quantity until the sequence ends. It is also possible to define an interval between the individual fill quantities. For added safety, a control input can also be assigned a blocking function which prevents the batching operation from restarting automatically.
- Manual mode: In the manual mode, it is possible to perform batching without a preset counter. The device registers the total flow between the start and end of a batch. The batch must be started and ended by pressing a button or via the control input.

The device is suitable for the automatic control of slow batch processes with a duration of longer than 10 seconds..

After-run correction

The after-run correction is a volume that is determined by the system response time. On the basis of this volume, the stop command from the batch control system is executed earlier in order to achieve maximum batching accuracy. Two correction capabilities, which build on one another, are implemented in the device.

- Fixed after-run correction: A fixed value can be specified if the system response time is known, or in order to keep the after-run quantity as low as possible when initially teaching the device and configuring it for the automatic correction function.
- Automatic after-run correction: It is advisable to enable automatic after-run correction. It complements manual correction and constantly optimizes the lead time before the valve is closed and the pump is switched off in order to permanently obtain precise batching results, and to compensate for possible system changes brought about by aging or external influencing factors.

Outputs (optional)

The additional output package comprises two more digital outputs (open collector) and a pulse/analog output. These digital outputs are non-wearing and are thus suitable for a high number of switching cycles. Furthermore, a counter, a flow or a user-definable ramp function to indicate the progress of the batching can be output with the additional pulse/analog output.

Temperature/density compensation (optional)

The temperature/density compensation enables compensation for various kinds of media. For mineral oils, compensation can be selected via temperature measurement or via density measurement. The values measured are then converted to a compensated volume at 15 °C, 20 °C or 60 °F using the ASTM D1250-04 standard.

The compensation of user-defined media is a second possibility. A volume can be corrected by measuring the temperature and applying an expansion coefficient, or by measuring the density. Volume can also be converted to mass with a density measurement. The preset counter can also be set for this mass unit.

Data logging/logbook

Data logging comprises three specific areas. Batching reports, daily, monthly and annual statistics, and a logbook of events are stored in the device.

- Batch report: A batch report is created for each batch run. This report contains any error messages that might have occurred. The preset counter value, the volume actually filled, the batch name and number, as well as the date and time are saved in every report.
- Statistics: Daily, monthly and annual statistics are generated internally. They contain information on the number of batches executed, the number of batches without errors, and the total amount.
- Event logbook: All the relevant device events are logged in the event logbook. These include setup changes, power outages, sensor errors and firmware updates.

Real-time clock (RTC)

The device has a real-time clock that can be synchronized via a free digital input or using the Field Data Manager software MS20.

The real-time clock continues running even in case of a power outage, the device documents power on and off; the clock switches either automatically or manually from daylight saving to standard time.

Display

To display measured values, counters and calculated values, six groups are available. Each group can be assigned up to 3 values or counter readings as desired.

Analyzing the stored data–Field Data Manager software MS20

The Field Data Manager software allows the saved measured values, alarms and events, as well as the device configuration to be read out from the device (automatically) and backed up securely in an SQL database in such a way that they are tamper-proof. The software offers centralized data management with a variety of visualization functions. Using an integrated system service, analyses and reports can be compiled, printed and saved fully automatically. Security is guaranteed by the FDA-compliant audit trail of the software and by the extensive user management functionality. Simultaneous access to and analysis of data from different workstations or different users is supported (client-server architecture).

Communication interfaces

A USB interface (with CDI protocol), and optional Ethernet, are used to configure the device and read out the values.

ModBus is optionally available as a communication interface.

None of the interfaces has a modifying effect on the device in accordance with PTB Requirement PTBA 50.1.

USB device

Connection:	Type B socket
Specification:	USB 2.0

Speed:	"Full Speed" (max. 12 MBit/sec)
Max. cable length:	3 m (9.8 ft)

Ethernet TCP/IP

The Ethernet interface is optional and cannot be combined with other optional interfaces. It is galvanically isolated (testing voltage: 500 V). A standard patch cable (e.g. CAT5E) can be used to connect the Ethernet interface. A special cable gland is available that allows pre-terminated cables to be routed through the housing. Via the Ethernet interface, the device can be connected to office equipment using a hub or a switch.

Standard:	10/100 Base-T/TX (IEEE 802.3)
Socket:	RJ-45
Max. cable length:	100 m (328 ft)

RS232 printer interface

The RS232 interface is optional and cannot be combined with other optional interfaces. A commercially available serial ASCII printer can be connected via the RS232 interface to print out batching reports directly from the device.

Connection:	3-pin plug-in terminal
Transmission protocol:	serial
Transmission rate:	300/1200/2400/4800/9600/19200/38400/57600/76800

RS485

Connection:	3-pin plug-in terminal
Transmission protocol:	RTU
Transmission rate:	2400/4800/9600/19200/38400
Parity:	choose from none, even, odd

Modbus TCP

The Modbus TCP interface is optional and cannot be ordered with other optional interfaces. It is used to connect the device to higher-order systems to transmit all measured values and process values. The Modbus TCP interface is physically identical to the Ethernet interface.

Modbus RTU

The Modbus RTU (RS-485) interface is optional, and cannot be ordered with other optional interfaces.

It is galvanically isolated (testing voltage: 500 V) and is used to connect to higher-level systems to transmit all measured values and process values. It is connected via a 3-pin plug-in terminal.

Input

Current/pulse input

This input can be used either as a current input for 04 to 20 mA signals or as a pulse/frequency input. Sensors for volume or mass flow measurement can be connected to the Batch Controller.

The input is galvanically isolated (500 V testing voltage towards all other inputs and outputs).

Cycle time

The cycle time is 125 ms.

Response time

In the case of analog signals, the response time is the time between the change at the input and the time when the output signal is equivalent to 90 % of the full scale value.

Input	Output	Response time [ms]
Current	Current	≤ 440
Current	Relay/digital output	≤ 250
RTD	Current/ relay/digital output	≤ 440
Cable open circuit detection	Current/ relay/digital output	≤ 440
Cable open circuit detection, RTD	Current/ relay/digital output	≤ 1100
Pulse input	Pulse output	≤ 600
Pulse input	Relay/digital output	≤ 250

Current input

Measuring range:	0/4 to 20 mA + 10 % overrange
Accuracy:	0.1 % of full scale value
Temperature drift:	0.01 %/K (0.0056 %/°F) of full scale value
Loading capacity:	max. 50 mA, max. 2.5 V
Input impedance (load):	50 Ω
HART® signals	Not affected
A/D converter resolution:	20 bit

Pulse/frequency input

The pulse/frequency input can be configured for different frequency ranges:
- Pulses and frequencies 0.3 Hz to 12.5 kHz
- Pulses and frequencies 0.3 to 25 Hz (filters bounce contacts, max. bounce time: 5 ms)

Minimum pulse width:	
Range up to 12.5 kHz	40 µs
Range up to 25 Hz	20 ms
Maximum permissible contact bounce time:	
Range up to 25 Hz	5 ms
Pulse input for active voltage pulses and contact sensors as per EN 1434-2, Class IB and IC:	
Non-conductive state	≤ 1 V
Conductive state	≥ 2 V
No-load supply voltage:	3 to 6 V
Current limiting resistance in the power supply (pull-up at input):	50 to 2 000 kΩ
Maximum permissible input voltage:	30 V (for active voltage pulses)
Pulse input for contact sensors as per EN 1434-2, Class ID and IE:	
Low-level	≤ 1.2 mA
High-level	≥ 2.1 mA
No-load supply voltage:	7 to 9 V
Current limiting resistance in the power supply (pull-up at input):	562 to 1 000 Ω
Not suitable for active input voltages	

Current/pulse input:	
Low-level	≤ 8 mA
High-level	≥ 13 mA
Loading capacity:	max. 50 mA, max. 2.5 V
Input impedance (load):	50 Ω
Accuracy during frequency measurement:	
Basic accuracy:	0.01 % of measured value
Temperature drift:	0.01 % of measured value over entire temperature range

Temperature input current/RTD

These inputs can be used either as current inputs (0/4 to 20 mA) or as RTD inputs (RTD = Resistance Temperature Detector). It is also possible to configure one input as a current input and the other as an RTD input.

The two inputs are galvanically connected but galvanically isolated from other inputs and outputs (testing voltage: 500 V).

Cycle time

The cycle time of the temperature measurement is 500 ms.

Current input

Measuring range:	0/4 to 20 mA + 10 % overrange
Accuracy:	0.1 % of full scale value
Temperature drift:	0.01 %/K (0.0056 %/°F) of full scale value
Loading capacity:	max. 50 mA, max. 2.5 V
Input impedance (load):	50 Ω
A/D converter resolution:	24 bit
No influence from HART signals.	

RTD input

Pt100, Pt500 and Pt1000 resistance temperature detectors can be connected to this input.

Measuring ranges:	
Pt100_exact:	−200 to +300 °C (−328 to +572 °F)
Pt100_wide:	−200 to +600 °C (−328 to +1 112 °F)
Pt500:	−200 to +300 °C (−328 to +572 °F)
Pt1000:	−200 to +300 °C (−328 to +572 °F)
Connection method:	2-, 3- or 4-wire connection
Accuracy:	4-wire: 0.06 % of measuring range 3-wire: 0.06 % of measuring range + 0.8 K (1.44 °F)
Temperature drift:	0.01 %/K (0.0056 %/°F) of measuring range
Characteristic curves:	DIN EN 60751:2008 IPTS-90
Max. cable resistance:	40 Ω
Cable open circuit detection:	Outside the measuring range

Density input

Cycle time

The cycle time of the density measurement is 125 ms.

Measuring range:	0/4 to 20 mA + 10 % overrange
Accuracy:	0.1 % of full scale value
Temperature drift:	0.01 %/K (0.0056 %/°F) of full scale value
Loading capacity:	max. 50 mA, max. 2.5 V
Input impedance (load):	50 Ω
A/D converter resolution:	24 bit
No influence from HART signals.	

Digital inputs

The digital inputs can be used for external control. A batch run can be started or stopped via these inputs, or the inputs can prevent a new batch from starting. In addition, the time can be synchronized.

Input level

As per IEC 61131-2 Type 3:

Logical "0" (corresponds to −3 to 5 V), activation with logical "1" (corresponds to 11 to 30 V)

Input current:

Max. 3.2 mA

Input voltage:

Max. 30 V (steady-state, without destroying input)

Output

Current/pulse output (option)

This output can be used either as a 0/4 to 20 mA current output or as a voltage pulse output.

The output is galvanically isolated (500 V testing voltage towards all other inputs and outputs).

Current output (active)

Output range:	0/4 to 20 mA + 10 % overrange
Load:	0 to 600 Ω (as per IEC 61131-2)
Accuracy:	0.1 % of upper range value
Temperature drift:	0.01 %/K (0.0056 %/°F) of upper range value
Inductive load:	Max. 10 mH
Capacitance load:	Max. 10 µF
Ripple:	max. 12 mVpp at 600 Ω for frequencies < 50 kHz
D/A converter resolution:	14 bit

Pulse output (active)

Frequency:	Max. 12.5 kHz
Pulse width:	Min. 40 µs

Voltage level:	Low: 0 to 2 V High: 15 to 20 V
Maximum output current:	22 mA
Short-circuit proof	

2 x relay output

The relays are designed as normally-open contacts. The output is galvanically isolated (1 500 V testing voltage towards all other inputs and outputs).

Max. relay switching capacity:	AC: 250 V, 3 A DC: 30 V, 3 A
Minimum contact load:	10 V, 1 mA
Min. switching cycles:	$>10^5$

2 x digital output, open collector (option)

The two digital outputs are galvanically isolated from one another and from all other inputs and outputs (testing voltage: 500 V). The digital outputs can be used as status or pulse outputs.

Frequency:	Max. 1 kHz
Pulse width:	Min. 500 µs
Current:	Max. 120 mA
Voltage:	Max. 30 V
Voltage drop:	Max. 2 V in conductive state
Maximum load resistance:	10 kΩ For higher values, the switching edges are flattened.

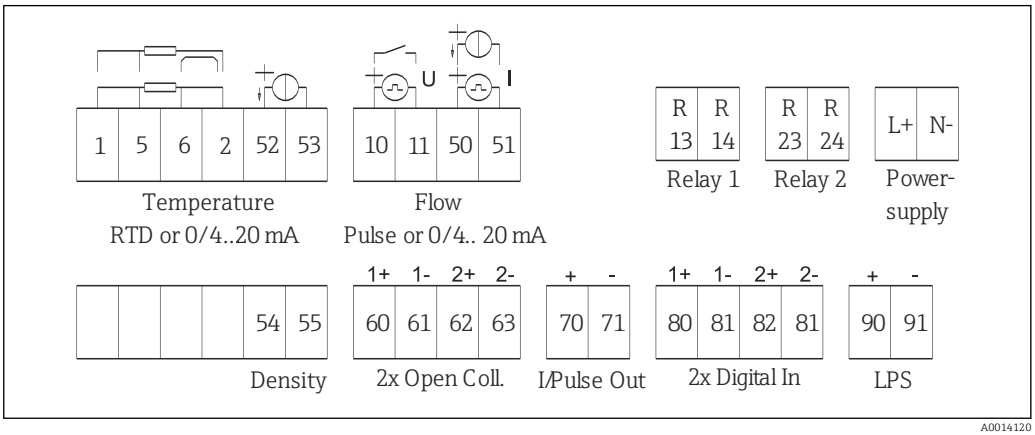
Auxiliary voltage output (transmitter power supply)

The auxiliary voltage output can be used to power the transmitter or control the digital inputs. The auxiliary voltage is short-circuit proof and galvanically isolated (500 V testing voltage towards all other inputs and outputs).

Output voltage:	24 V DC ±15 % (not stabilized)
Output current:	Max. 70 mA
HART® signals are not affected.	

Electrical connection

Terminal assignment



4 *Terminal assignment of RA33*

Supply voltage	▪ Low-voltage power unit: 100 to 230 V AC(−15 %/ +10 %) 50/60 Hz ▪ Extra-low voltage power unit: 24 V DC (−50 % / +75 %) 24 V AC (±50 %) 50/60 Hz An overload protection element (rated current ≤ 10 A) is required for the power cable.
Power consumption	15 VA

Performance characteristics

Reference operating conditions	▪ Power supply 230 V AC ±10 %; 50 Hz ±0.5 Hz ▪ Warm-up period > 2 h ▪ Ambient temperature 25 °C ±5 K (77 °F ±9 °F) ▪ Humidity 39 % ±10 % RH.
Arithmetic unit	The system operates with a calculation cycle of 125 ms. The flow at the specified response times is reliably recorded by the Batch Controller, but may deviate by this amount from the preset filling quantity. By using the after-run correction or reducing the flow rate in single-stage batching, the accuracy of the fill volume is increased. Using two filling stages enables both fast and highly accurate batching.

Installation

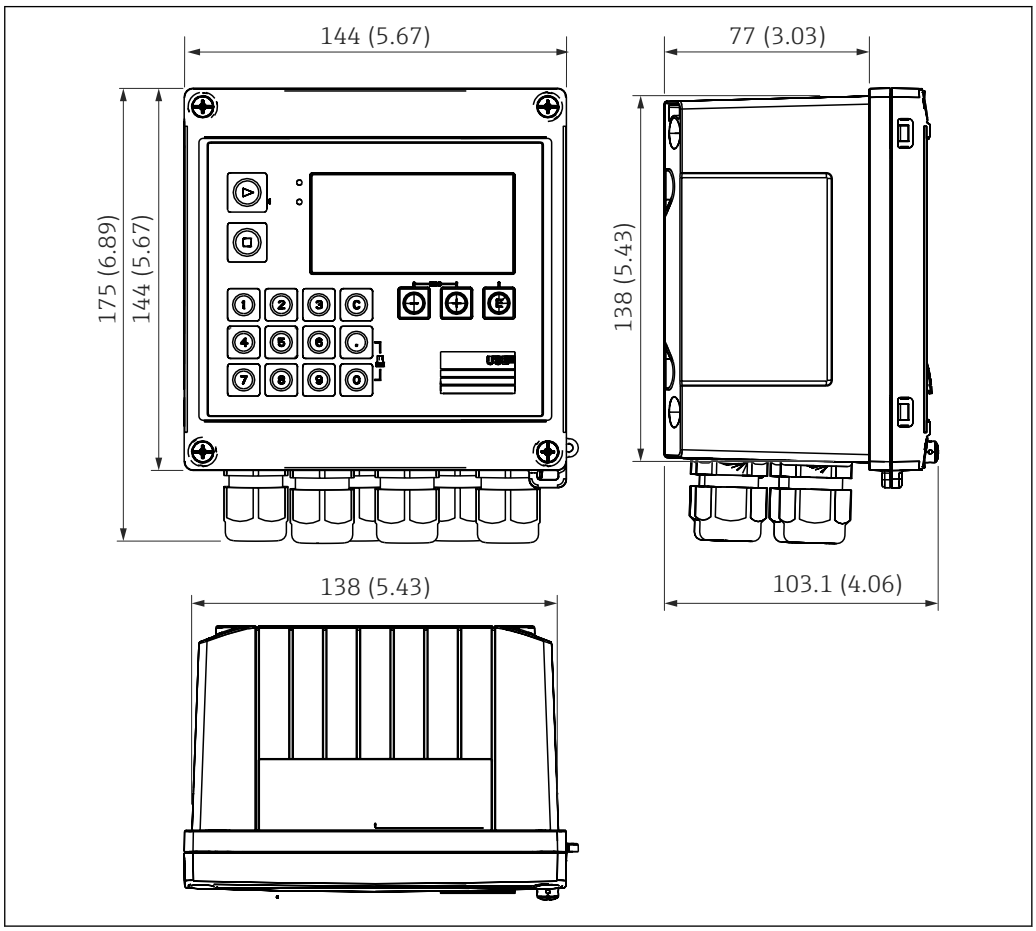
Installation location	Wall/pipe mounting, panel or DIN rail as per IEC 60715
Orientation	The orientation is determined by the readability of the display.

Environment

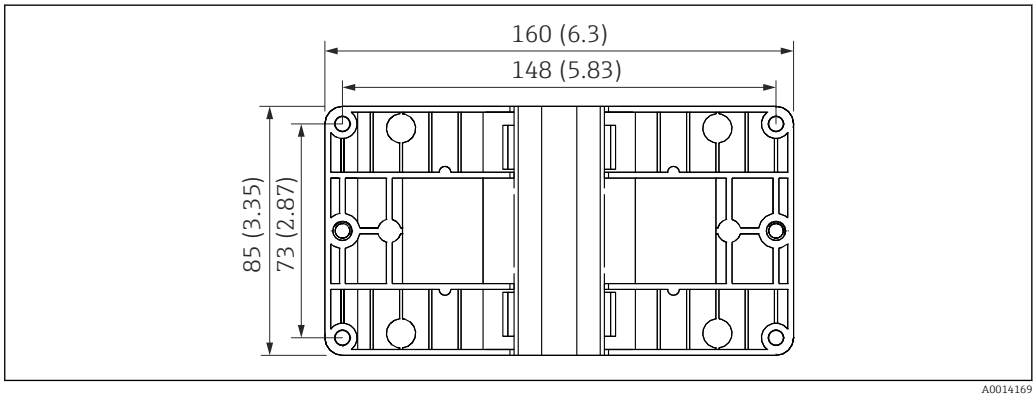
Ambient temperature range	−20 to +60 °C (−4 to +140 °F)
Storage temperature	−30 to +70 °C (−22 to +158 °F)
Climate class	As per IEC 60 654-1 Class B2, as per EN 1434 environment class C
Humidity	Maximum relative humidity 80 % for temperatures up to 31 °C (87.8 °F), decreasing linearly to 50 % relative humidity at 40 °C (104 °F).
Electrical safety	As per IEC 61010-1 and CAN C22.2 No 1010-1. ▪ Class II equipment ▪ Overvoltage category II ▪ Pollution level 2 ▪ Overcurrent protection ≤ 10 A ▪ Operating altitude: up to 2 000 m (6 560 ft.) above MSL
Degree of protection	▪ Panel mounting: IP65 at front, IP20 at rear ▪ DIN rail: IP20 ▪ Field housing: IP66, NEMA4x (for cable gland with double seal insert: IP65)
Electromagnetic compatibility	As per EN 1434-4, EN 61326 and NAMUR NE21

Mechanical construction

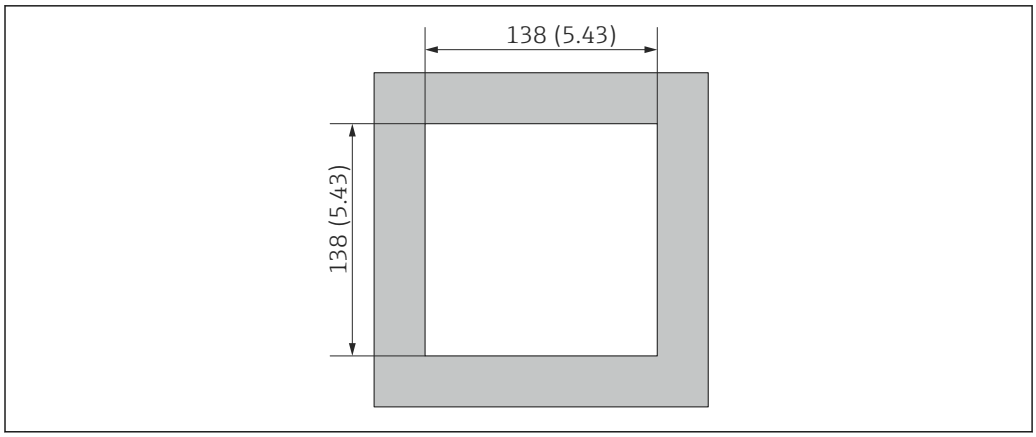
Design and dimensions



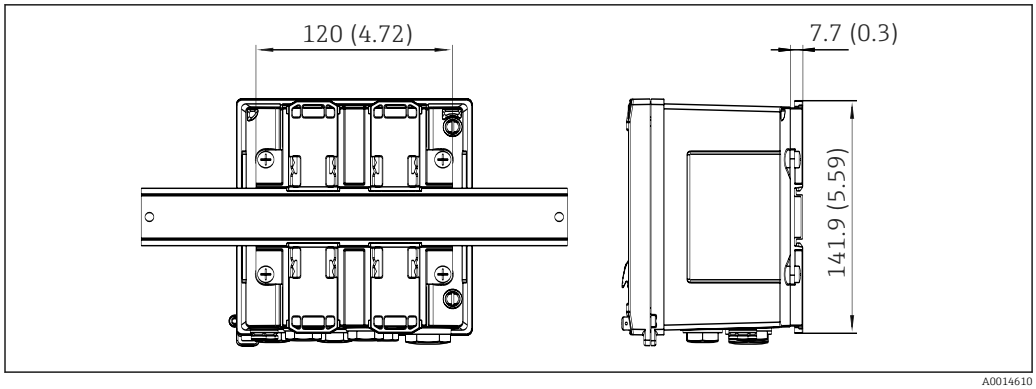
5 Batch Controller housing; dimensions in mm (in)



6 Mounting plate for wall, pipe and panel mounting; dimensions in mm (in)



7 Panel cutout in mm (in)

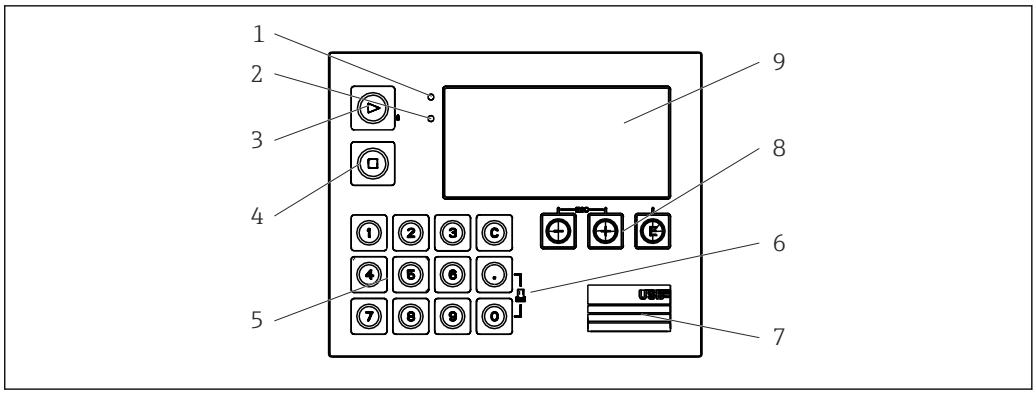


8 Dimensions of DIN rail adapter in mm (in)

Weight	Approx. 700 g (1.5 lbs)
Materials	Housing: fiber-glass reinforced plastic, Valox 553
Terminals	Spring terminals, 2.5 mm² (14 AWG); auxiliary voltage with plug-in screw terminal (30-12 AWG; torque 0.5 to 0.6 Nm) .

User interface

Languages	You can choose from one of the following operating languages on the device: English, German, French, Spanish, Italian, Dutch, Portuguese, Polish, Russian, Czech
Display elements	▪ Display: 160 x 80 dot-matrix LCD with white backlighting, color changes to red in the event of an alarm, active display area 70 x 34 mm (2.76" x 1.34") ▪ LED status display: Operation: 1 x green Fault message: 1 x red



9 *Display and operating elements*

1 Green LED, "Operation"
2 Red LED, "Fault message"
Function keys:
3 Start batch manually
4 Stop batch manually
5 Numeric keypad
6 Start printout
7 USB connection for configuration
8 Operating keys: -, +, E
9 Display: 160x80 dot-matrix display

Local operation

3 keys, "-", "+", "E".

14 function keys:

- Start / stop function: Press the "Start" button to start a batch run. Press "Stop" to pause the batch that is currently running. Press "Stop" again to abort the batch; press "Start" to resume the batch run.
- Reset counters: Press "C" when a batch is stopped to reset the counters on the display to their initial values.
- Printout: Press "0" and "." simultaneously to trigger a printout of the last batch run. To avail of this functionality, the "RS232 printer interface" option must be purchased.

Configuration interface

USB interface at front, optional Ethernet: configuration via PC with FieldCare Device Setup configuration software.

Data logging

Real-time clock

- Deviation: 15 min per year
- Power reserve: 1 week

Software

- **Field Data Manager software MS20**: visualization software and database for analyzing and evaluating the measured data and calculated values as well as tamper-proof data logging.
- **FieldCare Device Setup**: The device can be configured with the FieldCare PC software. FieldCare Device Setup is included in the delivery with the RXU10-G1 (see "Accessories") or can be downloaded free of charge from www.endress.com/fieldcare .

Certificates and approvals

Current certificates and approvals for the product are available at www.endress.com on the relevant product page:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Downloads**.

Ordering information

Detailed ordering information is available from your nearest sales organization www.addresses.endress.com or in the Product Configurator at www.endress.com:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Configuration**.

Product Configurator - the tool for individual product configuration
- Up-to-the-minute configuration data
- Depending on the device: direct input of information specific to the measuring point, such as the measuring range or operating language
- Automatic verification of exclusion criteria
- Automatic creation of the order code and its breakdown in PDF or Excel output format
- Ability to order directly in the Endress+Hauser Online Shop

Scope of delivery

The scope of delivery comprises:
- Batch Controller in field housing
- Wall mounting plate
- Hard copy of Brief Operating Instructions
- Optional 3 pc. connecting terminal (each 5-pin)
- Optional interface cable in a set with "FieldCare Device Setup" parameterization software
- Optional Field Data Manager software MS20
- Optional mounting hardware for DIN rail, panel mounting, pipe mounting
- Optional overvoltage protection

Accessories

The accessories currently available for the product can be selected at www.endress.com:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Spare parts & Accessories**.

Device-specific accessories

Accessories enclosed

Accessories	Description
Pipe mounting set	Mounting plate for pipe mounting
DIN rail mounting set	DIN rail adapter for DIN rail mounting
Panel mounting set	Mounting plate for panel mounting

Service-specific accessories

Commubox FXA291

Connects Endress+Hauser field devices with a CDI interface (= Endress+Hauser Common Data Interface) and the USB port of a computer or laptop.

For more information, please refer to: www.endress.com

RXU10-G1

USB cable and FieldCare Device Setup configuration software incl. DTM library

For more information, please refer to: www.endress.com

FieldCare SFE500
FieldCare is a configuration tool for Endress+Hauser and third-party field devices based on DTM technology.
The following communication protocols are supported: HART, WirelessHART, PROFIBUS, FOUNDATION Fieldbus, Modbus, IO-Link, EtherNet/IP, PROFINET and PROFINET APL.

Technical Information TI00028S

www.endress.com/sfe500

Communication-specific accessories

Field Data Manager (FDM) analysis software MS20, MS21

- Field Data Manager (FDM) is a software which provides central data management and visualization. This enables the continuous, tamper-free archiving of process data, e.g. measured values and diagnostic events. "Live data" from connected devices is available. FDM saves the data in an SQL database.
- Supported databases: PostgreSQL (included in the delivery), Oracle or Microsoft SQL server.
- MS20 single-user license: Installing the software on a computer.
- MS21 multi-user license: Several simultaneous users, dependent on the number of available licenses.

Technical Information TI01022R

www.endress.com/ms20

www.endress.com/ms21

Online tools

Product information about the entire life cycle of the device is available at:
www.endress.com/onlinetools

System components

Data Manager of the RSG product family

Data Managers are flexible and powerful systems to organize process values. Up to 20 universal inputs and up to 14 digital inputs for direct connection of sensors, optionally with HART, are available as an option. The measured process values are clearly presented on the display and logged safely, monitored for limit values and analyzed. The values can be forwarded via common communication protocols to higher-level systems and connected to one another via individual plant modules.

For more information, please refer to: www.endress.com

Process indicators from the RIA product family

Easily readable process indicators with various functions: loop-powered indicators for displaying 4-20mA values, display of up to four HART variables, process indicators with control units, limit value monitoring, sensor power supply, and galvanic isolation.

Universal application thanks to international hazardous area approvals, suitable for panel mounting or field installation..

For more information, please refer to: www.endress.com

Surge arrester modules from the HAW product family

Surge arrester modules for DIN rail and field device mounting, for the protection of plants and measuring instruments with power supply and signal/communication lines.

More detailed information: www.endress.com

RN series active barrier

Single- or two-channel active barrier for safe separation of 0/4 to -20 mA standard signal circuits with bidirectional HART transmission. In the signal duplicator option, the input signal is transmitted to two galvanically isolated outputs. The device has one active and one passive current input; the outputs can be operated actively or passively.

For more information, please refer to: www.endress.com

Documentation

The following document types are available in the Downloads area of the Endress+Hauser website (www.endress.com/downloads), depending on the device version:

Document type	Purpose and content of the document
Technical Information (TI)	**Planning aid for your device** The document contains all the technical data on the device and provides an overview of the accessories and other products that can be ordered for the device.
Brief Operating Instructions (KA)	**Guide that takes you quickly to the 1st measured value** The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning.

Document type	Purpose and content of the document
Operating Instructions (BA)	**Your reference document** The Operating Instructions contain all the information that is required in various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.
Description of Device Parameters (GP)	**Reference for your parameters** The document provides a detailed explanation of each individual parameter. The description is aimed at those who work with the device over the entire life cycle and perform specific configurations.
Safety instructions (XA)	Depending on the approval, safety instructions for electrical equipment in hazardous areas are also supplied with the device. These are an integral part of the Operating Instructions. The nameplate indicates which Safety Instructions (XA) apply to the device.
Supplementary device-dependent documentation (SD/FY)	Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is a constituent part of the device documentation.

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