Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

RID16

8-channel field indicator with FOUNDATION Fieldbus™ communication

Application

- Field indicator with 8 input channels and FOUNDATION Fieldbus™ protocol for displaying process values and calculated values

Your benefits

- Easy and standardized communication via FOUNDATION Fieldbus™ H1
- Bright, backlit LC display with bar graph, diagnostic symbols and plain text field
- 8-channel display via function block interconnection
- NEW! Listener mode for up to 8 analog channels or digital statuses
- Safe operation in hazardous areas thanks to international approvals such as
  – FM IS, NI
  – CSA IS, NI
  – ATEX Ex ia, Ex nA
  for intrinsically safe installation in zone 1 and zone 2
- Optional aluminum housing for Ex applications

TI146R/09/en
71092442

Endress+Hauser
People for Process Automation

Function and system design

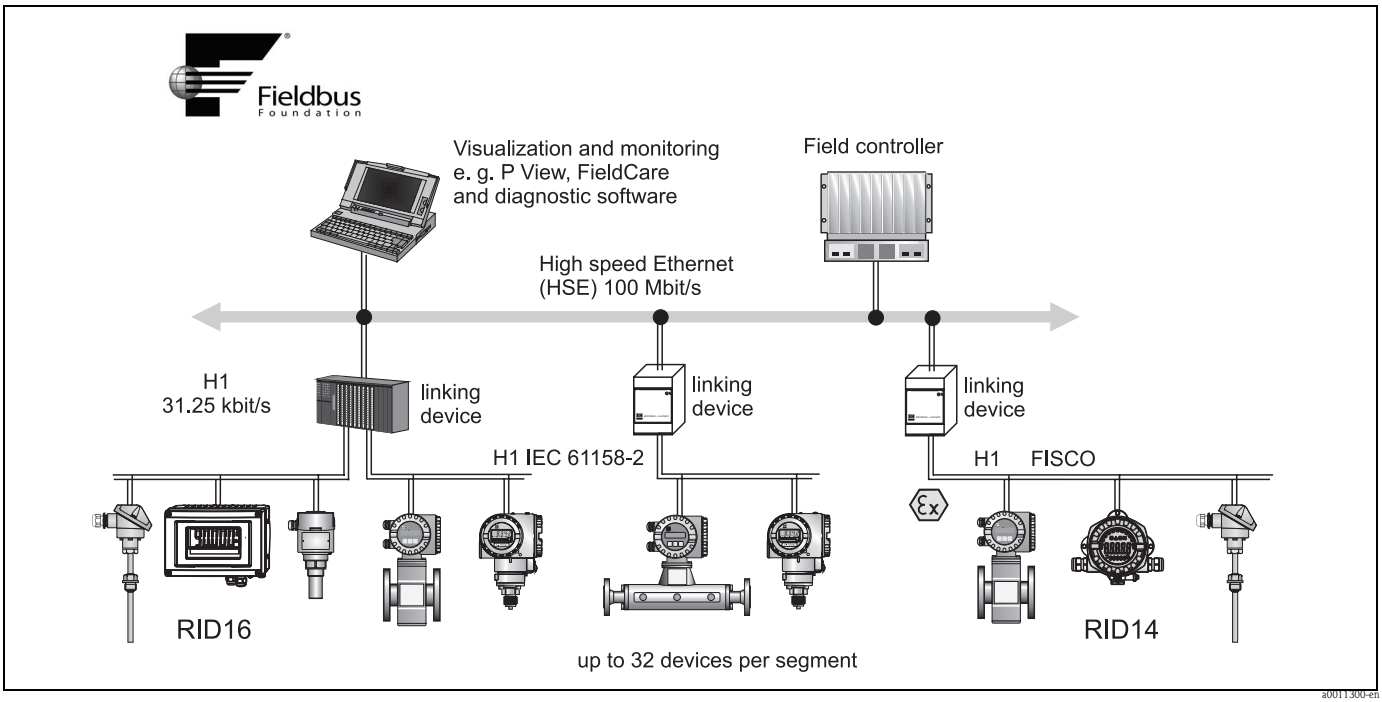
Display

Backlit display for up to 8 process values or calculated values through function block interconnection or listener mode.

Measuring system

Endress+Hauser has a wide range of innovative products which can be used with the FOUNDATION Fieldbus™ protocol. Together with the sensors and transmitters, the indicators form a complete measuring point for various applications in the industrial sector.

Device architecture



System integration via FOUNDATION Fieldbus™

The 8-channel digital indicator displays the measured values, calculated values and status information of the fieldbus users in a FOUNDATION Fieldbus™ network. In the listener mode, the device listens to the set fieldbus addresses and displays their specific values. Furthermore, values available on the bus can be displayed via function block interconnection.
Individual settings can be made for each channel. Analog values from the bus user are displayed as a five-digit number while digital values are displayed as plain text (ON/OFF, OPEN/CLOSE, numerical values). The process value status is indicated by icons or as plain text on the measured value display. Plain text display makes it possible to display alphanumeric character combinations, such as the TAG. For trend analysis, in addition to indicating measured values the indicator also has a bar graph, with indicators for overranging and underranging, which can be scaled independently of the display value.
The device is powered by the fieldbus and can be used in hazardous areas up to temperature class T6.

Communication

Signal

- FOUNDATION Fieldbus™ H1, IEC 61158-2
- FDE (Fault Disconnection Electronic) = 0 mA
- Data transmission rate: supported baud rate = 31.25 kBit/s
- Signal coding = Manchester II
- LAS (link active scheduler), LM (link master) function is supported:
  Thus, the indicator can assume the function of a link active scheduler (LAS) if the current link master (LM) is no longer available. The device is supplied as a BASIC device. To use the device as an LAS, this must be defined in the distributed control system and activated by downloading the configuration to the device.
- In accordance with IEC 60079-27, FISCO/FNICO

Breakdown information

Status message as per FOUNDATION Fieldbus™ specification.

Mains voltage filter

50/60 Hz

Current consumption

≤ 11 mA

Switch-on delay

8 s

Data of the FOUNDATION Fieldbus interface

Basic data

Device Type	10CF (hex)
Device Revision	01 (hex)
Node Address	Default: 247
ITK Version	5.2.0
ITK Certification Driver No.	IT064000
Link Master-capable (LAS)	Yes
Link Master / Basic Device selectable	Yes; factory setting: Basic Device
Number of VCRs	58
Number of Link Objects in VFD	64

Virtual communication relationships (VCRs)

Permanent Entries	58
Client VCRs	0
Server VCRs	5
Source VCRs	8
Sink VCRs	0
Subscriber VCRs	35
Publisher VCRs	10

Link settings

Slot time	4
Min. inter PDU delay	12
Max. response delay	40

Blocks

Block description	Block index	Permanent	Block execution time	Block class
Resource	400	YES		Extended
Display Transducer	500	YES		Manufacturer-specific
Advanced Diagnostic	600	YES		Manufacturer-specific
PID	700	NO	100 ms	Standard
Input Selector 1	800	NO	35 ms	Standard
Input Selector 2	900	NO	35 ms	Standard
Arithmetic	1000	NO	50 ms	Standard
Integrator	1100	NO	60 ms	Standard

Brief description of the blocks

Resource Block:
The Resource Block contains all the data that clearly identify and characterize the device. It is like an electronic device nameplate. In addition to parameters that are needed to operate the device on the fieldbus, the Resource Block also makes other information available, such as the order code, device ID, software revision, order ID etc.

Display Transducer:
The parameters of the "Display" Transducer Block allow the configuration of the display.

Advanced Diagnostic:
All the parameters for automatic monitoring and diagnosis are grouped together in this Transducer Block.

PID:
This function block contains input channel processing, proportional integral-differential control (PID) and analog output channel processing. The following can be implemented: basic controls, feedforward control, cascade control and cascade control with limiting.

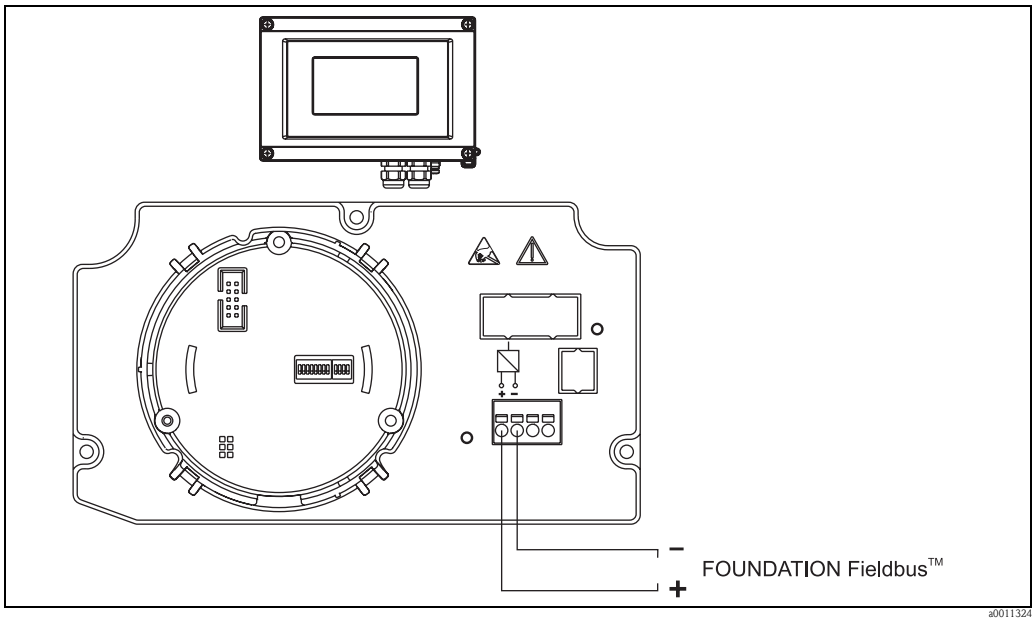
Input Selector (ISEL):
The block for selecting a signal (Input Selector Block – ISEL) allows the user to choose up to four inputs and generates an output based on the configured action.

Integrator (INT):
The Integrator Block integrates one or two variables over time. The Block compares the integrated or totalized value to limit values and generates a discrete output signal if the limit value is reached. It can be selected from six integration types.

Arithmetic (ARITH):
The Arithmetic function block permits standard computing operations and compensations. It supports the addition, subtraction, multiplication and division of values. Furthermore, mean values are calculated, and flow values are compensated (linear, quadratic compensation), in this block.

Power supply

Electrical connection



Terminal assignment of the field indicator.

Supply voltage

Voltage is supplied via the fieldbus.
U = 9 to 32 V DC, polarity-independent (max. voltage U_b = 35 V).

Cable entry

The following cable entries are available:

- Thread NPT1/2
- Thread M16
- 2x adapter NPT1/2
- 2x gland M16

Installation

Installation instructions

Mounting location
Wall or pipe mounting (see 'Accessories')
Orientation
No restrictions, the orientation depends on the readability of the display.

Environment

Ambient temperature limits

-40 to +80 °C (-40 to 176 °F)

Note!
The display can react slowly at temperatures < -20 °C (-4 °F).
The readability of the display is no longer guaranteed at temperatures < -30 °C (-22 °F).

Storage temperature

-40 to +80 °C (-40 to 176 °F)

Altitude

Up to 4000 m (13100 ft.) above mean sea level in accordance with IEC 61010-1, CSA 1010.1-92

Climate class

According to IEC 60654-1, Class C

Humidity

- Condensation permitted as per IEC 60 068-2-33
- Max. rel. humidity: 95% as per IEC 60068-2-30

Degree of protection

IP 67. NEMA 4X.

Shock and vibration resistance

10 to 2000 Hz for 5g as per IEC 60 068-2-6

Electromagnetic compatibility (EMC)

CE EMC conformity
The device complies with all the requirements of IEC 61326-1:2006 and NAMUR NE21:2007.

This recommendation is a consistent determination as to whether the devices used in laboratories and in distributed control systems are immune to interference, thus increasing their functional safety.

ESD (electrostatic discharge)	IEC 61000-4-2	6 kV cont., 8 kV air	
Electromagnetic fields	IEC 61000-4-3	0.08 to 4 GHz	10 V/m
Burst (fast transients)	IEC 61000-4-4	1 kV	
Surge	IEC 61000-4-5	1 kV asym.	
Conducted RF	IEC 61000-4-6	0.01 to 80 MHz	10 V

Measuring category

Measuring category II as per IEC 61010-1. The measuring category is provided for measuring on power circuits that are directly connected electrically with the low-voltage network.

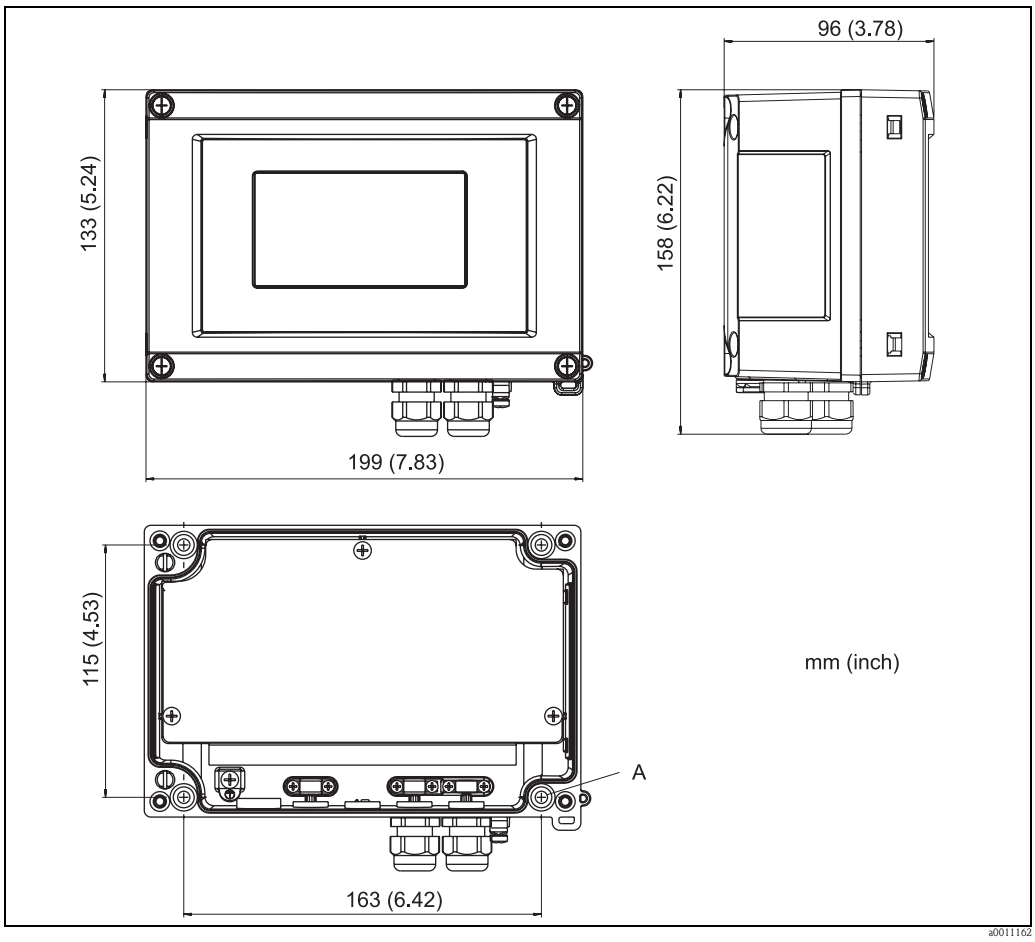
Degree of contamination

Pollution degree 2 as per IEC 61010-1.

Mechanical construction

Design, dimensions

Plastic housing for general applications, or optional aluminum housing



Dimensions in mm (dimensions in inches in brackets)

A: Bore for mounting directly on the wall or on optional mounting plate with 4 screws Ø5 mm (0.2")

Weight

- Plastic housing: approx. 500 g (1.1 lb)
- Aluminum housing: approx. 1.7 kg (3.75 lb)

Material

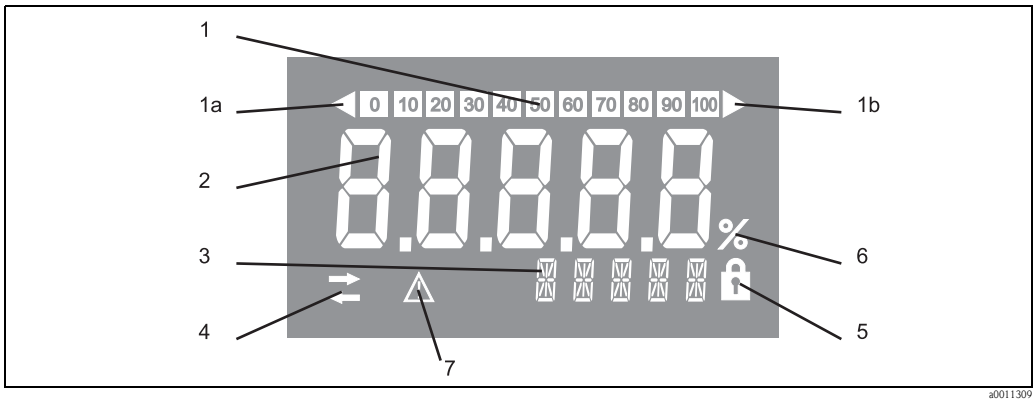
Housing	Nameplate
Fiber-glass reinforced plastic PBT-GF30	Laser inscription
Aluminum AlSi12 (optional)	Aluminum AlMgl, black anodized

Terminals

Screw terminals for cables up to max. 2.5 mm^2 (14 AWG) plus ferrule

Human interface

Display elements



LC display of the field indicator

Item 1: bar graph display in increments of 10% with indicators for underranging (item 1a) and overranging (item 1b)
Item 2: measured value display, digit height 26 mm (1.02"), status indication "Bad measured value status"
Item 3: 14-segment display for units and messages
Item 4: 'Communication' symbol
Item 5: 'Parameters cannot be modified' symbol
Item 6: '%' unit
Item 7: 'Uncertain measured value status' symbol

- Display range
  -9999 to +99999

Remote operation

Configuration

The configuration of FOUNDATION Fieldbus™ functions and of device-specific parameters is performed via fieldbus communication. Special configuration systems provided by various manufacturers are available for this purpose.

Distributed control systems	Asset management systems
Endress+Hauser ControlCare	National Instruments NI-Configurator (≥ 3.1.1)
Emerson DeltaV	Emerson AMS und Handheld FC375
Rockwell Control Logix/FFLD	-
Honeywell PKS Experion	-
Yokogawa Centum CS3000	-

Certificates and approvals

CE mark	The device meets the legal requirements of the EC directives. Endress+Hauser confirms that the device has been successfully tested by applying the CE mark.
Ex-approval	Information about currently available Ex versions (ATEX, FM, CSA, etc.) can be supplied by your E+H Sales Center on request. All explosion protection data are given in a separate documentation which is available upon request.
Other standards and guidelines	■ IEC 60529: Degrees of protection provided by enclosures (IP code) ■ IEC 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use ■ IEC 61326-Serie: Electromagnetic compatibility (EMC requirements) ■ NAMUR: International user association of automation technology in process industries (www.namur.de)
UL	Recognized component to UL61010-1
CSA GP	CSA General Purpose

Ordering information

Product structure

RID16	**Field indicator** 8 channel indicator (analog or binary) Display LC 5-digit, char. hight 26mm (1,02") Bargraph resolution 10%. Over-/under range, engineering units. NEMA 4x, IP67. Single compartment.											
	Approval:											
	AA	Non-hazardous area										
	BA	ATEX	II1G Ex ia IIC T4/T5/T6									
	BC	ATEX	II3G Ex nL IIC T4/T5/T6									
	BF	ATEX	II 2D									
	BN	ATEX	II3G Ex nA II T4/T5/T6									
	B4	ATEX	II 1G Ex ia IIC T4/T5/T6, II2D									
	CA	CSA	General Purpose									
	C1	CSA	IS, NI I / 1+2/ABCD									
	F1	FM	IS, NI I / 1+2/ABCD									
		Housing:										
		1	Plastics, glass fiber reinforced									
		2	Aluminum									
			Cable Entry:									
			A	M16								
			B	NPT1/2								
				Communication								
				1	FOUNDATION Fieldbus							
RID16-					⇐ **Order code** (part 1; 1 attribute per category must be selected.)							
Additional selection (as option - no selection or multiple selection is possible)												
						Accessory mounted:						
						E1	2x cable glandM16					
						E3	FF plug, 7/8"					
						E4	PA plug					
						E6	2x adapter M20 - NPT 1/2					
						E7	1x adapter M20 - M16					
							Service:					
							G1	Customized pre-installed				
								Additional Approval:				
								H1	GL marine certificate			
								H2	UL listed			
									Zubehör beigelegt:			
									I1	2x Blind plug		
									I2	Mounting kit wall/tube		
										Marking:		
										Z1	Tagging (TAG), metal	
										Z2	Tagging (TAG), on device	
										Z3	Commissioning label, paper	
										Z4	Tagging (TAG), Fieldbus	
										Z6	Tagging (TAG), by customer	
RID16-						+						⇐ **Order code** (complete)

Accessories

Accessories

Order no.	Designation
71089844	Pipe mounting kit with plastic mounting plate (for pipes ∅1-5 inch)

Documentation

- Overview brochure: System components – Indicators with control unit for field and panel mounting, power supplies, barriers, transmitters, energy managers and surge arresters: FA016K/09
- Operating instructions 'Field indicator RID16': BA284R/09

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