

General Specifications

GS 01U10B00-08EN-R

ROTAMASS Total Insight Coriolis Mass Flow and Density Meter Addendum to General Specifications for FOUNDATION Fieldbus



Fieldbus in general

- FOUNDATION Fieldbus is the digital communication line for field instruments, whose signal is internationally standardized by FieldComm Group organization. The fieldbus bi-directional digital communication performance makes it possible for field instruments and control devices to constitute a complete on-line system, superseding the existing analog transmission lines. The precise transmission of various process data of the field instruments is well established by the fieldbus multi-sensing function. Thus, based on FOUNDATION Fieldbus specifications, the ROTAMASS Total Insight series fieldbus models offer more flexible instrumentation through a greater level communication capability as well as cost reduction by multi-drop wiring with fewer cables.

Features

- **Interoperability:** FOUNDATION Fieldbus specifications ensures the interoperability of the field instruments without preparing designated software for the instrument.
- **Reduction of instrumentation cost:** The multi-drop wiring on the FOUNDATION Fieldbus communication line contributes to the reduction of wiring cost.
- **6 Analog input function blocks (AI):**
The ROTAMASS Total Insight Fieldbus model has six AI function blocks for mass flow, density, temperature, volume flow etc. signals setting via the channel.
- **3 Integrator function blocks (IT):**
The ROTAMASS Total Insight Fieldbus model has three independent IT function blocks.
- **Multiple Analog Output (MAO) function block:**
Receives different possible values from external connected devices. Transfers the value to FCB.

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1 Introduction

1.1 General information

This document is an addendum to the General Specifications GS 01U10B0_ -00_ -R. It describes the differences of the delivered product compared to the applicable “General Specifications” that specifies standard devices of ROTAMASS Total Insight series. The deviations could be model code related, design or configuration only and are listed on the next pages.

2 FOUNDATION Fieldbus Specifications

Overview of functional scope of the Rotamass FOUNDATION Fieldbus specifications

Functional scope	Values, ranges and specifications	available
Model code (position 13)	F0 (FOUNDATION Fieldbus)	●
	F1 (FOUNDATION Fieldbus)	●
Output signal:		
Digital communication signal based on FOUNDATION Fieldbus protocol (ITK 6.3.1)		
FOUNDATION Fieldbus block specifications:		
▪ Transducer block (TB):		
	Flow Calibration Block (FCB)	●
	Concentration Transducer Block (CTB)	optional
	Indicator Transducer Block (LTB)	●
	Maintenance Transducer Block (MTB)	●
	Advanced Diagnostic Transducer Block (ADTB)	optional
▪ Analog Input block (AI):¹⁾		
	AI1: Mass flow	●
	AI2: Density	●
	AI3: Temperature	●
	AI4: Volume flow	●
	AI5: Reference density	●
	AI6: Corrected volume flow	●
▪ Integrator function blocks (IT):¹⁾		
▪ Multi Analog Output function block (MAO):¹⁾		
Conditions of Communication Line:		
Supply voltage from the Bus:	9 to 32 V _{DC}	●
Current draw:	15mA (maximum)	●
Displayed language:		
Different language packages are possible to choose.		

¹⁾ Depends on FOUNDATION Fieldbus configuration.

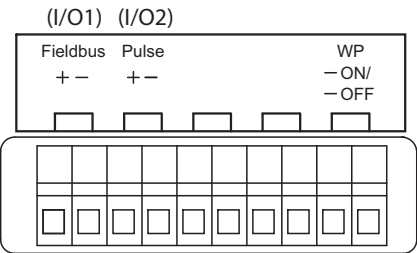
meaning of "–": not available;

meaning of "●": available

2.1 Inputs and outputs

For the FOUNDATION Fieldbus version there is only one configuration of the connection terminal. Following is the configuration of the connection terminal (value F0 and F1 on model code position 13):

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I/O1: Fieldbus FOUNDATION Fieldbus communication
I/O2: Pulse Pulse / Frequency output
WP: Write-protect bridge

2.1.1 Output signals FOUNDATION Fieldbus

Digital communication signal based on FOUNDATION Fieldbus protocol.
Maximum voltage and correct polarity must be observed for wiring.

FOUNDATION
Fieldbus

	Value
Power supply	9 to 32 V _{DC}
Current draw	15 mA (maximum)

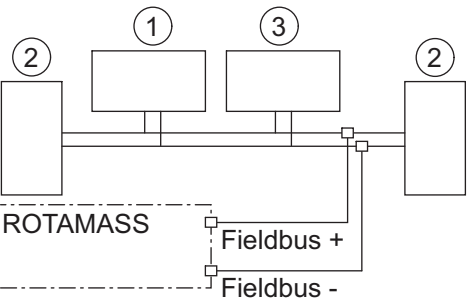


Fig. 1: FOUNDATION Fieldbus connection

- ① Fieldbus power supply and condition
- ② Termination
- ③ HOST

Passive pulse
output (only for
calibration)

	Value
Maximum load current	≤ 200 mA
Power supply	≤ 30 V _{DC}
Maximum pulse rate	10000 pulses/s
Frequency range	0 – 12.5 kHz

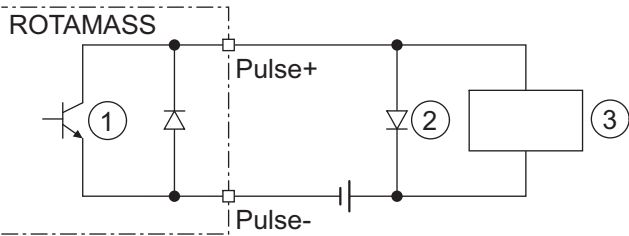


Fig. 2: Passive pulse output connection with electronic counter

- ① Passive pulse
- ② Load resistance
- ③ Electronic counter

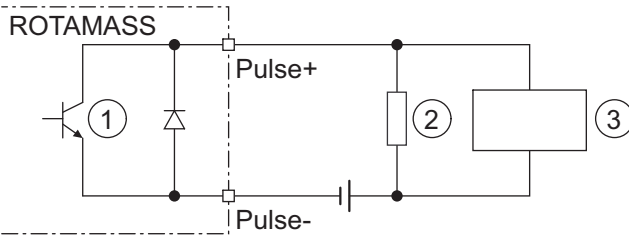


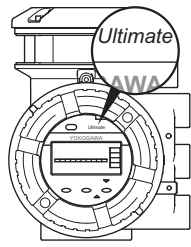
Fig. 3: Passive pulse output connection with electromechanical counter

- ① Passive pulse
- ② Protective diode
- ③ Electromechanical counter

3 Advanced functions and Features on Demand (FOD)

ROTAMASS Total Insight includes many dedicated application and maintenance functions that can be ordered simultaneously with the device or can be purchased and activated in a second time (only with the Ultimate transmitter).

Advanced functions

Functional scope	Transmitter Ultimate	Communication type and I/O Available type
		FOUNDATION Fieldbus
Model code (pos. 1 and 13)	U	F_
Standard concentration measurement	•	•
Advanced concentration measurement	•	•
Net Oil Computing (NOC) following API standard	•	•
Tube Health Check	•	•
Batching function	•	–
Viscosity function	•	•
Measurement of heat quantity	•	•

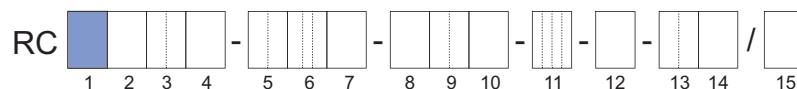
meaning of "–": not available;
meaning of "•": available

To order these functions refer to the related general specifications for FOD functions (GS01U10B20-00_ _-R).

4 Ordering information

4.1 Model code

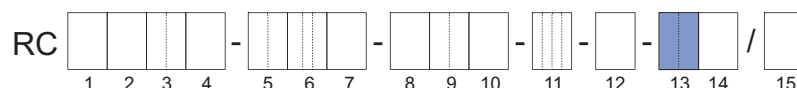
4.1.1 Transmitter



Tab. 1: Model code position 1 for transmitter

Model code position 1	Transmitter
U	Ultimate
N	Spare sensor without transmitter, combinable with Rotamass Total Insight transmitter

4.1.2 Communication type and I/O



Tab. 2: Connection terminal assignment for FOUNDATION Fieldbus

Model code position 13	Connection terminal assignment				
	I/O1 +/-	I/O2 +/-	I/O3 +/-	I/O4 +/-	WP
F0	FOUNDATION Fieldbus	Pulse Passive	—	—	Write-protect
F1	FOUNDATION Fieldbus (IS) (FISCO, Entity)	Pulse Passive (IS)	—	—	Write-protect

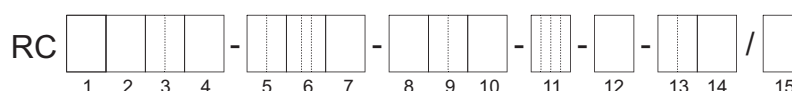
FOUNDATION Fieldbus communication

Pulse Passive: Pulse / Frequency output

Intrinsically safe (IS) outputs are only available in combination with selecting Ex approval of the device, see General Specifications GS 01U10B0_-00_-R, chapter *Ex approval*.

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4.2 Restrictions model codes



Model code position	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	Description	Restrictions
Transmitter	E														Essential (basic function)	not with communication type and I/O F ₁
Ex approval											FF11				FM, groups A, B, C, D, E, F, G	not with communication type and I/O F ₁
											FF12				FM, groups C, D, E, F, G	
											JF52				Japan Ex, Temperature class T2, explosion group IIC	
											JF53				Japan Ex, Temperature class T3, explosion group IIC	
											JF53				Japan Ex, Temperature class T4, explosion group IIC	not with communication type and I/O F ₁

4.3 Restrictions options

Presetting of customer parameters	PS	Presetting according to customer parameters	not with communication type and I/O F ₁
Country-specific delivery	VB	Delivery to EAEU area including EAC mark and Belarus Pattern Approval mark	
Country-specific application	Q11	PESO approval delivery	not with communication type and I/O F ₁
Marine Approval	MC2	Marine approval according to DNV GL piping class 2	not with communication type and I/O F ₁
	MC3	Marine approval according to DNV GL piping class 3	
Batching function	BT	Batching and filling function	not with communication type and I/O F ₁

4.4 Ordering Instructions

In addition to the ordering information described in GS 01U10B0₀-00₀-R, for FOUNDATION Fieldbus communication type please specify the following information when ordering a product:

Ordering information

Parameter	Value
NODE ADDRESS (HEX): up to 2 characters length	Default value '0xF6' unless otherwise specified
SOFTWARE TAG: up to 32 characters length	Default value 'FT2004' unless otherwise specified

TRADEMARKS

FOUNDATION Fieldbus:	registered trademark of FieldComm Group
ROTAMASS:	registered trademark of Rota Yokogawa GmbH & Co. KG, DE

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