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Product Information | **OMNI-HR2E-032..050**

Flow transmitter / switch OMNI-HR2E

- **Optimized for use with water**
- **Analog output 4..20 mA or 0..10 V**
- **Two programmable switches**
- **Graphical LCD display, backlit, can be read in sunlight and in the dark**
- **Selectable units in the display**
- **Programmable parameters via rotatable, removable ring (programming protection)**
- **Electronics housing with non-scratch, chemically resistant glass**
- **Rotatable electronic housing for best reading position**
- **Designed for industrial use**

Characteristics

Mechanical flow switch, for fluid media, with spring-supported piston and magnetic triggering of Hall sensors. Robust construction in brass or stainless steel.

The OMNI transducer located on the sensor has a backlit graphics LCD display which is very easy to read, both in the dark and in bright sunlight. The graphics display allows the presentation of measured values and parameters in a clearly understandable form. The measured values are displayed to 4 places, together with their physical unit, which may also be modified by the user. The electronics have an analog output (4..20 mA or 0..10 V) and two switching outputs, which can be used as limit switches for monitoring minimal or maximal, or as two-point controllers. The switching outputs are designed as push-pull drivers, and can therefore be used both as PNP and NPN outputs. Exceeding limit values is signaled by a red LED which is visible over a long distance, and by a clear text in the display.

The stainless steel housing has a hardened non-scratch mineral glass pane. It is operated by a programming ring fitted with a magnet, so there is no need to open the operating controls housing, and its leakproofness is permanently ensured.

By turning the ring to left or right, it is simple to modify the parameters (e.g. switching point, hysteresis...). To protect from unintended programming, it can be removed, turned through 180 ° and replaced, or completely removed, thus acting as a key.

Technical data

Sensor	analog Hall sensor	
Nominal width	DN 32 / 40 / 50	
Process connection	female thread G $1^1/_4$..G 2 (further process connections available on request)	
Metering range	5..300 l/min	for details see table "Ranges"
Pressure loss	~ 1 bar at Q_{max}	
$Q_{max.}$	up to 300 l/min	
Measurement accuracy	±8 % of full scale value	
Pressure resistance	PS 200 bar	
Medium temperature	-20..+85 °C, optionally -20..+100 °C	
Ambient temperature	-20..+70 °C	
Media	water	
Wiring	see section "Wiring"	
Materials medium-contact	*Brass construction*: CW614N nickelled, CW614N, 1.4305, 1.4310, hard ferrite,	*Stainless steel construction*: 1.4571, 1.4310, hard ferrite
Materials, non-medium-contact	Electronic adapter	CW614N nickelled
	Electronics housing	Stainless steel 1.4305
	Glass	Mineral glass, hardened
	Magnet	Samarium-Cobalt
	Ring	POM
Supply voltage	18..30 V DC	
Power consumption	<1 W	
Analog output	4..20 mA / max. load 500 Ω or 0..10 V / min. load 1 kΩ	
Switching output	Transistor output "Push-Pull" (resistant to short circuits and polarity reversal) I_{out} = 100 mA max.	
Hysteresis	adjustable, position of the hysteresis depends on minimum or maximum	
Display	extendable graphic LCD display Temperature range -20..+70 °C, 32 x 16 pixels, background illumination, displays value and unit, flashing LED signal lamp with simultaneous message on the display	
Electrical connection	for round plug connector M12x1, 5-pole	
Ingress protection	IP 67 (IP 68 when oil-filled)	
Weight	see table "Dimensions and weights"	
Conformity	CE	
Installation location	Standard: horizontal inwards flow; other installation positions are possible; the installation position affects the display, metering and switching range.	

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Product Information   OMNI-HR2E-032..050
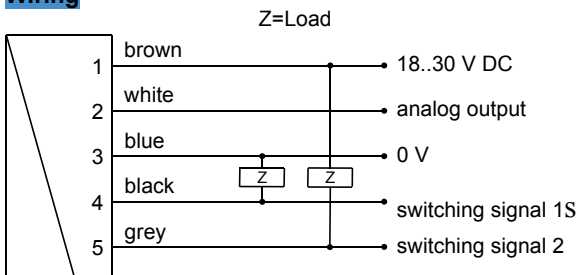
Ranges

Details in the table correspond to metering ranges with horizontal inwards flow and increasing flow rate.
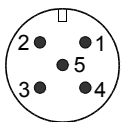
Standard type OMNI-HR2E

Metering range l/min H_2O	$Q_{max.}$ recommended
5 - 60	300 l/min
10 -100	300 l/min
15 -200	300 l/min
25 -300	300 l/min

Special ranges are available.

Wiring

Z=Load

1	brown	18..30 V DC
2	white	analog output
3	blue	0 V
4	black	switching signal 1S
5	grey	switching signal 2

Connection example: PNP   NPN

Before the electrical installation, it must be ensured that the supply voltage corresponds to the data sheet.
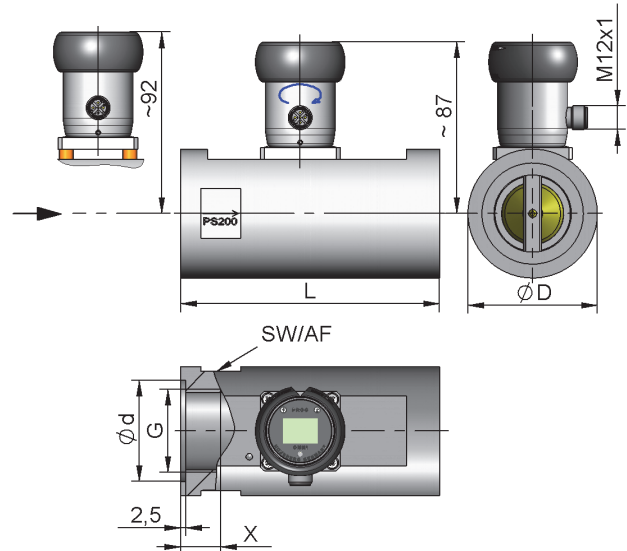
It is recommended to use shielded wiring.

The Push-Pull output) can as desired be switched as a PNP or an NPN output.

Dimensions and weights

..including OMNI electronics

DN	G	Types	L	ØD	SW	Ød	X	Weight kg
32	G $1^1/_4$	HR2E-032GM	130	65	60	51	23	2.8
40	G $1^1/_2$	HR2E-040GM	170	65	60	56	24	3.3
50	G 2	HR2E-050GM	185	80	75	70	26	5.5

High temperature

Gooseneck option

A gooseneck (optional) between the electronics head and the primary sensor provides freedom in the orientation of the sensor. This option simultaneously provides thermal decoupling between the two units

Handling and operation

Note

● Include straight calming section of 5 x DN in inlet and outlet
● If the media are dirty, install a filter (use magnetic filter for ferritic components)

The electronics housing is permanently connected to the primary sensor. There is no electrical connection between the electronics and the piston device. After installation, the electronic head can be turned to align the cable outlet.
It should be ensured that the piston device and the OMNI electronics are appropriately matched to each other.

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Product Information

OMNI-HR2E-032..050

Programming

The annular gap of the programming ring can be turned to positions 1 and 2. The following actions are possible:

Set to 1 = continue (STEP)
Set to 2 = modify (PROG)

Neutral position between 1 and 2

The ring can be removed to act as a key, or turned through 180 ° and replaced to create a programming protector.
Operation is by dialog with the display messages, which makes its use very simple.
Starting from the normal display (present value and unit), if 1 (STEP) is repeatedly selected, then the display shows the following information in this order:

Display of the parameters, using position 1

- Switching value S1 (switching point 1 in the selected unit)
- Switching characteristic of S1
     MIN = Monitoring of minimum value
     MAX = Monitoring of maximum value
- Hysteresis 1 (hysteresis value of S1 in the set unit)
- Switching value S2
- Switching characteristic of S2
- Hysteresis 2
- Code
  After entering the **code 111**, further parameters can be defined:
- Filter (settling time of the display and output)
- Physical unit (Units)
- Output: 0..20 mA or 4..20 mA
- 0/4 mA (measured value corresponding to 0/4 mA)
- 20 mA (measured value corresponding to 20 mA)

For models with a voltage output, replace 20 mA accordingly with 10 V.
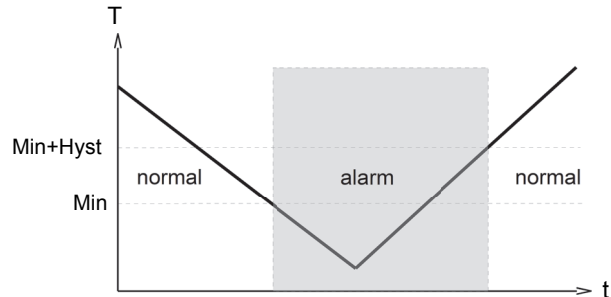
Edit, using position 2

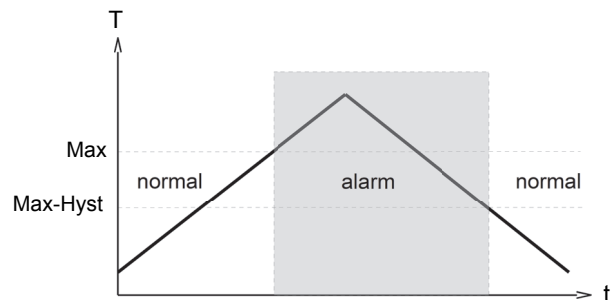If the currently visible parameter is to be modified:
- Turn the annular gap to position 2, so that a flashing cursor appears which displays the position which can be modified.
- By repeatedly turning to position 2, values are increased; by turning to position 1, the cursor moves to the next digit.
- Leave the parameter by turning to position 1 (until the cursor leaves the row); this accepts the modification.
- If there is no action within 30 seconds, the device returns to the normal display range without accepting the modification.

The limit switches S1 and S2 can be used to monitor minimal or maximal.

With a minimum-switch, falling below the limit value causes a switchover to the alarm state. Return to the normal state occurs when the limit value plus the set hysteresis is once more exceeded.

With a maximum-switch, exceeding the limit value causes a switchover to the alarm state. Return to the normal state occurs when the measured value once more falls below the limit value minus the set hysteresis.

The change to the alarm state is indicated by the integrated red LED and a clear text in the display.
While in the normal state, the switching outputs are at the level of the supply voltage; in the alarm state they are at 0 V, so that a wire break would also display as an alarm state at the signal receiver.

Overload display
Overload of a switching output is detected and indicated on the display ("Check S1 / S2"), and the switching output is switched off.

Simulation mode
To simplify commissioning, the sensor provides a simulation mode for the analog output. It is possible to create a programmable value in the range 0..26.0 mA at the output (without modifying the process variable). This allows the wiring run between the sensor and the downstream electronics to be tested during commissioning. This mode is accessed by means of code **311**.

Factory settings
After modifying the configuration parameters, it is possible to reset them to the factory settings at any time using **Code** 989.

Ordering code

The basic device is ordered e.g. HR2E-032GM100 with
electronics e.g. OMNI-HR2E-ISO

	1.	2.	3.	4.
HR2E -		**G**		

	5.	6.	7.
OMNI - HR2E -		**S**	

○=Option

1.	**Nominal width**	
	032	DN 32 - G 1$\frac{1}{4}$
	040	DN 40 - G 1$\frac{1}{2}$
	050	DN 50 - G 2
2.	**Process connection**	
	G	female thread
3.	**Connection material**	
	M	brass
	K	stainless steel
4.	**HR2E - Metering range H$_2$O for horizontal inwards flow**	
	060	5 - 60 l/min
	100	10 -100 l/min
	200	15 -200 l/min
	300	25 -300 l/min

5.	**Analog output**	
	I	current output 0/4..20 mA
	U ○	voltage output 0/2..10 V
6.	**Electrical connection**	
	S	for round plug connector M12x1, 5-pole
7.	**Optional**	
	D	high temperature up to 120°C
	H	model with gooseneck
	O ○	tropical model - oil-filled version for heavy duty or external use

Options

● Special quantities

Ordering information

● Specify direction of flow, medium, and metering range.

Accessories

● Cable/round plug connector (KB...)
  see additional information "Accessories"
● Device configurator ECI-1