### Product Information

**Sensors and Instrumentation**

**Flow - magnetic inductive - probe form**

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#### Characteristics

<table>
<thead>
<tr>
<th>System</th>
<th>Magnetic inductive metering system for all conductive fluids.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>Display, switching Metering, counting</td>
</tr>
<tr>
<td>Nominal widths</td>
<td>DN 50 - 300</td>
</tr>
<tr>
<td>Range</td>
<td>117.. 34000 l/min</td>
</tr>
<tr>
<td>Media</td>
<td>Non-aggressive conductive fluids</td>
</tr>
<tr>
<td>Pressure resistance</td>
<td>Max. 25 bar</td>
</tr>
<tr>
<td>Medium temperature</td>
<td>-25..+150 °C</td>
</tr>
</tbody>
</table>

#### Applications

- Metering of present value
- Filling applications
- Consumption metering
- Dry-run protection

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*... Professional Instrumentation 'MADE IN GERMANY'*

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pi-ho-sm-flow-magnetic_inductive_probe form_e V1.00-00
Function and benefits

- No moving parts
- Lowest pressure lost and influence on the tube cross-section
- Conveniently monitor large tubes
- A measuring probe for a wide range of tubing diameter
- High-quality materials (stainless steel and ceramic)
- Measurement insert can be replaced without opening the tube

If an electrical lead moves perpendicularly to a magnetic field, the movement in this wire induces a voltage (Faraday’s law of induction). With this measurement principle, the conductive liquid of the “lead”. The magnetic field is perpendicular to the flow direction.

The induced voltage \( U \) is directly proportional to the flow speed \( v \).

\[
U = k \cdot B \cdot D \cdot v
\]

- \( k \) = device constant
- \( B \) = strength of the magnetic field
- \( D \) = electrode spacing
- \( v \) = local speed

The voltage \( U \) is extracted at the electrodes, centre point and earth electrode (sleeve) and converted to a speed-proportional 4 - 20 mA signal.

Installation note

The supplied welding sleeve or the plastic clamp enable the use of a device various nominal tubing widths. Markings on the welding sleeve indicate how wide the sensor should be immersed into the tube diameter.

Local programmability of parameters

The FIS sensors can be combined with the OMNI intelligent sensor family. This combination enables a multitude of local parameter changes.

OMNI-FIS..

Programming with magnet ring:
With the aid of the display and of the movable ring, numerous parameters can be conveniently set on the spot.

Universal switching outputs

The push-pull transistor outputs of the OMNI electronics enable the simplest installation. The outputs can be connected like a PNP or an NPN switch and behave accordingly, without programming or wire breaks.

You are assured of resistance to short circuits and pole reversal. Overloads or short circuits are shown in the display.
# Device overview

<table>
<thead>
<tr>
<th>Device</th>
<th>Housing material</th>
<th>Range</th>
<th>Nominal width</th>
<th>Pressure resistance</th>
<th>Medium temperature</th>
<th>Supply voltage</th>
<th>Displays</th>
<th>Output signal</th>
<th>Switching</th>
<th>Measuring</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIS</td>
<td>stainless steel, ceramic</td>
<td>1.8 m/s</td>
<td>DN 50..300</td>
<td>PN 10..25</td>
<td>-25..+150 °C</td>
<td>24 V DC</td>
<td>-</td>
<td>-</td>
<td>4..20 mA</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>OMNI-FIS</td>
<td>stainless steel, ceramic</td>
<td>1.8 m/s</td>
<td>DN 50..300</td>
<td>PN 10..25</td>
<td>-25..+150 °C</td>
<td>18..30 V DC</td>
<td>Graphics LCD illuminated transflective and signal LED</td>
<td>2 x Push-Pull</td>
<td>0/4..20 mA or 0..10 V</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

**ECI-1**

All LABO, FLEX, and OMNI parameters can be set or modified using the ECI-1 configurator.

**Options**

- OMNI – Tropical model

**Accessories**

- Type ZV / ZE (Filter)
- KB.... (Round plug connector 4/5-pin)
- OMNI-TA (Panel meter)
- OMNI-C-TA (Panel counter)
- OMNI-remote
- OMNI-C-FIS
- EEZ-904 (External universal counter)

Errors and technical modifications reserved.
Magnetic-Inductive Flow Probe FIS

- Measurement of flow in conductive fluids
- A measurement probe for a wide range of piping diameters
- High quality materials
- No moving parts
- Change the sensor without loss of media

Characteristics

The FIS magnetic-inductive flow probes are built into the piping by means of the supplied welded-on sleeves (DN 50..DN 400) or by means of the plastic fixing clip (DN 50..DN 150). The complete measurement probe is removable without creating an opening to the medium, and so if a fault occurs, only the electronic part is replaced. When an electric conductor moves at right angles to the magnetic field, the movement induces a voltage $U$ in the conductor. With this measurement principle, the electrically conductive medium is the conductor. The magnetic field $B$ is transverse to the direction of flow. The induced voltage $U$ is directly proportional to the local flow speed $v$.

Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor</td>
<td>magnetic-inductive</td>
</tr>
<tr>
<td>Nominal width</td>
<td>DN 50..300 welded-on nozzle, DN 50..150 tapping sleeve</td>
</tr>
<tr>
<td>Process connection</td>
<td>welded-on nozzle, tapping sleeve</td>
</tr>
<tr>
<td>Metering ranges</td>
<td>full scales 1..8 m/s in steps of 1 m/s</td>
</tr>
<tr>
<td>Measurement accuracy</td>
<td>±5 % of the measured value, (when calibrated on the spot ±2 % of the measured value), from 3 cm/s</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±2 % of the measured value</td>
</tr>
<tr>
<td>Time constant</td>
<td>5 seconds fixed</td>
</tr>
<tr>
<td>Media</td>
<td>conductive, largely homogeneous fluids, pastes, and slurries, also having solids components</td>
</tr>
<tr>
<td>Electrical conductivity</td>
<td>min. 20 mS/cm</td>
</tr>
<tr>
<td>Medium temperature</td>
<td>-25..+150 °C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25..+60 °C</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>max. 25 bar for welded-on nozzle, max. 10 bar for tapping sleeve</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>24 V DC ±10 %</td>
</tr>
<tr>
<td>Current consumption</td>
<td>50 mA (at 24 V DC and 20 °C)</td>
</tr>
<tr>
<td>Output</td>
<td>4...20 mA (passive current output) load resistance max. 500 Ohm</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP 65 cable screw gland, IP 67 round plug connector</td>
</tr>
<tr>
<td>Weight</td>
<td>2.4 kg excluding tapping sleeve</td>
</tr>
<tr>
<td>Conformity</td>
<td>CE</td>
</tr>
</tbody>
</table>

Wiring

For model with round plug connector:

1 = supply voltage 24 V
2 = current loop +
3 = GND (0 V)
4 = current loop -
The FIS magnetic-inductive probes are installed in the pipework by means of the supplied welded-on sleeves or by means of the plastic fixing clip (≥ DN 50 / ≥ G 2). See diagrams for installation position and depth.

Weld on the nozzle at the marking according to its nominal width, free of distortion.

Run-in and run-out sections must be greater than or equal to 10 x pipework diameter. Weld on the connection sleeve at right angles to pipework mid-line (see marking = external pipework diameter, for >DN 400 also at 400). Avoid distortions. The probe must screw in easily. After screwing in, the probe can be adjusted by rotating it.

The complete measurement probe is removable without creating an opening to the medium, and so if a fault occurs, only the electronic part is replaced.

The electrical connection is made after opening the cover (unlosable because of its earthing cable). For this, completely remove the three internal hex bolts from the lid. (Take care not to lose them)

The arrow on the electronics insert must be in the direction of flow (loosen bolts 4 and 5 by approx. 2 or 3 turns. Do not remove completely!) Turn the electronic component appropriately, and then tighten the bolts again. The alignment of the arrow has nothing to do with the alignment of the housing. This is possible at any time, without affecting the alignment of the internal component.

The metering range full scale value has already been set in the factory to the desired metering range, by means of the DIP switches (1, 2, 3, 4, 5, 6, 7, 8 m/s, see drawing). The figures next to the DIP switches are valid.

Zero point setting:
- Fill the piping completely with medium
- Flow speed in the piping must be "zero"
- Press the "ZERO CAL" button
- After one minute, the device has automatically self-calibrated

During commissioning, an automatic self-test is carried out. The device status is signalled at the current output:
- 3 mA The device is still conducting the self-test or has detected an error
- 4..20 mA Device is in measurement mode and is displaying the speed measured currently

**Ordering code**

<table>
<thead>
<tr>
<th>No.</th>
<th>Nominal width</th>
<th>Process connection</th>
<th>Material for mechanical connection</th>
<th>Full scale value of range</th>
<th>Electrical connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>025</td>
<td>DN 25 (welded-on nozzle)</td>
<td>V welded-on nozzle</td>
<td>K stainless steel (welded-on nozzle)</td>
<td>1 m/s</td>
<td>G cable screw gland Pg 9 excluding cable</td>
</tr>
<tr>
<td>050</td>
<td>DN 50 (tapping sleeve)</td>
<td>B tapping sleeve</td>
<td>B PP (tapping sleeve)</td>
<td>2 m/s</td>
<td>S for round plug connector M12x1, 4-pole</td>
</tr>
<tr>
<td>065</td>
<td>DN 65 (tapping sleeve)</td>
<td></td>
<td></td>
<td>3 m/s</td>
<td></td>
</tr>
<tr>
<td>080</td>
<td>DN 80 (tapping sleeve)</td>
<td></td>
<td></td>
<td>4 m/s</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>DN 100 (tapping sleeve)</td>
<td></td>
<td></td>
<td>5 m/s</td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>DN 125 (tapping sleeve)</td>
<td></td>
<td></td>
<td>6 m/s</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>DN 150 (tapping sleeve)</td>
<td></td>
<td></td>
<td>7 m/s</td>
<td></td>
</tr>
<tr>
<td>001</td>
<td>1 m/s</td>
<td></td>
<td></td>
<td>8 m/s</td>
<td></td>
</tr>
<tr>
<td>002</td>
<td>2 m/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>003</td>
<td>3 m/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>004</td>
<td>4 m/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>005</td>
<td>5 m/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>006</td>
<td>6 m/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>007</td>
<td>7 m/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>008</td>
<td>8 m/s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**
- Cable/round plug connector (KB...) see additional information "Accessories"
Flow measurement in conductive fluids
A measurement probe for a wide range of piping diameters
High quality materials
No moving parts
Change the sensor without loss of media
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
Small, compact construction
Simple installation

Characteristics

The FIS magnetic-inductive flow probes are built into the piping by means of the supplied welded-on sleeves (DN 50..DN 400) or by means of the plastic fixing clip (DN 50..DN 150).

The complete measurement probe is removable without creating an opening to the medium, and so if a fault occurs, only the electronic part is replaced.

When an electric conductor moves at right angles to the magnetic field, the movement induces a voltage U in the conductor. With this measurement principle, the electrically conductive medium is the conductor. The magnetic field B is transverse to the direction of flow. The induced voltage U is directly proportional to the local flow speed v.

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 minima or maxima, 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 signalled by a red LED which is visible over a long distance, and by a cleartext in the display. The stainless steel case 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 right or left, 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

<table>
<thead>
<tr>
<th>Sensor</th>
<th>magnetic-inductive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal width</td>
<td>DN 50..300 welded-on nozzle</td>
</tr>
<tr>
<td>Process connection</td>
<td>welded-on nozzle, tapping sleeve</td>
</tr>
<tr>
<td>Metering ranges</td>
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</tr>
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</tr>
<tr>
<td>Time constant</td>
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</tr>
<tr>
<td>Media</td>
<td>conductive, largely homogeneous fluids, pastes, and slurries, also having solids components</td>
</tr>
<tr>
<td>Electrical conductivity</td>
<td>min. 20 mS/cm</td>
</tr>
<tr>
<td>Medium temperature</td>
<td>-25..+150 °C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25..+60 °C</td>
</tr>
<tr>
<td>Pressure resistance</td>
<td>max. 25 bar, welded-on nozzle, max. 10 bar, tapping sleeve</td>
</tr>
<tr>
<td>Materials</td>
<td>Probe, stainless steel 1.4435</td>
</tr>
<tr>
<td></td>
<td>Insulation, ceramic (zirconium oxide)</td>
</tr>
<tr>
<td></td>
<td>Tapping sleeve, PP, 1.4305</td>
</tr>
<tr>
<td></td>
<td>Electronics housing, stainless steel 1.4305 Klingerit</td>
</tr>
<tr>
<td>Materials non-medium-contact</td>
<td>Electronics housing, stainless steel 1.4305 mineral glass hardened samarium-Cobalt</td>
</tr>
<tr>
<td></td>
<td>Glass</td>
</tr>
<tr>
<td></td>
<td>Magnet</td>
</tr>
<tr>
<td></td>
<td>Ring</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>18..30 V DC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 2 W</td>
</tr>
<tr>
<td>Analog output</td>
<td>4..20 mA / max. load 500 Ω or 0..10 V / min. load 1 KΩ</td>
</tr>
<tr>
<td>Switching outputs</td>
<td>transistor output &quot;push-pull&quot; (resistant to short circuits and polarity reversal) Isw = 100 mA max.</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>adjustable, position of the hysteresis depends on minimum or maximum</td>
</tr>
</tbody>
</table>
## Product Information

**Display**
backlit graphical LCD-Display (transreflective), extended 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"

**Conformity**
CE

### Wiring

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>brown</td>
<td>white</td>
<td>blue</td>
<td>black</td>
<td>grey</td>
</tr>
</tbody>
</table>

Z = Load

- 18..30 V DC
- analog output
- 0 V
- switching signal 1
- switching signal 2

Connection example: PNP NPN

FE<10 Ohm
functional earth (protective earth)

(must be installed)

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**Dimensions**

![Dimensions Diagram]

Connection of cable screw gland

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Handling and operation

Installation

The FIS magnetic-inductive probes are installed in the pipework by means of the supplied welded-on sleeves or by means of the plastic fixing clip (≥ DN 50 / ≥ G 2). See diagrams for installation position and depth.

Weld on the nozzle at the marking according to its nominal width, free of distortion.

Run-in and run-out sections must be greater than or equal to 10 x pipework diameter. Weld on the connection sleeve at right angles to pipework mid-line (see marking = external pipework diameter, for >DN 400 also at 400). Avoid distortions. The probe must screw in easily. After screwing in, the probe can be adjusted by rotating it.

The complete measurement probe is removable without creating an opening to the medium, and so if a fault occurs, only the electronic part is replaced.

The electrical connection is made after opening the cover (unlosable because of its earthing cable). For this, completely remove the three internal hex bolts from the lid.

The arrow on the electronics insert must be in the direction of flow (loosen bolts 4 and 5 by approx. 2 or 3 turns. Do not remove completely) Turn the electronic component appropriately, and then tighten the bolts again. The alignment of the arrow has nothing to do with the alignment of the housing. This is possible at any time, without affecting the alignment of the internal component.

The metering range full scale value has already been set in the factory to the desired metering range, by means of the DIP switches (1, 2, 3, 4, 5, 6, 7, 8 m/s, see drawing). The figures next to the DIP switches are valid.

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.

Zero point setting:

- Fill the piping completely with medium
- Flow speed in the piping must be “zero”
- Press the “ZERO CAL” button
- After one minute, the device has automatically self-calibrated
Product Information

The limit switches S1 and S2 can be used to monitor minima or maxima.

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 cleartext 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. FIS xxx with electronics e.g. OMNI-FIS xxxx

<table>
<thead>
<tr>
<th>Code</th>
<th>Nominal width</th>
<th>Mechanical connection</th>
<th>Material for mechanical connection</th>
<th>Full scale value of range</th>
<th>Connection for</th>
<th>Analog output</th>
<th>Electrical connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>025</td>
<td>DN 25 (welded-on nozzle)</td>
<td>V welded-on nozzle</td>
<td>stainless steel (welded-on nozzle)</td>
<td>1 m/s</td>
<td>E electronics</td>
<td>I current output 0/4..20 mA</td>
<td>G cable screw gland Pg 9 excluding cable</td>
</tr>
<tr>
<td>050</td>
<td>DN 50 (tapping sleeve)</td>
<td>B tapping sleeve</td>
<td>PP (tapping sleeve)</td>
<td>2 m/s</td>
<td></td>
<td>U voltage output 0/2..10 V</td>
<td>S for round plug connector M12x1, 4-pole</td>
</tr>
<tr>
<td>065</td>
<td>DN 65 (tapping sleeve)</td>
<td></td>
<td></td>
<td>3 m/s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>080</td>
<td>DN 80 (tapping sleeve)</td>
<td></td>
<td></td>
<td>4 m/s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>DN 100 (tapping sleeve)</td>
<td></td>
<td></td>
<td>5 m/s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>DN 125 (tapping sleeve)</td>
<td></td>
<td></td>
<td>6 m/s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>DN 150 (tapping sleeve)</td>
<td></td>
<td></td>
<td>8 m/s</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. For nominal width

7. Analog output

8. Electrical connection

Accessories

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

Accessories

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

**Device Configurator ECI-1**

- Can be used on site for:
  - parameter modification
  - firmware update
  - adjustment of inputs and outputs
- Can be connected via USB

**Characteristics**

The device configurator ECI-1 is an interface which allows the connection of microcontroller-managed HONSBERG sensors to the USB port of a computer. Together with the Windows software "HONSBERG Device Configurator" it enables:

- the modification of all the sensor’s configuration settings
- the reading of measured values
- the adjustment of inputs and outputs
- firmware updates

**Technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>12..30 V DC (depending on the connected sensor) and via USB</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 1 W</td>
</tr>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>Sensor</td>
<td>cable bushing M12x1, 5-pole, straight length approx. 50 cm</td>
</tr>
<tr>
<td>Lead</td>
<td>device connector M12x1, 5-pole USB bushing type B</td>
</tr>
<tr>
<td>USB</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0..50 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20..+80 °C</td>
</tr>
<tr>
<td>Dimensions of housing</td>
<td>98 mm (L) x 64 mm (W) x 38 mm (H)</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP 40</td>
</tr>
</tbody>
</table>

**Handling and operation**

**Connection**

The device configurator is intended for temporary connection to the application. It is connected between the existing sensor lead and the sensor. Power supply is via the supply to the sensor and the computer’s USB port. When inactive (no communication), the configurator behaves completely neutrally; all signals from the sensor remain available to the application. During communication between computer and sensor, the signal wirings are separated in the configurator, so that in this state the sensor’s output signals are not available.

To connect 4-pole leads without a middle hole to the installed 5-pole device connector, adapter K04-05 is included. 4-pole leads with a middle hole can be used without an adapter.

**Ordering code**

**Device configurator**  
(for scope of delivery, see the diagram below) ECI-1

**Scope of delivery**

1. Device configurator ECI-1  
2. USB cable  
3. Adapter K04-05  
4. Plug KB05G  
5. Cable K05PU-02SG  
6. Carrying case

Incl. software

**Accessories:**

- Mains connector 24 V DC (with fitted round plug connector, 5-pole, incl. international plug set) EPWR24-1
- Replacement parts:
  - M12x1 adapter 4- / 5-pole K04-05
  - PUR cable, 5-pole, shielded with round plug connector M12x1 K05PU-02SG
  - Round plug connector M12x1, 5-pole (without cable) KB05G
**Options**

**OMNI - Tropical model**

This OMNI electronic option should be used where temperatures change quickly, or for external installations (the device is filled with oil, and thus prevents condensate formation in the electronics housing, even under adverse circumstances).

**Accessories**

**Filter**

Type ZV

Type ZE

The HONSBERG filters are offered for the protection of the devices from dirt or as independent components for coarse and fine filtration of liquids.

For more information, see additional product information.

**Round plug connector 4 / 5-pin**

**Ordering code**

**Self-assembly**

1. Number of pins
   - 04 4-pin
   - 05 5-pin

2. Connector output
   - G straight
   - W elbow 90 °

**Packaged**

1. Number of pins
   - K 4-pin
   - K05 5-pin

2. Cable material
   - PU PUR

3. Cable length
   - 02 2 m
   - 05 5 m
   - 10 10 m

4. Shielding
   - N shielding not applied to coupling
   - S shielding applied to coupling

5. Connector output
   - G straight
   - W elbow 90 °

6. Shielding
   - A shielded
**Product Information**

**Sensors and Instrumentation**

<table>
<thead>
<tr>
<th>Panel meter OMNI-TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>External converter with the same data as the electronics; can be mounted directly on the primary sensor, but as an external panel-mounting variant with IP 67 housing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel counter OMNI-C-TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>External counter with the same data as the electronics; can be mounted directly on the primary sensor, but as an external panel-mounting variant with IP 67 housing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OMNI - Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function is identical to OMNI-suburb. Connection to the sensor is, however, made by wire, and so the measurement point and display location can be apart</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Counter OMNI-C-FIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal counter directly on the base device. Automatic conversion of the unit (ml, litre, m³) therefore only four digits are sufficient!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EEZ-904</th>
</tr>
</thead>
<tbody>
<tr>
<td>External universal counter</td>
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</table>