Digitization starts with the sensor

Feature overview IO-Link

## Object detection and distance measurement

<table>
<thead>
<tr>
<th>Light barriers, optical sensors</th>
<th>Ultrasonic sensors</th>
<th>Inductive sensors</th>
</tr>
</thead>
</table>

### Connection / transmission

**Device profile**
- Smart sensor profile

**IO-Link port type, power consumption (max.)**
- Class A, 24 V, max. 200 mA

**Connection type**
- M8 4-Pin or cable 4-Pol, unshielded
- M8 4-Pin or cable 4-Pol, unshielded
- M12 4-Pin or cable 4-Pol, unshielded
- M8 4-Pin or cable 4-Pol, unshielded
- M8 5-Pin, unshielded
- M8 3-Pin or M12 4-Pin, unshielded

**IO-Link version**
- V 1.1
- V 1.1
- V 1.1
- V 1.0
- V 1.0
- V 1.1
- V 1.1

**Baud rate**
- 230.4 kbaud (COM 3)
- 38.4 kbaud (COM 2)
- 230.4 kbaud (COM 3)
- 38.4 kbaud (COM 2)
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- 38.4 kbaud (COM 2)
- 230.4 kbaud (COM 3)

**Cycle time (min.)**
- 0.6 ms
- 2.3 ms / 2.7 ms
- 2.3 ms / 2.7 ms
- 10 ms
- 20 ms
- 10 ms
- 0.6 ms

**Process data length**
- 32 bit
- 8 bit / 24 bit
- 8 bit / 24 bit
- 16 bit
- 12 bit
- 32 bit

**Cable length to master (max.)**
- 20 m

### Identification

**IODD**
- Electronic device description in the automation system – prevents, among other things, connection of an incorrect sensor. Download in the IODD finder or at www.baumer.com with the product

**Identification date**
- Manufacturer, product image, product designation, serial number, hardware and firmware version as well as freely usable application designation

### Configuration

**Off-line parameterization**
- **With SPS Engineering Tool**
- **Stored parameters for sensor swap**
- **Simple configuration changes**
- **Find-me function**

**Configurable parameters**
- Switching points or switching window for object detection or counter, output logic, switch-on/off delay, measured value filter, SSC / output assignment, LED behavior, Teach possibilities
- Switching point (mm / intensity), output logic, on / off delay, teaching possibilities, quality bit limit value, qTeach® locking
- Switching point (mm / intensity), output logic, switch-on / switch-off delay, teaching possibilities, quality bit limit value, qTeach® locking
- Switching point (mm), measuring range (FADx 14), output logic, on / off delay, teaching possibilities, quality bit limit value, qTeach® locking
- Switching points or switching windows for distance or counter, measuring range, sound beam, averaging, temperature compensation, output logic, switching hysteresis, input / output logic, switch-off delay, output circuit, SSC / output assignment, LED behavior, teaching facilities

### Process data

**Process data, cyclically transmitted in real time**
- MDC: Signal reserve, intensity or counter
- SSC: Distance, sensitivity

**Quality Bit (Process parameter)**
- Excess gain
- Excess gain
- Excess gain
- Excess gain
- Excess gain
- Excess gain

### Diagnosis

**Additional data, acyclically retrievable**
- Switching cycles, device temperature, signal reserve
- Signal reserve
- Signal reserve
- Signal reserve
- Switching cycles, operating time, boot cycles, histograms of process data values and the operating voltage and device temperature
- Switching cycles, operating time, boot cycles, histograms of process data values and the operating voltage and device temperature

**Alarm Bit (device defect)**
- **None**

**Transmission quality / security**
- Increased transmission reliability – up to 3 frame repetitions, active signalling of communication errors

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**Alarm Bit (device defect)**
- **None**
### Process instrumentation

<table>
<thead>
<tr>
<th>Flow sensors</th>
<th>Level measurement</th>
<th>Pressure sensors</th>
<th>Conductivity sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF20</td>
<td>LBFI, LBFH</td>
<td>PP20H</td>
<td>AFIx</td>
</tr>
</tbody>
</table>

#### Connection / transmission

**Device profile**

Smart sensor profile

**ID-Link port type, power consumption (max.)**

Class A, 24 V, max. 200 mA

**Connection type**

M12 4-Pin, unshielded  
M12 4-Pin, unshielded  
M12 5-Pin, unshielded  
M12, 5-pin, unshielded, PG Gland

**Baud rate**

38.4 kbaud (COM 2)  
38.4 kbaud (COM 2)  
38.4 kbaud (COM 2)  
38.4 kbaud (COM 2)

**Cycle time (min.)**

3.2 ms  
6.4 ms  
2.9 ms  
8.4 ms

**Process data length**

32 bit  
16 bit  
32 bit  
128 bit

**Cable length to master (max)**

20 m

**SIO mode / DI / DQ mode**

-  
-  
-  
-

**Dual Channel**

-  
-  
-  
-

**Transmission quality / security**

Increased transmission reliability – up to 3 frame repetitions, active signalling of communication errors

#### Identification

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**Identification date**

Manufacturer, product image, product designation, serial number, hardware and firmware version as well as freely usable application designation

#### Configuration

**Off-line parameterization**

-  
-  
-  
-

**With SIP engineering tool**

-  
-  
-  
-

**Stored parameters for sensor swap**

-  
-  
-  
-

**Simple configuration changes**

-  
-  
-  
-

**Find-me function**

Output: Temperature or flow, analog or switching, unit, 2 switching points / switching window, switching hysteresis, on / off delay, filter, scaling, output circuit, output logic (NO / NC)

Output: 2 switching points / switching window, switching hysteresis, on / off delay, output circuit, output logic (NO / NC)

Switching point (SSC1), hysteresis, switching behaviour (NO / NC)

Measuring unit, switching parameters, analog outputs, measuring range, temperature compensation, reference temperature, temperature source, damping, sensor calibration to conductivity, concentration and temperature, calibration to media concentration

**Process data**

**MDC = Measuring values**

MDC: Flow rate, temperature  
SSC1: Flow rate, temperature  
SSC2: Flow rate, temperature

**SSC = Switching signals**

SSC1: Filling level 1  
SSC2: Filling level 2

**MDC: pressure measuring value or process temperature value**

MDC: Analog output 1, analog output 2, media temperature, temperature unit, conductivity, concentration, measuring range  
SSC: conductivity, concentration or temperature

**Quality Bit (process parameter)**

Flow unstable

**Alarm Bit (device defect)**

-  
-

#### Diagnosis

**Additional data, acyclically retrievable**

Temperature value pressure measuring cell (process temperature), zero point adjustment, serial number, part number, 3 tags, device status, pressure switching point, MDC selector (pressure temperature), barometric pressure, current device temperature, CPU temperature, time since last power-up, current ambient pressure

Detailed device status (short-circuit, IO-Link maintenance, cable break, excess temperature)