




**Baumer**  
Passion for Sensors

# Digitization starts with the sensor

Feature overview IO-Link.

# Baumer sensors with IO-Link.

 **IO-Link**



| Light barriers, optical sensors                    |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                    | O200                                                                                                                                                                                                | O300                                                                                                                                                | O500                                                                                                                                                              |
| <b>Connection / transmission</b>                   |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| Device profile                                     |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| IO-Link port type, power consumption (max.)        |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| Coennection 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                                                                                                                              |
| IO-Link version                                    | V 1.1                                                                                                                                                                                               | V 1.1                                                                                                                                               | V 1.1                                                                                                                                                             |
| Transfer rate                                      | 230.4 kbaud (COM 3)                                                                                                                                                                                 | 38.4 kbaud (COM 2)<br>230.4 kbaud (COM 3)                                                                                                           | 38.4 kbaud (COM 2)                                                                                                                                                |
| Cycle time (min.)                                  | 0.6 ms                                                                                                                                                                                              | 2.3 ms / 2.7 ms<br>0.6 ms (O300.DL)                                                                                                                 | 2.3 ms / 2.7 ms                                                                                                                                                   |
| Process data length                                | 32 bit                                                                                                                                                                                              | 8 bit / 24 bit                                                                                                                                      | 8 bit / 24 bit                                                                                                                                                    |
| Cable length to master (max)                       |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| SIO mode / DI mode                                 | ■                                                                                                                                                                                                   | ■                                                                                                                                                   | ■                                                                                                                                                                 |
| Dual Channel                                       |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| Transmission quality / security                    | Increased transmissi                                                                                                                                                                                |                                                                                                                                                     |                                                                                                                                                                   |
| <b>Identification</b>                              |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| IODD                                               | Electronic device description in the automation system – prevent                                                                                                                                    |                                                                                                                                                     |                                                                                                                                                                   |
| Identification date                                | Manufacturer, product image, product desi                                                                                                                                                           |                                                                                                                                                     |                                                                                                                                                                   |
| <b>Configuration</b>                               |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| Off-line parameterization                          | ■                                                                                                                                                                                                   | ■                                                                                                                                                   | ■                                                                                                                                                                 |
| With SPS Engineering Tool                          | ■                                                                                                                                                                                                   | ■                                                                                                                                                   | ■                                                                                                                                                                 |
| Stored parameters for fast, error free sensor swap | ■                                                                                                                                                                                                   | ■                                                                                                                                                   | ■                                                                                                                                                                 |
| Simple configuration changes                       | ■                                                                                                                                                                                                   | ■                                                                                                                                                   | ■                                                                                                                                                                 |
| Find-me                                            | ■                                                                                                                                                                                                   |                                                                                                                                                     |                                                                                                                                                                   |
| Interlock (2 s)                                    | ■                                                                                                                                                                                                   | ■                                                                                                                                                   | ■                                                                                                                                                                 |
| Adjustable parameters                              | Switching points or switching window for object detection or counter, output logic, switch-on / switch-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, <i>qTeach</i> <sup>®</sup> locking | Switching point (mm / intensity), output logic, switch-on / switch-off delay, teaching possibilities, quality bit limit value, <i>qTeach</i> <sup>®</sup> locking |
| <b>Process data</b>                                |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| Cyclically transmitted process data in real time   | MDC: Signal reserve, intensity or counter<br>SSC1: Detection<br>SSC4: Counter                                                                                                                       | MDC: Distance (Ox00.Dx)<br>SSC: Distance, sensitivity                                                                                               | MDC: Distance (Ox00.Dx)<br>SSC: Distance, sensitivity                                                                                                             |
| MDC = Measuring values<br>SSC = Switching signals  |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| Quality Bit (Process parameter)                    | Excess gain                                                                                                                                                                                         | Excess gain                                                                                                                                         | Excess gain                                                                                                                                                       |
| Alarm Bit (device defect)                          | ■                                                                                                                                                                                                   | ■                                                                                                                                                   | ■                                                                                                                                                                 |
| <b>Analytic / diagnostic data</b>                  |                                                                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                                   |
| Additional data, acylically retrievable            | Switching cycles, operating time, boot cycles                                                                                                                                                       | Signal reserve                                                                                                                                      | Signal reserve                                                                                                                                                    |

| Object detection and distance measurement                                                                                                                              |                                                                                                                        |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                        | Ultrasonic sensors                                                                                                     |                                                                                                                                                                                                                                                                                        | Inductive sensors                                                                                                                                                                                                                                                     |
| Series 14                                                                                                                                                              | Series 09                                                                                                              | U500, UR18                                                                                                                                                                                                                                                                             | IR06.D, IR08.D, IR12.D, IR18.D, IR30.D                                                                                                                                                                                                                                |
| Smart sensor profile                                                                                                                                                   |                                                                                                                        |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
| Class A, 24 V, max. 200 mA                                                                                                                                             |                                                                                                                        |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
| M12 or M8 4-Pin or cable 4-Pol, unshielded                                                                                                                             | M8 4-Pin or cable 4-Pol unshielded                                                                                     | M12 5-Pin, unshielded                                                                                                                                                                                                                                                                  | M8 3-Pin oder M12 4-Pin, unshielded                                                                                                                                                                                                                                   |
| V 1.0                                                                                                                                                                  | V 1.0                                                                                                                  | V 1.1                                                                                                                                                                                                                                                                                  | V 1.1                                                                                                                                                                                                                                                                 |
| 38.4 kbaud (COM 2)                                                                                                                                                     | 38.4 kbaud (COM 2)                                                                                                     | 38.4 kbaud (COM 2)                                                                                                                                                                                                                                                                     | 230.4 kbaud (COM 3)                                                                                                                                                                                                                                                   |
| 10 ms                                                                                                                                                                  | 20 ms                                                                                                                  | 10 ms                                                                                                                                                                                                                                                                                  | 0.6 ms                                                                                                                                                                                                                                                                |
| 16 bit                                                                                                                                                                 | 12 bit                                                                                                                 | 32 bit                                                                                                                                                                                                                                                                                 | 32 bit                                                                                                                                                                                                                                                                |
| 20 m                                                                                                                                                                   |                                                                                                                        |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
| ■                                                                                                                                                                      | ■                                                                                                                      | ■                                                                                                                                                                                                                                                                                      | ■                                                                                                                                                                                                                                                                     |
| Communication reliability – up to 3 frame repetitions, active signalling of communication errors                                                                       |                                                                                                                        |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
| Warning: among other things, connection of an incorrect sensor. Download in the IODD finder or at <a href="http://www.baumer.com">www.baumer.com</a> with the product. |                                                                                                                        |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
| Identification: designation, serial number, hardware and firmware version as well as freely usable application designation                                             |                                                                                                                        |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                       |
| ■                                                                                                                                                                      | ■                                                                                                                      | ■                                                                                                                                                                                                                                                                                      | ■                                                                                                                                                                                                                                                                     |
| ■                                                                                                                                                                      | ■                                                                                                                      | ■                                                                                                                                                                                                                                                                                      | ■                                                                                                                                                                                                                                                                     |
| ■                                                                                                                                                                      | ■                                                                                                                      | ■                                                                                                                                                                                                                                                                                      | ■                                                                                                                                                                                                                                                                     |
| ■                                                                                                                                                                      | ■                                                                                                                      | ■                                                                                                                                                                                                                                                                                      | ■                                                                                                                                                                                                                                                                     |
| ■                                                                                                                                                                      | ■                                                                                                                      | ■                                                                                                                                                                                                                                                                                      | ■                                                                                                                                                                                                                                                                     |
| ■                                                                                                                                                                      | ■                                                                                                                      | ■                                                                                                                                                                                                                                                                                      | ■                                                                                                                                                                                                                                                                     |
| Switching point (mm), measuring range (FADx 14), output logic, on / off delay, teaching possibilities, quality bit limit value, <i>qTeach</i> <sup>®</sup> locking     | Switching points or switching window for distance, measuring range, averaging, temperature compensation, teach-in lock | 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 | Switching points or switching window for distance, frequency or counter, measuring range, output logic, switching hysteresis, input / output logic, switch-off delay, output circuit, measured value filter, SSC / output assignment, LED behaviour, teaching options |
| MDC: Distance (FADx 14)<br>SSC: Distance                                                                                                                               | MDC: Distance<br>SSC: Distance                                                                                         | MDC: Distance, counter<br>SSC: Distance, counter                                                                                                                                                                                                                                       | MDC: Distance, frequency, counter<br>SSC1: Distance, frequency, counter<br>SSC2: Distance, frequency, counter                                                                                                                                                         |
| Excess gain                                                                                                                                                            | Excess gain                                                                                                            | Excess gain                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                       |
| ■                                                                                                                                                                      | ■                                                                                                                      | ■                                                                                                                                                                                                                                                                                      | ■                                                                                                                                                                                                                                                                     |
| Signal reserve                                                                                                                                                         |                                                                                                                        | Switching cycles, operating time, boot cycles, histograms of process data values and the operating voltage and device temperature                                                                                                                                                      | Switching cycles and operating time, boot cycles over service life, histograms of process data values and the operating voltage and device temperature                                                                                                                |

| Process instrumentation |                   |                  |
|-------------------------|-------------------|------------------|
| Flow sensors            | Level measurement | Pressure sensors |
| PF20                    | LBF1, LBFH        | PP20H            |

| Connection / transmission                          |                                                                                                                                                                                                                                  |                                                                                                                             |                                                                                                                                                                                                                        |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device profile                                     | Smart sensor profile                                                                                                                                                                                                             |                                                                                                                             |                                                                                                                                                                                                                        |
| IO-Link port type, power consumption (max.)        | Class A, 24 V, max. 200 mA                                                                                                                                                                                                       |                                                                                                                             |                                                                                                                                                                                                                        |
| Coconnection type                                  | M12 4-Pin, unshielded                                                                                                                                                                                                            | M12 4-Pin, unshielded                                                                                                       | M12 5-Pin, unshielded                                                                                                                                                                                                  |
| IO-Link version                                    | V 1.1                                                                                                                                                                                                                            | V 1.1                                                                                                                       | V 1.1                                                                                                                                                                                                                  |
| Transfer rate                                      | 38.4 kbaud (COM 2)                                                                                                                                                                                                               | 38.4 kbaud (COM 2)                                                                                                          | 38.4 kbaud (COM 2)                                                                                                                                                                                                     |
| Cycle time (min.)                                  | 3.2 ms                                                                                                                                                                                                                           | 6.4 ms                                                                                                                      |                                                                                                                                                                                                                        |
| Process data length                                | 32 bit                                                                                                                                                                                                                           | 16 bit                                                                                                                      | 32 bit                                                                                                                                                                                                                 |
| Cable length to master (max)                       | 20 m                                                                                                                                                                                                                             |                                                                                                                             |                                                                                                                                                                                                                        |
| SIO mode / DI mode                                 | ■                                                                                                                                                                                                                                | ■                                                                                                                           | ■                                                                                                                                                                                                                      |
| Dual Channel                                       | ■                                                                                                                                                                                                                                |                                                                                                                             |                                                                                                                                                                                                                        |
| Transmission quality / security                    | Increased transmission reliability – up to 3 frame repetitions, active signalling of communication errors                                                                                                                        |                                                                                                                             |                                                                                                                                                                                                                        |
| 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 <a href="http://www.baumer.com">www.baumer.com</a> 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 fast, error free sensor swap | ■                                                                                                                                                                                                                                | ■                                                                                                                           | ■                                                                                                                                                                                                                      |
| Simple configuration changes                       | ■                                                                                                                                                                                                                                | ■                                                                                                                           | ■                                                                                                                                                                                                                      |
| Find-me                                            |                                                                                                                                                                                                                                  |                                                                                                                             |                                                                                                                                                                                                                        |
| Interlock (2 s)                                    | ■                                                                                                                                                                                                                                | ■                                                                                                                           | ■                                                                                                                                                                                                                      |
| Adjustable parameters                              | 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, hysteresis, switching behavior                                                                                                                                                                        |
| Process data                                       |                                                                                                                                                                                                                                  |                                                                                                                             |                                                                                                                                                                                                                        |
| Cyclically transmitted process data in real time   | MDC: Flow rate, temperature<br>SSC1: Flow rate, temperature<br>SSC2: Flow rate, temperature                                                                                                                                      | SSC1: Filling level 1<br>SSC2: Filling level 2                                                                              | Pressure measuring value                                                                                                                                                                                               |
| MDC = Measuring values<br>SSC = Switching signals  |                                                                                                                                                                                                                                  |                                                                                                                             |                                                                                                                                                                                                                        |
| Quality Bit (Process parameter)                    | Flow unstable                                                                                                                                                                                                                    | Media suitability                                                                                                           |                                                                                                                                                                                                                        |
| Alarm Bit (device defect)                          |                                                                                                                                                                                                                                  |                                                                                                                             |                                                                                                                                                                                                                        |
| Analytic / diagnostic data                         |                                                                                                                                                                                                                                  |                                                                                                                             |                                                                                                                                                                                                                        |
| Additional data, acyclically retrievable           |                                                                                                                                                                                                                                  |                                                                                                                             | Temperature value pressure measuring cell, sensor temperature, barometer pressure, operating hours counter, overpressure range monitoring, histogram nominal pressure range, overpressure range and sensor temperature |

# IO-Link connectivity.



## Wireless IO-Link master

- On site sensor parameterization and monitoring
- Integrated WLAN and bluetooth LE
- Power supply via rechargeable battery
- Simple operation via mobile app



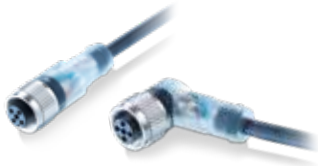
## IO-Link master portfolio

- Connection of sensors to the fieldbus level and PLC
- 4 port, 8 port master for field use and control cabinet
- Parameterization via user-friendly web interface
- Ethernet/IP or profinet interface



## USB IO-Link master

- Access to sensors via USB on the PC
- Operation via IO-Link device tool software
- Includes power supply (EU, KOR, USA, AUS, UK) and USB cable



## Cables

- Angled or straight female connector
- Sheath material: PUR, PP, PVC, PE-X or RADOX
- Ecolab certified, FDA compliant variants
- Halogen-free variants