

EXTREME Product Line for AS-i, Digital Modules AS-i, IP67, M12

Suitable for extreme conditions

- 100% protection against moisture
- High resistance to salt spray
- High corrosion resistance to chemically active substances
- Assured functionality at extreme temperatures from $-40\text{ °C} \dots 70\text{ °C}$
- Shock resistant to 30g (11 ms)
- Vibration rated for a frequency of 5 ... 500 Hz at an amplitude of 50 mm_{pp} / 6g



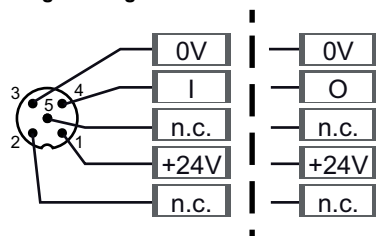
(Figure similar)



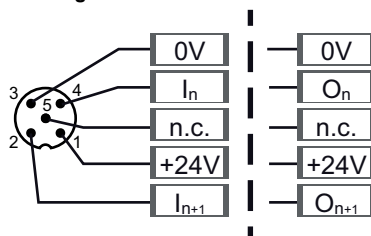
| Figure | Type | Inputs digital | Outputs digital | M12 connection ⁽¹⁾ | Input voltage (sensor supply) ⁽²⁾ | Output voltage (actuator supply) ⁽³⁾ | AS-i connection ⁽⁴⁾ | AS-i address ⁽⁵⁾ | Max. output current | Art. no. |
|--------|-------------------------------------|----------------|-----------------|-------------------------------|--|---|--------------------------------|-----------------------------|---------------------|----------------|
| | IP67, 4 x M12; <i>EXTREME</i> | 4 | – | Y | out of AS-i | – | AS-i profile cable | 1 AB slave | – | BWU3145 |
| | IP67, 8 x M12; <i>EXTREME</i> | 4 | 4 x electronic | Y | out of AS-i | out of AUX | AS-i profile cable | 1 AB slave | 1 A | BWU3144 |

(1) **M12 wiring:** either as a single-wiring, Y-wiring or mixed-wiring.

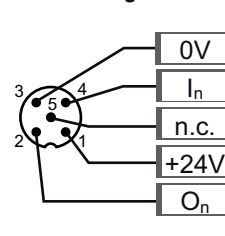
Single-wiring



Y-wiring



Mixed-wiring



(2) **Input voltage (sensor supply):** inputs are supplied by AS-i or by AUX (auxiliary 24 V power). If supplied by AS-i, inputs shall not be connected to earth or to external potential.

(3) **Output voltage (actuator supply):** outputs are supplied by AS-i or by AUX (auxiliary 24 V power). If supplied by AS-i, outputs shall not be connected to earth or to external potential

(4) **AS-i connection:** the connection to AS-i as well to AUX (auxiliary 24 V power) is made via yellow resp. black AS-i profile cable with piercing technology or via M12 socket (in IP20 via clamps).

(5) **AS-i address:** AB Slave (max. 62 AB Slaves/AS-i network), 2 AB Slaves (max. 31 modules with 2 AB Slaves), Single Slaves (max. 31 Single Slaves/AS-i network), mixed use allowed.

For modules with two slaves the second slave is turned off as long as the first slave is addressed to address "0".

Upon request, slaves are available with specific AS-i Slave profiles.

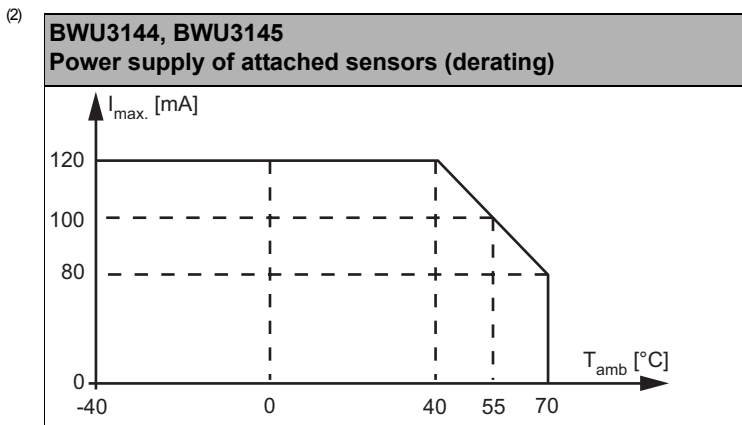
EXTREME Product Line for AS-i, Digital Modules AS-i, IP67, M12

| Article No. | BWU3145 | | BWU3144 | |
|---|--|-----------------------|--|--|
| General data | | | | |
| Device type | input | | input / output | |
| Connection | | | | |
| AS-i/AUX connection | profile cable and piercing | | | |
| Periphery connection | M12, Y-wiring | | | |
| Length of connector cable | unlimited ⁽¹⁾ | | | |
| AS-i | | | | |
| Profile | S-0.A.E (ID1=7 default) | | S-7.A.7 (ID1=7 fixed) | |
| Address | 1 AB slave | | | |
| Required Master profile | ≥M3 | | ≥M4 | |
| As of AS-i specification | 2.1 | | 3.0 | |
| Operating voltage | 30 V (18 ... 31.6 V) | | | |
| Max. current consumption | 165 mA | | | |
| Max. current consumption without sensor/ actuator supply | 45 mA | | | |
| AUX | | | | |
| Operating voltage | – | | 24 V (18 ... 30 V) | |
| Max. current consumption | – | | 3 A | |
| Input | | | | |
| Number | 4 | | | |
| Power supply | out of AS-i | | | |
| Power supply of attached sensors | up to +40 °C | 120 mA ⁽²⁾ | | |
| | at +55 °C | 100 mA ⁽²⁾ | | |
| | at +70 °C | 80 mA ⁽²⁾ | | |
| Switching threshold | U < 5 V (low) U > 15 V (high) | | | |
| Output | | | | |
| Number | – | | 4 | |
| Power supply | – | | out of AUX | |
| Max. output current | – | | 1 A (∑ 3 A max.) | |
| Display | | | | |
| LED ASI (green) | on: AS-i voltage on flashing: AS-i voltage on, but peripheral fault ⁽³⁾ or address 0 off: no AS-i voltage | | | |
| LED FLT/FAULT (red) | on: slave address 0 or slave offline flashing: peripheral fault ⁽³⁾ off: slave online | | | |
| LED AUX (green) | – | | on: 24 V _{DC} AUX off: no 24 V _{DC} AUX | |
| LEDs I1 ... In (yellow) | state of inputs I1 ... I4 | | | |
| LEDs O1 ... On (yellow) | – | | state of outputs O1 ... O4 | |

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| Article No. | BWU3145 | BWU3144 |
|---------------------------------|--|-----------------------------|
| Environment | | |
| Applied standards | EN 61000-6-2 EN 61000-6-3 EN 61131-2 EN 60529 | |
| Operating altitude | max. 2000 m | |
| Ambient temperature | -40 °C ... +55 °C (up to max. +70 °C) ⁽²⁾ ⁽⁴⁾ | |
| Storage temperature | -25 °C ... +85 °C | |
| Relative humidity | 100 %; dewing, condensation and ice formation permitted | |
| Corrosive gas | acc. EN 60068-2-60, Method 4: H ₂ S: 10 ppb NO ₂ : 200 ppb Cl ₂ : 10 ppb SO ₂ : 200 ppb relative humidity: 75 % | |
| Salt mist | acc. EN 60068-2-52: severity level 3 | |
| Housing | plastic, for DIN rail mounting | plastic, for screw mounting |
| Protection category | IP67 (circuit board coated) | |
| Pollution degree | 2 | |
| Protection category | IP67 | |
| Max. tolerable shock load | 30g, 11 ms, acc. EN 61131-2 | |
| Max. tolerable vibration stress | 5 ... 8 Hz 50 mm _{pp} /8 ... 500 Hz 6g, acc. EN 61131-2 | |
| Weight | 100 g | 200 g |
| Dimensions (W / H / D) in mm | 45 / 80 / 42 | 60 / 151 / 31 |

(1) Loop resistance $\leq 150 \Omega$



(3) See table "Peripheral fault indication"

(4) Maximum ambient operating temperature +55 °C according UL certificate for the use in the USA and Canada

| Article no. | Peripheral fault indication | | |
|-------------|-----------------------------|------------------------|---------------------|
| | Overload sensor supply | Output short circuited | AUX voltage missing |
| BWU3144 | • | • | - |
| BWU3145 | • | - | - |

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| Programming | AS-i bit assignment | | | |
|-------------------|--------------------------------------|---|--|----------|
| | D0 | D1 | D2 | D3 |
| Bit | input | | | |
| BWU3144 / BWU3145 | I1 | I2 | I3 | I4 |
| | output | | | |
| BWU3144 | O1 | O2 | O3 | O4 |
| | parameter bit | | | |
| | P0 | P1 | P2 | P3 |
| BWU3144 | 0= off / 1= on (Watchdog) | 0= on / 1= off (data input filter 128µs) | 0= on / 1= off (synchronous I/O mode) | not used |
| BWU3145 | 0= off / 1= on (peripheral fault) | | | |

Pin assignment

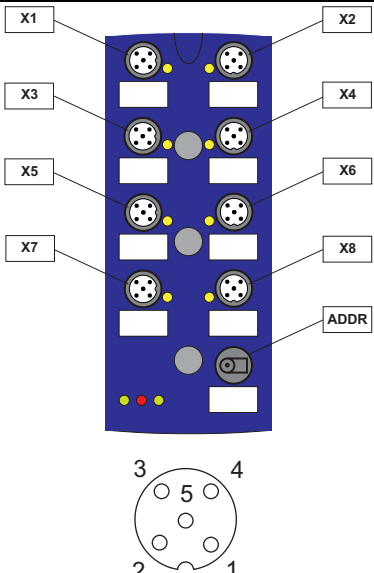
| Signal name | Explanation |
|----------------------------|---|
| Ix | digital input x |
| Ox | digital output x |
| 24V _{ext out} | power supply, out of external voltage, positive pole (AUX, actuator supply) |
| 0V _{ext out} | power supply, out of external voltage, negative pole (AUX, actuator supply) |
| 24V _{out of AS-i} | power supply, out of AS-i, positive pole (sensor supply) |
| 0V _{out of AS-i} | power supply, out of AS-i, negative pole (sensor supply) |
| AS-i+, AS-i- | connection to AS-i bus |
| n.c. | not connected |

Connections

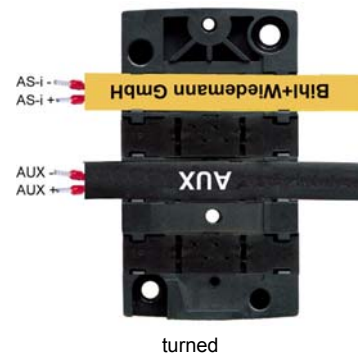
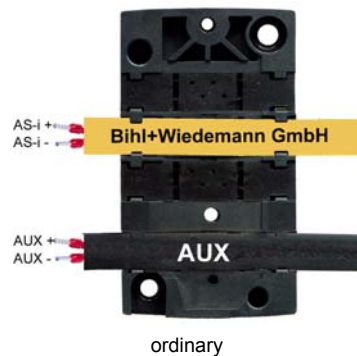
| Article no. | M12 connection | Marking | Pin1 | Pin2 | Pin3 | Pin4 | Pin5 | |
|-------------|----------------------|---------------------------------------|-----------------------------|------|----------------------------|------|------|--|
| BWU3145 | X1 | I1 | 24 V _{out of AS-i} | I2 | 0 V _{out of AS-i} | I1 | n.c. | |
| | X2 | I2 | 24 V _{out of AS-i} | n.c. | 0 V _{out of AS-i} | I2 | n.c. | |
| | X3 | I3 | 24 V _{out of AS-i} | I4 | 0 V _{out of AS-i} | I3 | n.c. | |
| | X4 | I4 | 24 V _{out of AS-i} | n.c. | 0 V _{out of AS-i} | I4 | n.c. | |
| | ADDR (dummy plug) | connection for AS-i addressing device | | | | | | |

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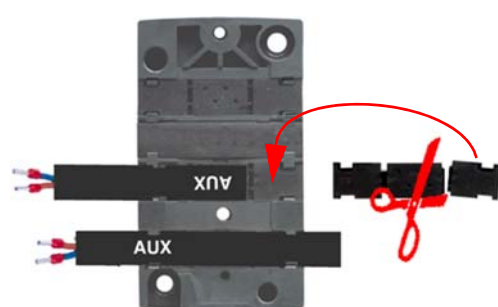
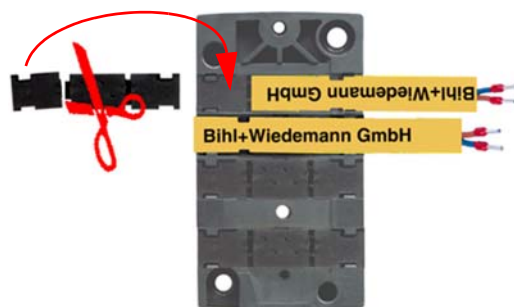
| Connections | | | | | | | |
|-------------|-------------------|---------------------------------------|-----------------------------|------|----------------------------|------|------|
| Article no. | M12 connection | Marking | Pin1 | Pin2 | Pin3 | Pin4 | Pin5 |
| BWU3144 | X1 | I1 | 24 V _{out} of AS-i | I2 | 0 V _{out} of AS-i | I1 | n.c. |
| | X2 | I2 | 24 V _{out} of AS-i | n.c. | 0 V _{out} of AS-i | I2 | n.c. |
| | X3 | I3 | 24 V _{out} of AS-i | I4 | 0 V _{out} of AS-i | I3 | n.c. |
| | X4 | I4 | 24 V _{out} of AS-i | n.c. | 0 V _{out} of AS-i | I4 | n.c. |
| | X5 | O1 | 0 V _{ext} out | O2 | 0 V _{ext} out | O1 | n.c. |
| | X6 | O2 | 0 V _{ext} out | n.c. | 0 V _{ext} out | O2 | n.c. |
| | X7 | O3 | 0 V _{ext} out | O4 | 0 V _{ext} out | O3 | n.c. |
| | X8 | O4 | 0 V _{ext} out | n.c. | 0 V _{ext} out | O4 | n.c. |
| | ADDR (dummy plug) | connection for AS-i addressing device | | | | | |



Mounting according to cable direction



Line termination with sealing profiles / as junction



Accessories:

- AS-i substructure module for 4 channel module in 45 mm housing (art. no. BW2349)
- AS-i substructure module (CNOMO) for 4 channel module in 45 mm housing (art. no. BW2350)
- AS-i substructure module (CNOMO) for 8 channel module in 60 mm housing (art. no. BW2351)
- Protection caps for unused M12 sockets (art. no. BW2368)
- Sealing profiles IP67 (IDC plug), 60 mm (art. no. BW3282)
- Sealing profiles IP67 (IDC plug), 45 mm (art. no. BW3283)