


ASi Safety Input Modules (M12), IP67

for optoelectronic protective devices,
floating contacts or
complementary switch

Applications up to category 4/PLe/SIL 3



(Figure similar)

| Figure | Type | Inputs Safety, SIL 3, cat. 4 | Outputs digital | Safety signal inputs | Input voltage (sensor supply) (1) | Output voltage (actuator supply) (2) | ASi connection (3) | ASi address (4) | Special function | Article no. |
|--|-----------------------|------------------------------|-----------------|-----------------------------------|-----------------------------------|--------------------------------------|--------------------|--------------------|--|----------------|
|  | IP67, 4 x M12, Safety | 2 x 2 channels | - | floating contacts | out of ASi | - | ASi profile cable | 2 single addresses | - | BWU2631 |
| | IP67, 4 x M12, Safety | 1 x 2 channels | 2 x electronic | floating contacts | out of ASi | out of AUX | ASi profile cable | 1 single address | - | BWU2284 |
| | IP67, 4 x M12, Safety | 1 x 2 channels | 2 x electronic | floating contacts | out of ASi | out of AUX | ASi using M12 | 1 single address | - | BWU2369 |
| | IP67, 4 x M12, Safety | 1 x 2 channels | 2 x electronic | optoelectronic protective devices | out of AUX | out of AUX | ASi profile cable | 1 single address | - | BWU2270 |
| | IP67, 4 x M12, Safety | 1 x 2 channels | 2 x electronic | optoelectronic protective devices | out of AUX | out of AUX | ASi profile cable | 1 single address | reset output for optoelectronic protective devices | BWU2689 |
| | IP67, 4 x M12, Safety | 1 x 2 channels | 2 x electronic | optoelectronic protective devices | out of AUX | out of AUX | ASi using M12 | 1 single address | - | BWU2370 |
| | IP67, 4 x M12, Safety | 1 x 2 channels | 2 x electronic | optoelectronic protective devices | out of ASi | out of ASi | ASi using M12 | 1 single address | - | BWU2960 |
| | IP67, 4 x M12, Safety | 1 x 2 channels | 2 x electronic | complementary switch | out of ASi | out of AUX | ASi profile cable | 1 single address | - | BWU2814 |

- (1) **Input voltage (sensor supply):** inputs are supplied by ASi or by AUX (auxiliary 24 V power). If supplied by ASi, inputs shall not be connected to earth or to external potential.
- (2) **Output voltage (actuator supply):** outputs are supplied by ASi or by AUX (auxiliary 24 V power). If supplied by ASi, outputs shall not be connected to earth or to external potential
- (3) **ASi connection:** the connection to ASi as well to AUX (auxiliary 24V power) is either made via yellow resp. black ASi profile cable with piercing technology or via M12 socket (in IP20 via clamps).
- (4) **ASi address:** 1 AB address (max. 62 AB addresses/ASi network), 2 AB addresses (max. 31 modules with 2 AB addresses), Single addresses (max. 31 Single addresses/ASi network), mixed use allowed.
For modules with two ASi nodes the second ASi node is turned off as long as the first ASi node is addressed to address "0".
Upon request, ASi nodes are available with specific ASi address profiles.

| Article no. | BWU2270 | BWU2370 | BWU2689 | BWU2960 |
|---------------------------|---|---------|----------------------------|----------------------------|
| Connection | | | | |
| ASi/AUX connection | profile cable and piercing | M12 | profile cable and piercing | M12 |
| Periphery connection | M12 | | | |
| Length of connector cable | unlimited ⁽¹⁾ | | | |
| ASi | | | | |
| Profile | S-7.B.1, ID1=F | | | |
| Voltage | 22 ... 31,6 V | | | |
| Max. current consumption | 60 mA | | | |
| AUX | | | | |
| Voltage | 24 V (20 ... 30 V _{DC}) (PELV) | | | – |
| Max. current consumption | 4 A max. | | | – |
| Input | | | | |
| Number | 1 x 2 channel safe input for OSSDs | | | |
| Safe input | OSSD | | | |
| Power supply | out of AUX | | | out of ASi |
| Sensor supply | short-circuit and overload protected according to EN 61131 | | | |
| Input level | V _{in} > 11 V for High-Level, Input current > 2,5 mA at 15 V | | | |
| OSSD test pulses | 0 ... 50 Hz | | | |
| OSSD test pulse width | U _{aux} ≥ 21,5 V = 0 ... 1 ms test pulses possible U _{aux} ≥ 17 V = 0 ... 0,8 ms test pulses possible U _{aux} < 17 V = 0 ... 0,6 ms | | | |
| Start delay | <22 ms | | | |
| Output | | | | |
| Number | 2, electronic | | | |
| Power supply | out of AUX | | | out of ASi |
| Output | short-circuit and overload protected according to EN 61131 | | | |
| Max. output current | 1 A per output | | | ∑ = 50mA |
| Display | | | | |
| LEDs S1, S2 (yellow) | state of inputs OSSD1, OSSD2 | | | |
| LEDs O1, O2 (O3) (yellow) | state of outputs O1, O2 | | state of outputs O2, O3 | state of outputs O1, O2 |
| LED AUX (green) | 24 V _{DC} AUX on | | | – |
| LED ASi (green) | ASi voltage on | | | |
| LED FLT/FAULT (red) | LED on: ASi communication error, ASi node does not participate in the normal exchange of data, e.g. ASi address 0 LED flashing: peripheral fault ⁽²⁾ | | | |

| Article no. | BWU2270 | BWU2370 | BWU2689 | BWU2960 |
|--|---|--------------------------------|-----------------------------------|--------------------------------|
| Environment | | | | |
| Applied standards | EN ISO 13849-1 PLe Kat4 EN ISO 13849-2 EN 62061 SIL 3 EN 62026-2 EN 61000-6-2 EN 61000-6-4 EN 61131-2 EN 60529 | | | |
| Can be used in passively safe paths up to SIL3/PLe | no ⁽³⁾ | | | yes ⁽⁵⁾ |
| Operating altitude | max. 2000 m | | | |
| Ambient temperature | -30 °C ... +70 °C ⁽⁴⁾ , no condensation permitted | | | |
| Storage temperature | -25 °C ... +85 °C | | | |
| Housing | plastic, for DIN rail mounting | plastic, for screw mounting | plastic, for DIN rail mounting | plastic, for screw mounting |
| Pollution degree | 2 | | | |
| Protection category | IP67 | | | |
| Tolerable loading referring to humidity | according to EN 61131-2 | | | |
| 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 | | | |
| Dimensions (W / H / D in mm) | 45 / 80 / 42 | 45 / 116,5 / 47,5 | 45 / 80 / 42 | 45 / 116,5 / 47,5 |

(1) loop resistance ≤150 Ω

(2) See table „Peripheral fault indication“

(3) The module is not suitable for use in passively safe paths because an exclusion of errors cannot be assumed for the connection of the two potentials, ASi and AUX.

(4) Temperature range up to -30°C from Ident.No. ≥16292 (BWU2270); Ident.No. ≥16294 (BWU2370); Ident.No. ≥16293 (BWU2689); Ident.No. ≥16369 (BWU2960)

(5) The module is suitable for use in passively safe paths as it has no connection to an AUX potential.

| Article no. | BWU2814 | BWU2284 | BWU2369 | BWU2631 |
|---------------------------|--|---|---------|---|
| Connection | | | | |
| ASi/AUX connection | profile cable and piercing | | M12 | profile cable and piercing |
| Periphery connection | M12 | | | |
| Length of connector cable | I/O: max. 15 m ⁽¹⁾ | | | |
| ASi | | | | |
| Profile | S-7.B.0, ID1=F | | | S1: S-7.B.0, ID1=F S2: S-7.B.0, ID1=E |
| Voltage | 22 ... 31,6 V | | | |
| Max. current consumption | 80 mA | | | |
| AUX | | | | |
| Voltage | 24 V (20 ... 30 V _{DC}) (PELV) | | | – |
| Max. current consumption | 3 A max. | | | – |
| Input | | | | |
| Number | 1 x 2 channel safe input for floating contacts | | | 2 x 2 channel safe inputs for floating contacts |
| Safe input | non-equivalent switch | floating contacts | | |
| Switching current | – | 15 mA (T = 100 μs), continuously 4 mA at 24 V | | |
| Power supply | out of ASi | | | |
| Sensor supply | short-circuit and overload protected according to EN 61131 | | | |
| Input level | 10 mA, R≤150 Ω | | | |

| Article no. | BWU2814 | BWU2284 | BWU2369 | BWU2631 |
|--|--|---------|--|-----------------------------------|
| Output | | | | |
| Number | 2, electronic | | | – |
| Power supply | out of AUX | | | – |
| Output | short-circuit and overload protected according to EN 61131 | | | – |
| Max. output current | 1 A per output | | | – |
| Display | | | | |
| LEDs S1, S2 (S3, S4) (yellow) | state of inputs S1, S2 | | state of inputs S1.1,S1.2; S2.1, S2.2 | |
| LEDs O1, O2 (yellow) | state of outputs O1, O2 | | | – |
| LED AUX (green) | 24 V _{DC} AUX on | | | – |
| LED ASI (green) | ASi voltage on | | | |
| LED FLT/FAULT (red) | LED on: ASi communication error, ASi node does not participate in the normal exchange of data, e.g. ASi address 0 LED flashing: peripheral fault ⁽²⁾ | | | |
| Environment | | | | |
| Applied standards | EN ISO 13849-1 PLe Kat4 EN ISO 13849-2 EN 62061 SIL 3 EN 62026-2 EN 61000-6-2 EN 61000-6-4 EN 61131-2 EN 60529 | | | |
| Can be used in passively safe paths up to SIL3/PLe | no ⁽³⁾ | | | yes ⁽⁵⁾ |
| Operating altitude | max. 2000 m | | | |
| Ambient temperature | 0 °C ... +70 °C, no condensation permitted | | -30 °C ... +70 °C ⁽⁴⁾ , no condensation permitted | |
| Storage temperature | -25 °C ... +85 °C | | | |
| Housing | plastic, for DIN rail mounting | | plastic, for screw mounting | plastic, for DIN rail mounting |
| Pollution degree | 2 | | | |
| Protection category | IP67 | | | |
| Tolerable loading referring to humidity | according to EN 61131-2 | | | |
| 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 | | | |
| Dimensions (W / H / D in mm) | 45 / 80 / 42 | | 45 / 116,5 / 47,5 | 45 / 80 / 42 |

(1) loop resistance ≤150 Ω

(2) See table „Peripheral fault indication“

(3) The module is not suitable for use in passively safe paths because an exclusion of errors cannot be assumed for the connection of the two potentials, ASi and AUX.

(4) Temperature range up to -30°C from Ident.No. ≥16286 (BWU2369); Ident.No. ≥16295 (BWU2631)

(5) The module is suitable for use in passively safe paths as it has no connection to an AUX potential.

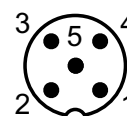
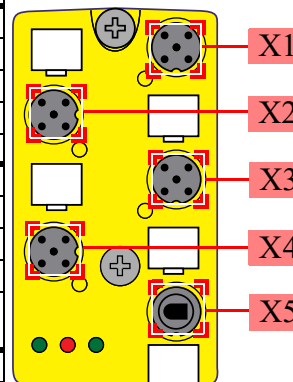
| Article no. | Peripheral fault indication | | |
|-------------|-----------------------------|-----------------|---------------------|
| | cross connection S1 to S2 | output overload | AUX voltage missing |
| BWU2270 | – | • | • |
| BWU2689 | – | • | • |
| BWU2284 | • | • | – |
| BWU2814 | • | • | – |
| BWU2369 | • | • | – |
| BWU2370 | – | • | • |
| BWU2631 | • | – | – |
| BWU2960 | – | • | – |

| UL-specifications (UL508) BWU2270, BWU2689, BWU2284, BWU2814, BWU2369, BWU2370, BWU2631, BWU2960 | |
|---|---|
| External protection | An isolated source with a secondary open circuit voltage of $\leq 30 V_{DC}$ with a 3 A maximum over current protection. Over current protection is not required when a Class 2 source is employed. |
| In general | UL mark does not provide UL certification for any functional safety rating or aspects of the above devices. |

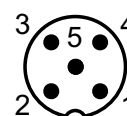
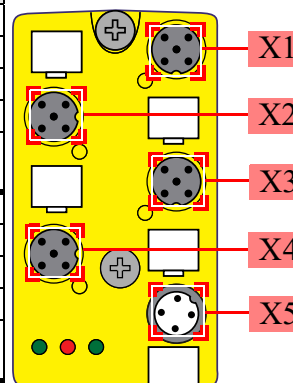
| Programming | ASi bit assignment | | | |
|---|--------------------------------|-----------|-------|--------------------------------|
| | D3 | D2 | D1 | D0 |
| | Safe input (ASi node 1) | | | |
| BWU2284 / BWU2369 / BWU2631 | S2 | S2 | S1 | S1 |
| BWU2814 | S2 denied | S2 denied | S1 | S1 |
| BWU2270 / BWU2370 / BWU2689 / BWU2960 | OSSD2 | OSSD2 | OSSD1 | OSSD1 |
| | Safe input (ASi node 2) | | | |
| BWU2631 | S4 | S4 | S3 | S3 |
| | Output | | | |
| BWU2270 / BWU2284 / BWU2369 / BWU2370 / BWU2814 / BWU2960 | not used | | O2 | O1 |
| BWU2689 | not used | O3 | O2 | not used |
| | Parameter bit | | | |
| | P3 | P2 | P1 | P0 |
| BWU2270 / BWU2370 / BWU2689 / BWU2960 | not used | | | Watchdog (0 = off / 1 = on) |
| BWU2284 / BWU2631 / BWU2369 / BWU2814 | not used | | | |

Pin assignment

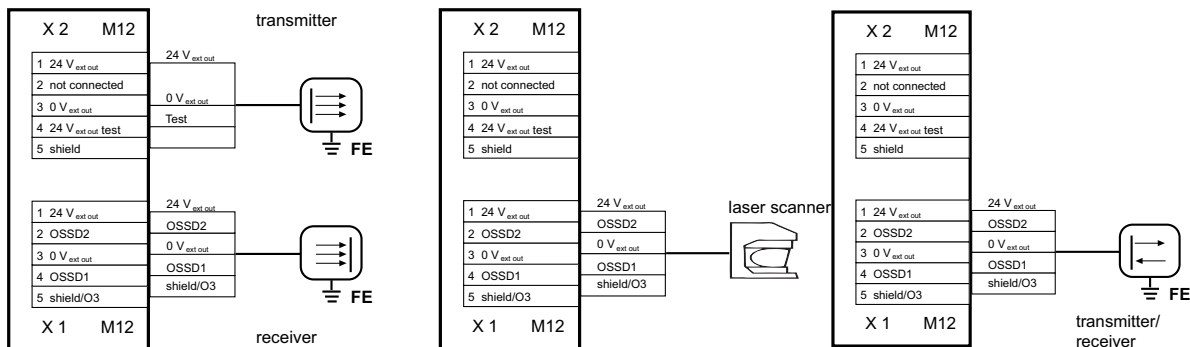
| Connections | | | | | | | |
|-------------|----------------|--------------------------------------|--|-----------------------|-----------------------|------------------------|--------|
| Article no. | M12 connection | Marking | Pin1 | Pin2 | Pin3 | Pin4 | Pin5 |
| BWU2270 | X1 | S1 | 24V _{ext out} | OSSD2 | 0V _{ext out} | OSSD1 | shield |
| | X2 | S2 | 24V _{ext out} | n.c. | 0V _{ext out} | 24V _{ext out} | shield |
| | X3 | O1 | n.c. | O2 | 0V _{ext out} | O1 | n.c. |
| | X4 | O2 | n.c. | n.c. | 0V _{ext out} | O2 | n.c. |
| | X5 | ADDR | connection for ASi-3 addressing plug | | | | |
| BWU2284 | X1 | S1 | S1+ | S1- | S2+ | S2- | n.c. |
| | X2 | S2 | S2+ | S2- | n.c. | n.c. | n.c. |
| | X3 | O1 | n.c. | O2 | 0V _{ext out} | O1 | n.c. |
| | X4 | O2 | n.c. | n.c. | 0V _{ext out} | O2 | n.c. |
| | X5 | ADDR | connection for ASi-3 addressing plug | | | | |
| BWU2631 | X1 | S1 | S1.1+ | S1.1- | S1.2+ | S1.2- | n.c. |
| | X2 | S2 | S1.2+ | S1.2- | - | - | n.c. |
| | X3 | S3 | S2.1+ | S2.1- | S2.2+ | S2.2- | n.c. |
| | X4 | S4 | S2.2+ | S2.2- | - | - | n.c. |
| | X5 | F1/F2 ADDR | connection for ASi-3 addressing plug (ASi node 1: above, ASi node 2: below) | | | | |
| BWU2689 | X1 | S1 | 24V _{ext out} | OSSD2 | 0V _{ext out} | OSSD1 | O3 |
| | X2 | S2 | 24V _{ext out} | n.c. | 0V _{ext out} | 24V _{ext out} | shield |
| | X3 | O3 | n.c. | O2 | 0V _{ext out} | n.c. | n.c. |
| | X4 | O2 | n.c. | O3 | 0V _{ext out} | O2 | n.c. |
| | X5 | ADDR | connection for ASi-3 addressing plug | | | | |
| BWU2814 | X1 | S1 | NC contact | | NO contact | | n.c. |
| | | | S1+ | S1- | S2+ | S2- | |
| | X2 | S2 | NO contact | | NC contact | | n.c. |
| | | | S2+ | S2- | S1+ | S1- | |
| | X3 | O1 | n.c. | O2 | 0V _{ext out} | O1 | n.c. |
| X4 | O2 | n.c. | n.c. | 0V _{ext out} | O2 | n.c. | |
| X5 | ADDR | connection for ASi-3 addressing plug | | | | | |



| Connections | | | | | | | |
|-------------|----------------|-------------------------------|---------------------------|----------------------|--------------------------|---------------------------|--------|
| Article no. | M12 connection | Marking | Pin1 | Pin2 | Pin3 | Pin4 | Pin5 |
| BWU2369 | X1 | S1 | S1+ | S1- | S2+ | S2- | n.c. |
| | X2 | S2 | S2+ | S2- | n.c. | n.c. | n.c. |
| | X3 | O1 | n.c. | O2 | 0V _{ext out} | O1 | n.c. |
| | X4 | O2 | n.c. | n.c. | 0V _{ext out} | O2 | n.c. |
| | X5 | ASI/ AUX _{ext.in} | ASi+ | 0V _{ext in} | ASi- | +24V _{ext in} | n.c. |
| BWU2370 | X1 | S1 | 24V _{ext out} | OSSD2 | 0V _{ext out} | OSSD1 | shield |
| | X2 | S2 | 24V _{ext out} | n.c. | 0V _{ext out} | 24V _{ext out} | shield |
| | X3 | O1 | n.c. | O2 | 0V _{ext out} | O1 | n.c. |
| | X4 | O2 | n.c. | n.c. | 0V _{ext out} | O2 | n.c. |
| | X5 | ASI/ AUX _{ext.in} | ASi+ | 0V _{ext in} | ASi- | +24V _{ext in} | n.c. |
| BWU2960 | X1 | S1 | 24V _{out of ASi} | OSSD2 | 0V _{out of ASi} | OSSD1 | shield |
| | X2 | S2 | 24V _{out of ASi} | n.c. | 0V _{out of ASi} | 24V _{out of ASi} | shield |
| | X3 | O1 | n.c. | O2 | 0V _{out of ASi} | O1 | n.c. |
| | X4 | O2 | n.c. | n.c. | 0V _{out of ASi} | O2 | n.c. |
| | X5 | ASI | ASi+ | n.c. | ASi- | n.c. | n.c. |



Connection examples BWU2270, BWU2370, BWU2689, BWU2960



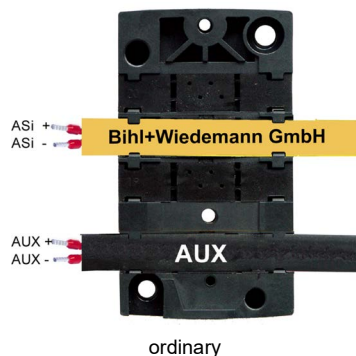
BWU2270, BWU2284, BWU2631, BWU2689, BWU2814:

The matching substructure modules are available as accessories with two different drilling patterns.

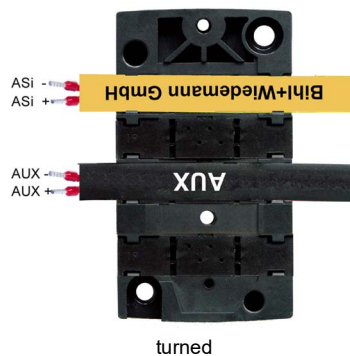
BWU2369, BWU2370, BWU2960:

They are supplied including mounted substructure modules (no additional profile cable connection possible)

Mounting according to cable direction

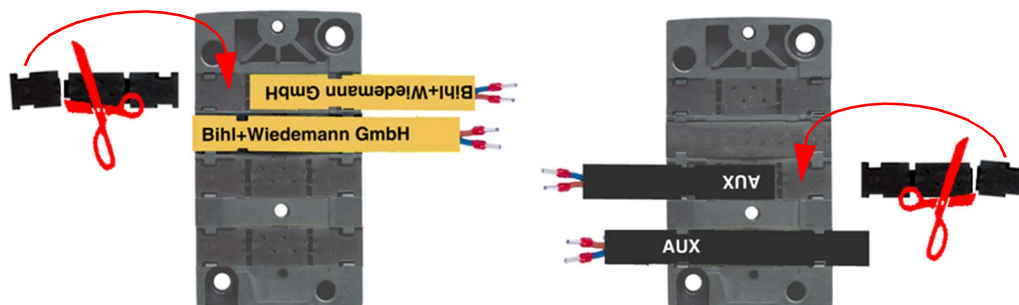
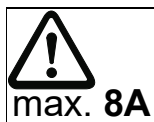


ordinary



turned

Line termination with sealing profiles / junction



Accessories:

- ASi substructure module for 4-channel module in 45 mm-housing (article no. BW2349)
- ASi substructure module (CNOMO) for 4-channel module in 45 mm-housing (article no. BW2350)
- Universal protection cap ASi-5/ASi-3 for M12 sockets, IP67 (art. no. BW4056)
- ASi-5/ASi-3 Address Programming Device (art. no. BW4708)