

# ASi Safety I/O Module, IP20



## ASi Safety I/O Module

Up to 8 x 2 channels safe inputs for:

- floating contacts
- antivalent switches
- OSSDs
- adjustable test puls width

Up to 2 release circuits (2 x electronic safe outputs)

- augmented reliability

Optimal costs for safety in- and outputs on ASi

Module width of 22.5 mm,  
for optimal use of space in the service cabinet

Universal module for as many use cases,  
optimized for service and commissioning

Protection category IP20



(figure similar)



| Figure | Type   | Housing      | Inputs Safety, SIL 3, cat. 4 | Outputs Safety, SIL 3, cat. 4  | Safety signal inputs   | Input voltage (sensor supply) (1) | Output voltage (actuator supply) (2) | ASi address (3)                                     | Article no.    |
|--------|--|--------------|------------------------------|--|--|-----------------------------------|--------------------------------------|---|----------------|
|        | IP20, 22,5 mm x 114 mm, 6 x COMBICON, Safety | 6 x COMBICON | 8 x 2 channels               | 1 release circuit; 1 x electronic safe outputs augmented reliability | floating contacts, optoelectronic protective devices, complementary switch | out of AUX                        | out of AUX                           | depending on configuration, optimized for ASIMON360 | <b>BWU3428</b> |
|        | IP20, 22,5 mm x 114 mm, 6 x COMBICON, Safety | 6 x COMBICON | 4 x 2 channels               | 2 release circuit; 2 x electronic safe outputs augmented reliability | floating contacts, optoelectronic protective devices, complementary switch | out of AUX                        | out of AUX                           | depending on configuration, optimized for ASIMON360 | <b>BWU3427</b> |

- (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 address:** 1 AB Slave (max. 62 AB Slaves/ASi network), 2 AB Slaves (max. 31 modules with 2 AB Slaves), Single Slaves (max. 31 Single Slaves/ASi 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 ASi Slave profiles.

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| Article no.                       | BWU3427   | BW3428   |
|-----------------------------------|---|--|
| <b>Connection</b>                 |   |  |
| Connection                        | 6 x COMBICON clamp  |  |
| Length of connector cable         | unlimited <sup>(1)</sup>  |  |
| <b>ASi</b>                        |   |  |
| Profile                           | safety input slaves: S-0.B.F.0<br>diagnostic slaves: S-7.A.5.E<br>configuration slave: S-7.A.F.5      |  |
| Address                           | depending on configuration  |  |
| Required Master profile           | ≥M3   |  |
| Since ASi specification           | 2.1   |  |
| Voltage                           | 30 V <sub>DC</sub> (18 ... 31,6 V)  |  |
| Max. current consumption          | 200 mA  |  |
| Max. continuous operating current | 125 mA  |  |
| <b>AUX</b>                        |   |  |
| Voltage                           | 24 V <sub>DC</sub> (20 ... 30 V)  |  |
| Max. current consumption          | 4 A   | 4 A  |
| <b>Input</b>                      |   |  |
| Number                            | 4 x 2 channels safe inputs  | 8 x 2 channels safe inputs   |
| Supply voltage inputs             | out of AUX  |  |
| Sensor supply                     | short-circuit and overload protected per EN 61131   |  |
| Max. current for sensor supply    | 1,4 A   | 0,7 A  |
| Safety Signal                     | floating contacts or antivalent switches,<br>SI3 + SI4 optional for optical protective equipment      | floating contacts or antivalent switches, or<br>optical protective equipment |
| Switching current                 | 15 mA (T = 100 μs), continuously 4 mA at 24 V   |  |
| Switching threshold               | <5 V (low)<br>>15 V (high)  |  |
| OSSD test pulses                  | 0 ... 50 Hz   |  |
| OSSD test pulse width             | 0 ... 51 ms, adjustable   |  |
| <b>Output</b>                     |   |  |
| Number                            | 2 release circuits, 2 x fast electronic safe outputs  | 1 release circuit, 1 x fast electronic safe output                           |
| Max. contact load:                | 0,7 A DC-13 at 24 V   |  |
| Supply voltage outputs            | out of AUX  |  |
| Output                            | short-circuit and overload protected per EN 61131   |  |
| Test pulse                        | when output is switched on<br>minimal distance between 2 test pulses: 250 ms, pulse length up to 1 ms |  |
| <b>Visualization</b>              |   |  |
| LED ASI (green)                   | ASi power supply on   |  |
| LED FAULT (red)                   | on: no data exchange or adress 0<br>flashing: peripheral error  |  |
| LED AUX (green)                   | –   | on: 24 V <sub>DC</sub> AUX<br>off: no 24 V <sub>DC</sub> AUX                 |
| LEDs S1 ... Sn (yellow)           | state of input S1 ... S8  | state of input S1 ... S16  |
| LED SO1 (yellow)                  | output 1 has switched   |  |
| LED SO2 (yellow)                  | output 2 has switched   | –  |

# ASi Safety I/O Module, IP20



| Article no.                             | BWU3427  | BW3428 |
|---|--|--------|
| <b>Environment</b>                      |  |        |
| Applied standards                       | EN 60529<br>IEC 61508 SIL 3<br>EN 62061 SIL 3<br>EN ISO 13849-1 PLe cat. 4 |        |
| Ambient temperature                     | 0 °C ... +55 °C  |        |
| Storage temperature                     | -25 °C ... +85 °C  |        |
| Housing                                 | plastic, for DIN-rail mounting   |        |
| Protection class                        | IP20   |        |
| Tolerable loading referring to humidity | according to EN 6131-2   |        |
| Voltage of insulation                   | ≥ 500 V  |        |
| Weight                                  | 160 g  |        |
| Dimensions (W / H / D in mm)            | 22,5 / 99 / 114,5  |        |

(1) loop resistance ≤ 150 Ω

| <b>UL-specifications (UL508)</b><br><b>BWU3427, BWU3428</b> |  |
|---|--|
| External protection   | An isolated source with a secondary open circuit voltage of ≤30 V <sub>DC</sub> 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.  |

## Wiring rules

| <b>Push-in terminals</b>   |   |
|--|---|
| <b>General</b>   |   |
| Nominal cross section  | 2,5 mm <sup>2</sup>                                 |
| <b>Conductor cross section</b>                                     |   |
| Conductor cross section solid                                      | 0,2 ... 2,5 mm <sup>2</sup>                         |
| Conductor cross section flexible                                   | 0,2 ... 2,5 mm <sup>2</sup>                         |
| Conductor cross section flexible, with ferrule                     | without plastic sleeve: 0,2 ... 2,5 mm <sup>2</sup> |
|  | with plastic sleeve: 0,25 ... 2,5 mm <sup>2</sup>   |
| 2 conductors with same cross section, stranded, with TWIN ferrules | without plastic sleeve: 0,5 ... 1,5 mm <sup>2</sup> |
| AWG  | 24 ... 14   |
| Stripped insulation length   | 10 mm   |

# ASi Safety I/O Module, IP20



| BWU3427   | Clamps   | Description                              |  |
|---|--|--|--|
| <p>The diagram shows a terminal block with two rows of 8 pins each. The top row is labeled S22, S21, S12, S11, S42, S41, S32, S31, S62, S61, S52, S51. The bottom row is labeled S71, S72, S81, S82, 1.14<sub>ext.out</sub>, 2.14<sub>ext.out</sub>, 0V<sub>1ext.out</sub>, 0V<sub>2ext.out</sub>, ASI+, ASI-, ADDR, AUX+<sub>ext.in</sub>, AUX-<sub>ext.in</sub>. There are also labels for S1-S4, S5-S8, FAULT, S01, S02, and a CHIP CARD slot.</p> | S22, S21, S12, S11                                   | terminal safety 2-channels input 1 (SI1) |  |
|   | S42, S41, S32, S31                                   | terminal safety 2-channels input 2 (SI2) |  |
|   | S62, S61, S52, S51                                   | terminal safety 2-channels input 3 (SI3) |  |
|   | S71, S72, S81, S82                                   | terminal safety 2-channels input 4 (SI4) |  |
|   | 1.14 <sub>ext.out</sub>                              | semiconductor output 1                   |  |
|   | 2.14 <sub>ext.out</sub>                              | semiconductor output 2                   |  |
|   | 0V <sub>1ext.out</sub> ,<br>0V <sub>2ext.out</sub>   | mass connection for semiconductor output |  |
|   | ASI +, ASI -   | Connection to the ASi Bus                |  |
|   | ADDR   | addressing socket                        |  |
|   | AUX + <sub>ext.in</sub> ,<br>AUX - <sub>ext.in</sub> | power supply input                       |  |
|   |  |  |  |
|   |  |  |  |
|   |  |  |  |
|   |  |  |  |

# ASi Safety I/O Module, IP20

| BWU3428 | Clamps   | Description                                  |  |
|---------|--|--|--|
|         | S1, S2, S3, S4                                       | safe input terminal input 1-4                |  |
|         | S5, S6, S7, S8                                       | safe input terminal input 5-8                |  |
|         | S9, S10, S11, S12                                    | safe input terminal input 9-12               |  |
|         | S13, S14, S15, S16                                   | safe input terminal input 13-16              |  |
|         | 1.14 <sub>ext.out</sub>                              | semiconductor output 1                       |  |
|         | 0 V <sub>ext.out</sub>                               | mass connection for semiconductor output     |  |
|         | T1   | pulse 1 (S1, S3, S5, S7, S9, S11, S13, S15)  |  |
|         | T2   | pulse 2 (S2, S4, S6, S8, S10, S12, S14, S16) |  |
|         | ASI +, ASI -   | Connection to the ASi Bus                    |  |
|         | ADDR   | addressing socket                            |  |
|         | AUX + <sub>ext.in</sub> ,<br>AUX - <sub>ext.in</sub> | power supply input                           |  |
|         |  |  |  |
|         |  |  |  |
|         |  |  |  |

### Diagnostics (device colors)

| Value | Color           | Description   | State change                      | LED O1/2          |
|-------|-----------------|---|-----------------------------------|-------------------|
| 0     | green           | output on   |                                   | on                |
| 1     | green flashing  | -   |                                   | -                 |
| 2     | yellow          | restart inhibit                                       | auxiliary signal 2                | 1 Hz              |
| 3     | yellow flashing | -   |                                   | -                 |
| 4     | red             | output off  |                                   | off               |
| 5     | red flashing    | waiting for "reset of error condition" or AUX missing | auxiliary signal 1 or connect AUX | 8 Hz              |
| 6     | gray            | internal error, such as "fatal error"                 | only via "Power ON" on device     | all LEDs flashing |
| 7     | green/yellow    | output released, but not switched on                  | switching-on by setting of O0     | off               |

### Assignment code half sequence - terminals

|         | Code half sequence | Terminals  |
|---------|--------------------|--|
| BWU3427 | Bit0               | Input terminals: SI 21 / SI 41 / SI 61 / SI 72                             |
|         | Bit1               |  |
|         | Bit2               | Input terminals: SI 12 / SI 32 / SI 52 / SI 81                             |
|         | Bit3               |  |
| BWU3428 | Bit0               | Input terminals: SI 2 / SI 4 / SI 6 / SI 8 / SI 10 / SI 12 / SI 14 / SI 16 |
|         | Bit1               |  |
|         | Bit2               | Input terminals: SI 1 / SI 3 / SI 5 / SI 7 / SI 9 / SI 11 / SI 13 / SI 15  |
|         | Bit3               |  |

### Diagnostic slaves

| Bit  | input  | output  |
|------|--|---|
| Bit0 | Diagnostic color   | If P1=0 and A0=0, the output is switched off independent from release |
| Bit1 |  | free  |
| Bit2 |  | free  |
| Bit3 | P2=1: response switch S31/S32 or S41/S42<br>P2=0: response of the release of the state | non existent  |

## ASi Safety I/O Module, IP20



### Accessories:

- Safe contact expander, 1 or 2 independent channels (art. no. BWU2548 / BWU2539)



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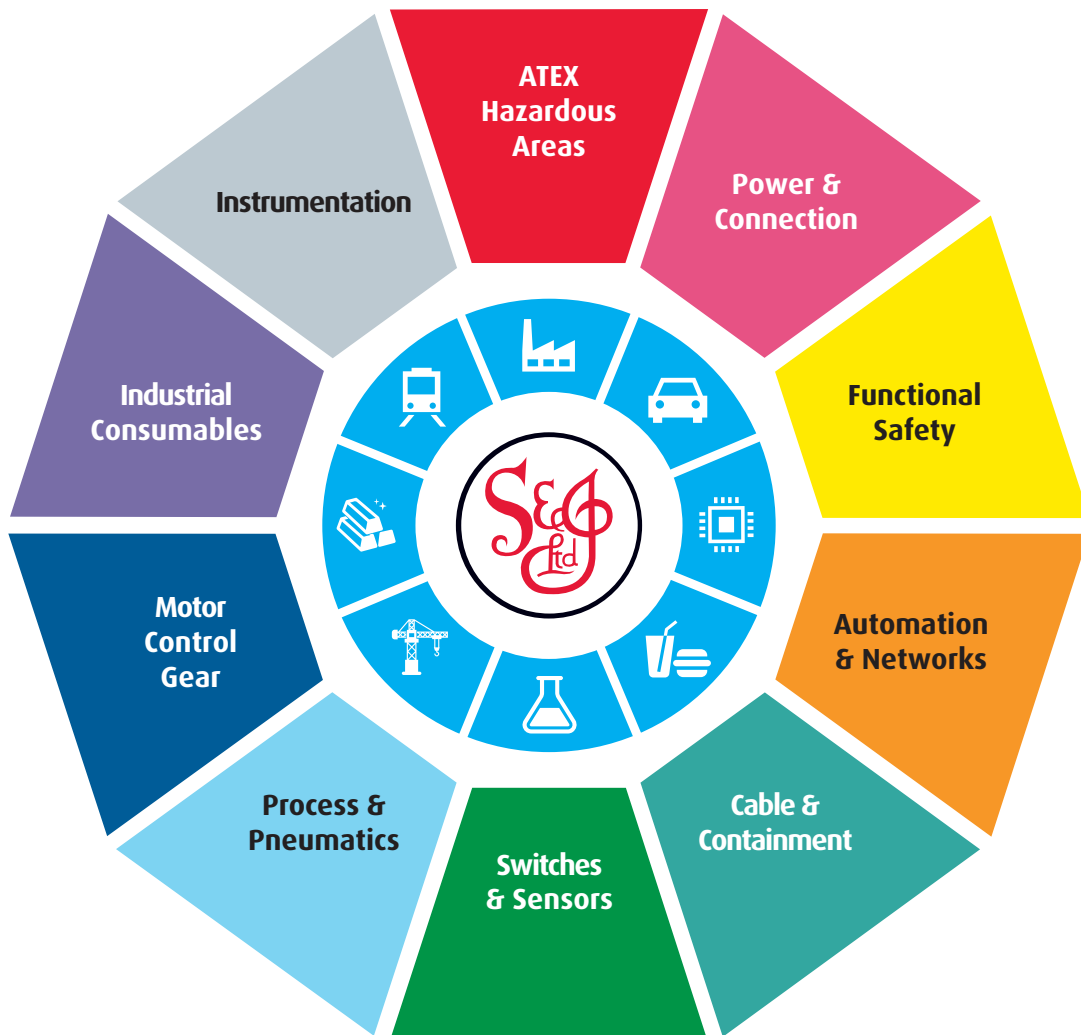
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