



# Analog Modules ASi IP20



(Figure similar)

| Figure  | Type                                   | Inputs analog                      | Outputs analog                     | Input voltage (sensor supply) <sup>(1)</sup>   | Output voltage (actuator supply) <sup>(2)</sup> | ASi address <sup>(3)</sup> | Art. no.       |
|---|--|------------------------------------|------------------------------------|--|---|----------------------------|----------------|
|   | IP20, 22,5 mm x 92 mm<br>4 x COMBICON  | 2 x<br>4 ... 20 mA /<br>0 ... 10 V | –                                  | selectable,<br>from ASi or AUX,<br>default ASi | –   | 1 AB slave                 | <b>BWU1897</b> |
|   | IP20, 22,5 mm x 92 mm<br>4 x COMBICON  | 2 x<br>4 ... 20 mA /<br>0 ... 10 V | –                                  | selectable,<br>from ASi or AUX,<br>default ASi | –   | 1 single slave             | <b>BWU1345</b> |
|   | IP20, 22,5 mm x 92 mm<br>4 x COMBICON  | –                                  | 2 x<br>0 ... 20 mA /<br>0 ... 10 V | –  | selectable,<br>from ASi or AUX,<br>default ASi  | 1 single slave             | <b>BWU1412</b> |
|   | IP20, 22,5 mm x 92 mm<br>4 x COMBICON  | –                                  | 2 x<br>0 ... 20 mA /<br>0 ... 10 V | –  | selectable,<br>from ASi or AUX,<br>default AUX  | 1 single slave             | <b>BWU1727</b> |
|   | IP20, 22,5 mm x 92 mm<br>4 x COMBICON  | –                                  | 2 x<br>-10 V ... +10 V             | –  | out of AUX                                      | 1 single slave             | <b>BWU2224</b> |
|  | IP20, 22,5 mm x 105 mm<br>6 x COMBICON | 4 x<br>4 ... 20 mA                 | –                                  | from ASi or AUX,<br>auto switching             | –   | 1 single slave             | <b>BWU1364</b> |
|   | IP20, 22,5 mm x 105 mm<br>6 x COMBICON | 4 x<br>0 ... 10 V                  | –                                  | from ASi or AUX,<br>auto switching             | –   | 1 single slave             | <b>BWU1365</b> |
|   | IP20, 22,5 mm x 105 mm<br>6 x COMBICON | 4 x<br>Pt100                       | –                                  | out of ASi                                     | –   | 1 single slave             | <b>BWU1368</b> |
|   | IP20, 22,5 mm x 105 mm<br>6 x COMBICON | 4 x<br>thermocouple<br>type J      | –                                  | out of ASi                                     | –   | 1 single slave             | <b>BWU1933</b> |
|   | IP20, 22,5 mm x 105 mm<br>6 x COMBICON | 4 x<br>thermocouple<br>type K      | –                                  | out of ASi                                     | –   | 1 single slave             | <b>BWU2243</b> |
|   | IP20, 22,5 mm x 105 mm<br>6 x COMBICON | –                                  | 4 x<br>0 ... 20 mA                 | –  | from ASi or AUX,<br>auto switching              | 1 single slave             | <b>BWU1366</b> |
|   | IP20, 22,5 mm x 105 mm<br>6 x COMBICON | –                                  | 4 x<br>0 ... 10 V                  | –  | from ASi or AUX,<br>auto switching              | 1 single slave             | <b>BWU1367</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.

# Analog Modules ASi IP20



| Article No.   | BWU1897                                   | BWU1345                 | BWU1364                | BWU1365                | BWU1368                | BWU1933                            | BWU2243                            |
|---|---|-------------------------|------------------------|------------------------|------------------------|------------------------------------|------------------------------------|
| <b>General Data</b>                                   |   |                         |                        |                        |                        |                                    |                                    |
| Device type   | Input                                     |                         |                        |                        |                        |                                    |                                    |
| <b>Connection</b>                                     |   |                         |                        |                        |                        |                                    |                                    |
| ASi/AUX connection                                    | COMBICON clamp                            |                         |                        |                        |                        |                                    |                                    |
| Periphery connection                                  | COMBICON clamp                            |                         |                        |                        |                        |                                    |                                    |
| <b>ASi</b>  |   |                         |                        |                        |                        |                                    |                                    |
| Profile   | S-7.A.9                                   |                         | S-7.3                  |                        |                        |                                    |                                    |
| Address   | 1 AB slave                                |                         | 1 single slave         |                        |                        |                                    |                                    |
| Required Master profile                               | ≥M4                                       |                         | ≥M3                    |                        |                        |                                    |                                    |
| Since ASi specification                               | 3.0                                       |                         | 2.1                    |                        |                        |                                    |                                    |
| Operating voltage                                     | 30 V<br>(18 ...31,6 V)                    | 30 V<br>(19 ...31,6 V)  | 30 V<br>(24 ...31,6 V) | 30 V<br>(18 ...31,6 V) |                        |                                    |                                    |
| Max. current consumption                              | < 80 mA                                   |                         |                        |                        |                        | < 100 mA                           |                                    |
| <b>AUX</b>  |   |                         |                        |                        |                        |                                    |                                    |
| Voltage   | 24 V (18 ... 30 V)                        |                         |                        |                        |                        | -                                  |                                    |
| Max. current consumption                              | 500 mA                                    |                         |                        |                        |                        | -                                  |                                    |
| <b>Input</b>  |   |                         |                        |                        |                        |                                    |                                    |
| Number  | 2<br>(4 ... 20 mA/<br>0 ... 10 V)         |                         | 4<br>(4 ... 20 mA)     | 4<br>(0 ... 10 V)      | 4<br>(Pt100)           | 4<br>(thermo-<br>couple<br>type J) | 4<br>(thermo-<br>couple<br>type K) |
| Resolution  | 14 Bit<br>(1 µA / 1mV)                    | 16 Bit<br>(1 µA / 1 mV) | 16 Bit (1 µA)          | 16 Bit<br>(1 mV)       | 16 Bit<br>(0,1 °C)     | 16 Bit<br>(0,1 °C)                 |                                    |
| Range of value  | 4000 ... 20000 dec. /<br>0 ... 10000 dec. |                         | 4000 ...<br>20000 dec. | 0 ...<br>10000 dec.    | -200 °C ...<br>+850 °C | -200 °C ... +760 °C                |                                    |
| Internal resistance                                   | 50 Ω / 100 kΩ                             |                         |                        |                        |                        | -                                  |                                    |
| Max. input voltage                                    | 25 V                                      |                         |                        |                        |                        | -                                  |                                    |
| Max. input current                                    | 40 mA                                     |                         |                        |                        |                        | -                                  |                                    |
| Power supply  | out of ASi or out of AUX                  |                         |                        |                        |                        | out of ASi                         |                                    |
| Power supply of<br>attached sensors                   | 500 mA out of AUX<br>50 mA out of ASi     |                         |                        |                        |                        | 50 mA                              |                                    |
| <b>Output</b>   |   |                         |                        |                        |                        |                                    |                                    |
| Resolution  | -   |                         |                        |                        |                        |                                    |                                    |
| Range of value  | -   |                         |                        |                        |                        |                                    |                                    |
| Resistance of the actuators                           | -   |                         |                        |                        |                        |                                    |                                    |
| Max. output current                                   | -   |                         |                        |                        |                        |                                    |                                    |
| Power supply  | -   |                         |                        |                        |                        |                                    |                                    |
| Power supply of<br>attached actuators                 | -   |                         |                        |                        |                        |                                    |                                    |
| <b>Environment</b>                                    |   |                         |                        |                        |                        |                                    |                                    |
| Applied standards                                     | EN 61000-6-2<br>EN 61000-6-4<br>EN 60529  |                         |                        |                        |                        |                                    |                                    |
| Can be used in passively safe<br>paths up to SIL3/PLe | no <sup>(1)</sup>                         |                         |                        |                        |                        | yes <sup>(2)</sup>                 |                                    |
| Operating altitude                                    | max. 2000 m                               |                         |                        |                        |                        |                                    |                                    |
| Operating temperature                                 | 0 °C ... +70 °C                           |                         |                        |                        |                        |                                    |                                    |
| Storage temperature                                   | -25 °C ... +85 °C                         |                         |                        |                        |                        |                                    |                                    |
| Housing   | plastic, for DIN rail mounting            |                         |                        |                        |                        |                                    |                                    |
| Pollution degree                                      | 2   |                         |                        |                        |                        |                                    |                                    |
| Protection category                                   | IP20                                      |                         |                        |                        |                        |                                    |                                    |
| Voltage of insulation                                 | ≥ 500 V                                   |                         |                        |                        |                        |                                    |                                    |
| Weight  | 120 g                                     |                         |                        | 145 g                  |                        |                                    |                                    |
| Dimension (W / H / D in mm)                           | 22,5 / 99 / 92                            |                         |                        | 25 / 105 / 114         |                        |                                    |                                    |

(1) 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.

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

# Analog Modules ASi IP20



| Article No.  | BWU1366                                  | BWU1367                 | BWU1412                             | BWU1727         | BWU2224                |
|--|--|-------------------------|-------------------------------------|-----------------|------------------------|
| <b>General Data</b>                                |  |                         |                                     |                 |                        |
| Device type  | output                                   |                         |                                     |                 |                        |
| <b>Connection</b>                                  |  |                         |                                     |                 |                        |
| ASi/AUX connection                                 | COMBICON clamps                          |                         |                                     |                 |                        |
| Periphery connection                               | COMBICON clamps                          |                         |                                     |                 |                        |
| <b>ASi</b>   |  |                         |                                     |                 |                        |
| Profile  | S-7.3                                    |                         |                                     | S-7.3.5         |                        |
| Address  | 1 single slave                           |                         |                                     |                 |                        |
| Required Master profile                            | ≥ M3                                     |                         |                                     |                 |                        |
| Since ASi specification                            | 2.1                                      |                         |                                     |                 |                        |
| Operating voltage                                  | 30 V<br>(24 ... 31,6 V)                  | 30 V<br>(18 ... 31,6 V) |                                     |                 |                        |
| Max. current consumption                           | <80 mA                                   |                         |                                     | <100 mA         |                        |
| <b>AUX</b>   |  |                         |                                     |                 |                        |
| Voltage  | 24 V (18 ... 30 V)                       |                         |                                     |                 |                        |
| Max. current consumption                           | 500 mA                                   |                         |                                     |                 |                        |
| <b>Input</b>                                       |  |                         |                                     |                 |                        |
| Resolution   | -  |                         |                                     |                 |                        |
| Range of value                                     | -  |                         |                                     |                 |                        |
| Internal resistance                                | -  |                         |                                     |                 |                        |
| Max. input voltage                                 | -  |                         |                                     |                 |                        |
| Max. input current                                 | -  |                         |                                     |                 |                        |
| Power supply                                       | -  |                         |                                     |                 |                        |
| Power supply of attached sensors                   | -  |                         |                                     |                 |                        |
| <b>Output</b>                                      |  |                         |                                     |                 |                        |
| Number   | 4<br>(0 ... 20 mA)                       | 4<br>(0 ... 10 V)       | 2<br>(0 ... 20 mA/0 ... 10 V)       |                 | 2<br>(-10 V ... +10 V) |
| Resolution   | 16 Bit (1 µA)                            | 16 Bit (1 mV)           | 16 Bit (1 µA / 1 mV)                |                 | 16 Bit                 |
| Range of value                                     | 0 ... 20000 dec.                         | 0 ... 10000 dec.        | 0 ... 20000 dec. / 0 ... 10000 dec. |                 | -10000 ... +10000 dec. |
| Resistance of the actuators                        | -  |                         |                                     |                 | ≥1 kΩ                  |
| Max. output current                                | -  |                         |                                     |                 | 10 mA                  |
| Power supply                                       | out of ASi or out of AUX                 |                         |                                     |                 | out of AUX             |
| Power supply of attached actuators                 | 500 mA out of AUX<br>50 mA out of ASi    |                         |                                     |                 | 500 mA                 |
| <b>Environment</b>                                 |  |                         |                                     |                 |                        |
| Applied standards                                  | EN 61000-6-2<br>EN 61000-6-4<br>EN 60529 |                         |                                     |                 |                        |
| Can be used in passively safe paths up to SIL3/PLe | no <sup>(1)</sup>                        |                         |                                     |                 |                        |
| Operating altitude                                 | max. 2000 m                              |                         |                                     |                 |                        |
| Operating temperature                              | 0 °C ... +70 °C                          |                         |                                     | 0 °C ... +60 °C |                        |
| Storage temperature                                | -25 °C ... +85 °C                        |                         |                                     |                 |                        |
| Housing  | plastic, for DIN rail mounting           |                         |                                     |                 |                        |
| Pollution degree                                   | 2  |                         |                                     |                 |                        |
| Protection category                                | IP20                                     |                         |                                     |                 |                        |
| Voltage of insulation                              | ≥ 500 V                                  |                         |                                     |                 |                        |
| Weight   | 145 g                                    |                         | 120 g                               |                 |                        |
| Dimension (W / H / D in mm)                        | 22,5 / 105 / 114                         |                         | 22,5 / 99 / 92                      |                 |                        |

<sup>(1)</sup> 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.

# Analog Modules ASi IP20



## Wiring rules

| Push-in terminals  |   |
|--|---|
| <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   |

## Programming

| Bit               | Bit setting   |  |   |  |
|-------------------|---|--|---|--|
|                   | input   |  |   |  |
|                   | P3  | P2   | P1  | P0   |
| BWU1345           | 0: both channels in current mode and without broken wire recognition<br>1: normal operation | 1: peripheral fault is indicated<br>0: peripheral fault is not indicated         | 0: channel 2 is not projected<br>1: channel 2 is projected                                  | 0: 60 H filter in A/D converter active<br>1: 50 H filter in A/D converter active |
| BWU1364 / BWU1365 | 0: peripheral fault is not indicated<br>1: peripheral fault is indicated                    | Analog module is switched on-/off (bit combination P1 and P2)                    |   |  |
| BWU1368           | 0: 4 wire-mode<br>1: 2 wire-mode  | A peripheral fault can be released through channel X (bit combination P1 and P2) |   |  |
| BWU1897           | –   | 1: peripheral fault is indicated<br>0: peripheral fault is not indicated         | 0: both channels in current mode and without broken wire recognition<br>1: normal operation |  |
| BWU1933 / BWU2243 | 0: external cold-junction compensation<br>1: internal cold-junction compensation            | Analog module is switched on-/off (bit combination P1 and P2)                    | A peripheral fault can be released through channel X (bit combination P1 and P2)            |  |

## Combination of input bits P1 and P2

| BWU1364, BWU1365 |    |     |     |     |     | BWU1368, BWU1933, BWU2243                        |    |     |     |     |     |
|------------------|----|-----|-----|-----|-----|--|----|-----|-----|-----|-----|
| Channel c.X is   |    |     |     |     |     | Peripheral fault can be released through channel |    |     |     |     |     |
| P1               | P2 | c.1 | c.2 | c.3 | c.4 | P1   | P2 | 1   | 2   | 3   | 4   |
| 0                | 0  | on  | off | off | off | 0  | 0  | yes | no  | no  | no  |
| 0                | 1  | on  | on  | off | off | 0  | 1  | yes | yes | no  | no  |
| 1                | 0  | on  | on  | on  | off | 1  | 0  | yes | yes | yes | no  |
| 1                | 1  | on  | on  | on  | on  | 1  | 1  | yes | yes | yes | yes |

# Analog Modules ASi IP20

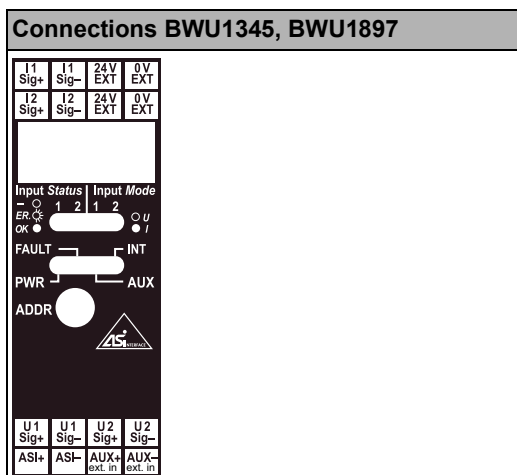


| Bit               | Bit setting  |  |  |   |
|-------------------|--|--|--|---|
|                   | output   |  |  |   |
|                   | P3   | P2   | P1   | P0  |
| BWU1366 / BWU1367 | –  | 0: peripheral fault is not indicated<br>1: peripheral fault is indicated | –  | 0: profile is not monitored<br>1: profile is monitored:                                 |
| BWU1412 / BWU1727 | 0: channel 2 is in mode voltage module<br>1: channel 2 is in mode current module |  | 0: channel 1 is in mode voltage module<br>1: channel 1 is in mode current module | 0: mode of channel 1 and 2 (bit combination P1 and P3)<br>1: automatic mode recognition |
| BWU2224           | –  |  | –  |   |

| Programming notes                           |                  |                            |                   |        |                  |                  |
|---|------------------|----------------------------|-------------------|--------|------------------|------------------|
| Article no.                                 | ID Code          | ID1 Code                   |                   |        | ID2 Code         | IO Code          |
| BWU1345                                     | 3 <sub>hex</sub> | ID1 = F (default)          |                   |        | D <sub>hex</sub> | 7 <sub>hex</sub> |
| BWU1364, BWU1365, BWU1368, BWU1933, BWU2243 | 3 <sub>hex</sub> | ID1 = F (default)          |                   |        | E <sub>hex</sub> | 7 <sub>hex</sub> |
| BWU1366, BWU1367                            | 3 <sub>hex</sub> | ID1 = F (default)          |                   |        | 6 <sub>hex</sub> | 7 <sub>hex</sub> |
| BWU1412, BWU1727                            | 3 <sub>hex</sub> | ID1 = F (default)          |                   |        | 5 <sub>hex</sub> | 7 <sub>hex</sub> |
| BWU1897 <sup>(1)</sup>                      | A <sub>hex</sub> | Code-Definition            |                   |        | 9 <sub>hex</sub> | 7 <sub>hex</sub> |
|   |                  | ID1                        | 14 bit            | 12 Bit |                  |                  |
|   |                  | channel 1                  | 0; 2; 3           | 1      |                  |                  |
|   |                  | channel 1 and 2            | 4; 5; 7 (default) | 6      |                  |                  |
| BWU2224                                     | 3 <sub>hex</sub> | F <sub>hex</sub> (default) |                   |        | 5 <sub>hex</sub> | 7 <sub>hex</sub> |

<sup>(1)</sup> BWU1897 can transfer either 12 or 14 bit-values. Via ID1 the data capacity and the channel number can be defined.

| UL-specifications (UL508)  |  |
|--|--|
| <b>BWU1345, BWU1364, BWU1365, BWU1366, BWU1367, BWU1368, BWU1412, BWU172,7 BWU1933, BWU1897, BWU2243</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.  |



| LEDs BWU1345, BWU1897 |   |
|-----------------------|---|
| PWR (green)           | ASi voltage                                       |
| FAULT (red)           | ASi communication error, peripheral fault         |
| AUX (green)           | Voltage supply 24 V for the analog part           |
| INT (green)           | Voltage supply for the analog part out of ASi     |
| Analog 1 (green)      | State of channel 1                                |
| Analog 2 (green)      | State of channel 2                                |
| Analog 1 (green)      | On: current measurement; off: voltage measurement |
| Analog 2 (green)      | On: current measurement; off: voltage measurement |

Current or voltage modules can be attached over different clamps. The current supply of the sensors can take place depending upon position of a slide switch from ASi or from external voltage (after PELV). With the help of a 2. slide switch the 2. channel in favor of faster data communication can be switched off. The position of the slide switches is indicated over LEDs.

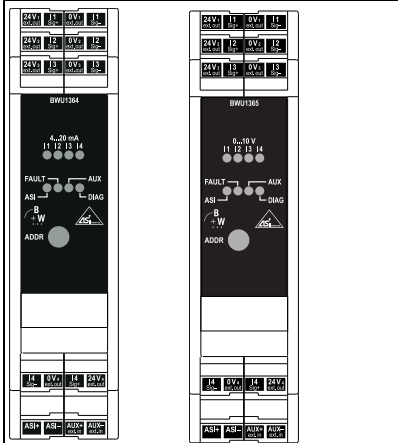
Supplying external loads:

- by supply out of ASi: 50 mA max.
- y external supply: 500 mA max. (750 mA fuse)

# Analog Modules ASi IP20



## Connections BWU1364, BWU1365

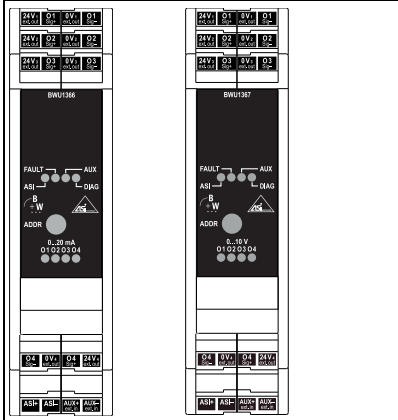


## LEDs BWU1364, BWU1365

|                    |   |
|--------------------|---|
| PWR (green)        | ASi voltage                               |
| FAULT (red)        | ASi communication error, peripheral fault |
| AUX (green)        | Voltage supply 24 V for the analog part   |
| DIAG (green)       | Diagnosis                                 |
| I1 ... I4 (yellow) | State of channel I1, I2, I3, I4           |

The current supply of the sensors can be made out of ASi or an external voltage supply (according to PELV). The current supply switches automatically to the supply out of external voltage supply, as soon as an external voltage is connected. The analog sensors and ASi are galvanically separated.

## Connections BWU1366, BWU1367

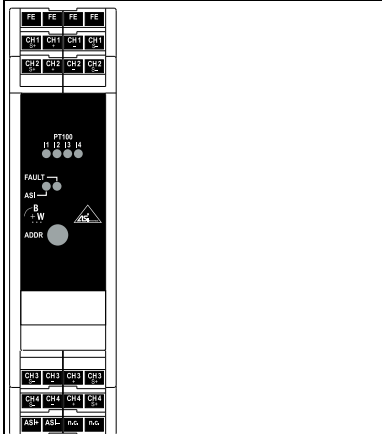


## LEDs BWU1366, BWU1367

|                    |   |
|--------------------|---|
| PWR (green)        | ASi voltage                               |
| FAULT (red)        | ASi communication error, peripheral fault |
| AUX (green)        | Voltage supply 24 V for the analog part   |
| DIAG (green)       | Diagnosis                                 |
| O1 ... O4 (yellow) | State of channel O1, O2, O3, O4           |

The current supply of the actuators can be made out of ASi or an external voltage supply (according to PELV). The current supply switches automatically to the supply out of external voltage supply, as soon as an external voltage is connected. The actuators and ASi are galvanically separated.

## Connections BWU1368



## LEDs BWU1368

|                    |   |
|--------------------|---|
| PWR (green)        | ASi voltage                               |
| FAULT (red)        | ASi communication error, peripheral fault |
| I1 ... I4 (yellow) | State of channel I1, I2, I3, I4           |

The measuring sensors and ASi are galvanically separated.

# Analog Modules ASi IP20



**Connections BWU1412, BWU1727**

|            |            |                |               |
|------------|------------|----------------|---------------|
| I1<br>Sig+ | I1<br>Sig- | 24V<br>ext.out | 0V<br>ext.out |
| I2<br>Sig+ | I2<br>Sig- | 24V<br>ext.out | 0V<br>ext.out |

Output Status Output Mode  
 - ER OK 1 2 1 2  
 - O U  
 - O I

FAULT INT  
 PWR AUX  
 ADDR

**Bihl + Wiedemann**  
 www.bihl-wiedemann.com

|            |            |                |                |
|------------|------------|----------------|----------------|
| U1<br>Sig+ | U1<br>Sig- | U2<br>Sig+     | U2<br>Sig-     |
| ASI+       | ASI-       | AUX+<br>ext.in | AUX-<br>ext.in |

**LEDS BWU1412, BWU1727**

|                  |  |
|------------------|--|
| PWR (green)      | ASi voltage  |
| FAULT (red)      | ASi communication error, peripheral fault                    |
| AUX (green)      | Voltage supply 24 V for the analog part                      |
| INT (green)      | Voltage supply for the analog part out of ASi                |
| Analog 1 (green) | State of channel 1   |
| Analog 2 (green) | State of channel 2   |
| Analog 1 (green) | Channel 1: on: current measurement; off: voltage measurement |
| Analog 2 (green) | Channel 2: on: current measurement; off: voltage measurement |

Current or voltage modules can be attached over different clamps. The current supply of the actuators can take place depending upon position of a slide switch from ASi or from external voltage (after PELV). The position of the slide switch is indicated over LEDs. BWU1897: With the help of a 2. slide switch the 2. channel in favor of faster data communication can be switched off.

**Connections BWU1933, BWU2243**

|                     |    |    |    |
|---------------------|----|----|----|
| FE                  | FE | FE | FE |
| TC1+ PT1+ PT1- TC1- |    |    |    |
| TC2+ PT2+ PT2- TC2- |    |    |    |

Input  
 - O 1 2 3 4  
 - OK

Pwr Fault  
 Addr

**Bihl + Wiedemann**  
 www.bihl-wiedemann.com

|                     |  |  |  |
|---------------------|--|--|--|
| TC3- PT3- PT3+ TC3+ |  |  |  |
| TC4- PT4- PT4+ TC4+ |  |  |  |
| ASI+ ASI- NC NC     |  |  |  |

**Terminal connections BWU1933, BWU2243**

|      |   |
|------|---|
| FE   | Functional earth                                |
| TCx± | Thermo element +/- (inputs 1 - 4)               |
| PTx± | PT100 +/- (External cold junction compensation) |
| ASi± | ASiinterface +/-                                |
| n.c. | Not connected                                   |

The inputs ch. 2, ch. 3 and ch 4 are connected with a bridge and a resistor (in default state) to become a valid input value and to avoid peripheral faults.

This can also be obtained by setting the paramater P1 and P2. The temperature is measured using cold junction temperature compensation. The analog sensors are galvanical separated to ASi. For internal compensation the peripheral fault can be caused by a broken wire of the thermo-couple. For the external compensation (Pt100 in connectors 2 and 3) the peripheral fault can also be caused by a broken wire or a short circuit of the Pt100 element. A short circuit of the TC cannot be recognized as an error.

**Note:**  
 Precise cold junction compensation requires vertical mounting and natural air circulation. A clearance of at least 5 cm each side is required!

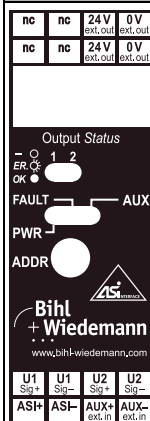
**LEDs BWU1933, BWU2243**

|                      |   |
|----------------------|---|
| PWR (green)          | ASi voltage                               |
| FAULT (red)          | ASi communication error, peripheral fault |
| In1 ... In4 (yellow) | State of channel I1, I2, I3, I4           |

# Analog Modules ASi IP20



## Connections BWU2224



## LEDs BWU2224

|             |   |
|-------------|---|
| PWR (green) | ASi voltage   |
| FAULT (red) | On: ASi communication error; flashing: peripheral fault |
| AUX (green) | Voltage supply 24 V for the analog part                 |
| 1 (yellow)  | State of channel 1                                      |
| 2 (yellow)  | State of channel 2                                      |

U1 Sig.- and U2 Sig.- connected.

The outputs are short circuit. The output channels have a common reference potential. The actuators are controlled from separate 24 V and they are galvanically isolated from ASi and AUX.



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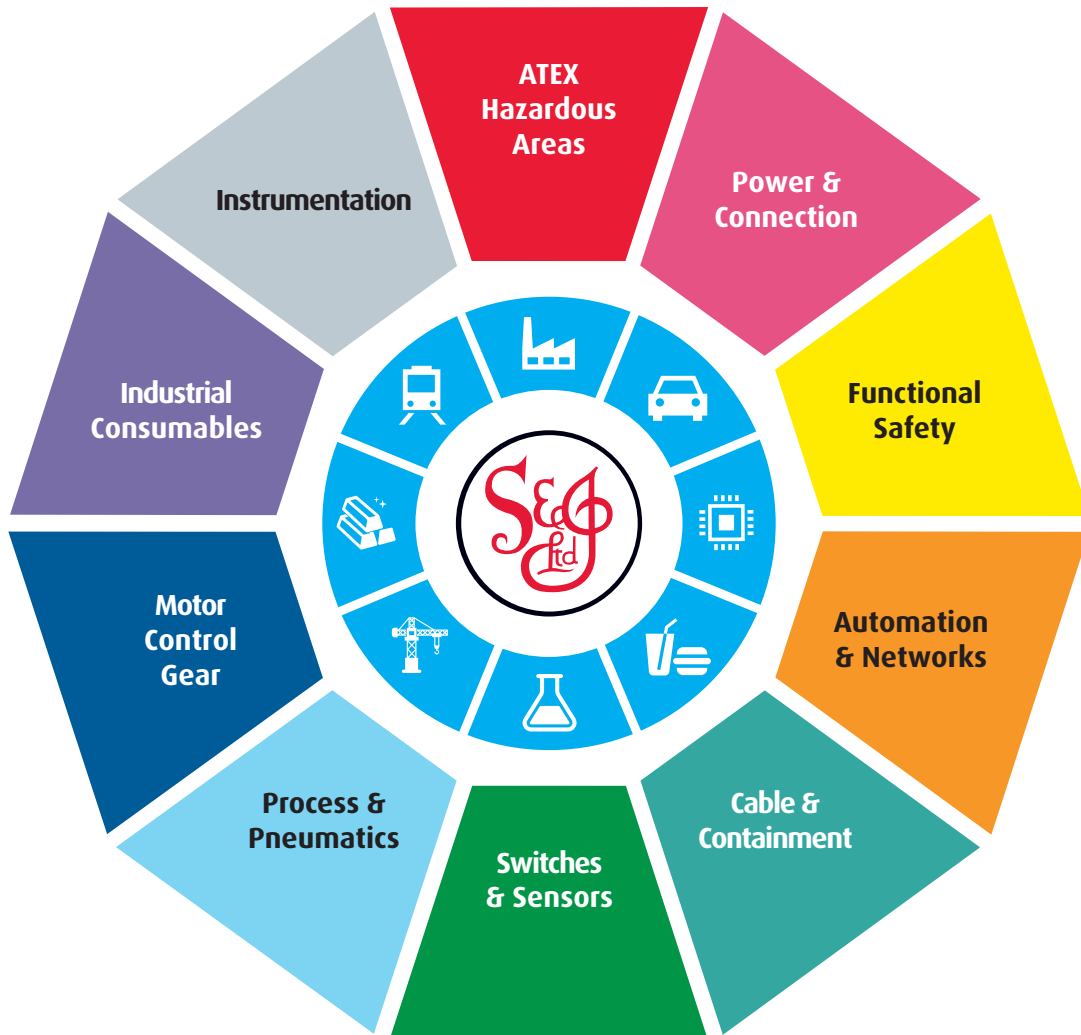
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