

# Remote Process Actuation Control System AirLINE

## PHOENIX CONTACT – Remote I/Os and Fieldbuses

ON/OFF & Continuous Control

8644-P

### Compact Valve Island with Electronic I/O



- ✓ **Customized Process Actuation Systems Pre-Mounted & Pre-Tested**
- ✓ **Flexible Combination of High Performance Pilot Valves and Remote I/O Modules**
- ✓ **Choice of Different Remote I/O Vendors and Fieldbuses**
- ✓ **Compact Design**
- ✓ **High Flow Rate**

8644

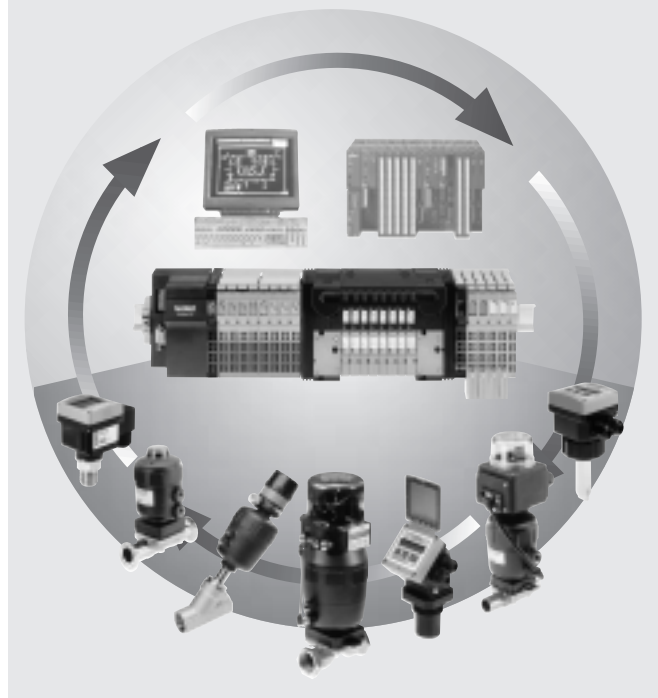
The AirLINE System integrates high performance solenoid pilot valves, remote electronic I/Os and fieldbus communication to a very compact and flexible Process Actuation & Control System. Its modular design allows fully customized, pre-mounted and tested solutions to exactly meet any application needs.

#### Specifications

|                               |  |
|-------------------------------|--|
| Pilot valve types             | 0460, 6524 and 6525  |
| Mounting dimensions           | 10 mm  |
| Circuit functions / ways      | C (3/2)<br>D (3/2)<br>H (5/2)<br>H (5/2) impulse<br>L (5/3) in middle position all ports closed<br>N (5/3) in middle position all ports vented |
| Flow rate                     | 300 l/min<br>(200 l/min for functions H impulse, L and N)  |
| Pressure range                | 2.5 up to 7.0 bar<br>(up to 10.0 bar on request)   |
| Module types                  | 2x and 8x<br>(optional integrated check valves)  |
| Max. number of modules        | Depending on application   |
| Fieldbus type                 | Profibus DP<br>InterBus-S<br>DeviceNET<br>(others on request)  |
| Digital modules               | 2 or 8 inputs<br>2 or 8 outputs  |
| Analog modules                | 2 inputs<br>(0 - 10 V, 0 - 20 mA, 4 - 20 mA, RTD, TC)<br>1 output<br>(0 - 10 V, 0 - 20 mA, 4 - 20 mA)  |
| Operating voltage             | 24 V/DC  |
| Permissible voltage tolerance | +20% / -15%  |
| Residual ripple               | 1 V <sub>ss</sub>  |
| Rated power per valve         | 1 W<br>(0.5 W nominal power after 30 ms)   |
| Rated current per valve       | 42 mA<br>(21 mA holding current after 30 ms)   |
| Temperatures                  |  |
| Operating*                    | -10 up to +55°C<br>(* Profibus DP module 0 up to +55°C)  |
| Storage                       | -10 up to +55°C  |
| Rating                        | IP20<br>IP65 in closed field housing   |
| Approvals for hazardous areas | On request   |

#### Target Markets:

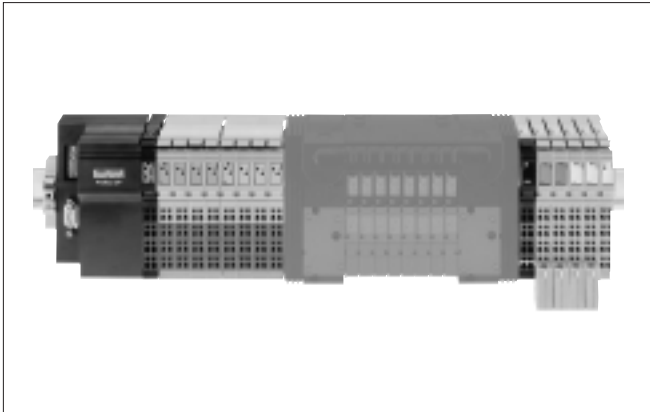
- Water Treatment
- Food and Beverage
- Pharmaceutical Industry, Biotechnology and Cosmetics
- Chemical Industry
- Pulp / Paper Processing Equipment
- Textile Dyeing / Drying Equipment
- Semiconductor Industry



# Remote Process Actuation Control System AirLINE

## PHOENIX CONTACT – Remote I/Os and Fieldbuses

### Electronic Modules PHOENIX CONTACT INLINE



#### General Specifications

|  |   |
|--|---|
| Voltage supply                           | 24 V/DC (+20% / -15%)   |
| Communication power                      | 7 V/DC via voltage jumper   |
| Electrical insulation                    |   |
| Logic - I/O                              | 500 V/AC test voltage   |
| I/O - functional ground                  | 500 V/AC test voltage   |
| Wire connection                          | CAGE CLAMP® AWG 24 - 16<br>(0.2 mm <sup>2</sup> - 1.5 mm <sup>2</sup> ) |
| Local diagnostics on I/O segments        |   |
| Bus active                               | LED green on  |
| Comm power not present                   | LED green off   |
| Comm power not present with bus inactive | LED green (flashes at 0.5 Hz)   |
| I/O error                                | LED green (flashes at 2 Hz)   |
| Previous device faulty                   | LED green (flashes at 4 Hz)   |
| Dimensions (incl. connection terminal)   | W x H x L   |
| Profibus DP coupler                      | 91 x 120 x 71.5 mm  |
| InterBus-S coupler                       | 48.8 x 120 x 71.5 mm  |
| Segments (1 wide)                        | 12.2 x 120 x 71.5 mm  |
| (2 wide)                                 | 24.4 x 120 x 71.5 mm  |
| (4 wide)                                 | 48.8 x 120 x 71.5 mm  |

### Fieldbus Modules (others on request)

#### Profibus DP EN 51070; 12 MBaud; digital and analog signals



|  |   |
|--|---|
| Interface  | Copper cable (RS-485), connected via SUB-B shield connector; supply electrically isolated, shielding directly connected with functional grounding |
| Current consumption  |   |
| Without connected IB IL - I/O terminals                            | Approx. 100 mA  |
| Max. total perm. curr. consumption of all I/O terminals            | ≤0.75 A   |
| Communication power (7 V)  | ≤0.5 A  |
| Analog supply  | ≤0.5 A  |
| Local diagnostics  |   |
| 24 V main circuit supply present (UM)                              | LED green   |
| 24 V segment circuit supply present (US)                           | LED green   |
| No communication on Profibus (BF)                                  | LED red   |
| Error-indication number and type (FS / FN)                         | LED red (2x)  |
| Profibus data  |   |
| Number of devices per station                                      | Max. 63   |
| Sum of all I/O data per station                                    | Max. 192 bytes  |
| Max. fieldbus coupler current (for supplying the I/O module logic) | 2 A at U L  |
| Max. additional current (for supplying the analog terminals)       | 0.5 A at U ANA  |
| 24 V main supply U M   |   |
| Connection method  | Spring clamp terminals  |
| Recommended cable lengths  | Max. 30 m<br>(do not route cable through outdoor areas)   |
| Safety devices   |   |
| Overvoltage  | Yes   |
| Polarity reversal  | Yes   |
| Provide an external fuse for the 24 V area                         |   |

► The Profibus DP fieldbus connects the AirLINE automation system to a Profibus DP network. The fieldbus coupler acts as a slave in the Profibus and a master in the lower level INTERBUS local bus.

The product is supplied with a disk containing the appropriate GSD (device master data) file for configuring the Profibus. The INTERBUS diagnostics are supported by the Profibus DP fieldbus coupler, as are the typical diagnostics messages for the Profibus DP.

LED's facilitate accurate diagnostics at a local level.

#### DeviceNET 125, 250 and 500 kBaud; digital and analog signals



|  |   |
|--|---|
| Diagnostic LED indicators                  |   |
| Network status                             | Indicates DeviceNET™ communication                      |
| Module status                              | Indicates module or inline station                      |
| Logic supply status                        | Indicates proper power to the local bus                 |
| Segment power (US)                         | Indicates proper 24 V/DC segment I/O power              |
| Main power (UM)                            | Indicates proper 24 V/DC main power                     |
| Supported DeviceNET™ features              |   |
| I/O peer to peer                           | Yes   |
| Explicit peer to peer messaging            | Yes   |
| Configuration consistency                  | Yes   |
| Faulted node recovery                      | Yes   |
| Baud rates 125K                            | Yes   |
| 250K                                       | Yes   |
| 500K                                       | Yes   |
| I/O slave messaging                        |   |
| Polled                                     | Yes   |
| Cyclic                                     | Yes   |
| Change of state                            | Yes   |
| Bit strobe                                 | Yes   |
| 24 V main supply U M                       |   |
| Connection method                          | Spring clamp terminals                                  |
| Recommended cable lengths                  | Max. 30 m<br>(do not route cable through outdoor areas) |
| Safety devices                             |   |
| Surge voltage                              | Yes   |
| Polarity reversal                          | Yes   |
| Provide an external fuse for the 24 V area |   |

► The DeviceNET™ fieldbus coupler allows the AirLINE system to communicate on a DeviceNET™ network as a group 2 slave.

The coupler is housed in a 4-module width package that contains the front panel wiring and diagnostic indicators for both the local bus and DeviceNET™ communications.

# Remote Process Actuation Control System AirLINE

## PHOENIX CONTACT – Remote I/Os and Fieldbuses

### InterBus-S 500 kBaud; digital and analog signals



|   |   |
|---|---|
| <b>Interfaces</b>                                       |   |
| INTERBUS remote bus (I/O)                               | 2 x 6 pos. shield connector   |
| Supply voltage  | 8 pos. input connector  |
| INTERBUS local bus                                      | Voltage jumper  |
| <b>Current consumption</b>                              |   |
| Without connected IB IL - I/O terminals                 | Approx. 90 mA   |
| Max. total perm. curr. consumption of all I/O terminals | ≤2 A  |
| Communication power (7 V)                               | ≤0.5 A  |
| Analog supply   | LED green   |
| <b>Local diagnostics</b>                                |   |
| Remote bus active (BA)                                  | LED green   |
| Remote bus connection OK (RC)                           | LED green   |
| Outgoing remote bus disabled (RD)                       | LED red   |
| Local bus branch disabled (LD)                          | LED red   |
| Local bus error (E)                                     | LED red   |
| Communication power (UL)                                | LED green   |
| Supply voltage segment circuit (SG)                     | LED green   |
| Operating voltage (US)                                  | LED green   |
| <b>INTERBUS data</b>                                    |   |
| Max. distance from next remote bus station              | 400 m   |
| Number of connectable modules                           | Max. 63   |
| Number of connectable INLINE terminals                  | 20 (observe total permissible current consumption, without additional power terminal) |
| <b>Programmable functions</b>                           |   |
| Local bus branch disabled                               | Yes   |
| Local bus reset   | Yes   |
| Local bus disabled                                      | Yes   |
| Remote bus disabled                                     | Yes   |
| Remote bus reset  | Yes   |
| <b>Local functions</b>                                  |   |
| Reconfiguration input                                   | A push button can be connected via an 8 pos. INLINE connector                         |
| <b>General data</b>                                     |   |
| Polarity reversal protection                            | Yes   |
| Connector set for bus terminal                          | 1   |

► The INTERBUS terminal connects the AirLINE system with the INTERBUS network.

The bus terminal has the following functions within an AirLINE system:

- Refreshing the remote bus signals
- Decoupling the outgoing remote bus of the connected I/O modules using a software command
- Supplying the connected I/O modules using an integrated power supply unit
- Connection to functional earth when installed on the mounting rail

### AS-Interface Gateway



This AS-Interface gateway allows to operate an ASI 2.1 system as a subsystem AirLINE. The configuration of ASI is done on site by means of pushbuttons directly on the gateway, or by means of parameterisation via software. The gateway has a 2-digit, 7-segment display to indicate status and diagnostics information.

As ASI master, the gateway can operate up to 62 ASI slaves according to the new specification 2.1.

### Accessory Modules (others on request)

#### Power Terminal Block Fused



|                                |           |
|--------------------------------|-----------|
| Max. nominal current           | 10 A      |
| <b>Local diagnostics</b>       |           |
| Operating voltage display (US) | LED green |
| <b>General data</b>            |           |
| Polarity reversal protection   | Yes       |
| Surge voltage protection       | Yes       |
| Overload protection            | No        |
| Fuse (fused version)           | 6.3 A     |

► Power and segment terminals provide the power supply for an Interbus station. The power terminal is used to supply the I/O circuit. The supply enables the electrical isolation of the previous isolated group.

Power terminals are available with or without integrated fuses.

#### Segment Terminal Block Fused / Not Fused



|                                |                    |
|--------------------------------|--------------------|
| <b>Interfaces</b>              |                    |
| Supply voltage                 | Via voltage jumper |
| INTERBUS local bus             | Voltage jumper     |
| Max. nominal current           | 10A                |
| <b>Local diagnostics</b>       |                    |
| Operating voltage display (US) | Yes                |
| <b>General data</b>            |                    |
| Polarity reversal protection   | No                 |
| Surge voltage protection       | No                 |
| Overload protection            | No                 |

► Power and segment terminals provide the power supply for an Interbus station. The power terminal is used to supply the I/O circuit.

The segment terminal can be used to group any adjacent terminals within a station into separate segments.

Segment terminals are available with or without integrated fuses.

# Remote Process Actuation Control System AirLINE

## PHOENIX CONTACT – Remote I/Os and Fieldbusses

### Remote I/O Modules (others on request)

#### Digital Input Module DI 2 and 8 channel



|                             |   |
|-----------------------------|---|
| Power supply                |   |
| Current consumption         | Approx. 30 mA (2 channel)<br>Approx. 50 mA (8 channel)  |
| I/O voltage                 | 24 V/DC (via voltage jumper)  |
| Residual ripple             | 5%  |
| Voltage tolerance           | 19.2 V up to 30 V/DC (ripple included)  |
| Drawing initiator supply    | Segment circuit   |
| Inputs                      |   |
| Number of inputs            | 2 or 8  |
| Connection method           | 4 wire  |
| Input current per channel   | 5 mA at 24 V/DC   |
| Permissible range           | -30 V < U <sub>in</sub> < +30 V /DC   |
| Nominal current             | "1" signal   +15 V ≤ U <sub>in</sub> ≤ +30 V/DC<br>"0" signal   -30 V ≤ U <sub>in</sub> ≤ +5 V/DC |
| Delay time at signal change | In μs range   |

► Digital INTERBUS INLINE input terminals are designed for the connection of digital signals such as those generated by limit switches, push buttons or proximity switches.

#### Digital Output Module DO 2 and 8 channel



|                                      |   |
|--------------------------------------|---|
| Power supply                         |   |
| Current consumption                  | Approx. 40 mA (2 channel)<br>Approx. 70 mA (8 channel)              |
| I/O voltage                          | 24 V/DC (via voltage jumper)  |
| Residual ripple                      | 5%  |
| Voltage tolerance                    | 19.2 V up to 30 V/DC (ripple included)                              |
| Drawing initiator supply             | Segment circuit   |
| Diagnostic messages via the bus      |   |
| Short circuit, overload of an output | Yes   |
| Inputs                               |   |
| Number of outputs                    | 2 or 8  |
| Connection method                    | 4 wire  |
| Output voltage                       | μs - 1 V  |
| Signal delay                         | In μs range   |
| Output current                       | Max. / output   2 A (2 channel)<br>0.5 A (8 channel)                |
| Nominal load                         | Max. / terminal 4 A   |
| Nominal load                         | Ohmic           48 W (2 channel)<br>12 W (8 channel)                |
| Nominal load                         | Lamp           48 W (2 channel)<br>12 W (8 channel)                 |
| Nominal load                         | Inductive      12 Ω / 1.2 H (2 channel)<br>50 Ω / 1.2 H (8 channel) |
| Overload protection                  | Yes   |
| Short circuit protection of outputs  | Yes   |

► Digital INTERBUS INLINE output terminals are designed for the connection of digital actuators such as solenoid valves, contactors or signalling devices

#### Analog Input Module AI 2 Channel; voltage and current signals



|                                  |   |
|----------------------------------|---|
| Power supply                     |   |
| Current consumption              | Approx. 45 mA                           |
| Analog voltage                   | 24 V/DC (via voltage jumper)            |
| Current consumption              | Approx. 12 mA                           |
| Diagnosics messages via the bus  |   |
| Overrange                        | Yes                                     |
| Error of internal I/O voltage    | Yes                                     |
| Line interrupt detection         | Yes, for the range of 4 - 20 mA         |
| Inputs                           |   |
| Number of inputs                 | 2, single ended                         |
| Connection method                | 2-wire (shielded)                       |
| Input range                      | 0- 10 V, ± 10 V; 0-20mA, 4-20mA, 20mA   |
| Input resistance                 | 220 k W (V signals); 50 W (mA signals); |
| Measurement principle            | Successive approximation                |
| Representation of measured value | 16 bits two's complement                |
| Measured value resolution        | 16 bits (15 bits + sign)                |
| A/D conversion time per channel  | 100 μs                                  |
| Process data update              | < 2 ms                                  |
| 3 dB cut-off frequency           | 15 Hz/ 40 Hz without averaging          |
| Basic error limit                | 0.015 %                                 |

► Analog INTERBUS input terminals are used for the connection of standard sensors for detecting current or voltage signals.

Terminal features include:

- High accuracy
- Fast measurement
- Very high noise and common mode suppression
- 16 bit resolution

RTD and TC inputs on request.

#### Analog Output Module AO 1 channel; 0 - 20 mA, 4 - 20 mA and 0 - 10 V



|                                 |   |
|---------------------------------|---|
| Power supply                    |   |
| Current consumption             | Approx. 30 mA   |
| Analog voltage                  | 24 V/DC (via voltage jumper)                            |
| Current consumption             | Approx. 15 mA (V outputs)<br>Approx. 50 mA (mA outputs) |
| Inputs                          |   |
| Number of inputs                | 1   |
| Connection method               | 2 wire  |
| Output range                    | 0 - 10 V, 0 - 20 mA, 4 - 20 mA                          |
| Load impedence                  | > 5 kΩ (V outputs)<br>< 500 Ω (mA outputs)              |
| Representation of output values | 16 bit  |
| DAC resolution                  | 16 bit  |
| A/D conversion time per channel | < 100 μs  |
| Basic error limit               | 0.05%   |
| Error type                      | U OUT           ±0.5%<br>I OUT           ±0.8%          |
| Transient protection of outputs | Yes   |

► Analog output modules are used in applications which require the control of analog actuators. Normal current and voltage output ranges can be configured individually for these terminals.

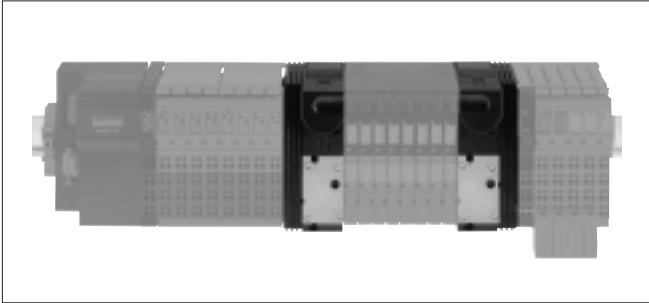
All analog signals are provided with a resolution of 16 bit.

# Remote Process Actuation Control System AirLINE

## PHOENIX CONTACT – Remote I/Os and Fieldbusses

### Pneumatic Modules and Electrical Interfaces for Modules PHOENIX CONTACT INLINE

#### Pneumatic Modules MP11



#### Connector Module "left" With or without pressure gauge



Connector module "left"

|   |           |
|---|-----------|
| Without pressure gauge, threaded port G 1/4   | 144 938 W |
| Without pressure gauge, threaded port NPT 1/4 | 150 236 G |
| Without pressure gauge, push-in 10 mm         | 150 237 H |
| With pressure gauge, threaded port G 1/4      | 150 235 F |
| With pressure gauge, threaded port NPT 1/4    | 150 221 H |
| With pressure gauge, push-in 10 mm            | 150 222 A |

#### Connector Module "right" and Intermediate Supply Modules With or without pressure gauge

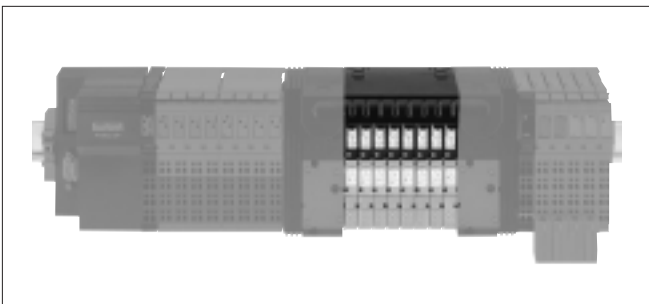


Connector module "right"

Pneumatic intermediate supply module

|   |           |
|---|-----------|
| Without pressure gauge, threaded port G 1/4   | 144 939 X |
| Without pressure gauge, threaded port NPT 1/4 | 150 238 J |
| Without pressure gauge, push-in 10 mm         | 150 239 K |
| With pressure gauge, threaded port G 1/4      | 150 141 H |
| With pressure gauge, threaded port NPT 1/4    | 150 142 A |
| With pressure gauge, push-in 10 mm            | 150 143 B |
| Without pressure gauge, threaded port G 1/4   | 150 622 B |
| Without pressure gauge, threaded port NPT 1/4 | 150 624 D |
| Without pressure gauge, push-in 10 mm         | 150 623 C |
| With pressure gauge, threaded port G 1/4      | 150 625 E |
| With pressure gauge, threaded port NPT 1/4    | 150 627 G |
| With pressure gauge, push-in 10 mm            | 150 626 F |

#### AirLINE Valve Modules



#### Available options on request

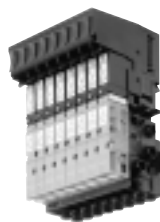
- Check valves in R, S and P
- Covering plate for spare channels
- Channel separation plugs to build different pressure areas

#### Pneumatic Basic Module, Electrical Basic Module and Pilot Valves



**2 Valves wide**  
Service port 2 (A), 4 (B)

Threaded port M5  
Threaded port M7  
Push-in ø 6 mm  
Push-in ø 1/4"  
Push-in ø 5/32"



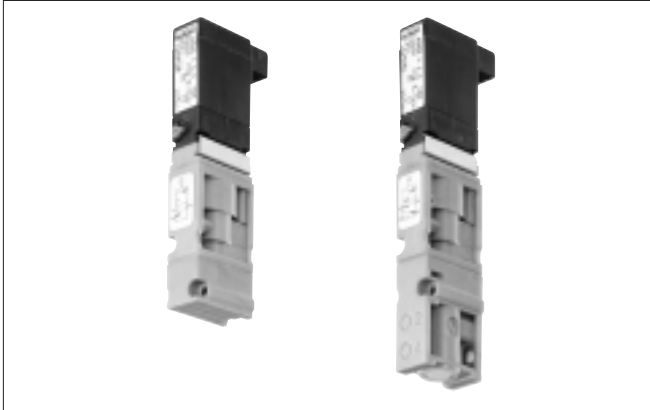
**8 Valves wide**  
Service port 2 (A), 4 (B)

Threaded port M5  
Threaded port M7  
Push-in ø 6 mm  
Push-in ø 1/4"  
Push-in ø 5/32"

# Remote Process Actuation Control System AirLINE

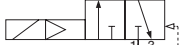

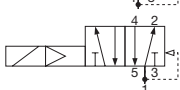
## PHOENIX CONTACT – Remote I/Os and Fieldbusses

### Multi-Way Solenoid Valves 6524 and 6525



The solenoid valve types 6524 and 6525 consist of a pilot rocker valve type 6104 and a pneumatic seat valve. The rocker principle allows switching of high pressures together with low power consumption and fast response times. All valves are equipped with manual override as a standard.

#### Circuit Functions

- C**  3/2 way valve, servo-assisted in de-energized position port 2 to atmosphere
- D**  3/2 way valve, servo-assisted in de-energized position port 2 pressurized
- H**  5/2 way valve, servo-assisted in de-energized position port 1 connected to port 2, port 4 exhausted

#### Specifications

Body material PA (Polyamide)  
 Seal material FPM, NBR and PUR  
 Fluids Lubricated and non-lubricated dry air, neutral gases (5 µm-filter recommended)

Temperatures  
 Fluid -10 up to +50°C  
 Ambient -10 up to +55°C

Port connection Flange  
 Pneumatic module MP11  
 Supply port 1 (P), 3 (R), 5 (S) G 1/4  
 NPT 1/4  
 Plug connector ø 10 mm  
 Service port 2 (A), 4 (B) Push-in ø 6 mm  
 Push-in ø 1/4"  
 M5  
 M7

Operating voltage 24 V/DC  
 Permissible voltage tolerance ± 10%  
 Electrical connection on valve Rectangular plug  
 Rating IP 40 with rectangular plug  
 Installation As required, but preferably with solenoid system upright  
 Standard

#### Manual override

| Orifice DN [mm] | Circuit Funct. | Q <sub>Nn</sub> (air) [l/min] | Pressure Range [bar] | Nominal Power [W] | Response Times Opening [ms] | Response Times Closing [ms] | Weight [g] | Item-No.  |
|-----------------|----------------|-------------------------------|----------------------|-------------------|-----------------------------|-----------------------------|------------|-----------|
| 4               | C              | 300                           | 2.5 – 7.0            | 1.0               | 15                          | 20                          | 20         | 144 933 R |
| 4               | D              | 300                           | 2.5 – 7.0            | 1.0               | 15                          | 20                          | 20         | 144 934 J |
| 4               | H              | 300                           | 2.5 – 7.0            | 1.0               | 15                          | 20                          | 21         | 144 935 K |

#### Flow rate: Q<sub>Nn</sub>-value air [l/min]

Measured at +20 °C, 6 bar pressure at valve inlet, 1 bar pressure difference

#### Pressure ranges [bar]

Measured as overpressure to the atmospheric pressure

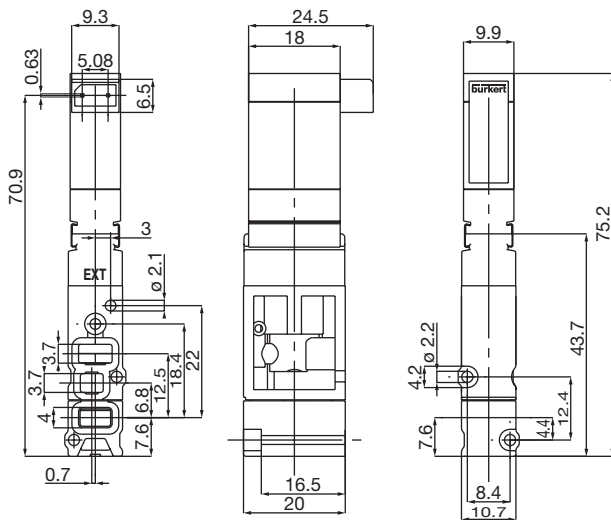
#### Response times [ms]

Measured at valve outlet at 6 bar and +20°C

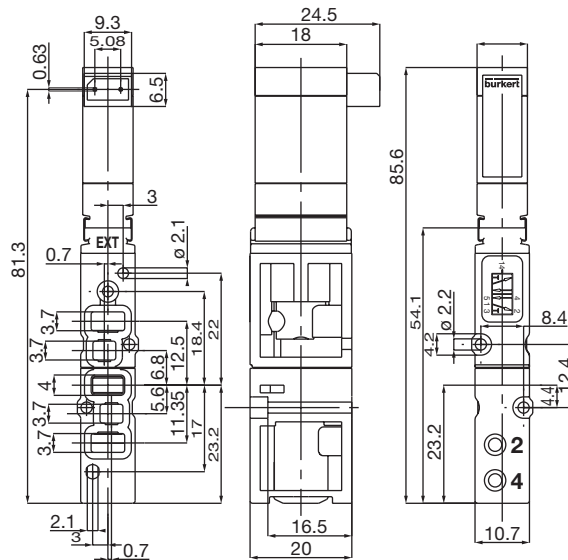
- Opening Pressure rise from 0 to 90%
- Closing Pressure drop from 100 to 10%

#### Dimensions [mm]

Valve type 6524, 3/2 way version, circuit function C and D



Valve type 6525, 5/2 way version, circuit function H



# Remote Process Actuation Control System AirLINE

## PHOENIX CONTACT – Remote I/Os and Fieldbusses

### Multi-Way Solenoid Valve 0460



The solenoid valve type 0460 consists of a double coil and a pneumatic seat valve. The principle allows switching of high pressures together with low power consumption and fast response times. All valves are equipped with manual override as a standard.

#### Specifications

|                                 |  |
|---------------------------------|--|
| Body material                   | PA (Polyamide)   |
| Seal material                   | FPM, NBR and PUR   |
| Fluids                          | Lubricated and non-lubricated dry air, neutral gases (5 µm-filter recommended) |
| Temperatures                    |  |
| Fluid                           | -10 up to +50°C  |
| Ambient                         | -10 up to +50°C  |
| Port connection                 | Flange   |
| Pneumatic module                | MP11   |
| Supply port 1 (P), 3 (R), 5 (S) | G 1/4<br>NPT 1/4<br>Plug connector ø 10 mm                                     |
| Service port 2 (A), 4 (B)       | Push-in ø 6 mm<br>Push-in ø 1/4"<br>Push-in ø 5/32"<br>M5<br>M7                |
| Operating voltage               | 24 V/DC  |
| Permissible voltage tolerance   | ± 10%  |
| Electrical connection on valve  | Rectangular plug   |
| Rating                          | IP 40 with rectangular plug  |
| Installation                    | As required, but preferably with solenoid system upright                       |
| Manual override                 | Standard   |

#### Circuit Functions

|          |  |   |
|----------|--|---|
| <b>H</b> |  | 5/2 way valve, servo-assisted impulse version                           |
| <b>L</b> |  | 5/3 way valve, servo-assisted in middle position all ports locked       |
| <b>N</b> |  | 5/3 way valve, servo-assisted in middle position port 2 and 4 exhausted |

#### Manual override

| Orifice DN [mm] | Circuit Funct. | Q <sub>Nn</sub> (air) [l/min] | Pressure Range [bar] | Nominal Power [W] | Response Times [ms] | Weight [g] | Item-No.  |
|-----------------|----------------|-------------------------------|----------------------|-------------------|---------------------|------------|-----------|
| 2.5             | H              | 200                           | 2.0 – 7.0            | 0.9               | 15 / 15             | 50         | 154 183 L |
| 2.5             | L              | 200                           | 2.0 – 7.0            | 0.9               | 15 / 20             | 50         | 154 184 M |
| 2.5             | N              | 200                           | 2.0 – 7.0            | 0.9               | 15 / 20             | 50         | 154 185 N |

#### Flow rate: Q<sub>Nn</sub>-value air [l/min]

Measured at +20 °C, 6 bar pressure at valve inlet, 1 bar pressure difference

#### Pressure ranges [bar]

Measured as overpressure to the atmospheric pressure

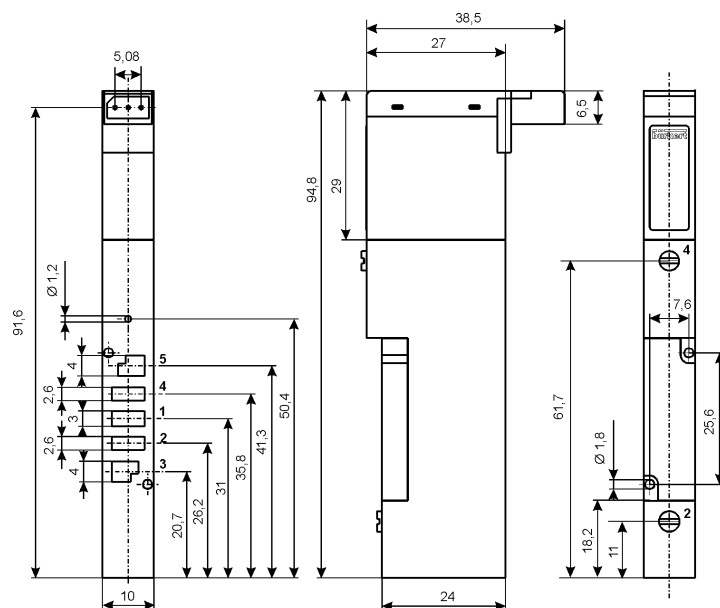
#### Response times [ms]

Measured at valve outlet at 6 bar and +20°C

|         |                               |
|---------|-------------------------------|
| Opening | Pressure rise from 0 to 90%   |
| Closing | Pressure drop from 100 to 10% |

#### Dimensions [mm]

Valve type 0460, 5/2 way impulse and 5/3 way version, circuit function H impulse, L and N



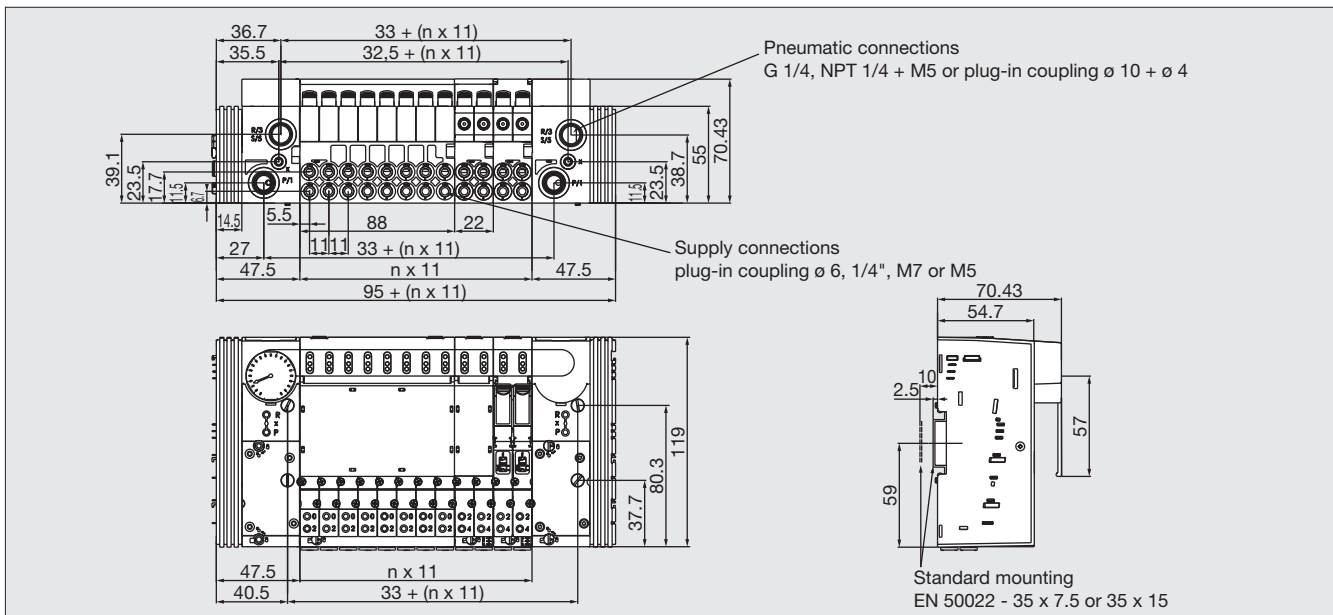
# Remote Process Actuation Control System AirLINE

## PHOENIX CONTACT – Remote I/Os and Fieldbusses

### Accessories and Spare Parts (Other Versions on Request) for Type 8644-P

| Item                                 | Description                                    | Item-No.   |
|--------------------------------------|--|------------|
| <b>Fieldbus Modules</b>              |  |            |
| Profibus DP                          | EN 51070; 12 MBaud; digital and analog signals | 148 837 V  |
| Interbus-S                           | EN 50254; digital and analog signals           | 150 697 F  |
| DeviceNET                            | 125 - 500 kBaud; digital and analog signals    | on request |
| ASI Gateway                          | ASI master for up to 62 ASI slaves             | on request |
| <b>Multi-Way Solenoid Valves</b>     |  |            |
| Type 6524                            | 3/2-way valve, circuit function C              | 144 933 R  |
| Type 6524                            | 3/2-way valve, circuit function D              | 144 934 J  |
| Type 6525                            | 5/2-way valve, circuit function H              | 144 935 K  |
| Type 0460                            | 5/2-way valve, circuit function H impulse      | 154 183 L  |
| Type 0460                            | 5/3-way valve, circuit function L              | 154 184 M  |
| Type 0460                            | 5/3-way valve, circuit function N              | 154 185 N  |
| <b>Pneumatic Modules MP11</b>        |  |            |
| Connector module → left              | Without pressure gauge, threaded port G 1/4    | 144 938 W  |
| Connector module → left              | Without pressure gauge, threaded port NPT 1/4  | 150 236 G  |
| Connector module → left              | Without pressure gauge, push-in 10 mm          | 150 237 H  |
| Connector module → left              | With pressure gauge, threaded port G 1/4       | 150 235 F  |
| Connector module → left              | With pressure gauge, threaded port NPT 1/4     | 150 221 H  |
| Connector module → left              | With pressure gauge, push-in 10 mm             | 150 222 A  |
| Connector module → right             | Without pressure gauge, threaded port G 1/4    | 144 939 X  |
| Connector module → right             | Without pressure gauge, threaded port NPT 1/4  | 150 238 J  |
| Connector module → right             | Without pressure gauge, push-in 10 mm          | 150 239 K  |
| Connector module → right             | With pressure gauge, threaded port G 1/4       | 150 141 H  |
| Connector module → right             | With pressure gauge, threaded port NPT 1/4     | 150 142 A  |
| Connector module → right             | With pressure gauge, push-in 10 mm             | 150 143 B  |
| Pneumatic intermediate supply module | Without pressure gauge, threaded port G 1/4    | 150 622 B  |
| Pneumatic intermediate supply module | Without pressure gauge, threaded port NPT 1/4  | 150 624 D  |
| Pneumatic intermediate supply module | Without pressure gauge, push-in 10 mm          | 150 623 C  |
| Pneumatic intermediate supply module | With pressure gauge, threaded port G 1/4       | 150 625 E  |
| Pneumatic intermediate supply module | With pressure gauge, threaded port NPT 1/4     | 150 627 G  |
| Pneumatic intermediate supply module | With pressure gauge, push-in 10 mm             | 150 626 F  |
| Covering plate complete              | For spare channels                             | 650 373 W  |
| Channel separation plug              | To build different pressure areas              | 650 418 L  |
| <b>Remote I/O Modules</b>            |  |            |
| DI 2 channel                         | 24 V/DC input                                  | 150 709 T  |
| DI 8 channel                         | 24 V/DC input                                  | 150 711 C  |
| DO 2 channel                         | 2.0 A  | 150 703 M  |
| DO 8 channel                         | 0.5 A  | 150 705 P  |
| AI 2 channel                         | Thermocouple                                   | 150 714 F  |
| AI 2 channel                         | RTD  | 150 715 G  |
| AI 2 channel                         | 0 – 20 mA, 4 – 20 mA, 0 – 10 V                 | 150 713 E  |
| AO 1 channel                         | 0 – 10 V                                       | 150 708 S  |
| AO 1 channel                         | 0 – 20 mA, 4 – 20 mA, 0 – 10 V                 | 150 707 R  |
| <b>Accessory Modules</b>             |  |            |
| Power terminal block                 | Fused  | 150 699 R  |
| Segment terminal block               | Fused  | 150 701 K  |
| Segment terminal block               | Not fused                                      | 150 700 W  |

### Dimensions [mm] for Pneumatic and Valve Modules



In case of special application requirements, please consult for advice.

We reserve the right to make technical changes without notice.  
102-GB/ 2-0229