Remote Process Actuation Control System AirLINE
WAGO – Remote I/Os and Fieldbusses

8644-W

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 Fieldbusses**
- ✓ **Compact Design**
- ✓ **High Flow Rate**

ON/OFF & Continuous Control

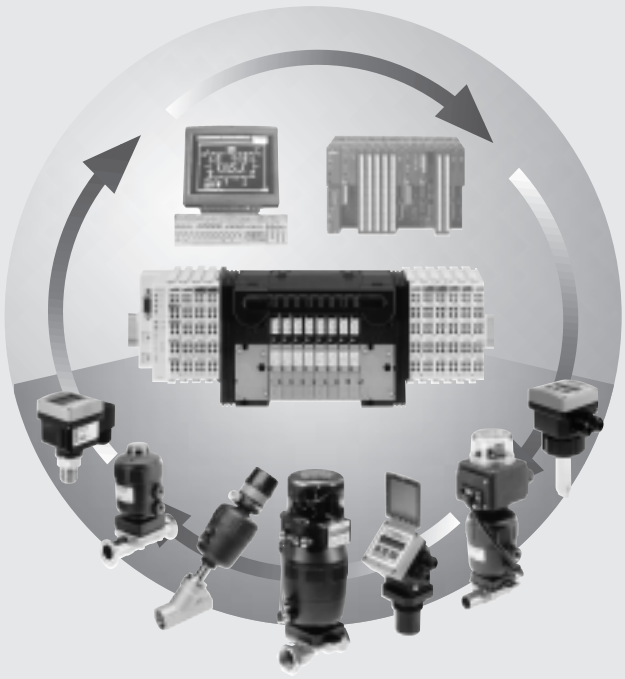
8644

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) D (3/2) H (5/2) H (5/2) impulse L (5/3) in middle position all ports closed N (5/3) in middle position all ports vented
Flow rate	300 l/min (200 l/min for functions H impulse, L and N)
Pressure range	2.5 up to 7.0 bar (up to 10.0 bar on request)
Module types	2x and 8x (optional integrated check valves)
Max. number of modules	Depending on application
Fieldbus type	Profibus DP InterBus-S DeviceNET CANopen (others on request)
Digital modules	2 or 4 inputs 2 or 4 outputs
Analog modules	2 or 4 inputs (0 - 10 V, 0 - 20 mA, 4 - 20 mA, RTD, TC) 2 outputs (0 - 10 V, 0 - 20 mA, 4 - 20 mA)
Operating voltage	24 V/DC
Permissible voltage tolerance	+20% / -15%
Residual ripple	1 Vss
Rated power per valve	1 W (0.5 W nominal power after 30 ms)
Rated current per valve	42 mA (21 mA holding current after 30 ms)
Temperatures	
Operating	0 up to +55°C
Storage	-20 up to +60°C
Rating	IP20 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**



bürkert Fluid Control Systems

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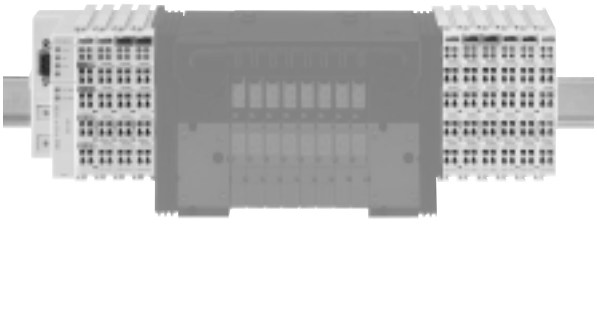
Electronic Modules Series 750 WAGO



General Specifications

Voltage supply	24 V/DC (+20% / -15%)
Internal current	500 mA at 24 V
Insulation	500 V system/supply
Power contacts, current	10 A DC max.
Rating	IP20
Temperatures	
Operating	0 up to +55°C
Storage	-20 up to +60°C
Relative humidity	95% max, not condensating
Configuration of fieldbus module	Via PC or PLC device
Current consumption (fieldbus modules)	350 mA (internal)
Wire connection	CAGE CLAMP® AWG 28 - 14 (0.08 mm²- 2.5 mm²)
Vibration resistivity	Acc. to IEC 60068-2-6
Shock resistivity	Acc. to IEC 60068-2-27
Certifications	
UL	E175199
Dimensions	W x H x L
Fieldbus modules	51 x 65 x 100 mm
I/O modules	12 x 64 x 100 mm

Fieldbus Modules (others on request)

Profibus DP/FMS
EN 51070; 12 MBaud; digital and analog signals

Max. no. of nodes	96 with repeater
Max. no. I/O points	Approx. 6000 (depends on master)
Transmission medium	Cu cable acc. to EN 50170
Max. length of bus line	100 m – 1200 m (depends on Baud rate on the cable)
Baud rate	9.6 kBaud – 12 MBaud
Transmission time typ.	Approx. 1.0 ms (10 nodes; 32 Is, 32 Os per node; with 12 MBaud and digital signals)
Fieldbus module connection	1 x D-SUB 9; plug with shielding
Max. I/O modules per node	64
Digital points per node	256 Is or Os
Analog points per node	64 Is or Os
Current supply	105 mA typ. 900 mA max.
Factory preset	DP/FMS dual operation 32 analogue points per node max. (inputs and outputs)

- This fieldbus module allows connection of the AirLINE System as a slave to a PROFIBUS fieldbus.

  The fieldbus module is capable of supporting all bus modules and automatically creates the local process image which may include analog and digital modules.

InterBus
EN 50254; digital and analog signals

Max. no. of nodes	256
Max. no. I/O points	4096 (depends on Master)
Transmission medium	Certified Cu cable
Max. distance between nodes	400 m
Baud rate	500 kBaud
Transmission time typ.	1.43 ms (10 nodes; 32 Is, 32 Os per node)
Fieldbus module connection	2 x D-SUB 9; plug with shielding
Max. I/O modules per node	64
Digital points per node	256 Is or Os max.
Analog points per node	32 Is or Os max.
Current supply	105 mA typ. 900 mA max.

- This fieldbus module allows connection of the AirLINE System as a slave to an INTERBUS fieldbus.

  The fieldbus module is capable of supporting all bus modules and automatically creates the local process image which may include analog and digital modules.

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WAGO – Remote I/Os and Fieldbusses

DeviceNET™
125 - 500 kBaud; digital and analog signals

Max. no. of nodes	64 with scanner
Max. no. I/O points	Approx. 6000 (depends on Master)
Transmission medium	Shielded Cu cable,
Trunkline	AWG15,18 (2x0.82mm2+2x1.7mm2)
Dropline	AWG22,24 (2x0.2mm2+2x0.32mm2)
Max. length of bus line	100 m - 500 m (depends on Baud rate/on the bus cable)
Baud rate	125 kBaud, 250 kBaud, 500 kBaud
Fieldbus module connection	1 x Open Style; connection with shielding
Max. I/O modules per node	64
Digital points per node	256 Is or Os max.
Analog points per node	128 Is or Os max.
Current supply	85 mA typ. 580 mA max.

- This fieldbus module allows connection of the AirLINE System as a slave to a DeviceNet fieldbus.

  The fieldbus module is capable of supporting all bus modules and automatically creates the local process image which may include analog and digital modules.

CANopen
10 kBaud - 1 MBaud; digital and analog signals

Max. no. of PDOs	5 Tx / 5 Rx
No. of available SDOs	1 Tx / 1 Rx
Transmission medium	Shielded Cu cable 3 x 0.25 mm2/AWG 23
Max. length of bus line	40 m - 1000 m depends on Baud rate on the bus cable
Baud rate	10 kBaud - 1 MBaud
Fieldbus module connection	5-pin multi connector series 231
Max. I/O modules per node	64
Digital points per node	256 Is or Os max.
Analog points per node	64 Is or Os max.
Current supply	85 mA typ. 580 mA max.

- This fieldbus module allows connection of the AirLINE System as a slave to a CANopen fieldbus.

  The data is sent using PDOs and SDOs.
  The fieldbus module is capable of supporting all bus modules and automatically creates the local process image which may include analog and digital modules.

  The local process image is divided into two data zones containing the data received and the data to be sent. The process data can be sent via the CANopen fieldbus to a PLC, PC or NC for further processing, and received from the field via CANopen.

Accessory Modules (others on request)

Supply Module, Passive
24 V DC

- The supply module provides I/O module power through the power jumper contacts.

  Maximum current supply to all connected modules is 10 A.

End Module

- After the fieldbus node is assembled with the correct fieldbus module and selected I/O modules, the "end" module is snapped onto the assembly.

  It completes the internal data circuit and ensures correct data flow.
  One is required for each fieldbus module.

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WAGO – Remote I/Os and Fieldbusses

Remote I/O Modules (others on request)

Digital Input Module DI
2 and 4 channel; high-side switching

No. of inputs	2 or 4
Current consumption	2.5 or 5 mA (internal)
Signal voltage (0)	-3 V up to + 5 V DC
Signal voltage (1)	15 V up to 30 V DC
Input filter	3 ms
Current supply	5 mA typ. (field side)
Internal bit width	2 or 4

- The digital input module receives control signals from digital field devices (sensors, etc.).

  Each input module has a noise-rejection filter. This filter is available with different time constants. An optocoupler is used for electrical insulation between the bus and the field side.

  All digital input modules are independent of the fieldbus and automatically connected to the next module when snapped onto the DIN rail.

Digital Output Module DO
2 and 4 channel; short-circuit protected; high-side switching

No. of outputs	2 or 4
Current consumption	7 or 15 mA
Type of load	Resistive, inductive, lamps
Output current	0.5 A; 2 A (2 channels) 0.5 A (4 channels)
Current consumption	15 mA or 30 mA + load (field side)
Internal bit width	2 or 4

- The connected load is switched via the digital output from the control system.

  All outputs are electronically short-circuit protected. All digital output modules operate with any of the fieldbuses.

  Power connections are made automatically from module to module when snapped onto the DIN rail.

Analog Input Module AI
2 and 4 channel; 4 - 20 mA and 0 - 10 V; single ended

No. of inputs	2 or 4
Voltage supply	Via system voltage (DC/DC)
Current consumption	60 mA typ. (10V versions) 75 mA (20 mA versions)
Maximum input voltage	35 V
Signal inputs	0 - 10 V, 4 – 20 mA
Internal resistance	133 kW typ (10 V versions) 50 W typ. (20 mA versions)
Resolution	12 bits
Conversion time	2 ms typ.
Internal bit width	2 x 16 bits data 2 x 8 bits control/status

- The analog input module receives signals with the standardized values of 0 - 10 V, 4 – 20 mA.

  The 4 – 20 mA input module can also supply the voltage for 2-wire transmitter. The input signal is electrically insulated and will be transmitted with a resolution of 12 bits.

  The shield (screen) is directly connected to the DIN rail.

  RTD and TC inputs on request.

Analog Output Module AO
2 channel; 4 - 20 mA and 0 - 10 V

No. of outputs	2
Current consumption	65 mA (internal, 10V versions) 60 mA max. (internal, 20 mA versions)
Output signals	0 - 10 V, 4 – 20 mA
Load impedance	> 5 kW (10V versions) < 500 W (20 mA versions)
Resolution	12 bits
Internal bit width	2 x 16 bits data 2 x 8 bits control/status

- The analog output module creates a standardized signal of 0-10 V, 4-20 mA.

  The output signal is electrically insulated and will be transmitted with a resolution of 12 bits.

  Current analog output modules use power derived from the field side (loop powered), *Voltage* analog output modules use the internal system supply.

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WAGO – Remote I/Os and Fieldbusses

Pneumatic Modules and Electrical Interfaces for Modules Series 750 WAGO

Pneumatic Modules MP11

Connector Module "left"
With or without pressure gauge

Connector module "left"	Without pressure gauge, threaded port G 1/4	148 844 C
	Without pressure gauge, threded port NPT 1/4	148 848 Q
	Without pressure gauge, push-in 10 mm	150 242 N
	With pressure gauge, threaded port G 1/4	150 144 C
	With pressure gauge, threaded port NPT 1/4	150 145 D
	With pressure gauge, push-in 10 mm	150 146 E

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

Connector module "right"	Without pressure gauge, threaded port G 1/4	150 147 P
	Without pressure gauge, threaded port NPT 1/4	150 148 Q
	Without pressure gauge, push-in 10 mm	150 149 R
	With pressure gauge, threaded port G 1/4	150 150 N
	With pressure gauge, threaded port NPT 1/4	150 151 B
	With pressure gauge, push-in 10 mm	150 152 C
Pneumatic intermediate supply module	Without pressure gauge, threaded port G 1/4	150 628 R
	Without pressure gauge, threaded port NPT 1/4	150 630 P
	Without pressure gauge, push-in 10 mm	150 629 J
	With pressure gauge, threaded port G 1/4	150 631 C
	With pressure gauge, threaded port NPT 1/4	150 633 E
	With pressure gauge, push-in 10 mm	150 632 D

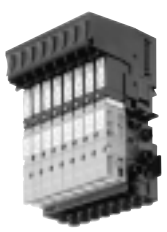
AirLINE Valve Modules

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"

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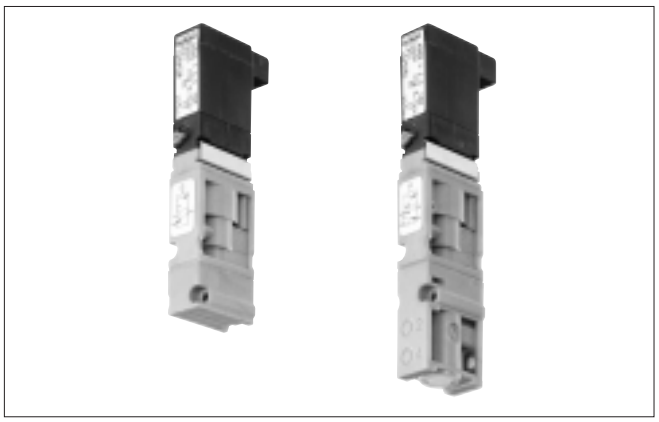
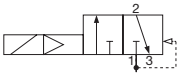
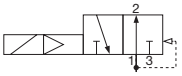
Multi-Way Solenoid Valves 6524 and 6525

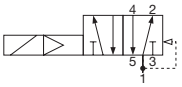


The solenoid valve types 6524 and 6525 consist of a pilot rocker valve type 6104 and a pneumatic seat valve. The rocker principle allows switching of high pressures together with low power consumption and fast response times.
All valves are equipped with manual override as a standard.

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
Manual override	Standard

Orifice DN [mm]	Circuit Funct.	Q_{Nn} (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: QNn-value air [l/min]
Measured at +20 °C, 6 bar pressure at valve inlet, 1 bar pressure difference

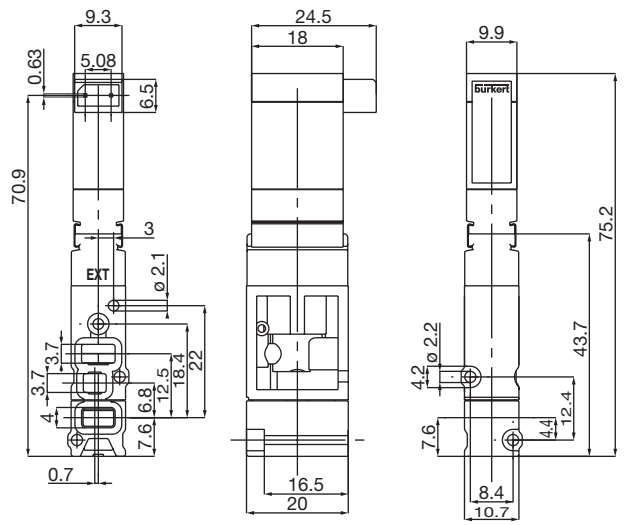
Pressure ranges [bar]
Measured as overpressure to the atmospheric pressure

Response times [ms]
Measured at valve outlet at 6 bar and +20°C

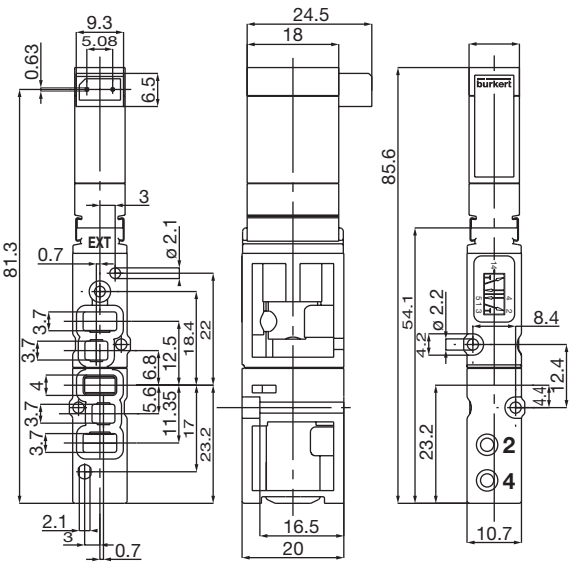
Opening	Pressure rise from 0 to 90%
Closing	Pressure drop from 100 to 10%

Dimensions [mm]

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



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

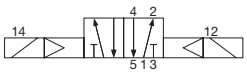


Multi-Way Solenoid Valve 0460

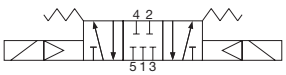
The solenoid valve type 0460 consists of a double coil and a pneumatic seat valve. The principle allows switching of high pressures together with low power consumption and fast response times.
All valves are equipped with manual override as a standard.

Circuit Functions

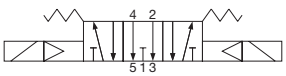
H 5/2 way valve, servo-assisted impulse version



L 5/3 way valve, servo-assisted in middle position all ports locked



N 5/3 way valve, servo-assisted in middle position port 2 and 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 +50°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” Push-in ø 5/32” 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
Manual override	Standard

Orifice DN [mm]	Circuit Funct.	Q_{Nn} (air) [l/min]	Pressure Range [bar]	Nominal Power [W]	Response Times Opening [ms]	Response Times Closing [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: QNn-value air [l/min]
Measured at +20 °C, 6 bar pressure at valve inlet, 1 bar pressure difference

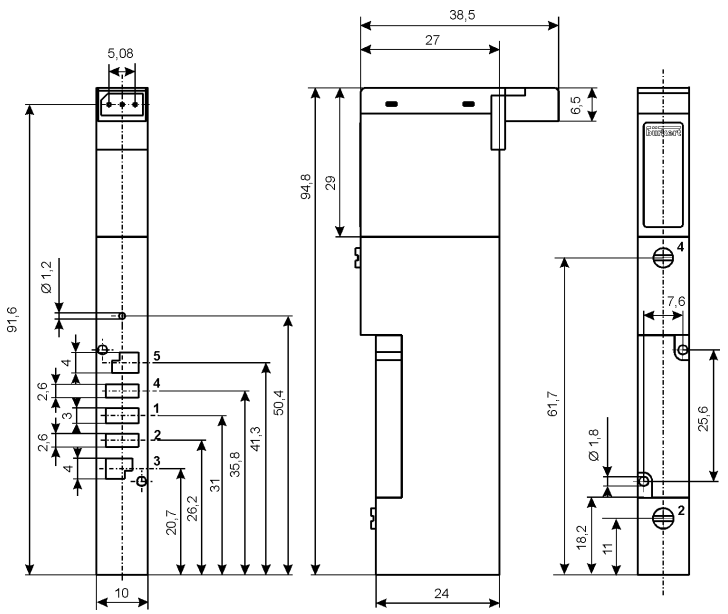
Pressure ranges [bar]
Measured as overpressure to the atmospheric pressure

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



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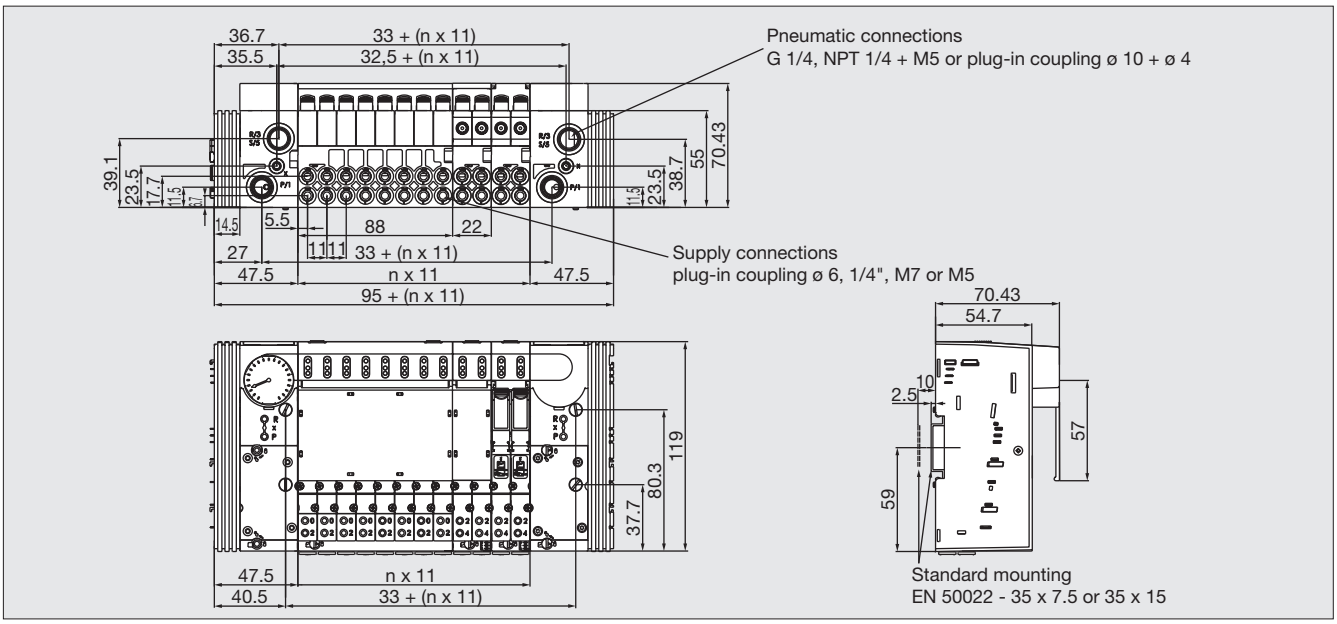
Accessories and Spare Parts (Other Versions on Request) for Type 8644-W

Item	Description	Item-No.
Fieldbus Modules		
Profibus DP/FMS	EN 51070; 12 MBaud; digital and analog signals	150 716 H
Interbus	EN 50254; digital and analog signals	150 736 D
DeviceNET	125 - 500 kBaud; digital and analog signals	150 722 F
CANopen	10 kBaud - 1 MBaud; digital and analog signals	150 721 E
Multi-Way Solenoid Valves		
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
Pneumatic Modules MP11		
Connector module –> left	Without pressure gauge, threaded port G 1/4	148 844 C
Connector module –> left	Without pressure gauge, threaded port NPT 1/4	148 848 Q
Connector module –> left	Without pressure gauge, push-in 10 mm	150 242 N
Connector module –> left	With pressure gauge, threaded port G 1/4	150 144 C
Connector module –> left	With pressure gauge, threaded port NPT 1/4	150 145 D
Connector module –> left	With pressure gauge, push-in 10 mm	150 146 E
Connector module –> right	Without pressure gauge, threaded port G 1/4	150 147 F
Connector module –> right	Without pressure gauge, threaded port NPT 1/4	150 148 Q
Connector module –> right	Without pressure gauge, push-in 10 mm	150 149 R
Connector module –> right	With pressure gauge, threaded port G 1/4	150 150 N
Connector module –> right	With pressure gauge, threaded port NPT 1/4	150 151 B
Connector module –> right	With pressure gauge, push-in 10 mm	150 152 C
Pneumatic intermediate supply module	Without pressure gauge, threaded port G 1/4	150 628 R
Pneumatic intermediate supply module	Without pressure gauge, threaded port NPT 1/4	150 630 P
Pneumatic intermediate supply module	Without pressure gauge, push-in 10 mm	150 629 J
Pneumatic intermediate supply module	With pressure gauge, threaded port G 1/4	150 631 C
Pneumatic intermediate supply module	With pressure gauge, threaded port NPT 1/4	150 633 E
Pneumatic intermediate supply module	With pressure gauge, push-in 10 mm	150 632 D
Covering plate complete	For spare channels	650 373 W
Channel separation plug	To build different pressure areas	650 418 L
Remote I/O Modules		
DI 2 channel	2 to 4 conductor connection, high-side switching	150 729 N
DI 4 channel	2 conductor connection, high-side switching	150 730 K
DO 2 channel	0.5 A; short-circuit protected, high-side switching	150 724 H
DO 2 channel	2.0 A; short-circuit protected, high-side switching	150 725 A
DO 4 channel	0.5 A; short-circuit protected, high-side switching	150 726 B
AI 2 channel	0 – 10 V, single ended	150 732 H
AI 4 channel	0 – 10 V, single ended	150 733 A
AI 2 channel	4 – 20 mA, single ended	150 731 G
AO 2 channel	0 – 10 V	150 727 C
AO 2 channel	4 – 20 mA	150 728 M
Accessory Modules		
Supply module	Passive, 24 V/DC	150 737 E
End module	–	151 013 R

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.
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