DATA SHEET

Type 8650

bürkert
FLUID CONTROL SYSTEMS

AirLINE Ex – electropneumatic automation system for use in potentially explosive areas

- For use in potentially explosive areas (Zone 1/21)
- Developed in cooperation with Siemens
- Electrical connection via PROFIBUS® DP-is, electrical I/O functions via Siemens SIMATIC ET 200 iSP™ module
- NEW REV.2 makes new integrable functions like pressure sensor or pressure switch possible

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

Type 8030 ▸
Inline flowmeter for continuous measurements

Type 6519 ▸
Servo-assisted 3/2, 5/2 or 5/3-way solenoid valve for pneumatics

Type 2012 ▸
Pneumatically operated 2/2 way globe valve CLASSIC

Type 2000 ▸
Pneumatically operated 2/2 way angle seat valve CLASSIC

Type 6524 ▸
3/2-way or 2 x 3/2-way solenoid valve for pneumatic applications

Type 6525 ▸
5/2-way solenoid valve for pneumatic applications

Type description

AirLINE Ex Type 8650 is a modular electrical and pneumatic automation system that controls complex processes in potentially explosive areas (Zones 1/21). The protection class “intinsically safe” (Ex i) of electronic modules and valves allows modules to be replaced during operation. With the modules of the cooperation partner Siemens, Bürkert offers electrical, analogue and digital I/O functions for use in Zone 0.

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1. General technical data

1.1. General data

Note:
Further information can be found in chapter:

- Type 6524, 6525 "1.4. 11 mm width per station: pilot valves Type 6524 and Type 6525 Ex i" on page 5
- Type 6526, 6527 "1.5. 16.5 mm width per station: pilot valves Type 6526 and Type 6527 Ex i" on page 6

Product properties	Type 6524, Type 6525	Type 6526, Type 6527
Dimensions	Further information can be found in chapter "5. Dimensions" on page 8.	
Material		
Body	PA, PC, nickel-plated brass, stainless steel	PA, PC, brass nickel-plated, stainless steel
Seal	NBR	NBR
Maximum installation width of a valve island	Further information can be found in chapter "5. Dimensions" on page 8.	
Width per station	11 mm	16.5 mm
Manual override	Standard	Standard
Number of valve positions	Max. 48	Max. 32
Maximum number of valve functions	Max. 96 valve functions	Max. 32 valve functions
Switching function/Operating principle 1.)	Further information can be found in chapter "2. Circuit functions" on page 6.	
Pneumatic intermediate supply	Necessary from 20 valve functions	Necessary from 20 valve functions
Performance data		
Pressure data	Overpressure to atmospheric pressure	Overpressure to atmospheric pressure
Pressure range	Vac.…8 bar	Vac.…8 bar
External supply air (auxiliary pilot air)	>2.5 bar	>2.5 bar
Flow rate Q_{Nn} value air	300 l/min 1.) measured at +20 °C, pressure 6 bar at valve inlet and 1 bar differential pressure	700 l/min 1.) measured at +20 °C, pressure 6 bar at valve inlet and 1 bar differential pressure
Flow rate Q_{Nn} value air with integrated P shut-off	Flow reduced by approx. 25 %	N/A
Nominal operating mode	Continuous operation (100 % duty cycle)	Continuous operation (100 % duty cycle)
Switching time	Measured according to ISO 12238	Measured according to ISO 12238
Electrical data		
Operating voltage	Supply via ET 200iSP: 24 V DC, alternatively 120/230 V AC, installed protection class Ex e	Supply via ET 200iSP: 24 V DC, alternatively 120/230 V AC, installed protection class Ex e
Voltage tolerance	±10 %	±10 %
Residual ripple (at DC)	N/A (due to the PowerSupply module of Siemens SIMATIC ET 200iSP™)	N/A (due to the PowerSupply module of Siemens SIMATIC ET 200iSP™)
Nominal power of each valve	0.3 W (2×0.3 W with 2×3/2-way valve)	0.3 W
Nominal current of each valve	Max. 30 mA	Max. 30 mA
Position feedback	Via cooperation partners	Via cooperation partners
Protection class	III according to DIN EN 61140	III according to DIN EN 61140
With fieldbus connection	Table 3-4 in the Siemens ET200 iSP manual	Table 3-4 in the Siemens ET200 iSP manual
Medium data		
Operating medium	Oil-free or lubricated compressed dry air (5 µm filter recommended)	Oil-free or lubricated compressed dry air (5 µm filter recommended)
Compressed air quality	ISO 8573-1: 2010, class 7.4.4	ISO 8573-1: 2010, class 7.4.4
Approvals and conformities		
Degree of protection	IP30	IP30
Explosion protection	Further information can be found in chapter "3.4. Explosion protection" on page 7	
Process/Port connection & communication		
Working port	D 6, D 8, D ¼"	D 8
Air supply connection	G ⅜	G ⅜
Communication module	Siemens SIMATIC ET 200iSP™	Siemens SIMATIC ET 200iSP™
Communication interface	PROFIBUS DP, PROFINET IO	PROFIBUS DP, PROFINET IO
Environment and installation		
Installation position	On S7 standard rail from Siemens	On S7 standard rail from Siemens
Storage temperature	-40…+70 °C	-40…+70 °C
Ambient temperature	0…+60 °C (horizontal installation) 0…+50 °C (for all other installation positions)	0…+60 °C (horizontal installation) 0…+50 °C (for all other installation positions)

1.) The maximum flow rate depends on the valve function.

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1.2. Electrical modules of Siemens SIMATIC ET 200iSP™ series

Note:

- The Siemens SIMATIC ET 200iSP™ decentralised peripheral device can be used in areas at risk of explosion. It consists of the power supply and interface module, and a maximum of 32 electronics modules.
- Further information can be found in the Siemens SIMATIC ET 200iSP™ manual operating Instructions.
- **Type 8650** ▶ REV2 with shut-off valve **Type 6518** ▶ (for availability see "8.4. Ordering chart accessories" on page 13)

Type 8650 REV1	Type 8650 REV2 with shut-off valve Type 6518
	

Overview of the Siemens components required for the AirLINE Ex Type 8650

Note:
An overview of the Siemens components required for the **Type 8650** ▶ AirLINE Ex system will be given below. For further information on the modules of the ET 200iSP™ series, please refer to the corresponding data sheets from Siemens.

Components for the SIMATIC ET 200iSP™ system		
Standard rail		The standard rail is the subrack of the ET 200iSP™ system. You mount the modules on this rail (standard rails are available in different lengths).
Terminal module		The terminal modules support upright wiring. They hold the power supply, the interface and the electronic modules.
	Power supply module	The power supply module is plugged into the TM-PS-A terminal module (optionally redundant, then TM-PS-B terminal module). It supplies the electronics, valves and encoders with power.
	Interface module	The interface module is plugged into the terminal module TM-IM / EM or TM-IM / IM. It connects the ET 200iSP™ system to the PROFIBUS network and distributes the data to the equipped electronic modules.
	Electronic module	The electronic module is plugged onto the terminal module TM-IM / EM or M-EM / EM. It provides the electrical I/Os (e.g. analogue outputs or digital inputs).
Termination module		The termination module completes the station.

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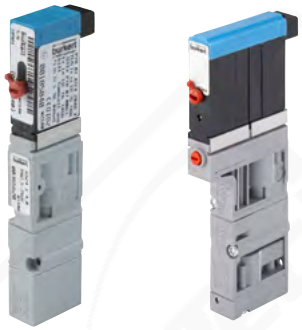
1.3. Supply slice right/left/middle

- The connection discs (in the picture connection discs right/left) form the interfaces between the electrical modules of the Siemens SIMATIC ET 200iSP™ series and the pneumatic Bürkert valve block. The AirLINE Ex system is supplied with compressed air via the connection discs.
- Further information regarding dimensions can be found in chapter "5. Dimensions" on page 8

Product properties	
Material	
Body (pneumatic)	PA, PC, brass, stainless steel
Weight	With manometer: approx. 500 g
Electrical data	
Power consumption	0 W (module is electrically passive)
Process/Port connection & communication	
Pneumatic connection	G ⅜" (P + R/S) and G ⅛" (X)
Connection size for pressure switch	G ¼"

1.4. 11 mm width per station: pilot valves Type 6524 and Type 6525 Ex i



- The pneumatic valves of **Type 6524** ▸ and **Type 6525** ▸ consist of an Ex i pilot solenoid valve and a pneumatic seat valve. The operating principle allows switching of high pressures with low power consumption and short switching times. The pilot valves are equipped with a manual override as standard (alternatively versions without manual override).
- Further information regarding ordering information can be found in chapter "8.3. Ordering chart replacement valves" on page 11.

Product properties	
Material	
Body	PA (polyamide)
Seal	NBR
Manual actuation	Yes (alternative versions without)
Orifice	DN 4 mm
Performance data	
Flow (Q_{Nn} value air)	300 l/min, measured at +20 °C, 6 bar pressure at valve inlet and 1 bar differential pressure
Nominal operating mode	Continuous operation 100 % duty cycle
Electrical data	
Nominal power of each valve	0.3 W (2 × 0.3 W with 2 × 3/2-way valve)
Process/Port connection & communication	
Port connection	Via valve block Bürkert Type 8650
Electrical connection (on valve)	Via valve block Bürkert Type 8650
Environment and installation	
Mounting condition	For single valves: M2 x 20 For double valves: M2 x 28

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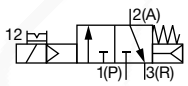
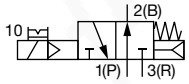
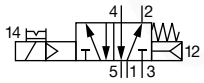
1.5. 16.5 mm width per station: pilot valves Type 6526 and Type 6527 Ex i

- The pneumatic valves of **Type 6526** ▶ and **Type 6527** ▶ consist of an Ex i pilot solenoid valve **Type 6106** ▶ and a pneumatic seat valve. The operating principle allows switching of high pressures with low power consumption and short switching times. The pilot valves are equipped with a manual override as standard (alternatively versions without).
- Further information regarding ordering information can be found in chapter „Ordering chart accessories“ auf Seite 13.

Product properties	
Material	
Body	PA (polyamide)
Seal	NBR
Manual actuation	Yes (alternative versions without)
Orifice	DN 6 mm
Performance data	
Flow (Q_{Nn} value air)	700 l (measured at +20 °C, 6 bar pressure at valve inlet and 1 bar differential pressure)
Nominal operating mode	Continuous operation (100 % duty cycle)
Electrical data	
Nominal power of each valve	0.3 W
Process/Port connection & communication	
Port connection	Via valve block Bürkert Type 8650
Electrical connection (on valve)	Via valve block Bürkert Type 8650
Environment and installation	
Mounting condition	With 2 Screws M3×30

2. Circuit functions

Symbol	Description
	**Circuit function C (CF C)** 3/2-way solenoid valve Servo-controlled, with manual override Normally closed
	**Circuit function C (CF C)** 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally closed
	**Circuit function D (CF D)** 3/2-way solenoid valve Servo-controlled, with manual override Normally open
	**Circuit function H (CF H)** 5/2-way solenoid valve Servo-controlled, with manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure.

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3. Approvals and conformities

3.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available versions can be supplied with the below mentioned approvals or conformities.

3.2. Conformity

In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

3.3. Standards

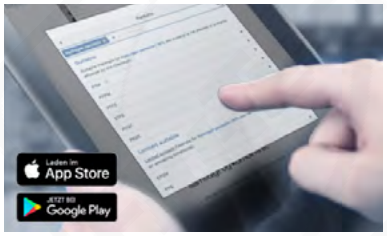
The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

3.4. Explosion protection

Approval	Description
	Optional: Explosion protection As a category 3 device suitable for zone 1 and zone 2 (optional). **ATEX:** BVS 21 ATEX E 013 X II 2G Ex be ib IIC T4 Gb **IECEx:** IECEx BVS 21.0013 X Ex be ib IIC T4 Gb

4. Materials

4.1. Bürkert resistApp



Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start Chemical Resistance Check

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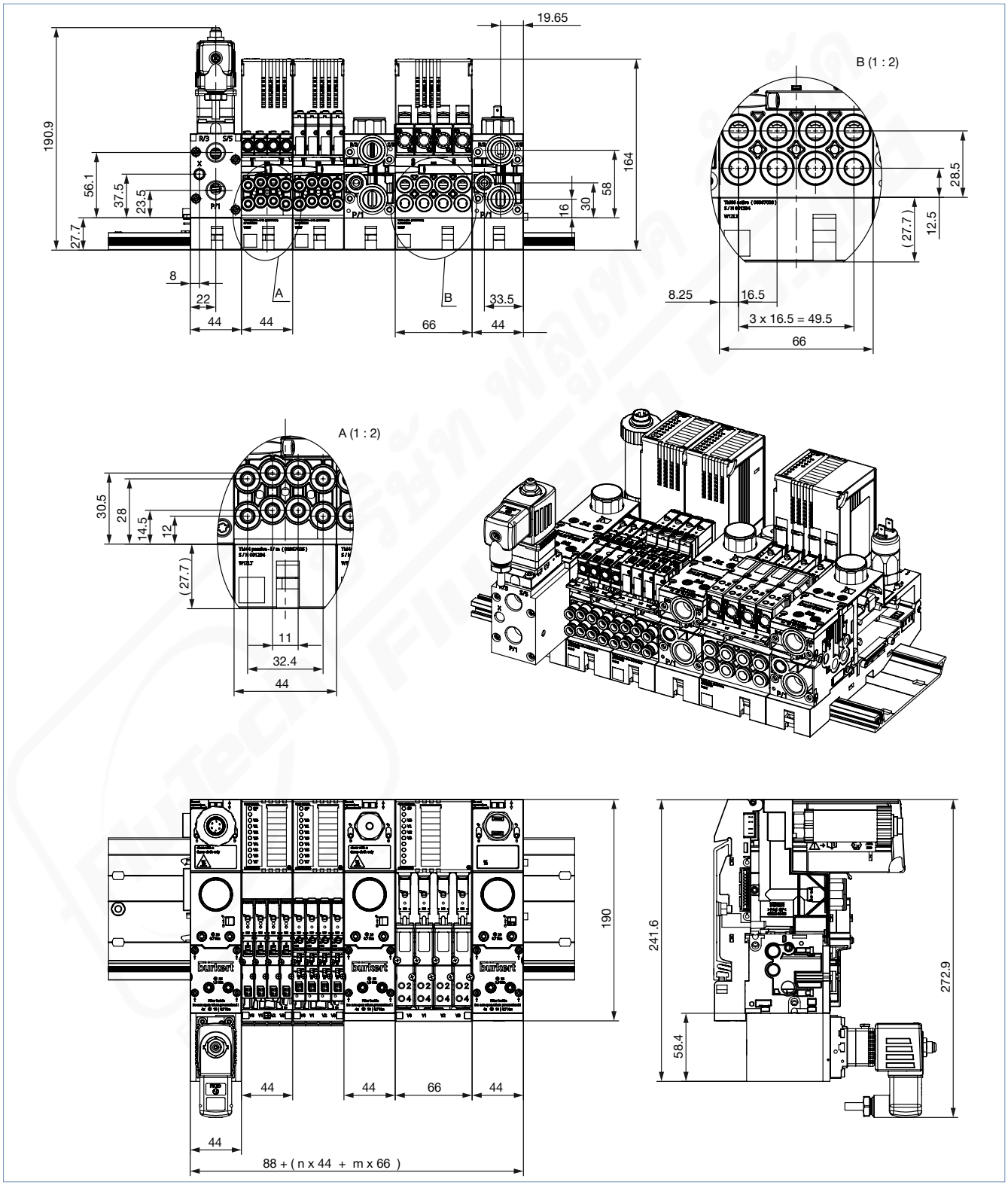
5. Dimensions

5.1. AirLINE Ex Type 8650

Note:

- Dimensions in mm, unless otherwise stated



6. Product design and assembly

Note:

- Open for all functionalities
- The valve island acquires sensor signals via digital feedback inputs. As a result, pneumatic outputs switch single-acting or double-acting process valves in different modes of operation.

No.	Element	Pneumatic connections
1	Supply slice, left	G ⅜" (P + R/S) and G ⅛" (X)
2	Valve slice 44 mm	Plug-in coupling D6, D ¼" (working ports)
3	Valve slice 66 mm	Plug-in coupling D8 (working ports)
4	Supply slice, right	G ⅜" (P + R/S) and G ⅛" (X)

7. Product accessories

7.1. Certified control cabinets

Note:
Certified control cabinets (e.g. ATEX/UL) are available on request.

Certified cabinet	Description
	Control cabinet with Siemens SIMATIC ET 200iSP™ and Bürkert Type 8650, e.g. for use in the pharmaceutical industry.

8. Ordering information

8.1. Bürkert eShop

Bürkert eShop – Easy ordering and quick delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now

8.2. Bürkert product filter

Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements?
Use the Bürkert product filter and find suitable articles for your application quickly and easily.

Try out our product filter

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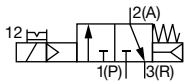
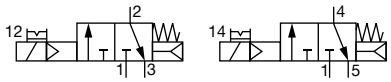
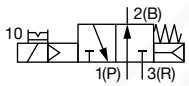
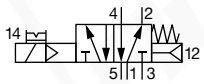
8.3. Ordering chart replacement valves

Pilot valves Type 6524 and Type 6525 Ex i (11 mm width per station)

Note:

- ATEX and IECEx certified
- Other valve functions on request
- Further information about technical data can be found in chapter “1.4. 11 mm width per station: pilot valves Type 6524 and Type 6525 Ex i” on page 5.
- Further information about the circuit functions can be found in chapter “2. Circuit functions” on page 6.

Circuit function	Switching times		Pressure range	Manual override	Article no.	
	Opening	Closing				
	[ms]	[ms]	[bar]		Valve for 8650 REV1 1.)	Valve for 8650 REV2 1.)
C (CF C) 3/2-way solenoid valve Servo-controlled, with manual override Normally closed 	15	20	2.5…7	Yes	20028756 (184766 2.)	20028760 (365620 2.)
			2.5…7	No	o. r.	o. r.
			1…7	Yes	20028758 3.) (186835 2.)	20028762 (366796 2.)
C (CF C) 2 x 3/2-way solenoid valve Servo-controlled, with manual override Normally closed 	15	20	2.5…7	Yes	182086	
			1…7	Yes	182088 3.)	
Circuit function D (CF D) 3/2-way solenoid valve Servo-controlled, with manual override Normally open 	15	20	2.5…7	Yes	184767	365624
			2.5…7	No	184768	20021915
H (CF H) 5/2-way solenoid valve Servo-controlled, with manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure. 	15	20	2.5…7	Yes	20028757 (184769 2.)	20028761 (365625 2.)
			2.5…7	No	o. r.	o. r.
			1…7	Yes	20028759 3.) (186834 2.)	20028763 (366797 2.)

o. r. = on request

1.) If you have any questions about the compatibility of the valve revision, please contact your Bürkert sales office.

2.) The Article no. can no longer be ordered. Order the superordinate set instead.

3.) Version with auxiliary pilot air

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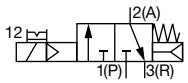
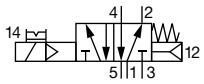
Pilot valves Type 6526 and Type 6527 Ex i (16.5 mm width per station)

Note:

- ATEX and IECEx certified
- Other valve functions on request
- Further information about technical data can be found in chapter “1.5. 16.5 mm width per station: pilot valves Type 6526 and Type 6527 Ex i” on page 6.
- Further information about the circuit functions can be found in chapter “2. Circuit functions” on page 6.

Circuit function	Switching times Opening [ms]	Switching times Closing [ms]	Pressure range [bar]	Manual override	Article no.
C (CF C) 3/2-way solenoid valve Servo-controlled, with manual override Normally closed 	80	90	2…8	Yes	263932
			No	No	175674
			1…8	Yes	366798 1.)
H (CF H) 5/2-way solenoid valve Servo-controlled, with manual override Pressure applied via port (1), therefore one of the two ports (2) or (4) is under pressure. 	80	90	2…8	Yes	365024
			No	No	175728
			1…8	Yes	366799 1.)

1.) Version with auxiliary pilot air

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8.4. Ordering chart accessories

Cover plate

Note:
If not all the valve connections in a basic valve unit module are used, then these connections should be covered by the appropriate cover plate to ensure full efficiency.

Cover plate	Article no.
Cover plate for solenoid valves Type 6524/6525 (REV1)	650373
Cover plate for solenoid valves Type 6524/6525 (REV2)	661092
Cover plate for solenoid valves Type 6524 2x 3/2-way valve	661092
Cover plate for solenoid valves Type 0460	655069
Cover plate for solenoid valves Type 6526/6527	653765
Cover plate for solenoid valves Type 0461	657490

Various

Accessories	Specification	Article no.
Standard rail	Length: 480 mm	655982
	Length: 530 mm	655983
	Length: 585 mm	671701
	Length: 830 mm	671702
	Length: 885 mm	671703
Further accessories	Plug to block P channel (to build up several pressure levels or media groups in a 8650 system)	o. r.
	Suitable Ex bus plug (Profibus DP - is) D-Sub 9 e.g. from Siemens (Article no. 6ES7-972-0DA60-0XA0)	655981
	RS 485 IS bus coupler from Siemens (Article no. 6ES7-972-0AC80-0XA0)	222963

Picture		Article no.
	**Shut-off valve Ex i version, 0.3 W** (can be flanged to supply module of Type 8650 REV2, for applications requiring shut-off of supply air)	20002450
	Shut-off valve Ex m version (can be flanged to supply module of Type 8650 REV2, for applications requiring shut-off of supply air)	o. r.
(Example) 	Pressure sensor	774891
	Pressure switch (with changer)	772515
	Pressure switch (with normally open contact)	780496

o. r. = on request

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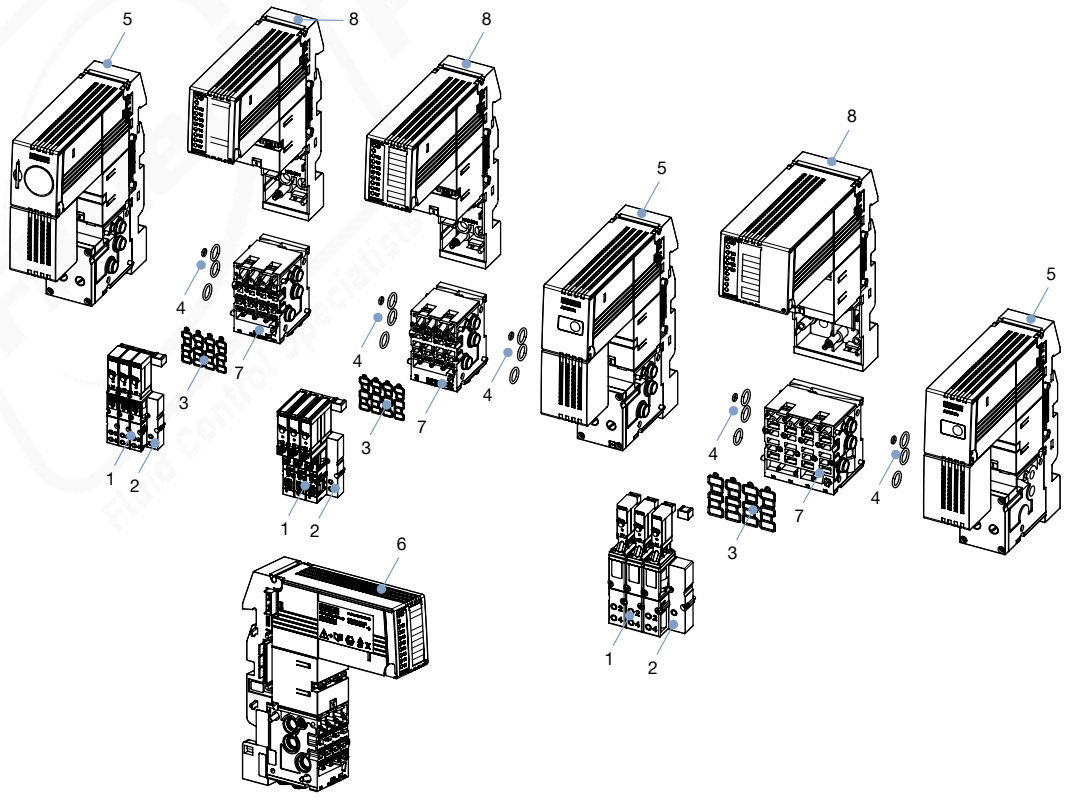
8.5. Ordering chart spare parts

Spare parts SVVI for Type 8650, REV1 – Pneumatics 11/16 mm width per station

Pos.	Description	Content	Article no.
1	**Spare valves** see “8.5. Ordering chart spare parts” on page 14	–	–
2	**Cover plate** see “8.4. Ordering chart accessories” on page 13	–	–
3	**Set of valve seals**	–	–
	Spare valve seals FM20 for Type 6524, 2 x 3/2-way solenoid valve	12	20016305
	Spare valve seals FM15 for Type 6524, 3/2-way solenoid valve	12	20024333
	Spare valve seats FM14 for Type 6525, 5/2-way solenoid valve	12	20024334
	Spare valve seals FM16 for Type 0460	12	20016307
4	**Sets of module seals**	–	–
	Spare module seals for Type MP13	4	20036699
5	**Supply units**	–	–
	Supply unit left for Type 8650, 11 mm / 16 mm, G ⅜, with manometer	1	20033025
	Intermediate supply for Type 8650, 11 mm / 16 mm, G ⅜, with manometer	1	20033027
	Supply unit right for Type 8650, 11 mm / 16 mm, G ⅜, with manometer	1	20033029
6	**Module units**	–	–
	Valve unit for Type 8650, 11 mm, 4-fold, D6, FM14, single valve	1	20059528
	Valve unit for Type 8650, 11 mm, 4-fold, D6, FM14, single valve, P barrier, RSV	1	20059530
	Valve unit for Type 8650, 11 mm, 4-fold, D6, FM20, double valve	1	20059531
	Valve unit for Type 8650, 11 mm, 4-fold, D6, FM20, double valve, P barrier, RSV	1	20059533
	Valve unit for Type 8650, 16 mm, 4-fold, D8, FM17	1	20059534
	Valve unit for Type 8650, 16 mm, 4-fold, D8, FM17, RSV	1	20059536
6	**Base modules**	o. R.	o. r.
7	**Electronic modules**	–	–
	Electrical base module for Type 8650, 11 mm, 4-fold, double valve	1	20027512
	Electrical base module for Type 8650, 11 mm, 4-fold, single valve	1	20027513
	Electrical base module for Type 8650, 11 mm, 4-fold	1	20027514
	Terminal module 11 mm for Type 8650	1	20033030
	Terminal module 16 mm for Type 8650	1	20033032

o. r. = on request



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Spare parts SVVI for Type 8650, REV2 – Pneumatics 11/16 mm width per station

Pos.	Description	Content	Article no.
1	**Spare valves** see “8.5. Ordering chart spare parts” on page 14	–	–
2	**Cover plate** see “8.4. Ordering chart accessories” on page 13	–	–
3	**Set of valve seals**	–	–
	Spare valve seals FM20 for Type 6524, 2 x 3/2-way solenoid valve	12	20016305
	Spare valve seats FM24 for Type 6524, 3/2-way solenoid valve	12	20024336
	Spare valve seals FM16 for Type 0460	12	20016307
4	**Sets of module seals**	–	–
	Spare module seals for Type MP17	4	20016310
5	**Supply units**	–	–
	Supply unit left for Type 8650, 11 mm/16 mm, G ⅜, with manometer	1	20014283
	Intermediate supply for Type 8650, 11 mm/16 mm, G ⅜, with manometer	1	20014284
	Supply unit right for Type 8650, 11 mm/16 mm, G ⅜, with manometer	1	20014285
6	**Module units**	–	–
	Valve unit for Type 8650, 11 mm, 4-fold, D6, FM14, single valve	1	20014277
	Valve unit for Type 8650, 11 mm, 4-fold, D6, FM14, double valve	1	20014278
	Valve unit for Type 8650, 11 mm, 4-fold, D6, FM20, single valve, P barrier, RSV	1	20014279
	Valve unit for Type 8650, 11 mm, 4-fold, D6, FM20, double valve, P barrier, RSV	1	20014280
	Valve unit for Type 8650, 16 mm, 4-fold, D8, FM17	1	20014281
	Valve unit for Type 8650, 16 mm, 4-fold, D8, FM17, RSV	1	20014282
	Valve unit for Type 8650, 11 mm, 4-fold, D¼, FM20, single valve	1	20014287
	Valve unit for Type 8650, 11 mm, 4-fold, D¼, FM20, double valve	1	20014288
	Valve unit for Type 8650, 11 mm, 4-fold, D¼, FM20, single valve, P barrier, RSV	1	20014289
	Valve unit for Type 8650, 11 mm, 4-fold, D¼, FM20, double valve, P barrier, RSV	1	20014290
6	**Base modules**	o. r.	o. r.
7	**Electronic Modules**	–	–
	Electrical base module for Type 8650, 11 mm, 4-fold, double valve	1	20027512
	Electrical base module for Type 8650, 11 mm, 4-fold, single valve	1	20027513
	Electrical base module for Type 8650, 16 mm, 4-fold	1	20027514
	Terminal module 11 mm for Type 8650	1	20033030
	Terminal module 16 mm for Type 8650	1	20033032

o. r. = on request

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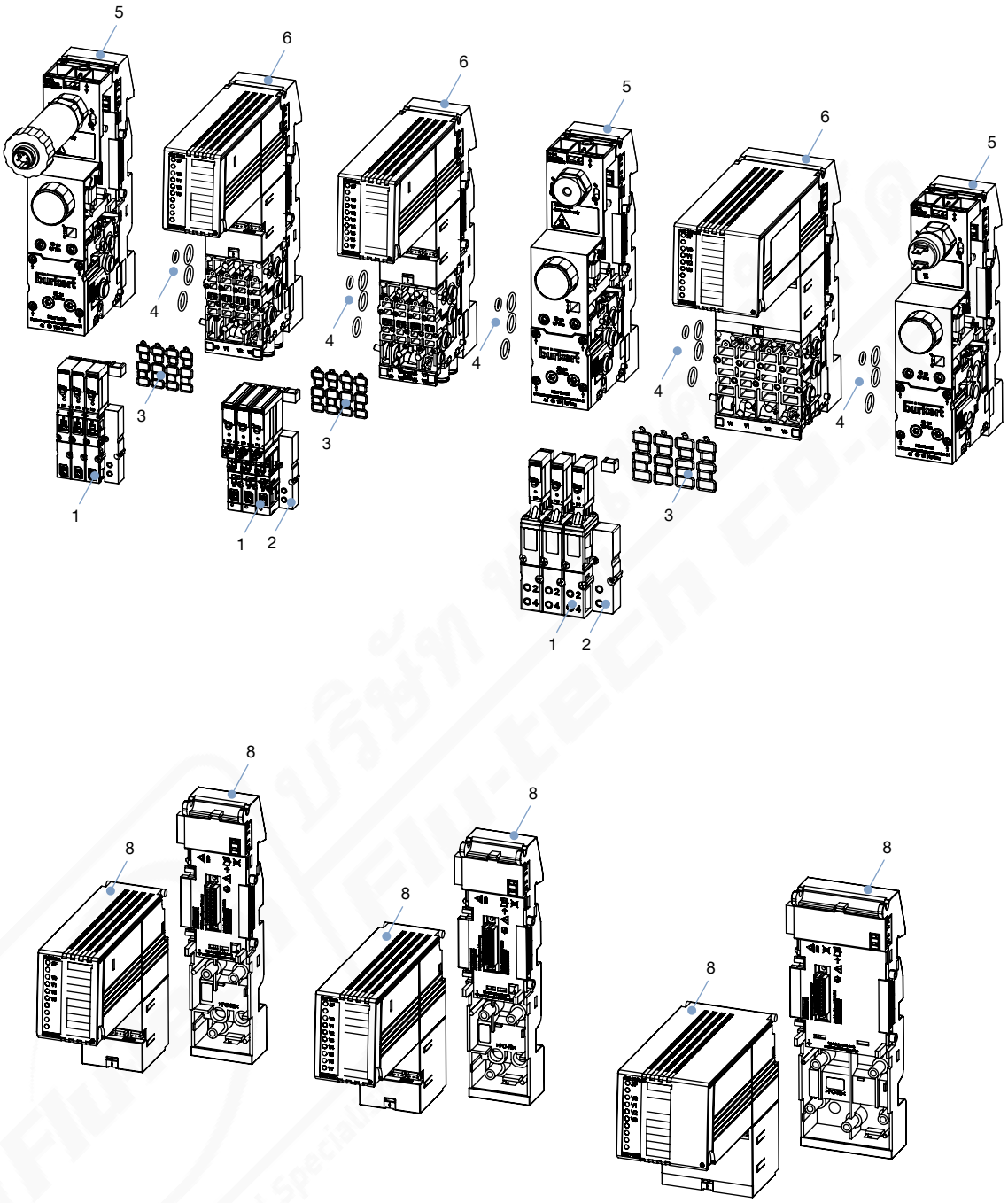

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