Control Head for Process Valves with Multipole or Fieldbus

Control head, pneumatic connections

Control head, 5-pole DeviceNet connector and PG9 screwed cable gland

- Convenient control of pneumatically actuated process valves
- Compact unit comprising pilot valves, position feedback sensors and communication electronics
- Low response times owing to short hose connections
- Low installation effort and simple commissioning

Control head Type 1066 is designed for the convenient control of pneumatically actuated piston-controlled process valves. Integrated in the control head are electrical and pneumatic control components, position feedback sensors and optional intelligent communication electronics.

This allows the following functions to be realized:
- Piloting of process valves
  -single / double-acting
  -2 and 3-position actuator
  -additional synchronization for multi-function actuation
  -external pneumatic piloting
- Position feedback with up to 3 vertically adjustable inductive initiators or end position microswitches
- Electrical control of the control head optionally via multipole (parallel) or via bus connection (ASI and DeviceNet)
- Burst protection with pressure relief valve

For protection against unauthorized interference, the cover may be lead-sealed and provided with a self-tapping screw.

The control heads were developed for use in the food and pharmaceutical industries.

Technical Data	
Body material	PPE/PA
Cover material	PSU (transparent, bluish gray)
Sealing material	NBR
Media	unlubricated compressed air; neutral gases
Medium temperature	-10 to +50°C
Ambient temperature	-10 to +50°C
Fluid port connections	
Pressure/exhaust ports	G 1/4
Service ports	plug-on hose connector 6/4 or 1/4”
QNn value for air	110 l/min Type 6510 40 l/min Type 6106
Pressure range	2.5 to 7 bar
Response times	Type 6510/Type 6106
Opening	15/23 ms
Closing	10/21 ms
Stroke range	
Min.	2 mm
Max.	73 mm
Mounting position	any, but preferably with cover above; flanged to process valve
Mass	0.5 to 0.65 kg
Operating voltage	24 V DC Type 6510 24/110/230 V UC Type 6106 acc. field bus specifications

Solenoid valves	in control head
Type 6510	09 V DC
Type 6510	24 V DC
Type 6106	24/110/230 V UC
Current consumption	
Valve Type 6510	ca. 50 mA (1 W each)
Valve Type 6106	ca. 125/27/13 mA (3 W each)
Inductive initiator	max. 100 mA (external load) short-circuit proof
Electrical power loss	max. 5 W
Electrical connections	
Multipole	• 8-pole circular plug DIN 45326 • 8-pole terminal strip • 2x6-pole terminal strips
ASI-Bus	• insulation displacement connection for ASI flat cable, 1 m long • M12 plug and cable bushing, 2 m round cable
DeviceNet	• M12 flanged plug, 4-pole • 5-pole plug connector M12 acc. DeviceNet specification
Duty cycle	continuous rating (ED 100%)
Type of protection	IP67
Initiators	8 to 30 V / max. 100 mA
End position switches	max. 230 V UC / max. 1A

Flow rate:	
QNn value for air [l/min]	measured at +20°C, 6 bar pressure at valve inlet and 1 bar pressure difference
Pressure data [bar]	measured as overpressure to atmospheric
Response times [ms]	measured at valve outlet at 6 bar and +20°C
Opening	pressure build-up 0 to 90%
Closing	pressure decay 100 to 10%

DTS 1000010950 EN Version: B Status: RL (released | freigegeben | validé) printed: 08.08.2008

DTS 1000010950 EN Version: B Status: RL (released | freigegeben | validé) printed: 08.08.2008

Possible configurations

Electrical control
- Multipole
- ASI (Actuator Sensor Interface) acc. ASI specification (energy supply via ASI line)
- DeviceNet
  -Group 2 Only Slave Device
  -MAC-ID and transfer rate can be set with DIP switches
  -Energy supply via DeviceNet line

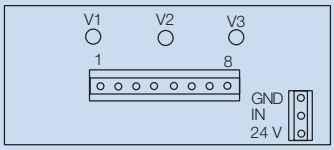
Configuration of control head
- Valves (0 to 3 pcs.)
  -Single-acting actuator (1 valve)
  -Double-acting actuator (2 valves)
  -Double-seat valve with common flow for both valve seats (CIP cleaning, 3 valves)

Position feedback
- Initiators (0 to 3 pcs.), third initiator may be connected internally or externally via terminal as per connection labelling “IN”
- End position microswitches (0 to 2 pcs.) for low-cost version; may be used internally only

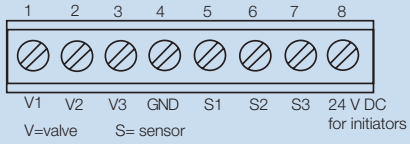
Control heads with multipole connectors (without communication)

Multipole connector with 8-pole terminal strip for 24 V DC (without communication)

Control head without cover, PG9 screwed cable gland, multipole, 8-pole terminal strip for 24 V DC



LED status indicator with 24 V DC multipole connector

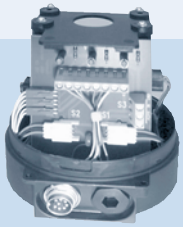


Connector configuration, internal terminal strip

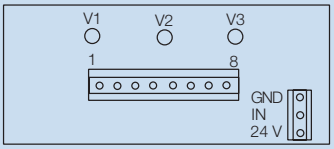
Features
- Electrical connection with 8-pole terminal strip
- PG9 screwed cable gland
- 0 to 3 valves type 6510
- Valves for 24 V DC
- 3 LEDs for valve status indication
- Up to 3 inductive initiators for position feedback

Note
The outputs from the initiators are pnp-plus switching and short-circuit proof.

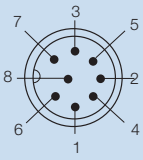
Multipole connector with 8-pole circular connector for 24 V DC (without communication)



Control head without cover, multipole, 8-pole circular connector for 24 V DC



LED status indicator with 24 V DC multipole connector



PIN configuration
1 Valve 2
2 +24 V DC for initiators
3 Initiator 2
4 Valve 1
5 Initiator 1
6 Valve 3
7 Initiator 3
8 GND (common ground)

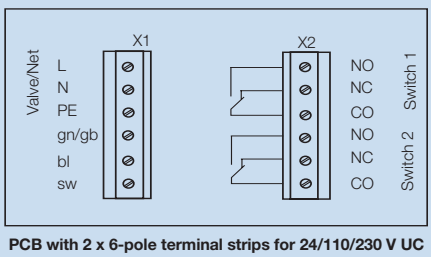
Front view of connector pins on control head; the solder connections lie behind

Features
- Electrical connection with 8-pole circular connector acc. DIN 45326
- 0 to 3 valves type 6510
- Valves for 24 V DC
- 3 LEDs for valve status indication
- Up to 3 inductive initiators for position feedback

Note
- The pins of the circular connector are connected in the factory to the internal terminal strip.
- The outputs from the initiators are pnp-plus switching and short-circuit proof.

Multipole connector with 2 x 6-pole terminal strips; for 24/110/230 V UC (without communication)

Control head without cover, PG9 screwed cable gland, multipole, 2 x 6-pole terminal strips, for 24/110/230 V UC



PCB with 2 x 6-pole terminal strips for 24/110/230 V UC

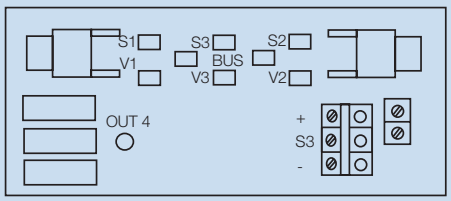
Features
- Electrical connection with 2 x 6-pole terminal strips
- PG9 screwed cable gland
- For 24/110/230 V UC
- 0 or 1 valve type 6106
- no status indication
- Up to 2 end position microswitches for position feedback

Control heads with bus connection (with communication)

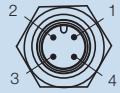
Control heads with ASI connection and different connections

Control head without cover, ASI standard version, with insulation displacement connector, PG9

Control head without cover, ASI special connection 2, M12 flanged connector, 4-pole, PG9 for sensor cable bushing from outside

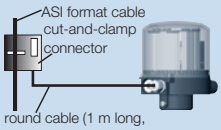


Visible part of ASI PCB

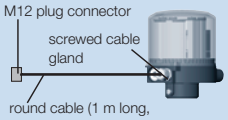


PIN configuration ASI
1 brown, ASI+
2 not used
3 blue, ASI-
4 not used

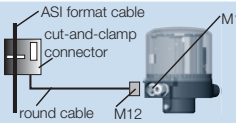
4-pole M12 flanged connector for ASI special connection 1 und 2, front view of connector pins on cable or control head; the solder connections lie behind



ASI connections with cut-and-clamp connector, screwed cable gland PG9, **standard version**



M12 plug connector, PG9 bushing, ASI special connection 1, 4-pole M12 plug connector (on request)



4-pole M12 flanged connector, ASI special connection 2 (on request)

Features
- 3 different electrical connections
- 1 to 3 valves type 6510
- Valves for 24 V DC
- 3 LEDs for valve status indication
- Up to 3 inductive initiators for position feedback
- 3 LEDs for initiator status indication
- 2 LEDs for bus/power status indication

Inputs: 3 sensors S1-S3, pnp-plus switching, power supply via AS interface (24 V +20%/-10%), short-circuit proof, current limited to 60 mA, switching level high ≥ 10 V, limited input current ≤ 6.5 mA, input current low signal ≤ 1.5 mA

Outputs: 3 valves V1-V3, max. 3 x 1 W, power reduction after ca. 100 ms, with integrated watchdog function

Programming data
- I/O code 7 hex (4 outputs and 4 inputs)
- ID code F hex (for bit allocation see operating instructions)
- Profile 7.F

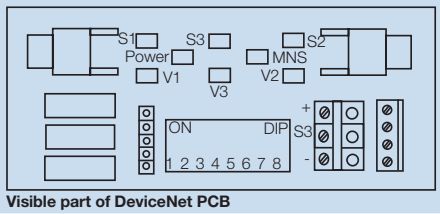
Note on data for the round cable
The round cable leading directly to the control head differs somewhat from the ASI standard in its electrical data. For this reason, on calculation of the max. permissible line length to ASI specification, a value 1.5 times the actual length should be used.

ASI length = 1.5 x actual length

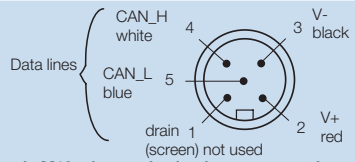
Control heads with DeviceNet connection and 5-pole circular plug connector

Control head without cover, 5-pole DeviceNet connector, PG9 for cable bushing from outside

Inputs: 3 sensors S1-S3, pnp-plus switching, power supply via DeviceNet line (11-25 V DC), switching level high signal ≥ 5 V, switching level low signal ≤ 1.5 V, trunk line to be terminated with 120 Ω resistor



Visible part of DeviceNet PCB



5-pole M12 micro-style circular connector, front view of connector pins on control head; the solder connections lie behind

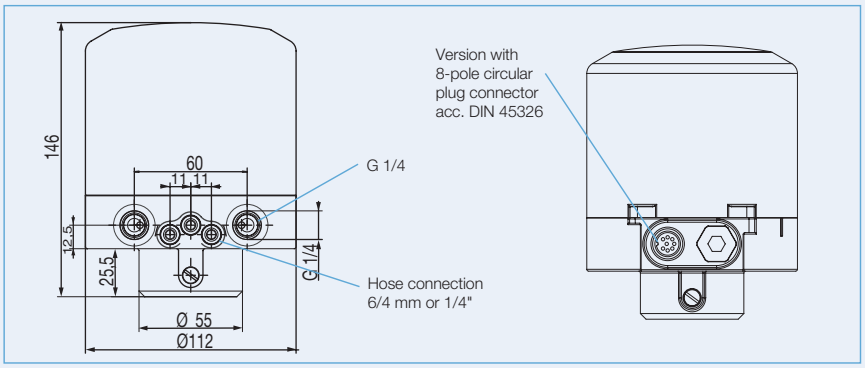
Features
- Electrical connection with 5-pole circular plug connector
- 1 to 3 valves type 6510
- Valves for 9 V DC
- 3 LEDs for valve status indication
- Up to 3 inductive initiators for position feedback
- 3 LEDs for initiator status indication
- 1 LED, single-colour, for power status indication
- 1 LED, two-colour, for MNS, display of different device statuses

Voltage supply 11 to 25 V DC, max. power loss 5 W when all valves are switched (3 x 1 W).

Configuration with 8 DIP switches
- DIP switches 1-6: DeviceNet address
- DIP switches 7 and 8: data transfer rate
- Read files BUE1066.EDS and BUE1066.ICO into configuration tool (from diskette supplied)

Connector configuration acc. DeviceNet specification

Dimensions [mm]



DTS 1000010950 EN Version: B Status: RL (released | freigegeben | validé) printed: 08.08.2008

bürkert

DTS 1000010950 EN Version: B Status: RL (released | freigegeben | validé) printed: 08.08.2008

Ordering table for control heads (other versions on request)

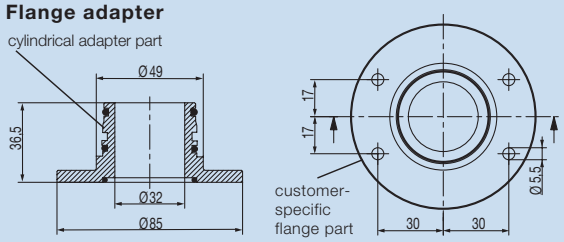
Version	No. of valves	Valve type; operating voltage of valve	No. of feedback sensors	Electrical connection on control head	Order-No.
Multipole	0	no valve	2 initiators	8-pole circular plug connector acc. DIN 45326	193 354
	1	Type 6510; 24 V DC			193 355
	2				193 356
	3				193 357
Multipole	0	no valve	2 initiators	8-pole terminal strip with PG9 screwed cable gland	193 358
	1	Type 6510; 24 V DC			193 359
	2				193 360
	3				193 361
Multipole	0	no valve	2 micro-switches	2 x 6-pole terminal strips with PG9 screwed cable gland	195 002
	1	Type 6106; 024 V UC			197 880
	1	Type 6106; 110 V UC			198 332
	1	Type 6106; 230 V UC			197 773
ASI Bus	1	Type 6510; 24 V DC	2 initiators	Cut-and-clamp connector, ASI round cable, 1 m long, PG9 bushing	193 362
	2				193 363
	3				193 364
DeviceNet	1	Type 6510; 9 V DC	2 initiators	Circular plug connector M12, 5-pole acc. DeviceNet specification	194 826
	2				194 828
	3				194 829

Assembly

To mount the control head on process valves from different manufacturers, an adapter with a customer-specific flange is required (flange adapter, see drawing). The cylindrical adapter part for the control head is Bürkert-specific. The customer-specific flange part must be adapted to the structural shape of the process valve. The two parts form a constructive unit. The drawing below illustrates an application for a specific process valve. Any position of installation may be used for the control head, but it is preferable to have the cover above (see also Operating Instructions for Type 1066).

On assembly of the control head, be sure to take care that the bores and cavities are self-emptying in order to avoid damage by residues from aggressive detergents.

Flange adapter



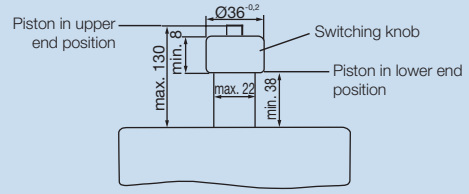
Note
On fabrication of the flange adapter oneself, the following must be kept to exactly:
- Number of sealing points
- Dimensions for O-ring seats
- Dimensional tolerances and
- Material specifications

▶ For this purpose, be sure to request a detailed dimensional drawing.

On assembly of the flange, centring on the middle axis is required. The max. permissible axial deviation is ± 0.1 mm. If this tolerance is exceeded, there is a risk that the initiators will not function.

Suggestion: use a special assembly sleeve.

Upper piston of the process valve



Note
The switching knob should preferably be made of ST37 (nickel plated or zinced). On use of stainless steel A2, the range of the initiators drops to 75% compared with ST37.

In the case of vigourous shocks, this can lead to faulty switching of the initiator.

Ordering table for accessories (other versions on request)

Version	Order-No.
Blanking-off plug in brass, G 1/4	780 142
Silencer in sintered bronze with hexagonal bolt, G 1/4	780 786

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

We reserve the right to make technical changes without notice.

805-GB/ 4-0160