

V5004T

KOMBI-QM PRESSURE-INDEPENDENT CONTROL VALVES PN16 / PN25

PRODUCT DATA



FEATURES

- Automatic equalizing of fluctuating pressure
 - Precise pressure-independent flow performance
 - Highest energy saving potential due to efficient energy transfer and minimized pump speed
 - Integrated measuring possibility to find the optimal setpoint for the pump
 - Reduced movements of actuators as pressure fluctuations do not influence flow rate
 - No complex calculation needed for selection
 - No balancing method needed for commissioning
- Wide range of application
 - Sizes DN15 up to DN250
 - Various versions to support standard flow rates as well as low flow and high flow needs
 - Covers two functions in one valve which reduces mounting costs
- All models with equal-percentage flow characteristics
- Easy commissioning
 - Presetting with visual flow scale at the valve
 - Presetting by hand without the need of tools
 - Presetting possible even when the system is running and an actuator is already mounted
 - Can balance a system even if only some parts of a building are in operation
- Maintenance friendly
 - Temporary shut-off function with plastic cap
 - Measuring possibility for problematic applications

APPLICATION

The V5004T Kombi-QM is a Pressure-Independent Control Valve (PICV). It combines a flow controller and a full stroke, full authority temperature controller in one valve.

It is suitable for use in variable and constant flow systems. They may be used as constant flow limiter in constant flow systems (without an actuator) or as a Pressure-Independent Control Valve in variable flow systems.

The V5004T Kombi-QM is typically used for the balancing and temperature control of fan coil units, air handling units, chilled ceilings and one-pipe heating systems.

METHOD OF OPERATION

V5004T Kombi-QM valves consist of combinations of one or two control orifices, in sequence, and are equipped with an additional differential pressure control orifice.

The maximum flow limitation can be applied by reducing one of the control orifices (specific balancing ring available in type A valves and type B valves) or by limiting the single control orifice in its stroke (type E and type F).

	LOW				HIGH
ENERGY EFFICIENCY	●	●	●	●	●
COMMISSIONING EFFORT	●	●	○	○	○
CALCULATION EFFICIENCY	●	●	●	○	○

Fig. 1. Valve efficiency

TECHNICAL DATA

Table 1. Technical data

Media	
Medium	Water or water-glycol mixture, quality to VDI 2035 (up to 50 % glycol), free of contamination (see also section "Safe Operation" on pg. 10)
pH-value	8 - 9.5
Nominal pressure ratings	
DN15 to DN32 (types A and B)	PN25
DN32 to DN250 (types E and F)	PN16
Control range	
Δp_{min}	25...65 kPa (see Table 2)
Δp_{max}	400 kPa; close-off: 600 kPa. When operated in range of 400...600 kPa, noise possible.
Operating temperatures	
Max. operating temp. of medium	-2 to +120 °C (+28 to +248 °F). For DN200 and DN250, max. operating temperature = -10...+105 °C; water quality compliance according to VDI 2035.
Connections / Sizes	
Nominal size	DN15 to DN250
Valve body	DN15 to 32 (dezincification-resistant brass); DN32 to 250 (ductile iron)
Flow values	See Table 2.
Leakage	According to Class IV IEC 60534-4

ORDERING INFORMATION

When ordering, please always state the ordering number.

Table 2. Options

Order text	DN size	Flow range		Diff. pressure range		Weight	OS no.
		Min. flow (l/h)	Max. flow (l/h)	Δp (kPa)	Δp (kPa)	kg	
TYPE A Linear valve V5004 Kombi-QM with internal threads to DIN EN 10226-1 (ISO 7)	DN15	45	150	20	400	0.88	V5004TY10150150
	DN15	60	600	25		0.88	V5004TY10150600
	DN15	78	780	35		0.88	V5004TY10150780
	DN20	100	1000	30		0.95	V5004TY10201000
	DN20	450	1500	35		0.95	V5004TY10201500
	DN25	450	1500	35		0.95	V5004TY10251500
TYPE B Linear valve V5004 Kombi-QM with ex- ternal threads to DIN EN 10226-1 (ISO 7)	DN20	220	2200	25	400	2.3	V5004TY10202200
	DN20	270	2700	25		2.3	V5004TY10202700
	DN25	220	2200	25		2.4	V5004TY10252200
	DN25	270	2700	25		2.4	V5004TY10252700
	DN32	270	2700	25		2.6	V5004TY10322700
	DN32	300	3000	35		2.6	V5004TY10323000
TYPE E Rotating valve V5004 Kombi-QM with ex- ternal threads to DIN EN 10226-1 (ISO 7)	DN32	1800	6000	30	400	8.5	V5004TY10326000
	DN40	2700	9000	35		8.6	V5004TY10409000
	DN50	3300	11000	40		8.7	V5004TY10501200
	DN50	5400	18000	35		15.5	V5004TY10501700
TYPE F Flanged valves V5004TF... DN50 to DN250, delivered together with an actuator as a single unit.	DN50	2000	20000	40	400	33.0	V5004TF1050
	DN65	3000	30000	30		40.0	V5004TF1065
	DN80	3000	30000	30		43.0	V5004TF1080
	DN100	5500	55000	30		74.0	V5004TF1100
	DN125	9000	90000	35		93.0	V5004TF1125
	DN150	15000	150000	50		140.0	V5004TF1150
	DN200	20000	200000	40	400	280	V5004TF1200LF
	DN200	30000	300000	40		280	V5004TF1200HF
	DN250	30000	300000	40		385	V5004TF1250LF
	DN250	50000	500000	65		385	V5004TF1250HF

CONSTRUCTION

V5004TY, Type A

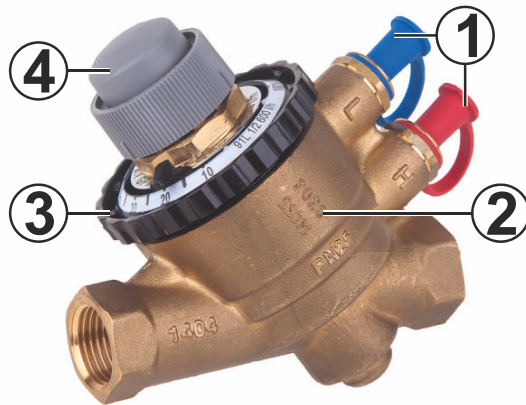


Fig. 2. V5004TY, type A (DN15 to DN25)

Table 3. Overview of components and materials

Components	Materials
1 SafeCon™ ¼" pressure test valves	Brass
2 Valve housing with internal threads to DIN EN 10226-1 for threaded pipe.	Dezincification-resistant brass
3 Presetting handwheel with scale for presetting the valve	High-resistant polymer and brass
4 Cover cap to protect actuator connection. Can be used for temporary shut-off	Plastic
Not depicted	
Sealings	EPDM
Installation and Set-Up Instructions	Paper
Inner parts	Brass, stainless steel, high-resistant polymer, and EPDM

V5004TY, Type B

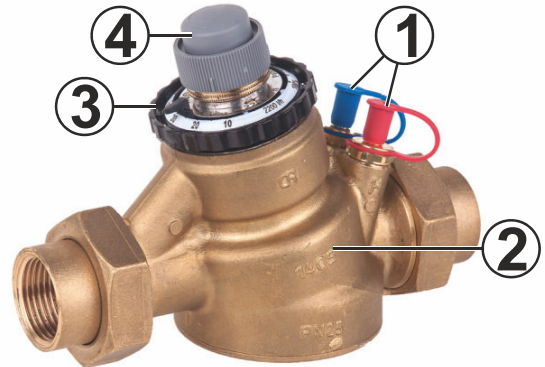


Fig. 3. V5004TY, type B (DN20 to DN32)

Table 4. Overview of components and materials

Components	Materials
1 SafeCon™ ¼" pressure test valves and two connection sets	Brass
2 Valve housing with external threads to DIN EN 10226-1 for threaded pipe.	Dezincification-resistant brass
3 Presetting handwheel with scale for presetting the valve	High-resistant polymer and brass
4 Cover cap to protect actuator connection. Can be used for temporary shut-off	Plastic
Not depicted	
Sealings	EPDM
Installation and Set-Up Instructions	Paper
Inner parts	Brass, stainless steel, high-resistant polymer, and EPDM

V5004TY, Type E

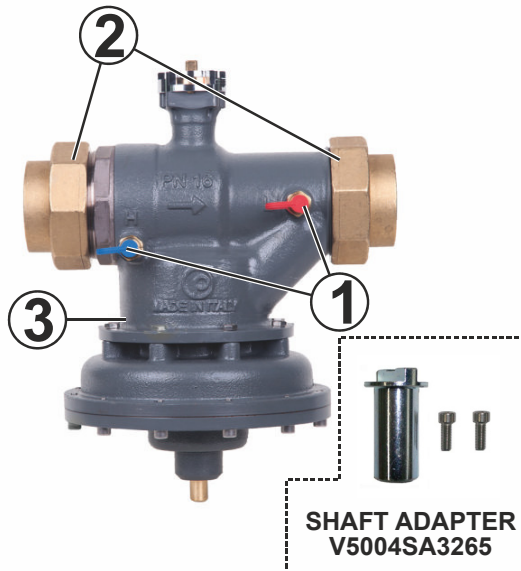


Fig. 4. V5004TY, type E (DN32 to DN50)

Table 5. Overview of components and materials

	Components	Materials
1	SafeCon™ ¼" pressure test valves	Brass
2	Threaded connection set	Dezincification-resistant brass
3	Valve housing with external threads to DIN EN 10226-1 for threaded pipe.	Ductile iron
	Not depicted	
	Sealings	EPDM
	Installation and Set-Up Instructions	Paper
	Inner parts	Brass, stainless steel, high-resistant polymer, and EPDM

Special Remark about Transportation and Storage of Type E Valves

Keep parts in their original packaging and unpack them shortly before use. If the actuator is to be mounted at some later time, care should be taken that the shaft adapter is not lost or misplaced.

V5004TF, Type F

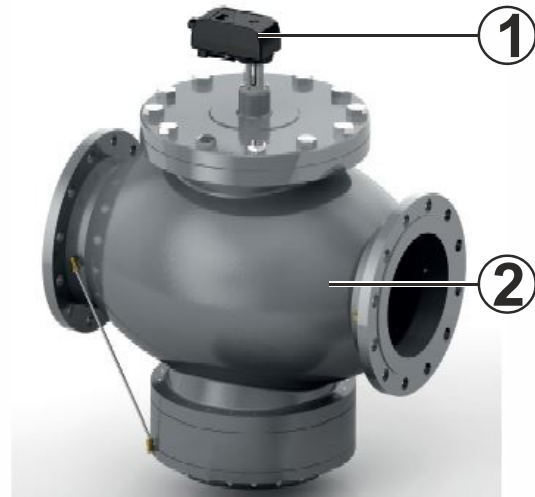


Fig. 5. V5004TY, type F (DN50 to DN250)

Table 6. Overview of components and materials

	Components	Materials
1	Actuator included in delivery. Valve can be preset at actuator.	
2	Valve housing with flanges to EN 1092-2.	Ductile iron
	Not depicted	
	Sealings	EPDM
	Installation & Set-Up Instructions	Paper
	Inner parts	Brass, stainless steel, high-resistant polymer, and EPDM

VALVE IDENTIFICATION

Each valve is marked as follows:

- OS – number
- DN size
- PN rating
- Flow arrows
- Serial number / date code

FLOW DATA AND ACCURACY

Accuracy

Table 7, Table 8, and Table 9 show the flow values for different limitation settings. As long the differential pressure range (Table 2) is available, the accuracy for such flow values is within ±25% of the maximum flow. If a higher accuracy is necessary, the setting of the limitation must be verified separately by measuring the flow. As long the differential pressure is in the listed range, this flow will not change more than ±5% independent of the pressure drop.

Flow Data (types A and B)

The limitation of the orifice is done by the special balancing ring. Since there are two orifices in sequence, the valve characteristic of the sequenced control valve changes with the setting.

The valves listed in Table 7 can be used to limit the flow through the valve to achieve the stated values independent of the differential pressure. This requires that the presetting ring be set and that the differential pressure be within the range listed in Table 2.

Table 7. Limits of flows, types A and B

	Presetting	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%
OS no.	Flow rate										
V5004TY10150150	[l/h]	150	135	120	105	90	75	60	45	--	--
V5004TY10150600	[l/h]	600	540	480	420	360	300	240	180	120	60
V5004TY10150780	[l/h]	780	702	624	546	468	390	312	234	156	78
V5004TY10201000	[l/h]	1000	900	800	700	600	500	400	300	200	100
V5004TY10201500	[l/h]	1500	1350	1200	1050	900	750	600	450	--	-
V5004TY10251500	[l/h]	1500	1350	1200	1050	900	750	600	450	--	--
V5004TY10202200	[l/h]	2200	1980	1760	1540	1320	1100	880	660	440	220
V5004TY10202700	[l/h]	2700	2430	2160	1890	1620	1350	1080	810	540	270
V5004TY10252200	[l/h]	2200	1980	1760	1540	1320	1100	880	660	440	220
V5004TY10252700	[l/h]	2700	2430	2160	1890	1620	1350	1080	810	540	270
V5004TY10322700	[l/h]	2700	2430	2160	1890	1620	1350	1080	810	540	270
V5004TY10323000	[l/h]	3000	2700	2400	2100	1800	1500	1200	900	600	300

Flow Data (types E and F)

The limitation of the control orifice is done by the limiting of the actuator stroke. The control valve keeps its full authority.

The valves listed in Table 8 and Table 9 can be used to limit the flow through the valve to achieve the stated values independent of the differential pressure. This requires that the actuator's maximum stroke be limited and that the differential pressure be within the range listed in Table 2.

Table 8. Limits of flows, type E

	Stroke	90°	85°	75°	65°	55°	45°
	P _L (M7061)	15°	20°	30°	40°	50°	60°
OS no.	Flow rate						
V5004TY10326000	[m ³ /h]	6.0	5.7	3.6	2.4	1.8	1.4
V5004TY10409000	[m ³ /h]	9.0	8.6	7.0	5.4	4.1	2.7
V5004TY10501200	[m ³ /h]	12	9.4	8.4	7.4	4.9	4.1
V5004TY10501700	[m ³ /h]	18	17	13	10	7.0	5.2

Table 9. Limits of flows, type F

	Presetting	100%	90%	80%	70%	60%	50%	40%	30%	20%	10%
OS no.	Flow rate										
V5004TF1050	[m ³ /h]	20	18	16	14	12	10	8.0	6.0	4.0	2.0
V5004TF1065	[m ³ /h]	30	27	24	21	18	15	12	9.0	6.0	3.0
V5004TF1080	[m ³ /h]	30	27	24	21	18	15	12	9.0	6.0	3.0
V5004TF1100	[m ³ /h]	55	49	44	38	33	27	22	16	11	5.5
V5004TF1125	[m ³ /h]	90	81	72	63	54	45	36	27	18	9.0
V5004TF1150	[m ³ /h]	150	135	120	105	90	75	60	45	30	15
V5004TF1200LF	[m ³ /h]	200	180	160	140	120	100	80	60	40	20
V5004TF1200HF	[m ³ /h]	300	270	240	210	180	150	120	90	60	30
V5004TF1250LF	[m ³ /h]	300	270	240	210	180	150	120	90	60	30
V5004TF1250HF	[m ³ /h]	500	450	400	350	300	250	200	150	100	50

DIMENSIONS

V5004TY

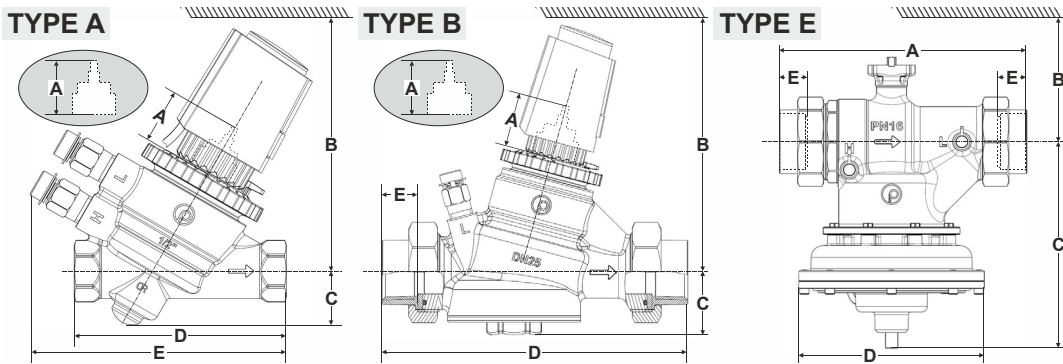


Fig. 6. Dimensions

Table 10. Parameters and values

Parameter	Value										
		TYPE A			TYPE B			TYPE E			
Nominal size (body)	DN	15	20	25	20	25	32	40*	40	40**	50
Dimensions	A	32	32	32	32	32	32	178	178	178	206
	B	150	150	150	160	160	160	240	240	240	250
	C	25	25	25	38	38	38	176	176	176	221
	D	99	108	130	176	184	209	158	158	158	198
	E	117	124	132	17	21.5	22	27	27	50	28
Thread (pipe)		Rp 1/2"	Rp 3/4"	Rp 1"	Rc 3/4"	Rc 1"	Rc 1-1/4"	Rc 1-1/4"	Rc 1-1/2"	Rc 2"	Rc 2"

*V5004TY10326000; **V5004TY10501200

V5004TF

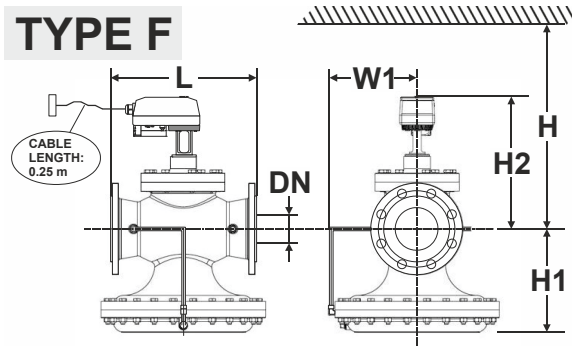


Fig. 7. Dimensions





Table 11. Parameters and values

Parameter	Value (TYPE F)								
	DN	50	65	80	100	125	150	200	250
Dimensions	W1	155	155	155	213	213	213	213	283
	H	400	400	400	400	450	500	550	600
	H1	190	183	183	247	264	348	393	421
	H2	291	300	300	318	347	397	440	508
	L	254	272	272	352	400	451	543	730
Flange size (PN16 according to ISO-7005-2)		2"	2½"	3"	4"	5"	6"	8"	10"





NOTE: All dimensions in mm unless otherwise stated.

ACCESSORIES



For TYPE A Valves

	Description	Part no.				
	MT4 Actuator, thermoelectric. 4.0 mm effective stroke, 90 N, ON/OFF Open on power failure. Open on power failure. Open on power failure. Close on power failure. Close on power failure. Close on power failure. Open on power failure. Open on power failure. Open on power failure. Close on power failure. Close on power failure. Close on power failure.	MT4-024-NO MT4-024-NO-2.5M MT4-024S-NO MT4-024-NC MT4-024-NC-2.5M MT4-024S-NC MT4-230-NO MT4-230-NO-2.5M MT4-230S-NO MT4-230-NC MT4-230-NC-2.5M MT4-230S-NC				
			M100 Actuator, thermoelectric. 4.0 mm effective stroke, 90 N, ON/OFF Open on power failure. Close on power failure. Open on power failure. Close on power failure.	M100-BO M100-BG M100-AO M100-AG		
					M5410 Actuator, fast motorized 100 N, ON/OFF. 230V model. Run-time: 6s. 24V model. Run-time: 3s.	M5410L1001 M5410C1001
						
					M4410 Actuator, thermoelectric, 0...10 V. 4.0 mm effective stroke, 100 N, modulating. Close on power failure. Cable for M4410 actuator, 1 m, 10 pcs	
			M7410E Actuator, 0/2...10 V. 2.9 mm effective stroke, 90 N, modulating. 3 m, 5 m, and 10 m cable lengths available.			M7410E5001

For TYPE B Valves

	Description	Part no.
	MT8 Actuator, thermoelectric 90 N, ON/OFF.	
		MT8-024-NO MT8-024-NO-2.5M MT8-024S-NO MT8-024-NC MT8-024-NC-2.5M MT8-024S-NC MT8-230-NO MT8-230-NO-2.5M MT8-230S-NO MT8-230-NC MT8-230-NC-2.5M MT8-230S-NC
	M5410 Actuator, fast motorized 100 N, ON/OFF	
	230V model. Run-time: 6 s. 24V model. Run-time: 3 s.	M5410L1001 M5410C1001
	M6410C, M6410L, M7410C Actuator, floating 6.5 mm effective stroke, 180 N.	
	3 m, 5 m, and 10 m cable lengths available. Available only with standard 1.5-m cable.	M7410C1007 M6410C2023 M6410C4029 M6410L2023 M6410L4029
	M7410E Actuator, 0/2...10 V 6.5 mm effective stroke, 180 N, modulating.	
	3 m, 5 m, and 10 m cable lengths available.	M7410E1002 M7410E2026 M7410E4022

For TYPE E Valves with 90° Rotation DN32-50

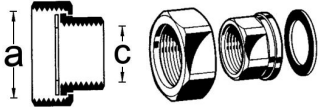
	Description	Part no.
	M7061 Actuator, 0/2...10 V	
	90°, 10 Nm, rotating, modulating	M7061E1012
	M6061 Actuator, floating 90°, 10 Nm, rotating.	
		M6061A1013 M6061L1019

SPARE PARTS



Connection Sets

NOTE: The dimensions of the replacement connection parts differ slightly from those of the original parts. In particular, the dimensions of the pipe-thread and the length may differ. When these spare parts are installed, the resultant overall dimensions of the V5004T may thus differ from those depicted in Fig. 6.


Connection Set for Type B

	Description	Part no.
	AC-25TF Consisting of 1 union nut, 1 tailpiece (c = 1"), and 1 gasket.	AC-25TF


Connection Set for Type E

	Description	Part no.
	AC-40TF Standard for type E. Consisting of 1 union nut, 1 tailpiece (c = 1-1/2"), and 1 gasket.	AC-40TF
	AC-50TF For V5004TY10501700, only. Consisting of 1 union nut, 1 tailpiece (c = 2"), and 1 gasket.	AC-50TF

Shaft Adapter for Type E

	Description	Part no.
	V5004 Shaft adapter for V5004TY (type E, DN32...50, ductile iron)	V5004SA3265

M5004 Actuator for Type F

	Description	Part no.
	Actuator for V5004TF1050	M5004F1050
	Actuator for V5004TF1065	M5004F1065
	Actuator for V5004TF1080	M5004F1080
	Actuator for V5004TF1100	M5004F1100
	Actuator for V5004TF1125	M5004F1125
	Actuator for V5004TF1150	M5004F1150
	Actuator for V5004TF1200LF	M5004F1200LF
	Actuator for V5004TF1200HF	M5004F1200HF
	Actuator for V5004TF1250LF	M5004F1250LF
	Actuator for V5004TF1250HF	M5004F1250HF

APPLICATION

M5004 - 24V electromotive actuators are used in many kinds of control systems employed in HVAC applications with V5004TF balancing valves, including ON/OFF, floating, proportional managed by thermostat or BMS handling analog signals or PWM digital.

In order to properly set the presetting, see the specific section devoted to actuator setting.

For further information about electrical connections, see the specific section.

APPROVALS

- CE

OPERATION

24V electromotive actuator to drive Pressure-Independent Control Valve Honeywell V5004TF series.

Managed control signals: analog (voltage and current), PWM, 3-point floating and ON/OFF.

It can be completely configured using the onboard display and control buttons.

Manual override, after actuator removal.

Actuator supplied with valve V5004TF as standard or available as spare part.

The control signal and feedback are selected using parameter settings and do not require external resistor circuiting.

Table 12. Technical data

Operating temperature

Ambient temp. range	-20...+60 °C (non-condensing)
Storage temp. range	-20...+80 °C (non-condensing)

Specifications

Weight	0.975 kg
Power supply	24 VAC/DC, 50/60 Hz
Power consumption	5 W, 2.5 W stand-by
Connecting cable	length: 0.25 m
Connection to valve	8 mm square. Easy-fitting gear.
Operating life	50,000 cycles
Control signal	
0(2)...10 V	250 kΩ burden
0(4)...20 mA	500 Ω burden
ON/OFF	24 VAC/DC, 30 mA AC, 6 mA DC
3-point floating	24 VAC/DC, 30 mA AC, 6 mA DC
Nominal torque	10 Nm max., self-limited at 7 Nm
Current consumption	80 mA, load max. 380 mA
Feedback	0(4)...20 mA and 0(2)...10 V

Manual override	Through release button and 6 mm Allen key
Prot. class / IP rating	II / IP54
Motor	Brushless DC motor
Running speed	Selectable: 1 RPM or 1.5 RPM

INSTALLATION

Wiring

			FACTORY DEFAULT
BK	1	COMMON	
RD	2	24 VAC/DC	
WH	3	CONTROL SIGNAL 1, OPEN / Y*	0...10 VDC
GN	4	CONTROL SIGNAL 2, CLOSE*	---
BU	5	FEEDBACK SIGNAL	0...10 VDC

*SELECTABLE RANGES

Fig. 8. Wiring

SAFE OPERATION

Honeywell accepts no liability for improper use of this product.

Always protect the pressure regulator by using strainers upstream of valve and, in any case, ensure that water quality complies with VDI 2035 standards (Fe < 0.5 mg/kg and Cu < 0.1 mg/kg).

Furthermore, iron oxide content of medium should not exceed 25 mg/kg (25 ppm).

To ensure that the main pipework is properly cleaned, flushing bypasses should be used without flushing through the pressure regulator of the valve; this helps to prevent clogging of the valve with debris.



Manufactured for and on behalf of the Connected Building Division of Honeywell Products and Solutions SARL, Z.A. La Pièce, 16, 1180 Rolle, Switzerland by its Authorized Representative:

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