

Automatic Controls for Systems of

**Heating**  
**Ventilation**  
**Air Conditioning**  
**Refrigeration**





*Controlli provides a series of resources to make it as easy as possible for you to identify the products you need.*

## **LITERATURE**

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<b>Data Sheets</b>	specify manufacturing and technical characteristics of products and their application, installation, wiring connections and start-up instructions.
<b>Product Selection Guide</b>	gives a brief description of Controlli product range according to different applications.
<b>General Instructions</b>	provide the information for the correct use of the equipment and for its maintenance.
<b>Brochures</b>	advertise single Controlli products or control systems.
<b>Application Diagrams</b>	illustrate the most common applications, indicating the equipment of control system, basic system and wiring diagram.
<b>Price List</b>	lists the prices and sales conditions.
<b>CD</b>	our product range catalogue is also available on CD-ROM

## **SERVICES**

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<b>Application Engineering Office</b>	available for technical information, selection, application and quotations of equipment and complete control systems.
<b>Sales Service</b>	consisting of our technical staff and authorised assistants for technical support, commissioning, repairs and maintenance.
<b>Technical Training Courses</b>	courses are held periodically for both technical and commercial staff on equipment and control systems. Moreover, there are courses aimed at the users of digital supervision systems.
<b>Web Site</b>	check our total portfolio by visiting <a href="http://www.controlli.org">www.controlli.org</a> , which gives direct access to the latest version of all our data sheets.



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## 200 Line On-Off / Floating Control

### GENERAL INFORMATION

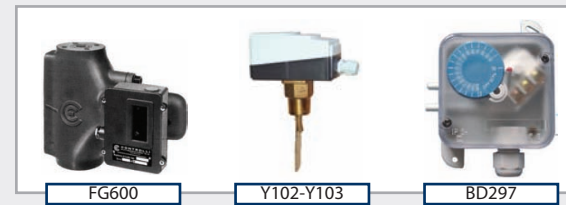
#### Controllers

On-Off controllers are fitted with a snap-acting SPDT switch; the variation of the measured unit, equal to the differential, causes the contacts to switch.

Floating controllers are fitted with an electric SPDT contact with dead zone.

BASIC SYSTEM

### CONTROLLERS



### ACTUATORS



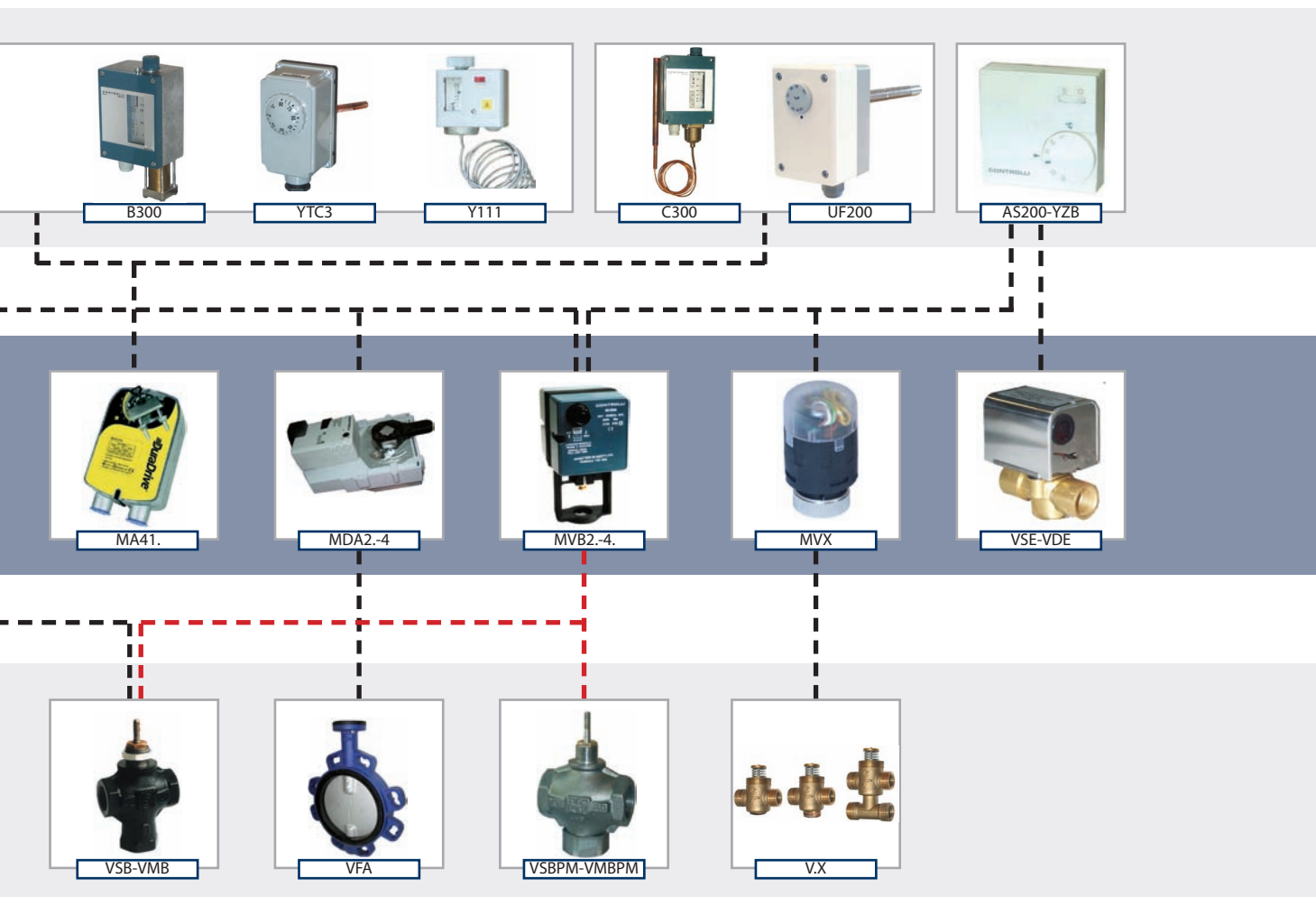
### VALVES



# electromechanical controls

## Controlled devices

Field devices driven by On-Off controllers are: relays, contactors, solenoid valves, zone VSE-VDE motorised valves or fan coil MVX+V.X valves, DuraDrive damper actuators, V.BPM+MVB46 valves. Controlled devices operated both by On-Off and floating controllers are damper actuators MDL2./4. and globe valves actuators MVT4., MVB2., MVH2.



# electromechanical controls

## 200 Line



### Room Thermostats

Series AS200 - Bimetal thermal element. IP30 protection.

MODEL	RANGE °C	DIFFERENTIAL K	OTHER CHARACTERISTICS
AS205	10 to 30	1	SPDT 5 (2) A-250 Vac - summer/winter changeover - 3 speed fan selector
AS206	5 to 30	0.5	SPDT. Power supply 230 Vac
AS207	5 to 30	0.5	SPST for summer/winter changeover. Power supply 230 Vac

### Humidity Switches

Series UF200 - Synthetic fibre sensing element - UF215 room type - UF217 duct type with 228 mm immersion pipe.

MODEL	RANGE % R.H.	DIFFERENTIAL % R.H.	OTHER CHARACTERISTICS
UF215	35 to 100	4	SPDT 2 (2) A-240 V a.c. - IP30 protection
UF217	30 to 100	3 to 6	SPDT 15 (2) A - 250 Va.c. - IP64 protection

### Bulb Thermostats

Series C300 - Steam filled sensing element - Differential 2.5 to 5 K - SPDT 15 (2.5) A-250 V a.c. - Die-cast aluminium case - IP55 protection.

MODEL	RANGE °C	MAX SAFETY TEMPERATURE °C	OTHER CHARACTERISTICS
C307	20 to 70	85	copper bulb and capillary 2 m long
C309	95 to 140	155	

### Fan-coil Thermostat

Series YZB - Liquid-filled sensing element - Copper bulb and capillary 1 m long. SPDT 15 (2.5) A-230 V a.c. - IP43 protection.

MODEL	RANGE °C	DIFFERENTIAL K	OTHER CHARACTERISTICS
YZB	0 to 40	2	setting knob and lock nut

### Frost-protection Switches

Series Y111 - Steam-filled sensing element - 6 m long capillary. SPDT contact 16 (16) A 250 V a.c. - IP43 protection.

Note: For correct operation, the bulb must have a lower temperature with respect to the controller.

MODEL	RANGE °C	DIFFERENTIAL K	OTHER CHARACTERISTICS
Y111	-18 to 13	3	max safety temperature 200 °C with external set
Y111RM	-18 to 13	-	as above with manual reset

### Immersion Thermostats

Series YTC3 - Liquid-filled sensing element - SPDT 10 (2.5) A-250 V a.c. - IP40 protection.

MODEL	RANGE °C	DIFFERENTIAL K	OTHER CHARACTERISTICS
YTC3	0 to 90	3	copper well gas 3/4" - 100 mm long
YTC3RM	90 to 110	0 to 6	as above with manual reset

# electromechanical controls

## 200 Line

### Pressure Switches

Series B300 - Metal bellows sensing element - SPDT 15 (2.5) A-250 V a.c. - Die-cast aluminium case - IP55 protection.

MODEL	RANGE kPa	DIFFERENTIAL kPa	MAX SAFETY PRESSURE kPa	OTHER CHARACTERISTICS
B301	10 to 200	7 to 30	600	copper alloy bellows
B302	100 to 600	15 to 120	900	
B303	200 to 1400	60 to 400	2200	
B304	500 to 3000	80 to 400	3800	
B301X	10 to 200	7 to 30	600	AISI 316 stainless steel bellows
B302X	100 to 600	15 to 120	900	
B303X	200 to 1400	60 to 400	2200	
B304X	500 to 3000	80 to 400	3800	



### Differential Pressure Switches

Series BD200 - Differential pressure switch for signalling dirty air filter - Silver contacts - Membrane sensing element - IP54 protection.

MODEL	RANGE Pa	MAX SAFETY PRESSURE kPa	OTHER CHARACTERISTICS
BD297	30 to 500	50	- connections Ø 5 mm for PVC pipe - with 2m tube and bracket for wall mounting



### Flow Switches

Series Y100 - Paddle type - Protection degree: Y102 IP55, Y103 IP45. SPDT contact 15 (8) A-230 V a.c.

MODEL	RANGE	OTHER CHARACTERISTICS
Y102	1 to 85 m <sup>3</sup> /h	for liquids - 1" screwed connections for pipes Ø 1" to 8"
Y103	1 to 10 m/ s	for air - with paddle 175 x 80 mm



### Level Controllers

Series FG600 - Float-type - AISI 304 stainless steel - Flanged connections - SPDT 10 (1) A-24 V a.c. - Industrial water-proof case - IP55 protection.

MODEL	MAX WORKING PRESSURE kPa	DIFFERENTIAL mm	MAX WORKING TEMPERATURE °C	OTHER CHARACTERISTICS
FG601	1600	15 to 60	200	cast-iron body - connections 20 mm
FG603	3000	25 to 60	230	stainless steel body connections 20 mm
FG604	3000	25 to 60	230	as above with level indicator







## 300 Line - Potentiometer Proportional Control

### GENERAL INFORMATION

#### Controllers

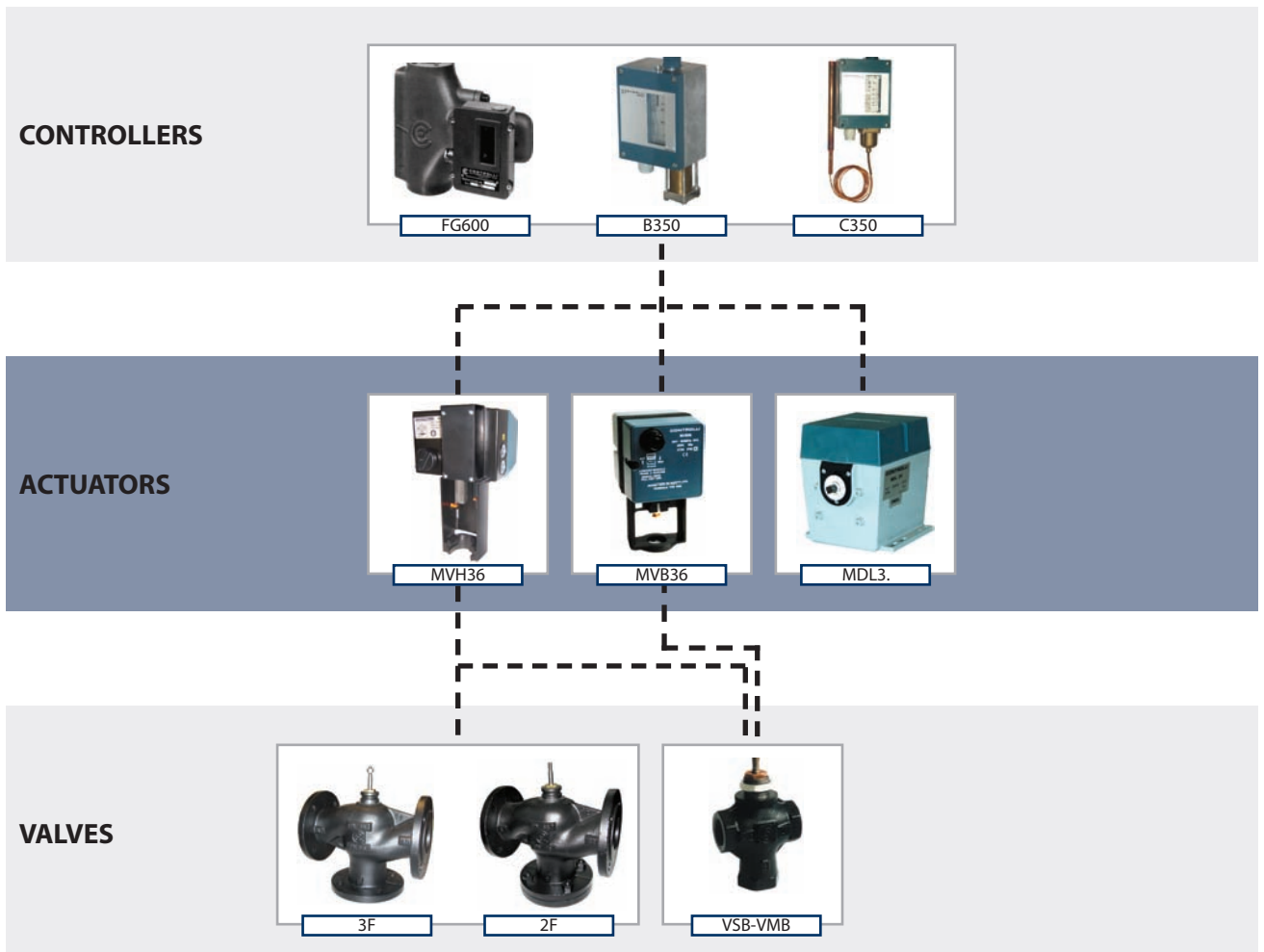
Line 300 controllers are equipped with a linear potentiometer device, with an output signal which can assume any value between 0 and 165 Ohm.

Each variation of the controlled variable within the range of the proportional band, corresponds to a specific ohmic value from the controller and to the relevant position of the end device detected by the balance potentiometer.

#### Controlled devices

The suitable controlled devices are bidirectional actuators fitted with electronic card and 300 Ohm balance potentiometer: MDL3. for dampers, MVB36 - MVH36 for globe valves.

BASIC SYSTEM



# electromechanical controls

## 300 Line

### Bulb Thermostats

Series C350 - Steam filled sensing element - 165 Ohm potentiometer - Die-cast aluminium case - IP55 protection.

MODEL	RANGE °C	PROPORTIONAL-BAND K	MAX SAFETY TEMP.°C	OTHER CHARACTERISTICS
C357	20 to 70	3 to 10	85	copper bulb and capillary 2 m long



### Pressure Switches

Series B350 - Metal bellows sensing element - 165 Ohm potentiometer - Die-cast aluminium case - IP55 protection.

MODEL	RANGE kPa	PROPORTIONAL BAND kPa	MAX SAFETY PRESSURE kPa	OTHER CHARACTERISTICS
B351	10 to 200	25 to 100	600	copper alloy bellows
B352	100 to 600	35 to 350	900	
B353	200 to 1400	150 to 900	2200	
B354	500 to 3000	120 to 900	3800	
B351X	10 to 200	25 to 100	600	AISI 316 stainless steel bellows
B352X	100 to 600	35 to 350	900	
B353X	200 to 1400	150 to 900	2200	
B354X	500 to 3000	120 to 900	3800	



### Level Controllers

Series FG650 - AISI 304 stainless steel float - Flanged connections - 165 Ohm potentiometer - Industrial water-proof case.

MODEL	MAX WORKING-PRESSURE kPa	PROPORTIONAL BAND mm	MAX WORKING TEMPERATURE °C	OTHER CHARACTERISTICS
FG651	1600	60	200	cast-iron body-connections 20 mm
FG653	3000	60	230	cast-steel body-connections 20 mm
FG654	3000	60	230	as above with level sight glass

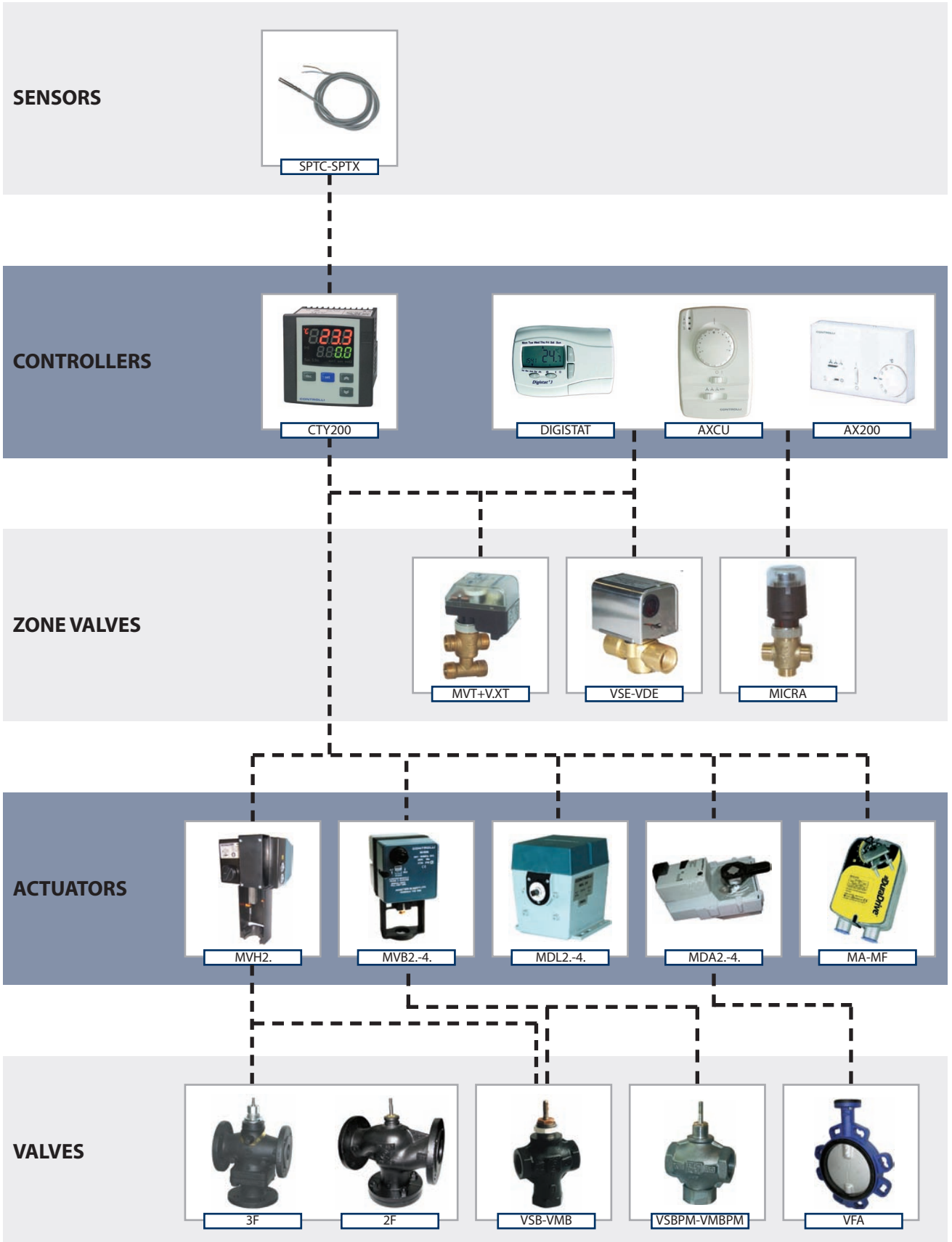


# systems and controls for heating plants and industrial processes



## 200 Line On-Off / Floating Control

(General Information see page 4. Electronic floating controllers have two SPST and TRIAC outputs with PID or proportional action)



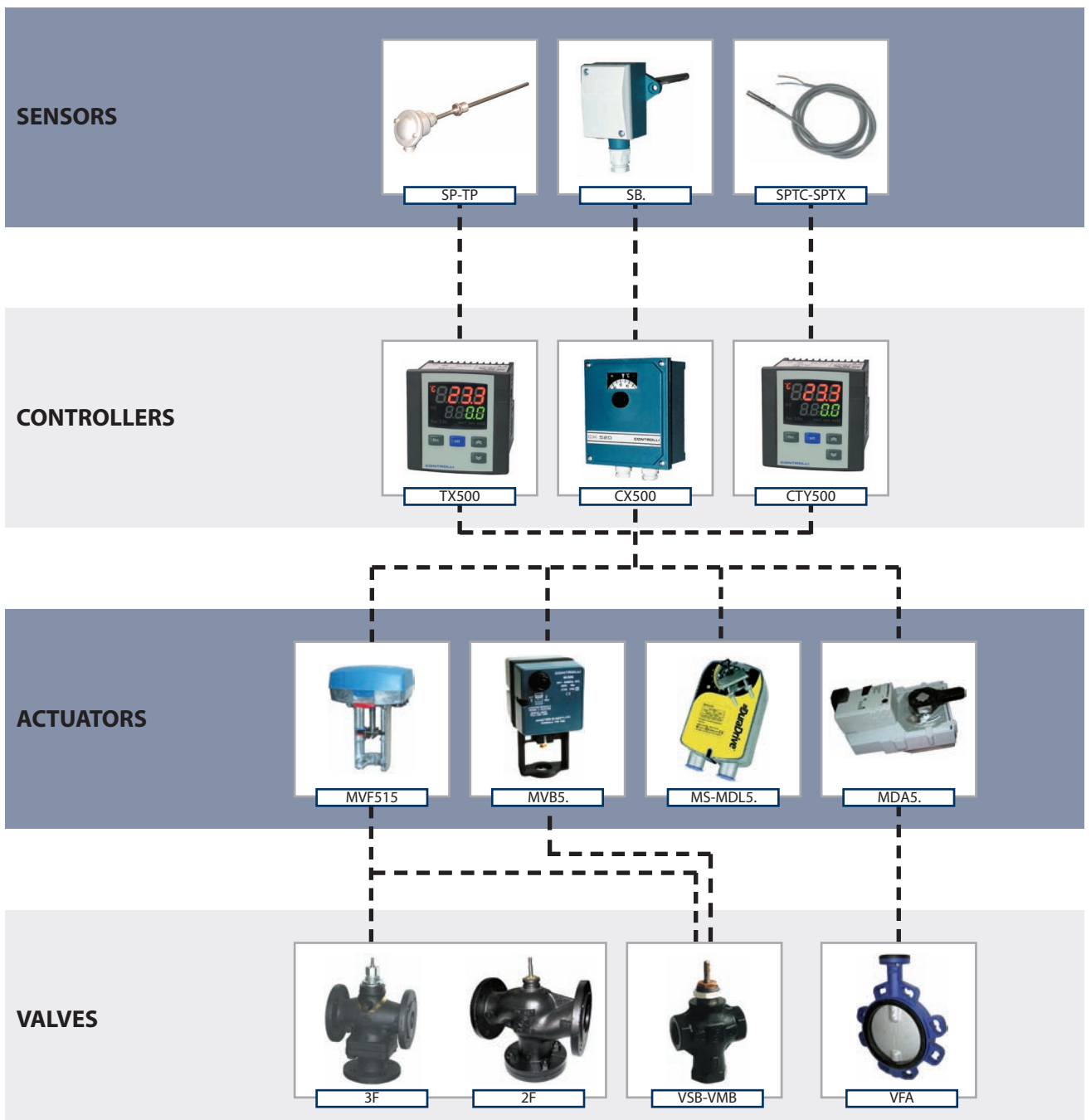
BASIC SYSTEM

# systems and controls for heating plants and industrial processes

## 500 Line V d.c. Output Proportional Control

(General Information see page 16)

BASIC SYSTEM



# systems and controls for heating plants and industrial processes

## 200 Line



### Room Thermostat

Series AX200 - Thermistor sensing element - Supply 230 V ac.

MODEL	RANGE °C	DIFFERENTIAL	OTHER CHARACTERISTICS
AX236	10 to 30	hysteresis 0.5 K	on/off, 3 fan speed control

Special versions, available on request.

MODEL	DESCRIPTION
4200-588	Fan coil controller, 2-pipe/4-pipe, SPDT contact, 3 speed fan control, S/W changeover, on/off switch
4200-662	Fan coil controller, 4-pipe, SPDT contact, 3 speed fan control, S/W changeover, on/off switch
4200-953	Fan coil controller with LCD display, 2-pipe, SPDT contact, 3 speed fan control, on/off switch
4200-577	Fan coil controller with LCD display, 4-pipe, SPDT contact, 3 speed fan control, on/off switch

### Fan-coil Electronic Controllers

AXC series - Periodic ventilation, valve protection, set point limit, led indication (Heating/Cooling/On), hot start (timer), periodic valve opening, Economy switch (on request), 3 fan speed selector, water sensor input, window contact input, automatic changeover, electric heater. IP30 protection, power supply 230Vac, 50/60Hz.

For data reading through Touchscreen see page 36.

MODEL	DESCRIPTION
AXCU22/W	Controller for 2/4-pipe fan coils
AXCU22/WMB	Controller for 2/4-pipe fan coils with ModBus connectivity

### Accessories for ModBus version connectivity

MODEL	DESCRIPTION
AXCU/BA	Bus Adapter for AXCU22/WMB

### Water and Air Sensors for AXC Controllers

Input ST2 can be connected to a NTC sensor (additional to the internal sensor: by a dip switch it is possible to choose which one to use) installed on the return air flow. Input ST3 can be connected to a NTC sensor to measure the water temperature (to be mounted downstream the valve). This sensor is used to acknowledge operation.

MODEL	DESCRIPTION
SNTC	Temperature sensor, ABS cap, PVC cable, range - 30..80°C, cable length 1.5 m.
SNTC-S	Temperature sensor, AISI 304 steel cap, silicone cable, range - 50..110°C, cable length 1.5 m.

### Pipe Thermostat for Automatic Summer/Winter Change-over

MODEL	DESCRIPTION
37T	For water temperature in the pipe of 30°C or more, this thermostat will enable Heating mode, for water temperature 18°C or less, it will enable Cooling mode.

### Room Chronothermostat

Series DIGISTAT.

MODEL	RANGE °C	DIFFERENTIAL	OTHER CHARACTERISTICS
DIGISTAT+3	7 to 32	0.5	NEW chronothermostat, 7..32°C, 6 daily programmes, possibility of different programme for each day of the week, holiday function, fuzzy logic, valve protection, manual override, automatic calendar, frost protection. Dimensions 137x96.5x31.3mm. IP30 protection.

# systems and controls for heating plants and industrial processes

200/500 Line

## Temperature Controllers

Series CTY - DDC controllers with 2-relay, 2-relay + 0÷10V output and on/off PD or PID action. Dimensions 72x72x102mm, panel mounting (cut-out 67x67mm). SPTC sensors see page 38.

MODEL	OUTPUT	INPUT	POWER SUPPLY Vac
CTY231	2 relay	PTC	230
CTY232	2 relay	Pt100 and 4-20mA	230
CTY241	2 relay	PTC	24
CTY242	2 relay	Pt100 and 4-20mA	24
CTY531	2 relay + 0 to 10 V	PTC	230
CTY532	2 relay + 0 to 10 V (or 4-20mA)	Pt100 and 4-20mA	230
CTY541	2 relay + 0 to 10 V	PTC	24
CTY542	2 relay + 0 to 10 V	Pt100 and 4-20mA	24

Series CX500 - Proportional - Integral - Derivative (PID), changeable on field into Proportional - Direct/reverse action - Power supply directly from MVB-MDL-MVF-MVH actuator - Sensing element: see SB sensors, page 38 - IP55 protection.

MODEL	RANGE °C	PROPORTIONAL BAND K	INTEGRATION TIME T <sub>n</sub> (s)	DERIVATIVE TIME T <sub>D</sub>	MOUNTING
CX528	-10 to 120°C	2 to 40	16 to 600	1/4 T <sub>n</sub>	wall or flush

## Temperature Controllers for Industrial Applications

Series TX500 - P, PD and Proportional - Integral - Derivative action (PID) - Power supply 230 or 24 Vac - Configurable as heating or cooling loop - Supervision by ModBus protocol - Sensing element: see SP-TP below or SPTX-U - Flush mounting with 67x67 mm panel cut-out - IP54 protection.

MODEL	POWER SUPPLY Vac	OUTPUTS	INPUT
TX532	230	1 alarm relay output	Pt100
TX542	24	1 configurable analogue output <sup>1)</sup>	

1) Max load controlled by analogue output: 0-1V = 20mA with 50 Ohm min. load resistance; 0-5V = 20mA with 250 Ohm min. load resistance; 0-10V = 20mA with 500 Ohm min. load resistance; 0-20 mA or 4-20 mA = 350 Ohm.

## Accessories for CTY-TX

MODEL	DESCRIPTION
ARAD9672	Hole adapter (96x96 to 72x 72mm) for front panel mounting to replace analogue TX and RX series having 96x96 mm drilling template
4200-1322	COPY CARD for data storage and upload/download of parameter settings on CTY and TX

## Sensors

Temperature sensors for TX and CTYxx2 with Platinum (100 Ohm at 0°C) sensing element.

MODEL	DESCRIPTION
SPTX-U	Universal sensor, Pt100 sensing element, cable length 3 m, sensor material AISI316 steel, max fluid temperature: 350 °C
SPC	Immersion, AISI 304 well, 1/2" gas connection, conduit opening Ø 10 mm, 113 mm long, max fluid temperature: 150 °C, IP44 protection
TPC	Immersion, 1/2" gas connection, AISI 304 well, conduit opening Ø 10 mm 200 mm long, max fluid temperature: 500 °C - IP55 protection
421	Option for SPC: AISI 304 stainless steel sheath and connection



# systems and controls for heating plants and industrial processes



## 400 Line Time Proportional Control

### GENERAL INFORMATION

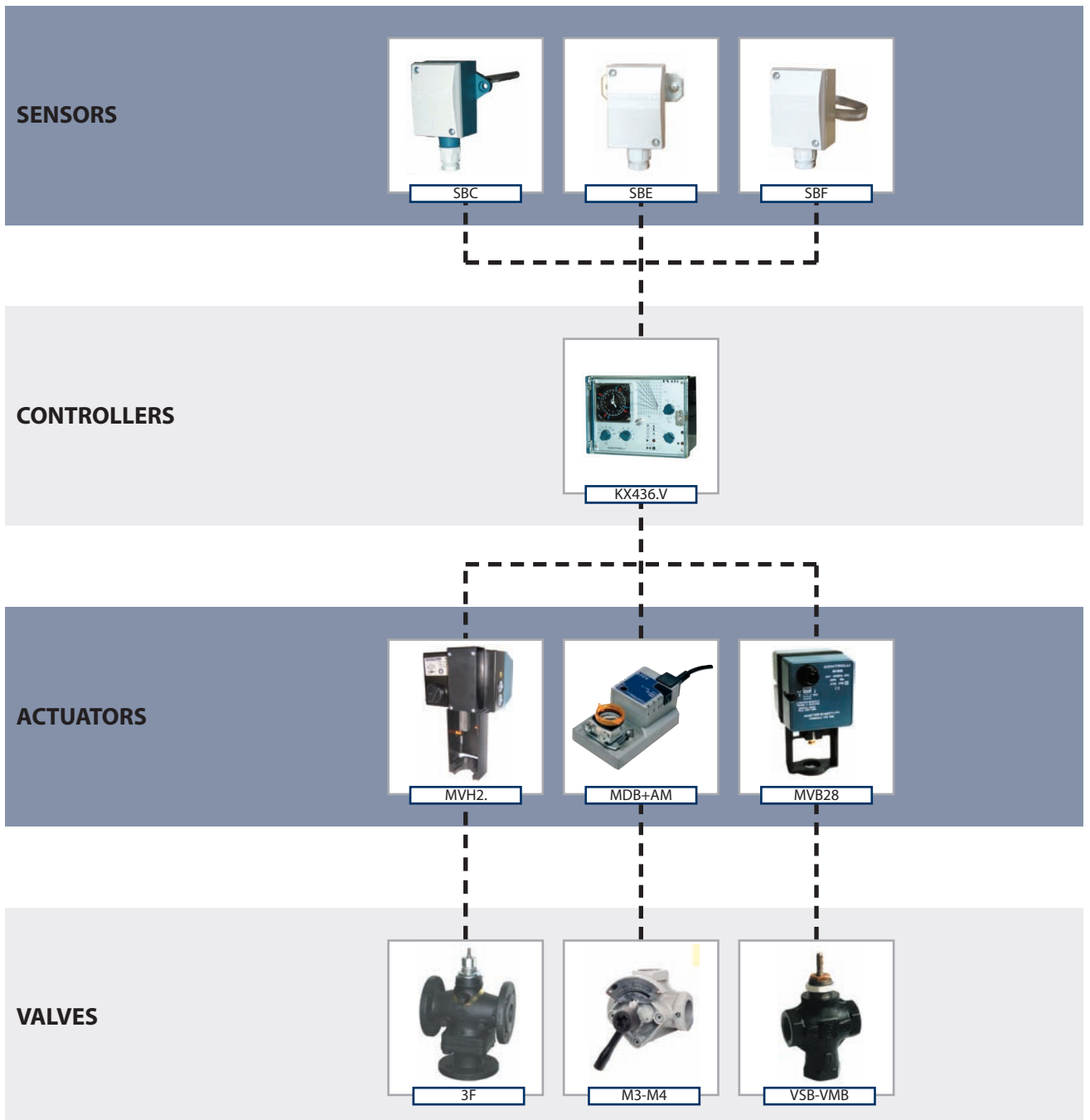
400 line controllers are electronic type with integrated circuit with two-relay floating output signal.

Signals are activated as proportional impulses, whose duration is proportional to the difference of the controlled variable temperature with respect to the set value.

These controllers are equipped with two sensing elements (supply sensor and outside sensor) and they control hot water supply temperature in function of outdoor temperature value, according to a preset slope.

Suitable field devices are globe valves motorised by MVH2, and MVB2, actuators and shoe valves motorised by MDB24-44+AM70.

BASIC SYSTEM



# systems and controls for heating plants and industrial processes

400 Line

## Climatic Controllers

**Series KX400 - Designed for use in residential and commercial heating systems, provides PI control of supply water with compensation. Heat slope 0.5 to 3.5. Power supply 230 Vac. IP40 protection. Balco sensing element.**

**Control valves motorised by MVB28, MVH26, see pages 42- 43.**

MODEL	DESCRIPTION
KX436G	Daily time switch with spring reserve - 7-programme selection knob - circulation pump control circuit - SB sensors, running time 300 s.
KX436GV	Daily time switch with spring reserve - 7-programme selection knob - circulation pump control circuit - SB sensors, running time 150 s.
KX436S	Weekly time switch with spring reserve - 7-programme selection knob - circulation pump control circuit - SB sensors, running time 300 s.
KX436SV	Weekly time switch with spring reserve - 7-programme selection knob - circulation pump control circuit - SB sensors, running time 150 s.

## Accessories

MODEL	DESCRIPTION
F1	Bracket for flush mounting

## Temperature Sensors

**Series SB. Balco 1000 Ohm 21.1°C sensing element - For KX436 controllers.**

MODEL	DESCRIPTION
SBC	Immersion - AISI 304 stainless steel well, 1/2" gas nickel-plated brass connection length 113 mm, PG9 cable sleeve, max fluid temp.: 140°C, IP44
SBE	Outside - PG9 cable sleeve, IP44
SBF	Strap-on (immersion), IP44
421	Sheath for SBC with AISI 304 stainless steel connection





# systems and controls for heating/cooling plants

## ConBOX

### GENERAL INFORMATION

**ConBOX** is our innovative solution of metering systems for heating and cooling. Heat Meters are becoming more and more a common solution for all buildings and residences where residents have the possibility to pay only for their own consumption and to adjust their own comfort level in each unit/apartment.

**ConBOX systems from Controlli are turn-the-key panels**, ready to be installed in the wall, typically one cassette for each single unit/apartment. Fluid can either be hot or chilled water.

Each **ConBOX** panel includes an heat meter (Zelsius or Multidata), PT500 temperature sensors, 2way or 3way zone valve, 2 flow meters (for hot and for chilled water), electrical pull box, pipes, gaskets, strainers and all the necessary fittings and accessories.

Room temperature can be controlled by a thermostat or a chronothermostat.

When temperature set point is achieved the valve is closed, hence the fluid does not go through the heat meter and billing is still.

When room temperature is different than the set point, the meter starts billing and storing energy consumptions data for each unit/apartment. Hot and cold water flow volumes data are also stored thanks to the 2 flow meters. 2 flow meters can be billed at the same time.

CB01 panels include ZELSIUS heat meters, for nominal flow rate up to 3,5 m<sup>3</sup>/h. The sensor for return temperature is already integrated in the brass casting; the other sensor will be inserted in the appropriate well on the supply line.

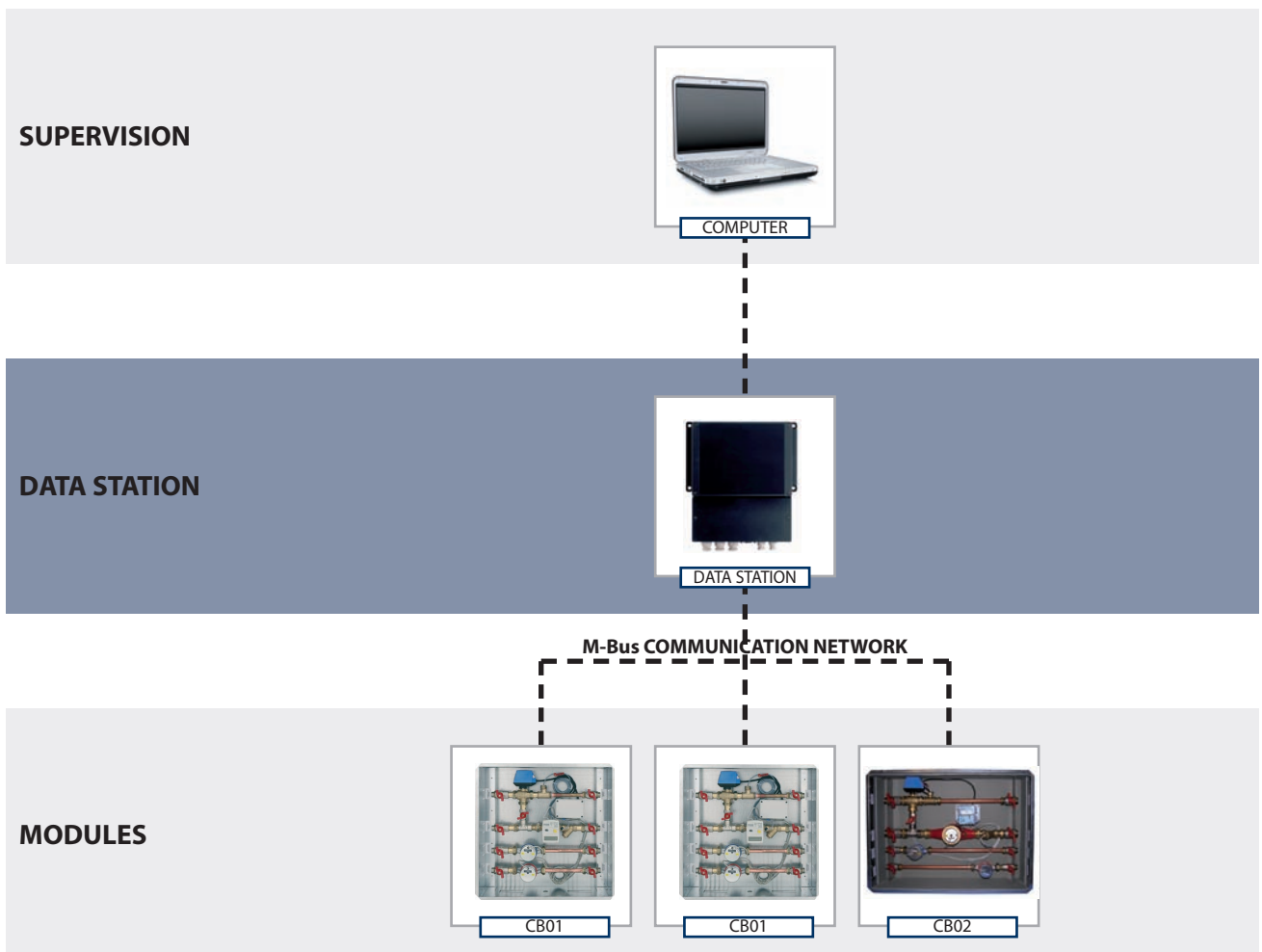
CB02 panels include MULTIDATA heat meters, for nominal flow rate up to 6 m<sup>3</sup>/h. Dimensions are larger than Zelsius, the electronic calculator is separate from the flow meter. Supply and return sensors are both located inside the wells and already connected to the terminal board of the heat meter. The heat meters above are able to work with hot and chilled water and are equipped with M-Bus.

All data are safely stored on an EEPROM. It's possible to view all consumptions for the past 18 months. Consumption can be read locally on the meters or transmitted to a remote data station via M-Bus.

Furthermore, all data from the data station can be downloaded to a PC.

Versions with heat exchanger are available on request.

BASIC SYSTEM



# systems and controls for heating/cooling plants

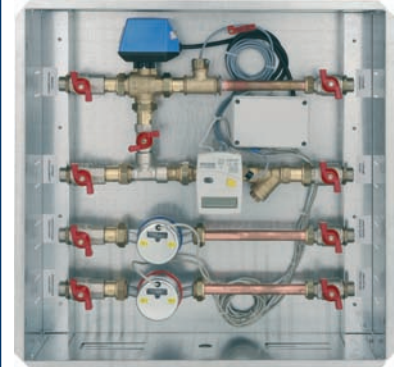
ConBOX

## Metering Modules

ConBOX series - 3/4" or 1" metering modules with 2- or 3-way valve. Heat meter with M-Bus interface.

The ConBOX metering modules can be customised according to specific plant needs. For different types of modules or for commissioning pipes, contact our Sales Support.

MODEL	COMPONENTS IN COMMON	ZONE VALVE	HEAT METER
3/4" METERING MODULE			
CB01D0,6	- 550x550x150 box with 8 ball valves - Kit composed of M-Bus interface, EAS box, wells for 1/2" sensors, brass connections for Zelsius heating and cooling energy meter - Line strainer - Cold water volumetric flow meter - Hot water volumetric flow meter	two-way	Zelsius 0.6 m <sup>3</sup> /h
CB01D1,5			Zelsius 1.5 m <sup>3</sup> /h
CB01D2,5			Zelsius 2.5 m <sup>3</sup> /h
CB01T0,6		three-way	Zelsius 0.6 m <sup>3</sup> /h
CB01T1,5			Zelsius 1.5 m <sup>3</sup> /h
CB01T2,5			Zelsius 2.5 m <sup>3</sup> /h
1" METERING MODULE			
CB02D3,5	- 750x550x150 box with 8 ball valves - Kit composed of two PT500 sensors, wells for 1/2" sensors, two connections, multiple-jet flow meter for Multidata heating and cooling energy meter - Line strainer - Cold water volumetric flow meter - Hot water volumetric flow meter	two-way	Multidata 3.5 m <sup>3</sup> /h
CB02D6,0			Multidata 6 m <sup>3</sup> /h
CB02T3,5		three-way	Multidata 3.5 m <sup>3</sup> /h
CB02T6,0			Multidata 6 m <sup>3</sup> /h



# air conditioning systems and controls



## 500 Line V d.c. Output Proportional Control

### GENERAL INFORMATION

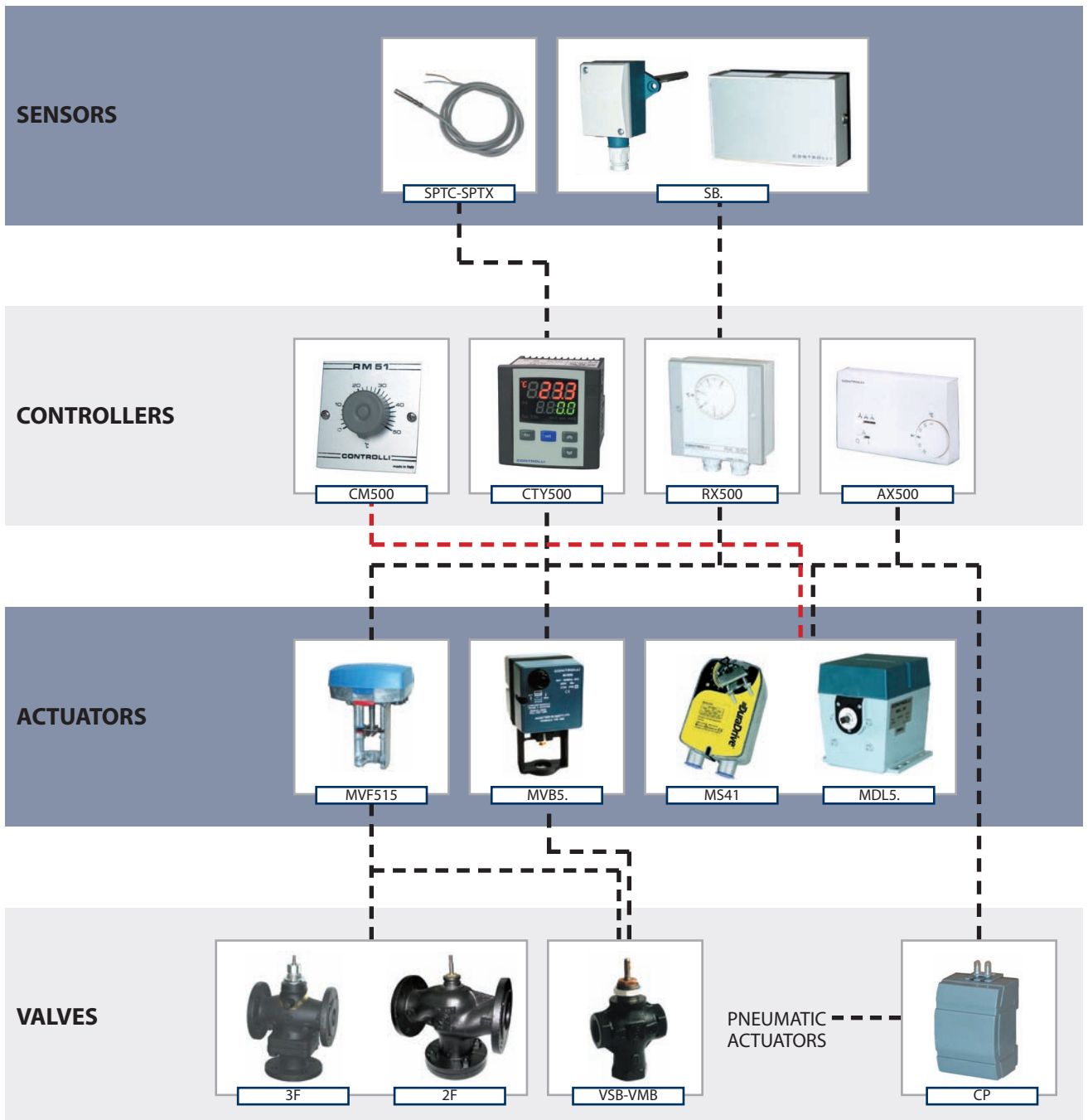
*AX - CX - CTY - TX - Omnia controllers*

Hybrid and integrated electronic circuit type with Vdc output signal and P (AX500, CTY500, Omnia) or PID (CX) action. Each variation of the controlled variable, included in the proportional band range, corresponds to a specific voltage value from the controller. The final control element position, determined by the potentiometer, will be proportional to the controller output signal, thus ensuring the system accuracy and stability. The compatible final elements or field devices are MS41, MDB and MDL5. damper actuators and MVB5., MVH56F and MVT5. valve actuators.

*Auxiliaries*

This line provides a wide range of transducers and auxiliary modules which allow accomplishing several complex technical solutions.

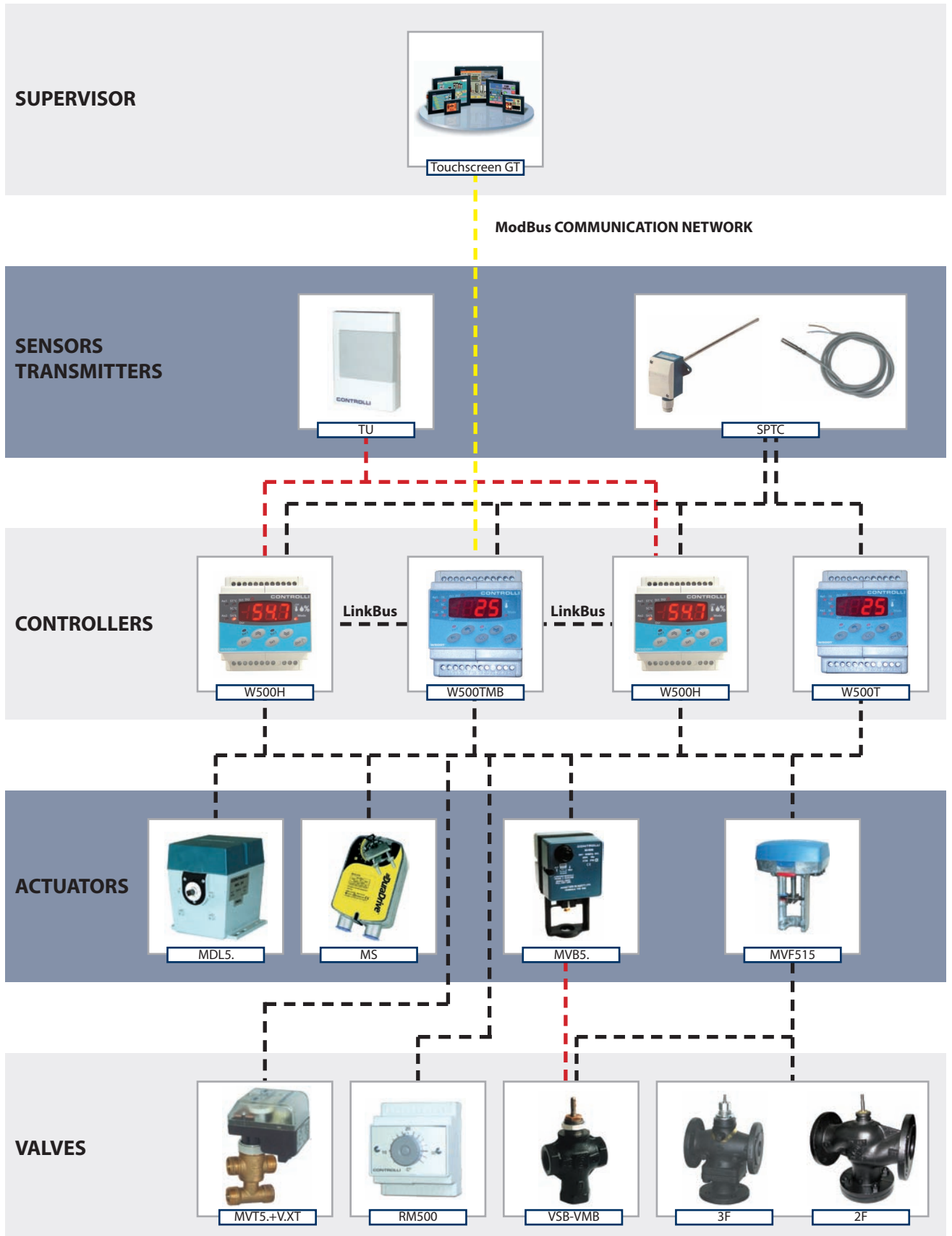
BASIC SYSTEM



# air conditioning systems and controls

## 500 Line V d.c. Output Proportional Control

BASIC SYSTEM



# air conditioning systems and controls

## Omnia



### DDC Temperature Controllers

Omnia series - PTC sensing element - Power supply 230 Vac or 24 Vac - Data exchange through LinkBus - ModBus capability - IP30 protection - Dimensions 70X85X61 mm. For data reading through Touchscreen see page 36.

MODEL	DESCRIPTION
W500T	Digital temperature controller. P, P+I control, limit and compensation functions. 2 analogue 0÷10 Vdc outputs and 2 relay outputs. 3 ½-digit display. DIN rail mounting, 230 Vac power supply
W500T4	As above with 24 Vac power supply
W500TMB	As W500T with RTC clock and ModBus connectivity, 230 Vac power supply
W500TMB4	As W500TMB with 24 Vac power supply
W501TMB	As W500TMB with application-specific default values and 3-position output

### DDC Temperature, Humidity and Enthalpy Controllers

Omnia series - PTC sensing element - Power supply 230 Vac or 24 Vac - Data exchange through LinkBus - ModBus capability - IP30 protection - Dimensions 70X85X61 mm. For data reading through Touchscreen see page 36.

MODEL	DESCRIPTION
W500H	Digital temperature and humidity controller. P, P+I control, limit and compensation functions. 2 analogue 0÷10 Vdc outputs and 2 relay outputs. 3 ½-digit display. DIN rail mounting, 230 Vac power supply
W500H4	As above with 24 Vac power supply
W500HMB	As W500H with RTC clock and ModBus connectivity, 230 Vac power supply
W500HMB4	As W500HMB with 24 Vac power supply

### Accessories for Omnia Controllers

MODEL	DESCRIPTION
LIBO-USB	USB-RS485 optically isolated converter
RM500	Remote positioner for Omnia controllers, working range 5÷35 °C
RM510	Remote positioner for W500H/HMB controllers, working range 0÷100%

### Programming Tool

Programming tool for W500T, W500TMB, W500H, W500HMB controllers.

You can set all parameters from your PC or Laptop by simply connecting one or more controllers via either a RS232/485 converter or a USB/ RS485 opto-isolated converter. All configurations can be saved on your PC and downloaded onto other controllers.

### Temperature Sensors

PTC sensing element for Omnia controllers

MODEL	DESCRIPTION
SPTC-A	Room sensor (dimensions 86x86x31 mm) - IP30
SPTC-A5	Room sensor with set point adjustment (dimensions 86x86x31 mm) - IP30
SPTC-C	Immersion sensor cable type (provide a well), 1.5 m silicone cable
SPTC-CR	Immersion sensor with case and stick enclosed
SPTC-D	Duct sensor cable type (provide a well), 1.5 m silicone cable
SPTC-E	Outside sensor - IP44
SPTC-F	Strap-on pipe sensor - IP44
SPTC-V	As SPTC-D but with case and stick enclosed - IP44

# air conditioning systems and controls

## 500 Line

### Room Controllers

Series AX500 - Built-in NTC sensing element - Power supply 24 Vac - IP30 protection - Optional external temperature sensor STR73, see page 38.

MODEL	RANGE °C	PROPORTIONAL BAND K	OTHER CHARACTERISTICS
AX526	5 to 30	1,5	2 outputs 0 to 10 Vdc
AX527	5 to 30	3	As AX526 with on/off switch and 3 fan speed control
AX536	5 to 30	1,5	2 outputs 0 to 10 Vdc with on/off electric heater output and LCD display
AX537	5 to 30	1,5	As AX536 with on/off switch and 3 fan speed control

### Electronic-Pneumatic Transducers

Series CP8500 - Output signal 3 to 13 psi - Air supply 20 psi max - Rating 540 l/h - Consumption 500 NI/h.

MODEL	INPUT SIGNAL		Action	POWER SUPPLY Vac	OTHER CHARACTERISTICS
	Vdc	mA			
CP8551	-	4 to 20	direct	24	panel mounting
CP8552	6 to 9 0 to 10	4 to 20	direct		

### Signal Transducers

Series IZ - Supply 24 Vac - Mounting on 35-mm DIN 46277/3 rail - IP20 protection.

MODEL	DESCRIPTION
IZA	Input 3 to 12 V d.c. - output 12 to 3 Vdc
IZB	Input from SB sensors - output 0 to 10 Vdc
IZF	Input 2 to 10 Vdc - output 4 to 20 mA
IZV	Input 4 to 7; 6 to 9; 8 to 11; 0 to 10 Vdc - output 4 to 20 mA

### Remote Positioners

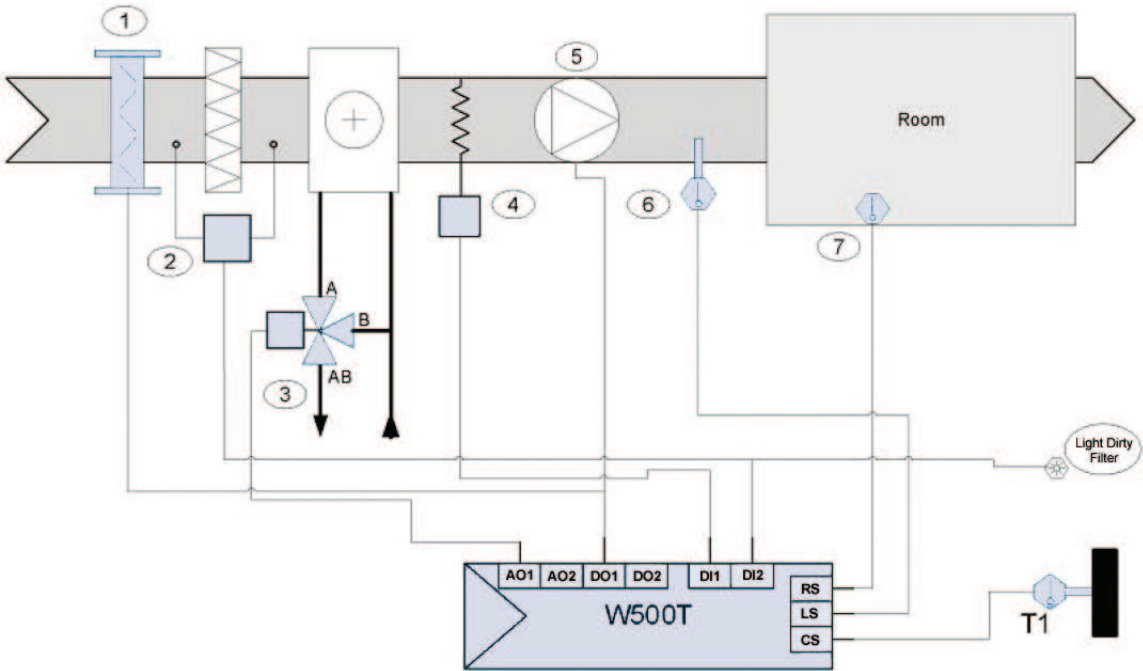
Series CM500 - Remote manual potentiometer to drive 500 Line actuators - Flush mounting - IP30 protection.

MODEL	RANGE	OTHER CHARACTERISTICS
CM511	0 to 10	control range 6 to 9 Vdc

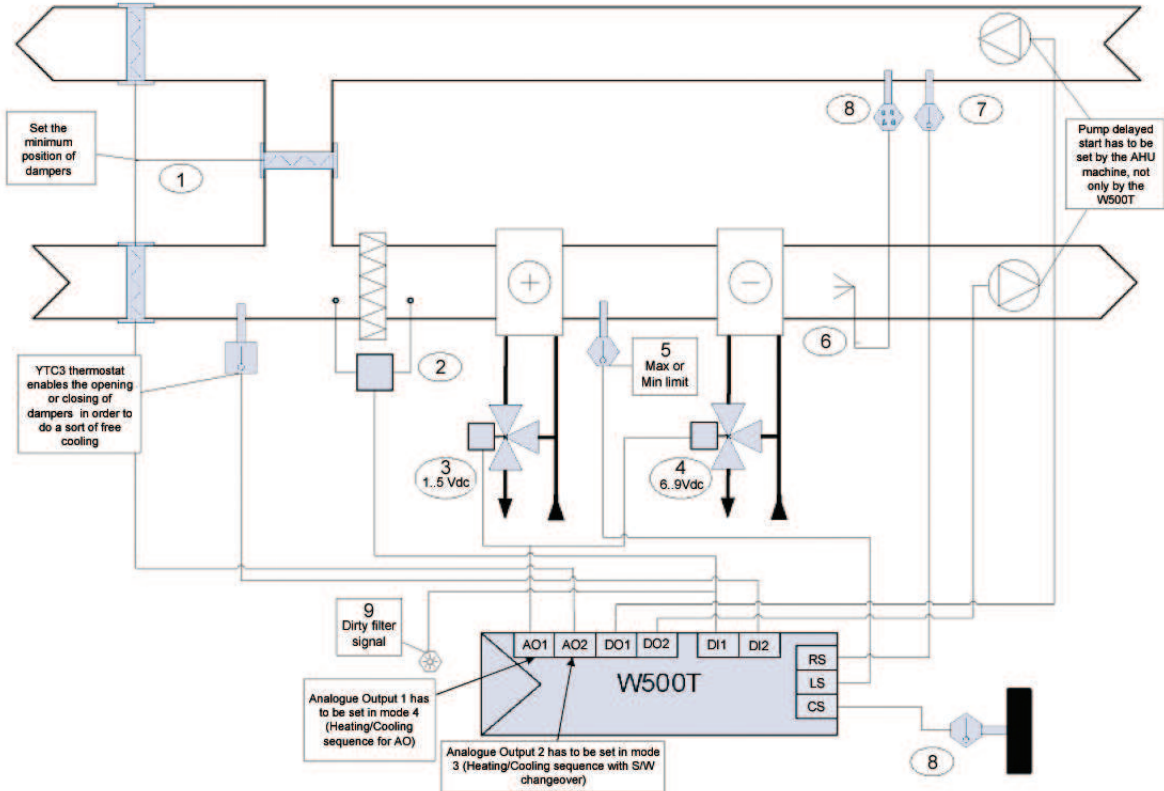


# application examples with Omnia controllers

## Main Air Conditioning

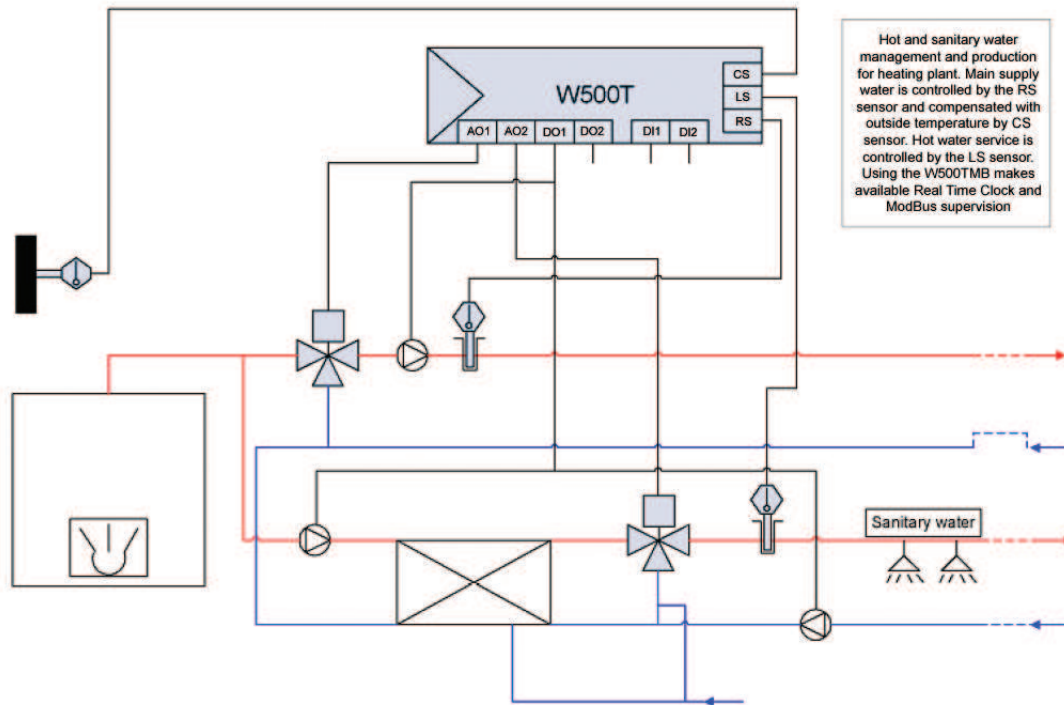


## Air Handling Unit at Constant Flow

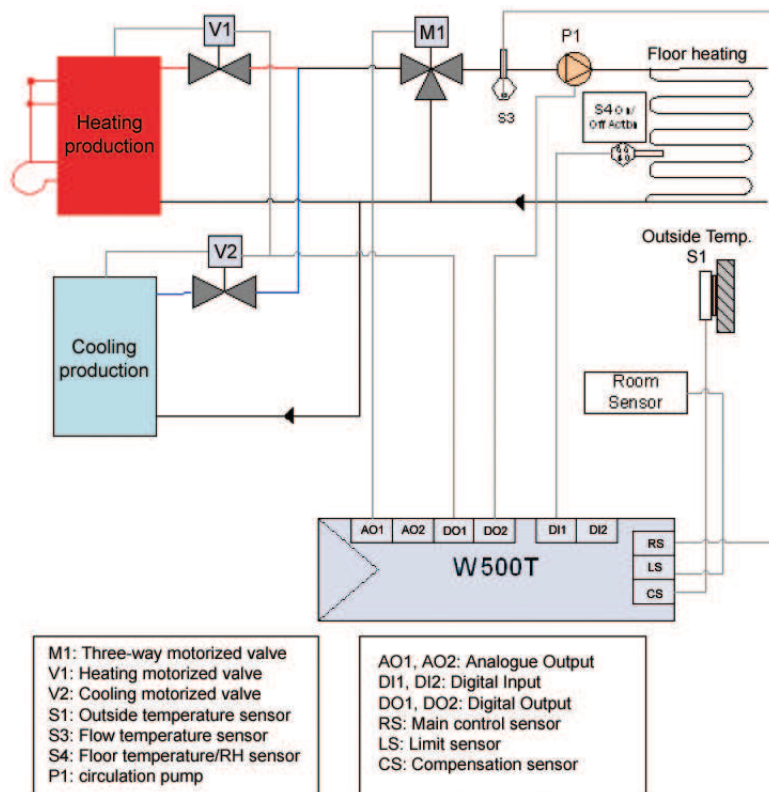


# application examples with Omnia controllers

## Heating and Hot Water Service



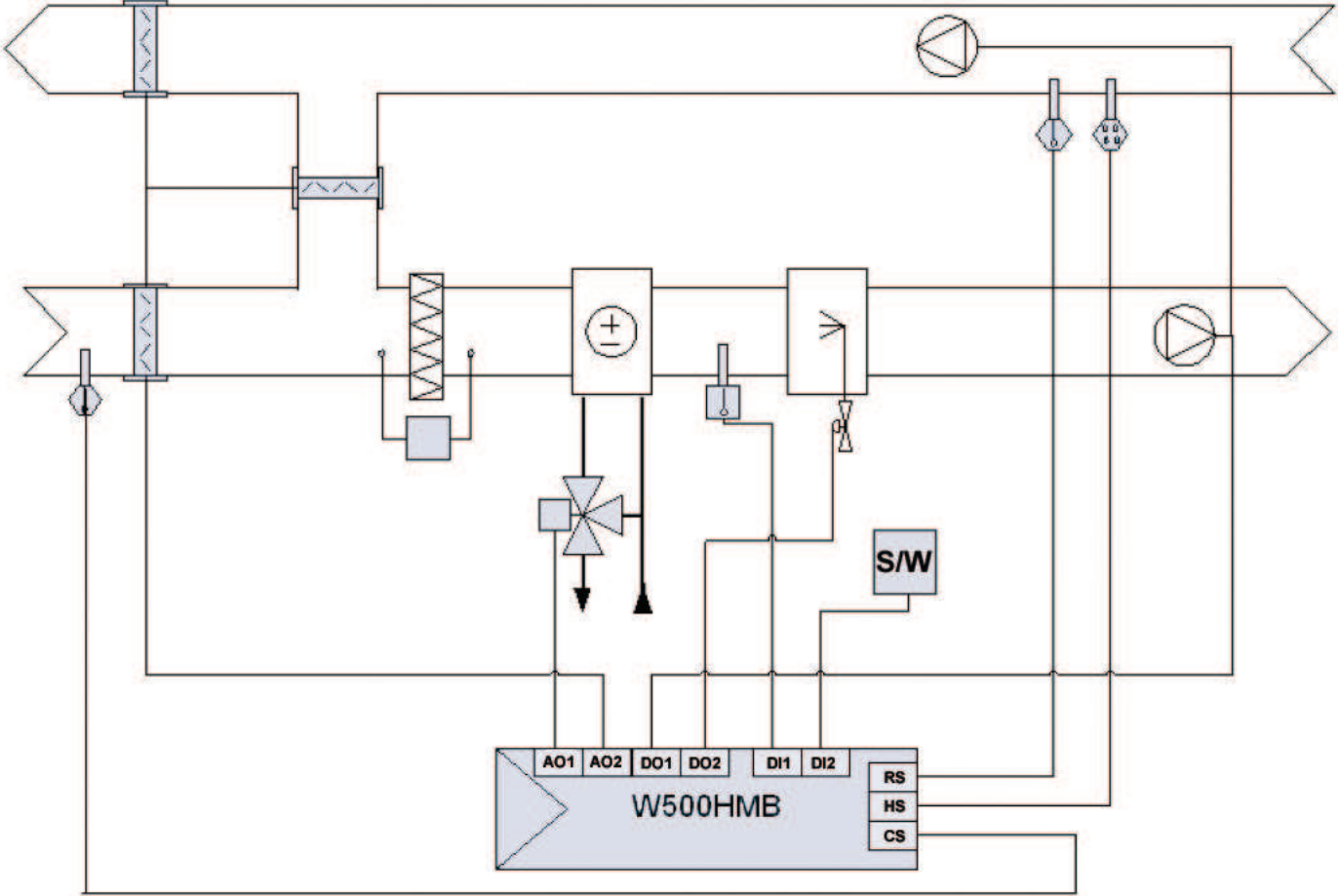
## Floor Heating and Cooling





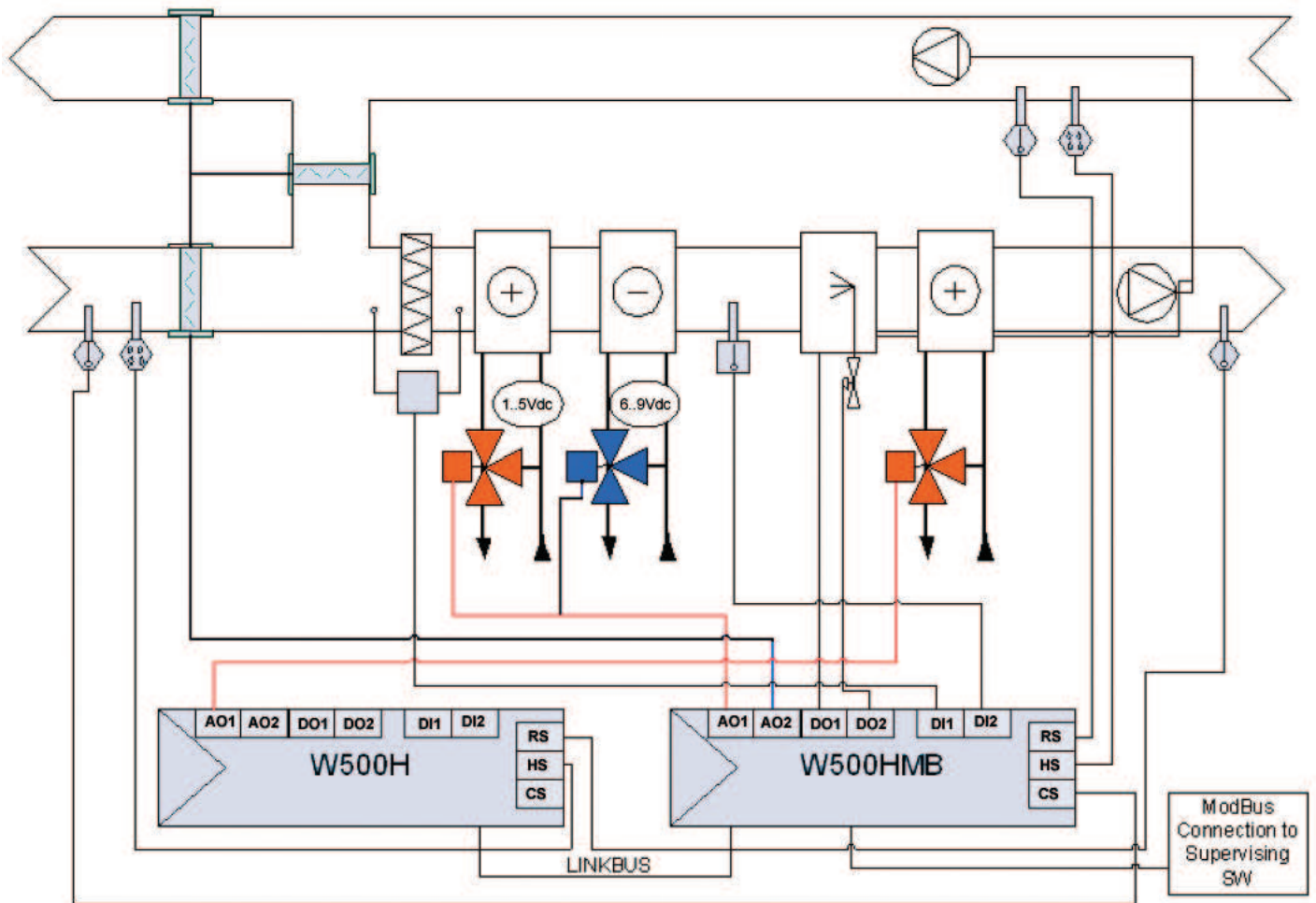
# application examples with Omnia controllers

## Temperature, Humidity and Enthalpy Control



# application examples with Omnia controllers

## Free Cooling



# fan coil controllers

## DG8000

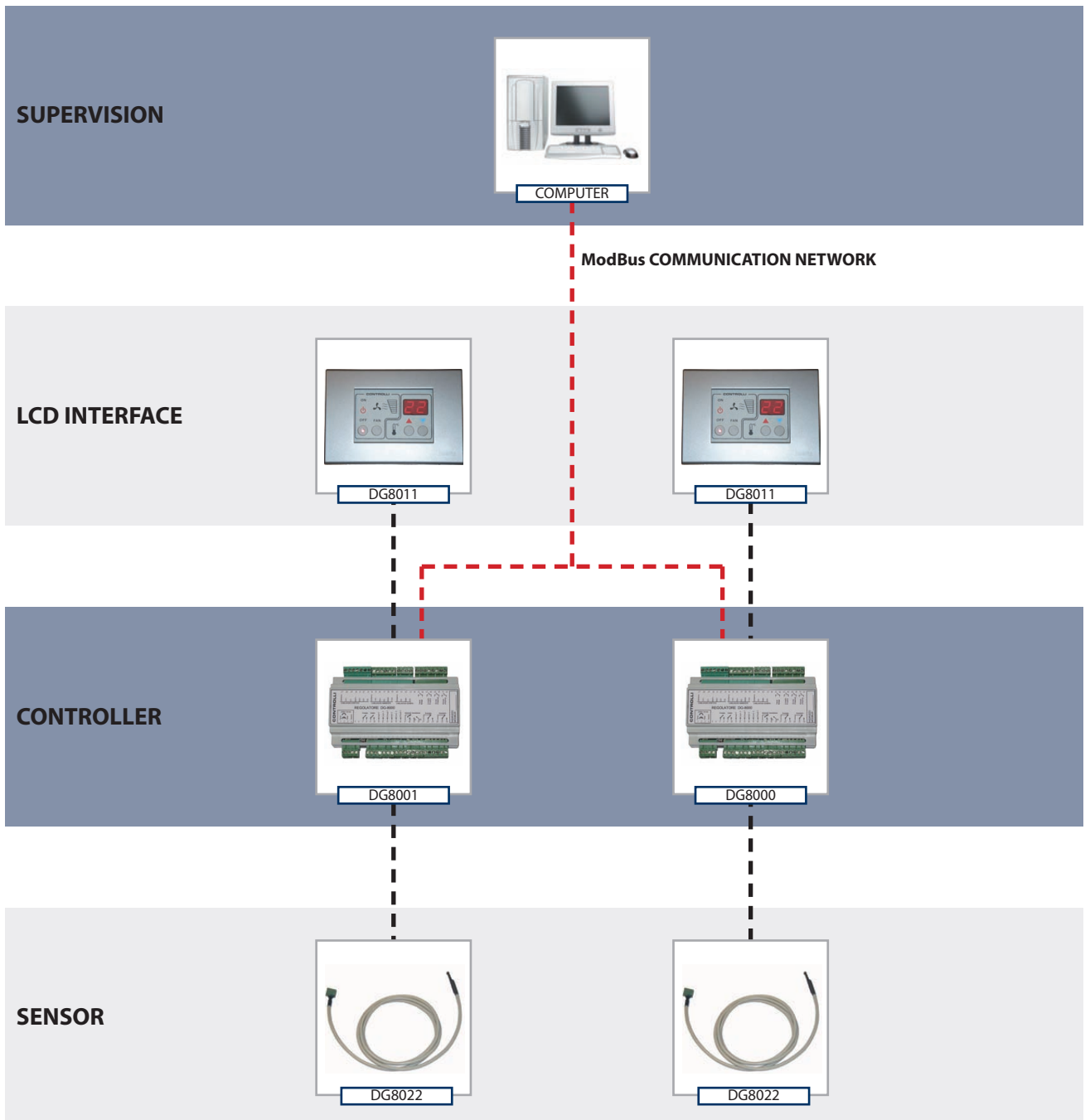
### GENERAL INFORMATION

The new DG8000 series controllers are particularly suitable for temperature control in hotel rooms, hospitals, offices, in applications such as fan coils or small AHU. The controllers can operate stand-alone or can be supervised remotely through ModBus protocol (up to 250 devices).

The new DG8000 allows to:

- Set the fan speed (automatic or manual)
- Stop the fan when the set value is reached
- Enable switch-off by window contact
- Select winter or summer operation (only for two-pipe applications)
- Activate automatically control by inserting the badge
- Activate electric loads
- Detect an alarm signal.

BASIC SYSTEM



# fan coil controllers

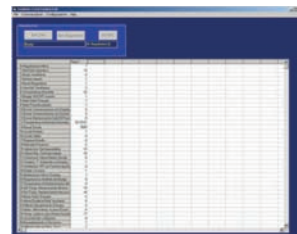
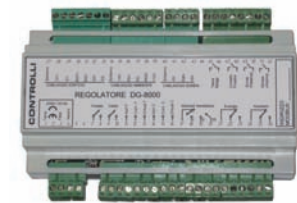
## DG8000

### Digital Fan Coil Controllers

Series DG8000 - Two controller types (floating or on/off valve control) - Fan speed control - 2- or 4-pipe management - User display fit for standard plates for three-module installation - Power supply 230 Vac - Supervision through ModBus protocol. For data reading through Touchscreen see page 36.

MODEL	DESCRIPTION
DG8000	Controller for floating valve control
DG8001	Controller for on/off valve control
DG8011	User display with white standard plate <sup>1)</sup>
DG8022	Return sensor (range 1-55 °C), fixed length 1,5 m

1) Other plates of different colours or materials are available. Please contact our Sales Support.



### Configuring Tool

Software tool for DG8000 controllers. The programme allows configuring through ModBus protocol (using a opto-isolated RS232/RS485 or USB/RS485 converter) the operation modes and setting values different from default ones. This tool is particularly useful during plant and supervision start-up.

# fan-coil unit systems

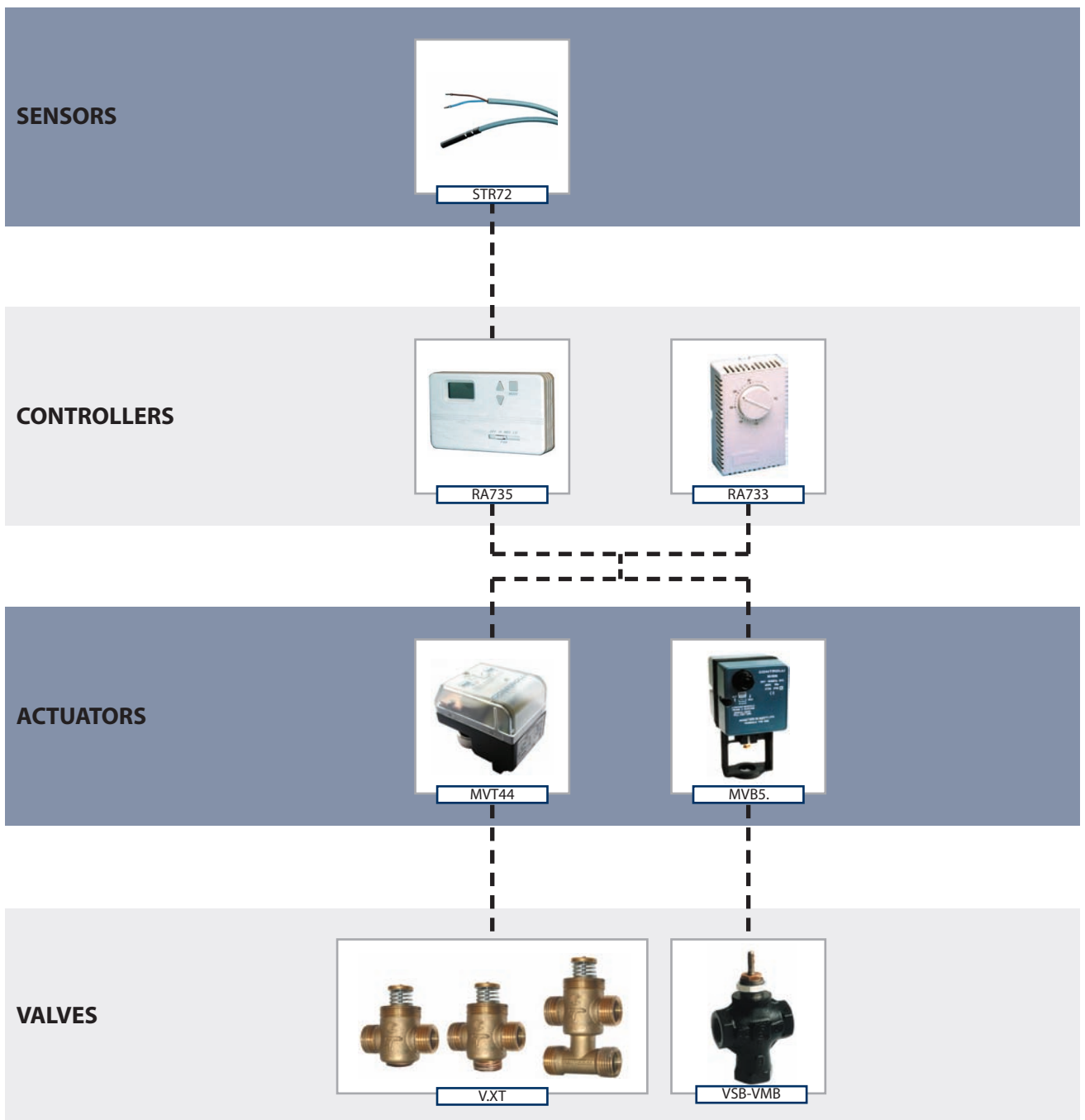
## 700 Line: Microprocessor Floating Control

### GENERAL INFORMATION

The RA730 microprocessor controllers drive, with floating (PI) action, 24 Vac bidirectional actuators. The controllers have a built-in sensor, but they can be connected to an external return sensor.

Their typical application is to drive V.XT/MVT4 motorised valves in two- or four-pipe terminal units, but they can also be used to control V.B/MVB46 motorised valves in AHU re-heat coils.

BASIC SYSTEM



# fan-coil unit systems

## 700 Line

### Room Temperature Microprocessor Controllers

Floating action for driving bidirectional actuator MVT44/V.XT, see page 42-46.

Built-in NTC sensor or, for RA735 only, external sensor on return.

RA733 manual set point adjustment.

RA735 display for temperature and set point reading, 3 fan speed selector and switch.  
Power supply 24 V ac - Wall mounting - IP30 protection.

MODEL	RANGE	ACTION	OTHER CHARACTERISTICS
RA733	0 to 35	heating or cooling	for 2-pipe terminal (1 V.XT/MVT4 valve), centralised summer/winter changeover
RA735	10 to 32	heating-cooling in sequence	for two- and four-pipe terminals (1-2 V.XT/MVT4 valves)

### Return Temperature Sensor

Series STR - For RA735 - Sensing element NTC 10 kOhm at 25°C - IP20 protection.

MODEL	DESCRIPTION
STR72	Return air on terminal unit or pipe mounting - cable length 1.2 m - supplied without mounting kit



# fan-coil and vav control

## DIGITROLL 7000

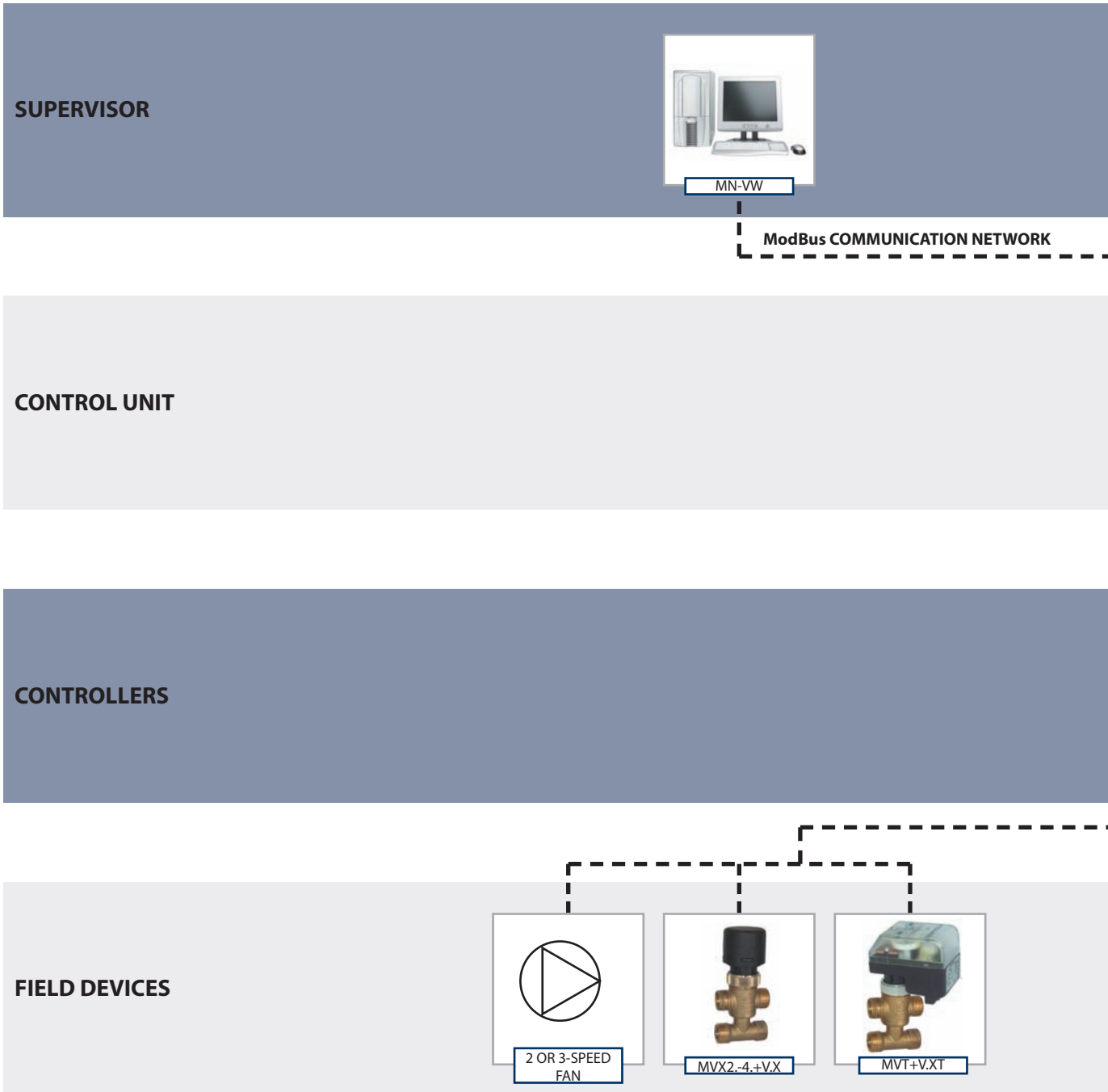
### GENERAL INFORMATION

The NC7000 microprocessor control unit includes a display and function keypad for setpoint adjustment, operating modes programming of the terminal unit controllers and central controllers recalibration.

The control unit can be connected to a communication network.

The controllers can operate stand-alone, if the control unit is absent. They control room temperature in 2 or 4-pipe fan coils; different versions are available for P+I control of Micra valves or V.XT valves motorised by MVT4. and, only in case of controllers with fan speed control, also with MVT5. and MVX57 motorised valves.

BASIC SYSTEM



# fan-coil and vav control



Up to 160 controllers associated to 1 of the 4 groups. They can be programmed as single with individual parameters connected to each control unit installed.





# fan-coil and vav control

## Digitroll 7000



### Control Unit

**Series NC7000 - Wide back-lighted LCD display and keyboard for set point adjustment, programming of operating data and NR7000 controllers monitoring - Power supply 24 Vac - Wall or flush mounting - RS232 and RS485 communication network - IP20 protection.**

MODEL	DESCRIPTION
NC7311MB2F	Microprocessor control unit with ModBus protocol, connection to supervision system through RS232 - yearly programme, summer-winter compensation. Language French/English
NC7311MB2I	Microprocessor control unit with ModBus protocol, connection to supervision system through RS232 - yearly programme, summer-winter compensation. Language Italian/English
NC7311MB4F	Microprocessor control unit with ModBus protocol, connection to supervision system through RS485 - yearly programme, summer-winter compensation. Language French/English
NC7311MB4I	Microprocessor control unit with ModBus protocol, connection to supervision system through RS485 - yearly programme, summer-winter compensation. Language Italian/English

### Accessories

MODEL	DESCRIPTION
LIBO-4-485	RS232/485 opto-isolated converter

### Address Cards

**Series NS - Plug-in electronic card for identification of each controller by Control Unit.**

MODEL	DESCRIPTION
NS71	40-card package, numbered 1 to 40
NS72	80-card package, numbered 1 to 80
NS73	120-card package, numbered 1 to 120
NS74	160-card package, numbered 1 to 160

### Remote Set Point

MODEL	DESCRIPTION
RM77	Remote set-point adjuster $\pm 3$ K - Flush mounting - IP30 protection

### Interfaces

MODEL	DESCRIPTION
DG7ROUT1	Interface with conveyed waves bus, used as a repeater
DG7ROUT2	Interface with conveyed waves bus and RS485, used as bridge
DG7ROUT3	Interface with RS485 bus used as a repeater

### Temperature Sensors

**Series ST for temperature - Sensing element: NTC 5kOhm at 25 °C for NR controllers - Temperature range 0 to 50 °C - IP30 protection.**

MODEL	DESCRIPTION
STA71	Room sensor (dimensions 85 x 55 x 32 mm)
STA75S	Room sensor with $\pm 3$ K set-point adjustment, dimensions 86x86x31 mm
STA80S	Room with $\pm 3$ K set-point and speed selector and on-off switch, dimensions 86x86x31 mm
STR71	Return air sensor with mounting kit

# fan-coil and vav control

## Digitroll 7000

### Microprocessor Controllers

Series NR7000 - P+I action - All parameters set by Control Unit with possibility to operate stand-alone - Power supply 24 Vac - Installation on 35-mm rail (DIN 46277/3) - IP20 protection.

MODEL	APPLICATION	OUTPUT	OTHER CHARACTERISTICS
NR7312	2-pipe fan coil	1 PWM output	1 V.X-MVX4. valve
NR7314	4-pipe fan coil	2 PWM outputs	2 V.X-MVX4. valves
NR7412	2-pipe fan coil	1 floating output	1 V.XT/MVT4. valve
NR7414	4-pipe fan coil	2 floating output	2 V.XT/MVT4. valves
NR732xx	2-pipe fan coil	3-stage on/off (Triac 24 Vac 4A) + 1 On-Off or PWM or floating (cooling only) or proportional valve	3 fan speed selector + 1 valve with MVX4or MVT4. or MVT5. <b>Please contact our Sales support for the selection of the model which suits your application</b>
NR734xxx	4-pipe fan coil	3-stage on/off (Triac 24 Vac 4A) + 2 On-Off or PWM or floating or proportional valves	3 fan speed selector+ 2 valves with MVX4or MVT4. (only cooling) or MVT5. <b>Please contact our Sales support for the selection of the model which suits your application</b>



NR73XX/XX	APPLICATION	OUTPUT	OTHER CHARACTERISTICS
	2 (2-pipe fan coil) 4 (4-pipe fan coil)		
	Fan control		
	1 (fan off in dead zone 0.5 K; fixed V1/V2/V3 = 1 K)		
	2 (fan always on; fixed V1/V2/V3 = 0.5 K.)		
	3 (fan always on; V1/V2/V3 = 1/3, adjustable Proportional Band)		
	4 (fan always on; V1 = 1/3 Proportional Band V2/V3 = 2/3 PB, valve = adjustable 2/3 PB)		
	Valve control (2-pipe fan coil)		
	A PWM valve (MVX4)		
	B floating valve (MVT4.)		
	C On-Off valve		
	D proportional valve 0 to 10 Vdc (MVT5.)		
	Valve control (4-pipe fan coil, COOLING duct)		
	A PWM valve (MVX4.)		
	B floating valve (MVT4.) add auxiliary module NRMR7340		
	C On-Off valve		
	D proportional valve 0 to 10 Vdc (MVT5.)		
	Valve control (4-pipe fan coil, HEATING duct)		
	A PWM valve (MVX4.)		
	C On-Off valve (MVX2.)		
	D proportional valve 0 to 10 Vdc (MVT5.)		

### Auxiliary Modules

Power supply 24 Vac - Fan control.

MODEL	APPLICATION	ACTION	OTHER CHARACTERISTICS
NRMR7340	with NR734XXB		
NRMR7340/A	all models except NR734XXB	3-stages, 2-position 230 Vca	3 fan speed through NO 230 Vac relay contact



# fan-coil and vav control

## TERMINAL UNIT CONTROLS

### SELECTION CHART FOR ROOM CONTROLLERS

CONTROLLER	SENSOR/SENSING ELEMENT	ACTION	S/W CHANGEOVER	SUMMER COMPENSATION	
AS205	built-in	on/off	on-board		
AS206	built-in	on/off	centralised		
AS207	built-in	on/off	on-board		
AX236	built-in	on/off	on-board		
AXCU22/W	built-in/SNTC-S	On/off	on-board		
AXCU22/WMB	built-in/SNTC-S	On/off	centralised	via bus	
AX526	built-in/STR73	Prop. 0-10 Vdc	centralised		
AX527	built-in/STR73	Prop. 0-10 Vdc	centralised		
AX536	built-in/STR73	Prop. 0-10 Vdc	centralised		
AX537	built-in/STR73	Prop. 0-10 Vdc	centralised		
RA733	built-in	floating	centralised		
RA735 <sup>1)</sup>	built-in/STR72	floating <sup>1)</sup>	on-board <sup>3)</sup>		
NR7312	STA71-75S-80S-STR71	P+I	via bus	via bus	vi
NR7314	STA71-75S-80S-STR71	P+I	via bus	via bus	vi
NR7412	STA71-75S-80S-STR71	P+I	via bus	via bus	vi
NR7414	STA71-75S-80S-STR71	P+I	via bus	via bus	vi
NR7321/2/3/4x <sup>2)</sup>	STA71-75S-80S-STR71	P+I/3 stages	via bus	via bus	
NR7341/2/3/4xx <sup>2)</sup>	STA71-75S-80S-STR71	PI/3 stages	via bus	via bus	

- 1) RA735 can drive 1 or 2 on-off valves instead of floating ones.
- 2) Different models are available according to the application and the valve type.
- 3) For 2-pipe only.

# fan-coil and vav control

## TERMINAL UNIT CONTROLS

	FAN CONTROL	FAN SPEED MAN. SELECTOR	CONTROL OF 1 VALVE (2-PIPE)	CONTROL OF 2 VALVES (4-PIPE)	SUPPLY Vac	DEVICE TYPE
	X	X				electro-mechanical
	X				230	electro-mechanical
	X				230	electro-mechanical
	X	X	Micra		230	electronic
	X		Micra	Micra	230	electronic
	X	X	Micra	Micra	230	electronic
			MVT4/V.XT	MVT4/V.XT	24	electronic
	X	X	MVT4/V.XT	MVT4/V.XT	24	electronic
			MVT4/V.XT	MVT4/V.XT	24	electronic
	X	X	MVT4/V.XT	MVT4/V.XT	24	electronic
			MVT4/V.XT		24	microprocessor
		X	MVT4/V.XT	MVT4/V.XT	24	microprocessor
	via auxiliary relay	only with STA80S	Micra		24	digital centralised
	via auxiliary relay	only with STA80S		Micra	24	digital centralised
	via auxiliary relay	only with STA80S	MVT4/V.XT		24	digital centralised
	via auxiliary relay	only with STA80S		MVT4/V.XT	24	digital centralised
	3-stage fan control	only with STA80S	on/off Micra MVT4-5		24	digital centralised
	3-stage fan control	only with STA80S		on/off Micra MVT4-5	24	digital centralised

## Touchscreen



### Touchscreen

GT series – Graphic terminals suitable to the following Controlli devices: OMNIA-W500 controllers, AXC22/WMB fan-coil controllers, DG8000 room controllers.

Monochrome and colour touchscreens available in 3 different sizes: 5,7" – 7,5" – 10,4" ModBus protocol, Ethernet port.

Web Server capabilities: a plant can be monitored remotely via Internet Explorer browser.

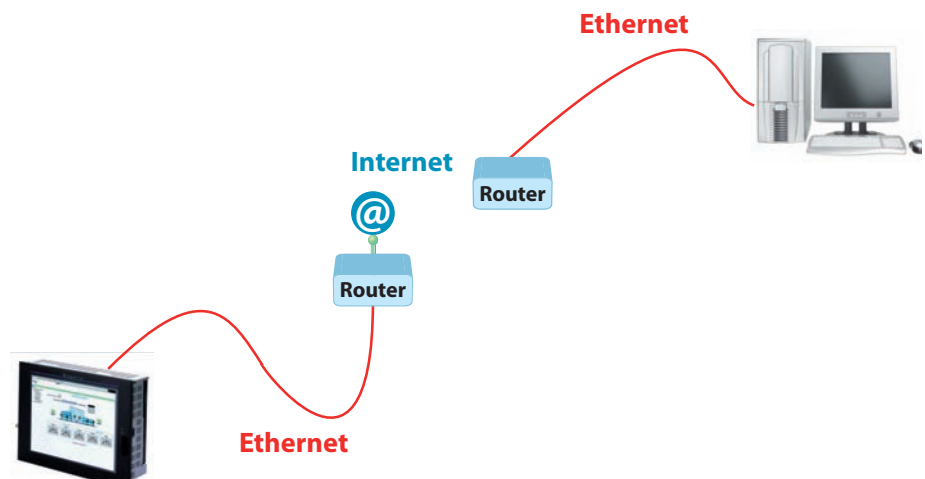
Application memory capacity from 8MB to 32MB.

Available with 2 independent serial ports RS485.

Different controllers – e.g. W500 and AXC22/WMB – can be connected to the same touch screen.

Alarms management and log.

MODEL	DIMENSIONS	SCREEN SIZE	SCREEN TYPE	RESOLUTION PIXEL	ETHERNET PORT
GT2110	167,5x135	115,2x86,4	blue	320x240	NO
GT2130			grey		YES
GT2220			4096 colours		NO
GT2330			65536 colours		YES
GT4230	215x170	153.7x115.8	4096 colours	640x480	YES
GT5230	313x239	215,2x162.3			
GTDB9CAV	RS232 SUB-D 9 cable				
GTRJ45CAV	RS485 cable				



# field devices: sensors and transmitters, actuators, valve bodies

Field devices are:

**SENSORS** (passive) for temperature detection: Ohm output signal .

**TRANSMITTERS** (active sensors) temperature, humidity, pressure, air quality.

Output signal 0÷10 Vdc (3-wire) 4÷20mA (2-wire).

**DAMPER ACTUATORS** direct or crank-arm coupling on damper shaft. On/off, floating, proportional potentiometric and voltage or current proportional control signal, with or without spring return.

**VALVE ACTUATORS** to motorise valve bodies. On/off, floating, proportional potentiometric and voltage or current proportional control signal, with or without spring return. The actuators are supplied with linkage for valve mounting.

**MOTORIZED VALVES** 2-, 3-way, 3-way 4-port valves, PN16 threaded max DN 2", equipped with on/off, floating or proportional actuator, with or without spring return, for application such as zone valves, terminal units and re-heating coils.

## VALVE BODIES

- globe 2-, 3-way, 3-way 4 port valves, PN16 threaded connections DN ½"÷¾", application in zones, terminal units and air conditioning (hot/chilled water) plants.
- globe 2-way simple seat, balanced plug or double seat and 3-way mixing valves PN16 threaded DN ½"÷2", PN16-25-40 flanged DN15÷200 mm, for residential and industrial applications with hot/chilled water, overheated water, steam, diathermic oil.
- butterfly PN10 valves, DN40÷100 mm, application with hot/chilled water.
- 3- and 4-way shoe valves, PN6 threaded DN 1"÷2", flanged 40÷100 mm.

**ALL CONTROLLI VALVES ARE PED ("Pressure Equipment Directive" 97/23/CE) COMPLIANT**



# field devices

## Sensors



### Temperature Sensors

**SB... Balco 1000 Ohm at 21.1 °C sensing element - for KX436 and CX528 controllers.**

MODEL	DESCRIPTION
SBA	Room sensor (dimensions 85x55x32 mm) - IP30
SBA55	Room sensor with set-point adjustment potentiometer 5 to 35°C (dimensions 115x85x32 mm) - IP30 protection
SBC	Immersion - AISI 304 stainless steel well- 1/2" gas nickel-plated brass connection length 113 mm - PG9 cable sleeve - max fluid temperature: 140 °C - IP44
SBD	Duct - with mounting flange - 7.5 mm - length 300 mm - PG9 cable sleeve, max fluid temperature: 95 °C - IP44
SBE	Outside - PG9 cable sleeve - IP44
SBF	Strap-on ( immersion) - IP44
SBV	As SBD but with uncovered fast-detecting sensing element - length 315 mm, max fluid temperature: 65 °C - IP44 Not suitable for applications with possible condensation
421	Well for SBC and SPTC-C with AISI 304 stainless steel connection
422	Nickel-plated brass well

### Temperature Sensors

**PTC (SPTC) and PT100 (SPTX-U only) sensing element for Omnia and CTY-TX controllers.**

MODEL	DESCRIPTION
SPTC-A	Room sensor for Omnia controllers (dimensions 86x86x31 mm) - IP30
SPTC-A5	Room sensor for Omnia with set point adjustment (dimensions 86x86x31 mm) - IP30
SPTC-A6	Room sensor for Omnia with 10-30 °C degree scale (dimensions 86x86x31 mm) - IP30
SPTC-C	Immersion sensor for CTYxx1 and Omnia cable type, 1.5 m silicone cable
SPTC-CR	Immersion sensor for CTYxx1 and Omnia with case and stick enclosed
SPTC-D	Duct sensor for CTYxx1 and Omnia, cable type, 1.5 m silicone cable
SPTC-E	Outside sensor for Omnia with PG9 cable sleeve - IP44
SPTC-F	Strap-on pipe sensor for Omnia - IP44
SPTC-V	As SPTC-D but with case and stick enclosed for Omnia and CTYxx1 - length 315 mm - max temperature 65 °C - IP44 <b>Not suitable for applications with possible condensation</b>
SPTX-U	Universal sensor for CTYxx2, PT100 sensing element, cable type, 3 m cable

### Temperature Sensors

**ST... NTC thermistor : STA/STR, 5 K Ohm at 25°C, STR72 10 Kohm at 25 °C, STR73 33 Kohm at 25°C - Application range 0 to 50 °C.**

MODEL	DESCRIPTION
STA71	Room sensor with set point adjustment 5 to 35°C for NR7000 (dimensions 85x55x32 mm) - IP30
STA75S	Room sensor with set point adjustment 5 to 35°C 3K for NR7000 (dimensions 86x86x31 mm) - IP30
STA80S	Room sensor with set point adjustment 3 K - on/off and fan speed selector for NR7000 (dimensions 86x86x31 mm) - IP30
STR71	Return air sensor with mounting kit for terminal unit for NR7000 - IP30
STR72	Return air or pipe-contact sensor without mounting kit for RA735 - IP30
STR73	Return air or pipe-contact sensor without mounting kit for AX526/527/536/537 - IP30

Sensor models in other sections of the present guide:

**SP. - TP.** Platinum sensors for TX controllers, see page 13;

**SNTC** Sensors for AXC, see page 12.

## Transmitters

### Temperature Transmitters

Output signal 0 to 10 V d.c. or 4 to 20 mA - "Integrated" sensing element for CTYxx2 (4-20 mA-version). See page 13.

MODEL	RANGE °C	OUTPUT SIGNAL	APPLICATION
TT-A21	0 to 50	4 to 20 mA	room - dimensions 115 x 85 x 32 mm. IP30
TT-A31	0 to 50	0 to 10 Vdc	
TT-C21	0 to 100	4 to 20 mA	immersion - 113 mm stainless steel well - AISI 304 stainless steel 1/2" connection - IP55
TT-C22	-50 to 50	4 to 20 mA	
TT-C23	0 to 300	4 to 20 mA	immersion - length 175 mm - 1/2" stainless steel connection without well, Pt100 Ohm at 0 °C sensing element
TT-C24	0 to 500	4 to 20 mA	
TT-C31	0 to 100	0 to 10 Vdc	as TT-C21
TT-D21	-50 to 50	4 to 20 mA	duct, 300 max stem length, with wall mounting kit. IP55
TT-D31	-50 to 50	0 to 10 Vdc	
TT-E21	-50 to 50	4 to 20 mA	outside - IP55

### Humidity Transmitters

Series TU - Capacitive sensing element 0 to 95% R.H. - For W500H controllers, see page 20.

Series TUT - Humidity-sensing element and Balco 1000 Ohm at 21.1 °C (TUT.32) or NTC (TUT.34) temperature sensing element - For W500H controllers, see page 20.

MODEL	OUTPUT SIGNAL	APPLICATION
TU-A22	4 to 20 mA (2-wire)	room (dimensions 115x85x32 mm) - IP30
TU-A32	0 to 10 Vdc (3-wire)	room (dimensions 115x85x32 mm) - IP30
TU-D22	4 to 20 mA (2-wire)	duct - immersion length 200 mm - IP55
TU-D32	0 to 10 Vdc (3-wire)	duct - immersion length 200 mm - IP55
TUTA32	0 to 10 Vdc/Ohm (temp.) (3+2 wires)	room (dimensions 115x85x32 mm) - IP30
TUTD32	0 to 10 Vdc/Ohm (temp.) (3+2 wires)	duct - immersion length 200 mm - IP55
TU-A33	4 to 20 mA (2-wire)/0 to 10 Vdc (3-wire)	room (dimensions 84 x116 x 24 mm) - IP 20
TU-D33	4 to 20 mA (2-wire)/0 to 10 Vdc (3-wire)	duct - rod Ø 12.5 mm - length 230 mm - IP 65
TUTA34	0 to 10 Vdc/Ohm (temp.) (3+2 wires)	room (dimensions 84 x116 x 24 mm) - IP 20
TUTD34	0 to 10 Vdc/Ohm (temp.) (3+2-wire)	duct - rod Ø 12.5 mm - length 230 mm - IP 65

### Pressure and Differential Pressure Transmitters

Series TP - Output signal 0 to 10 V d.c. 24 Vac power supply - For CTYxx2 (4-20mA-version) controllers, see page 13.

MODEL	RANGE	MAX PRESSURE	APPLICATION
TP-C34	0-500/1000/2000 kPa	+300%	pressure of not aggressive gas and liquids - G 1/8" - IP65
TP-C351	0 to 600 kPa	1200 kPa	differential pressure of not aggressive gas and liquids G 1/8" connections - IP65
TP-C361	0 to 1000 kPa	1200 kPa	
TP-D333	0-312,5/625/1250 Pa adjustable with central "0"	68 kPa	differential pressure of air and not aggressive gas PVC internal Ø 6 mm connections - IP65
TP-D334	0-62,5/125/250 Pa adjustable with central "0"	68 kPa	

### Room Air Quality Transmitters

Series TQ - Output signal 0 to 10 V dc - Power supply 24 Vac.

MODEL	DESCRIPTION
TQ-A31	Room - range 1 to 100% (dimensions 115 x 85 x 32 mm) - IP20
TQ-D31	As above, duct type





# field devices

## Actuators



5 Nm



10 and 20 Nm

### Damper Actuators for Direct Coupling to Damper Shaft

MDB series. Without spring return - Max angular travel 95°, adjustable by mechanical stops - M;DB24-44+AM70 for shoe valves- IP54 protection.

MODEL	INPUT SIGNAL	TORQUE Nm	SUPPLY Vac	CONSUMPTION VA	DAMPER SURFACE m <sup>2</sup>	TIMING (s. FOR 90°)
MDB24	floating	10	230	5.5	2	150
MDB26	floating	20	230	6	4	150
MDB42	floating	5	24	1.5	1	150
MDB44	floating	10	24	3.5	2	150
MDB46	floating	20	24	4	4	150
MDB52	0-10 V	5	24	2	1	150
MDB54	0-10 V	10	24	4	2	150
MDB56	0-10 V	20	24	4	4	150

### Accessories for MDB Actuators

MODEL	DESCRIPTION
DMDB	Two auxiliary microswitches for MDB, SPDT1 mA...3(0.5) A, 250 V AC

### Damper Actuators for Direct Coupling to Damper Shaft

DuraDrive series. With spring return - Protection IP54 (for 7-15 Nm only with conduit connector downwards, otherwise IP30).



4 Nm



7 and 15 Nm

MODEL	CONTROL SIGNAL	TORQUE Nm	SUPPLY Vac	AUXILIARY MICRO-SWITCH	MAX DAMPER SURFACE m <sup>2</sup>	TIMING (s. FOR 90°)
MA40-7041-G00	2 pos.	4	230		0.74	50
MA40-7041-G01	2 pos.	4	230	1	0.74	50
MA40-7043-G00	2 pos.	4	24		0.74	50
MA40-7043-G01	2 pos.	4	24	1	0.74	50
MA41-7071-G00	2 pos.	7	230		1.39	80
MA41-7071-G02	2 pos.	7	230	2	1.39	80
MA41-7073-G00	2 pos.	7	24		1.39	80
MA41-7073-G02	2 pos.	7	24	2	1.39	80
MA41-7151-G00	2 pos.	15	230		3.25	190
MA41-7151-G02	2 pos.	15	230	2	3.25	190
MA41-7153-G00	2 pos.	15	24		3.25	190
MA41-7153-G02	2 pos.	15	24	2	3.25	190
MF40-7043-G00	floating	4	24		0.74	130
MF40-7043-G01	floating	4	24	1	0.74	130
MF41-7073-G00	floating	7	24		1.39	195
MF41-7073-G02	floating	7	24	2	1.39	195
MF41-7153-G00	floating	15	2		3.25	190
MF41-7153-G02	floating	15	24	2	3.25	190
MS40-7043-G00	2-10 V	4	24		0.74	130
MS40-7043-G01	2-10 V	4	24	1	0.74	130
MS41-7073-G00	2-10 V	7	24		1.39	195
MS41-7073-G02	2-10 V	7	24	2	1.39	195
MS41-7153-G00	2-10 V	15	24		3.25	190
MS41-7153-G02	2-10 V	15	24	2	3.25	190

### Accessories for DuraDrive Actuators

MODEL	DESCRIPTION
AM-703	Input rescaling module. Adjusts signals to 2-10 Vdc, zero and span adjustment, for MS..

### Damper Actuators: Crank-arm Mounting Type

Series MDL - Bidirectional motor- Input signal P.C. board - Power consumption 12VA - 2 output shafts: main and secondary shaft  $\varnothing$  9,5 x 9.5 mm - MDL30-50 angular travel set at 90°adjustable between 55 and 160° - MDL20-40-60 angular travel set at 90°adjustable between 0 and 160° - Force 500 N - Manual override - IP 55.

MODEL	TIMING (s. FOR 90°)	TORQUE Nm	ADJUSTABLE ANGULAR TRAVEL	SUPPLY Vac	MAX DAMPER SURFACE m <sup>2</sup>	ACTION
MDL22	15 - 27	6	0 to 160	230	1.2	on/off, floating
MDL24	45 - 80	20	0 to 160	230	4	"
MDL26	60 - 107	30	0 to 160	230	6	"
MDL42	15 - 27	6	0 to 160	24	1.2	"
MDL44	45 - 80	20	0 to 160	24	4	"
MDL46	60 - 107	30	0 to 160	24	6	"
MDL62	15 - 27	6	0 to 160	110	1.2	"
MDL64	45 - 80	20	0 to 160	110	4	"
MDL66	60 - 107	30	0 to 160	110	6	"
MDL32	15 - 27	6	55 to 160	24	1.2	proportional-potentiometric (165 Ohm)
MDL34	45 - 80	20	55 to 160	24	4	
MDL36	60 - 107	30	55 to 160	24	6	
MDL52	15 - 27	6	55 to 160	24	1.2	Vdc/current proportional control. Ranges: 6 to 9, 4 to 7, 8 to 11, 0 to 10, 1 to 5 Vdc, or current 4 to 20 mA
MDL54	45 - 80	20	55 to 160	24	4	
MDL56	60 - 107	30	55 to 160	24	6	

VARIANTS: in case the MDL2./4. actuators are needed to be supplied with 1 KOhm auxiliary potentiometer, add PA2 for MDL20, PA4 for MDL40 and PA6 for MDL60: e.g. MDL24PA2, MDL46PA4 or MDL66PA6. In special applications, the actuators can be supplied with 2 or 3 auxiliary potentiometers.

### Options

MODEL	DESCRIPTION
MDLS5	Electronic card input signal, range 6 to 9, 4 to 7, 8 to 11, 1 to 5 V d.c., 4 to 20 mA for MDL32/34/36
MDLV5	Electronic card input signal, range 0 to 10 V d.c., 4 to 20 mA with adjustable start point and span for MDL32/34/36

### Accessories

MODEL	DESCRIPTION
DMDL	Two auxiliary microswitches SPDT 10 (3) A - 240 V a.c. adjustable on the whole stroke for MDL
MDLA1	Damper drive linkage for MDL
MDLA2	Linkage for mounting MDL when replacing SL
MDLPA2	Board with 1 K Ohm auxiliary potentiometer for MDL2
MDLPA4	Board with 1 K Ohm auxiliary potentiometer for MDL4
MDLPA6	Board with 1 K Ohm auxiliary potentiometer for MDL6
YS7	Crank-arm in addition to MDLA1 composed of 2 joints and 8-mm rod for dampers with 10 to 18mm shaft with MDL actuator

All the accessories are supplied separately.

As a special request, it is possible to supply boards with 2 or 3 auxiliary potentiometers.



# field devices

## Actuators



### Actuators for Zone and Terminal Unit Valves

Series MVT2./4. - Bidirectional type - Driving signal from any floating controller, e.g. DIGITROLL 7000 NR732xB-734xBx, RA733/735 - Torque 200N - Stroke 6.5 mm, stroke time 117 s. - For V.XT - V.BT valve bodies - Protection IP43.

Series MVT5. - Bidirectional type with microprocessor module for proportional signal Vdc and mA - 24 Vac power supply - Torque 200N - Stroke 6.5mm, stroke time 117 s. - For V.XT - V.BT valve bodies - Protection IP43.

MODEL	POWER SUPPLY Vac	CONSUMPTION VA	OTHER CHARACTERISTICS
MVT28	230	5	3-position control
MVT44	24	0.5	3-position control
MVT56	24	1	0 to 10/ 6 to 10/ 1 to 5/ 2 to 10/ 4 to 7/ 6 to 9/8 to 11 Vdc proportional control - direct/reverse action
MVT57	24	1	0 to 10 Vdc - proportional control - only direct action

### Globe Valve Actuators

Series MVB - Bidirectional motor for V.B threaded ½" to 2" and flanged 15 to 65 mm valve bodies - Supplied with linkage for mounting on V.B-V.BF valve bodies - Force 450 N - IP50 protection.



MODEL	TIMING s.	SUPPLY Vac	CONSUMPTION VA	OTHER CHARACTERISTICS
MVB22	37	230	5	on/off, floating
MVB26	60	230	5	
MVB28	370	230	5	
MVB46	60	24	5	proportional potentiometric
MVB36	60	24	5	
MVB52	37	24	5	Vdc/ current proportional control. Ranges: 6 to 9, 4 to 7, 8 to 11, 0 to 10, 2 to 10, 1 to 5 Vdc, 4 to 20 mA. Default setting: 0 to 10Vdc
MVB56	60	24	5	
MVBAV	MVB valve mounting			

### WARNING:

Actuators are supplied NOT mounted on valve bodies. In case the actuator-valve assembly is required, order the specific part number MVBAV together with the models of actuator and valve body.

### Globe Valve Actuators

Series MVF - Brushless motor for any Controlli valve, threaded (MVF-S) and flanged (MVF) - Self-stroking, self-adjusting - The actuator is supplied separately, for VSB-VSB.F VMB-VMB.F valve mounting, add linkage AG52 for MVF or AG63 for MVFS (page 54) - Linkages to valves from other manufacturers are available - Contact our customer service for details. IP54 protection



MODEL	FORCE N	SUPPLY Vac	CONSUMPTION VA	OTHER CHARACTERISTICS
MVF54	400	24	5	3-position and/or proportional control (selectable). Ranges: 6 to 9/4 to 7/ 8 to 11/0 to 10/2 to 10/1 to 5 Vdc; current 4 to 20 mA
MVF58	800	24	5	
MVF515	1500	24	5	
MVF54S	400	24		3-position and/or proportional control (selectable). Ranges: 6 to 9/4 to 7/ 8 to 11/0 to 10/2 to 10/1 to 5 Vdc; current 4 to 20 mA <b>Short bracket</b>
MVF58S	800	24		
MVF515S	1500	24		

## Actuators

### Globe Valve Actuators with Spring Return

Series MVF59 - Brushless motor for any Controlli valve, flanged DN15÷65 (MVF59) and threaded 1/2"÷2" (MVF59-S short bracket with linkage AG63) - Self-stroking, self-adjusting - Force 900 N - Power supply 24Vac - The actuator is supplied separately, for VSB-VSB-F VMB-VMB-F valve mounting, add linkage AG52 for MVF59 or AG63 for MVF59-S, see page 54 - Linkages to valves from other manufacturers are available - Contact our customer service for details.

MODEL	PROTECTION DEGREE	ACTION	OTHER CHARACTERISTICS
MVF59A	IP54	3-position and/or proportional control (selectable). Ranges: 6 to 9/4 to 7/8 to 11/0 to 10/2 to 10/1 to 5 Vdc; current 4 to 20 mA	with spring return stem up
MVF59AW	IP65		
MVF59C	IP54		with spring return stem down
MVF59CW	IP65	3-position and/or proportional control (selectable). Ranges: 6 to 9/4 to 7/8 to 11/0 to 10/2 to 10/1 to 5 Vdc; current 4 to 20 mA <b>Short bracket</b>	with spring return stem up
MVF59AS	IP54		
MVF59AWS	IP65		with spring return stem down
MVF59CS	IP54		
MVF59CWS	IP65		



### Globe Valve Actuators

Series MVH - For all valve bodies with self-adjusting stroke 10 to 45 mm (9 to 50 mm for MVH56F) - Supplied with linkage for valve mounting - For VSB-VSB-F VMB-VMB-F only, add linkage AG62, see page 54 - Force 1500 N - Manual control device - Protection IP55.

MODEL	TIMING DEPENDING ON VALVE STROKE s.			SUPPLY Vac	CONSUMPTION VA	ACTION
	16.5	25	45			
MVH26	22	33	60	230	12	on/off floating
MVH46	22	33	60	24	12	proportional potentiometric
MVH36	22	33	60	24	12	
MVH56F	22	33	60	24	12	3-position and/or proportional control (selectable) Ranges: 6 to 9/4 to 7/8 to 11/0 to 10/2 to 10/1 to 5 Vdc; current 4 to 20 mA. Default setting: 0 to 10Vdc
MVHAV	MVH assembly on valve body					



### Globe Valve Actuators with Spring Return

Series MVH - For all valve bodies with self-adjusting stroke 9 to 50 mm - Direct-reverse action - Supplied with linkage for mounting on valve body - For VSB-VSBF VMB-VMBF only, add linkage AG62, see page 54 - Force 700 N - Protection IP55.

MODEL	TIMING DEPENDING ON VALVE STROKE s.			SUPPLY Vac	CONSUMPTION VA	ACTION	OTHER CHARACTERISTICS
	16.5	25	45				
MVH56FA	17 (45)	25 (60)	48 (114)	24	15	Vdc/ mA proportional control or floating control. Default setting: 0 to 10Vdc	with spring return stem up
MVH56FC	17 (45)	25 (60)	48 (114)	24	15		with spring return stem down

Note: The values in brackets indicate the return time by spring return. By spring return: MVHFA closes two-way valves and direct way in three-way valves, MVHFC opens two-way valves and direct way in three-way valves. This is valid for all valves except 2FGA-2FGA.B-2FAA-2FAA150B in which happens the opposite.



### NEW High-performance Valve Actuators

MODEL	TIMING DEPENDING ON VALVE STROKE s.			SUPPLY Vac	CONSUMPTION VA	ACTION	FORCE
	16.5	25	45				
MVH3K	26	40	70	24	25	Vdc/ mA proportional control or floating control (selectable). Default setting: 0 to 10Vdc	3000

# field devices

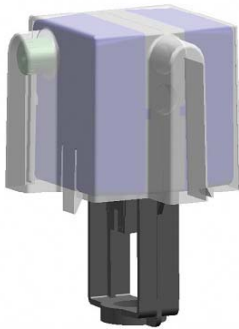
## Actuators



### Actuators for Butterfly Valves

Series MDA - Bidirectional actuator for VFA butterfly valves, see page 55 - Floating (MDA2.-4.) or proportional 0-10 V (MDA5.) control signal - Angular stroke 90° - Manual control - Supplied with linkage for mounting on valve body - Protection IP54.

MODEL	TIMING s.	POWER SUPPLY Vca	TORQUE Nm	OTHER CHARACTERISTICS
MDA22	90	230	20	For VFA valves up to DN100
MDA24	150		40	For VFA valves from DN125 to DN200
MDA42	90	24	20	For VFA valves up to DN100
MDA44	150		40	For VFA valves from DN125 to DN200
MDA52	90		20	For VFA valves up to DN100
MDA54	150		40	For VFA valves from DN125 to DN200
MDAV1	MDA actuators are supplied NOT mounted on valve bodies. In case the actuator-valve assembly is required, order the specific part number MDAV1 together with the models of actuator and valve body.			
MDAV2	DMDA microswitch assembling on MDA actuator			



### Accessories for MVB - MVF - MVH - MVHF - MDA Actuators

MODEL	DESCRIPTION
D36	One stroke-end auxiliary microswitch adjustable on the whole stroke for MVB
DMDA	Two auxiliary microswitches for MDA
DMVF	Two auxiliary adjustable microswitches for MVF
DMVH	Two auxiliary microswitches adjustable on the whole stroke for MVH
MVBC	Rain-proof protection (see picture on the left)
MVBD	Microswitch driven by manual control knob. Supplied only factory-mounted
MVBHT	Spacer for MVB. To be used with V.B/V.BF valves with temperature from 120 to 140 °C
MVBPA2	1 kOhm auxiliary potentiometer for MVB46. Supplied only factory-mounted
MVHFS5	Selection module for 4 to 20 mA range for MVHF (supplied with the actuator)
MVHT	Spacer for high temperature for MVH-MVF. To be used with valve bodies with fluid temperature higher than 150°C (2F-3F)
MVHPA2	1000 Ohm auxiliary potentiometer for MVH26
MVHPA4	1000 Ohm auxiliary potentiometer for MVH46
MVHPA6	1000 Ohm auxiliary potentiometer for MVH66

All accessories, except MVBPA2 and MVBD, are supplied separately. Mounting is carried out by the customer.

### Micra - Fan Coil Motorised Valves

Actuators series MVX - Electrothermal actuator for normally closed V.X valves - Stroke end indicator - 2 m bipolar/tripolar cable - Protection IP44.

MODEL	STARTING TIME s.	SUPPLY Vac	FORCE N	ACTION
MVX21 <sup>1)</sup>	60	110-230	90	on-off
MVX41 <sup>1)</sup>	60	24	90	
MVX57	60	24	90	proportional 0-10 Vdc

1) These models are also available with cable section 0.35 mm<sup>2</sup> instead of 0.75 mm<sup>2</sup>. When ordering this version, add the letter "R" at the end of the model code, e.g. MVX21R.

**NEW** Actuators series MVR - Electrothermal actuator for normally open V.X valves - 0.65 m cable - Protection IP44.

MODEL	STARTING TIME s.	SUPPLY Vac	FORCE N	ACTION
MVR230 <sup>2)</sup>	60	110-230	90	on-off - normally open
MVR24 <sup>2)</sup>	60	24	90	

2) These models are also available with auxiliary microswitch. When ordering this version, add the letter "M" at the end of the model code, e.g. MVR230M.

**Series V.X. - NP16 brass valve bodies - Tight close-off both on direct and angle way - NBR plug - Fluid: water and water+glycol 30% max. - Temperature 5 to 95 °C - Stroke 2.5 mm - Threaded connections for conic and flat tight - Motorised by MVX-MVR.**

MODEL	Kvs		CLOSE-OFF bar	ACTION TYPE DIRECT WAY	THREADED CONNECTIONS	TIGHT
	DIRECT WAY	ANGLE WAY				
VSX09P	0.25	-	2.5	2-way n.c.	G 1/2" M	flat
VSX10P	0.4	-	2.5		G 1/2" M	flat
VSX11P	0.6	-	2.5		G 1/2" M	flat
VSX12P	1	-	2.5		G 1/2" M	flat
VSX13	1.6	-	2.5		G 1/2" M	conic
VSX13P	1.6	-	2.5		G 1/2" M	flat
VSX21	2.5	-	1.5		G 3/4" M	conic
VSX21P	2.5	-	1.5		G 3/4" M	flat
VMX09P	0.5	0.25	2.5		3-way	G 1/2" M
VMX10P	0.4	0.4	2.5	G 1/2" M		flat
VMX11P	0.6	0.6	2.5	G 1/2" M		flat
VMX12P	1	0.8	2.5	G 1/2" M		flat
VMX13	1.6	1	2.5	G 1/2" M		conic
VMX13P	1.6	1	2.5	G 1/2" M		flat
VMX21	2.5	1.6	1.5	G 3/4" M		conic
VMX21P	2.5	1.6	1.5	G 3/4" M		flat
VTX09P <sup>4)</sup>	0.25	0.25	2.5	3-way 4-port		G 1/2" M
VTX10P <sup>4)</sup>	0.4	0.4	2.5		G 1/2" M	flat
VTX11P <sup>4)</sup>	0.6	0.6	2.5		G 1/2" M	flat
VTX12P <sup>4)</sup>	1	0.8	2.5		G 1/2" M	flat
VTX13	1.6	1	2.5		G 1/2" M	conic
VTX13P <sup>4)</sup>	1.6	1	2.5		G 1/2" M	flat
VTX21	2.5	1.6	1.5		G 3/4" M	conic
VTX21P	2.5	1.6	1.5		G 3/4" M	flat

3) In case of motorised valves, add M2 at the end of the model code for MVX21, M4 for MVX41 and M5 for MVX57, e.g. VMX13M2.

4) These models are also available with 40-mm port-to-port distance, instead of 35 mm. When ordering this version, add "4" at the end of the model code; e.g. VTX12P4.

### Accessories

MODEL	DESCRIPTION
VXC	Manual control for V.X and V.XT series valves



# field devices

## Micra



### Micra - Fan Coil Motorised Valves with high Kvs

Actuators series MVX - Electrothermal actuator for V.X valves with Kvs 4 and 6 - Stroke end indicator - 2 m. bipolar/tripolar cable - Protection IP44.

MODEL	STARTING TIME s.	SUPPLY Vac	FORCE N	ACTION
MVX22	90	110-230	140	on-off
MVX42	90	24	140	on-off
MVX52	90	24	140	proportional 0-10 Vdc

Series V.X. - NP 16 brass valve bodies - Tight close-off both on direct and angle way - Fluid: water and water + glycol 30% max. - Temperature 5 to 95°C - Stroke 2.5 mm - Threaded connection for conic and flat tight. Motorised by MVX actuators<sup>1</sup>.



MODEL	Kvs		CLOSE-OFF bar	ACTION TYPE DIRECT WAY	THREADED CONNECTIONS	TIGHT
	DIRECT WAY	ANGLE WAY				
VSX24P	4	-	1.5	2-way n.c	G 3/4" M	flat
VSX26P	6	-	1.5		G 3/4" M	flat
VMX24P	4	2.5	1 (0.4) <sup>2</sup>	3-way	G 3/4" M	flat
VMX26P	6	4	1 (0.4) <sup>2</sup>		G 3/4" M	flat
VTX24P	4	2.5	1 (0.4) <sup>2</sup>	3-way 4-port	G 3/4" M	flat
VTX26P	6	4	1 (0.4) <sup>2</sup>		G 3/4" M	flat

1) In case of motorised valves, add to the valve code M2 for MVX22, M4 for MVX42 and M5 for MVX52. E.g. VMX26M2.

2) The values in brackets refer to the angle way.

### Valves Bodies for Zone and Fan Coil Units

Series V.XT - NP 16 forged brass valve body - Tight close-off both on direct and angle way - Plug with double Viton OR - Fluid: water and water+glycol 30% max., temperature 2 to 95°C - Stroke 5.5 mm - Flow characteristic: equal-percentage direct way, linear angle way. To be motorised with MVT actuator, see page 42.

MODEL <sup>1)</sup>	Kvs		CLOSE-OFF bar	ACTION TYPE DIRECT WAY	THREADED CONNECTIONS	TIGHT
	DIRECT WAY	ANGLE WAY				
VSXT09P	0.25	-	3.5	2-way n.c	G 1/2" M	flat
VSXT10P	0.4	-	3.5		G 1/2" M	flat
VSXT11P	0.6	-	3.5		G 1/2" M	flat
VSXT12P	1	-	3.5		G 1/2" M	flat
VSXT13P	1.6	-	3.5		G 1/2" M	flat
VSXT1P	2	-	2.5		G 1/2" M	flat
VSXT21P	2.5	-	2.5		G 3/4" M	flat
VSXT24P	4	-	1.5		G 3/4" M	flat
VSXT26P	6	-	1.5		G 3/4" M	flat
VMXT09P	0.25	0.25	3.5		3-way	G 1/2" M
VMXT10P	0.4	0.25	3.5	G 1/2" M		flat
VMXT11P	0.6	0.4	3.5	G 1/2" M		flat
VMXT12P	1	0.6	3.5	G 1/2" M		flat
VMXT13P	1.6	1	3.5	G 1/2" M		flat
VMXT1P	2	1.6	2.5	G 1/2" M		flat
VMXT21P	2.5	1.6	2.5	G 3/4" M		flat
VMXT24P	4	2.5	1 (0.4) <sup>3)</sup>	G 3/4" M		flat
VMXT26P	6	4	1 (0.4) <sup>3)</sup>	G 3/4" M		flat
VTXT09P <sup>2)</sup>	0.25	0.25	3.5	3-way 4-port		G 1/2" M
VTXT10P <sup>2)</sup>	0.4	0.25	3.5		G 1/2" M	flat
VTXT11P <sup>2)</sup>	0.6	0.4	3.5		G 1/2" M	flat
VTXT12P <sup>2)</sup>	1	0.6	3.5		G 1/2" M	flat
VTXT13P <sup>2)</sup>	1.6	1	3.5		G 1/2" M	flat
VTXT1P <sup>2)</sup>	2	1.6	2.5		G 1/2" M	flat
VTXT21P	2.5	1.6	2.5		G 3/4" M	flat
VTXT24P	4	2.5	1 (0.4) <sup>3)</sup>		G 3/4" M	flat
VTXT26P	6	4	1 (0.4) <sup>3)</sup>		G 3/4" M	flat

- 1) All V.XT valves are available with conic connection. When ordering this version, ignore the letter "P" at the end of the model code; e.g. VSXT21.
- 2) These models are also available with 40-mm port-to-port distance, instead of 35 mm. When ordering this version, add "4" at the end of the model code; e.g. VTXT1P4.
- 3) The values in brackets refer to the angle way.

### Motorised Valves for Zone and Terminal Units

Series VSE/VDE - On/off actuator with aluminium case - Power supply 230 Vac - Spring return - Stroke end microswitch.

Brass valve body - Temperature range 0 to 93 °C - Mixing and diverting.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE kPa	TYPE
VSE1	1/2"	2.2	210	Two-way n.c.
VSE2	3/4"	3.0	140	
VSE3	1"	6.9	103	
VDE1	1/2"	2.6	210	Three way
VDE2	3/4"	3.4	140	
VDE3	1"	6.5	103	





# field devices

## Valves



### 2-way Globe Valves

Series VSB (threaded) - VSB.F (flanged) - NP 16 - Stroke 16.5 mm. To be motorised by MVB - MVF - MVH actuators, see pages 42-43 - Thermal insulation available, see page 55 - Stainless steel plug available. Contact our export sales dept. for prices and part numbers.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER CHARACTERISTICS	
			MVB	MVF58	MVH	MVHF A/C <sup>1)</sup>		
VSB11	1/2"R	1	2 (13.5)	2 (16)	2 (16)	2 (16)	<ul style="list-style-type: none"> <li>- Brass body for DN1/2"; G 25</li> <li>- cast-iron body for DN3/4" to 2"</li> <li>- Brass internal parts</li> <li>- Female threaded connections: fluid temperature -10<sup>2)</sup> to 150 °C, with MVB max 120°C (140°C with MVB+MVBHT)</li> <li>- Equal-percentage control flow characteristic</li> <li>- Leakage 0.03% Kvs</li> <li>- For MVF actuator, add AG52 linkage</li> <li>- For MVH actuator, add AG62 linkage</li> </ul>	
VSB1	1/2"R	1.6	2 (13.5)	2 (16)	2 (16)	2 (16)		
VSB15	1/2"R	2.5	2 (13.5)	2 (16)	2 (16)	2 (16)		
VSB2	1/2"	4	2 (13.5)	2 (16)	2 (16)	2 (16)		
VSB3	3/4"	6.3	2 (11)	2 (16)	2 (16)	2 (16)		
VSB4	1"	10	2 (7)	2 (15.5)	2 (16)	2 (13.5)		
VSB5	1 1/4"	16	2 (4.2)	2 (9.4)	2 (16)	2 (8.2)		
VSB6	1 1/2"	22	2 (3)	2 (6.5)	2 (12)	2 (5.7)		
VSB8	2"	30	2 (2.1)	2 (4.9)	2 (9)	2 (4.3)		
VSB8A	2"	40	2 (2.1)	2 (4.9)	2 (9)	2 (4.3)		
VSB11F	15 R	1	2 (13.5)	2 (16)	2 (16)	2 (16)		As above but with slip-on flanges
VSB1F	15 R	1.6	2 (13.5)	2 (16)	2 (16)	2 (16)		
VSB15F	15 R	2.5	2 (13.5)	2 (16)	2 (16)	2 (16)		
VSB2F	15	4	2 (13.5)	2 (16)	2 (16)	2 (16)		
VSB3F	20	6.3	2 (11)	2 (16)	2 (16)	2 (16)		
VSB4F	25	8	2 (7)	2 (15.5)	2 (16)	2 (13.5)		
VSB5F	32	16	2 (4.2)	2 (9.4)	2 (16)	2 (8.2)		
VSB6F	40	22	2 (3)	2 (6.5)	2 (12)	2 (5.7)		
VSB8F	50	30	2 (2.1)	2 (4.9)	2 (9)	2 (4.3)		
VSB8AF	50	40	2 (2.1)	2 (4.9)	2 (9)	2 (4.3)		

1) By spring return MVHFA closed, MVHFC open.

2) For applications with ice formation on stem and packing, use the stem heater (see page 54).

### 2-way Globe Valves with Tight Close-off

Series VSBPM threaded valves - Modulating tight close-off valves NP16 G25 cast iron - Thermal insulation available, see page 55 - To be motorised by MVB-MVF54-actuators, see pages 42.



MODEL	DN	Kvs	STROKE mm	MAX DIFFERENTIAL PRESSURE bar		OTHER CHARACTERISTICS
				MVB	MVF54	
VSBP2M	1/2"	4	8.8	2 (11)	2 (9.5)	<ul style="list-style-type: none"> <li>- Fluid temperature -5 to 95°C</li> <li>- Leakage 0% Kvs</li> <li>- For MVF54, add AG52 linkage</li> </ul>
VSBP3M	3/4"	6.3	16.5	2 (8.8)	2 (7.5)	
VSBP4M	1"	10	16.5	2 (5.5)	2 (5)	
VSBP5M	1 1/4"	16	16.5	2 (5.5)	2 (5)	
VSBP6M	1 1/2"	25	16.5	2 (2.5)	2 (2.2)	
VSBP8M	2"	40	16.5	1.8	1.5	

Values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.

### 2-way Globe Valves

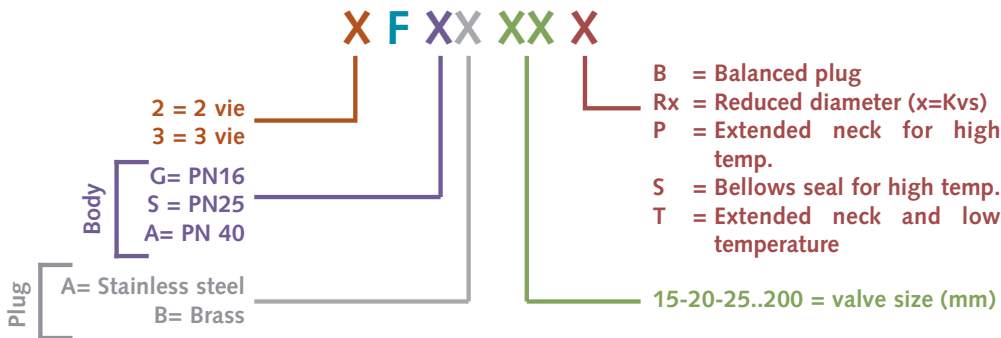
Series VSBT in G25 cast-iron NP16 - To be motorised by MVT actuators, see page 42.



MODEL	DN	Kvs	STROKE mm	MAX DIFFERENTIAL PRESSURE bar	OTHER CHARACTERISTICS
VSBT3	3/4"	6.3	5.5	2.5	<ul style="list-style-type: none"> <li>- Linear control flow characteristics</li> <li>- Leakage 0.03% Kvs</li> <li>- Fluid temperature 5° to 95°C</li> </ul>
VSBT4	1"	10	5.5	1.5	
VSBT5	1 1/4"	14	5.5	0.9	
VSBT6	1 1/2"	18	5.5	0.6	

Pressure drop diagrams and Kvs selection: see pages 62-63.

### Flanged Globe Valves Selection Chart



### 2-way Single-seat Globe Valves

Series 2F - NP16-25 - Stroke 16.5 mm (DN25), 25 mm (DN40 to 65) 45 mm (DN80 to 150)  
 - To be motorised by MVH - MVF actuators, see pages 42-43.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER CHARACTERISTICS
			MVF58	MVH3K	MVH	MVHF A/C <sup>1)</sup>	
2FGB25R4	25 R	4	2 (12)	-	2 (16)	2 (10.5)	- G 25 cast-iron body internal parts in bronze - NP 16 flanged connections - Fluid temperature: - 10 <sup>2)</sup> to 150 °C - Control flow characteristics equal-percentage - Leakage 0.03% Kvs
2FGB25R7	25 I	6.3	2 (12)	-	2 (16)	2 (10.5)	
2FGB25	25	10	2 (12)	-	2 (16)	2 (10.5)	
2FGB40	40	25	2 (6.6)	-	2 (12)	2 (5.8)	
2FGB50	50	40	2 (4.1)	-	2 (7.5)	2 (3.6)	
2FGB65	65	63	2 (2.4)	-	2 (4.5)	2 (2.1)	
2FGB80	80	100	1.5	5.7	2 (2.5)	1.3	
2FGB100	100	130	0.9	3.7	1.8	0.8	
2FGB125	125	200	0.6	2.3	1.1	0.5	
2FGB150	150	300	0.35	1.6	0.8	0.3	
2FGA15R0	15R	0.6	8 (16)	-	8 (16)	8 (16)	- G 25 cast-iron body internal parts in stainless steel - NP 16 flanged connections - Fluid temperature: - 10 <sup>2)</sup> to 200 °C - Equal-percentage control flow characteristic - Leakage 0.02% Kvs
2FGA15R1	15R	1	8 (16)	-	8 (16)	8 (16)	
2FGA15R2	15R	1.6	8 (16)	-	8 (16)	8 (16)	
2FGA15R3	15R	2.5	8 (16)	-	8 (16)	8 (16)	
2FGA15	15	4	8 (16)	-	8 (16)	8 (16)	
2FGA20	20	6.3	8 (16)	-	8 (16)	8 (14.5)	
2FGA25	25	10	8 (10)	-	8 (16)	8 (9)	
2FGA32	32	16	8 (10)	-	8 (16)	8 (9)	
2FGA40	40	24	6.8	-	8 (13.5)	6	
2FGA50	50	32	4.3	-	8 (9)	3.8	
2FGA65	65	63	1.7	-	3.5	1.5	
2FGA80	80	110	1.1	5.5	2	1	
2FGA100	100	140	0.7	3.5	1.5	0.6	

The values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.

- 1) 2FGB: by spring return MVHFA closed, MVHFC open. 2FGA: by spring return MVHFA open, MVHFC closed.
- 2) For applications with eventual ice formation on stem and packing, use the stem heater (see page 54).

Options and accessories for valve bodies: see page 54.

Pressure drop diagrams and Kvs selection: see pages 58-59.

Valve selection chart: see page 49.



# field devices

## Valves



### 2-way Single-seat Globe Valves

Series 2F - NP16-25 - Stroke 16.5 mm (DN25), 25 mm (DN40 to 65) 45 mm (DN80 to 150)  
- To be motorised by MVH - MVF actuators, see pages 42-43.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER CHARACTERISTICS
			MVF58	MVH3K	MVH	MVHF A/C <sup>1)</sup>	
2FSA25R4	25 R	4	8 (24)	-	8 (25)	8 (21)	<ul style="list-style-type: none"> <li>- Spheroidal cast-iron body internal parts in stainless steel</li> <li>- NP 25 flanged connections</li> <li>- Fluid temperature: -10<sup>2)</sup> to -230°C</li> <li>- Equal-percentage control flow characteristic</li> <li>- Leakage 0.02% Kvs</li> </ul>
2FSA25R7	25I	6,3	8 (12)	-	8 (22)	8 (10.6)	
2FSA25	25	10	8 (12)	-	8 (22)	8 (10.6)	
2FSA32	32	16	8	-	8 (14.5)	7.1	
2FSA40	40	25	5.8	-	8 (10.5)	5.1	
2FSA50	50	40	3.7	-	6.5	3.2	
2FSA65	65	63	2	-	4	1.8	<ul style="list-style-type: none"> <li>- Fe 52 steel body internal parts in stainless steel</li> <li>- NP 40 flanged connections</li> <li>- Fluid temperature: -10<sup>2)</sup> to 230°C</li> <li>- Equal-percentage control flow characteristic</li> <li>- Leakage 0.02% Kvs</li> </ul>
2FAA15R2	15 R	1.6	12 (30)	-	12 (30)	12 (30)	
2FAA15	15	4	12 (20)	-	12 (30)	12 (18)	
2FAA20	20	6.3	11.5	-	12 (29)	12 (10)	
2FAA25	25	10	7.5	-	12 (18)	6.5	
2FAA32	32	16	7.5	-	12 (18)	6.5	
2FAA40	40	24	4.9	-	12	4.3	
2FAA50	50	32	3	-	8	2.7	
2FAA65	65	63	1.2	-	3	1.1	
2FAA80	80	110	0.8	5	2	0.7	
2FAA15PR2	15 R	1.6	12 (30)	-	12 (30)	12 (30)	<ul style="list-style-type: none"> <li>- Fe 52-steel body with extended neck internal parts in stainless steel with greaser and special gaskets for high temperatures</li> <li>- NP 40 flanged connections</li> <li>- Fluid temperature: -20<sup>3)</sup> to 350°C</li> <li>- Equal-percentage control flow characteristic</li> <li>- Leakage 0.02% Kvs</li> </ul>
2FAA15P	15	4	12 (20)	-	12 (30)	12 (18)	
2FAA20P	20	6.3	11.5	-	12 (29)	12 (10)	
2FAA25P	25	10	7.5	-	12 (18)	6.5	
2FAA32P	32	16	7.5	-	12 (18)	6.5	
2FAA40P	40	24	4.9	-	12	4.3	
2FAA50P	50	32	3	-	8	2.7	
2FAA65P	65	63	1.2	-	3	1.1	
2FAA80P	80	110	0.8	5	2	0.7	

The values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.

- 1) 2FSA: by spring return MVHFA closed, MVHFC open. 2FAA: by spring return MVHFA open, MVHFC closed.
- 2) For applications with eventual ice formation on stem and packing, use the stem heater (see page 54).
- 3) For fluid applications with temperature below -10 °C, when ordering, add "T" instead of "P" to model, e.g. 2FAA40T.

**Options and accessories for valve bodies: see page 54.**

**Pressure drop diagrams and Kvs selection: see pages 58-59.**

**Valve selection chart: see page 49.**

### 2-way Balanced Plug Valves

Series 2F.B Stroke 16.5 mm (DN25), 25 mm (DN40 to 65) 45 mm (DN80 to 150). To be motorised by MVH-MVF actuators, see pages 42-43.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER CHARACTERISTICS
			MVF58	MVF515	MVH	MVHF A/C <sup>1)</sup>	
2FGB65B	65	63	2 (15)	2 (16)	2 (16)	2 (13)	- G25 cast iron body, brass plug - NP 16 flanged connections - Fluid temperature: -10 <sup>3)</sup> to 150°C - Equal-percentage control characteristic - Leakage 0.03% Kvs
2FGB80B	80	100	2 (11.5)	2 (16)	2 (16)	2 (10)	
2FGB100B	100	130	2 (8)	2 (16)	2 (16)	2 (7)	
2FGB125B	125	200	2 (5.4)	2 (16)	2 (16)	2 (4.7)	
2FGB150B	150	300	2 (3.4)	2 (13)	2 (13)	2 (3)	
2FSA25BR4	25R	4	8 (25)	8 (25)	8 (25)	8 (25)	- Spheroidal cast iron body, stainless steel internal parts - NP 25 flanged connections - Fluid temperature: -10 <sup>3)</sup> to 230°C - Equal-percentage control characteristic - Leakage 0.02% Kvs
2FSA25BR7	25I	6.3	8 (25)	8 (25)	8 (25)	8 (25)	
2FSA25B	25	10	8 (25)	8 (25)	8 (25)	8 (25)	
2FSA32B	32	16	8 (25)	8 (25)	8 (25)	8 (25)	
2FSA40B	40	25	8 (25)	8 (25)	8 (25)	8 (25)	
2FSA50B	50	40	8 (25)	8 (25)	8 (25)	8 (23.5)	
2FSA65B	65	63	8 (25)	8 (25)	8 (25)	8 (22)	
2FSA80B	80	80	8 (20)	8 (25)	8 (25)	8 (18)	
2FAA25B	25	10	12 (30)	12 (30)	12 (30)	12 (30)	- Steel body and stainless steel internal parts - NP40 flanged connections - Fluid temperature: -20 <sup>3)</sup> to 230°C - Equal-percentage control characteristic - Leakage 0.02% Kvs
2FAA32B	32	16	12 (30)	12 (30)	12 (30)	12 (30)	
2FAA40B	40	25	12 (30)	12 (30)	12 (30)	12 (30)	
2FAA50B	50	40	12 (30)	12 (30)	12 (30)	12 (30)	
2FAA65B	65	63	12 (25)	12 (30)	12 (30)	12 (22)	
2FAA80B	80	100	12 (20)	12 (30)	12 (30)	12 (18)	
2FAA100B	100	160	12 (12.5)	12 (28)	12 (28)	11	
2FAA125B	125	200	9	12 (22)	12 (22)	8	

The values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.

1) By spring return MVHFA closed, MVHFC open.

2) For applications with eventual ice formation on stem and packing, use the stem heater (see page 54).

### 2-way Double-seat Globe Valves

Series 2FGA.B-2FAA.B - Stroke 45 mm - To be motorised by MVH-MVF actuators, see pages 42-43.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER CHARACTERISTICS
			MVF58	MVF515	MVH	MVHF A/C <sup>1)</sup>	
2FAA150B (NP25)	150	300	2.9	12 (17.5)	12 (17.5)	2.5	- Fe 52 Steel body and stainless steel internal parts - NP40 flanged connections - Fluid temperature: -10 <sup>3)</sup> ÷ 230°C - Equalpercentage control characteristic - Leakage 0.12% Kvs
2FGA200B (NP16)	200	500	1.8	8 (11.6)	8 (11.6)	1.6	- G25 cast iron body, stainless steel internal parts - NP 16 flanged connections - Fluid temperature: -10 <sup>3)</sup> to 200°C - Equalpercentage control characteristic - Leakage 0.12% Kvs

The values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.

1) By spring return MVHFA closed, MVHFC open.

2) For applications with eventual ice formation on stem and packing, use the stem heater (see page 54).

Options and accessories for valve bodies: see page 54.

Pressure drop diagrams and Kvs selection: see pages 58-59.

Valve selection chart: see page 49.



# field devices

## Valves



### 3-way Globe Valves

Series VMB (threaded) - VMBF (flanged) - NP 16. To be motorised by MVB - MVF - MVH actuators, see pages 42-43. - Thermal insulation available, see page 55 - Stainless steel plug available. Contact our export sales dept. for prices and part numbers.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER CHARACTERISTICS
			MVB	MVF58	MVH	MVHF A/C <sup>1)</sup>	
VMB11	1/2"	1	2 (4.1)	2 (16)	2 (16)	2 (16)	<ul style="list-style-type: none"> <li>- Brass valve body for DN 1/2"; G 25 cast-iron body for DN 3/4"÷2"</li> <li>- Brass internal parts</li> <li>- Female threaded connections</li> <li>- Fluid temperature: -10<sup>2)</sup>±150°C (with MVB max 120 °C, with MVB+MVBHT max 140 °C)</li> <li>- Control characteristic: equal-percentage on direct way, linear on angle way</li> <li>- Leakage 0.03% Kvs</li> <li>- For MVF actuator, add AG52 linkage</li> <li>- For MVH actuator, add AG62 linkage</li> </ul>
VMB1	1/2"	1.6	2 (4.1)	2 (16)	2 (16)	2 (16)	
VMB15	1/2"	2.5	2 (4.1)	2 (16)	2 (16)	2 (16)	
VMB2	1/2"	4	2 (4.1)	2 (16)	2 (16)	2 (16)	
VMB3	3/4"	6.3	2 (2.7)	2 (16)	2 (16)	2 (15.2)	
VMB4	1"	10	1.8	2 (11.5)	2 (16)	2 (10)	
VMB5	1 1/4"	16	1.1	2 (7)	2 (14)	2 (6.3)	
VMB6	1 1/2"	22	0.8	2 (5.2)	2 (10)	2 (4.6)	
VMB8	2"	30	0.6	2 (4)	2 (7.5)	2 (3.5)	
VMB8A	2"	40	0.6	2 (4)	2 (7.5)	2 (3.5)	
VMB11F	15	1	2 (4.1)	2 (16)	2 (16)	2 (16)	As above with NP16 slip-on flanges
VMB1F	15	1.6	2 (4.1)	2 (16)	2 (16)	2 (16)	
VMB15F	15	2.5	2 (4.1)	2 (16)	2 (16)	2 (16)	
VMB2F	15	4	2 (4.1)	2 (16)	2 (16)	2 (16)	
VMB3F	20	6.3	2 (2.7)	2 (16)	2 (16)	2 (15.2)	
VMB4F	25	8	1.8	2 (11.5)	2 (16)	2 (10)	
VMB5F	32	16	1.1	2 (7)	2 (14)	2 (6.3)	
VMB6F	40	22	0.8	2 (5.2)	2 (10)	2 (4.6)	
VMB8F	50	30	0.6	2 (4)	2 (7.5)	2 (3.5)	
VMB8AF	50	40	0.6	2 (4)	2 (7.5)	2 (3.5)	

The values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.

- 1) By spring return MVHFA closed, MVHFC open.
- 2) For applications with eventual ice formation on stem and packing, use the stem heater (see page 54).

### 3-way Tight Close-Off Valves

Series VMBPM threaded valves - Tight close-off modulating valves NP 16 - Thermal insulation available, see page 55 - To be motorised by MVB-MVF54 actuators, page 42.



MODEL	DN	Kvs	STROKE mm	MAX DIFFERENTIAL PRESSURE bar		OTHER CHARACTERISTICS
				MVB	MVF54	
VMBP2M	1/2"	4	8.8	11 (5.5) <sup>1)</sup>	9.5 (4.8) <sup>1)</sup>	<ul style="list-style-type: none"> <li>- G25 cast iron valve body</li> <li>- Fluid temperature -5 to 95°C</li> <li>- Leakage 0% Kvs</li> <li>- For MVF actuator add AG52</li> </ul>
VMBP3M	3/4"	6.3	16.5	8.8	7.5	
VMBP4M	1"	10	16.5	5.5	5	
VMBP5M	1 1/4"	16	16.5	3.5	3	
VMBP6M	1 1/2"	25	16.5	2.5	2.2	
VMBP8M	2"	40	16.5	1.8	1.5	

1) The values in brackets refer to angle way.

### 3-way Globe Valves

Series VMBT NP 16 - To be motorised by MVT actuators, see page 42.



MODEL	DN	Kvs		STROKE mm	MAX DIFFERENTIAL PRESSURE bar	OTHER CHARACTERISTICS
		DIRECT WAY	ANGLE WAY			
VMBT3	3/4"	6.3	5.5	5.5	1.7	<ul style="list-style-type: none"> <li>- G25 cast iron body</li> <li>- Fluid temperature 5 to 95 °C</li> <li>- Linear control characteristic</li> <li>- Leakage: direct way &lt;0.03% Kvs angle way &lt; 2% Kvs</li> </ul>
VMBT4	1"	10	9	5.5	1	
VMBT5	1 1/4"	13	11	5.5	0.7	
VMBT6 <sup>1)</sup>	1 1/2"	16	7	5.5	0.5	

### 3-way Globe Valves

Series 3F - Stroke 16.5 mm (DN25), 25mm (DN40-65), 45mm (DN80-150) - To be motorised by MVF-MVH actuators, see pages 42-43.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER CHARACTERISTICS
			MVF58	MVH3K	MVH	MVHF A/C <sup>1)</sup>	
3FGB25R4	25 R	4	2 (9)	-	2 (16)	2 (8.1)	<ul style="list-style-type: none"> <li>- G25 cast-iron body brass internal parts</li> <li>- NP 16 flanged connections</li> <li>- Fluid temperature: -10<sup>2)</sup> to 150 °C</li> <li>- Control flow characteristic: direct way: equal-percentage, angle way: linear</li> <li>- Leakage: direct-way: 0.03% Kvs, angle way: 2% Kvs</li> </ul>
3FGB25R7	25 I	6.3	2 (9)	-	2 (16)	2 (8.1)	
3FGB25	25	10	2 (9)	-	2 (16)	2 (8.1)	
3FGB40R19	40 R	19	2 (5.2)	-	2 (10)	2 (4.6)	
3FGB40	40	25	2 (5.2)	-	2 (10)	2 (4.6)	
3FGB50	50	40	2 (3.4)	-	2 (6.5)	2 (3)	
3FGB65	65	63	2	-	2 (3.8)	1.7	
3FGB80	80	100	1.2	5.7	2 (2.5)	1.1	
3FGB100	100	130	0.8	3.7	1.6	0.7	
3FGB125	125	200	0.4	2.3	1	0.4	
3FGB150	150	300	0.3	1.6	0.7	0.3	
3FSA25R4	25 R	4	8 (14)	-	8 (25)	8 (12)	<ul style="list-style-type: none"> <li>- G-308 spheroidal cast-iron body stainless steel internal parts</li> <li>- NP 25 flanged connections</li> <li>- Fluid temperature: -10<sup>2)</sup> to 230 °C</li> <li>- Control flow characteristic: equal-percentage (DN25÷65) linear (DN80), angle way linear</li> <li>- Leakage 0.02% Kvs</li> </ul>
3FSA25R7	25 I	6.3	7	-	8 (17)	6	
3FSA25	25	10	7	-	8 (17)	6	
3FSA32	32	19	4.5	-	8 (11.5)	4	
3FSA40	40	25	3.2	-	8	2.8	
3FSA50	50	40	2	-	5	1.8	
3FSA65	65	63	1.1	-	3	1	
3FSA80	80	110	1	5.5	2.2	0.9	
3FSA25SR4	25 R	4	5	-	5	5	<ul style="list-style-type: none"> <li>- G 308 spheroidal cast-iron body stainless steel internal parts with bellows seal</li> <li>- NP 25 flanged connections</li> <li>- Fluid temperature: -10<sup>2)</sup> to 300 °C</li> <li>- Control flow characteristic: equal percentage (DN25÷65) linear (DN80), angle way linear</li> <li>- Leakage 0.02% Kvs</li> </ul>
3FSA25SR7	25 I	6.3	5	-	5	5	
3FSA25	25	10	5	-	5	5	
3FSA32	32	16	5	-	5	5	
3FSA40	40	25	4.3	-	5	3.8	
3FSA50	50	40	2.7	-	5	2.4	
3FSA65	65	63	1.5	-	3.5	1.3	
3FSA80	80	110	0.9	5	2.2	0.8	
3FAA25R4	25 R	4	8	-	12 (19)	7	<ul style="list-style-type: none"> <li>- Fe 52 steel body stainless steel internal parts</li> <li>- NP 40 flanged connections</li> <li>- Fluid temperature: -10<sup>2)</sup> to 230 °C</li> <li>- Control flow characteristic: linear</li> <li>- Leakage 0.02% Kvs</li> </ul>
3FAA25R7	25 I	6.3	8	-	12 (19)	7	
3FAA25	25	10	8	-	12 (19)	7	
3FAA32	32	16	5	-	12	4.3	
3FAA40	40	22	3.2	-	7.5	2.8	
3FAA50	50	32	2.2	-	5.5	1.9	
3FAA65	65	70	1.2	-	3.2	1.1	
3FAA80	80	110	0.8	5.3	2	0.7	
3FAA100	100	140	0.4	3.3	1.3	0.4	
3FAA125	125	250	0.3	2.1	0.8	0.3	

The values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.

1) By spring return MVHFA closed, MVHFC open.

2) For applications with eventual ice formation on stem and packing, use the stem heater (see page 54).

**Options and accessories for valve bodies: see page 54.**

**Pressure drop diagrams and Kvs selection: see pages 58-59.**

**Valve selection chart: see page 49.**



# field devices

## Valves



### 3-way Globe Valves

Series 3F - Stroke 16.5 mm (DN25), 25mm (DN40-65), 45mm (DN80-125) - To be motorised by MVF-MVH actuators, see pages 42-43.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER CHARACTERISTICS
			MVF58	MVH3K	MVH	MVHF A/C <sup>1)</sup>	
3FAA25PR4	25 R	4	8	-	12 (19)	7	- Fe 52 steel body internal parts in AISI 316 stainless steel with grease-cap and special seals for high temperature - NP 40 flanged connections - Fluid temperature: - 20 <sup>2)</sup> to 350 °C - Control flow characteristics: linear - Leakage 0.02% Kvs
3FAA25PR7	25 I	6.3	8	-	12 (19)	7	
3FAA25P	25	10	8	-	12 (19)	7	
3FAA32P	32	16	5	-	12	4.3	
3FAA40P	40	22	3.2	-	7.5	2.8	
3FAA50P	50	32	2.2	-	5.5	1.9	
3FAA65P	65	70	1.2	-	3.2	1.1	
3FAA80P	80	110	0.8	5.3	2	0.7	
3FAA100P	100	140	0.4	3.3	1.3	0.4	
3FAA125P	125	250	0.3	2.1	0.8	0.3	

The values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.

- 1) By spring return MVHFA closed direct way, MVHFC open
- 2) For fluid applications with temperature below -10 °C, when ordering, add "T", instead of "P" to model, e.g. 3FAA40T

Pressure drop diagrams, see pages 58-59.

Valve selection chart: see page 49.

### Valve Options

MODEL	DESCRIPTION
A125-2	Flanges with ANSI (ASA) 125 bolt holes for 2-way valves 2FGA.B, 2FGB, 2FGB.B, 2FSA (DN50 to 65), 2FSA.B (DN50 to 80), 2FGA (DN25, 32, 50, 65)
A125-3	Flanges with ANSI (ASA) 125 bolt holes for 3-way valves 3FGB, 3FSA (DN50 to 65)
A150-2	Flanges with ANSI (ASA) 150 bolt holes for 2-way valves 2FAA150B, 2FSA (DN50 to 65), 2FSA.B (DN50 to 80), 2FAA.B (DN50 to 125), 2FAA (DN32 to 65)
A150-3	Flanges with ANSI (ASA) 150 bolt holes for 3-way valves 3FAA (DN50 to 125), 3FSA (DN50 to 65)
A300-2	Flanges with ANSI (ASA) 300 bolt holes for 2-way valves 2FSA, 2FSA.B, 2FAA.B (DN32 to 65 and DN100 to 125), 2FAA (DN15 and DN32 to 65)
A300-3	Flanges with ANSI (ASA) 300 bolt holes for 3FSA, 3FAA (DN32 to 65 and DN100 to 125)

### Accessories

(Supplied separately from the valve body, mounting to be arranged by the user)

MODEL	DESCRIPTION
AG22	Linkage kit for MVB on V500
AG52	Linkage kit for MVF-MVH on VSB-VMB, VSB.F-VMB.F, VSBPM-VMBPM, valves (pages 48, 52)
AG60-01	Linkage kit for MVF on Honeywell valves (stem M6)
AG60-02	Linkage kit for MVF on Honeywell valves (stem 1/4")
AG60-03	Linkage kit for MVF on Landis valves
AG60-04	Linkage kit for MVF on Satchwell valves (stem 1/4")
AG60-05	Linkage kit for MVF on Satchwell valves (stem 3/8")
AG60-06	Linkage kit for MVF on Satchwell valves (stem 1/4" & 3/8")
AG60-07	Linkage kit for MVF on Danfoss valves
AG62	Linkage kit for MVH on VSB-VMB, VSB.F-VMB.F, VSBPM-VMBPM, valves (pages 48, 52)
AG63	Linkage kit for MVF.S on VSB-VMB, VSB.F-VMB.F valves (pages 48, 52)
244	Stem heater for VSB/VSB.F-VMB/VMB.F valves motorised by MVB actuator or MVF-MVH actuators with AG52-AG62, supply 24 V a.c.
248	As above for MVH-MVF with 2F-3F flanged valves

### Insulation Jackets for V.B Valve Bodies

(Supplied separately from the valve body, mounting to be arranged by the user)

MODEL	DESCRIPTION
GVB3	Thermal insulation for V.B-V.BF-V.BPM 3/4" or DN20
GVB4	Thermal insulation for V.B-V.BF-V.BPM 1" or DN25
GVB5	Thermal insulation for V.B-V.BF-V.BPM 1 1/4" or DN32
GVB6	Thermal insulation for V.B-V.BF-V.BPM 1 1/2" or DN40
GVB8	Thermal insulation for V.B-V.BF-V.BPM 2" or DN50.

### Butterfly Valves

Series VFA - To be motorised by MDA actuators, see page 44. The valves are already fitted for mounting on MDA actuators.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar		OTHER CHARACTERISTICS
			MDA22/42/52	MDA24/44/54	
VFA (PN10)	25	27.8	600	-	<ul style="list-style-type: none"> <li>- Spheroidal cast-iron body (EN-JS1030)</li> <li>- Shaft tight O-Ring</li> <li>- Seat EPDM</li> <li>- Fluid temp.: -10 to 100°C</li> <li>- Close-off leakage: leakage rate A (DIN EN 12266-1)</li> </ul>
	32	28.5		-	
	40	58		-	
	50	107		-	
	65	201		-	
	80	336		-	
	100	576		-	
	125	840		600	
	150	1295	300	-	
	200	2470	-	-	

### Shoe Valves

Series M - Cast-iron NP 6 - To be motorised by: MDB24-44 actuators fitted with AM70 linkage.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar	OTHER CHARACTERISTICS
M3 (NP6) threaded	1"	30	100	<ul style="list-style-type: none"> <li>- THREE-WAY</li> <li>- NP 6 cast-iron valve body</li> <li>- Female threaded connections</li> <li>- Outlet from angle-way</li> <li>- Fluid temperature: 110 °C max</li> </ul>
	1 1/4"	37	100	
	1 1/2"	38	100	
	2"	45	100	
M3 (NP6) flanged	40	38	100	As above, with flanged connections
	50	70	100	
	65	80	80	
	80	90	50	
	100	110	30	
M4 (NP6) threaded	1"	30	100	<ul style="list-style-type: none"> <li>- FOUR-WAY</li> <li>- NP 6 cast-iron valve body</li> <li>- Female threaded connections</li> <li>- Fluid temperature: 110 °C max</li> </ul>
	1 1/4"	37	100	
	1 1/2"	40	100	
	2"	45	100	
M4 (NP6) flanged	50	70	100	As above, with flanged connections
	65	80	100	
	80	90	80	
	100	110	30	





# field devices

## Valves

### 2-way Globe Valves Selection Chart

MODEL	NP	DN	ACTUATOR			FLUID TEMPERATURE				
			ON/OFF	FLOATING	PROPORTIONAL	MAX °C	MIN °C			
SINGLE SEAT										
<b>Motorised valves<sup>1)</sup></b>										
VSE	16	½" - 1"	230 Vac			93	0			
<b>Valves to be assembled with the actuator<sup>2)</sup></b>										
VSX	16	½" - ¾"	MVX2./4. MVR.V		MVX5.	95	5			
VSXT	16	½" - ¾"		MVT4.	MVT5.	95	2			
VSBT	16	¾" - 1 ½"		MVT4.	MVT5.	95	5			
VSB	16	½" - 2"		MVB2./4. <sup>3)</sup>	MVB36/5. <sup>3)</sup>	150	-10			
VSBF	16	15 - 50		MVB2./4. <sup>3)</sup>	MVB36/5. <sup>3)</sup>	150	-10			
VSBPM	16	½" - 2"		MVB2./4. <sup>3)</sup>	MVB36/5. <sup>3)</sup>	95	-5			
2FGB	16	25 - 150		MVF MVH26/46	MVF MVH56F	150	-10			
2FGA	16	15 - 100				200	-10			
2FSA	25	25 - 65				230	-10			
2FAA	40	15 - 80				230	-10			
2FAA.P	40	15 - 80				350	-20			
BALANCED PLUG										
2FGB.B	16	65 - 150				MVF MVH26/46	MVF MVH56F	150	-10	
2FSA.B	25	25 - 80	230	-10						
2FAA.B	40	25 - 125	230	-20						
DOUBLE SEAT										
2FGA200B	16	200	MVF MVH26/46	MVF MVH56F	200	-10				
2FAA150B	25	150			230	-10				

Note:

- 1) **Motorised valves** are supplied already mounted on the actuator.
- 2) The **valve bodies can be assembled on different actuator models**, as indicated in the table.  
VSXT, VSBT valve bodies are supplied separately from the actuator (MVT).  
All the other valve bodies can be supplied individually or mounted on the actuator. If assembled valves are required, when ordering fill in the valve model, the actuator model and the code indicating the valve-actuator assembly.
- 3) In applications with MVB actuator with fluid having a temperature higher than 120°C, add the MVBHT spacer.

For max differential pressure values, according to the DN and the actuator, see:

- page 45- 46 VSX valve bodies
- page 47 VSXT, VSE valve bodies
- page 48 VSB, VSBF, VSBPM valve bodies
- page 49 VSBT, 2FGB, 2FGA valve bodies
- page 50 2FSA, 2FAA, 2FAA.P valve bodies
- page 51 2FGB.B, 2FSA.B, 2FAA.B, 2FGA200.B, 2FAA150B valve bodies

### 3-way Globe Valves Selection Chart

MODEL	NP	DN	ACTUATOR			FLUID TEMPERATURE	
			ON/OFF	FLOATING	PROPORTIONAL	MAX°C	MIN °C
<b>Motorised valves<sup>1)</sup></b>							
VDE	16	½" - 1"	230 Vac			93	0
<b>Valves to be assembled with the actuator<sup>2)</sup></b>							
VMX-VTX	16	½" - ¾"	MVX2./4. MVR		MVX5.	95	5
VMXT-VTXT	16	½" - ¾"		MVT4.	MVT5.	95	2
VMBT	16	¾" - 1 ½"		MVT4.	MVT5.	95	5
VMB	16	½" - 2"		MVB2./4. <sup>3)</sup>	MVB36/5. <sup>3)</sup>	150	-10
VMBF	16	15 - 50		MVB2./4. <sup>3)</sup>	MVB36/5. <sup>3)</sup>	150	-10
VMBPM	16	½" - 2"		MVB2./4. <sup>3)</sup>	MVB36/5. <sup>3)</sup>	95	-5
3FGB	16	25 - 150				150	-10
3FSA	16	25 - 80				230	-10
3FSA.S	25	25 - 80		MVF MVH26/46	MVF MVH56F	300	-10
3FAA <sup>4)</sup>	40	25 - 125				230	-10
3FAA.P <sup>4)</sup>	40	25 - 125				350	-20

Note:

- 1) **Motorised valves** are supplied already mounted on the actuator.
- 2) The **valve bodies can be assembled on different actuator models**, as indicated in the table.  
VMXT, VTXT, VMBT valve bodies are supplied separately from the actuators (MVT).  
All the other valve bodies can be supplied individually or mounted on the actuator, if assembled valves are required, when ordering fill in the valve model, the actuator model and the code indicating the valve-actuator assembly.
- 3) In applications with MVB actuator with fluid having a temperature higher than 120 °C, add the MVBHT spacer.
- 4) 3FAA125 and 3FAA125P have NP25

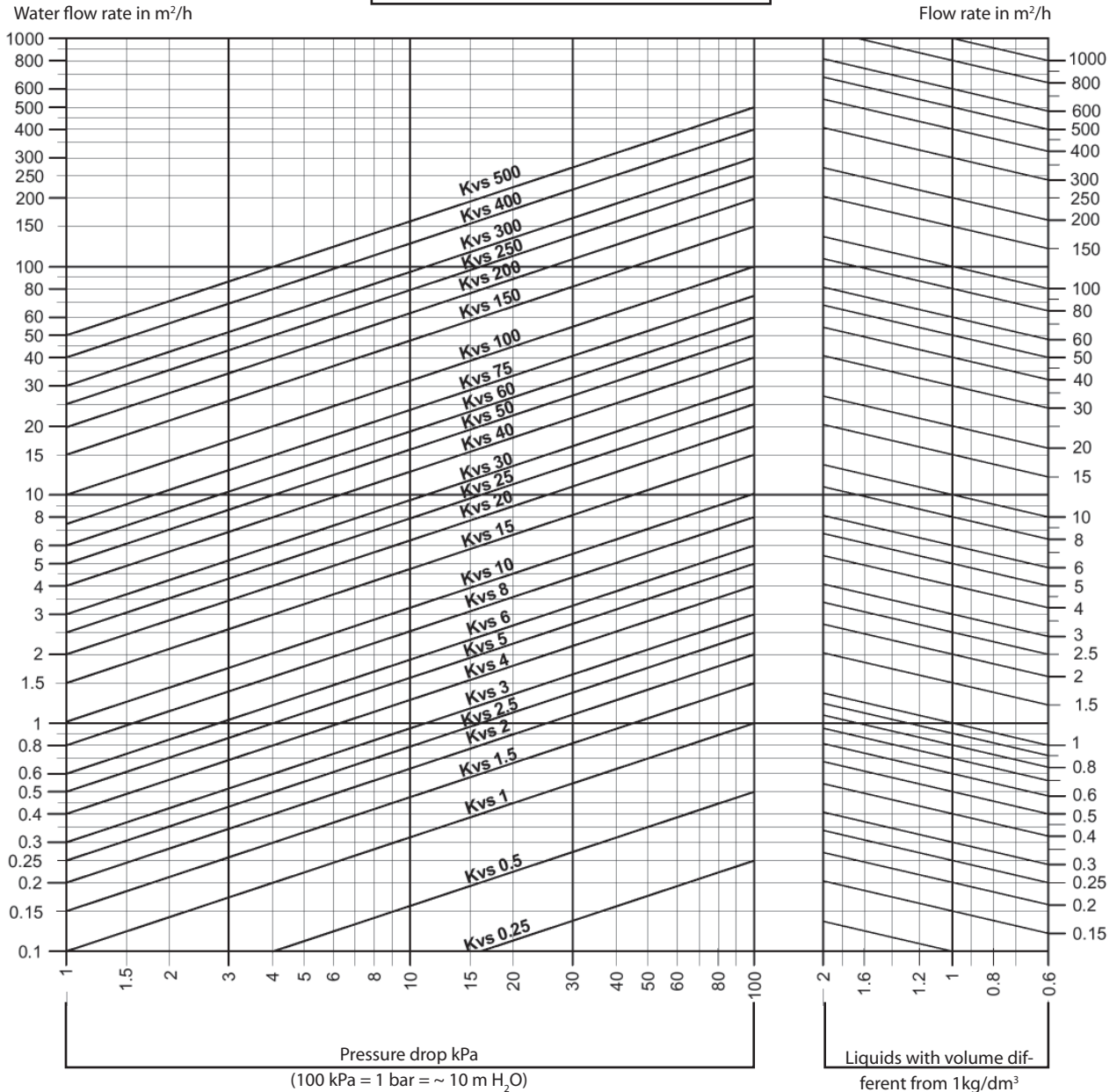
For max differential pressure values, according to the DN and the actuator, see:

- page 45-46 VMX-VTX motorised valves
- page 47 VMXT, VTXT, VDE valve bodies
- page 52 VMB, VMBF, VMBPM, VMBT valve bodies
- page 53 3FGB, 3FSA, 3FAA, 3FSA.S, valve bodies
- page 54 3FAA.P valve bodies

# field devices

## Valve Sizing Diagram for Fluids

$$Kvs = \frac{Q \cdot 10}{\sqrt{\Delta p_v}} \quad \begin{array}{l} Q = \text{flow rate in m}^3/\text{h} \\ \Delta p_v = \text{pressure drop in kPa} \end{array}$$



NOTA: the recommended valve pressure drop must be at least equal to the load.

Example for fluids with relative density 1 kg/dm<sup>3</sup> (water)

In order to size a control valve with:

FLOW RATE: 7.5 m<sup>3</sup>/h of water

PRESSURE DROP: 55 kPa

Use the diagram as follows:

- Identify the crossing point between the line starting from the flow rate value (7.5 m<sup>3</sup>/h) and from the pressure drop value (55 kPa).

This point corresponds to the required flow coefficient, i.e. Kvs 10. Therefore, the control valve must have Kvs 10.

Example for liquids having relative density different from 1 kg/dm<sup>3</sup>

In order to size a control valve with:

FLOW RATE : 150 m<sup>3</sup>/h having (0.9 kg/dm<sup>3</sup>) relative density

PRESSURE DROP: 80kPa

Use the diagram as follows:

Identify the crossing point (right side of the diagram) between the line starting from the relative density value (0.9 kg/dm<sup>3</sup>) and the inclined line starting from the flow rate value (150 m<sup>3</sup>/h).

Identify the crossing point between the line starting from the crossing point above and the other from the pressure drop value (80 kPa).

This point corresponds to the required flow coefficient. Therefore, the control valve must have approximately kvs 160.

Example with diathermic oil.

It could be convenient to size the valve on diathermic oil using the water diagram. To do this, it is necessary to apply the following conversion formula, which takes into account the mass and the "average" specific heat of diathermic oil:

$$Q = \frac{K \text{ calories}}{\Delta t 500} \text{ in m}^3/\text{h} = \text{water}$$

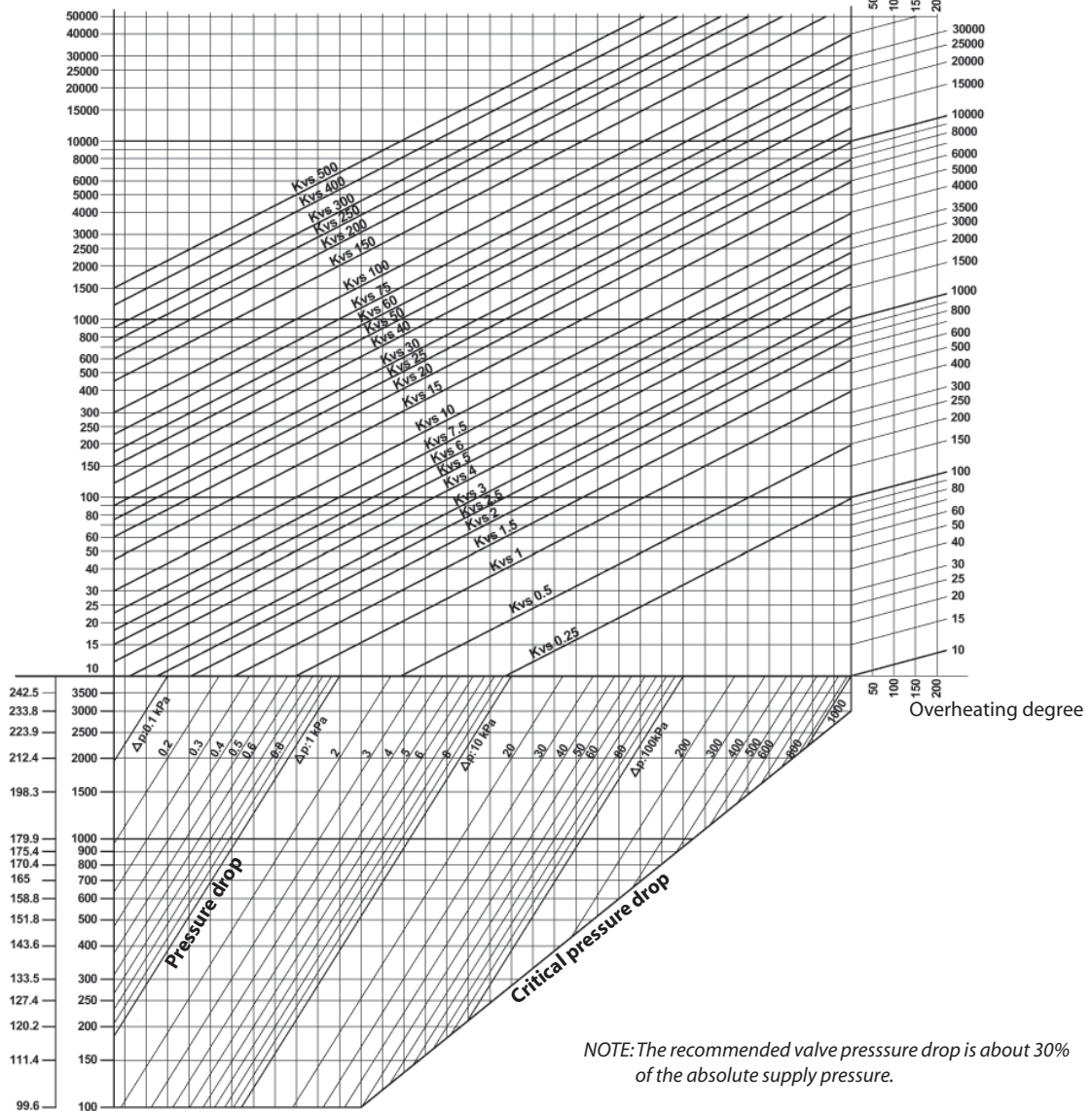
## Valve Sizing Diagram for Steam

$$Kvs = \frac{Q}{22,8 \cdot \sqrt{\Delta p_v \cdot P_u}}$$

$Q$  = flow rate m<sup>3</sup>/h  
 $\Delta p_v$  = valve leakage  
 $P_u$  = absolute pressure downstream the valve (bar)

Saturated steam flow rate kg/h

Overheated steam flow rate kg/h



Example for saturated steam:

FLOW RATE: 4700 Kg/h of saturated steam  
 ABSOLUTE PRESSURE UPSTREAM: 850 kPa  
 PRESSURE DROP: 160 kPa

Use the diagram as follows:

- Identify the crossing point between the line starting from absolute pressure upstream the valve (850 kPa) and the inclined line corresponding to the pressure drop value (160 kPa).
- Identify the crossing point between the line starting from the crossing point above and the line from the flow rate value (4700 Kg/h). This point corresponds to the required flow rate coefficient: Kvs 63.

Example for overheated steam:

FLOW RATE: 140 Kg/h of overheated steam  
 ABSOLUTE PRESSURE UPSTREAM: 350 kPa  
 TEMPERATURE: 209 °C  
 PRESSURE DROP: 100 kPa

Calculate the overheating degree of steam as follows:

- On the left side of the diagram, read the temperature value corresponding to 350 kPa (139 °C). The overheating degree is: 209 – 139 = 70 °C

Use the diagram as follows:

- Identify the crossing point "A" (right side of the diagram) between the line starting from the overheating value (70 °C) and the inclined line corresponding to the flow rate value (140 Kg/h).
- Identify the crossing point "B" between the line starting from the value of pressure upstream (350 kPa) and the inclined line corresponding to the value of pressure drop (100 kPa).
- Identify the crossing point between the line starting from the points "A" and "B".



## How to Calculate Kvs

Flow coefficient Kvs is the flow rate of water in m<sup>3</sup>/h passing through a fully open valve at a 100 kPa pressure drop.

$$\text{a) Liquids } kvs = 10 \times Q \times \sqrt{\frac{\rho}{\Delta p}}$$

Q = flow rate m<sup>3</sup>/h

Δp = pressure drop (kPa)

ρ = relative density (kg/dm<sup>3</sup>)

The Δp pressure drop should be determined as follows:

- Equal or higher than the Δp of the circuit under control, in case of variable flow applications
- Equal or higher than the Δp of the supply circuit, in case of constant flow applications

$$\text{b) Steam } kvs = \frac{100 \times G \times C}{20.3 \sqrt{P_2 \times \Delta p_v}}$$

G = flow rate (kg/h)

C = 1 + 0.0013 (t - ts)

t = steam temperature in working conditions

ts = saturated steam temperature at P<sub>2</sub> pressure

P<sub>2</sub> = pressure downstream (kPa)

Δp<sub>v</sub> = pressure drop (kPa)

Choose the valve with the Kvs closest to the calculated one.

## Water Systems

### Two-way valve

For this application the pressure drop through the valve must be high, in order to have a good control flow characteristic and a properly working system.

- 1) The valve pressure drop must be 30 to 50% of the pressure upstream the valve.
- 2) The valve pressure drop must be equal to, or higher than the pressure drop of the coil or heat exchanger under control, in particular:

#### Temperature drop of heat exchanger

30 °C

20 °C

10 °C

#### Design of valve pressure drop

Equal to pressure drop of heat exchanger

Twice as pressure drop of heat exchanger

Three times as pressure drop of heat exchanger

### Three-way mixing valve

For mixing valve a high pressure drop is not normally required even when used in primary and secondary water circuits to control supply temperature to users.

As a general rule, the valve must have a pressure drop similar to the one of the heat exchanger.

### Three-way diverting valve

Three-way diverting valves are used to control flow to heat exchanger and, therefore, the pressure drop through the valve. For proportional systems it must be high.

*Note:* When selecting pressure drop, you must not exceed the above-mentioned values because an undersized valve could produce:

- Noisy operation and vibration of the plug
- Rapid wear of plug and seat due to high speed of the fluid through the valve.

## Overheated Water Systems

For this application the valves can be two- or three-way type. The valve pressure drop must be high, in order to have a good control flow characteristic and a properly working system. The principles and rules for correct sizing are the same as "WATER SYSTEMS".

## Steam Systems

For low pressure steam systems (up to 2 bar), the pressure drop through the valve must be from 60 to 80 % of the pressure available upstream the valve.

<b>Steam pressure upstream the valve</b>	<b>Valve pressure drop</b>
0.5 bar (50 kPa)	40 kPa
1.0 bar (100 kPa)	70 kPa

For high pressure steam systems (above 2 bar) the pressure drop through the valve must be from 30 to 40% of the pressure available upstream the valve.

<b>Steam pressure upstream the valve</b>	<b>Valve pressure drop</b>
200 kPa	80 kPa
600 kPa	200 kPa
1,000 kPa	300 kPa

For on/off valves there are no particular rules to follow: pressure drop may be 10 to 20% of inlet pressure, but the valve is normally pipe sized.

*Note:* Do not size valves for high pressure steam with pressure drop higher than 50% of absolute pressure upstream: beyond this percentage thermodynamic problems could affect valve efficiency and life.

## Diathermic Oil Systems

The most commonly used valve type is three-way with linear characteristics, in order to ensure a constant flow to the boiler by constant speed.

Two-way valves can be used for several low-power users and wherever a balanced-plug valve is mounted between supply and return boiler.

The pressure drop of three-way valves must be at least equal to or higher than the one of the heat exchanger.

For a single user control, the valve must have a pressure drop from 30 to 50% of the system pressure drop.

For two-way valves, see also the "WATER SYSTEMS" section.

## NEW ITEMS INTRODUCED IN JULY 2009

	OLD MODEL	NEW MODEL
<b>2-way valves PN16</b>		
Cast iron valves with s/steel internal parts	SSGA11	2FGA15R0
	SSGA12	2FGA15R1
	SSGA15R	2FGA15R2
	SSGA1	2FGA15R3
	SSGA15	2FGA15
	SSGA20	2FGA20
	SSGA25	2FGA25
	SSGA32	2FGA32
	SSGA40	2FGA40
	SSGA50	2FGA50
Cast iron valves	VSG25R	2FGB25R4
	VSG25I	2FGB25R7
	VSG25	2FGB25
	VSG40	2FGB40
	VSG50	2FGB50
	VSG65	2FGB65
	VSG80	2FGB80
	VSG100	2FGB100
Balanced plug valves	VBG65	2FGB65B
	VBG80	2FGB80B
	VBG100	2FGB100B
	VBG125	2FGB125B
	VBG150	2FGB150B
	DSGA200	2FGA200B

	OLD MODEL	NEW MODEL
<b>2-way valves PN25</b>		
Spheroidal cast iron valves	VSS25R	2FSA25R4
	VSS25I	2FSA25R7
	VSS25	2FSA25
	VSS32	2FSA32
	VSS40	2FSA40
	VSS50	2FSA50
	VSS65	2FSA65
	VSS80	2FSA80
Balanced plug valves	VBS25R	2FSA25BR4
	VBS25I	2FSA25BR7
	VBS25	2FSA25B
	VBS32	2FSA32B
	VBS40	2FSA40B
	VBS50	2FSA50B
	VBS65	2FSA65B
	VBS80	2FSA80B
	DSAA150	2FAA150B

	OLD MODEL	NEW MODEL
<b>2-way valves PN40</b>		
Steel valves	SSAA15R	2FAA15R2
	SSAA15	2FAA15
	SSAA20	2FAA20
	SSAA25	2FAA25
	SSAA32	2FAA32
	SSAA40	2FAA40
	SSAA50	2FAA50
	SSAA65	2FAA65
	SSAA80	2FAA80
	SSAA100	2FAA100
Steel valves for very high temperatures	SSAACP15R	2FAA15PR2
	SSAACP15	2FAA15P
	SSAACP20	2FAA20P
	SSAACP25	2FAA25P
	SSAACP32	2FAA32P
	SSAACP40	2FAA40P
	SSAACP50	2FAA50P
	SSAACP65	2FAA65P
	SSAACP80	2FAA80P
	SSAACP100	2FAA100P
Steel valves for very low temperatures	SSAACP15RB	2FAA15TR2
	SSAACP15B	2FAA15T
	SSAACP20B	2FAA20T
	SSAACP25B	2FAA25T
	SSAACP32B	2FAA32T
	SSAACP40B	2FAA40T
	SSAACP50B	2FAA50T
	SSAACP65B	2FAA65T
	SSAACP80B	2FAA80T
	SSAACP100B	2FAA100T
Balanced plug valves	VBAA25	2FAA25B
	VBAA32	2FAA32B
	VBAA40	2FAA40B
	VBAA50	2FAA50B
	VBAA65	2FAA65B
	VBAA80	2FAA80B
	VBAA100	2FAA100B
	VBAA125	2FAA125B

	OLD MODEL	NEW MODEL
<b>3-way valves PN16</b>		
Cast iron valves	VMB1625R	3FGB25R4
	VMB1625I	3FGB25R7
	VMB1625	3FGB25
	VMB1640R	3FGB40R19
	VMB1640	3FGB40
	VMB1650	3FGB50
	VMB1665	3FGB65
	VMB1680	3FGB80
	VMB16100	3FGB100
	VMB16125	3FGB125
VMB16150	3FGB150	

	OLD MODEL	NEW MODEL
<b>3-way valves PN25</b>		
Spheroidal cast iron valves	VMS25R	3FSA25R4
	VMS25I	3FSA25R7
	VMS25	3FSA25
	VMS32	3FSA32
	VMS40	3FSA40
	VMS50	3FSA50
	VMS65	3FSA65
	3VSA80	3FSA80
High temperature valves	VMSTS25R	3FSA25SR4
	VMSTS25I	3FSA25SR7
	VMSTS25	3FSA25S
	VMSTS32	3FSA32S
	VMSTS40	3FSA40S
	VMSTS50	3FSA50S
	VMSTS65	3FSA65S
	3VSATS80	3FSA80S

	OLD MODEL	NEW MODEL
<b>3-way valves PN40</b>		
Steel valves	3VAA25R	3FAA25R4
	3VAA25I	3FAA25R7
	3VAA25	3FAA25
	3VAA32	3FAA32
	3VAA40	3FAA40
	3VAA50	3FAA50
	3VAA65	3FAA65
	3VAA80	3FAA80
	3VAA100	3FAA100
	3VAA125*	3FAA125*
Steel valves for very high temperatures	3VAACP25R	3FAA25PR4
	3VAACP25I	3FAA25PR7
	3VAACP25	3FAA25P
	3VAACP32	3FAA32P
	3VAACP40	3FAA40P
	3VAACP50	3FAA50P
	3VAACP65	3FAA65P
	3VAACP80	3FAA80P
	3VAACP100	3FAA100P
	3VAACP125*	3FAA125P*
Steel valves for very low temperatures	3VAACP25RB	3FAA25TR4
	3VAACP25IB	3FAA25TR7
	3VAACP25B	3FAA25T
	3VAACP32B	3FAA32T
	3VAACP40B	3FAA40T
	3VAACP50B	3FAA50T
	3VAACP65B	3FAA65T
	3VAACP80B	3FAA80T
	3VAACP100B	3FAA100T
	3VAACP125B*	3FAA125T

OLD MODEL	NEW MODEL
<b>Actuators</b>	
MVL26	MVH26
MVL36	MVH36
MVL46	MVH46
MVL56F	MVH56F
MVL56FA	MVH56FA
MVL56FC	MVH56FC
MVL3K	MVH3K
MVLAV	MVHAV

OLD MODEL	NEW MODEL	DESCRIPTION
<b>Actuators</b>		
245	248	Stem heater for MVH-MVF with flanged valves
245F		
246	244	Stem heater for MVH-MVF with VSB-VMB-VSBF-VMBF valves
AG31		
AG31	AG62	Linkage for MVH actuators with with VSB-VMB-VSBF-VMBF valves
DMVL	DMVH	Aux. microswitches for MVH
MVLF55	MVHF55	4-20 mA input signal
MVLP42	MVHP42	1kOhm aux. potentiometer for MVH26
MVLP44	MVHP44	1kOhm aux. potentiometer for MVH46
MVLHT	MVHT	High temperature spacer

## A

A125/150/300	54
AG	54
AM70	55
AM-703	40
ARAD9672	13
AS205	6
AS206	6
AS207	6
AX236	12
AX526/527	21
AX536/537	21
AXCU	12
AXCU/BA	12

## B

B301÷304	7
B301X÷304X	7
B351÷354	9
B351X÷354X	9
BD297	7

## C

C307/C309	6
C357	9
CM511	21
ConBOX	17
CP8551/CP8552	21
CTY	13
CX528	13

## D

D36	44
DG7000 series	32
DG7ROUT	32
DG8000	27
DIGISTAT	12
DMDA	44
DMDB	40
DMDL	41
DMVF	48
DMVH	44
DURADRIVE	40

## F

F1	15
FG601÷604	7
FG651÷654	9

## G

GT	36
GVB	55

## I

IZ	21
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## K

KX436	15
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## L

LIBO-4-485	32
LIBO-USB	20

## M

M3/M4	55
MA4x	40
MDA	44
MDB	40
MDL	41
MDLA1/2	41
MDLPA	41
MDLS5/V5	41
MF4x	40
Micra	45
MS4x	40
MVB	42
MVBAV	42
MVBC	44
MVBD	44
MVBHT	44
MVBPA2	44
MVF	42-43
MVH	43
MVHF	43
MVHFS5	44
MVHT	44
MVHPA2/4	44
MVR	45
MVT	42
MX	45-46

## N

NC7311	32
NR7000	33
NRMR7000	33
NS71÷74	32

## R

RA733/735	29
RM500	20
RM77	32

## S

SBA/SBC/SBD/SBE/SBF/SBV	38
SNTC/SNTC-S	12
SPC	13
SPTC	20-38
SPTX	38
STA71	32-38
STA75S/STA80S	32-38
STR71	32-38
STR72	29-38
STR73	38

## T

TPC	13
TP	39
TQ	39

TT	39
TU/TUT	39
TX	13

## U

UF215	6
UF217	6

## V

VDE	47
VFA	55
VMB/VMBF	52
VMBPM/VMBT	52
VMXT	47
VMX	45-46
VSB/VSBF	48
VSBPM	48
VSBT	49
VSE	47
VSXT	47
VSX	45-46
VTXT	47
VTX	45-46
VXC	45

## W

W500H	20
W500T	20

## Y

Y102/103	7
Y111/Y1111RM	6
YS7	41
YTC3/YTC3RM	6
YZB	6

## 2

2FAA/2FAA.P	50
2FAA150B	51
2FAA.B	51
2FGA/2FGB	49
2FGB.B	51
2FSA	50
2FSA.B	51
2FGA200.B	51
244-248	54

## 3

37T	12
3FAA	53
3FAA.P	54
3FGB	53
3FSA/3FSA.S	53

## 4

421	13-38
422	38





### ACTIVITY

CONTROLLI was established in Genoa in 1936 and was the first Italian company to manufacture a complete range of controllers, actuators and control valves for heating and air-conditioning systems.

Since 1950 the product range was improved by widening the range of control equipment and systems for industrial application.

In the eighties CONTROLLI consolidates its position as the most important Italian manufacturer, with special regard to climate controls, thanks to the development of analogue and digital electronic devices.

In the nineties CONTROLLI gains a position also in the Building Automation market.

From 1996 to July 2005 CONTROLLI has been part of the Invensys multinational group.

Since August 2005, CONTROLLI is merged to the TAC multinational group, with a combined company revenue of over 1,400\$ million, with the backing of a parent company like Schneider Electric, the world's leading power and control specialist.

CONTROLLI core business is represented by products and systems for the control and supervision of HVAC plants and industrial process.

### RESEARCH & DEVELOPMENT MANAGEMENT

CONTROLLI products are the result of mechanical - electrical - electronic technology integration, supported by a 70-year experience in HVAC applications.

### PRODUCTION MANAGEMENT

An industrial complex of 6.000 m<sup>2</sup> in Sant'Olcese (Genoa) is CONTROLLI head office. Production is highly automated with robotic devices for the assembly and calibration of mechanical and electronic spare parts and finished products.

It is worth mentioning the robotic plant for processing, mounting and testing of valve bodies and the robotized workcell for assembly, testing and certification of fan-coil valve actuators. CONTROLLI has adopted the SIX SIGMA procedures, further elevating the quality standard of its products.

CONTROLLI operates under ISO9001-2000 Quality Certificate System. All CONTROLLI valves are PED (Pressure Equipment Directive) compliant.

### SALES AND MARKETING MANAGEMENT

Sales & Marketing Dept. is in Sant'Olcese (Genoa).

Italian sales network consist of Sales-Offices in Milan, Genoa and Rome, 45 representatives and 75 authorised dealers throughout the Italian territory.

Abroad CONTROLLI operates through a widespread network of distributors and dealers in almost all European countries, in the United States and Canada, in the Far East and in South America. By getting in touch with the nearest CONTROLLI sales point, the customers can find a solution to any technical and commercial issue.

In particular, a proper service of technical assistance offers support for systems and devices, application information, quotations and wiring diagrams.

Moreover, CONTROLLI holds periodically training courses for different levels of technical expertise and class of customers.





## Zone Valves



Valve		Actuator		MVT28 MVT44		MVT56 MVT57		MVX21 MVX41		MVX57		MVX22 MVX42		MVX52	
				3 position 24V-230V	Proportional 24V	2 position, 24V-230V	Proportional 24 V	2 position, 24V-230V	Proportional 24 V	2 position, 24V-230V	Proportional 24 V				
<b>Threaded valves PN16 - Kvs 0.25 to 6</b>															
VSXT	2-way	DN ½"-¾"	■	■											
VMXT	3-way		■	■											
VTXT	3-way + bypass		■	■											
VSBT	2-way	DN ¾"-1 ½"	■	■											
VMBT	3-way		■	■											
<b>Threaded valves PN16 - Kvs 0.25 to 2.5</b>															
VSX	2-way	DN ½"-¾"			■	■									
VMX	3-way		■	■											
VTX	3-way + bypass		■	■											
<b>Threaded valves PN16 - Kvs 4 to 6</b>															
VSX24-26	2-way	DN ¾"										■	■		
VMX24-26	3-way		■	■								■	■		
VTX24-26	3-way + bypass		■	■								■	■		
<b>Motorised valves</b>															
VSE	2-way	DN ½"-1"	Valves supplied with 2-position actuator (230 Vac)												
VDE	3-way														

## Rotary Valves



Valve			Actuator		MDA2. MDA4.		MDA5.		MDB24		MDB44	
					2-3 position 24-230V	Proportional 24 V	3 position, 230 V	3 position, 24V				
<b>Butterfly valves PN10</b>												
VFA	Butterfly valve PN10	DN 25-200	■	■								
<b>Shoe valves PN6</b>												
M3	3 ports female thread	DN 1"-2"						■	■	with AM70	with AM70	
M4	4 ports female thread		■	■				with AM70	with AM70			
M3 flanged	3 ports flanged connections	DN 40-125	■	■				with AM70	with AM70			
M4 flanged	4 ports flanged connections	DN 50-100	■	■				with AM70	with AM70			

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