CONTROLLI

CONTROL SOLUTIONS FOR

GREEN HVAC SYSTEMS

CATALOGUE | 2014

CONTROLLI

Controllers & field devices for HVAC

COMPANY PROFILE

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 equipments and systems for industrial application.

In the 80s 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 90s CONTROLLI gains a position also in the Building Automation market.
From 1996 to July 2005 CONTROLLI has been part of the Invensys multinational group.
From 2005 to August 2011 CONTROLLI has been part of Schneider Electric S.A.

CORE BUSINESS

CONTROLLI core business consists of products and systems for the control and supervision of HVAC plants and industrial processes.
CONTROLLI products are the result of mechanical - electric - electronic technology integration, supported by a 75-years experience in HVAC applications.

MANUFACTURING SITE

An industrial area of 6,000 m2 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 ISO9001-2008 Quality Certificate System. All CONTROLLI valves are PED (Pressure Equipment Directive) compliant.
Products are tested 100%.

PRODUCT QUALITY IS OUR N°1 COMMITMENT!

Business with OEMs (Original Equipment Manufacturers) is more than 30% of our turnover. System integration for BMS is part of our business too. Our Building Automation team develops control software for free programmable controllers according to customers' specifications. Since several years we are mainly focusing on cutting-edge solutions aiming at guaranteeing the highest level of comfort but keeping a close eye on energy saving technologies. Some of these technologies refer to: heat metering systems, control devices with wireless communication, circuit balancing and more.

*The port of Genoa

SALES ORGANIZATION

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 agents in Europe, Africa, Middle East, Far East, North and South America. By getting in touch with the nearest CONTROLLI sales point, the customers will find solution to any technical and commercial issue

TECHNICAL SUPPORT

Our offices will provide a continuous technical assistance and 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.

WHERE TO FIND US

Controlli S.p.a.

Via Carlo Levi, 52

16010 S. Olcese

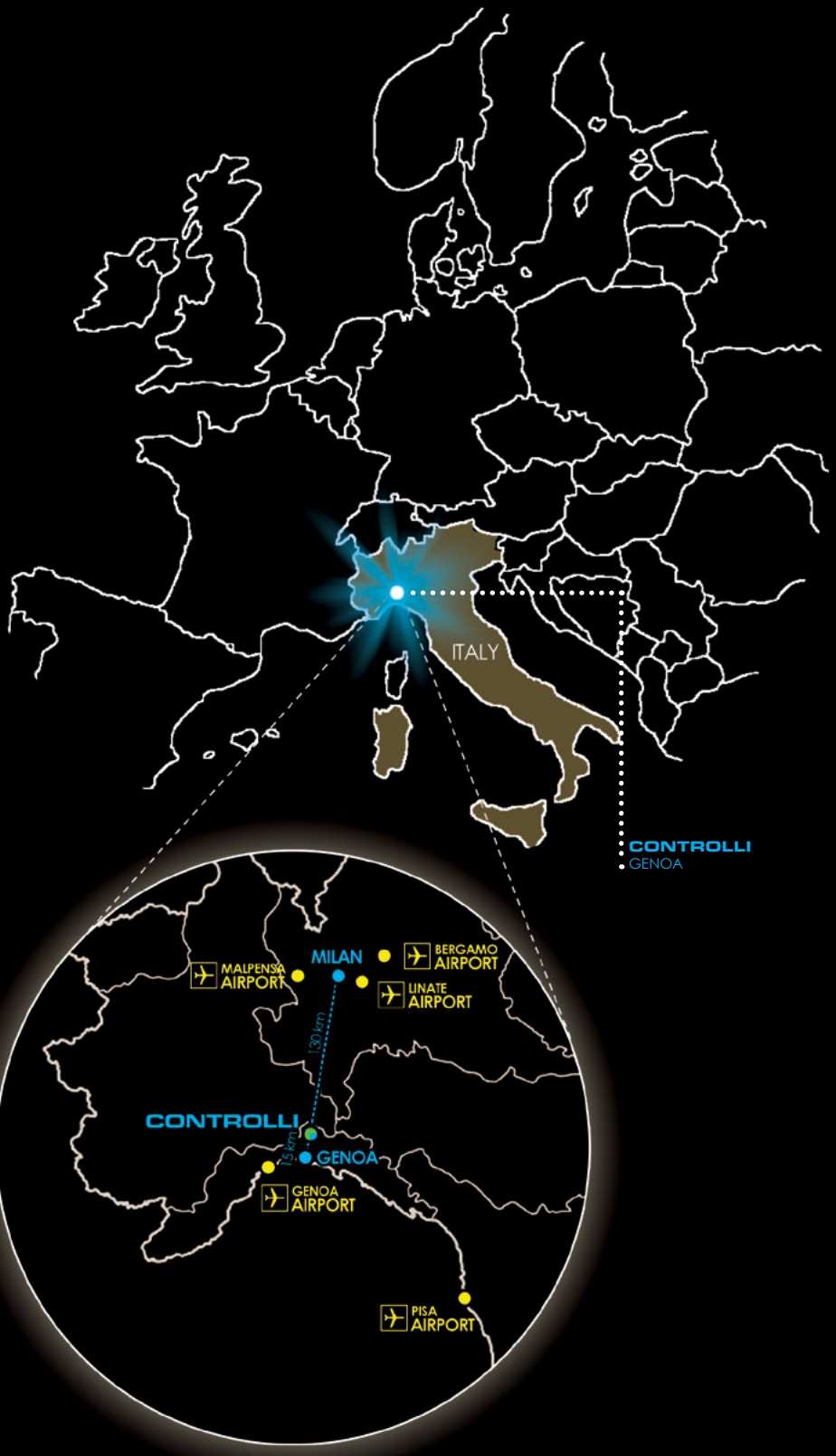
Genova - Italy

Controlli is located 10 Km north of Genova.

By car: take the A7 highway (genova-milano) and exit at Genova Bolzaneto.

Gps: 44.4862, 8.9223

By plane: distance from genova airport is 15km



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

LITERATURE

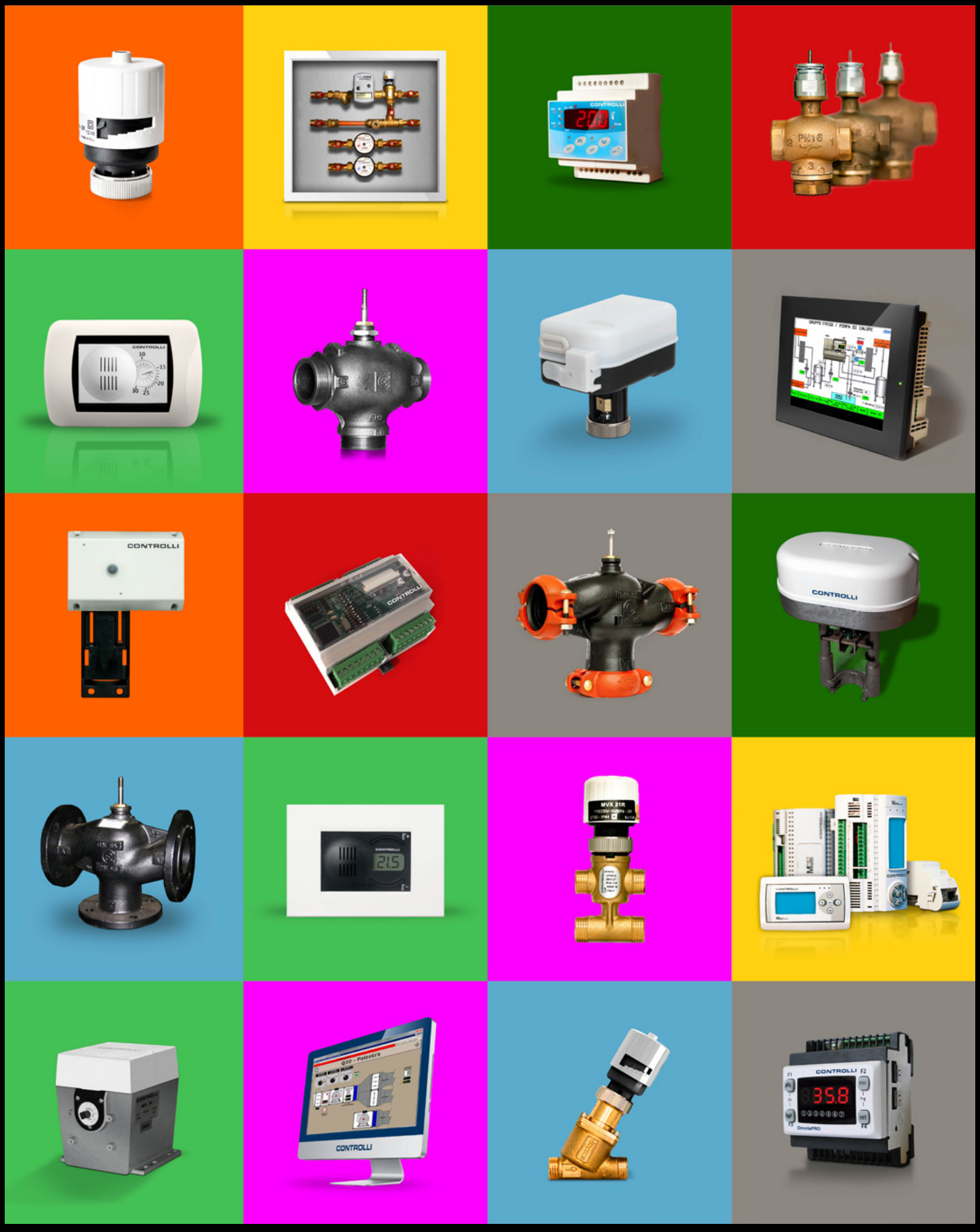
DATA SHEETS	Specify manufacturing and technical characteristics of products and their application, installation, wiring connections and start-up instructions.
PRODUCT SELECTION GUIDE	Gives a brief description of Controlli product range according to different applications.
USERS' INSTRUCTIONS	Provide the information for the correct use of the equipment and for its maintenance.
BROCHURES	Advertise single Controlli products or control systems.
APPLICATION DIAGRAMS	Illustrate the most common applications, indicating the equipment of control system, basic system and wiring diagram.
PRICE LIST	Lists the prices and sales conditions.
CD	Our product range catalogue is also available on CD-ROM

SERVICES

APPLICATION ENGINEERING OFFICE	Available for technical information, selection, application and quotations of equipment and complete control systems.
SALES SERVICE	Consisting of our technical staff and authorised assistants for technical support, commissioning, repairs and maintenance.
TECHNICAL TRAINING COURSES	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.
WEB SITE	Check our total portfolio by visiting www.controlli.eu, which gives direct access to the latest version of all our data sheets.

WEBUP.CONTROLLI.EU

Our customers have free access to our WEBUP online service, where they can check the updated situation for any order, shipment, as well as download documents and invoices.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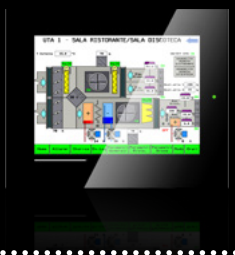
CORE BUSINESS

VALVES & ACTUATORS

We are proud to offer one of the largest range of valves and actuators in the HVAC market. Valves range from 15mm to 200mm for fluids with temperature from -30°C to +350°C, max. pressure 12bar (steam) or 30bar (water). Linear actuators start at 90N and go up to 3000N. Rotary actuators for butterfly valves and shoes valves and for direct mounting on air dampers up to 2sqm.

CONTROLLERS

To start with, we will mention our thermostats for heating and cooling, our fan-coil units controllers, room controllers, ddc controllers with parameter-setting as well as programmable controllers. Not to forget our KX climatic controllers with outside temperature compensation. Controllers are offered either as stand-alone or with ModBus connectivity. Our range includes sensors, transmitters and switches for temperature, humidity, pressure, differential pressure, air quality, etc.



SUPERVISORY SYSTEMS

To make matters easy, we propose pre-programmed GT (graphic terminals) touch-screens, with web Server capabilities for remote monitoring through Internet Explorer. GT touch-screens are supplied ready for most of our controllers (W500, OmniaPro, Liberty). One GT is suitable to approx. 40 controllers at one time.

HEAT METERING & MORE

Last but not least, we are continuously improving our range for heat metering systems, variable speed drives, Dynamic Pressure Independent Control Valves, solutions for underfloor systems and more.

AN EXTENSIVE SELECTION OF CONTROL VALVES

MICRA® MOTORIZED VALVES FOR FAN-COIL UNITS

Brass valves for FCUs 2way, 3way, 3way + bypass, Kvs 0,25 to 6,
with On-Off / Modulating thermic actuators (90N & 140N force)
and 3 pos. / Modulating electric actuators (200N force).

PICVs

PN25 dynamic pressure independent control valves ½" to 1 ½"
with On/Off or proportional actuators suitable to fluids up to 120°C.

GLOBE VALVES WITH THREADED CONNECTIONS

Cast iron or bronze PN16 valve bodies with threaded connections
½" up to 2" for fluids from -10°C to +150°C.

GLOBE VALVES WITH FLANGED CONNECTIONS

PN16, PN15, PN40 globe valves with flanged connections DN15mm to DN200mm,
suitable to fluids (water, glycol, steam, thermal oil) from -30°C to +350°C.

GLOBE VALVE ACTUATORS

Linear actuators from 450N to 3000N, with or without spring return.
Includes MVE range of new generation actuators 600N, 1000N & 1500N force with
self adjusting and auto dignostic capabilities

BUTTERFLY VALVES

PN16 butterfly valves, 100% tight close-off, DN25mm to DN200mm to be
motorized by MDL or MDA actuators (up to 30Nm).

ROTARY ACTUATORS

Air damper actuators with spring return (7 / 8 / 15Nm) or without
spring return (5 / 8 / 15 / 20Nm).

USER-FRIENDLY SOLUTIONS FOR HVAC

FAN-COIL UNITS CONTROLLERS

Models available with On/Off, floating or Proportional control with manual/automatic fan speed selection. Some models (e.g. AXCU22/WMB) offer electric heater, automatic S/W change-over, window contact and ModBus connectivity.

TOUCH SCREEN THERMOSTATS

DGTOUCH are user-friendly touch-screens for heating and cooling applications. User can set time schedules with 3 different set points to reduce energy consumption and mprove comfort

PARAMETER-SETTING CONTROLLERS

OMNIA® is the name of our range of digital controllers with 9 Inputs/Outputs for Temperature, Humidity and Pressure control. With P+I action, 4 control loops, 24Vac or 230Vac power supply, outside temperature compensation, low / high temperature/humidity limits, enthalpy control, free cooling. Models with RS485 provide Modbus connectivity, Real Time Clock, daily & weekly programs. All air handling units, including those with variable speed fan, are easily controlled by OMNIA controllers. LIBERTY controllers are slightly bigger than Omnia controllers, with 19 I/Os and also include additional I/O modules. Display can be in-built or remote.
All these ddc controllers are parameter-setting. No configuration tool is needed.

ROOM CONTROLLERS

Not only FCU control! These Energon controllers perform room control management e.g. badge contact, room power input, window contact, occupancy control, alarms. Display panel frame can be easily customised. Thanks to ModBus connectivity, these controllers are easily monitored through our GT touch-screens, thus representing an ideal solutions for hotels, hospitals, offices.

PROGRAMMABLE CONTROLLERS

OMNIA Pro programmable controllers have 6 digital + 5 analogue Inputs and 5 digital + 3 analogue Outputs, 2 triacs, I/O expansion modules, in-built or remote display, ModBus connectivity RS485 and RTC (option), Temperature & Humidity room sensor with display.
Applications include: AHUs with heating/cooling/humidity control, frost protection, compensation, optimization, free cooling, electric heater, heat pump. Central heating, hot water service, boliers and chillers sequencing and more. Models with with RS485 can be remotely monitored by GT Touch Screens. Maximum number of controllers monitored by one GT touch screen: from 10 to 40 controllers, depending on the architecture.

CONTROLS FOR INDUSTRIAL THERMAL PROCESSES

Digital controllers with PID action (Proportional, Integrative, Derivative), with relay and analogue outputs, display with set-point and actual values, Pt100 temperature sensor, suitable to applications with hot water service, plate heat exchangers, industrial thermal processes and whenever high accuracy control is required.

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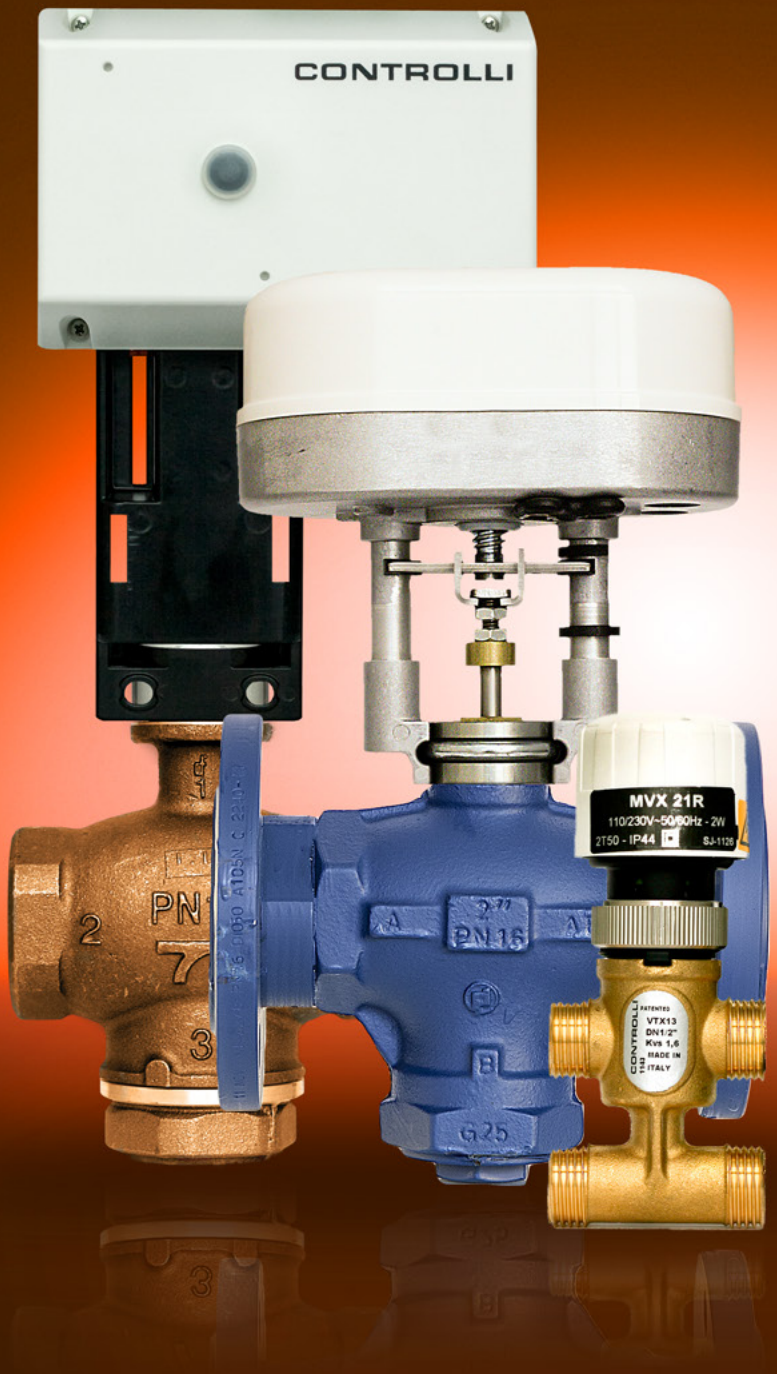


INDEX

VALVES AND ACTUATORS

Micra - Fan Coil Motorised Valves 90 N

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
MVX21R	60	110-230	90	on-off
MVX41R	60	24	90	on-off, PWM
MVX57	60	24	90	proportional 0-10 Vdc

MVR series 90 N Electrothermal actuator for V.X valves with reverse action - 0.65 m cable - IP44 protection.

MODEL	STARTING TIME s.	SUPPLY Vac	FORCE N	ACTION
MVR230V[1)]	60	110-230	90	on-off - normally open for Micra valve
MVR24V[1)]	60	24	90	on-off - normally open for Micra valve

1. *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. - **PN16** brass valve bodies - Tight close-off both on direct and angle way - PPS plug with double EPDM o-ring - 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	flat
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	0.6	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[1)]	0.25	0.25	2.5	3-way 4-port	G 1/2" M	flat
VTX10P[1)]	0.4	0.4	2.5		G 1/2" M	flat
VTX11P[1)]	0.6	0.6	2.5		G 1/2" M	flat
VTX12P[1)]	1	0.6	2.5		G 1/2" M	flat
VTX13	1.6	1	2.5		G 1/2" M	conic
VTX13P[1)]	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

1. *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

DESCRIPTION
VXC - Manual control for V.X and V.XT series valves
Thermal insulation

Fan Coil Motorised Valves with high Kvs 140 N

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
MVX22R	90	110-230	140	on-off
MVX42R	90	24	140	on-off, PWM
MVX52	90	24	140	proportional 0-10 Vdc

Series V.X. - **PN16** brass valve bodies - Tight close-off both on direct and angle way - Brass plug with double EPDM o-ring Fluid: water and water + glycol 30% max. - Temperature 5 to 95°C - **Stroke 2.5 mm** - Threated connection for conic and flat tight. Motorised by MVX actuators.

MODEL	Kvs		CLOSE-OFF bar	ACTION TYPE DIRECT WAY	THREADED CONNEC-TIONS	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)[1)]	3-way	G 3/4" M	flat
VMX26P	6	4	1 (0.4)[1)]		G 3/4" M	flat
VTX24P	4	2.5	1 (0.4)[1)]	3-way 4-port	G 3/4" M	flat
VTX26P	6	4	1 (0.4)[1)]		G 3/4" M	flat

1. The values in brackets refer to the angle way.

Valve Bodies with 5.5mm stroke for fan coil units

Series V.XT - **PN16** forged brass valve body - Tight close-off both on direct and angle way - Plug with double EPDM 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.

MODEL[1]	Kvs		CLOSE-OFF bar	ACTION TYPE DIRECT WAY	THREADED CONNEC-TIONS	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	flat
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)[3]		G 3/4" M	flat
VMXT26P	6	4	1 (0.4)[3]		G 3/4" M	flat
VTXT09P[2]	0.25	0.25	3.5	3-way 4-port	G 1/2" M	flat
VTXT10P[2]	0.4	0.25	3.5		G 1/2" M	flat
VTXT11P[2]	0.6	0.4	3.5		G 1/2" M	flat
VTXT12P[2]	1	0.6	3.5		G 1/2" M	flat
VTXT13P[2]	1.6	1	3.5		G 1/2" M	flat
VTXT1P[2]	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)[3]		G 3/4" M	flat
VTXT26P	6	4	1 (0.4)[3]		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.*

Zone Valves

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 bar	TYPE
VSE1	1/2"	2.2	2,1	Two-way normally closed
VSE2	3/4"	3.0	1,4	
VSE3	1"	6.9	1	
VDE1	1/2"	2.6	2,1	Three way
VDE2	3/4"	3.4	1,4	
VDE3	1"	6.5	1	

Dymanic pressure independent control valves

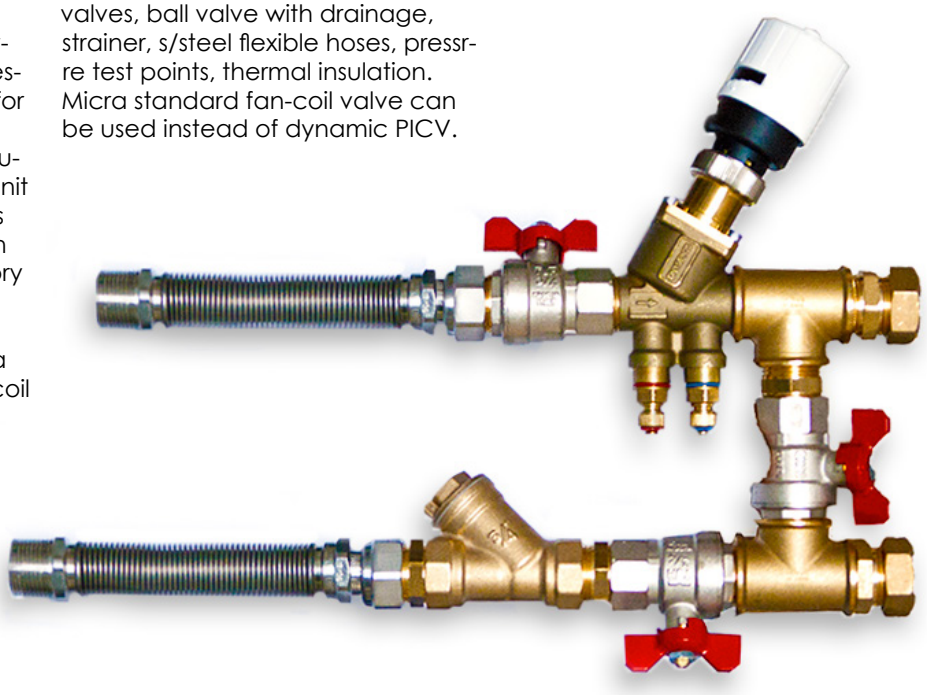
VSX..PB and VSXT..PB series. 2-way brass valves PN25. Control and balancing valves with compact dimensions for MCA and MVT actuators, as specified below.
Dynamic balancing eliminates overflows, regardless of fluctuating pressure conditions in the system. Male threaded connections. From 0,2 to 4 m3/h. Normally closed. Maximum temperature: 120°C

MODEL	EXTERNAL THREADED CONNECTIONS	STROKE [mm]	SUITABLE CONTROLLI ACTUATOR	CONTROL ACTION	MAX.FLOW [l/h]	MAX. DIFFERENTIAL PRESSURE (bar)
VSX03PB	G 1/2"	2,5	MCA230L/MCA24L	On/Off, PWM	200	
VSXT03PB	G 1/2"	5	MVT28 / MVT44 / MVT56S	Proportional	370	
VSX04PB	G 3/4"	2,5	MCA230L/MCA24L	On/Off, PWM	200	
VSXT04PB	G 3/4"	5	MVT28 / MVT44 / MVT56S	Proportional	370	
VSX05PB	G 3/4"	2,5	MCA230L/MCA24L	On/Off, PWM	575	4
VSX06PB	G 1"	2,5	MCA230L/MCA24L	On/Off, PWM	575	
VSXT06PB	G 1"	5	MVT28 / MVT44 / MVT56S	Proportional	1330	
VSXT07PB	G 1 1/4"	5.5	MVT28 / MVT44 / MVT56	Proportional	3605	
VSXT08PB	G 1 1/2"	5.5	MVT28 / MVT44 / MVT56	Proportional	4001	

Commissioning kits for terminal units

Controlli linking kits for FCUs are designed to connect a fan-coil unit directly into a building's chilled water or hot water network.
Each kit includes an inbuilt factory-assembled set of valves and accessories in order to reduce the time for installation and commissioning on site, while preventing potential future system leakages from fan-coil unit systems.All necessary components are installed as a single item which is then pressure-tested in our factory prior to delivery to site.No specific tools are needed.
A built-in bypass section includes a full port isolating valve to enable coil and circuit flushing and cleaning.

List of assembled components: 2way dynamic PICV (with On/Off or 3 pos. or Proportional actuator), isolating valves, ball valve with drainage, strainer, s/steel flexible hoses, pressr-re test points, thermal insulation.
Micra standard fan-coil valve can be used instead of dynamic PICV.



Electrothermal actuator for manifolds and radiant panels: 90 N

On/off and PWM control - Fast opening/closing times - 24 Vac, 110-230Vac, 50-60 Hz IP44 - 4.0 mm stroke - M30x1.5 connection on valves/manifolds - 90N force - Starting time 60 sec. Auxiliary microswitch. Operation: without power supply MVR spindle is in "outside" position; when powered MVR pulls the spindle "inside".
All models are also available with auxiliary microswitch. When ordering this version, add the letter "M" to the model code, e.g. MVR230MC2.

MODEL	STEM OUTPUT	SUPPLY Vac	FORCE N	ACTION
MVR230	10,7÷11,8	110-230	90	on-off
MVR24	10,7÷11,8	24	90	on-off, PWM
MVR230C1*	12,3÷13,4	110-230	90	on-off
MVR24C1*	12,3÷13,4	24	90	on-off, PWM
MVR230C2*	11,3÷12,4	110-230	90	on-off
MVR24C2*	11,3÷12,4	24	90	on-off, PWM
MVR230C3*	10,3÷11,4	110-230	90	on-off
MVR24C3*	10,3÷11,4	24	90	on-off, PWM

1. *Models suitable to manifolds or valves of many different brands. Please check Controlli "MVR_DBL310E" data sheet for details.*

Customizable

Thanks to a little plastic stem adapter, our MVR thermal actuators are suitable to a number of different valves or manifolds.
Connection is M30x1.5. All materials are self-extinguishing rated V0. An indicator shows the open/closed position of the actuator.
MVR actuators can easily be customized with your company logo.

MCA

Valve Adaptive concept without adapters

Protection from condensation and from leaking regardless of the valve position (throughout 360°)
Function Indicator Pin visible from any direction.
Fast installation thanks to our Manual Override Position.
MCA has not only a protection from condensation and from water leak whichever is the mounting position (IP44 also up side down), but it is designed to be adapted to the majority of underfloor heating manifolds and zone valves up to 4 mm stroke available on the market without the need of any adapters.
Another peculiarity of MCA is the Manual Override position, which allows opening and closing the valve/ manifold through an easy operation and without powering the actuator.

Last but not least, the MCA is equipped with an ON/OFF Position Indicator, visible from any directions, which allows an easy and fast installation.
As for any other Controlli product, the reliability and quality are key requirements, that's why our products continuously undergo life tests and each MCA is tested before being shipped to the customer.
MCA is available with or without a end-stroke switch contact and with the possibility to be powered with 110/220Vac or 24Vac/dc.

MCA is then the ideal product for installers and distributors who can use it on any manifolds/valves but also for OEMs thanks to its high performances, its installation quickness as well as the possibility to be customized for example with the customer's logo.

MODEL	CONTROL SIGNAL [Vca]	AUXILIARY MICROSWITCH	POWER [N]	STROKE [mm]
MCA230	110÷230	--	90N	3
MCA230M		•		
MCA24	24	--		
MCA24M		•		
MCA230L	110÷230	--	140N	4
MCA230LM		•		
MCA24L	24	--		
MCA24LM		•		

Series 2T (threaded) - **PN16** - Stroke 11.5 mm. To be motorised by MVB (2TGB.B) or MVE.S (2TGB.F) actuators.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar	OTHER FEATURES
2TGB15BR00	1/2"	0.4	16	- GJL-250 cast-iron body - Brass internal parts - Equal-percentage control flow characteristic - Leakage 0 to 0.001% Kvs - Female threaded connections: fluid temperature -5[2] to 140 °C, with MVB max 120°C (140 °C with MVB+MVBHT) - For MVB actuator
2TGB15BR0	1/2"	0.63		
2TGB15BR1	1/2"	1		
2TGB15BR2	1/2"	1.6		
2TGB15BR3	1/2"	2.5		
2TGB15B	1/2"	4		
2TGB15FR00	1/2"	0.4	16	- GJL-250 cast-iron body - Brass internal parts - Equal-percentage control flow characteristic - Leakage 0 to 0.001% Kvs - Female threaded connections: fluid temperature -5[2] to 140 °C - For MVE.S actuator
2TGB15FR0	1/2"	0.63		
2TGB15FR1	1/2"	1		
2TGB15FR2	1/2"	1.6		
2TGB15FR3	1/2"	2.5		
2TGB15F	1/2"	4		

1. In order to avoid seat & plug wearing issues we recommend not to exceed 4 bar differential pressure.

Series VSB (threaded) - VSB.F (flanged) - **PN16** - Stroke 16.5 mm. To be motorised by MVB - MVE - MVH actuators - Thermal insulation available.

MOD	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar							OTHER FEATURES
			MVB	MVE506	MVE510	MVE515	MVH	MVH56FA MVH56FC	MVF59A MVF59C	
VSB3	3/4"	6.3	10,8	16	16	16	16	16	16	- G 25 cast-iron body - Brass internal parts - Female threaded connections: fluid temperature -10[2] to 150 °C, with MVB max 120°C (140°C with MVB+MVBHT) - Equal-percentage control flow characteristic - Leakage 0.03% Kvs - For MVE actuator, add AG52 linkage - For MVH actuator, add AG62 linkage
VSB4	1"	10	6,8	11,9	16	16	16	13,8	16	
VSB5	11/4"	16	4,1	7,2	12,1	16	16	8,4	10,7	
VSB6	11/2"	22	2,9	5	8,6	13	11,7	5,9	7,5	
VSB8	2"	30	2,1	3,7	6,4	9,6	8,7	4,4	5,6	
VSB8A	2"	40	2,1	3,7	6,4	9,6	8,7	4,4	5,6	
VSB3F	20	6.3	10,8	16	16	16	16	16	16	As above but with slip-on flanges
VSB4F	25	8	6,8	11,9	16	16	16	13,8	16	
VSB5F	32	16	4,1	7,2	12,1	16	16	8,4	10,7	
VSB6F	40	22	2,9	5	8,6	13	11,7	5,9	7,5	
VSB8F	50	30	2,1	3,7	6,4	9,6	8,7	4,4	5,6	
VSB8AF	50	40	2,1	3,7	6,4	9,6	8,7	4,4	5,6	

1. By spring return MVHFA closed, MVHFC open.
2. For applications with ice formation on stem and packing, use the stem heater.
3. In order to avoid seat & plug wearing issues we recommend not to exceed 2 bar differential pressure.

Tight Close-off

Series VSBPM threaded valves - Modulating tight close-off valves **PN16** - Thermal insulation available - To be motorised by MVB actuators.

MODEL	DN	Kvs	STROKE mm	MAX DIFFERENTIAL PRESSURE bar	OTHER FEATURES
VSBP3M	3/4"	6.3	16.5	2 (8.8)	- G 25 cast-iron body - Fluid temperature -5 to 95°C - Leakage 0% Kvs
VSBP4M	1"	10	16.5	2 (5.5)	
VSBP5M	1 1/4"	16	16.5	2 (5.5)	
VSBP6M	1 1/2"	25	16.5	2 (2.5)	
VSBP8M	2"	40	16.5	1.8	

1. Values in brackets are max close-off differential pressure. In applications with steam, the value in brackets is not applicable.
2. In order to avoid seat & plug wearing issues we recommend not to exceed 2 bar differential pressure.

Series VSBT in G25 cast-iron **PN 16** - Stroke 5,5mm - To be motorised by MVT actuators.

MODEL	DN	Kvs	STROKE mm	MAX DIFFERENTIAL PRESSURE bar	OTHER FEATURES
VSBT3	3/4"	6.3	5.5	2.5	- Linear control flow characteristics - Leakage 0.03% Kvs - Fluid temperature 5° to 95°C
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	

1. In order to avoid seat & plug wearing issues we recommend not to exceed 2 bar differential pressure.

2-way Globe Valves with high performances

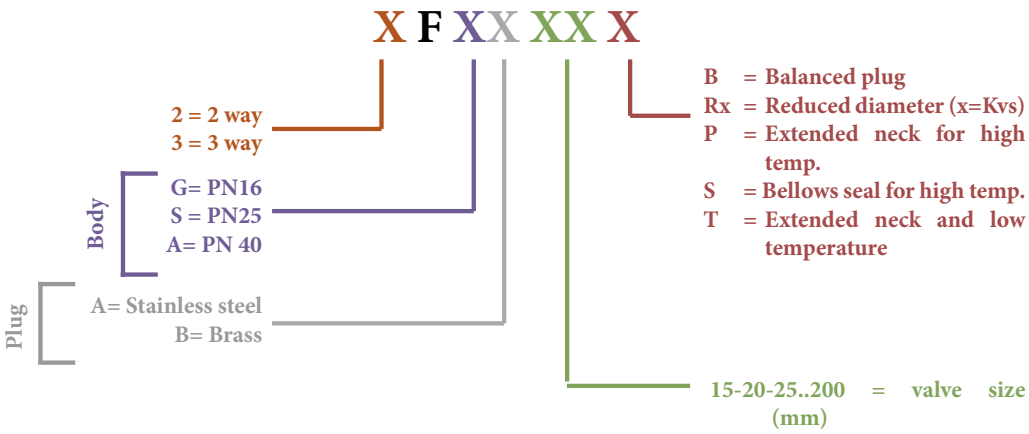
2TGA.B Series 2-way valves **PN16** with pressure balanced plug, compact dimensions, threaded connections up to 2", maximum temperature 130°C, suitable to applications with high close-off pressure: up to 10 bar close-off.
8,5mm stroke for MVT28, MVT44 (3 pos.) and MVT56L (proportional) actuators.

MODEL	DN	KVS	MAX. DIFFERENTIAL PRESSURE WITH MVT ACTUATORS	OTHER FEATURES
2TGA20B	3/4"	5	10 bar	Stainless steel internal parts (seat, plug, stem)
2TGA25B	1"	8		
2TGA32B	1" 1/4	11		
2TGA40B	1" 1/2	18		
2TGA50B	2"	30		

2TBB Series = 2-way valves, bronze body, with threaded connections up to 2", brass plug, stainless steel stem. Temperature applications -10°C to 130°C. Rangeability 50:1.
To be motorised by MVE and MVH actuators (no adapter needed).
1/2" and 3/4" models are tight close-off. Maximum leakage on 1" to 2" models is 0.1% of Kvs.
Stroke on 1/2" and 3/4" models is 9.5mm. Stroke on 1" to 2" models is 16mm.

Model	DN	Kvs	MAX DIFFERENTIAL PRESSURE (bar)			
			MVE506	MVE510	MVE515	MVH56FA MVH56FC
2TBB15R1	1/2"	0,2	16	16	16	16
2TBB15R2	1/2"	0,5	16	16	16	16
2TBB15R3	1/2"	1	16	16	16	16
2TBB15	1/2"	2,5	16	16	16	16
2TBB20	3/4"	5	16	16	16	16
2TBB25	1"	10	11,3	16	16	13,2
2TBB32	1 1/4"	16	7,1	12,2	16	8,4
2TBB40	1 1/2"	25	4,9	8,4	12,8	5,7
2TBB50	2"	38	2,7	4,6	7,1	3,2

Flanged Globe Valves Selection Chart



2-way flanged Valves

Series 2F - **PN16** - Stroke 16.5 mm (DN25), 25 mm (DN40 to 65) 45 mm (DN80 to 150) - To be motorised by MVH - MVE actuators.

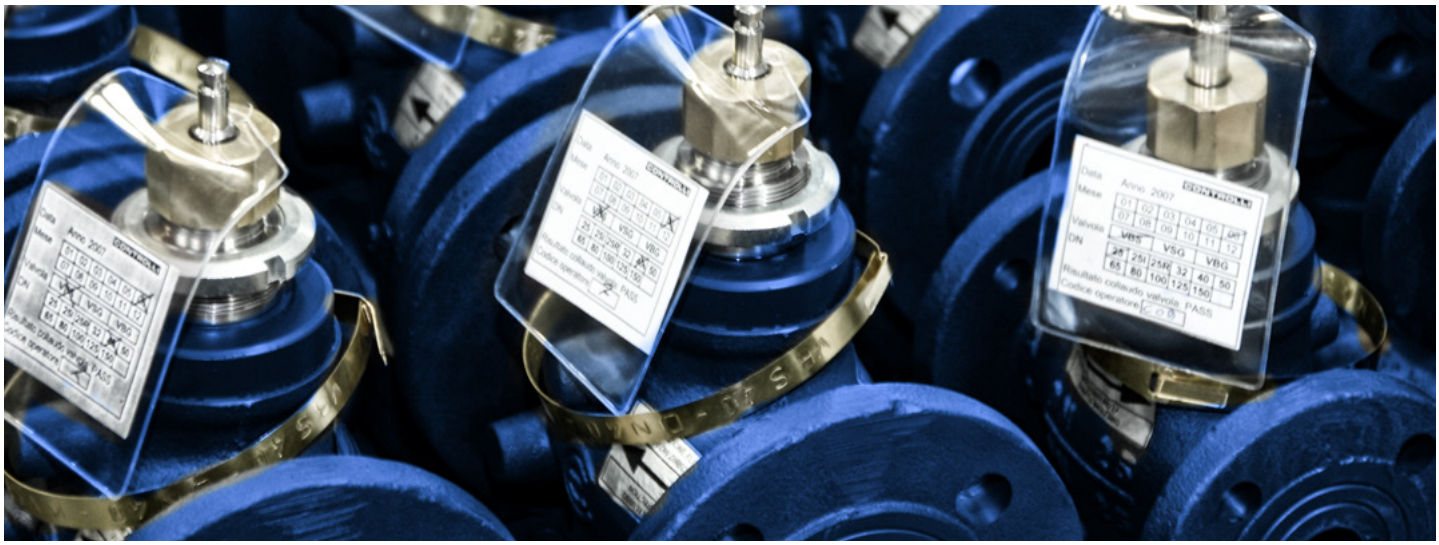
MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar							OTHER CHARACTERISTICS
			MVE506	MVE510	MVE515	MVH	MVH3K	MVH56FA MVH56FC	MVF59A MVF59C	
2FGB25R4	25 R	4	9,4	15,9	16	16	16	11	14	
2FGB25R7	25 I	6.3	9,4	15,9	16	16	16	11	14	- G 25 cast-iron body internal parts in bronze - PN16 flanged connections - Fluid temperature: - 10[2] to 150 °C - Control flow characteristics equal-percentage - Leakage 0.03% Kvs
2FGB25	25	10	9,4	15,9	16	16	16	11	14	
2FGB40	40	25	5	8,6	13	11,7	16	5,9	7,5	
2FGB40R	40	19	5	8,6	13	11,7	16	5,9	7,5	
2FGB50	50	40	3,1	5,3	8,1	7,3	16	3,6	4,7	
2FGB65	65	63	1,8	3,1	4,8	4,3	9,6	2,1	2,7	
2FGB80	80	100	1,1	2	3,1	2,8	6,2	1,3	-	
2FGB100	100	130	0,7	1,2	1,9	1,7	3,9	0,8	-	
2FGB125	125	200	0,4	0,7	1,2	1	2,4	0,5	-	
2FGB150	150	300	0,3	0,5	0,8	0,7	1,6	0,3	-	
2FGA15R0	15R	0.6	16	16	16	16	16	16	16	- G 25 cast-iron body internal parts in stainless steel - PN16 flanged connections - Fluid temperature: - 10[2] to 200 °C - Equal-percentage control flow characteristic - Leakage 0.02% Kvs
2FGA15R1	15R	1	16	16	16	16	16	16	16	
2FGA15R2	15R	1.6	16	16	16	16	16	16	16	
2FGA15R3	15R	2.5	16	16	16	16	16	16	16	
2FGA15	15	4	16	16	16	16	16	16	16	
2FGA20	20	6.3	12,5	16	16	16	16	15,1	16	
2FGA25	25	10	7,6	14,1	16	16	16	9,2	12,2	
2FGA32	32	16	7,6	14,1	16	16	16	9,2	12,2	
2FGA40	40	24	5,1	9,5	15	13,4	16	6,2	8,2	
2FGA50	50	32	3,3	6,2	9,8	8,7	16	4	5,3	
2FGA65	65	63	1,3	2,5	4	3,5	8,3	1,6	2,1	
2FGA80	80	110	0,8	1,6	2,6	2,3	5,5	1	-	
2FGA100	100	140	0,5	1	1,6	1,4	3,5	0,6	-	

1. *2FGB: by spring return MVHFA close, MVHFC open. 2FGA: by spring return MVHFA open, MVHFC closed.*
2. *For applications with possible ice formation on stem and packing, use the stem heater.*
3. *Options and accessories for valve bodies.*
4. *In order to avoid seat & plug wearing issues we raccomend not to exceed 2 bar (2FGB) & 6 bar (2FGA) differential pressure.*

Series 2F - **PN25-40** - Stroke 16.5 mm (DN25), 25 mm (DN32 to 65) 45 mm (DN80 to 150) - To be motorised by MVE - MVF actuators.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar							OTHER FEATURES
			MVE506	MVE510	MVE515	MVH	MVH3K	MVH56FA MVH56FC	MVF59A MVF59C	
2FSA25R4	25 R	4	18,5	25	25	25	25	21,5	25	- Spheroidal cast-iron body internal parts in stainless steel - PN25 flanged connections - Fluid temperature: -10[2] to -230°C - Equal-percentage control flow characteristic - Leakage 0.02% Kvs
2FSA25R7	25I	6.3	9,3	15,8	23,9	21,5	25	10,8	13,9	
2FSA25	25	10	9,3	15,8	23,9	21,5	25	10,8	13,9	
2FSA32	32	16	6,2	10,6	16,1	14,5	25	7,3	9,3	
2FSA40	40	25	4,4	7,6	11,6	10,4	23,1	5,2	6,7	
2FSA50	50	40	2,8	4,8	7,4	6,6	14,7	3,3	4,2	
2FSA65	65	63	1,6	2,8	4,3	3,9	8,6	1,9	2,4	
2FAA15R2	15 R	1.6	30	30	30	30	30	30	30	- Fe 52 steel body internal parts in stainless steel - PN40 flanged connections - Fluid temperature: -10[2] to 230 °C - Equal-percentage control flow characteristic - Leakage 0.02% Kvs
2FAA15	15	4	14,5	32,1	40	30	30	18,7	27	
2FAA20	20	6.3	8,5	19	32,2	28,4	30	11,1	16	
2FAA25	25	10	5,1	11,6	19,8	17,4	30	6,7	9,7	
2FAA32	32	16	5,1	11,6	19,8	17,4	30	6,7	9,7	
2FAA40	40	24	3,4	7,8	13,3	11,7	29,2	4,5	6,5	
2FAA50	50	32	2,2	5,1	8,7	7,6	19,1	2,9	4,2	
2FAA65	65	63	0,8	2	3,5	3,1	7,9	1,1	1,7	
2FAA80	80	110	0,5	1,3	2,3	2	5,2	0,7	-	
2FAA15PR2	15 R	1.6	30	30	40	30	30	30	30	- Fe 52-steel body with extended neck internal parts in stainless steel with greaser and special gaskets for high temperatures - PN40 flanged connections - Fluid temperature: -20[3] to 350°C - Equal-percentage control flow characteristic - Leakage 0.02% Kvs
2FAA15P	15	4	14,5	32,1	40	30	30	18,7	27	
2FAA20P	20	6.3	8,5	19	32,2	28,4	30	11,1	16	
2FAA25P	25	10	5,1	11,6	19,8	17,4	30	6,7	9,7	
2FAA32P	32	16	5,1	11,6	19,8	17,4	30	6,7	9,7	
2FAA40P	40	24	3,4	7,8	13,3	11,7	29,2	4,5	6,5	
2FAA50P	50	32	2,2	5,1	8,7	7,6	19,1	2,9	4,2	
2FAA65P	65	63	0,8	2	3,5	3,1	7,9	1,1	1,7	
2FAA80P	80	110	0,5	1,3	2,3	2	5,2	0,7	-	

1. 2FSA: by spring return MVHFA close, MVHFC open. 2FAA: by spring return MVHFA open, MVHFC closed.
2. For applications with possible ice formation on stem and packing, use the stem heater.
3. For fluid applications with temperature below -10 °C, when ordering, add "T" instead of "P" to model, e.g. 2FAA40T.
4. In order to avoid seat & plug wearing issues we recommend not to exceed 8 bar (2FSA & 2FAA) & 12 bar (2FAAP) differential pressure.



2-way Balanced Plug Valves

Series 2F.B **PN16-25-40** Stroke 16.5 mm (DN25), 25 mm (DN40 to 65) 45 mm (DN80 to 150).
To be motorised by MVH-MVE actuators.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar						OTHER FEATURES
			MVE506	MVE510	MVE515	MVH	MVHF A/C	MVF59A MVF59C	
2FGB65B	65	63	10,8	16	16	16	14	16	- G25 cast iron body, brass plug - PN16 flanged connections - Fluid temperature: -10[2] to 150°C - Equal-percentage control characteristic - Leakage 0.03% Kvs
2FGB80B	80	100	8	16	16	16	10,6	15,7	
2FGB100B	100	130	5,3	13,9	16	16	7,4	11,4	
2FGB125B	125	200	3,5	10,4	16	16	5,1	8,3	
2FGB150B	150	300	2,1	7,8	15	12,9	3,5	6,2	
2FSA-25BR4	25R	4	25	25	25	25	25	25	- Spheroidal cast iron body, stainless steel internal parts - PN25 flanged connections - Fluid temperature: -10[2] to 230°C - Equal-percentage control characteristic - Leakage 0.02% Kvs
2FSA-25BR7	25I	6.3	25	25	25	25	25	25	
2FSA25B	25	10	25	25	25	25	25	25	
2FSA32B	32	16	25	25	25	25	25	25	
2FSA40B	40	25	24,9	25	25	25	25	25	
2FSA50B	50	40	18,3	25	25	25	25	25	
2FSA65B	65	63	12,2	25	25	25	17,6	25	
2FSA80B	80	80	8,3	25	25	25	12,8	-	
2FAA25B	25	10	30	30	30	30	30	30	- Steel body and stainless steel internal parts - PN40 flanged connections - Fluid temperature: -20[2] to 230°C - Equal-percentage control characteristic - Leakage 0.02% Kvs
2FAA32B	32	16	30	30	30	30	30	30	
2FAA40B	40	25	27,6	30	30	30	30	30	
2FAA50B	50	40	21	30	30	30	28,1	30	
2FAA65B	65	63	14,9	30	30	30	20,4	30	
2FAA80B	80	100	11	29,6	30	30	15,5	-	
2FAA100B	100	160	6,5	19,1	30	30	9,5	-	
2FAA125B	125	200	4,2	14,3	27,6	23,3	6,6	-	

1. *By spring return MVHFA close, MVHFC open.*
2. *For applications with possible ice formation on stem and packing, use the stem heater.*
3. *In order to avoid seat & plug wearing issues we recommend not to exceed 2 bar (2FGBB) & 8 bar (2FSA) & 12 bar (2FAAB) differential pressure.*

2-way Double-seat Valves

Series 2FGA.B-2FAA.B - Stroke 45 mm - To be motorised by MVH-MVE actuators.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar				OTHER FEATURES
			MVE510	MVE515	MVH	MVH56FA MVH56FC	
2FAA150B (PN25)	150	300	9,5	20,3	17,1	2,9	- Fe 52 Steel body and stainless steel internal parts - PN40 flanged connections - Fluid temperature: -10[2] ÷ 230°C - Equalpercentage control characteristic - Leakage 0.12% Kvs
2FGA200B (PN16)	200	500	6,3	13,4	11,3	1,9	- G25 cast iron body, stainless steel internal parts - PN16 flanged connections - Fluid temperature: -10[2] to 200°C - Equalpercentage control characteristic - Leakage 0.12% Kvs

1. *By spring return MVHFA closed, MVHFC open.*
2. *For applications with possible ice formation on stem and packing, use the stem heater.*

Series 3T (threaded) - **PN16** - Stroke 11.5 mm. To be motorised by MVB (3TGB.B) - MVE.S (3TGB.F) actuators.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar	ACTUATORS	OTHER FEATURES
3TGB15BR2	1/2"	1.6	16	For MVB actuator	- GJL-250 cast-iron body - Brass internal parts - Equal-percentage control flow characteristic - Leakage 0 to 0.001% Kvs - Female threaded connections: fluid temperature -5[1] to 140 °C, with MVB max 120°C (140 °C with MVB+MVBHT)
3TGB15BR3	1/2"	2.5			
3TGB15B	1/2"	4			
3TGB15FR2	1/2"	1.6	16	For MVE.S actuator	
3TGB15FR3	1/2"	2.5			
3TGB15F	1/2"	4			

1. *For applications with possible ice formation on stem and packing, use the stem heater.*
2. *In order to avoid seat & plug wearing issues we recommend not to exceed 4 bar differential pressure.*

Series VMB (threaded) - VMBF (flanged) - **PN16**. To be motorised by MVB - MVE - MVH actuators. - Thermal insulation available.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar							OTHER FEATURES
			MVB	MVE506	MVE510	MVE515	MVH	MVH56FA MVH56FC	MVF59A MVF59C	
VMB3	3/4"	6.3	2,6	13,1	16	16	16	15,6	16	- G 25 cast-iron body - Brass internal parts - Female threaded connections - Fluid temperature: -10[2]÷150°C (with MVB max 120 °C, with MVB+MVBHT max 140 °C) - Control characteristic: equal-percentage on direct way, linear on angle way - Leakage 0.03% Kvs - For MVE actuator, add AG52 linkage - For MVH actuator, add AG62 linkage
VMB4	1"	10	1,7	8,7	15,6	16	16	10,3	13,6	
VMB5	11/4"	16	1,1	5,4	9,8	15,4	13,7	6,5	8,6	
VMB6	11/2"	22	0,8	3,9	7,1	11,1	9,9	4,7	6,2	
VMB8	2"	30	0,6	2,9	5,4	8,4	7,5	3,5	4,7	
VMB8A	2"	40	0,6	2,9	5,4	8,4	7,5	3,5	4,7	
VMB3F	20	6.3	2,6	13,1	16	16	16	15,6	16	As above with NP16 slip-on flanges
VMB4F	25	8	1,7	8,7	15,6	16	16	10,3	13,6	
VMB5F	32	16	1,1	5,4	9,8	15,4	13,7	6,5	8,6	
VMB6F	40	22	0,8	3,9	7,1	11,1	9,9	4,7	6,2	
VMB8F	50	30	0,6	2,9	5,4	8,4	7,5	3,5	4,7	
VMB8AF	50	40	0,6	2,9	5,4	8,4	7,5	3,5	4,7	

1. *By spring return MVHFA closed, MVHFC open.*
2. *For applications with possible ice formation on stem and packing, use the stem heater.*
3. *In order to avoid seat & plug wearing issues we recommend not to exceed 2 bar (VMB) & 2 bar (VMBF) differential pressure.*

Tight Close-Off

Series VMBPM threaded valves - Tight close-off modulating valves **PN16** - Thermal insulation available - To be motorised by MVB actuators.

MODEL	DN	Kvs	STROKE mm	MAX DIFFERENTIAL PRESSURE bar	OTHER FEATURES
VMBP3M	3/4"	6.3	16.5	8.8	- G25 cast iron valve body - Fluid temperature -5 to 95°C - Leakage 0% Kvs
VMBP4M	1"	10	16.5	5.5	
VMBP5M	11/4"	16	16.5	3.5	
VMBP6M	11/2"	25	16.5	2.5	
VMBP8M	2"	40	16.5	1.8	

1. *The values in brackets refer to angle way.*
2. *In order to avoid seat & plug wearing issues we reccomend not to exceed 2 bar differential pressure.*

Series VMBT **PN16** - Stroke 5,5 mm - To be motorised by MVT actuators.

MODEL	DN	Kvs		STROKE mm	MAX DIFFERENTIAL PRESSURE bar	OTHER FEATURES
		DIRECT WAY	ANGLE WAY			
VMBT3	3/4"	6.3	5.5	5.5	1.7	- G25 cast iron body - Fluid temperature 5 to 95 °C - Linear control characteristic - Leakage: direct way <0.03% Kvs angle way < 2% Kvs
VMBT4	1"	10	9	5.5	1	
VMBT5	11/4"	13	11	5.5	0.7	
VMBT6[1)]	11/2"	16	7	5.5	0.5	

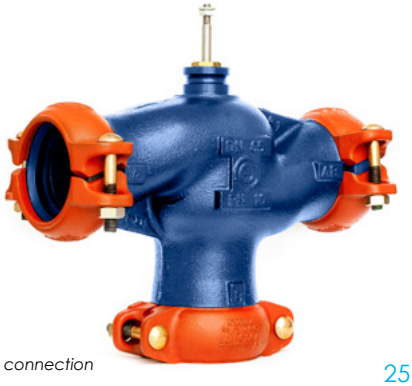
1. In order to avoid seat & plug wearing issues we recommend not to exceed 2 bar differential pressure.

3TBB Series = 3-way valves, mixing or diverting, bronze valve bodies with threaded connections, brass plug, stainless steel stem. Temperature applications -10°C to 130°C. Rangeability 50:1.
To be motorised by MVE and MVH actuators (no adapter needed).
1/2" and 3/4" models are tight close-off. Maximum leakage on 1" to 2" models is 0.1% of Kvs.
Stroke on 1/2" and 3/4" models is 9.5mm. Stroke on 1" to 2" models is 16mm.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE (bar)			
			MVE506	MVE510	MVE515	MVH56FA MVH56FC
3TBB15	1/2"	2,5	16	16	16	16
3TBB20	3/4"	5	16	16	16	16
3TBB25	1"	10	9,7	16	16	11,7
3TBB32	1" 1/4	16	6,1	11,2	16	7,3
3TBB40	1" 1/2	25	4,2	7,7	12,1	5
3TBB50	2"	38	2,3	4,2	6,7	2,8

Series 3F **PN16-25** - Stroke 16.5 mm (DN25), 25mm (DN32-65), 45mm (DN80-150) - To be motorised by MVE-MVH actuators.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar							OTHER FEATURES
			MVE506	MVE510	MVE515	MVH	MVH3K	MVH56FA MVH56FC	MVF59A MVF59C	
3FGB25R4	25 R	4	7	12,7	16	16	16	8,4	11	
3FGB25R7	25 I	6.3	7	12,7	16	16	16	8,4	11	
3FGB25	25	10	7	12,7	16	16	16	8,4	11	
3FGB40R19	40 R	19	3,9	7,1	11,1	9,9	16	4,7	6,2	- G25 cast-iron body brass internal parts - PN16 flanged connections - Fluid temperature: - 10[2] to 150 °C - Control flow characteristic: direct way: equal-percentage, angle way: linear - Leakage: direct-way: 0.03% Kvs, angle way: 2% Kvs
3FGB40	40	25	3,9	7,1	11,1	9,9	16	4,7	6,2	
3FGB50	50	40	2,5	4,5	7,1	6,3	14,4	3	3,9	
3FGB65	65	63	1,5	2,7	4,2	3,7	8,5	1,7	2,3	
3FGB80	80	100	0,9	1,7	2,7	2,4	5,6	1,1	-	
3FGB100	100	130	0,6	1,1	1,7	1,5	3,6	0,7	-	
3FGB125	125	200	0,4	0,7	1,1	1	2,3	0,4	-	
3FGB150	150	300	0,2	0,5	0,7	0,7	1,6	0,3	-	
3FSA25R4	25 R	4	9,5	22,2	25	25	25	12,5	18,5	
3FSA25R7	25 I	6.3	4,7	11,2	19,3	16,9	25	6,3	9,3	- G-308 spheroidal cast-iron body stainless steel internal parts - PN25 flanged connections - Fluid temperature: -10[2] to 230 °C - Control flow characteristic: equalpercentage (DN25÷65) linear (DN80), angle way linear - Leakage 0.02% Kvs
3FSA25	25	10	4,7	11,2	19,3	16,9	25	6,3	9,3	
3FSA32	32	19	3,1	7,5	13	11,4	25	4,2	6,2	
3FSA40	40	25	2,2	5,4	9,4	8,2	20,8	3	4,4	
3FSA50	50	40	1,3	3,4	5,9	5,2	13,3	1,8	2,8	
3FSA65	65	63	0,7	1,9	3,4	3	7,8	1	1,6	
3FSA80	80	110	0,7	1,5	2,2	2,2	5,3	0,9	-	
3FSA25SR4	25 R	4	5	5	5	5	5	5	5	
3FSA25SR7	25 I	6.3	5	5	5	5	5	5	5	- G 308 spheroidal cast-iron body stainless steel internal parts with bellows seal - PN25 flanged connections - Fluid temperature: -10[2] to 300 °C - Control flow characteristic: equal percentage (DN25÷65) linear (DN80), angle way linear - Leakage 0.02% Kvs
3FSA25S	25	10	5	5	5	5	5	5	5	
3FSA32S	32	16	4,7	5	5	5	5	5	5	
3FSA40S	40	25	3,4	5	5	5	5	4,2	5	
3FSA50S	50	40	2,2	4,2	5	5	5	2,7	3,6	
3FSA65S	65	63	1,3	2,5	4	3,5	5	1,6	2,1	
3FSA80S	80	110	0,8	1,6	2,6	2,3	5	1	-	



1. By spring return MVHFA closed, MVHFC open.
2. For applications with possible ice formation on stem and packing, use the stem heater.
3. In order to avoid seat & plug wearing issues we recommend not to exceed 2 bar (3FGB) & 8 bar (3FSA & 3FSAS) differential pressure.

**Also available with grooved connection*

Series 3F **PN40** - Stroke 16.5 mm (DN25), 25mm (DN32-65), 45mm (DN80-125) - To be motorised by MVE-MVH actuators.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar							OTHER FEATURES
			MVE506	MVE510	MVE515	MVH	MVH3K	MVH56FA MVH56FC	MVF59A MVF59C	
3FAA25R4	25 R	4	6	13	21,7	19,2	30	7,7	10,9	- Fe 52 steel body stainless steel internal parts - PN40 flanged connections - Fluid temperature: -10[2] to 230 °C - Control flow characteristic: linear - Leakage 0.02% Kvs
3FAA25R7	25 I	6.3	6	13	21,7	19,2	30	7,7	10,9	
3FAA25	25	10	6	13	21,7	19,2	30	7,7	10,9	
3FAA32	32	16	3,8	8,2	13,7	12,1	30	4,8	6,9	
3FAA40	40	22	2,4	5,3	9	7,9	19,4	3,1	4,5	
3FAA50	50	32	1,7	3,7	6,3	5,6	13,7	2,2	3,2	
3FAA65	65	70	1	2,2	3,7	3,3	8,1	1,3	1,8	
3FAA80	80	110	0,6	1,4	2,4	2,1	5,3	0,8	-	
3FAA100	100	140	0,4	0,9	1,5	1,4	3,4	0,5	-	
3FAA125	125	250	0,2	0,6	1	0,8	2,1	0,3	-	
3FAA25PR4	25 R	4	6	13	21,7	19,2	30	7,7	10,9	- Fe 52 steel body internal parts in AISI 316 stainless steel with grease-cap and special seals for high temperature - PN40 flanged connections - Fluid temperature: - 20[2] to 350 °C - Control flow characteristics: linear - Leakage 0.02% Kvs
3FAA25PR7	25 I	6.3	6	13	21,7	19,2	30	7,7	10,9	
3FAA25P	25	10	6	13	21,7	19,2	30	7,7	10,9	
3FAA32P	32	16	3,8	8,2	13,7	12,1	30	4,8	6,9	
3FAA40P	40	22	2,4	5,3	9	7,9	19,4	3,1	4,5	
3FAA50P	50	32	1,7	3,7	6,3	5,6	13,7	2,2	3,2	
3FAA65P	65	70	1	2,2	3,7	3,3	8,1	1,3	1,8	
3FAA80P	80	110	0,6	1,4	2,4	2,1	5,3	0,8	-	
3FAA100P	100	140	0,4	0,9	1,5	1,4	3,4	0,5	-	
3FAA125P	125	250	0,2	0,6	1	0,8	2,1	0,3	-	

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
3. In order to avoid seat & plug wearing issues we recommend not to exceed 12 bar differential pressure.

Accessories

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

MODEL	DESCRIPTION
AG22	Linkage kit for MVB on V500
AG50	Linkage kit for MVE-MVH on VMB16-VBG-VSG (old type) up to DN65 valves
AG51	Linkage kit for MVE-MVH on other SS-VS-DS-VM-3V (old type) flanged valves
AG52	Linkage kit for MVE-MVH on VSB-VMB, VSB.F-VMB.F valves (pages 52, 56)
AG53	Linkage kit for MVE on Satchwell valves
AG60-20	Linkage kit for MVE on Honeywell valves
AG70-10	Linkage kit for MVE on Siemens valves with 10 mm spindle diameter
AG70-14	Linkage kit for MVE on Siemens valves with 14 mm spindle diameter
AG66/AG67	Linkage kit for MVE on Johnson Controls valves
AG60-07	Linkage kit for MVE on Danfoss valves
AG62	Linkage kit for MVH on VSB-VMB, VSB.F-VMB.F valves (pages 52, 56)
AG63	Linkage kit for MVE.S on VSB-VMB, VSB.F-VMB.F valves (pages 52, 56)
AG64	Linkage kit for MVH on SS-DS-VM-3V (old type) up to DN65 valves with MVLHT spacer
AG65	Linkage kit for MVH on SS-DS-VM-3V (old type) DN ≥80 valves with MVLHT spacer
244	Stem heater for VSB/VSB-F- VMB/VMB-F valves motorised by MVB actuator or MVE-MVH actuators with AG52-AG62, supply 24 V a.c.
248	As above for MVH-MVE with 2F-3F flanged valves

MVT *300 Newton*

Compact Actuator

Electric bidirectional actuator with compact dimensions suitable to valves with hot or cool water used in a variety of applications including FCUs, AHUs, zone control systems, solar plants, small heating and cooling plants, small re-heating and dehumidification coils.
Force is 300N i.e. it provides 50% more force than standard MVT actuators that means higher close-off performances. It is easy to fit the actuator on Controlli valves.
Further more, thanks to self-stroking feature and 17mm long stroke, these new MVT 300N actuators can be used to retrofit actuators from other manufacturers, for example actuators for MZX, VZX, MEU, FEU, VEU Satchwell valves. Additionally, they can be used to motorize a number of PICVs available in the market.
Please contact export@controlli.eu for a comprehensive list of manufacturers.

MVT 300N actuators can be controlled by either proportional (modulating) signals or by an increase/decrease (floating) signal.
On all models, PC Board is equipped with two micro-switches detecting the complete open and complete closed positions.

Two versions are available:
SHORT: up to 9mm yoke, self stroking, only pushing
LONG: up to 17mm yoke, self stroking, push & pull

Timing:
60seconds on 5,5 mm stroke valves e.g. VMBT
90seconds on 8,5 mm stroke valves e.g. 2TGA..B

IP43 protection class.
Manual override by means of a 3mm Allen key.

Proportional actuators can be connected to any controller with 0..10Vdc, 2..10Vdc, 0..5Vdc, 6..10Vdc, 4..20mA signal.
Feedback signal: 2..10Vdc (2V=fully retracted; 10V= fully extended)

Proportional actuators are equipped with 3 LEDs visible under the cover
- Green for Power On
- Yellow for opening action
- Red for closing action

Direct / reverse action: actuator movement direction can be selected via a dip-switch.

				VALVES WITH SPRING				VALVES WITHOUT SPRING	
	ACTUATOR MODEL	CONTROL SIGNAL	POWER SUPPLY	VSXT / VMXT / VTXT VALVES FOR FCUS 1/2" TO 3/4" STROKE 5,5mm	VSXT..PB DYNAMIC PICVS 1/2" TO 1" 1/2 STROKE 5,0mm	VSBT_ / VMBT_ GLOBE VALVES 3/4" TO 1" 1/2 STROKE 5,5mm	2TGA..B VALVES WITH HIGH CLOSE-OFF 3/4" TO 2" STROKE 8,5mm	VSB_T / VMB_T GLOBE VALVES 3/4" TO 1" 1/2 STROKE 5,5mm	VALVES FROM OTHER MANUFACTURERS UP TO 17mm STROKE
SHORT YOKE, ONLY PUSHING	MVT203S	3POS.	230VAC	●	●	●	●		
	MVT403S		24VAC	●	●	●	●		
	MVT503S	PROPORTIONAL		●	●	●	●		
LONG YOKE, PULLING & PUSHING	MVT203	3POS.	230VAC					●	●
	MVT403		24VAC					●	●
	MVT503	PROPORTIONAL						●	●

Actuators for Zone Valves and Terminal Unit Valves 200 N

Series MVT2./4. - Bidirectional type - Stroke 5.5 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 - 24 Vac power supply - Stroke 5 mm to 5,5 mm, stroke time 117 s. - For V.XT - V.BT valve bodies - Protection IP43.

MODEL	POWER SUPPLY Vac	CONSUMPTION VA	OTHER FEATURES
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
MVT56L	24	1	Same as MVT56 but Stroke 8,5 mm
MVT56S	24	1	Same as MVT56 but Stroke 5 mm
MVT57	24	1	0 to 10 Vdc - proportional control - only direct action

Globe Valve Actuators 450 N

Series MVB - Bidirectional motor for V.B threaded ½" to 2" and flanged 15 to 50 mm valve bodies - Supplied with linkage for mounting on 2T-3T and V.B-V.BF valve bodies - IP50 protection.

MODEL	TIMING s.	SUPPLY Vac	CONSUMPTION VA	OTHER FEATURES
MVB22	37	230	5	on/off, floating
MVB26	60	230	5	
MVB28	370	230	5	
MVB46	60	24	5	
MVB46P	As MVB46 with 1 kOhm auxiliary potentiometer			
MVB36	60	24	5	proportional potentiometric
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 mounting on valvebody			

MVE

Universal Actuator

The MVE is a flexible electro-mechanical actuator for the control of two and three way globe valves in: Heating and Cooling systems, Air handling units, District Heating plants, Industrial Temperature Control systems. The MVE can be controlled either by a proportional (modulating) signal or by an increase/decrease (Floating) signal simply changing switch settings on the field. It is designed for an easy installation to any CONTROLLI flanged valve. Linkage kits are available for threaded valves as well as for valves of other manufacturers. The Actuator has a fine resolution (500 steps on the full stroke range) for a very accurate fluid control and it is able to self-calibrate on a different stroke without the need of any user action. A Plug&Play function is available as well calibrating the actuator on the valve at the very first power-on only. The MVE implements an smart control algorithm with self diagnostic and alarm functionality in case of unexpected operation, feedback of alarms to the user is provided by LEDs (Green and Red) on the control board.
MVE is available with standard yoke and with a compact yoke for applications where compact dimensions are required and each version can be available with close-off force 600 N, 1000 N and 1500 N.

MVE5.. - MVE5..S
MVE is available with very low voltage power supply 24 Vac or 24Vdc.
MVE2.. - MVE2..S
MVE is also available with high voltage power supply 230Vac with the same functionality of the 24Vac/dc

MODEL		TIMING [s]				POWER SUPPLY		FORCE [N]	OTHER
		STROKE [mm]			3P.				
		5/15	15/25	25/60		MVE5..	MVE2..		
MVE506	MVE206	15	20	30	60	24Vac/dc	220Vac	600	Control 3p floating and proportional switch selectable. Control range 0..10 Vdc, 2..10 Vdc, 0..5 Vdc, 5..10 Vdc, 2..6 Vdc, 6..10 Vdc and 4-20 mA
MVE510	MVE210							1000	
MVE515	MVE215							1500	
MVE506S	MVE206S							600	Control 3p floating and proportional switch selectable. Control range 0..10 Vdc, 2..10 Vdc, 0..5 Vdc, 5..10 Vdc, 2..6 Vdc, 6..10 Vdc and 4-20 mA **Short Yoke.**
MVE510S	MVE210S							1000	
MVE515S	MVE215S							1500	

Globe Valve Actuators 1500 N-3000 N

Series MVH - For all valve bodies, self-adjusting stroke 10 to 45 mm (9 to 50 mm for MVH56F) - For VSB-VSB.F VMB-VMB.F valves only, add linkage AG62, - Manual override - Protection IP55.

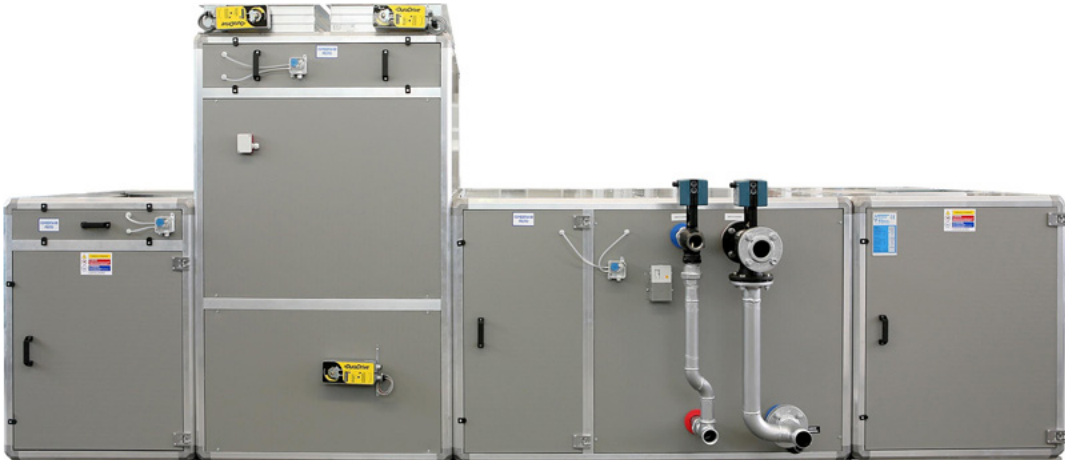
MODEL	TIMING DEPENDING ON VALVE STROKE (seconds)			SUPPLY Vac	CON-SUMPTION VA	FORCE N	ACTION
	16.5	25	45				
MVH26	22	33	60	230	12	1500	on/off floating
MVH46	22	33	60	24	12		
MVH36	22	33	60	24	12		proportional potentiometric
MVH56	22	33	60	24	12		proportional control selectable range for industrial applications
MVH56F	26	40	70	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
MVH3K	26	40	70	24	25	3000	
MVHAV	MVH assembly on valve body						

Globe Valve Actuators with Spring Return 700 N

Series MVH - For all valve bodies, self-adjusting stroke 9 to 50 mm - Direct-reverse action - For VSB-VSBF VMB-VMBF valves only, add linkage AG62 - Protection IP55.

MODEL	TIMING DEPENDING ON VALVE STROKE (seconds)			SUPPLY Vac	CON-SUMPTION VA	ACTION	OTHER FEATURES
	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

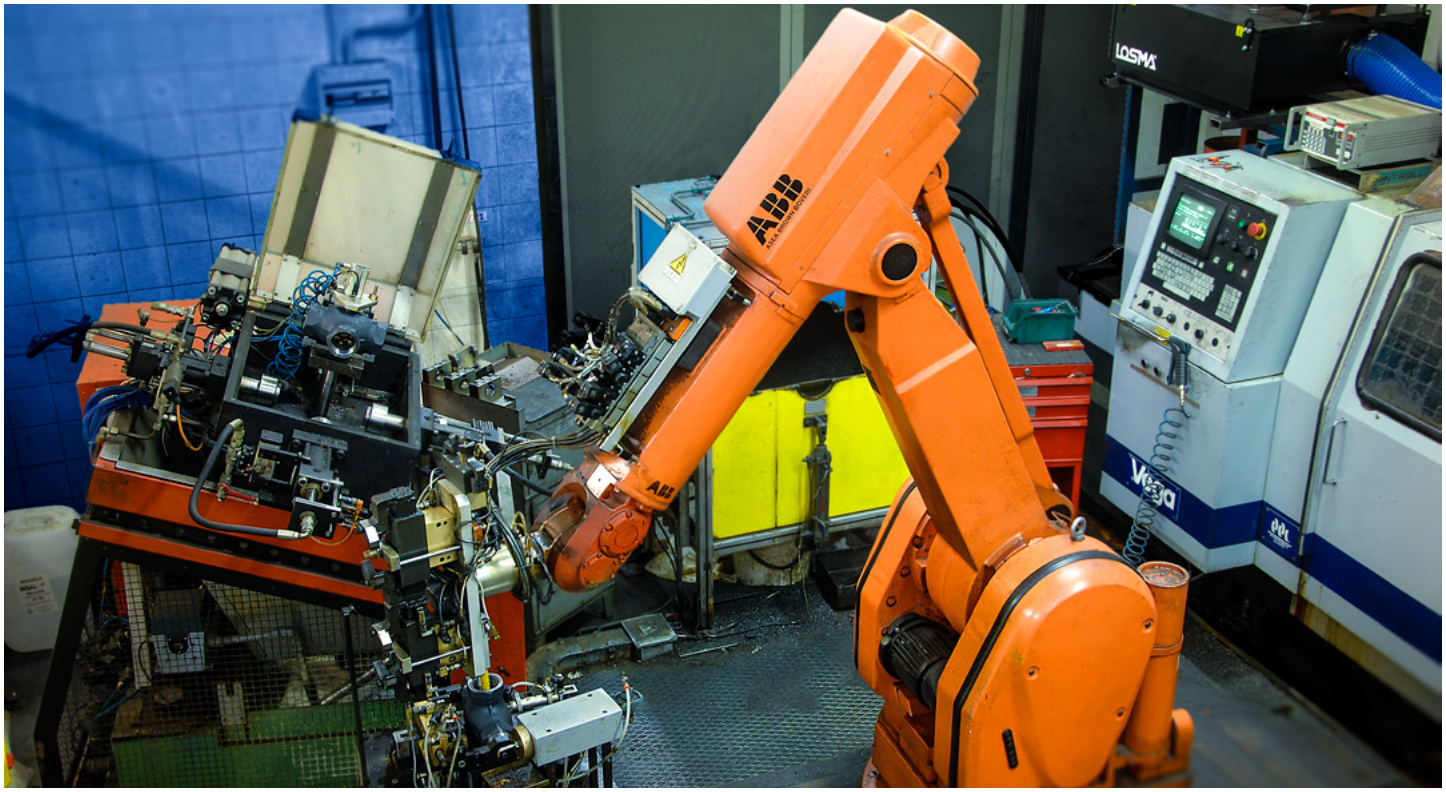
1. *The values in brackets indicate the return time by spring return. By spring return: MVHFA closes two-way valves and direct way in three-way valves, MVHFC opens two-way valves and direct way in three-way valves. This is valid for all valves except 2FGA-2FGA.B-2FAA-2FAA150B in which it happens the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



Action of spring return on power failure

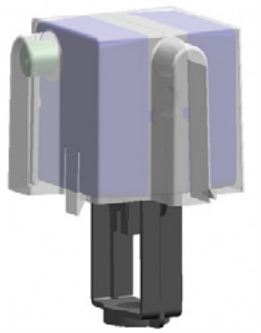
2 WAY VALVES					
SPRING ACTION ON POWER FAILURE					
	VALVE	MVH56FA	MVH56FC	MVF59A	MVF59C
Valve series	VSB	VALVE CLOSED	VALVE OPEN	-	-
	VSB.F	VALVE CLOSED	VALVE OPEN	-	-
	2TBB	VALVE CLOSED	VALVE OPEN	-	-
	2FGB	VALVE CLOSED	VALVE OPEN	VALVE CLOSED	VALVE OPEN
	2FGA	VALVE OPEN	VALVE CLOSED	VALVE OPEN	VALVE CLOSED
	2FSA	VALVE CLOSED	VALVE OPEN	VALVE CLOSED	VALVE OPEN
	2FAA	VALVE OPEN	VALVE CLOSED	VALVE OPEN	VALVE CLOSED
	2FAA.P	VALVE OPEN	VALVE CLOSED	VALVE OPEN	VALVE CLOSED
	2FGB.B	VALVE CLOSED	VALVE OPEN	VALVE CLOSED	VALVE OPEN
	2FSA.B	VALVE CLOSED	VALVE OPEN	VALVE CLOSED	VALVE OPEN
	2FAA.B	VALVE CLOSED	VALVE OPEN	VALVE CLOSED	VALVE OPEN
	2FGA.B	VALVE OPEN	VALVE CLOSED	-	-

3 WAY VALVES					
SPRING ACTION ON POWER FAILURE					
	VALVE	MVH56FA	MVH56FC	MVF59A	MVF59C
Valve series	VMB	DIRECT WAY CLOSED	DIRECT WAY OPEN	DIRECT WAY CLOSED	DIRECT WAY OPEN
	VMB.F	DIRECT WAY CLOSED	DIRECT WAY OPEN	DIRECT WAY CLOSED	DIRECT WAY OPEN
	3TBB	DIRECT WAY CLOSED	DIRECT WAY OPEN	DIRECT WAY CLOSED	DIRECT WAY OPEN
	3FGB	DIRECT WAY CLOSED	DIRECT WAY OPEN	DIRECT WAY CLOSED	DIRECT WAY OPEN
	3FSA	DIRECT WAY CLOSED	DIRECT WAY OPEN	DIRECT WAY CLOSED	DIRECT WAY OPEN
	3FSA.S	DIRECT WAY CLOSED	DIRECT WAY OPEN	DIRECT WAY CLOSED	DIRECT WAY OPEN
	3FAA	DIRECT WAY CLOSED	DIRECT WAY OPEN	DIRECT WAY CLOSED	DIRECT WAY OPEN
	3FAA.P	DIRECT WAY CLOSED	DIRECT WAY OPEN	DIRECT WAY CLOSED	DIRECT WAY OPEN



Accessories for MVB - MVE - 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
DMVE	Two auxiliary microswitches for MDA
DMVH	Two auxiliary microswitches adjustable on the whole stroke for MVH
MVBC	Rain-proof protection (see picture on the right)
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
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



1. All accessories, except MVBD, are supplied separately. Mounting is carried out by the user.

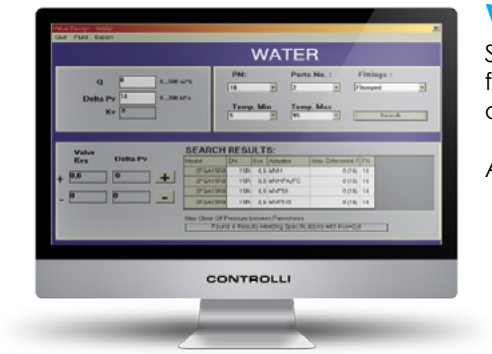
Valve Options

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)

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.



Valve Sizing

Software assistant to choose the correct valve size for: water, superheated water, saturated steam and thermal oil.

Available on our web site www.controlli.eu

Butterfly Valves

Series VFA - The valves are ready for mounting on MDA actuators.
They can also be motorized by MDL actuators (page 29) by means of AF24 and AF25 and adapter.

MODEL	DN	Kvs	MAX DIFFERENTIAL PRESSURE bar		OTHER FEATURES
			MDA22/42/52	MDA24/44/54	
VFA (PN10)	25	27.8	6	-	- Spheroidal cast-iron body (EN-JS1030) - Shaft tight O-Ring - Seat EPDM - Fluid temp.: -10 to 100°C - Close-off leakage: leakage rate A (DIN EN 12266-1)
	32	28.5		-	
	40	58		-	
	50	107		-	
	65	201		-	
	80	336		-	
	100	576		-	
	125	840	-	6	
	150	1295	-	3	
	200	2470	-		

Shoe Valves

Series M - Cast-iron PN6 - To be motorised by MDB24-44-54 actuators, fitted with AM72.

TYPE	DN	Kvs	MODEL	MAX DIFFERENTIAL PRESSURE bar	OTHER FEATURES
M3 (PN6) threaded	1"	30	M31P	1	- THREE-WAY - PN 6 cast-iron valve body - Female threaded connections - Outlet from angle-way - Fluid temperature: 110 °C max
	11/4"	37	M31P1/4	1	
	11/2"	38	M31P1/2	1	
	2"	45	M32P	1	
M3 (PN6) flanged	40	38	M340	1	As above, with flanged connections
	50	70	M350	1	
	65	80	M365	0.8	
	80	90	M380	0.5	
	100	110	M3100	0.3	
	125	120	M3125	0.2	
M4 (PN6) threaded	1"	30	M41P	1	- FOUR-WAY PN 6 cast-iron valve body - Female threaded connections - Fluid temperature: 110 °C max
	11/4"	37	M41P1/4	1	
	11/2"	40	M41P1/2	1	
	2"	45	M42P	1	
M4 (PN6) flanged	50	70	M450	1	As above, with flanged connections
	65	80	M465	1	
	80	90	M480	0.8	
	100	110	M4100	0.3	

Actuators for Butterfly Valves

Series MDA - Bidirectional actuator for VFA butterfly valves - 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.	POWEER SUPPLY Vca	TORQUE Nm	OTHER FEATURES
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			

Actuators for Butterfly valves

Series MDL - Bidirectional motor- Input signal P.C. board - Power consumption 12VA - 2 output shafts: main and secondary shaft Ø 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^2	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	

1. *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
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

Without Spring Return MDB Series. Maximun rotation 95°. For air dampers up to 2sqm. IP54

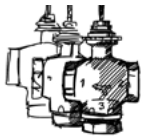
MODEL		Torque	Power supply	Control action	Micro-switch
MDB42		5 Nm	24 Vac	2-3 pos.	-
MDB42M					2
MDB52				0-10Vdc proportional	-
MDB24		8 Nm	230 Vac	2-3 pos.	-
MDB24M					1
MDB44			24 Vac		-
MDB44M					1
MDB54				0-10Vdc proportional	-
MDB26	**MDB28**	15 Nm **20 Nm**	230 Vac	2-3 pos.	-
MDB26M	**MDB28M**				2
MDB46	**MDB48**		24 Vac		-
MDB46M	**MDB48M**				2
MDB56	**MDB58**			0-10Vdc proportional	-

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

MODEL	CONTROL SIGNAL	TORQUE Nm	SUPPLY Vac	AUXILIARY MI-CROSWITCH	MAX DAMPER SURFACE m²	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

4 Nm

7 and 15 Nm



VALVES

ACTUATORS

			MVB		MVE		MVF59		MVH			
			MVB22 MVB26 MVB28 MVB46	MVB52 MVB56	MVE506 MVE510 MVE515	MVE506S MVE510S MVE515S	MVF59A MVF59AW MVF59C MVF59CW	MVF59AS MVF59AWS MVF59CS MVF59CWS	MVH26 MVH46	MVH36 MVH56	MVH56F MVH3K	MVH56FA MVH56FC
			2 - 3 pos. 24V; 230V	**prop.** 24V	**3 pos. & prop.** 24V	3 pos. & prop. 24V, short bracket	**3 pos. & prop.** 24V, spring return **Up to DN65**	**3 pos. & prop.** 24V spring return, short bracket	**2 - 3 pos.** 24V; 230V	**Prop. pot. or Vdc-mA** 24V	**3 pos.& prop.** 24V	**3 pos. & prop.** 24V spring return
			450 N		600 N 1000 N 1500 N	600 N 1000 N 1500 N	900 N	900 N	1500 N	1500 N	1500 N 3000 N	700 N
PN16 THREADED VALVES												
2TGB15B	2-way threaded for MVB	DN 1/2"	●	●	-	-	-	-	-	-	-	-
3TGB15B	3-way threaded for MVB		●	●	-	-	-	-	-	-	-	-
2TGB15F	2-way threaded for MVE.S	DN 1/2"	-	-	-	●	-	●	-	-	-	-
3TGB15F	3-way threaded for MVE.S		-	-	-	●	-	●	-	-	-	-
VSB	2-way threaded	DN 3/4" - 2"	●	●	● with AG52	● with AG63	● with AG52	● with AG63	● with AG62	● with AG62	● with AG62	● with AG62
VMB	3-way threaded		●	●	● with AG52	● with AG63	● with AG52	● with AG63	● with AG62	● with AG62	● with AG62	● with AG62
VSBP. M	2-way threaded tight close-off	DN 3/4" - 2"	●	●	-	-	-	-	-	-	-	-
VMBP. M	3-way threaded tight close-off		●	●	-	-	-	-	-	-	-	-
2TBB	2-way bronze valve	DN 1/2" - 2"	● *1	● *1	●	● *1	●	-	●	●	● no MVH 3K	●
3TBB	3-way bronze valve		● *1	● *1	●	● *1	●	-	●	●	● no MVH 3K	●
PN16 FLANGED VALVES												
VSB. F	2-way slip-on flanges	DN 20 - 50	●	●	● with AG52	● with AG63	● with AG52	● with AG63	● with AG62	● with AG62	● with AG62	● with AG62
VMB. F	3-way slip-on flanges		●	●	● with AG52	● with AG63	● with AG52	● with AG63	● with AG62	● with AG62	● with AG62	● with AG62
PN16, 25, 40 FLANGED VALVES												
2FGB	2-way flanged PN16	DN 25-150	-	-	●	-	● up to DN 65	-	●	●	●	●
3FGB	3-way flanged PN16		-	-	●	-	● up to DN 65	-	●	●	●	●
2FGA	2-way flanged PN16	DN 15-100	-	-	●	-	● up to DN 65	-	●	●	●	●
2FSA	2-way flanged PN25	DN 25-65	-	-	●	-	● up to DN 65	-	●	●	●	●
3FSA *2	3-way flanged PN25	DN 25-80	-	-	●	-	● up to DN 65	-	●	●	●	●
2FAA *2	2-way flanged PN40	DN 15-80	-	-	●	-	● up to DN 65	-	●	●	●	●
3FAA *2	3-way flanged PN40	DN 25-125	-	-	●	-	● up to DN 65	-	●	●	●	●
FLANGED VALVES FOR HIGH CLOSE-OFF PRESSURE												
2FGB.B	2-way flanged PN16, balanced plug	DN 65-150	-	-	●	-	● up to DN 65	-	●	●	●	●
2FSA.B	2-way flanged PN25, balanced plug	DN 25-80	-	-	●	-	● up to DN 65	-	●	●	●	●
2FAA.B	2-way flanged PN40, balanced plug	DN 25-125	-	-	●	-	● up to DN 65	-	●	●	●	●
2FAA150B	2-way double seat PN25	DN150	-	-	●	-	-	-	●	●	●	●
2FGA200B	2-way double seat PN16	DN200	-	-	●	-	-	-	●	●	●	●

*1 - Available on request

*2 - Also 2FAA.P, 2FAA.T, 3FAA.P, 3FAA.T, 3RFSA.S

VALVES

ACTUATORS			MVT				MVX				MCA	
			MVT28 MVT44	MVT56 MVT57	MVT56L	MVT56S	MVX21R MVX41R	MVX57	MVX22R MVX42R	MVX52	MCA 230 MCA24	MCA230L MCA24L
			3 pos. 24V; 230V	**prop.** 24V	**prop.** 24V	**prop.** 24V	**2 pos.** 24V; 230V	**prop.** 24V	**2 pos.** 24V; 230V	**prop.** 24V	2pos 230V;24V	2pos 230V;24V
			200 N				90 N		140 N		90N	140N
BRASS VALVES PN16 - KVS 0.25 TO 6												
VSXT	2-way	DN 1/2"-3/4"	●	●	-	-	-	-	-	-	-	-
VMXT	3-way		●	●	-	-	-	-	-	-	-	-
VTXT	3-way +bypass		●	●	-	-	-	-	-	-	-	-
BRASS VALVES PN16 - KVS 0.25 TO 2.5												
VSX	2-way	DN 1/2"-3/4"	-	-	-	-	●	●	-	-	●	-
VMX	3-way		-	-	-	-	●	●	-	-	●	-
VTX	3-way +bypass		-	-	-	-	●	●	-	-	●	-
BRASS VALVES PN16 - KVS 4 TO 6												
VSX24-26	2-way	DN 3/4"	-	-	-	-	-	-	●	●	-	●
VMX24-26	3-way		-	-	-	-	-	-	●	●	-	●
VTX24-26	3-way +bypass		-	-	-	-	-	-	●	●	-	●
CAST IRON VALVES PN16 - KVS 6.3 TO 18												
VSBT	2-way	DN 3/4"-1 1/2"	●	●	-	-	-	-	-	-	-	-
VMBT	3-way		●	●	-	-	-	-	-	-	-	-
2TGA_B	2-way	DN 3/4-2"	●	-	●	-	-	-	-	-	-	-
PRESSURE INDIPENDENT CONTROL VALVES												
VSX..PB	2 way		-	-	-	-	-	-	-	-	-	●
VSXT..PB	2 way		●	●	-	●	-	-	-	-	-	-

VALVES

ACTUATORS			MDA		MDB			MDL	
			MDA2. MDA4.	MDA5.	MDB24	MDB44	MDB54	MDL .4	MDL. 6
			2 - 3 pos. 24V; 230V	prop. 24V	3 pos. 230V	3 pos. 24V	prop. 24V	3 pos. or prop. 24V or 230V	
			20-40 Nm		10 Nm	10 Nm	10 Nm	20Nm	30Nm
BUTTERFLY VALVES PN10									
VFA	Butterfly valve PN10	DN 25-200	●	●	-	-	-	● with AF24	● with AF25
SHOE VALVES PN6									
M3	3 ports female thread	DN 1"-2"	-	-	● with AM72	● with AM72	● with AM72	-	-
M4	4 ports female thread		-	-	● with AM72	● with AM72	● with AM72	-	-
M3 flanged	3 ports flanged connections	DN 40-125	-	-	● with AM72	● with AM72	● with AM72	-	-
M4 flanged	4 ports flanged connections	DN 50-100	-	-	● with AM72	● with AM72	● with AM72	-	-

COMPATIBLE VALVES / LINKAGE KITS

MANUFACTURER	MODEL	WAY	TYPE	MVE	MVH	MVH56FA/C	MVF59A/C
SCHNEIDER ELECTRIC	V241	2way	threaded	compatible	compatible	compatible	compatible
	V211T	2way	threaded	compatible	compatible	compatible	compatible
	V212T	2way	threaded	compatible	compatible	compatible	compatible
	V211	2way	flanged	compatible	compatible	compatible	compatible
	V212	2way	flanged	compatible	compatible	compatible	compatible
	VG211	2way	flanged	compatible	compatible	compatible	compatible
	VG222	2way	flanged	compatible	compatible	compatible	compatible
	V231	2way	flanged	compatible	compatible	compatible	compatible
	V232	2way	flanged	compatible	compatible	compatible	compatible
	V292	2way	flanged	compatible	compatible	compatible	compatible
	V341	3way	threaded	compatible	compatible	compatible	compatible
	V311T	3way	threaded	compatible	compatible	compatible	compatible
	V311	3way	flanged	compatible	compatible	compatible	compatible
	VG321	3way	flanged	compatible	compatible	compatible	compatible
	V321	3way	flanged	compatible	compatible	compatible	compatible
SATCHWELL	VZ	2way	threaded	AG53	AG54	AG54	X
	VSF DN15-50	2way	flanged	AG53	AG54	AG54	X
	VZF DN65 150	2way	flanged	AG53	AG54	AG54	X
	MZ	3way	threaded	AG53	AG54	AG54	X
	MJF DN15-50	3way	flanged	AG53	AG54	AG54	X
	MZF DN 65-150	3way	flanged	AG53	AG54	AG54	X
HONEYWELL	V176A,B	2way	flanged	AG60-10	X	X	X
	V5011A	2way	flanged	AG60-10	X	X	X
SIEMENS	VVF21 DN 25..80	2way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VVF21DN ≥100	2way	flanged	AG70-14	AG70-14	AG70-14	X
	VVF31 DN 15..80	2way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VVF31DN 150	2way	flanged	AG70-14	AG70-14	AG70-14	X
	VVF40 DN 15..80	2way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VVF40 DN 150	2way	flanged	AG70-14	AG70-14	AG70-14	X
	VVF41 DN 50	2way	flanged	AG70-14	AG70-14	AG70-14	AG70-14
	VVF41 DN 65..150	2way	flanged	AG70-14	AG70-14	AG70-14	X
	VVF45 DN 50	2way	flanged	AG70-14	AG70-14	AG70-14	AG70-14
	VVF45 DN65..150	2way	flanged	AG70-14	AG70-14	AG70-14	X
	VVF51DN15..40	2way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VVF52 DN 15..40	2way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VVF53 DN 15..50	2way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VVF53 DN 65..150	2way	flanged	AG70-10	AG70-10	AG70-10	X
	VVF61 DN 15..25	2way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VVF61 DN 40..50	2way	flanged	AG70-14	AG70-14	AG70-14	AG70-14
	VVF61 DN 65..150	2way	flanged	AG70-14	AG70-14	AG70-14	X
	VVF61_2 DN 15..50	2way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VVF61_2 DN 65..150	2way	flanged	AG70-10	AG70-10	AG70-10	X
	VVG41 DN 15.50	2way	threaded	AG70-10	AG70-10	AG70-10	AG70-10
	VVG11 DN 25..40	2way	threaded	AG70-10	AG70-10	AG70-10	AG70-10
	VXF21DN 25..80	3way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VXF21DN 100	3way	flanged	AG70-14	AG70-14	AG70-14	X

SIEMENS	VXF31 DN 15..80	3way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VXF31 DN 100..150	3way	flanged	AG70-14	AG70-14	AG70-14	x
	VXF40 DN 15..80	3way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VXF40 DN 100..150	3way	flanged	AG70-14	AG70-14	AG70-14	x
	VXF41 DN 50	3way	flanged	AG70-14	AG70-14	AG70-14	AG70-14
	VXF41 DN 65..150	3way	flanged	AG70-14	AG70-14	AG70-14	x
	VXF45 DN 50	3way	flanged	AG70-14	AG70-14	AG70-14	AG70-14
	VXF45 DN 65..150	3way	flanged	AG70-14	AG70-14	AG70-14	x
	VXF51 DN 15..40	3way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VXF52 DN 15..40	3way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VXF53 DN 15..50	3way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VXF53 DN 65..150	3way	flanged	AG70-10	AG70-10	AG70-10	x
	VXF61 DN 15..25	3way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VXF61 DN 40..50	3way	flanged	AG70-14	AG70-14	AG70-14	AG70-14
	VXF61 DN 65..150	3way	flanged	AG70-14	AG70-14	AG70-14	x
	VXF61_2 DN 15..50	3way	flanged	AG70-10	AG70-10	AG70-10	AG70-10
	VXF61_2 DN 65..150	3way	flanged	AG70-10	AG70-10	AG70-10	x
	VXG41 DN 15..50	3way	threaded	AG70-10	AG70-10	AG70-10	AG70-10
	VXG11 DN 25..40	3way	threaded	AG70-10	AG70-10	AG70-10	AG70-10
JOHNSON CONTROLS	VB7816	3way	threaded	AG66	x	x	x
DANFOSS	VF2	2way	flanged	AG60-07	x	x	x
	VF3	3way	flanged	AG60-07	x	x	x
MUT	MK DN50 - 150	3way	flanged	AG69	x	x	x

x = link not available

2F & 3F VALVES CROSS REFERENCE WITH OLD CONTROLLI VALVES

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

	OLD MODEL	NEW MODEL
3-way valves PN25		
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
2-way valves PN16		
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
	SSGA65	2FGA65
	SSGA80	2FGA80
	SSGA100	2FGA100
Cast iron valves	VSG25R	2FGB25R4
	VSG25I	2FGB25R7
	VSG25	2FGB25
	VSG40	2FGB40
	VSG50	2FGB50
	VSG65	2FGB65
	VSG80	2FGB80
	VSG100	2FGB100
	VSG125	2FGB125
	VSG150	2FGB150
Balanced plug valves	VBG65	2FGB65B
	VBG80	2FGB80B
	VBG100	2FGB100B
	VBG125	2FGB125B
	VBG150	2FGB150B
	DSGA200	2FGA200B

	OLD MODEL	NEW MODEL
3-way valves PN16		
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
2-way valves PN25		
Spheroidal cast iron valves	VSS25R	2FSA25R4
	VSS25I	2FSA25R7
	VSS25	2FSA25
	VSS32	2FSA32
	VSS40	2FSA40
	VSS50	2FSA50
	VSS65	2FSA65
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
3-way valves PN40		
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	DESCRIPTION
Actuators		
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	AG62	Linkage for MVH actuators with VSB-VMB-VSBF-VMBF valves
DMVL	DMVH	Aux. microswitches for MVH
MVLFS5	MVHFS5	4-20 mA input signal
MVLPA2	MVHPA2	1kOhm aux. potentiometer for MVH26
MVLPA4	MVHPA4	1kOhm aux. potentiometer for MVH46
MVLHT	MVHT	High temperature spacer

REPLACING OLD CONTROLLI ACTUATORS

In the event of replacing an old Controlli actuator mounted on one of the old valves listed below, here is the equivalent MVH actuator model to be used:

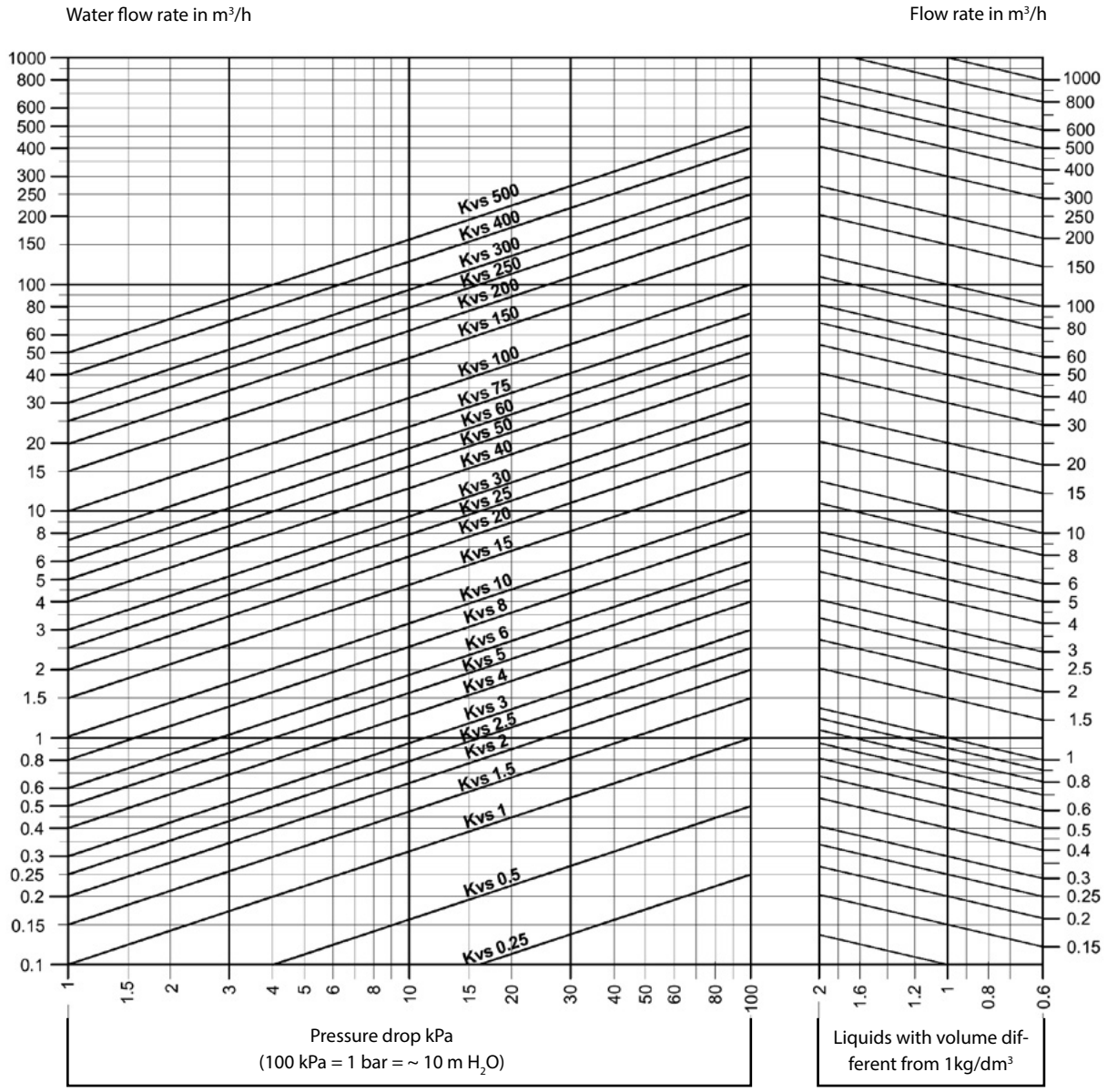
OLD MODEL		NEW MODEL		LINKAGE KIT
SH242		*MVH26*		
SH222		*MVH46*		
SH522		*MVH56*		
MVL26		*MVH26*		
MVL36		*MVH36*		
MVL46	=	*MVH46*	+	*AG50 / AG51 / AG62*
MVL56		*MVH56*		
MVL56F		*MVH56F*		
MVL56A / MVL56FA/MVL46A		*MVH56FA*		
MVL56C / MVL56FC/MVL46C		*MVH56FC*		
MVL3K		*MVH3K*		

	LINKAGE FOR MVH ACTUATORS	LINKAGE FOR MVE ACTUATORS	LINKAGE FOR MVB ACTUATORS
OLD threaded valves			
S300	-	-	*AG40*
V500	-	-	*AG22*
OLD flanged valves			
VSG, VMB16, VBG (up to 65mm)	*AG50*		-
VSG, VMB16, VBG (80mm or more)	*AG51*		-
SS, DS, VSS, VBS, VBAA, 3V, VMS	*AG51*		-
SS, DS, VS, VBS, 3V, VM + MVLHT DN15÷65mm	*AG64*	-	-
SS, DS, VS, VBS, 3V, VM + MVLHT DN80÷200mm	*AG65*	-	-
existing threaded valves			
2TGB.B, 3TGB.B	-	-	√
2TGB.F, 3TGB.F	-	√	-
VSB, VMB	*AG62*	*AG52*	√
existing valves with slip-on flanges			
VSB_F, VMB_F	*AG62*	*AG52*	√
existing flanged valves			
2F, 3F	√	√	-

Valve Sizing Diagram for Fluids

$$Kvs = \frac{Q10}{\sqrt{\Delta pv}}$$

Q = flow rate in m^3/h
Δpv = pressure drop in kPa



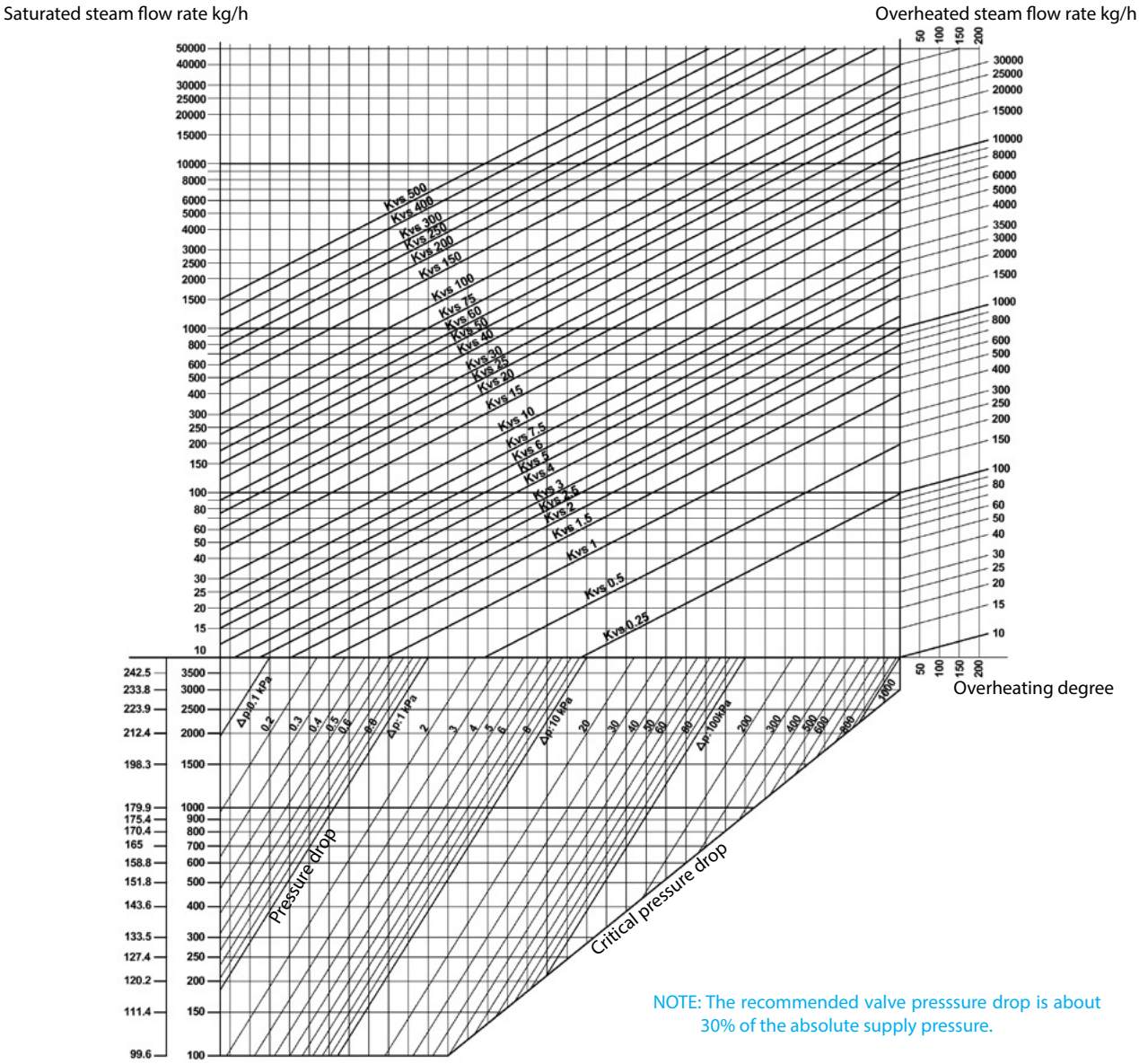
The recommended valve pressure drop must be at least equal to the load.
Example for fluids with relative density1 kg/dm³ (water)
In order to size a control valve with:
FLOW RATE: 7.5 m³/h of water
PRESSURE DROP: 55 kPa
Use the diagram as follows:
- Identify the crossing point between the line starting from the flow rate value (7.5 m³/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/dm³
In order to size a control valve with:
FLOW RATE : 150 m³/h having (0.9 kg/dm³) relative density
PRESSURE DROP: 80 kPa
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/dm³) and the inclined line starting from the flow rate value (150 m³/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:

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

Valve Sizing Diagram for Steam

$$Kvs = \frac{Q}{22.8 \cdot \sqrt{\Delta pv \cdot Pu}}$$



NOTE: The recommended valve presssure drop is about 30% of the absolute supply pressure.

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^3/h passing through a fully open valve at a 100 kPa pressure drop.

a) Liquids $kvs = 10 \times Q \times \sqrt{\frac{r}{Dp}}$

Q = flow rate m^3/h
Dp = pressure drop (kPa)
r = relative density

The Dp pressure drop should be determined as follows:
- Equal or higher than the Dp of the circuit under control, in case of variable flow applications
- Equal or higher than the Dp of the supply circuit, in case of constant flow applications

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

G = flow rate (kg/h)
C = 1 + 0.0013 (t-ts)
t = steam temperature in working conditions
ts = saturated steam temperature at P_2 pressure
P_2 = pressure downstream (kPa)
Dpv = 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	DESIGN OF VALVE PRESSURE DROP
30 °C	Equal to pressure drop of heat exchanger
20 °C	Twice as pressure drop of heat exchanger
10 °C	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 kPa), the pressure drop through the valve must be from 60 to 80 % of the pressure available upstream the valve.

STEAM PRESSURE UPSTREAM THE VALVE	VALVE PRESSURE DROP
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.

STEAM PRESSURE UPSTREAM THE VALVE	VALVE PRESSURE DROP
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.

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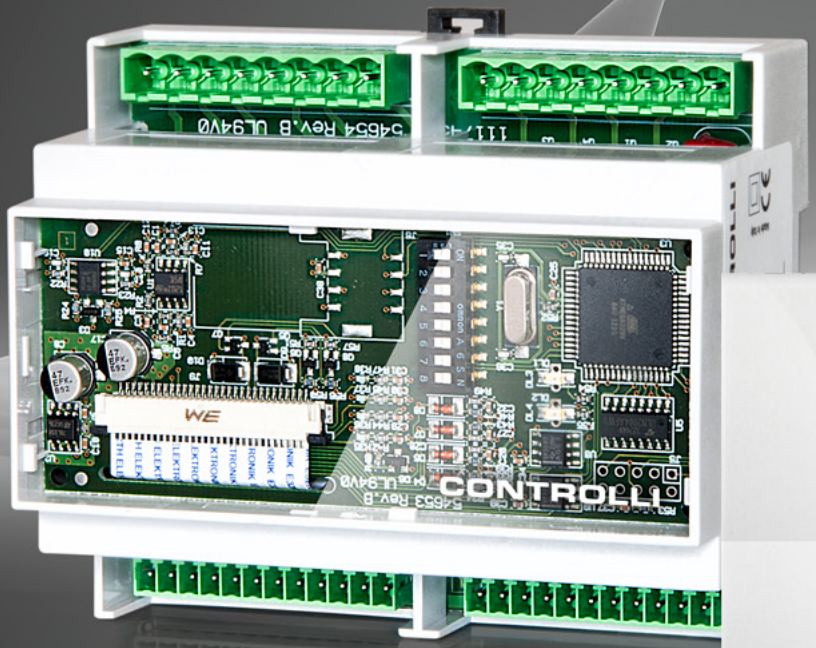
INDEX

INDEX

CONTROLLERS, SENSORS, TRANSMITTERS



"Innovative digital controller for fan-coil units. Compact dimensions but powerful and flexible hardware with 20 Inputs/ Outputs."

Compatible with finishing plate **BTICINO** and **VIMAR**

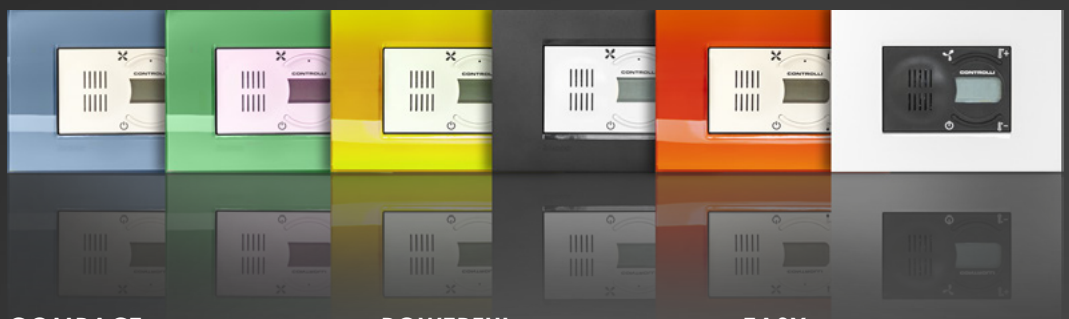
ENERGON

ModBus RS-485 communication. Proprietary Bus to connect more controllers to a single room sensor.
Removable terminal plugs for: power supply, high power signal, low power signal.Digital room sensor with adjustment for: set point, fan speed (manual or auto- matic), Economy/ Comfort mode.
Analog/Digital Inputs for sensors and remote function selection (e.g. Change/Over, Economy, Window Contact and more). 2 Analog Output (0..10Vdc) for modulating valves and modulating fan speed control.
High Voltage Digital output for valves control and 3 fan-speed control. Digital Inputs: Winter/Summer change over, Economy mode, Remote power-off (Occupancy Sensor), Windows contact. Digital Outputs for External Relays: Electrical heater, Electrical Power enable. Universal power supply from 85 to 265 Vac.
Control possibilities:

- **On-Off valves + 3 fan-speed control**
- **3pos Floating valves + 3 fan-speed control**
- **On-Off valves + Proportional 0..10Vdc fan-speed control**
- **Modulating valves + 3 fan-speed control**
- **Modulating valves 0..5Vdc & 5..10Vdc valves + Proportional 0..10Vdc fan-speed control**

Room Sensor available in 2 colors (black & white) external frame available in many different colors.
Flush mounting or wall mounting. Functions: On/Off/Economy Mode set, fan speed selection (Auto/3/2/1/0), temperature set point adjustment, multicolor leds (red-green-orange) showing operating mode (Off-Comfort-Economy). User may have full control or limited control or no control.
Free of charge Configuration Tool for setting of all parameters, overview on the plant installation showing the key variables for each individual controller, setting of daily & weekly time schedules.
Graphic Display Panel (Multinet).
Pre-programmed panel ready to control up to 50 controllers, allowing daily (6 per day) and weekly (3 per week) time schedules, web server capabilities, remote monitoring and supervisory through Internet Explorer.
Configurable features through dipswitches on the electronic board: Stand Alone or Network integrated, 2 Pipes or 4 Pipes FCU, valve control (On/Off or proportional) and fan speed control (3 fan-speed or proportional), ModBus address setting. User-friendly supervisory achieved by direct connection to Controlli GT touch-screens.

MODEL	POWER SUPPLY [Vca]	DESCRIPTION	INPUTS	OUTPUTS
NR9000	85-265	CONTROLLER FOR FANCOIL MODBUS	• DIGITAL INPUT - WINDOW CONTACT • DIGITAL INPUT - REMOTE ON/OFF • DIGITAL INPUT - SUMMER / WINTER • DIGITAL INPUT - COMFORT / ECO • ANALOG INPUT - RETURN SENSOR • ANALOG INPUT - SET ADJUSTMENT • ANALOG INPUT - AUXILIARY LOOP SENSOR • ANALOG INPUT - AUXILIARY LOOP SET ADJUSTMENT	4 TRIAC OUTPUT FOR VALVES (24- 250V 4A) 3 RELÈ OUTPUT FOR FAN (24-250V 8A) 2 ANALOG OUTPUT FOR VALVES/ FAN (0-10V) 2 OPEN COLLECTOR OUTPUT CONFIGURABLE (FOR RELAIS DGSRMV)
NR9000-RT1A		REMOTE SENSOR FLUSH MOUNTING CHARCOAL		
NR9000-RT2A		REMOTE SENSOR WALL MOUNTING CHARCOAL		
NR9000-RT1B		REMOTE SENSOR FLUSH MOUNTING WHITE COLOR		
NR9000-RT2B		REMOTE SENSOR WALL MOUNTING WHITE COLOR		
MT-NET-PONR	REMOTE PANEL WITH GRAPHICAL DISPLAY FOR SUPERVISION OF UP TO 50 NR9000. WEB SERVER.			



Wall sensor is customizable with almost any color for the frame

COMPACT

compact hardware (6 DIN module) with 20 Inputs & Outputs
digital room sensor with adjustment for: set point, fan speed and Economy/ Comfort mode
one model suitable to any FCU (2-pipe, 2-pipe with electric heater, 4-pipe, etc.)

POWERFUL

6 Analog/Digital Inputs for sensors and remote function selection (e.g. Change-over, Economy, Occupancy sensor, Window contact…)
2 Analog Output (0..10Vdc) for modulating valves and modulating fan speed control
7 High Voltage Digital output for valves control and 3 fan-speed control
ModBus RS-485 Communication
Up to 50 controllers managed through one MT-NET-PONR remote user panel with web server capabilities

EASY

Most important parameters, including Modbus addresses, are configurable through dip-switches directly on the electronic board
Configuration tool (free of charge) for PC useful to set all parameters and to achieve a user-friendly remote monitoring

FLEXIBLE

Proprietary Bus to connect more units to a single room sensor
Universal power supply from 85-265 Vac
removable terminal plugs for power supply, high power signal, low power signal

Room Thermostats

Thermistor sensing element - Supply 230 V ac.

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

Electronic Controllers for FCUs

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.
Suitable to remote monitoring from GT TouchScreen.

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
MT-NET-POAXC	Web server supervisor up to 50 AXCU22/WMB controllers

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-L	Temperature sensor, ABS 7x25mm-cap, PVC cable, range - 30..80°C, cable length 1.5 m.
SNTC-SL	Temperature sensor, AISI 304 6x40 mm-steel cap, silicone cable, range - 30..105 °C, cable length 1.5 m.

Room Controllers

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

MODEL	RANGE °C	PROPORTIONAL BAND K	OTHER FEATURES
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

OMNIA®

DDC Temperature Controllers

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.

MODEL	DESCRIPTION
W500T	Digital temperature controller. P, P+I control, limit and compensation functions. 3 analogue inputs+ 2 digital inputs, 2 analogue 0÷10 Vdc outputs + 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
W500T2	As W500T but with two independent control loops
W500T2MB	As W500TMB but with two independent control loops

DDC Controllers for Temperature, Humidity, Pressure

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.

MODEL	DESCRIPTION
W500H	Digital temperature and humidity controller. P, P+I control, limit and compensation functions 3 analogue inputs+ 2 digital inputs, 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

MODEL	DESCRIPTION
LIBO-USB	USB-RS485 optically isolated converter
RM500	Remote positioner for Omnia controllers, working range 5÷35 °C

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 (see also page 58)

MODEL	DESCRIPTION
S23x	Room sensor (dimensions 80x115x20 mm) - IP30
S22x	Room sensor with set point adjustment (dimensions 80x115x20 mm) - IP30
S21x	Room sensor with 10-30 °C scale (dimensions 80x115x20 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 - supplied with brass pocket
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

LIBERTY

Already programmed for specific HVAC applications.
No software needed.
Same hardware of ***OmniaPRO*** *controllers.*

USER FRIENDLY

Inputs: 6 digital + 5 analogue (3 passive NTC + 2 NTC or V or mA)
Outputs: 5 digital + 3 analogue (0-10Vdc / 4(0)-20mA)
I/O additional modules available with 11 inputs + 8 outputs

In-built or remote display. 12-24 Vca power supply. DIN rail mounting. Models with "S" (with RS485) can be remotely monitored by GT Touch Screens. Number of controllers that can be connected to one GT touch screen: from 10 to 40 controllers, depending on the architecture.

Model-number	Description	
W551C	controller without display	Fresh Air AHU
W551C-S	controller without display with RS485	
W551C-D	controller with display	
W551C-DS	controller with display and RS485	
W552C	controller without display	Constant air volume AHU with heat recovery
W552C-S	controller without display with RS485	
W552C-D	controller with display	
W552C-DS	controller with display and RS485	
W553C	controller without display	Heat pump; Proportional humidification
W553C-S	controller without display with RS485	
W553C-D	controller with display	
W553C-DS	controller with display and RS485	
W554C	controller without display	Fresh Air AHU for swimming pools
W554C-S	controller without display with RS485	
W554C-D	controller with display	
W554C-DS	controller with display and RS485	
W560-EXP	additional I/Os module (11 Inputs + 8 Outputs)	
W560-RT	remote display, flush mounting	

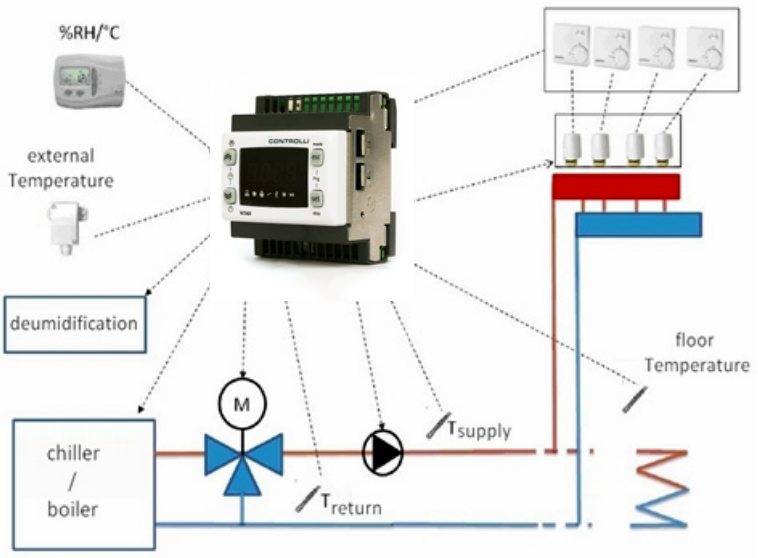
W560

Configurable controller with display for underfloor heating & cooling systems

6 digital inputs + 5 analogue inputs (3 passive NTC + 2 NTC or V or mA)
5 digital outputs + 3 analogue outputs + 1 analogue output PWM + 2 triac outputs
12-24 Vca power supply
ModBus connectivity RS485 (option).

Model-number	Description
W562D	controller with 3 pos. control
W562DS	controller with 3 pos. control with RS485
W562DM	controller with modulating control
W562DSM	controller with modulating control with RS485
W560-EXP	additional I/Os module (11 Inputs + 8 Outputs)
W560-RT	remote display, flush mounting
STA60L	room temperature sensor with display
STA61L	room temperature + humidity sensor with display

W562 controller will control the 3way mixing valve (0-10V) according to the set-point temperature from the room sensor. Based on the input from the room thermostats, W562 will abilitate the electro-thermal actuators on the manifold. In case of an alarm, thermal actuators will be closed. External temperature and water return temperature will compensate the set-point temperature for energy saving purposes.
Floor temperature sensor is used as a limit. W562 provides deumidification control to avoid condensation. More features: Summer/Winter change-over; remote On/Off activation; Economy mode.



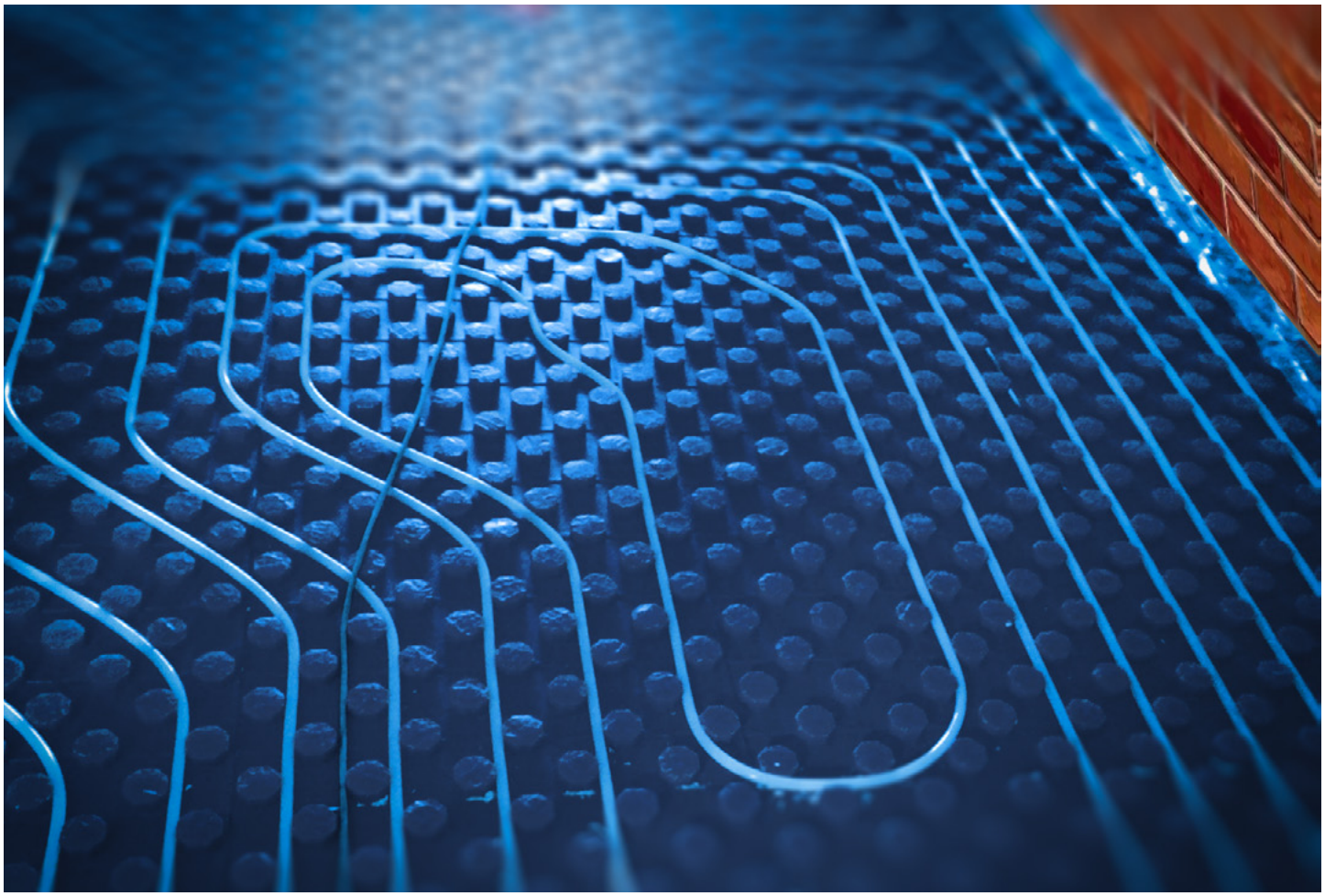
Temperature sensors for: OmniaPRO, LIBERTY and W560 controllers

Sensing element: NTC 10K (β=3435 at 25°C)

Model-number	Description
SNTC-CL	Immersion sensor with plastic case
SNTC-EL	Outside sensor
SNTC-FL	Strap-on sensor
SNTC-L	Duct sensor (cable and sensing element)
SNTC-SL	Immersion sensor (cable and sensing element)
SNTC-VL	Duct sensor, fast detection
S4xxA/B	Room sensor With/without set point adjustment, white or dark grey color, wall mounting or flush mounting

Temperature/humidity sensors with display for OmniaPRO, LIBERTY and W560 controllers

Model-number	Description
STA60L	room temperature sensor with display
STA61L	room temperature + humidity sensor with display



SENSORS
SNTC.XL
SOAVIS.4

OMNIAPRO

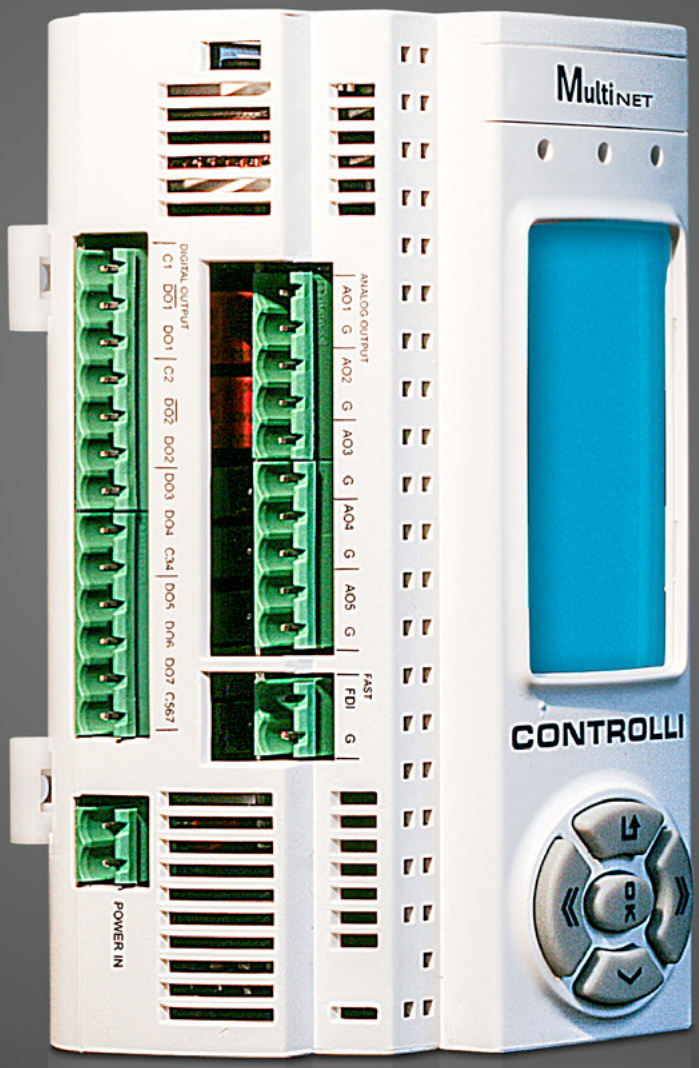
OmniaPRO programmable controllers are used for small size HVACR installations especially when parametric controllers (W500, NR9000) are not flexible enough to meet certain project specifications.

OmniaPRO are innovative controllers and, despite the compact dimensions, are powerfull enough to achieve a variety of HVACR applications.
Inputs: 6 digital + 5 analogue (3 passive NTC + 2 NTC or Vdc or mA)
Outputs: 5 digital + 3 analogue (0-10Vdc / 4(0)-20mA)
Combined temperature / humidity room sensor with display, with 4 set-points and weekly program, suitable to all residential applications.
OmniaPRO controllers are all equipped with TTL connectivity allowing direct integration into supervisory systems.
Any function can easily be managed through RS485 with RTC and ModBus protocol.
I/O additional modules available with 19 I/Os.
In-built or remote display (W560-RT).
12-24 Vca or 100-240Vac power supply.
Models with "S" (with RS485) can be remotely monitored by GT Touch Screens. Up to 40 controllers connected to a single GT touch screen.
Examples of application: AHUs with heating/cooling/humidity control, frost protection, compensation, optimization, free cooling, electric heater, heat pump, central heating, hot water service, boilers and chillers sequencing and more.

MODEL	DESCRIPTION	POWER SUPPLY [VAC]	INPUTS / OUTPUTS
WPRO-561D	WITH DISPLAY, SENZA SERIAL RS-485	12-24	• 6 Digital Inputs Voltage free • 5 Configurable analog inputs NTC (10kOhm)/Voltage (0..10V)/Current (4..20mA) • 5 Digital Outputs Relais (2A-230Vac) DO1..DO4, DO6 (**WPRO562**)/3 Digital Outputs Relais (2A-230Vac) DO1..DO3 • 2 Digital Outputs TRIAC (3A 230Vac) TC1, TC2 (**WPRO562** only) • 1 Digital outputs Open Collector for external relais DGSRMV (**WPRO561**) / 2 Digital outputs Open Collector for external relais DGSRMV (**WPRO562**) • 3 Analog Outputs 0..10Vdc • 1 Analog Outputs 4(0)..20MA (**WPRO EXP**) • 1 digital outputs open collector for external relay DGSRMV (**WPRO561**)/ 2 digital outputs open collector for external relay DGSRMV (**WPRO562**)
WPRO-561DS	WITH DISPLAY WITH SERIAL RS-485	12-24	
WPRO-562D	WITHDISPLAY, DUAL TRIAC WITHOUT SERIAL RS-485	12-24	
WPRO-562DS	WITH DISPLAY, DUAL TRIAC WITH SERIAL RS-485	12-24	
WPRO-561	WITHOUT DISPLAY, WITHOUT SERIAL RS-485	12-24	
WPRO-561S	WITHOUT DISPLAY, WITHSERIAL RS-485	12-24	
WPRO-562	WITHOUT DISPLAY, DUAL TRIAC WITHOUT SERIAL RS-485	12-24	
WPRO-562S	WITHOUT DISPLAY, DUAL TRIAC WITH SERIAL RS-485	12-24	
WPRO-521D	WITH DISPLAY, WITHOUT SERIAL RS-485	230	• 3 Configurable analog inputs ntc (10kohm)/pt1000/digital input • 2 Configurable analog inputs voltage (0..10v)/current (4..20ma)/digital input • 4 Digital outputs relais 2a - 230 va • 3 Analog outputs 0..10 vcc • 2 Digital outputs for external relais dgsrmv • 2 Voltage free digital inputs
WPRO-521DS	WITH DISPLAY, WITHSERIAL RS-485	230	
WPRO-521	WITHOUT DISPLAY, WITHOUT SERIAL RS-485	230	
WPRO-521S	WITHOUT DISPLAY, WITH SERIAL RS-485	230	
W560-RT	REMOTE (WHITE)	230	
W521-EXP	ESPANSION I/O (1 PER CONTROLLER)	230	

MULTINET

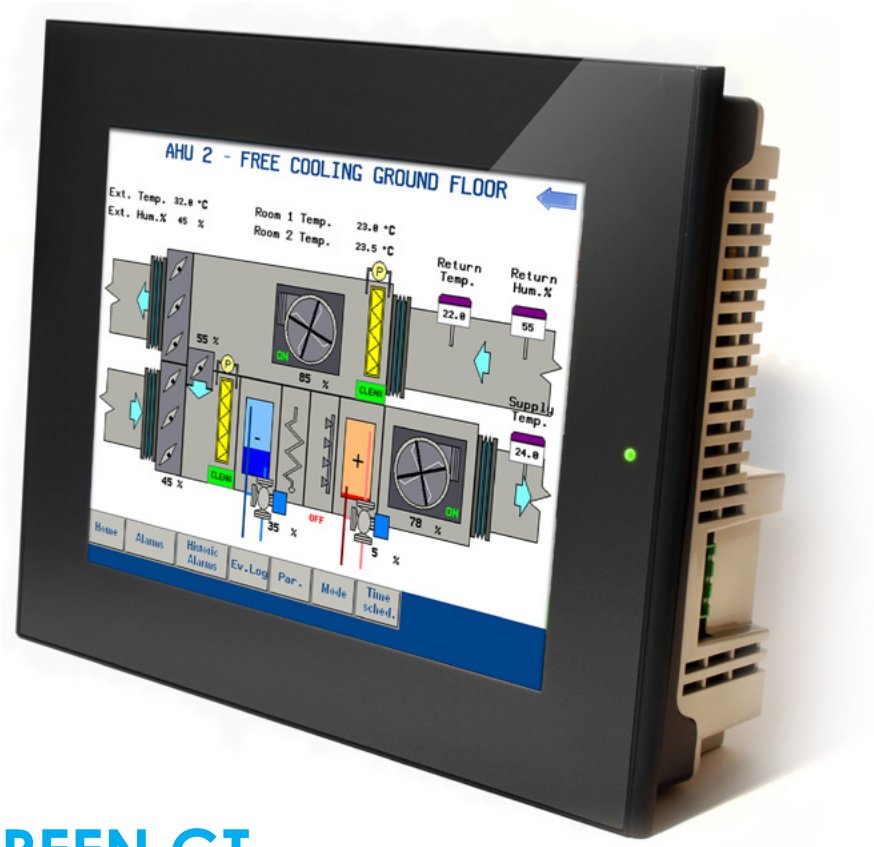
Multinet is the Top Level solution of the Controlli Programmable platform suitable to cope with a wide range of HVAC/R applications. Multinet grants high level performances in terms of memory, connectivity as well as user-friendly programmable user interface. All models are available for DIN bar installation and removable plug terminals offering a relevant time saving for wiring and installation. Multinet can be programmed in 5 different programming languages (IEC61131-3) and is equipped with a large integrated I/O that can be expanded up to 350 physical control points with 1 Controller and 12 expansion modules; furthermore Multinet offers a multiple selection of communication protocols thanks to Plug-In modules for ModBus, CanOpen, Ethernet and RS-232 in addition to the on-board ModBus and CanOpen communication port. Multinet platform can be supervised by SCADA software MicronetView, by GT Touch Screen Panel and when coupled with Ethernet Plug In Multinet is WebServer and therefore can be supervised by mean of common browser from a lap-top, a tablet and a smartphone. Controller MT-NET-BD1 and Expansion Module MT-NET-ES1 can be powered at 24 Vac/dc +/- 20% or 48Vac/dc +/-20% 50Hz/60Hz and MT-NET-BD1 models are equipped with a ModBus RTU (RS-485) communication port for connecting with other ModBus devices and with a CanO- pen communication port for connecting with expansion modules MT-NET-ES1 (max 12) and with Remote User Interface Panel MT-NET-TS1 (max 2). Using a Plug-In module the MT-NET-BD1 can offer an additional communication port for the connection with a supervisory control system or with a gateway (e.g. GSM Modem or 3G Router) for remote control. Multinet platform comprises an additional Remote Control Panel MT-NET-PO1 offering the same smart capability and functionality of a Controller MT-NET-BD1 but in a different format and without Inputs and Outputs. MT- NET-PO1is also equipped with 3 integrated communication ports ModBus RTU (RS-485) for other ModBus devices, CanOpen for expansions modules providing the I/O and ModBus IP (Ethernet) offering Web-Server capability for a remote control.



SENSORS
SNTC.XL
SOAVIS.4

MODEL	DESCRIPTION	POWER SUPPLY [Vca/cc]	INPUTS / OUTPUTS
MT-NET-BD1	BASE WITH DISPLAY	24/28	• 8 Digital Input low voltage 24V o 48 V(DI1..DI8) • 1 Digital Input Fast • 7 Digital Output Relais DI1..DI2 (8A 250 Vac) DI3..DI7 (5 A 250Vac) • 5 Configurable Analog Output 0..10V/4..20mA/ON-OFF • 2 Configurable Analog Input for NTC 10kOhm or digital input voltage free (AI1..AI2) • Configurable Analog Input for NTC 10kOhm, Pt1000, current input 4..20mA or voltage input 0..10V (AI3..AI6)
MT-NET-ES1	ESPANSION	24/28	
MT-NET-TS1	LOCAL KEYBOARD	24/28	
MT-NET-232	PLUG-IN RS232	24/28	
MT-NET-ETH	PLUG-IN ETHERNET	24/28	
MT-NET-CAN	PLUG-IN CANOPEN	24/28	
MT-NET-485	PLUG-IN RS485	24/28	
MT-NET-PO1	INTERFACE PANEL	24/28	

"Top Level Solution of the Controlli Products Range"



TOUCH SCREEN GT

Graphic terminals suitable to the following Controlli devices:
W500TMB/W500HMB digital controllers
AXCU22/WMB fan-coil controllers
ENERGON room controllers
OmniaPro controllers & Multinet 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.

Html pages browser.
Automatic email sending upon specific events.
Hight speed with RISC 64 bit processor
40 fonts for various foreingh languages supported.
Library with 4000 editable objects.
USB flash drive for applications downloading
Compact flash card (1Gb) for storing of all applications/instructions files/images/ logs etc..
Application memory capacity from 16MB to 32MB.

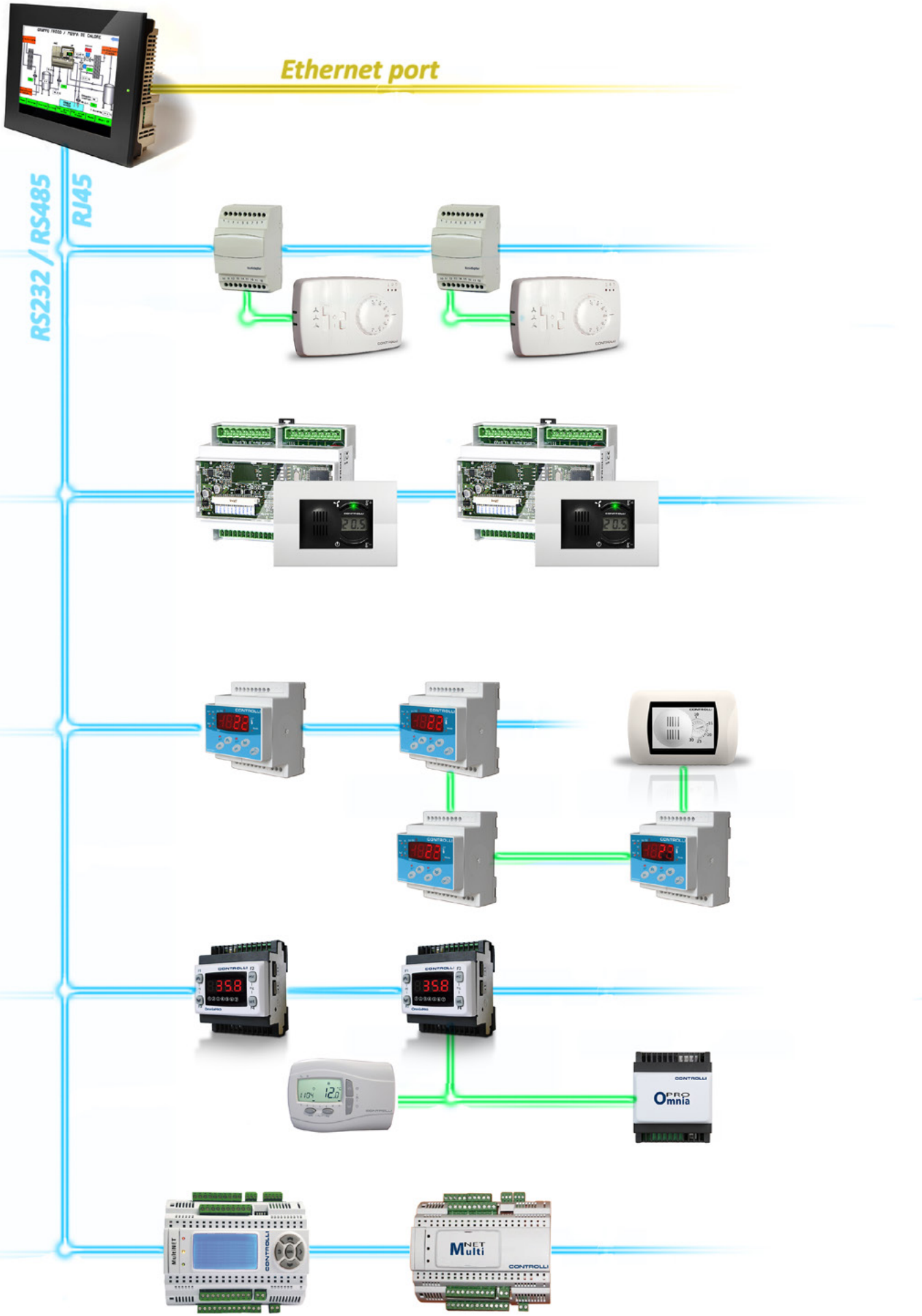
Available with 2 independent serial ports RS485.

DIFFERENT CONTROLLERS – E.G. W500 AND AXCU22/WMB – CAN BE SIMULTANELY CONNECTED TO A SINGLE TOUCH SCREEN.

Alarms and log management.
220/24Vcc transformer included.

MODEL	DIMENSIONS	SCREEN SIZE	SCREEN TYPE	RESOLUTION PIXEL	ETHERNET PORT
GT2110	167.5x135	5,7"	blue	320x240	NO
GT2130			grey		YES
GT2220			4096 colours		NO
GT2330			65536 colours		YES
GT4230	215x170	7.5"	4096 colours	640x480	YES
GT5230	313x239	10.4"			
GT2110xx[1]	GT2110 with preset application				
GT2130xx[1]	GT2130 with preset application				
GT2220xx[1]	GT2220 with preset application				
GT2330xx[1]	GT2330 with preset application				
GT4230xx[1]	GT4230 with preset application				
GT5230xx[1]	GT5230 with preset application				
GTDB9CAV	RS232 SUB-D 9 cable				
GTRJ45CAV	RS485 cable				

1) XX=WW max 20 W500TMB/W500HMB


Ethernet port
RS232 / RS485
RJ45
Omnia
MNET Multi

Temperature Controllers

Series CTY - DDC controllers with analogue or digital output and PD or PID action. Dimensions 72x72x102mm, panel mounting (cut-out 67x67mm). SPTC sensors.
More features: off-set, copy card, password, alarms, duty-cycle.
When pressure or humidity transmitters are connected (4-20 mA) CTY will become pressure or humidity controllers (0-100% range). Available units: °C, °F, bar, %RH, Pa, psi.

MODEL	OUTPUT	INPUT	POWER SUPPLY Vac
CTY231	2 relay+1 alarm	PTC	230
CTY232	2 relay+1 alarm	Pt100 and 4-20mA	230
CTY241	2 relay+1 alarm	PTC	24
CTY242	2 relay+1 alarm	Pt100 and 4-20mA	24
CTY541	0 to 10 V+1 relay+1 alarm	PTC	24/230
CTY542	0 to 10 V+1 relay+1 alarm	Pt100 and 4-20mA	24/230

Copy card

Series CX500 - Proportional - Integral - Derivative (PID), adjustable on field into Proportional - Direct/reverse action - Power supply directly from MVB-MDL-MVF-MVH actuator - Sensing element: see SB sensors, page 58 - IP55 protection.

MODEL	RANGE °C	PROPORTIONAL BAND K	INTEGRATION TIME Tn (s)	DERIVATIVE TIME TD	MOUNTING
CX528	-10 to 120°C	2 to 40	16 to 600	1/4 Tn	wall or flush

Temperature Controllers for Industrial Applications, Heat Exchangers, etc.

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
TX542	24/230	1 alarm relay output 1 configurable analogue output[1)]	Pt100

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.*

Temperature Controllers

Series RX500 - Direct/reverse action - Sensing elements: see SB sensors at page 58. Power supply from MVB, MVF, MVH, MDL actuators - IP40 protection.

MODEL	RANGE °C	PROPORTIONAL BAND K	SET POINT	other FEATURES
RX513	0÷45	3÷24	external	wall mounting
RX515	-10÷80	3÷24		

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 templalte
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

Climatic Controllers for central heating

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 MVB2x and MVH2x actuators or shoe valves motorised by MDB24-44+AM72.

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.

MODEL	DESCRIPTION
KX436G	Daily programme, 2 relay output + 1 SPST contact (pump) - SB sensors, running time 300 s.
KX436GV	Daily programme, 2 relay output + 1 SPST contact (pump) - SB sensors, running time 150 s.
KX436S	Weekly programme, 2 relay output + 1 SPST contact (pump) - SB sensors, running time 300 s.
KX436SV	Weekly programme, 2 relay output + 1 SPST contact (pump) - 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

SOAVIS

Temperature sensors Soavis are employed in heating and air conditioning systems for both civil and industrial purposes. Connected to the relevant controllers, they allow detecting and controlling room temperature. They can be equipped with a potentiometer in order to change the set point.
Room sensors Soavis can have two different type of installation: flush-mounting using box 503 or wall mounting with relevant back-plate. They are composed by a removable front part where you have the electronics, a supporting frame and theback plate if required. The removable front part is compatible with BTicino supporting frame (included) for Living or Light cover plates and with Vimar supporting frames for Plana or Idea cover plates. SOAVIS sensors can be equipped with different thermistor: NTC 5kOhm, NTC 10 kOhm, Balco or PTC 1kOhm for controllers line NR OmniaPRO, Multinet, CX and Omnia.

CONTROLLERS
OMNIA
OMNIAPRO
MULTINET
ENERGON

MODEL	DESCRIPTION	CONTROLLER
S1XXA/B	Room sensor with or without set correction; available white or char- coal, wall or flush-mounting; sen- sing element NTC 5K	SERIES NR7XXX
S2XXA/B	Room sensor with or without set correction; available white or char- coal, wall or flush-mounting; sen- sing element Balco	SERIES CX AND RX
S3XXA/B	Room sensor with or without set correction or with graduated scale; available white or charcoal, wall or flush-mounting; sensing element PTC 1K	SERIES W500
S4XXA/B	Room sensor with or without set correction or with graduated scale; available white or charcoal, wall or flush-mounting; sensing element NTC 10K	SERIES WPRO, MULTINET AND NR9XXX

S X X X X

1. Balco
2. PTC 1 kΩ
3. NTC 5 kΩ
4. NTC 10 kΩ

1. Flush mounting
2. Wall mounting

A. Charcoal
B. White

1. with graduated scale
2. with set correction, 3 terminals
3. No potentiometer
4. with set correction, 4 terminals*

** 2 2 dedicated to potentiometer*

Temperature Sensors

Balco 1000 Ohm at 21.1 °C sensing element - for KX436 and CX528 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 temperature: 140 °C - IP44 - supplied with brass pocket
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

Temperature Sensors

PTC 1K (SPTC) and PT100 (SPTX-U only) sensing element for Omnia and CTY-TX controllers.

MODEL	DESCRIPTION
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 - supplied with brass pocket
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 **Not suitable for applications with possible condensation**
SPTX-U	Universal sensor for CTYxx2, PT100 sensing element, cable type, 3 m cable

Temperature Sensors

NTC sensing element : 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
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

Temperature Transmitters

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

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.
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.

MODEL	OUTPUT SIGNAL	APPLICATION
TU-A22	4÷20 mA (2 wire)	room (size 115x85x32 mm) - Protection IP30
TU-A32	0÷10 [Vcc] (3 wire)	room (size 115x85x32 mm) - Protection IP30
TU-D22	4÷20 mA (2 wire)	duct - immersion lenght 200 mm - Protection IP55
TU-D32	0÷10 [Vcc] (3 wire)	duct - immersion lenght 200 mm - Protection IP55
TUTD32	0÷10 [Vcc]/Ohm (temp.) (3+2 wire)	duct - immersion lenght 200 mm - Protection IP55
TUTD32N10K	0-10[Vcc]/Ohm (temp. NTC 10kOhm) (3+2 wire)	
TUTD32P1K	0-10[Vcc]/Ohm (temp. PTC 1kOhm) (3+2 wire)	
TU-A33	4÷20 mA (2 wire)/0÷10 [Vcc] (3 wire) configurabile	room (size 84x116x24 mm) - Protection IP20
TU-D33		duct - immersion lenght 230 mm - Protection IP65
TUTA34	0÷10 [Vcc]/Ohm (temp.) (3+2 wire)	room (size 84x116x24 mm) - Protection IP20
TUTD34		duct - immersion lenght 230 mm - Protection IP65

Pressure and Differential Pressure Transmitters

Series TP - Output signal 0 to 10 V d.c. , except TP-D333-MA and TP-D334-MA (4÷20 mA) 24 Vac power supply - For CTYxx2 (4-20mA-version) controllers.

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	12 bar	differential pressure of not aggressive gas and liquids G 1/8" connections - IP65 - 0 to 10 Vdc output
TP-C361	0 to 1000 kPa	12 bar	
TP-D333	0-312.5/625/1250 Pa adjustable with central "0"	0.68 bar	differential pressure of air and not aggressive gas PVC internal Ø 6 mm connections - IP65 - 0 to 10 Vdc output
TP-D333-MA			as above with 4 to 20 mA output
TP-D334	0-62.5/125/250 Pa adjustable with central "0"	0.68 bar	differential pressure of air and not aggressive gas PVC internal Ø 6 mm connections - IP65 - 0 to 10 Vdc output
TP-D334-MA			as above with 4 to 20 mA output

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

Room Thermostats

Series AS200 - Bimetal element. IP30 protection.

MODEL	RANGE °C	DIFFERENTIAL K	OTHER FEATURES
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

Room Chronothermostat

MODEL	RANGE [°C]	DIFFERENTIAL [K]	OTHER FEATURES
DGTOUCH	2÷33	0,5	Touch screen chronothermostat for heating and cooling programmable with 3 temperature levels with daily and weekly programme. Battery powered. Dimension 125x85x26 cm

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 FEATURES
C307	20 to 70	85	copper bulb and capillary 2 m long
C357	20 to 70	85	copper bulb and capillary 2 m long 165 Ohm potentionmeter

Fan-coil Thermostat

Series YZB - Liquid-filled sensing element - Copper bulb and capillary 1 m long. SPDT 16 (4) A-250 V a.c. - IP00 protection.

MODEL	RANGE °C	DIFFERENTIAL K	OTHER FEATURES
YZB	0 to 40	2±1	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 FEATURES
Y111	-18 to 13	3	max safety temperature 200 °C with external set
Y111RM	-18 to 13	-	as above with manual reset

Pipe mounting 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.

Immersion Thermostats

Series YTC3 - Liquid-filled sensing element - SPDT 16 (4) A-250 V a.c. - IP43 protection.

MODEL	RANGE °C	DIFFERENTIAL K	OTHER FEATURES
YTC3	0 to 90	6±2	copper well gas 3/4" - 100 mm long
YTCRM	90 (fixed)	±4	

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 FEATURES
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

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 bar	OTHER FEATURES
BD297	40 to 400	0.1	- 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, Y105 IP65. SPDT contact 15 (8) A-230 V a.c.

MODEL	RANGE	OTHER FEATURES
Y106	1 to 85 m³/h	for liquids - 1" screwed connections for pipes Ø 1" to 8"
Y107	1 to 10 m/ s	for air - with paddle 175 x 80 mm

Pressure Switches

Series B300 - Metal bellows sensing element - 165 Ohm potentiometer - Die-cast aluminium case - IP55 protection.

MOD.	RANGE [kPa]	DIFFERENTIAL [kPa]	MAX SAFETY PRESSURE [kPa]	OTHER FEATURES
B301	10÷200	7÷30	600	copper alloy bellows
B302	100÷600	15÷120	900	
B303	200÷1400	60÷400	2200	
B304	500÷3000	80÷400	3800	
B301X	10÷200	7÷30	600	AISI 316 stinless steel bellows inox
B302X	100÷600	15÷120	900	
B303X	200÷1400	60÷400	2200	
B304X	500÷3000	80÷400	3800	
B353	200÷1400	150÷900	2200	
B353X	200÷1400	150÷900	2200	
B354	500÷3000	120÷900	3800	
B354X	500÷3000	12÷900	3800	

Level Controllers

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

MODEL	MAX WORKINGPRESSURE bar	PROPORTIONAL BAND mm	MAX WORKING TEMPERATURE °C	OTHER FEATURES
FG651	16	60	200	cast-iron body-connections 20 mm
FG653	30	60	230	cast-steel body-connections 20 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 bar	DIFFERENTIAL mm	MAX WORKING TEMPERATURE °C	OTHER FEATURES
FG601	16	15 to 60	200	cast-iron body - connections 20 mm
FG603	30	25 to 60	230	stainless steel body connections 20 mm

CONTROL BOX

CONTROL BOX

ConBOX is our innovative solution of metering systems for heating and cooling.

ConBOX systems from Controlli are turn-the-key panels, ready to be installed in the wall. Fluid can either be hot or chilled water. Each ConBOX panel includes an heat meter , 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.
Our heat meters consist of a microprocessor-controlled calculator, two fixed attached temperature sensors for the forward and return flows, and a flow sensor. A large display constantly shows the energy consumption. Additional data can be easily displayed by scanning three display loops. The integrated E²PROM automatically stores all data several times a day. Consumptions can be read locally on the meters or transmitted to a remote data station (via M-Bus connectivity). ConBOX modules include AQUACON (compact sizes), MULTICON (multijet), WOLTCON (Woltmann) or ULTRACON (ultrasonic) heat meters, all compliant to MID (Measuring Instruments Directive) European Directive 2004/22/CE. CONCxxx data stations allow reading of up to 250 heat meters, data stations can be connected to PC via USB port and reading is achieved thanks to STCU Reader software.
Here is a list of most popular ConBox models:

CB001	0,6 to 1,5 m3/h	400x500x110mm	size; ¾" connections	COMPACT DIMENSIONS suitable to residential buildings. Includes static balancing valve on by-pass line.
CB002	0,6 to 1,5 m3/h	400x500x110mm	size; ¾" connections	same as CB001 with static balancing valve also on supply lin
CB003	0,6 to 1,5 m3/h	550x550x130mm	size; ¾" connections	larger box dimensions suitable to customizations.
CB004	2,5 m3/h	550x550x130mm	size; ¾" connections	larger box dimensions suitable to customizations.
CB005	0,6 to 1,5 m3/h	550x550x130mm	size; ¾" connections	Includes a supply line for decorative towels radiators
CB006	2,5 m3/h	550x550x130mm	size; ¾" connections	Includes a supply line for decorative towels radiators
CB007	1,5 m3/h	500x400x110mm	size; ¾" connections	COMPACT DIMENSIONS and dynamic balancing.

"Visit our website in the metering section and donwload the ControlBox brochure ***www.controlli.eu****"*

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