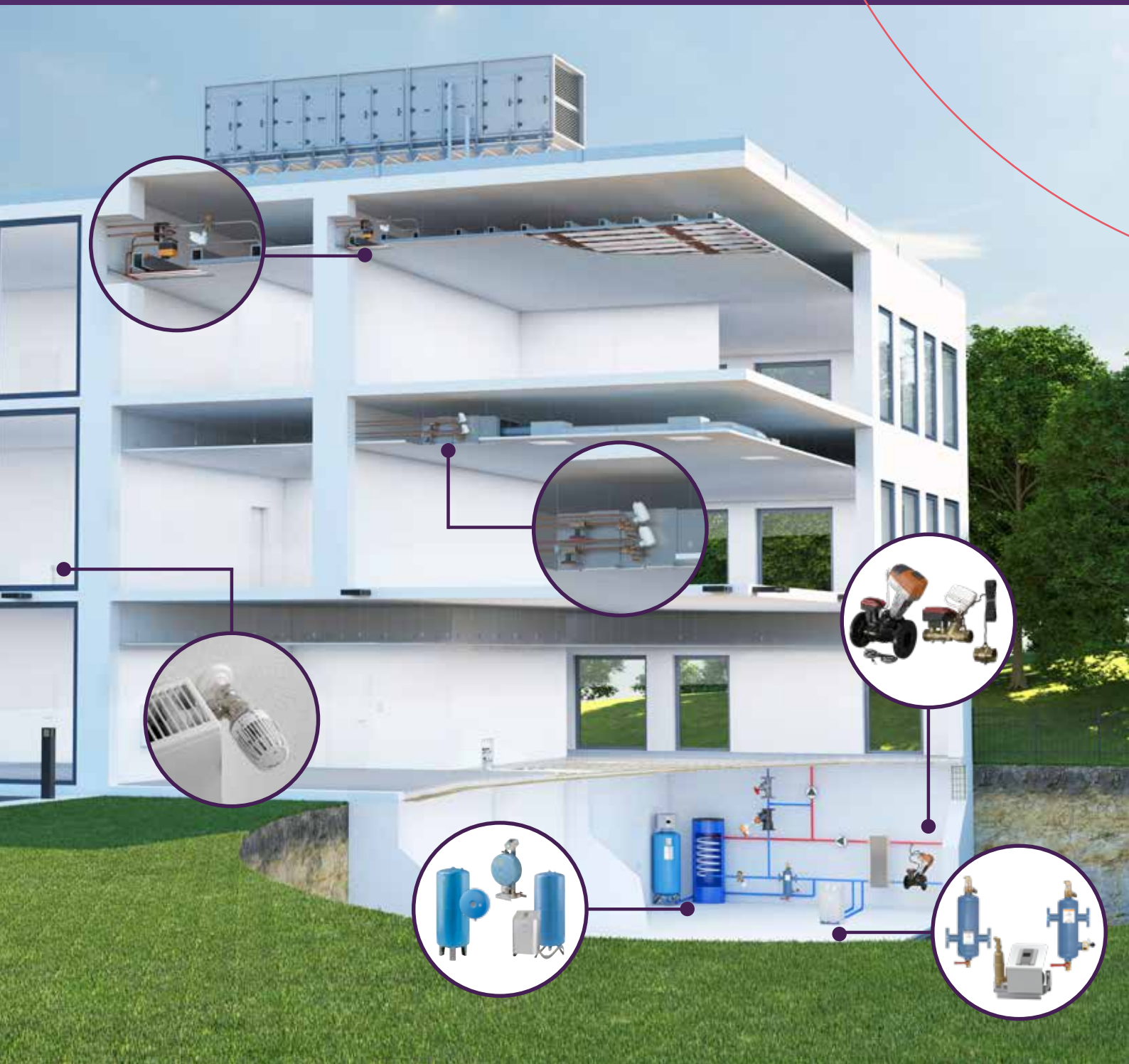


## Balancing, Control and Actuators

### Pressurisation and Water Quality



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Climate  
Control



## Your trusted balancing, control and actuation expert

For over 125 years, at **IMI TA** we have continuously pursued a deep understanding of the hydronic system and its challenges.

We work closely with you, **sharing our knowledge and helping you** address some of the most complex hydronic challenges in the most demanding applications.

Breakthrough  
engineering for  
a better world



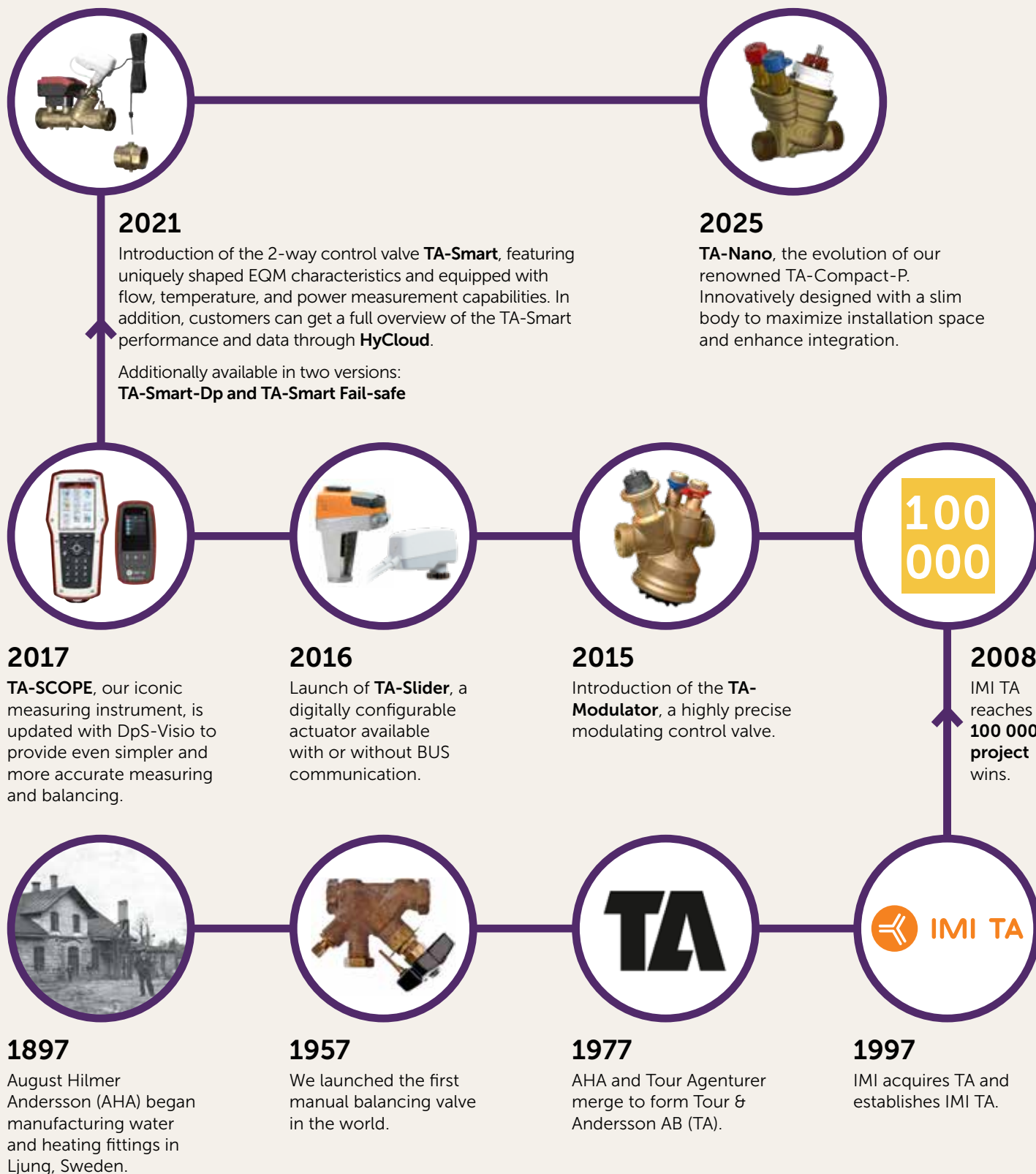
# Brand Fast Facts



WATCH THE VIDEO

Learn more about our history

Since its conception in 1897 in Ljung, Sweden, IMI TA has been building a 360° portfolio of quality balancing & control products that deliver optimal performance, maximize energy efficiency and help to create stable & long-lasting HVAC system.





# Optimal control and flexibility in buildings with **IMI TA**

## TA-Slider + TA-Modulator: An unparalleled match

- Optimized combination of linear actuator with EQM characteristic valve offsets terminal unit control curve for highest control accuracy.
- Up 6x higher operating stroke for better valve rangeability even for small flows.
- Fully configurable via the smartphone app HyTune.
- Modulating control reduces temperature oscillations and pumping costs – helping to reach up to **18% annual energy savings**.
- Limit return temperature and solve Low Delta T Syndrome, improving system performance and energy efficiency.
- Digital communication enables connectivity to all BMS systems.
- Available in sizes from DN10 to DN200.

## Introduction

# Highly precise hydronic control you can measure and diagnose

To achieve optimal energy efficiency, it is crucial to have measurable and transparent processes within the system. Accurate measurements are necessary to identify true system parameters and potential failures reliably. That's why our combined balancing and control valves come

equipped with measuring points. These points allow you to measure flow, pressure drop, temperatures, and actual power. Our patented features, such as fully adjustable Kv and the capability to measure available pump head, set us apart from competitors.



**TA-Modulator**  
with **TA-Slider 160**



**TA-Modulator**  
with **TA-Slider 500**



**TA-Modulator**  
with **TA-Slider 750**



## Control valve and actuators

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## TA-Smart by IMI TA

### Bringing DATA to life.

**Measuring is knowing.** TA-Smart is a connected control valve with measuring capabilities offering flexible control modes.

Its outstanding mechatronic engineering provides best-in-class control performance, energy savings, fast & easy installation and commissioning.

- ✓ Continuous local or cloud data logging of key circuit parameters (flow, valve position, temperature difference and power), eliminates system opacity and facilitates troubleshooting
- ✓ Compact valve arrangement and flexible set-up reduces installation costs
- ✓ Setting the benchmark in terms of measurement accuracy and control performance in water and water-glycol mixtures at all temperatures guarantees high comfort
- ✓ Versatility of communications with digital (bus of communications or Bluetooth mobile application) or analog (0(2)-10V and 0(4)-20 mA) provides full on site adaptability

TA-Smart-Dp is available in all sizes of **TA-Smart**. With the Dp module the TA-Smart-Dp can stabilise the differential pressure over a circuit whilst measuring flow, temperature and power.



DN15-50



DN65-150

## A1 | Smart Control

2-way control valve with uniquely shaped EQM characteristics or Smart electronic differential pressure controller. Flow, temperature and power measurement capabilities.

### A game-changing solution



Balancing & control function dynamically compensates for pressure fluctuations providing optimum room comfort and high energy efficiency under all conditions. Continuous measurement of flow, valve position, supply/return temperatures, temperatures' difference, power and energy with outstanding accuracy in water / water-glycol mixtures over a wide range of temperatures and pressures.

#### Your benefits

- ✓ Best-in-class control & measurement accuracy
- ✓ Meet green certifications and regulation requirements thanks to real time monitoring and transparent system Insights
- ✓ Fast and straightforward commissioning
- ✓ Easy to mount thanks to its compactness
- ✓ Versatility of communication guarantees on-site flexibility

#### Key technical parameters

A1 TA-Smart	PN class bar	Min temp. °C	Max temp. °C	Max. DpV	Control characteristics	Input signal	Output signal
DN 15-50	25	-10	110	4	Settable: Stepless between EQM 0.25 and inverted EQM		By BACnet/Modbus or Analog signal <sup>1</sup>
DN 65-150	16/25						



<sup>1</sup> Please see datasheet TA-Smart

#### Functions

A1 TA-Smart	
Control	Flow, power, position or $\Delta p^*$
Pre-setting	TA-Smart: max./min. flow, max. power, max/min. position TA-Smart-Dp: Pre-setting $\Delta p$ over the load ( $\Delta p_L$ )
Reading	Flow, power, energy, supply/return temperature, $\Delta T$ , position Measuring ( $\Delta p_L$ ) - TA-Smart-Dp
Manual override	via HyTune app

\* Available with TA-Smart-Dp

## A1 | Smart Control

TA-Smart / TA-Smart-Dp / TA-Smart Fail-safe DN 15-50	TA-Smart / TA-Smart-Dp / TA-Smart Fail-safe DN 65-150
	
<ul style="list-style-type: none"> <li>✓ Flow range up to 13400 l/h</li> <li>✓ Compact and easy to mount valve enabling flexibility on site</li> </ul>	<ul style="list-style-type: none"> <li>✓ Flow range up to 112000 l/h</li> <li>✓ Compact and easy to mount valve, can replace CV or TA-Modulator (G1 length according to EN-558-1), for your most demanding control application</li> </ul>

See applications



## Measurement Accuracy

$$P = k * q * \Delta T$$

### Flow measurement

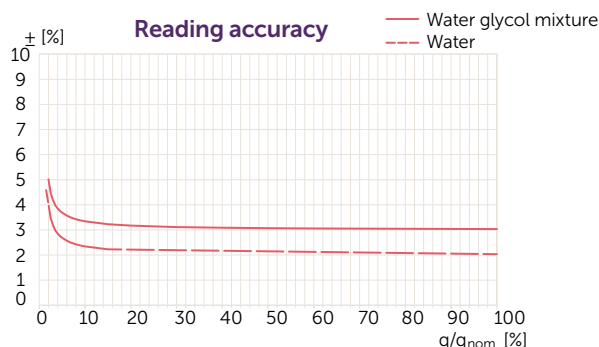
TA-Smart uses Ultrasonic Flow measurement technology to guarantee high accuracy of flow measurement for all regimes at any temperature covering water-glycol mixtures up to 57%.

### Temperature measurement

TA-Smart uses 2 Pt1000 EN 60751 class AA temperature sensors which are pair-calibrated to provide improved accuracy even at low  $\Delta T$ .

### Power measurement

Leveraging accurate flow and temperature measurement, TA-Smart provides accurate power measurement in both heating and cooling applications.



Accuracy measurement operates under the following flow conditions:

Water: From 2% accuracy at 100% of  $q_{nom}$  to 2.4% accuracy at 5% of  $q_{nom}$  (according MID-Class 2 EN1434).

Water+glycol: From 3% accuracy at 100% of  $q_{nom}$  to 4% accuracy at 5% of  $q_{nom}$  (according to MID-Class 3 EN1434).

These accuracies are subject to the respect of required upstream straight pipe lengths (0D for TA-Smart DN 20-50 and 5D for TA-Smart DN 65-125).



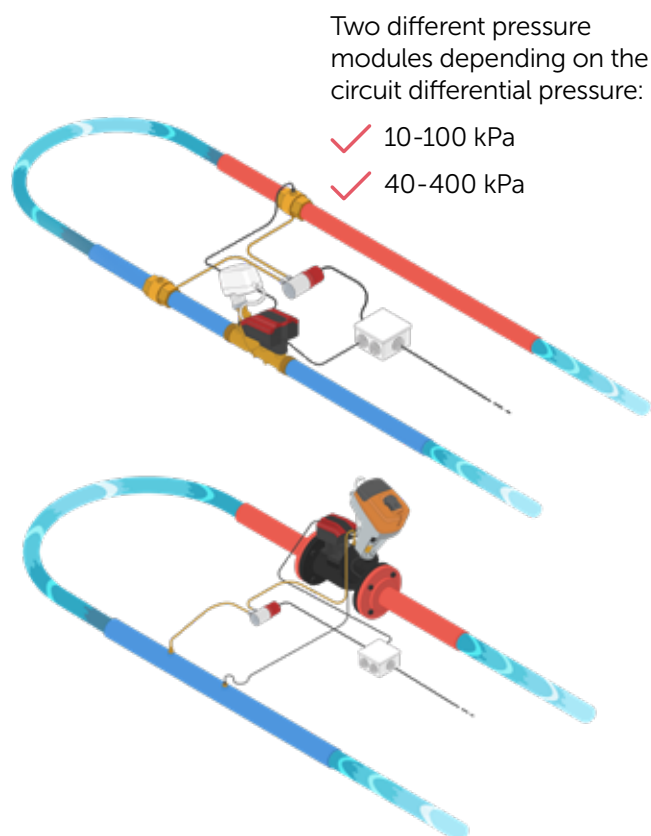
# Product variants

In addition to the standard TA-Smart valve, we have developed specific product variations to meet all system-specific needs.

## TA-Smart-Dp

Designed to provide the dual advantages of maintaining stable differential pressure in a circuit and delivering essential data insights about energy and operation.

The TA-Smart's DN65-DN125 variants perfectly match the size of STAP and TA-PILOT-R differential pressure controllers, ensuring a hassle-free integration.



## TA-Smart Fail-safe

Powered by supercapacitors, this TA-Smart ensures fail-safe positioning of the valve in the event of power loss. With the delay option, the actuator patiently waits for the specified number of seconds configured by you before smoothly transitioning to its fail-safe position.

No more operational uncertainties during power fluctuations, as the TA-Smart Fail-safe guarantees optimal performance and reliability in critical valve applications.



## Key Technical parameters in Differential pressure control mode

TA-Smart-Dp range	Stabilized pressure range (DpL)	Input signal	Output signal
DN 15-150	10-100 kPa	BACnet/Modbus	BACnet/Modbus 0(2)-10 VDC
	40-400 kPa		

# TA-Smart HyCloud



WATCH THE VIDEO

Revolutionize connectivity  
with TA-Smart valves via  
HyCloud

## Get connected to your TA-Smart valves

- ✓ Create projects where you can share data with your colleagues and stakeholders
- ✓ Add colleagues and stakeholders to the project, either as read only or admin rights
- ✓ Get full overview of the performance of TA-Smart

### Use HyCloud to get an overview of how your system is performing.

- Status of your valves
- Current and historical data reading of the valves



Flow



Position



Power



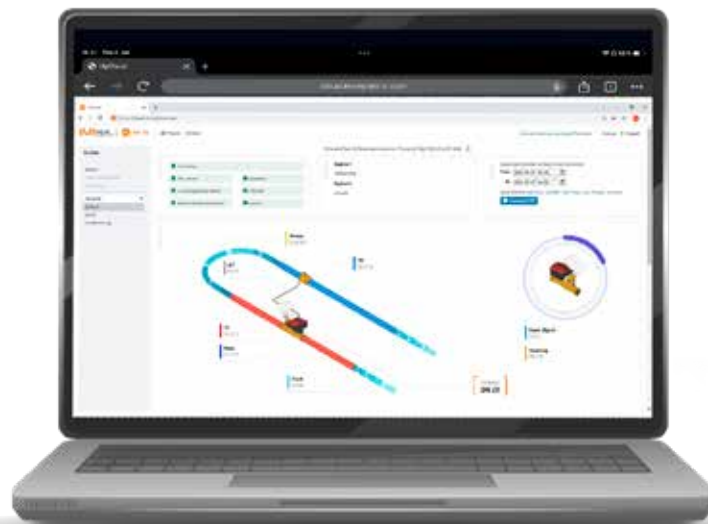
Supply, return and delta temperatures



Input signal

### Easy access to data

- View charts and dashboards on HyCloud
- Export data as csv
- Access data via API



## A2 | Pressure independent balancing and control valves (PIBCV)



Pressure independent balancing and control valves are the ideal solution for modern heating and cooling systems requiring low operating costs, and easy and flexible installation.

What sets our valves apart in the market is their exceptional diagnostic and measuring capabilities. These features assist you in configuring pump operation, maximizing energy savings, and identifying potential system malfunctions, ensuring optimal performance and efficiency.

### Your benefits

- ✓ Expanded Flow Range
- ✓ Compact size
- ✓ Precision Temperature Control
- ✓ Versatile Compatibility
- ✓ Easily monitor system health and performance

### Key technical parameters

A2	Pressure independent balancing and control valves	PN class bar	Min temp. °C	Max temp. °C	Max. Dp bar	Control characteristics	Dimensions													
							10	15	20	25	32	40	50	65	80	100	125	150	200	
TA-Compact-P		16	-10	90	4	LIN	✓	✓	✓	✓	✓									
TA-Nano		25	-10	110	6	LIN	✓	✓	✓	✓										
TA-Modulator		16/25	-10/-20	90/120	6	EQM	✓	✓	✓	✓	✓	✓								
TA-Modulator		16/25	-10	120	8	EQM							✓	✓	✓	✓	✓	✓		
KTM 512		16/25	-10	120/150	16	EQM		✓	✓	✓	✓	✓	✓	✓	✓	✓				

### Functions

A2 Pressure independent balancing and control valves	Control	Max flow pre-setting	Differential pressure control	Shut-off	Flushing	Measurement				
						Flow	Pressure drop	Temperature	Available differential pressure	Power
TA-Compact-P	✓	✓	✓	✓	✓ DN 40-50	✓	✓	✓	✓	✓
TA-Nano	✓	✓	✓	✓	✓ Plus version	✓	✓	✓	✓	✓
TA-Modulator	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
KTM 512	✓	✓	✓	✓		✓	✓	✓		✓



## A2 | Pressure independent balancing and control valves (PIBCV)

### TA-Modulator



### TA-Nano



- ✓ **Expanded Flow Range:** Up to 329 m<sup>3</sup>/h (new DN200), ensuring seamless operations in any condition.
- ✓ **Precision Temperature Control:** In combination with our proportional actuators ensure precise temperature management.
- ✓ **Enhanced valve rangeability, even for small flows:** Optimized combination of EQM valve and linear actuator enables up to 6x higher operating stroke
- ✓ **Versatile Compatibility:** Works seamlessly with TA-Slider 160, 500, 750, and 1600 actuators.
- ✓ **Easily monitor system health and performance:** Complete system diagnostics and flow measurement.

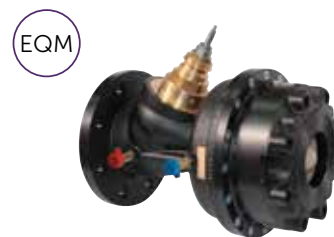
- ✓ **Compact design:** Engineered to fit into tight spaces without compromising performance, making it ideal for varied installation environments.
- ✓ **Expanded flow range options:** TA-Nano DN15 has 3 variants matching all your terminal units power output requirements.
- ✓ **Flexibility:** TA-Nano comes with various connection options (external, internal threads) and can be mounted in all directions.
- ✓ **Enhanced commissioning:** Visible settings when the actuator is mounted
- ✓ **TA-Nano Plus:** Equipped with test points and advanced flushing capabilities, it ensures easy maintenance and operational reliability.

### TA-Compact-P



- ✓ **Expanded Flow Range:** Up to 3.7 m<sup>3</sup>/h, ensuring efficient performance in compact systems.
- ✓ **Versatile Compatibility:** Actuator connection M30x1.5, facilitating seamless setup and compatibility.
- ✓ **Easily monitor system health and performance:** Gain insights into your system's health with total diagnostics capability.
- ✓ **Optimized Control:** Linear characteristic, ideal for precise on/off control, ensuring reliable performance tailored to your requirements.
- ✓ **Premium Material:** Crafted from patented alloy AMETAL®, guaranteeing durability and reliability for long-term use.



### KTM 512



- ✓ **Expanded Flow Range:** Up to 66.8 m<sup>3</sup>/h, ensuring optimal performance in district energy systems of varying sizes.
- ✓ **Modulating Control:** Ideal for precise modulating control in district energy systems.
- ✓ **Versatile Compatibility:** Choose from a wide range of actuators and adapters, providing flexibility to adapt to diverse system requirements.
- ✓ **Corrosion Resistance:** High resistance against corrosion ensures long-term reliability and durability, even in demanding environments.



## A3 | Combined balancing and control valves

TBV-C	TBV-CM
<div>LIN</div> 	<div>EQM</div> 
<ul style="list-style-type: none"> <li>✓ <b>Tailored for Small Terminal Units:</b> Perfect for precise On-Off control in compact spaces.</li> <li>✓ <b>Effortless Installation:</b> M30x1.5 actuator connection for quick setup and reliability.</li> <li>✓ <b>Greater Flexibility in System Design:</b> Lift independent of Kv pre-setting</li> <li>✓ <b>Premium Material:</b> Crafted from patented alloy AMETAL®, guaranteeing durability and reliability for long-term use..</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Precise Modulating Control:</b> EQM characteristics ensure precise modulation for optimal system performance.</li> <li>✓ <b>Greater Flexibility in System Design:</b> Lift independent of Kv pre-setting</li> <li>✓ <b>Effortless Installation:</b> M30x1.5 actuator connection for easy setup and reliability.</li> <li>✓ <b>Premium Material:</b> Crafted from patented alloy AMETAL®, guaranteeing durability and reliability for long-term use.</li> </ul>

Suitable actuators



## A4 | TA-Slider

### Actuators for balancing and control valves

## Digitally configurable actuators






















TA-Slider are the most universal and flexible actuators for all modern HVAC systems from 160 N to 1600 N. Fully compatible with all control systems, the advanced built in technology allows full digital configuration via smartphone.

For the first time you can digitally configure actuators also in buildings without BUS protocols. The modern way of setup is comfortable, intuitive and enables easy adjustment of all actuator parameters according to BMS requirements.

#### Your benefits

- ✓ Up to 50% faster commissioning
- ✓ Installation flexibility in non-standard positions
- ✓ Reduced design complexity
- ✓ Easy diagnostics
- ✓ Unique error memory

### For control valves from DN 10 up to DN 50

	TA-Slider versions for Non-BUS Systems	TA-Slider versions for BUS Communication Systems (RS485)	TA-Slider versions for Fail-safe	TA-Slider T-2T <sup>1</sup>
TA-Slider 160	 Std  I/O  CO  Plus	 KNX  KNX R24  Modbus, BACnet  Modbus CO, BACnet CO	 160 Fail-safe I/O  160 Fail-safe R24	 T I/O - 2T I/O
TA-Slider 500	 Std  I/O  Plus	 Modbus, BACnet  Modbus R24, BACnet R24	 500 Fail-safe I/O  500 Fail-safe R24	 T I/O - 2T I/O

<sup>1</sup> TA-Slider T-2T is a new version of the Slider that can be connected to temperature sensors.

#### Key features

User friendly:

Red-Blue LED for heating/cooling mode in change-over system and Violet LED for easy indication of errors

IP54 protection against air and dirt

Tracking of up to 10 last errors

Universal connectivity M30x1,5

Self-adjusting force from 160N to 500N for IMI TA/IMI Heimeier valves

T return,  $\Delta T$  optimization and automatic change-over

Easily connect to temperature sensors

Halogen free cables available



#### Fully digitally configurable:

- ✓ Input signal, also split range of input signal
- ✓ Output signal
- ✓ Control characteristic
- ✓ Calibration regimes
- ✓ Minimum stroke setting
- ✓ Delayed start-up
- ✓ Stroke limitation to set  $Kv_{max}$  or max. flow
- ✓ Protection against valve blockage
- ✓ Error safe position
- ✓ Broken line detection

#### Additional features of I/O and Plus versions

- ✓ Adjustable output VDC signal
- ✓ Programmable binary input
- ✓ Programmable relay (Plus version only)

## A4 | TA-Slider

For control valves from DN 65 up to DN 200



TA-Slider 750  
2T



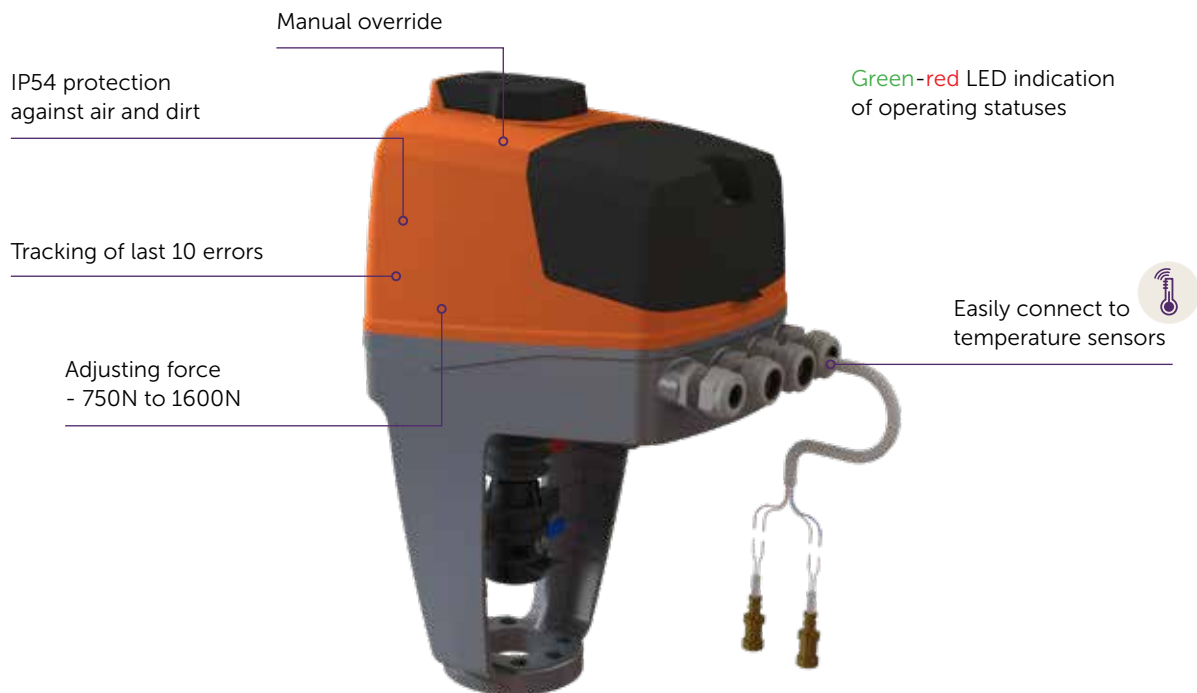
TA-Slider 750 Plus  
TA-Slider 750 Fail-safe Plus  
2T



TA-Slider 1600  
2T



TA-Slider 1600 Plus  
TA-Slider 1600 Fail-safe Plus  
2T



### Digitally fully configurable:

- ✓ T return ,  $\Delta T$  optimization Automatic change-over
- ✓ Input signal, also split range of input signal
- ✓ Output signal
- ✓ Control characteristic
- ✓ Calibration regimes
- ✓ Minimum stroke setting
- ✓ Delayed start-up
- ✓ Stroke limitation to set Kvmax or max. flow
- ✓ Time for full stroke cycle to avoid blockage
- ✓ Error safe position
- ✓ broken line detection

### Additional features of Plus version:

- ✓ Output mA signal (VDC as standard)
- ✓ Programmable binary input
- ✓ Programmable 2 relays
- ✓ Optional BUS communication boards (RS485 or IP)

## A4 | TA-Dongle

Actuators for balancing and control valves

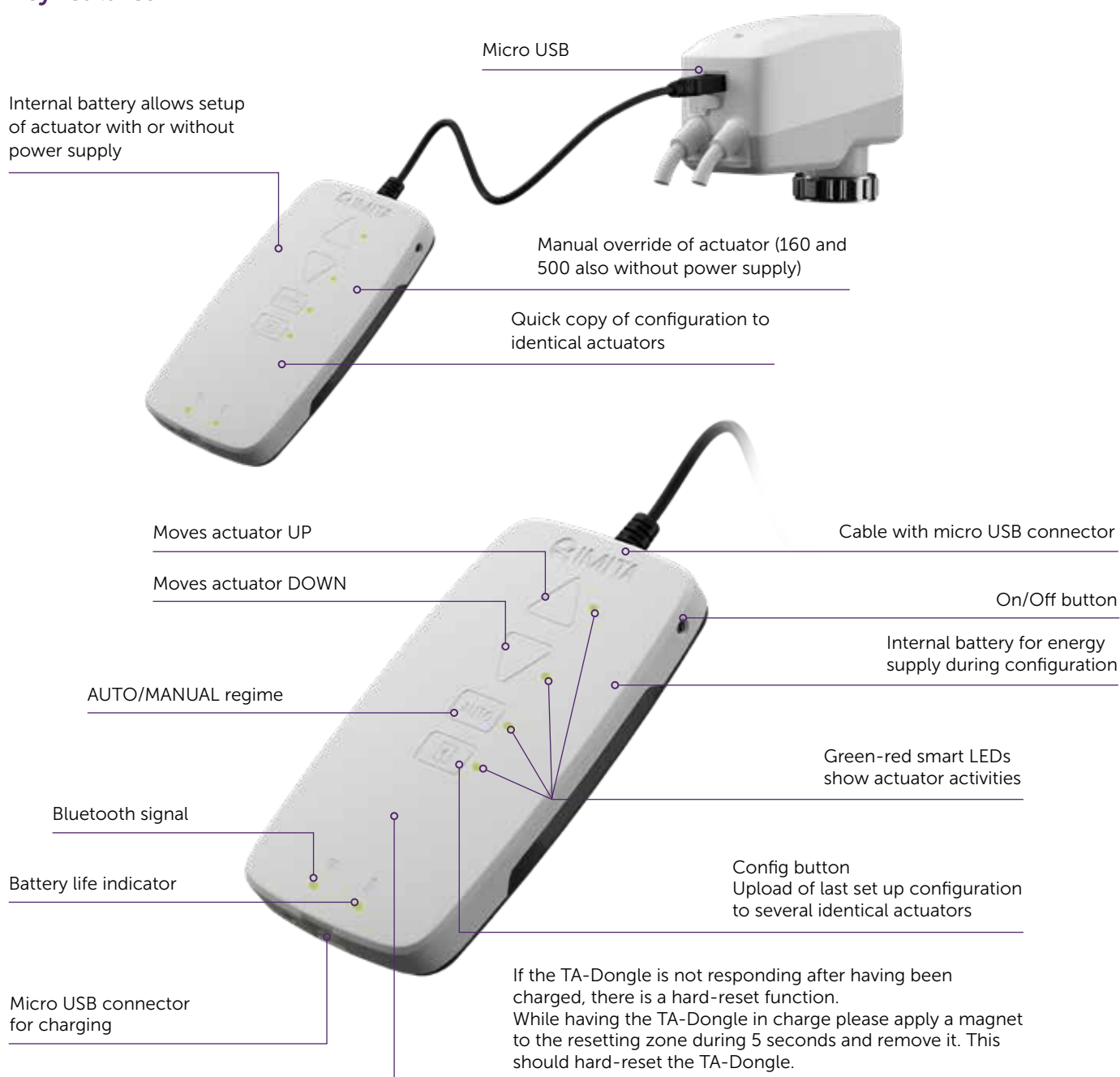
# Remote configuration and control of TA-Sliders with or without BUS communication



Comfortable USB interface between actuator and smartphone with Bluetooth communication.

Ability to clone settings can allow up to 50% faster configuration times.

### Key features



## A4 | HyTune

Actuators for balancing and control valves

# Mobile application for configuration and control of TA-Sliders via TA-Dongle



### Your benefits

- ✓ Real time input signal reading to actuator
- ✓ Easy to use
- ✓ Comfortable set up of TA-Sliders even in poorly lit environments
- ✓ Added protection against human error
- ✓ Access list of last 10 errors and operating statistics
- ✓ Pre-configure the actuator settings and upload the configuration on site
- ✓ Well established technology downloaded more than 10 000 times

Auto-detection  
of TA-Slider

Visual control

Intuitive and  
comfortable operation

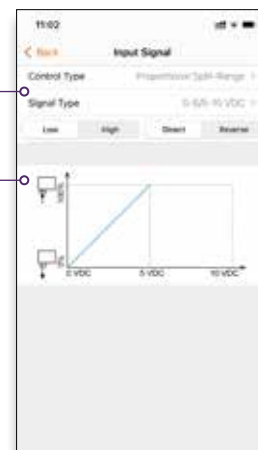
Track historical  
"error logs"

For smartphones using iOS version 5 or  
later and Android version 4.3 or later.

See the control signal  
recieved by the actuator

Oscilloscope  
function

Overview of actual  
operating statuses and  
actuator parameters





## A4 | Key technical parameters

### Actuators for balancing and control valves

A4 Actuators for balancing and control valves	Operation principle	Control	Supply voltage [V]	Input signal	Output signal	Stroke [mm]	Control valve compatibility
<b>TA-Slider 160</b> (optional I/O, CO, Plus, Fail-safe)	Motorized	Modulating	24 VAC/VDC	0(2)-10VDC fully configurable <sup>2</sup>	0(2) -10 VDC	6.9	TBV-CM, TA-Modulator DN 10-32, TA-Compact-P
<b>TA-Slider 160 BACnet, Modbus, KNX</b> (optional KNX R24, Modbus CO, BACnet CO)	Motorized	Modulating	24 VAC/VDC*	by BUS	by BUS	6.9	TBV-CM, TA-Modulator DN 10-32, TA-Compact-P
<b>TA-Slider 500</b> (optional I/O, Plus, Fail-safe)	Motorized	Modulating	24 VAC/VDC	0(2)-10VDC fully configurable <sup>2</sup>	0(2)-10 VDC	16.2	TA-Modulator DN 40-50, KTM 512 DN 15-50, CV
<b>TA-Slider 500 BACnet, Modbus</b> (optional Modbus R24, BACnet R24)	Motorized	Modulating	24 VAC/VDC*	by BUS	by BUS	16.2	TA-Modulator DN 40-50, KTM 512 DN 15-50, CV
<b>TA-Slider 750</b> (optional Plus, BACnet, Modbus, Fail-safe, T- 2T)	Motorized	Modulating	24 VAC/VDC, 230 VAC	0(2)-10 VDC, 0(4)-20 mA, 3-POINT, on-off <sup>3</sup>	0(2)-10 VDC, 0(4)-20 mA	22	KTM 512 DN 65-100 <sup>1</sup> , TA-Modulator DN 65-125, CV
<b>TA-Slider 1600</b> (optional Plus, BACnet, Modbus, Fail-safe, T- 2T)	Motorized	Modulating	24 VAC/VDC, 230 VAC	0(2)-10 VDC, 0(4)-20 mA, 3-POINT, on-off <sup>3</sup>	0(2)-10 VDC, 0(4)-20 mA	33	KTM 80-125 <sup>1</sup> , TA-Modulator DN 100-200 <sup>1</sup> , CV
<b>EMO T</b>	Thermoelectric	On-off/ pwm	24 VAC/VDC, 230 VAC	ON-OFF	-	4.7	TBV-C, TA-Compact-P
<b>EMO TM</b>	Thermoelectric	Modulating	24 VAC	0-10 / 10-0 / 2-10 / 10-2 VDC	-	4.7	TBV-CM, TA-Modulator DN 10-20
<b>TA-TRI</b>	Motorized	3-point	24 VAC	3-POINT, ON-OFF	-	4.5	TBV-CM, TA-Modulator DN 10-32, TA-Compact-P
<b>TA-TRI</b>	Motorized	3-point	230 VAC	3-POINT, ON-OFF	-	4.5	TBV-CM, TA-Modulator DN 10-32, TA-Compact-P
<b>TA-MC55</b>	Motorized	Modulating/ 3-point	24 VAC/VDC <sup>4</sup> , 230 VAC	3-POINT	0(2)-10 VDC	20	KTM 512 DN 15-80
<b>TA-MC55 Y</b>	Motorized	Modulating	24 VAC/VDC	0(2)-10 VDC, 0(4)-20 mA	0-10 VDC	20	KTM 512 DN 15-80, TA-Modulator DN 65-80
<b>TA-MC100</b>	Motorized	Modulating/ 3-point	24 VAC/VDC <sup>4</sup> , 230 VAC	0(2)-10 VDC, 0(4)-20 mA, 3-POINT	0(2)-10 VDC	20	KTM 512 DN 15-100

\* Except KNX

<sup>1</sup> Other actuators may be required depending upon the flow & maximum static inlet pressure in the system. Please see full KTM 512 & TA-Modulator datasheet selection table for further details.

<sup>2</sup> Also 2-10 or 10-2, proportional split range: 0-5, 5-0, 5-10 or 10-5 / 0-4.5, 4.5-0, 5.5-10 or 10-5.5/ 2-6, 6-2, 6-10 or 10-6 VDC. Proportional dual-range (for change-over): 0-3.3 / 6.7-10 VDC, 2-4.7 / 7.3-10 VDC, 0-4.5 / 5.5-10 VDC or 2-5.5 / 6.5-10 VDC.

<sup>3</sup> Also inverted 2-10 or 10-2 VDC / 4-20 or 20-4 mA and split range: 0-5, 5-0, 5-10 or 10-5 / 0-4.5, 4.5-0, 5.5-10 or 10-5.5/ 2-6, 6-2, 6-10 or 10-6 VDC, 0-10, 10-0, 10-20, 20-10 / 4-12, 12-4, 12-20, 20-12 mA. Proportional dual-range (for change-over): 0-3.3 / 6.7-10 VDC, 10-6.7 / 3.3-0 VDC, 2-4.7 / 7.3-10 VDC or 10-7.3 / 4.7-2 VDC.

<sup>4</sup> DC – Direct current flat voltage

## A4 | Recommended control valves

### Actuators for balancing and control valves

A4 Actuators for balancing and control valves	TBV-C	TBV-CM	TA-Modulator						TA-Nano	TA-Compact-P	KTM 512	KTM 512
	DN15-25	DN15-25	DN10-20	DN25-32	DN40-50	DN65-80	DN100-125	DN125-200		DN10-32	DN15-50	DN65-125
TA-Slider 160	✓ <sup>1</sup>	✓	✓	✓					✓	✓		
TA-Slider 500					✓						✓	
TA-Slider 750					✓ <sup>2</sup>	✓	✓ <sup>3</sup>					✓ <sup>4</sup>
TA-Slider 1600							✓	✓				✓ <sup>4</sup>
EMO T	✓								✓	✓		
EMO TM		✓	✓									
TA-TRI	✓	✓	✓	✓					✓	✓		

1 Possible but linear control characteristic of the valve must be compensated by actuator EQM control mode (TBV-CM recommended).




2 Possible but special connection required.

3 Work with modulator DN100-DN125 if DpV is lower than 400 kPa

4 Adapter required

## A4 | Actuators for balancing and control valves

TA-Slider 160, 500	TA-Slider 750, 1600
 <p>KNX BACnet Modbus ZERC Halogen</p>	 <p>BACnet Modbus</p>
<ul style="list-style-type: none"> <li>✓ Fully configurable by smartphone</li> <li>✓ Manual override by TA-Dongle</li> <li>✓ Memory for last 10 errors</li> <li>✓ Available with electronic fail-safe function</li> <li>✓ IP54 protection class in all positions</li> <li>✓ Configurable relay and binary input</li> <li>✓ BUS compatibility with BACnet, Modbus and KNX bus protocol</li> <li>✓ Adjusting force: TA-Slider 160 (160/200N), TA-Slider 500 (500N)</li> <li>✓ Change-over version available</li> </ul>	<ul style="list-style-type: none"> <li>✓ Fully configurable by smartphone</li> <li>✓ Manual override by hexagonal key or TA-Dongle</li> <li>✓ Memory for last 10 errors</li> <li>✓ Available with electronic fail-safe function</li> <li>✓ IP54 protection class</li> <li>✓ Configurable 2 relays and binary input</li> <li>✓ BUS compatibility with BACnet, Modbus protocols</li> <li>✓ Adjusting force: TA-Slider 750 (750N), TA-Slider 1600 (1600N)</li> </ul>

EMO T	EMO TM	TA-TRI
 <p>ZERC Halogen</p>	 <p>ZERC Halogen</p>	
<ul style="list-style-type: none"> <li>✓ Visible position indicator</li> <li>✓ Auto-adaptation to input signal</li> <li>✓ Automatic stroke adjustment</li> <li>✓ IP54 protection class in all positions</li> <li>✓ Connection M30x1,5</li> <li>✓ Adjusting force 125N</li> </ul>	<ul style="list-style-type: none"> <li>✓ Visible position indicator</li> <li>✓ Auto-adaptation to input signal</li> <li>✓ Automatic stroke adjustment</li> <li>✓ IP54 protection class in all positions</li> <li>✓ Connection M30x1,5</li> <li>✓ Adjusting force 125N</li> </ul>	<ul style="list-style-type: none"> <li>✓ Automatic stroke adjustment</li> <li>✓ Low-noise operation</li> <li>✓ Low energy consumption</li> <li>✓ Connection M30x1,5</li> <li>✓ Adjusting force 150N</li> </ul>

## A5 | Control valves

### Standard control valves



Our HVAC control valve product portfolio includes electrically operated control valves made of brass, gunmetal and cast iron (grey) as well as electrically operated butterfly valves.

Our standardized electrically operated industrial valves cover pressure stages up to PN 40 as well as temperatures up to 350 °C and nominal sizes up to DN 300.

Select the perfect actuator to meet your needs from our comprehensive range whatever type of control is needed: modulating, 3-point, PWM or on/off available in all voltage variants.

### Key technical parameters

A5	Combined balancing and control valves	PN bar	Min. temp. °C	Max. temp. °C	Max. Dp bar	Control characteristics	Dimensions												
							15	20	25	32	40	50	65	80	100	125	150	200	300
HVAC	CV216/316 RGA	16	0 (-15)	150	1,6 <sup>1</sup>	EQM/ EQM-LIN <sup>2</sup>	✓	✓	✓	✓	✓								
	CV206/216 GG, CV306/316 GG	6/16	0 (-10)	150	1,6 <sup>1</sup>	EQM/ EQM-LIN <sup>2</sup>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	TA-6-way valve	16	-10	120	2	LINEAR	✓	✓											
INDUSTRIAL <sup>4</sup>	CV216/316	16	0 (-30) <sup>3</sup>	180 (350) <sup>3</sup>	1,6 <sup>1</sup>	EQM/ EQM-LIN <sup>2</sup>										✓	✓	✓	✓
	CV225/325	16/25/40	0 (-30) <sup>3</sup>	180 (350) <sup>3</sup>	4,0 <sup>1</sup>	EQM/ EQM-LIN <sup>2</sup>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CV240/340 S/E	40	0 (-30) <sup>3</sup>	180 (350) <sup>3</sup>	4,0 <sup>1</sup>	EQM/ EQM-LIN <sup>2</sup>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	BR12WT	6/16	-10	110	12 <sup>6</sup>	N/A			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

<sup>1</sup> According to DN and type of actuator

<sup>2</sup> 3-way control valves, EQM in direction A-AB, LIN in direction B-AB

<sup>3</sup> Higher temperature available with special accessories






<sup>4</sup> For more information please visit [climatecontrol.imiplc.com](http://climatecontrol.imiplc.com)

CV2xx = 2-way valves

CV3xx = 3-way valves



## A5 | Control valves

TA-6-WAY VALVE	CV216/316 RGA	CV206/216 GG, CV306/316 GG
		
<ul style="list-style-type: none"> <li>✓ Kvs range: 1,25, 2,80 or 4,0 depending on type and size</li> <li>✓ TA-6-Way Valve for change-over systems</li> <li>✓ Ideal combination with TA-Modulator and TA-Slider 160 CO</li> <li>✓ Full range of accessories</li> </ul>	<ul style="list-style-type: none"> <li>✓ Kvs range: 0,63 - 40</li> <li>✓ Ideal valve for 3-point or modulating control of mid sized HVAC applications</li> <li>✓ Extensive actuator programme for different closing pressure and actuating time</li> <li>✓ Delivered with connection fittings</li> <li>✓ Wide range of accessories, silicon free version available</li> </ul>	<ul style="list-style-type: none"> <li>✓ Kvs range: 0,63 - 500</li> <li>✓ Suitable for wide range of HVAC applications</li> <li>✓ Extensive actuator programme for different closing pressure and actuating time</li> <li>✓ Tight closed in both end-positions</li> <li>✓ Wide range of accessories, silicon free version available</li> </ul>
BR12WT	CV240/340 S/E	CV216/316, CV225/325
		
<ul style="list-style-type: none"> <li>✓ Easy mounting by eyelets</li> <li>✓ Centralised flap</li> <li>✓ Manual operation with lever</li> <li>✓ Rotation direction indication</li> <li>✓ The flap and tight EPDM sealing for wide medium range</li> </ul>	<ul style="list-style-type: none"> <li>✓ Kvs range: 0,16 - 1250, special Kvs values available</li> <li>✓ Version S: made from cast steel</li> <li>✓ Version E: made from stainless steel</li> <li>✓ Extensive range of actuators and accessories</li> <li>✓ Also suitable for different media on request</li> </ul>	<ul style="list-style-type: none"> <li>✓ Kvs range: 0,16 - 1600, special Kvs values available</li> <li>✓ Suitable in building and process engineering for various mediums</li> <li>✓ 3-way version can be used as a mixing valve or a diverting valve</li> <li>✓ Different body materials for various temperatures and pressures</li> </ul>

Suitable actuators

## A6 | Actuators for standard control valves



### Compatibility With Standard Control Valves

A6 Actuators for standard control valves	CV216/316 RGA	CV206/306 GG			CV216/316 GG				
	DN 15-50	DN 15-50	DN 65	DN 80-100	DN 15-50	DN 65	DN 80-100	DN 125-150	DN 200
TA-MC55	✓	✓			✓				
TA-MC65			✓ <sup>2</sup>			✓			
TA-MC100	✓	✓	✓ <sup>2</sup>		✓	✓ <sup>2</sup>			
TA-MC160			✓ <sup>3</sup>	✓		✓ <sup>3</sup>	✓		
TA-MC161	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>2</sup>		✓ <sup>1</sup>	✓			
TA-MC220/24						✓	✓		
TA-MC220/230						✓	✓		
TA-MC400			✓ <sup>3</sup>	✓		✓ <sup>3</sup>	✓	✓	✓ <sup>4</sup>
TA-MC500			✓ <sup>3</sup>	✓		✓ <sup>3</sup>	✓	✓	✓
TA-MC1000								✓	✓
TA-Slider 750 <sup>5</sup>	✓	✓	✓ <sup>2</sup>		✓	✓ <sup>2</sup>			
TA-Slider 1600 <sup>5</sup>			✓ <sup>3</sup>	✓		✓ <sup>3</sup>	✓		

1 For DN 32-50

2 For valves with 20 mm stroke

3 For valves with 30 mm stroke

4 DN 200 for 2-way valves only

5 Refer to Datasheet

## A6 | Actuators for standard control valves





### Key technical parameters

A6 Actuators for standard control valves	Operation principle	Supply voltage [V]	Input signal	Output signal	Stroke [mm]
TA-MC55/24	3-Point	24 VAC/VDC	3-Point	0-10 VDC	Max. 14
TA-MC55/230 <sup>1</sup>	3-Point	230 VAC	3-Point	0-10 VDC	Max. 14
TA-MC55Y	Modulating	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA	0-10 VDC	Max. 14
TA-MC65/24	3-Point	24 VAC/VDC	3-Point	0-10 VDC	Max. 20
TA-MC65/230 <sup>1</sup>	3-Point	230 VAC	3-Point	0-10 VDC	Max. 20
TA-MC65Y	MODULATING	24 VAC	0(2)-10 VDC/0(4)-20 mA	0-10 VDC	Max. 20
TA-MC100/24	Modulating/3-Point	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 20
TA-MC100/230 <sup>1</sup>	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 20
TA-MC160/24	Modulating/3-Point	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 30
TA-MC160/230 <sup>1</sup>	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 30
TA-MC161/24	Modulating/3-Point	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 20
TA-MC161/230 <sup>1</sup>	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 20
TA-MC220/24	Modulating/3-Point	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC	Max. 30
TA-MC220/230	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC	Max. 30
TA-MC223/24	Modulating/3-Point	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC	Max. 30
TA-MC223/230	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC	Max. 30
TA-MC400/24	Modulating/3-Point	24 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 30 or 60
TA-MC400/230 <sup>1</sup>	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 30 or 60
TA-MC500/24	Modulating/3-Point	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 30 or 60
TA-MC500/230 <sup>1</sup>	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 30 or 60
TA-MC1000/24	Modulating/3-Point	24 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 60
TA-MC1000/230 <sup>1</sup>	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC <sup>2</sup>	Max. 60

<sup>1</sup> Voltage 115 VAC available

<sup>2</sup> Output signal 0(4)-20mA available as accessories

## A6 | Actuators for standard control valves

TA-MC55, TA-MC55Y, TA-MC65	TA-MC100
	
<ul style="list-style-type: none"> <li>✓ Automatic stroke adaptation</li> <li>✓ Binary input for frost protection function</li> <li>✓ Blockage detection</li> <li>✓ Manual mode</li> <li>✓ Adjusting force 600N</li> </ul>	<ul style="list-style-type: none"> <li>✓ 24V version enables modulating or 3-point control (switch)</li> <li>✓ Automatic stroke adaptation</li> <li>✓ Binary input for frost protection function</li> <li>✓ Blockage detection</li> <li>✓ Manual mode</li> <li>✓ Adjusting force 1000N</li> </ul>
TA-MC160, TA-MC161, TA-MC220, TA-MC223	TA-MC400, TA-MC500, TA-MC1000
	
<ul style="list-style-type: none"> <li>✓ 24V version enables modulating or 3-point control (switch)</li> <li>✓ Automatic stroke adaptation</li> <li>✓ Binary input for frost protection function</li> <li>✓ Blockage detection</li> <li>✓ Wire breakage detection</li> <li>✓ Manual mode</li> <li>✓ Adjusting force 1600N (VAC), 1100N (VDC)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Automatic stroke adaptation</li> <li>✓ Min-Max position indicators</li> <li>✓ Binary input for frost protection function</li> <li>✓ Blockage, wire breakage and lock detection</li> <li>✓ Overheating protection</li> <li>✓ Internal temperature monitoring</li> <li>✓ Automatic actuator heating</li> <li>✓ Open circuit detection</li> <li>✓ Adjustable hysteresis for input signal</li> <li>✓ Different actuating times</li> <li>✓ Autopause to avoid control hunting</li> <li>✓ Manual mode</li> <li>✓ Low power consumption</li> <li>✓ Adjusting force: <ul style="list-style-type: none"> <li>- MC400 4 kN</li> <li>- MC500 5 kN</li> <li>- MC1000 10 kN</li> </ul> </li> </ul>



## Introduction

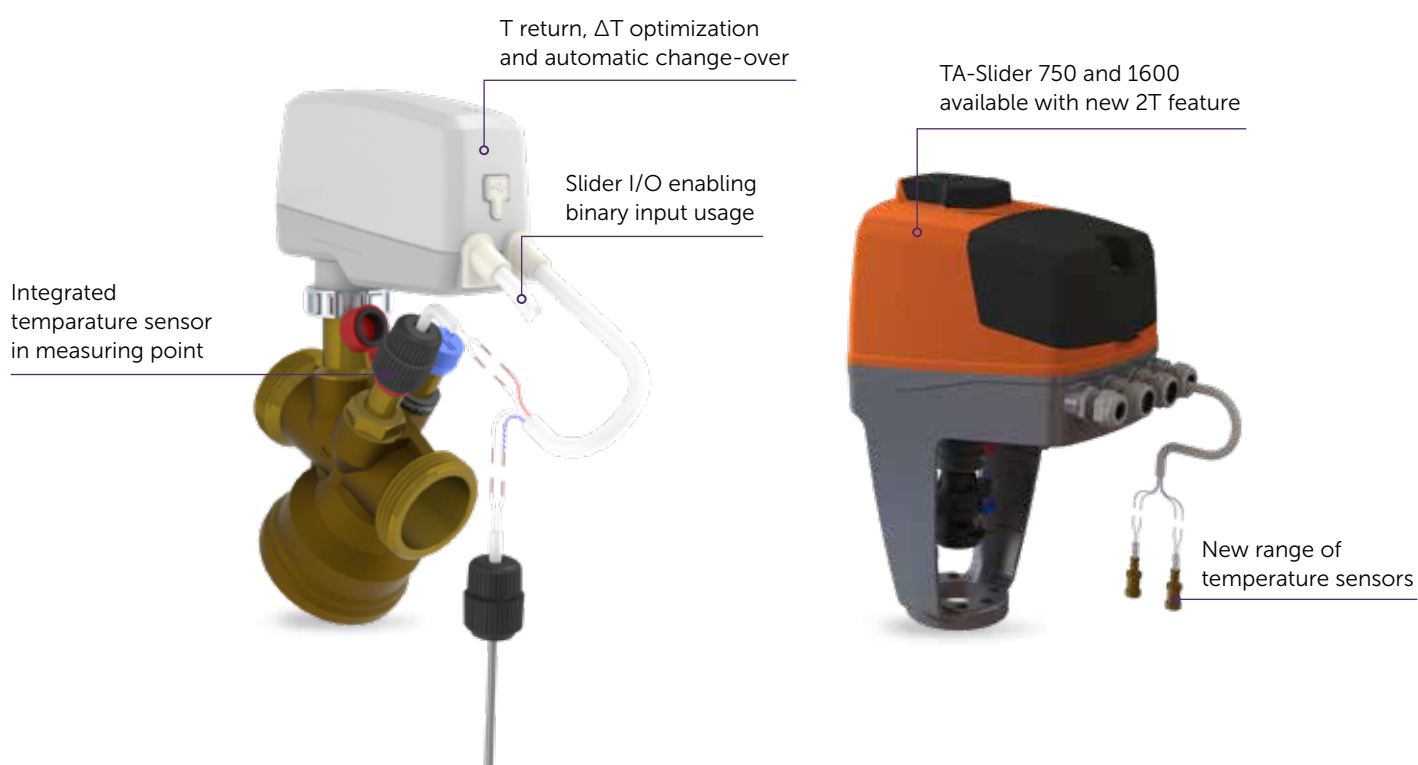
# Optimising Performance: The Critical Role of Sensors in HVAC Systems

Sensors play a pivotal role in HVAC systems, acting as the eyes and ears of the system. By continuously monitoring key parameters like temperature and pressure, sensors provide real-time data that enables precise control and adjustments. This not only enhances the comfort



and well-being of occupants but also significantly improves energy efficiency and system performance. Discover how integrating advanced sensors into your HVAC systems can transform your building's environment and operational costs.

### Your benefits

- ✓ Easy retrofitting and building upgrade
- ✓ Energy efficiency and regulations thanks to  $\Delta T$  control
- ✓ Ease of commissioning and installation






## Sensors

<b>B1</b>		Temperature Sensors.....	30
<b>B2</b>		Differential Pressure Sensors.....	30

## B1 | Temperature Sensors



Temperature sensors provide accurate, real-time data, enabling precise adjustments to heating and cooling operations. By responding quickly to temperature fluctuations, these sensors help to enhance system performance and reduce energy consumption. When integrated with TA-Slider, it opens the door to advanced control algorithms for T supply, T return and Delta T measurements.

Insert	Pocket	Surface
		
<ul style="list-style-type: none"> <li>✓ Ideal for retrofit</li> <li>✓ Accurate and fast response time</li> <li>✓ Easy installation: No piping work</li> <li>✓ Available for valves from DN10-400</li> </ul>	<ul style="list-style-type: none"> <li>✓ Reliable and well-established market solution</li> <li>✓ Available for piping from DN10-DN300</li> </ul>	<ul style="list-style-type: none"> <li>✓ Ideal for retrofit</li> <li>✓ Easy installation: No piping work</li> <li>✓ Requirement of insulation to ensure accuracy and good response time</li> </ul>

## B2 | Differential Pressure Sensors



By detecting pressure changes, you can early identify potential issues such as leaks or blockages, enable preventive maintenance, reducing downtime and repair costs. Pressure sensors also contribute to energy efficiency by maintaining proper flow rates and system balance, which lowers energy consumption

### TA Link



- ✓ Provides an accurate measurement of the differential pressure
- ✓ The crucial connection between the hydronic system and the building management system (BMS)
- ✓ Max. differential pressure 2 or 5 bar, measuring range 0-40 kPa or 0-100 kPa
- ✓ Output signal 0-10V or 4-20mA

## Introduction

# The first balancing valve in the World was manufactured in our factory in Sweden in 1957

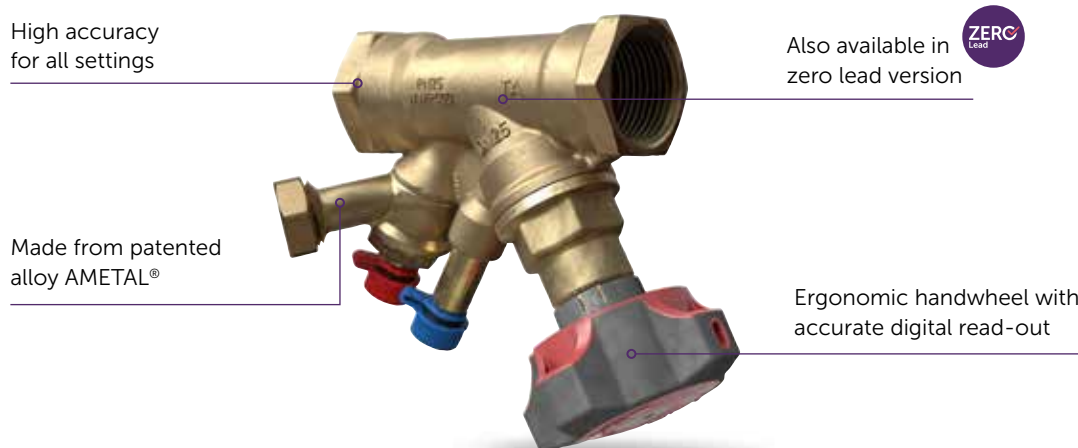
Rapid growth in energy prices and increasing comfort levels require a perfectly functioning system creating optimal conditions for the proper function of your building management system.

**Perfect Hydronic balancing is a basic requirement to obtain genuine comfort at minimum energy cost.**











Our “**Total hydronic balancing**” concept has been used for more than 50 years all over the world

in millions of applications and it is constantly being improved by new experience from real installations.

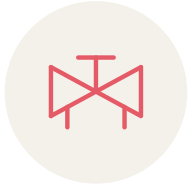
It's a collection of unique balancing valves, pressure controllers, balancing instruments, patented balancing methods, smart balancing procedures and excellent training programs sharing our mutual experience.



## Total hydronic balancing

		Balancing valves.....	32
		Fixed orifices.....	35
		Double regulating valves .....	36
		Differential pressure controllers.....	37
		Differential pressure relief valves.....	39

## C1 | Balancing valves



### Full range

Available in sizes DN 10-400, IMI TA balancing valves are used in an impressive range of applications. Ideally suited for use in heating and cooling systems, tap water systems and industry. The STAD and STAF are the most well known balancing valves worldwide.

### Absolute certainty

Balancing technology used by our customers has been developed thanks to 50 years of experience from more than 100 000 projects worldwide. Patented balancing methods like TA-Diagnostics and TA-Wireless give you the power and absolute confidence to successfully complete a project of any size. Our patented materials and technology features never disappoint.

### Key technical parameters

C1 Balancing valves	PN bar	Min. temp. °C	Max. temp. °C	Dimensions																
				10	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400
TBV	16	-20	120		✓	✓														
STAD-R	25	-20	120		✓	✓	✓													
STAD <sup>1</sup>	25	-20	120	✓	✓	✓	✓	✓	✓	✓										
STAD-C	20	-20	120/150	✓	✓	✓	✓	✓	✓	✓										
STAD-B	25	-20	120	✓	✓	✓	✓	✓	✓	✓										
STAD-D	25	-20	120	✓	✓	✓	✓	✓	✓	✓										
STAF	16	-10	120								✓	✓	✓	✓	✓					
STAF-R	16	-10	120								✓	✓	✓	✓	✓					
STAG	Class 150	-10	120								✓	✓	✓	✓	✓	✓	✓	✓		
STAF-SG	16/25	-10	120			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TA-BVS 240/243	16/25 <sup>2</sup>	-20	DN 15-50: 120 DN 65-250: 200		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
TA-BVS 140/143	16/25 <sup>2</sup>	-20	DN 15-50: 120 DN 65-400: 200		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

<sup>1</sup> Available as ZERO version  
IMI Zero products are manufactured with ecobross containing less than 0.09% lead.

<sup>2</sup> Other PN's on request





# C1 | Balancing valves

## Functions

C1 Balancing valves	Valve Body Material	End Connection Type	Double Sealed Measuring Points	Drain Function	Pressure balanced plug	Drinking water certified
TBV	AMETAL®	Threaded				
STAD-R	AMETAL®	Threaded		✓		
STAD <sup>1</sup>	AMETAL® /ZERO	Threaded		✓ <sup>1</sup>		
STAD-C	AMETAL®	Threaded	✓			
STAD-B	AMETAL® with electrophoretic layer	Threaded		✓		
STAD-D	AMETAL® with T.E.A. PLUS® surface treatment	Threaded		✓		✓
STAF	Cast iron	Flanged			✓ <sup>2</sup>	
STAF-R	Gunmetal	Flanged			✓ <sup>2</sup>	
STAG	Ductile iron	Grooved			✓ <sup>2</sup>	
STAF-SG	Ductile iron	Flanged			✓ <sup>2</sup>	
TA-BVS 240/243	Stainless steel	Flanged / Welding				
TA-BVS 140/143	Steel	Flanged / Welding				

1 Special version available

2 from DN 100







TBV	STAD	STAD-C
		
<ul style="list-style-type: none"> <li>✓ Ideal valve for balancing small terminal units</li> <li>✓ Compact size</li> <li>✓ Full measuring capabilities</li> <li>✓ Made from patented alloy AMETAL®</li> </ul>	<ul style="list-style-type: none"> <li>✓ The most popular balancing valve worldwide</li> <li>✓ Excellent measuring accuracy</li> <li>✓ Ergonomic handwheel with accurate digital display of the setting number available with / without 3/4" draining</li> <li>✓ Made from patented alloy AMETAL®</li> <li>✓ Available as ZERO lead version </li> </ul>	<ul style="list-style-type: none"> <li>✓ The STAD-C balancing valve has been specially developed for use in indirect cooling systems.</li> <li>✓ Double sealed measuring points with high protection against leakages</li> <li>✓ Ergonomic handwheel with accurate digital display of the setting number</li> <li>✓ External threads or smooth ends for tight and reliable connection</li> <li>✓ Made from patented alloy AMETAL®</li> </ul>

See applications

G1 G2 G3 G4 G5 G6 G7 G8 G9 G10 G11 G12



## C1 | Balancing valves

STAD-R	STAD-D	STAF, STAF-SG
 <ul style="list-style-type: none"> <li>✓ Unique balancing valve for renovations with reduced Kv values</li> <li>✓ No need to reduce pipe dimensions; decreases installation costs</li> <li>✓ Ergonomic handwheel with accurate digital display of the setting number</li> <li>✓ Full measuring possibilities with high accuracy</li> <li>✓ Made from patented alloy AMETAL®</li> <li>✓ Draining adapter at serial delivery</li> </ul>	 <ul style="list-style-type: none"> <li>✓ Balancing valve for hot tap water systems with special protection against oxygen corrosion</li> <li>✓ Certified to be used in systems with drinking water by RISE (Research Institutes of Sweden).</li> <li>✓ Ergonomic handwheel with accurate digital display of the setting number</li> <li>✓ Excellent measuring accuracy</li> <li>✓ Made from patented alloy AMETAL®</li> <li>✓ Draining adapter at serial delivery</li> </ul>	 <ul style="list-style-type: none"> <li>✓ Equipped with a digital display for the setting number, the handwheel ensures accurate and straightforward balancing</li> <li>✓ Self-sealing measuring points for simple, accurate balancing</li> <li>✓ Positive shut-off function for easy maintenance</li> </ul>
STAG	STAF-R	TA-BVS 240/243, TA-BVS 140/143
 <ul style="list-style-type: none"> <li>✓ Equipped with a digital display for the setting number, the handwheel ensures accurate and straightforward balancing</li> <li>✓ Self-sealing measuring points for simple, accurate balancing</li> <li>✓ Positive shut-off function for easy maintenance</li> <li>✓ Grooved ends</li> </ul>	 <ul style="list-style-type: none"> <li>✓ Body made from gunmetal with high resistance to corrosion for tap/industrial water systems</li> <li>✓ Positive shut-off function for easy maintenance</li> <li>✓ Self-sealing measuring points for simple, accurate balancing</li> <li>✓ Bonnet, cone (PTFE-coated) and spindle made from patented alloy AMETAL®</li> </ul>	 <ul style="list-style-type: none"> <li>✓ Stainless steel (240/243) or Steel (140/143) balancing valve with flanges or welding ends</li> <li>✓ TA-BVS 240/243: Ideal for use mainly in industrial and high temperature application</li> <li>✓ TA-BVS 140/143: Ideal for use on heating and cooling systems (HVAC/R) and other oxygen-free water applications</li> <li>✓ Long life and maintenance free operation</li> <li>✓ DN 200 - 400 with manual gear for easy shut-off</li> </ul>

See applications

G1 G2 G3 G4 G5 G6 G7 G8 G9 G10 G11 G12

## C2 | Fixed orifices



Flow measuring orifices with self-sealed measuring points are used for simple flow measuring in heating and cooling systems or systems in industries with constant flow.

Our fixed orifices are made precisely from stainless steel and guarantee longevity and very accurate measuring.

The orifice should be installed between two counter flanges. It is recommended to install 10D straight lengths before and 5D straight lengths after the orifice for exact measuring.

### Key technical parameters

C1 Fixed orifices	PN bar	Min. temp. °C	Max. temp. °C	Dimensions																
				20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500-900
MDF0	16	-20	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MDF0	25	-20	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
MDF0	25	-20	110						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

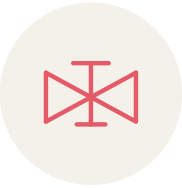
### MDF0



- ✓ Made from stainless steel
- ✓ Suitable for heating/cooling and technology circuits
- ✓ Measuring points made from dezincification resistant alloy AMETAL®
- ✓ Excellent measuring accuracy

C3

| Double regulating valves



Key technical parameters

C3 Double regulating fittings	PN bar	Min. temp. °C	Max. temp. °C	Dimensions					
				15	20	25	32	40	50
STK	16	-10	120	✓	✓				

Functions

C3 Double regulating fittings	Pre-setting	Shut-off	Measuring	Draining
STK	✓	✓		

STK

✓

Return lockshield with direct Kv indicator

✓

Setting with lock ring

✓

Shut-off function

✓

Made from nickel-plated patented alloy AMETAL®

## C4 | Differential pressure controllers



### Key technical parameters

C4 Differential pressure controllers	PN bar	Min. temp. °C	Max. temp. °C	Max. Dp bar	Setting range kPa	Dimensions													
						10	15	20	25	32	40	50	65	80	100	125	150	200	
STAP	16	-20	120	2.5	5-80		✓	✓	✓	✓	✓	✓							
STAP	16	-10	120	3.5	20-160								✓	✓	✓				
DA 516	25	-10	120/150	16	5-150		✓	✓	✓	✓	✓	✓							
DAF 516	16/25	-10	150	16	5-150		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
TA-PILOT-R	16/25	-10	120/150	12	10-400								✓	✓	✓	✓	✓	✓	
TA-COMPACT-DP	16	-20	120	4	5-18	✓	✓	✓	✓										

### Functions

C4 Differential pressure controllers	Return pipe	Supply pipe	Measuring	Shut-off	Draining (optional)	Measurement of flow and available differential pressure	Zone control
STAP	✓		✓	✓	✓		
DA 516	✓		✓				
DAF 516		✓					
TA-PILOT-R	✓		✓				
TA-COMPACT-DP		✓	✓	✓		✓	✓

### Differential pressure range (kPa)

STAP					
DN	5-25	10-40	10-60	20-80	40-160
15	✓		✓		
20	✓		✓		
25			✓		
32		✓		✓	
40		✓		✓	
50				✓	
65				✓	✓
80				✓	✓
100				✓	✓


DA 516				
DN	5-30	10-60	10-100	60-150
15/20	✓	✓		
25/32		✓		
40/50			✓	



DAF 516				
DN	5-30	10-60	10-100	60-150
15/20	✓	✓	✓	✓
25/32	✓	✓	✓	✓
40/50	✓	✓	✓	✓

DAF 516				
DN	5-30	10-60	10-100	60-150
65	✓	✓	✓	✓
80	✓	✓	✓	✓
100	✓	✓	✓	✓
125	✓	✓	✓	✓

DAF 516			
DN	10-50	30-150	80-400
65	✓	✓	✓
80	✓	✓	✓
100	✓	✓	✓
125	✓	✓	✓
150	✓	✓	✓
200	✓	✓	✓

## C4 | Differential pressure controllers

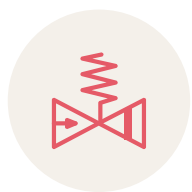
STAP DN 15-50	STAP DN 65-100	DA 516 / DAF 516
		
<ul style="list-style-type: none"> <li>✓ Ideal Dp controller with shut-off function for radiators/air conditioning circuits</li> <li>✓ Measuring point for return temperature/pressure measurements</li> <li>✓ Draining optional as an accessory, mounting without system draining</li> <li>✓ Made from patented alloy AMETAL®</li> </ul>	<ul style="list-style-type: none"> <li>✓ Ideal Dp controller for secondary circuits in HVAC systems</li> <li>✓ Two measuring points for system diagnostics enabling the measurement of temperature and differential pressure</li> <li>✓ Special measuring point for capillary connection on STAF is a part of delivery</li> <li>✓ Works in all positions</li> </ul>	<ul style="list-style-type: none"> <li>✓ Patented In-line body for quiet operation under high differential pressures</li> <li>✓ Particularly effective in systems with high temperatures and differential pressures</li> <li>✓ Highly accurate differential pressure control with very low hysteresis</li> <li>✓ Rust protection thanks to the electrophoretically painted ductile iron body</li> <li>✓ Small and compact body for easy installation in small spaces</li> <li>✓ Easy to insulate</li> <li>✓ DAF for use in supply pipe, 2 capillaries</li> </ul>

TA-PILOT-R	TA-COMPACT-DP
	
<ul style="list-style-type: none"> <li>✓ First in-line Dp controller operated by Pilot technology</li> <li>✓ The smallest, the lightest and the most accurate Dp control on the market</li> <li>✓ Clearly visible setting lockable against tampering</li> <li>✓ Measuring points for system diagnostics and exact setting according to system true parameters</li> </ul>	<ul style="list-style-type: none"> <li>✓ All in one zone control valve, balancing valve and differential pressure controller</li> <li>✓ Ideal solution for zone control in apartment buildings</li> <li>✓ Compact valve fits in areas where space is limited</li> <li>✓ Enables flow measurement and system diagnostics</li> <li>✓ Recommended actuator: EMO T</li> </ul>

See applications

G2 G3 G4 G9 G11 G12




## C5 | Differential pressure relief valves



Differential pressure relief valves are used in heating and cooling systems to ensure a minimum flow level through the pump, maintaining the desired supply temperature when the system operates at low loads or keeps constant differential pressure for specific circuits with terminal units.

### Key technical parameters

C5 Differential pressure controllers	PN bar	Min. temp. °C	Max. temp. °C	Setting range kPa	Shut-off	Dimensions									
						15	20	25	32	40	50	65	80	100	125
Hydrolux	16	-10	120	5-50, 30-180	No		✓	✓	✓						
BPV	20	-20	120	10-60	Yes	✓	✓	✓	✓						
PM 512	16/25	-10	100	0-1600	No	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Hydrolux	BPV	PM 512
		
<ul style="list-style-type: none"> <li>✓ Direct setting by handwheel with setting scale</li> <li>✓ Low proportional hysteresis</li> <li>✓ Very quiet in operation</li> <li>✓ Made from corrosion resistant gunmetal</li> </ul>	<ul style="list-style-type: none"> <li>✓ Setting scale with protective cap against dirt and tampering</li> <li>✓ Shut-off function</li> <li>✓ Easy setting with 3mm hexagonal key</li> <li>✓ Made from patented alloy AMETAL®</li> </ul>	<ul style="list-style-type: none"> <li>✓ Pneumatic principle allows adjustable set-point from 0 to 16 bar</li> <li>✓ In-line design for quiet operation</li> <li>✓ Opens at increasing inlet pressure</li> <li>✓ Setting dependent on static pressure in the system</li> </ul>





Climate  
Control

# IMI Pneumatex Pressure Maintenance and Water Quality

Products that focus on tackling system problems before they appear

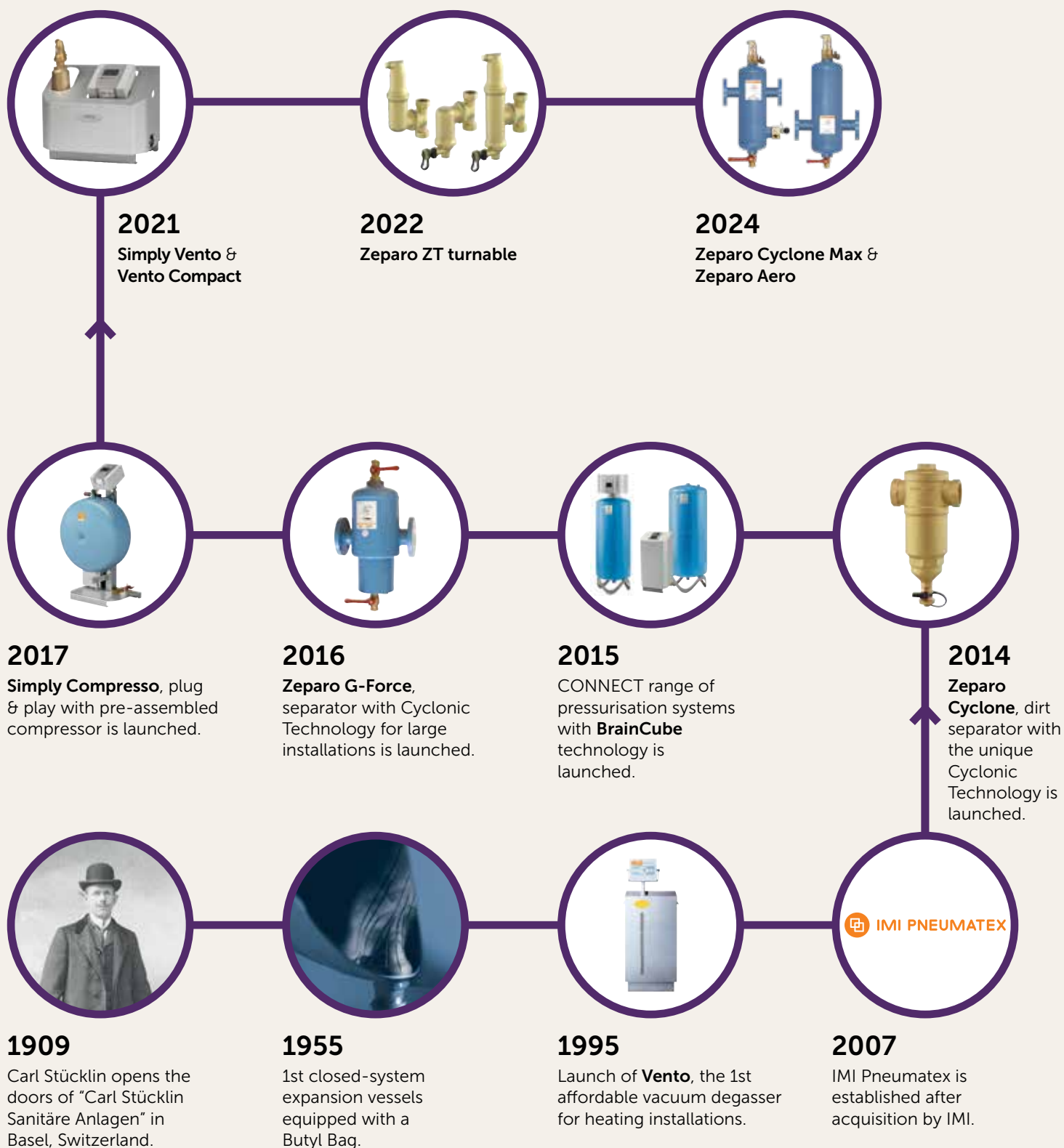
With a firm belief that prevention is better than cure, IMI Pneumatex develops cutting-edge solutions and groundbreaking technologies that keep HVAC systems free of gas and sludge, ensuring longevity, stability and pressure maintenance.

Innovation, Swiss manufacturing quality and customer service excellence are what make us stand out from the crowd.

Breakthrough  
engineering for  
a better world

# Brand Fast Facts

Founded in 1909 in Basel, Switzerland, IMI Pneumatex has been a true pioneer in the pressurisation market, developing products - such as the first-ever closed expansion system back in 1955 - that remain market leaders to this day.



# Introduction

## Why is pressurisation so important?

As temperatures inside heating, solar, and cooling water installations fluctuate, so does the incompressible media change its volume and thus system pressure.

Rising pressure puts a strain on individual components, which can lead to ruptures and premature failure. On the other hand, pressure drops can lead to air intake that causes corrosion, the single worst enemy of water-based HVAC installations.





It is therefore essential to invest in a high-quality pressurisation solution that is in line with your specific system needs.

Our intelligent and durable pressurisation technologies compensate for temperature-induced changes in system pressure, rendering the above concerns a thing of the past.



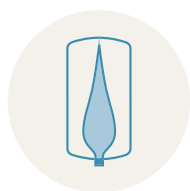
**Effective pressurisation control is essential to ensure optimal system performance and protect components throughout their service life.**

## Pressure maintenance

D1		Expansion vessels.....	44
D2		Automatic pressure maintenance systems .....	50
D3		Safety valves .....	52
D4		Pressure reducing valves .....	54

# D1 | Expansion vessels

## Pressure maintenance



Under the IMI Pneumatex brand, IMI offers top-quality solutions to protect systems against pressure increase. The **Airproof** butyl bags inside IMI Pneumatex expansion vessels guarantee a very high resistance against diffusion. For several decades, materials used for the rubber compound have been sourced from the same handful of select suppliers. Butyl vulcanization is carried out in our plants on custom-built machinery.

### Your benefits

- ✓ Lowest gaseous diffusion coefficient on the market - 3.3% for expansion vessels
- ✓ Selection of different models according to the investor's needs
- ✓ Up to 5-year warranty\* on the butyl bag

### Key technical parameters

D1 Expansion vessels	PN class bar	T min/max of media °C	volume l	Coupling DN	Max % of glycol %	Mounting type	Construction
Statico SD	3 / 10	+5 / +70	8-80	R 1/2" / R 3/4"	50%	hanging/lying	bag type
Statico SU	3 / 4 / 6 / 10	+5 / +70	140-800	R 3/4"	50%	standing	bag type
Statico SG	6 / 10	+5 / +70	1000 - 5000	R 1 1/2"	50%	standing	bag type
Aquapresso AD	10	+5 / +70	8-80	R 1/2" / R 3/4" / R 1"	-	hanging/lying	bag type
Aquapresso ADF	10	+5 / +70	8-80	2 x R 1/2" / 2 x R 3/4" / 2 x R 1"	-	hanging/lying	bag type - flow
Aquapresso AU	10	+5 / +70	140-600	R 1 1/4"	-	standing	bag type
Aquapresso AUF	10	+5 / +70	140-500	2 x R 1 1/4"	-	standing	bag type - flow
Aquapresso AG	10 / 16	+5 / +70	700-3000 / 300-3000	DN 50 – DN 80	-	standing	bag type
Aquapresso AGF	10 / 16	+5 / +70	700-3000 / 300-3000	2x DN 50 – 2x DN 80	-	standing	bag type - flow




### Applications



Q / Power: 0 MW ..... ► 160 MW  
 Static Pressure 0 bar ..... ► 20 bar

D1 Expansion vessels	Pressure maintenance														
	Heating systems	Refrigeration systems	Solar systems	Potable water systems	Glycol systems	Small Residential	Large Residential	Small Building	Supermarket	Shopping Mall	Large Commercial Building	Hospital	Skyscraper	District Energy	Industrial Facilities
Statico SD, SU, SG	✓	✓	✓		✓	✓	✓	✓	✓						
Aquapresso ADF, AUF, AGF				✓		✓	✓	✓	✓	✓	✓	✓	✓		✓
Aquapresso AD, AU, AG				✓		✓	✓	✓	✓	✓	✓	✓	✓		✓

\* Conditions apply. For more information please contact your local IMI representative.

## D1 | Expansion vessels

Statico SD	Statico SU	Statico SG
		
<ul style="list-style-type: none"> <li>✓ Bag construction</li> <li>✓ Welded shell joints</li> <li>✓ Butyl rubber bag</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ Gaseous diffusion coefficient below 3,3%</li> <li>✓ Horizontal or vertical mounting</li> </ul>	<ul style="list-style-type: none"> <li>✓ Bag construction</li> <li>✓ Welded shell joints</li> <li>✓ Butyl rubber bag</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ gaseous diffusion coefficient below 3,3%</li> <li>✓ Upright installation</li> </ul>	<ul style="list-style-type: none"> <li>✓ Bag construction</li> <li>✓ Welded shell joints</li> <li>✓ Replaceable butyl rubber bag</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ Gaseous diffusion coefficient below 3,3%</li> <li>✓ Upright installation</li> </ul>

Aquapresso AD, ADF	Aquapresso AU, AUF, AG, AGF
	
<ul style="list-style-type: none"> <li>✓ Bag construction</li> <li>✓ Butyl rubber bag</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ Gaseous diffusion coefficient below 3,3%</li> <li>✓ Horizontal or vertical installation</li> <li>✓ ADF -&gt; Flowfresh full flow-through - elimination of Legionella risk</li> <li>✓ Hydrowatch inspection glass for bag tightness control</li> </ul>	<ul style="list-style-type: none"> <li>✓ Bag construction</li> <li>✓ Welded shell joints</li> <li>✓ Butyl rubber bag</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ Gaseous diffusion coefficient below 3,3%</li> <li>✓ Upright installation</li> <li>✓ AUF, AGF -&gt; Flowfresh full flow-through - elimination of Legionella risk</li> <li>✓ AG, AGF -&gt; Replaceable butyl rubber bag</li> </ul>





## BrainCube Connect by IMI PNEUMATEX

BrainCube Connect is the universal control unit of all Pneumatex TecBoxes to help you stay in control any time, anywhere.

**"It is a significant improvement by IMI Pneumatex that you can remotely control the system via your smartphone or laptop."**

Stefan Schwenk, Germany

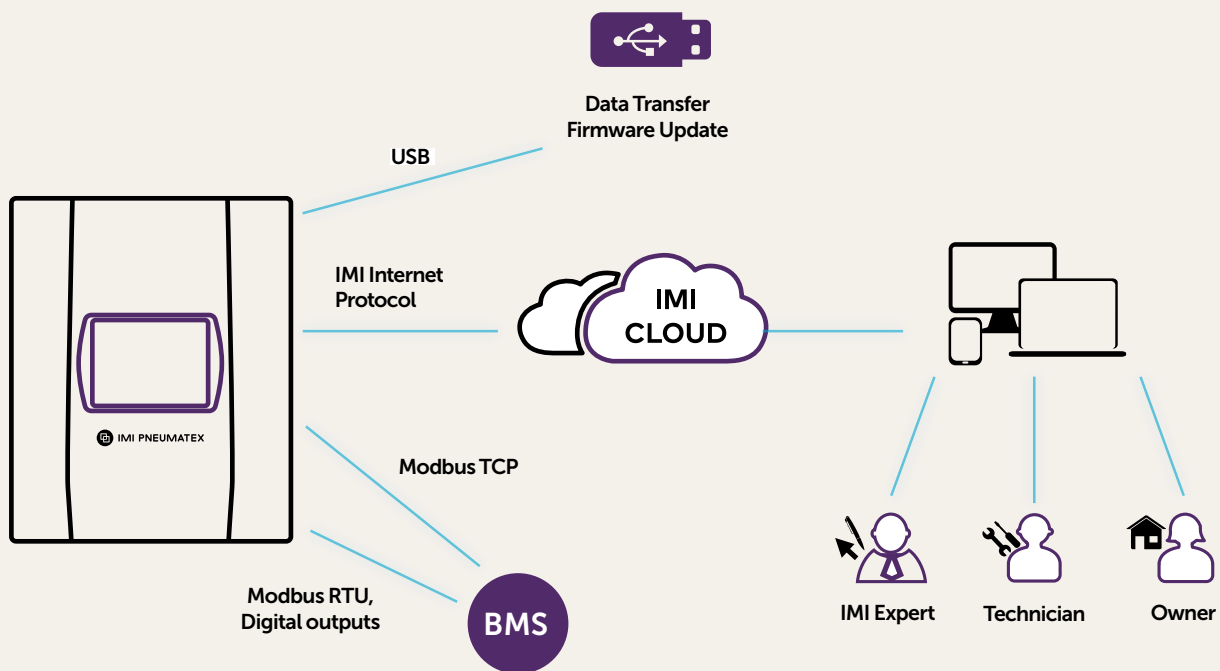


# BrainCube Connect

## Connected interface

The BrainCube enables simplified access to essential system information via any connected device. So, you can enter settings, change system values, access logging data for system performance monitoring and even troubleshoot the system whether you are on or off site.

The illustration below shows the communication versatility of the BrainCube Connect. If a system fault is detected, an alert will be sent directly to the customer who can view the message on their smartphone, access system settings, make adjustments or call for service before the problem gets worse.



### Remote Connection RS485

Thanks to the RS485 port you can easily connect your device to the BMS system and fully control your system.

- ✓ Direct communication with BMS via Modbus RTU
- ✓ Communication with KNX, BACnet or other networks via suitable external modules
- ✓ BrainCube to BrainCube communication (e.g., in Master-Slave pressurisation networks and external water make-up function)



### Service Connection USB

The USB port provides a quick and reliable connection on-site for service purpose.

- ✓ Off-line update of firmware
- ✓ Data transfer from BrainCube (history, messages) or upload of new settings.



### Plug & Play Connection Ethernet

Easy connection to your BMS system and/or to IMI Cloud Web-Interface via router or GSM gate.

- ✓ Direct communication with BMS via Modbus TCP
- ✓ Communication with KNX, BACnet or other networks via suitable external modules
- ✓ Plug & play connection with the IMI Hydronic Web-Interface Cloud solution

## Seamless Integration

BrainCube Connect integrates with Building Management Systems via standardized Modbus protocol on RS485 (RTU) and Ethernet (TCP-IP), ready to be converted to other standards (such as KNX and BACnet).

Direct on-site connection via USB and Ethernet with the IMI Hydronic Web-Interface Cloud solution to give you total visibility and control.

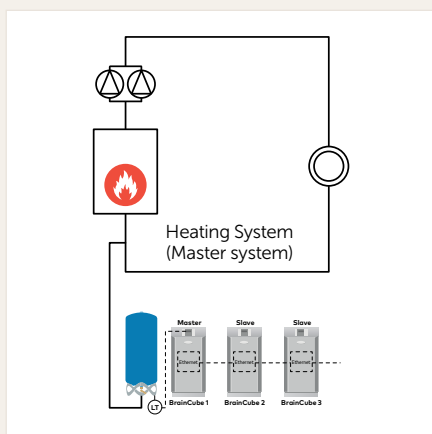
# Master-Slave functionalities

In installations where more than one pressure maintenance system is employed or multiple installations are hydraulically connected, a master-slave combined operation becomes essential. In such scenarios, effective communication between pressure maintenance devices is crucial to maintain control over the system's pressures and vessel levels.

The need for multiple pressurizations is driven by various reasons, such as:

- ✓ **Improved load distribution:** Distributing load for better partial load behaviour.
- ✓ **Enhanced safety:** Increasing operational safety.
- ✓ **Full safety:** Redundancy in all components and performance.
- ✓ **Maximum ease of maintenance:** maintaining pressurisation during maintenance work on the device or expansion vessels.
- ✓ **Space optimization:** Overcoming limitations due to insufficient space.
- ✓ **Volume recirculation:** energy-efficient recirculation of displaced water volumes in heating-cooling change-over systems with common consumers.
- ✓ **Integration of installations:** Merging existing installations for a comprehensive system.
- ✓ **Temporary autonomous operation:** Enabling independent operation in hydraulic networks, as in local heating systems with secondary district decoupling.

In order to fulfil the requirements described above, different master-slave operating modes are required:



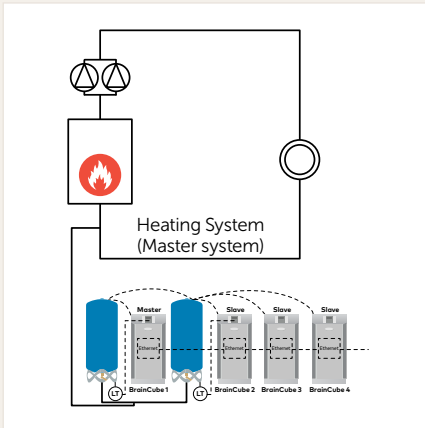
## MS-PC (Master-Slave Pressure Control)

Multiple pressurisation stations in parallel for:  
Improved load distribution + Enhanced safety.

In this operating mode, all devices regulate with the same ACTUAL pressure value to individually adjustable setpoints. This ensures that the devices reliably fulfil their pressure maintenance function without causing mutual build-up.

The devices can have different pressure switch-on points and individual time delays for switching on their pumps and valves.

Pump running times can also be synchronised with each other. In this way, cascade operation with optimum partial load behaviour can be implemented and individual devices or even device groups can be defined as reserve or peak load devices, which can be switched on as new devices when required without any previous component stress or wear.



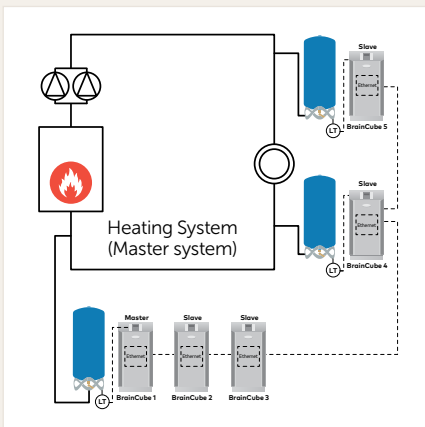
### MS-PCR

#### (Master-Slave Pressure Control Redundancy)

Multiple pressurisation stations in parallel for:  
Improved load distribution + Full safety + Maximum ease of maintenance.

MS-PCR operation is an extended MS-PC operation. Each device can achieve full redundancy of the components by analysing its own measuring foot LT on its own expansion vessel. Depending on the design of the devices, full redundancy of the pressurisation capacity can also be achieved.

If additional expansion vessels with their own measuring feet are used, redundancy is also achieved for the expansion volume and at the same time the pressurisation operation is fully maintained during service and maintenance work.

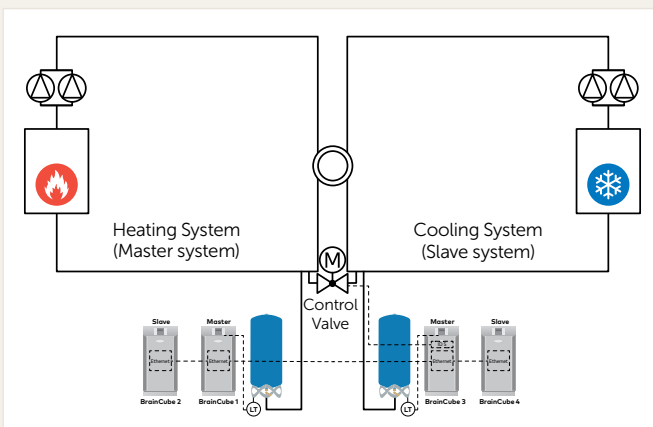


### MS-LC

#### (Master-Slave Level Control)

Two or more pressurisation stations at different locations within a single system for:  
Space optimisation (+ Volume recirculation + Integration of installations + Temporary autonomous operation).

MS-LC master-slave operation is always required if several pressurisations with their own expansion vessels are integrated at different points in the system or if the expansion vessels of the pressurisations do not automatically balance their water level via the principle of communicating water columns.



### MS-IO

#### (Master-Slave Isolated Operation)

Two or more independent pressurisation stations in separate but connectable systems:  
Volume recirculation + Integration of installations + Temporary autonomous operation.

MS-IO master-slave operation is always required when several pressurisations in different systems, which can be either hydraulically separated or connected, have to work together. If the systems are hydraulically separated from each other, the

pressurisations work in MS-IO mode and maintain the pressure in your system (pressure control). If two systems are hydraulically connected to each other, the operating mode of one system switches to LC (Level Control) mode. Switching between the operating modes can be controlled automatically via the pressurisation stations themselves or via the BMS.

# MS Communication via Ethernet-Multicast

In demanding applications like district heating and/or cooling, especially where multiple sub-power plants are situated several kilometres apart in addition to the main thermal power plant, the Master-Slave communication via Ethernet-Multicast is the optimal solution. It eliminates the need for additional cabling and efficiently utilizes existing Ethernet network infrastructure, whether dedicated or public.

## Efficient integration:

- ✓ **No additional cabling needed:** Multicast communication via Ethernet eliminates extensive additional cabling requirements.
- ✓ **Utilizes existing networks:** Leverages existing network infrastructure effectively.

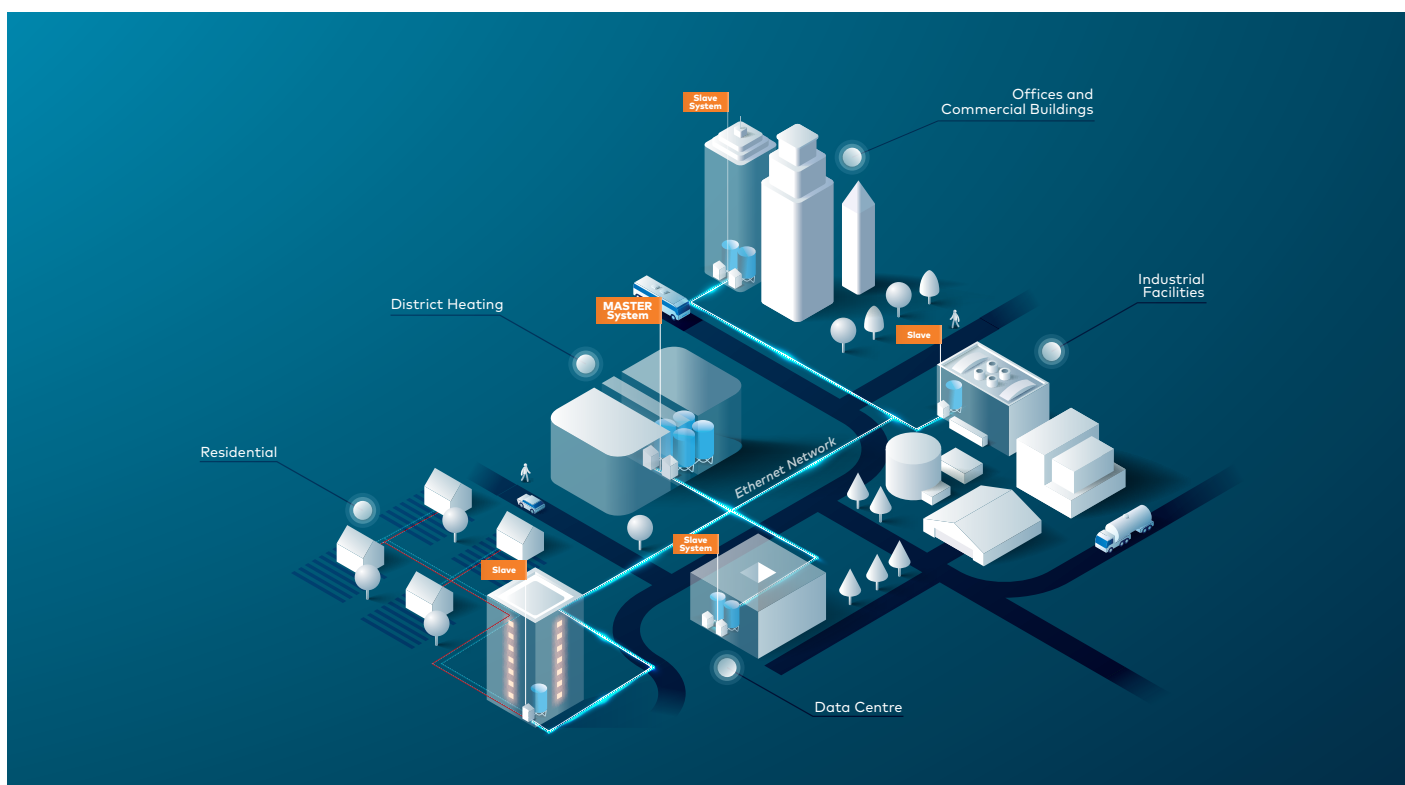
For master-slave combined operations, IMI Pneumatex offers two options: RS485 with Modbus RTU protocol or Ethernet with the innovative multicast technology.

## IMI Pneumatex Master-Slave operation with Ethernet-Multicast communication:

- ✓ **Independent operation:** Multiple master-slave network systems can operate independently in an Ethernet network using the multicast communication.
- ✓ **Controlled configuration:** Configuration is managed through multicast port numbers.





Each individual Ethernet network system can be operated with up to 40 devices with a common multicast IP and port. Using different multicast port numbers allows multiple Master-Slave networks (up to 40 units each) to operate independently within an Ethernet network for enhanced flexibility.




## Master-Slave communication via Ethernet-Multicast network.





## D2 | Automatic pressure maintenance systems

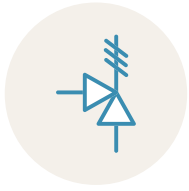
Simply Compresso	Compresso F Connect	Compresso C Connect	Compresso CX Connect
			
<ul style="list-style-type: none"> <li>✓ Integrated compact design (TecBox with 80 litre vessel and extension by 80 l possible)</li> <li>✓ BrainCube Connect controller</li> <li>✓ Water refilling module</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ Precise pressure maintenance <math>\pm 0.1</math> bar</li> <li>✓ Plug and Play design</li> <li>✓ Modbus and Ethernet communication as standard</li> </ul>	<ul style="list-style-type: none"> <li>✓ BrainCube Connect controller</li> <li>✓ Modbus and Ethernet communication as standard</li> <li>✓ Installation of the TecBox on the vessel, which reduces the space required</li> <li>✓ Low noise level 59 dB(A) / 1 bar</li> <li>✓ Precise pressure maintenance <math>\pm 0.1</math> bar</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ Water refilling module as option</li> </ul>	<ul style="list-style-type: none"> <li>✓ BrainCube Connect controller</li> <li>✓ Modbus and Ethernet communication as standard</li> <li>✓ Low noise level: Silent-run compressor 53-62 dB(A) / 1-10 bar</li> <li>✓ Precise pressure maintenance <math>\pm 0.1</math> bar</li> <li>✓ Vessel range 200 - 5000 l</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ Water refilling module as option</li> </ul>	<ul style="list-style-type: none"> <li>✓ BrainCube Connect controller for external compressed air supply</li> <li>✓ Modbus and Ethernet communication as standard</li> <li>✓ Precise pressure maintenance <math>\pm 0.1</math> bar</li> <li>✓ Vessel range 200 - 5000 l</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> <li>✓ Water refilling module as option</li> </ul>

Transfero TV Connect	Transfero TVI Connect	Transfero TI Connect
		
<ul style="list-style-type: none"> <li>✓ BrainCube Connect controller</li> <li>✓ Modbus and Ethernet communication as standard</li> <li>✓ Vacuum degassing in a hydrocyclone with a capacity of <math>\sim 1\text{m}^3/\text{h}</math></li> <li>✓ Precise pressure maintenance <math>\pm 0.2</math> bar</li> <li>✓ Water refilling module</li> <li>✓ Vessel range 200 - 5000 l</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> </ul>	<ul style="list-style-type: none"> <li>✓ BrainCube Connect controller</li> <li>✓ Modbus and Ethernet communication as standard</li> <li>✓ Vacuum degassing in a hydrocyclone with a capacity of <math>\sim 1\text{m}^3/\text{h}</math></li> <li>✓ Precise pressure maintenance <math>\pm 0.2</math> bar</li> <li>✓ Water refilling module</li> <li>✓ Suitable for systems with high static pressure</li> <li>✓ Vessel range 200 - 5000 l</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> </ul>	<ul style="list-style-type: none"> <li>✓ BrainCube Connect controller</li> <li>✓ Modbus and Ethernet communication as standard</li> <li>✓ Precise pressure maintenance <math>\pm 0.2</math> bar</li> <li>✓ Suitable for systems with high static pressure</li> <li>✓ Vessel range 1000 l - 5000 l (larger sizes on demand)</li> <li>✓ Media is closed in a bag without contact with the steel shell</li> </ul>



## D3 | Safety valves

### Pressure maintenance



Under the IMI Pneumatex brand, IMI offers top-quality components for safeguarding installations against pressure increases. IMI Pneumatex safety valves protect all system components against overpressure.

#### Your benefits

- ✓ EN ISO 4126-1:2013, DIN 4751, SWKI HE301-01 and PED 2014/68/EU compliant.
- ✓ A complete range of products, able to satisfy every application and norm's requirement.
- ✓ Up to 5-year warranty\*

#### Features

D3 Safety valve	Heating systems	Cooling systems	Solar systems	Pressure range	Maximum antifreeze content
DSV...H	✓			3,0 bar	30%
DSV...DGH	✓	✓		2,0 – 10 bar**	50%
DSV...SOL			✓	3,0 -10 bar**	100%
DSV...F		✓		3,0 -10 bar**	100%
DSV...DGF	✓	✓	✓	2,0 -10 bar**	50%

\* Conditions apply. For more information please contact your local IMI representative.

\*\* Up to 16 bar on request

All the Pneumatex safety valves have been officially certified and approved (D=Steam, G=Gases, H=Heating, SOL=Solar, F=Fluids).

For details such as certificate numbers please refer to the applicable Declaration of Conformity.

Safety valves with sole approval code letters F, H, SOL are not allowed for installations according to SWKI HE301-01.

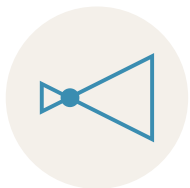
Safety valves of the approval type DGF and DGH are to be used here.

## D3 | Safety valves

DSV..H	DSV...DGH	DSV...DGH
		
<ul style="list-style-type: none"> <li>✓ Female Thread</li> <li>✓ Spring-loaded, manually released, membrane-secured spring chamber. Inlet and outlet sides with inner thread, outlet side enlarged.</li> <li>✓ DN 15-50</li> <li>✓ Vertical mounting.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Female Thread</li> <li>✓ Spring-loaded, aerated by hand lever, spring protected by a bellow, balanced pressure. Inlet and outlet sides with inner thread, outlet side enlarged.</li> <li>✓ DN 15-32</li> <li>✓ Vertical mounting.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Flanged</li> <li>✓ Spring-loaded, aerated by hand lever, spring protected by a bellow.</li> <li>✓ Flanged inlet and outlet connection, outlet side enlarged.</li> <li>✓ DN 40-50</li> <li>✓ Vertical mounting.</li> </ul>
DSV...SOL	DSV...F	DSV...DGF
		
<ul style="list-style-type: none"> <li>✓ Female Thread</li> <li>✓ Spring-loaded, manually released, membrane-secured spring chamber. Inlet and outlet sides with inner thread, outlet side enlarged.</li> <li>✓ DN 15-25</li> <li>✓ Vertical mounting.</li> <li>✓ The valves are entirely made of metal; they can also be installed in high temperature or radiation environments.</li> <li>✓ All materials are suitable for temperatures up to 160 °C.</li> <li>✓ 2013 SOL type TÜV test certificate.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Female Thread</li> <li>✓ The temperature of the medium at atmospheric pressure must not reach boiling point.</li> <li>✓ Spring-loaded, manually released, membrane secured spring chamber.</li> <li>✓ Inlet and outlet sides with inner thread.</li> <li>✓ DN 15-25</li> <li>✓ Vertical mounting.</li> <li>✓ The valves are entirely made of metal, and can also be installed in high temperature or radiation environments.</li> <li>✓ All materials are suitable for temperatures up to 150°C.</li> <li>✓ TÜV - 293 F conformity.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Female Thread</li> <li>✓ Spring loaded, with manual blow-off lever.</li> <li>✓ DN 15-50</li> <li>✓ Vertical installation.</li> <li>✓ Spring chamber is membrane sealed and pressure balanced.</li> <li>✓ Female thread on both inlet and outlet sides, with the latter being larger.</li> </ul>

## D4 | Pressure reducing valves

### Pressure maintenance



With the IMI Pneumatex brand, we offer high quality components to protect installations from water hammer and pressure variations in general. IMI Pneumatex pressure reducer valves protect all the system components from overpressure that could cause structural damage and noise in the installation.




#### Your benefits

- ✓ Stabilisation of outlet pressure regardless of inlet pressure variations
- ✓ Compliant with DIN EN 1567, DIN 1988, DIN EN ISO 3822 and PED 2014/68/EU.
- ✓ In accordance with DM174, ACS, WRAS (up to 85°C), DIN-DVGW (up to 80°C) and TR ZU 032/2013 - TR ZU 010/2011
- ✓ No minimum  $\Delta p$  between outlet and inlet pressure
- ✓ Compatibility with compressed air and neutral gases (nitrogen, etc.)
- ✓ Absorption of water hammer.

### Key technical parameters

D4 Pressure reducing Valve	PN	Output pressure	DN	T <sub>max</sub>	Kvs (m³/h)								
					DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
<b>Pressoreduct</b>	16 bar (25 bar*)	1,5-7 bar	15-50	40°C	3,4	4,4	9,3	10,5	19,5	20,5			
<b>Pressoreduct HP threaded</b>	40 bar	1-8 bar	15-50	120°C	3	3,5	6,7	7,6	12,5	15			
<b>Pressoreduct HP flanged</b>	16 bar	1-8 bar	65-100	120°C							25	26	80

\* Available on request

Pressoreduct	Pressoreduct HP threaded	Pressoreduct HP flanged
		
<ul style="list-style-type: none"> <li>✓ Threaded pressure reducer with balanced seat</li> <li>✓ Setting scale for trouble-free commissioning</li> <li>✓ Integrated 160 µm filter easy to clean or replace</li> <li>✓ Transparent filter cup</li> <li>✓ Complete with male connections</li> <li>✓ Lead-free gunmetal</li> <li>✓ DN15-DN50</li> <li>✓ PN 16 (PN25 available on request)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Threaded pressure reducer with balanced seat</li> <li>✓ Complete with pressure gauge and integrated filter (DN15-DN32 0,60mm, DN40-DN50 0,76mm)</li> <li>✓ Complete with male connections</li> <li>✓ Valve insert available as spare part</li> <li>✓ DN15-DN50</li> <li>✓ PN 40</li> </ul>	<ul style="list-style-type: none"> <li>✓ Flanged pressure stabilising valve with balanced seat</li> <li>✓ Complete with pressure gauges and integrated filter 0,76mm</li> <li>✓ Valve insert available as spare part</li> <li>✓ DN65-DN100</li> <li>✓ PN 16</li> </ul>



Danger is **below the surface.**

Keep your HVAC system safe with  
**Zeparo Cyclone Max** and **Zeparo Aero**  
by **IMI Pneumatex**.

- **Optimize energy efficiency:** from the third year, you can save from 3% to 7% on primary energy consumption\*.
- **Superior Separation Technology:** the only cyclonic technology that reliably eliminates up to 95% of dirt in a single cycle, depending on particle sizes.
- **Enhanced flexibility:** separating dirt particles at all water speeds and pipe sizes. It can be installed both vertically and horizontally and enables easy retrofitting thanks to its 1:1 width with other separators on the market.
- **Premium components:** effective in separating magnetic particles of all sizes, even those 5µm and smaller, thanks to the most powerful magnet available in the dirt separators market.
- **Effortless Maintenance:** easy-to-clean designs and userfriendly features make maintaining your HVAC system hassle-free.



**Remove air**  
Zeparo Aero



**Remove dirt**  
Zeparo Cyclone Max



Introduction

Why is Water Quality important?

Venting and degassing systems are essential components of a modern installation.

Only thorough pre-venting before startup and smoothly working operational degassing guarantee stable working conditions. This holds particularly true for long-span branched systems with horizontal heating pipes and cooling ceilings.

Appropriate system components must be carefully selected based on the operation principles and performance characteristics of air vents, dirt & microbubble separators and degassing units.



Damaged installation components due to water contamination



Zeparo Cyclone



Zeparo ZT turnable





Zeparo Cyclone Max



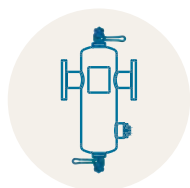
Vento Connect

Medium quality

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E2		Water refilling and treatment systems..... 61

# E1 | Dirt & microbubble separators and degassing units

## Medium quality



For the separation of gas and sludge, the Cyclonic technology offers the highest efficiency. Combined with vacuum generated in a single cycle, this enables our Vento products to remove gasses efficient and quick from system media - a feature called VacuCyclonSplit.

### Your benefits

- ✓ Efficient cyclonic separation of sludge and gas
- ✓ Separators with approval for mounting in various positions
- ✓ Vacuum Degassing units with Modbus and Ethernet communication as standard

### Key technical parameters

E1 Automatic air vents	PN class bar	T <sub>max.</sub> of media °C	Size DN
Zeparo ZUT	10	110	15, 20, 25
Zeparo ZUTS	10	160	15

E1 Zeparo - Separators	PN class bar	T <sub>max.</sub> of fluid °C	qN (m³/h)														
			20	25	32	40	50	65	80	100	125	150	200	250	300	400	500
Zeparo ZUV/ZUVS	10	110 / 160	1.3	2.1	3.7	5.0											
Zeparo ZUM / ZUKM / ZUCM	10	110	1.3	2.1	3.7	5.0											
Zeparo Cyclone	10	120	1.18	1.47	3.18	4.75	6.88										
Zeparo Turnable	10	110	1.15	1.8	3.0												
Zeparo Cyclone Max	10	110 / 180					6	11	18	33	58	93	184	336	535		
Zeparo Aero	10	110					6	11	18	33	58	93	184	336	535		
Ferro-Cleaner	10/16	110			5.5			21	28	48	72	102	180	287	410	645	1010

E1 Vento - vacuum degassing units		PN class bar	T <sub>min/max</sub> of fluid °C	Power supply U, P V, kW	Dimensions TecBox W x H x D (mm)	TecBox weight kg	dpu bar	Mounting type
Simply Vento	V 2.1 S	10	+0 / +90	230; 0,75	520 x 575 x 350	30	0,5-2,5	standing/wall hanging
Vento Compact	V 2.1 FE	10	+0 / +90	230; 0,75	520 x 575 x 350	32	0,5-2,5	standing/wall hanging
Vento V Connect	V 4.1 E (C)	10	+0 / +90	230; 0,75	500 x 920 x 530	40 - 41	1,0 - 2,5	standing
	V 6.1 E (C)	10		230; 1,1	500 x 920 x 530	42 - 43	1,5 - 3,5	
	V 8.1 E (C)	10		230; 1,4	500 x 920 x 530	43 - 44	2,0 - 4,5	
	V 10.1 E (C)	10		230; 1,7	500 x 1300 x 530	57 - 58	3,5 - 6,5	
	V 14.1 E (C)	13		230; 1,7	500 x 1300 x 530	67 - 68	5,5 - 10,0	
Vento VI Connect	V 2.1 S	25	+0 / +90	3x400V; 2,6	570 x 1086 x 601	78 - 86	6,5 - 15,5	standing
	V 2.1 FE			3x400V; 3,4	570 x 1258 x 601	85 - 94	10,5 - 20,5	







## E1 | Dirt & microbubble separators and degassing units




## Pressure maintenance

## Applications





Static Pressure 0 bar ..... 20 bar



## E1 | Dirt & microbubble separators and degassing units

Zeparo ZUT, ZUTS	Zeparo ZUV, ZUVS	Zeparo ZUM	Zeparo ZUKM
			
<ul style="list-style-type: none"> <li>✓ Large anti-leakage float chamber: Leakfree function</li> <li>✓ Ideal for installation on storage tanks and buffers</li> <li>✓ Large connection diameters</li> </ul>	<ul style="list-style-type: none"> <li>✓ Helistill cartridge for effective separation and removal of air</li> <li>✓ Equipped with ZUT air vent with Leakfree function</li> <li>✓ Available in DN 20-40 with female threads</li> </ul>	<ul style="list-style-type: none"> <li>✓ Helistill cartridge for best separation performance of sludge</li> <li>✓ Strong magnet rod in pocket tube for magnetite separation</li> <li>✓ No risk of clogging. Reduces maintenance and associated costs over system lifetime</li> <li>✓ Easy cleaning. Dirt can be flushed out under operation</li> </ul>	<ul style="list-style-type: none"> <li>✓ Combined air and dirt separator with magnet</li> <li>✓ Combines the features of ZUV and ZUM</li> </ul>

Zeparo ZUCM Collect	Zeparo Cyclone	Zeparo ZTVI
		
<ul style="list-style-type: none"> <li>✓ Combined air and dirt separator and low loss header in one product.</li> <li>✓ Combines the features of ZUV and ZUM</li> </ul>	<ul style="list-style-type: none"> <li>✓ Cyclonic separation technology</li> <li>✓ Low flow resistance thanks to unique solutions</li> <li>✓ Separate sludge chamber protected against secondary entrainment of particles</li> <li>✓ Corrosion-resistant material: Body -&gt; brass, insert Cyclone -&gt;PPS Ryton</li> <li>✓ No risk of clogging. Reduces maintenance and associated costs over system lifetime</li> <li>✓ Easy cleaning. Dirt can easy be flushed out under operation</li> </ul>	<ul style="list-style-type: none"> <li>✓ The separation chamber can be rotated 360 degrees, allowing the Zeparo ZTVI to be mounted in every position.</li> <li>✓ Separator for microbubbles, Vent version</li> <li>✓ Helistill cartridge for effective separation and removal of air</li> <li>✓ Leakfree air vent</li> </ul>

## E1 | Dirt & microbubble separators and degassing units

Zeparo ZTMI	Zeparo ZTKMI	Ferro-Cleaner	Zeparo Cyclone Max
			
<ul style="list-style-type: none"> <li>✓ The separation chamber can be rotated 360 degrees, allowing the Zeparo ZTMI to be mounted in every position. Separator for sludge particles, Dirt version</li> <li>✓ Helistill cartridge for best separation performance of sludge</li> <li>✓ Easy cleaning. Drain can be removed without pressure, allowing for easy cleaning of the separator.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The separation chamber can be rotated 360 degrees, allowing the Zeparo ZTKMI to be mounted in every position.</li> <li>✓ Separator for microbubbles and sludge particles, Kombi version</li> <li>✓ Combines the features of ZTVI and ZTMI</li> </ul>	<ul style="list-style-type: none"> <li>✓ Magnetic flux filter system that system captures the finest magnetic particles</li> <li>✓ Can be installed in any orientation</li> <li>✓ Compact dimensions</li> <li>✓ No risk of clogging. Reduces maintenance and associated costs over system lifetime</li> </ul>	<ul style="list-style-type: none"> <li>✓ Cyclonic separation technology</li> <li>✓ Separate sludge chamber protected against secondary entrainment of particles</li> <li>✓ Can be mounted on horizontal and vertical pipe</li> <li>✓ Air extraction function after installation of the ZUTX air vent</li> <li>✓ No risk of clogging. Reduces maintenance and associated costs over system lifetime</li> <li>✓ Optional magnet accessory optimizes separation efficiency for sludge and even for finer magnetic particles.</li> <li>✓ Easy cleaning. Dirt can easy be flushed out under operation</li> </ul>

Zeparo Aero	Simply Vento	Vento V, VI, Vento Compact
		
<ul style="list-style-type: none"> <li>✓ Helicoidal microbubble separation</li> <li>✓ Separation based on particle density difference and stream calming</li> <li>✓ Low flow resistance</li> <li>✓ No risk of clogging. Reduces maintenance and associated costs over system lifetime</li> <li>✓ Optional magnet accessory optimizes separation efficiency for sludge and even for finer magnetic particles.</li> <li>✓ Easy cleaning. Dirt can easy be flushed out under operation</li> </ul>	<ul style="list-style-type: none"> <li>✓ Vacuum degassing with Cyclonic technology - VacuCyclonSplit</li> <li>✓ BrainCube Connect controller</li> <li>✓ Modbus and Ethernet communication as standard</li> <li>✓ Working pressure range from 0,5-2,5 bar</li> <li>✓ Compact design for floor and wall hanging installation</li> </ul>	<ul style="list-style-type: none"> <li>✓ Vacuum degassing with Cyclonic technology - VacuCyclonSplit</li> <li>✓ BrainCube Connect controller</li> <li>✓ Modbus and Ethernet communication as standard</li> <li>✓ ECO degassing function (gas presence monitoring)</li> <li>✓ Refilling module as standard</li> <li>✓ Available in pressure ranges from 0,5 to 20 bar</li> </ul>

[illegible]

## E2 | Water make-up and treatment systems

Pleno PX	Pleno PIX Connect	Pleno PI 9F Connect
		
<ul style="list-style-type: none"> <li>✓ Hydraulic unit with water meter and solenoid valve</li> <li>✓ Water make-up without pumps</li> <li>✓ Wall mounting</li> </ul>	<ul style="list-style-type: none"> <li>✓ Water make-up without pumps</li> <li>✓ Control unit TecBox - BrainCube Connect to control water make-up and Pleno Refill units</li> <li>✓ Wall mounting</li> <li>✓ Hydraulic unit with water meter and solenoid valve</li> </ul>	<ul style="list-style-type: none"> <li>✓ Water make-up with pump</li> <li>✓ Control unit TecBox - BrainCube Connect to control water make-up and Pleno Refill units</li> <li>✓ Integrated wall mounting bracket.</li> </ul>
Pleno PI 9.1, 9.2 Connect	Pleno Refill 6000 - 12000, Pleno Refill Demin 2000 - 4000	Pleno Refill 16000 - 48000, Pleno Refill Demin 13500 - 18000
		
<ul style="list-style-type: none"> <li>✓ Water make-up with pumps</li> <li>✓ Control unit TecBox - BrainCube Connect to control water make-up and Pleno Refill units</li> <li>✓ Standing mounting type</li> </ul>	<ul style="list-style-type: none"> <li>✓ Decalcification or demineralisation cartridge</li> <li>✓ Mesh filter</li> <li>✓ Wall mounting</li> <li>✓ Compatible with Pleno PX, Pleno PIX</li> </ul>	<ul style="list-style-type: none"> <li>✓ Decalcification or demineralisation resin</li> <li>✓ Mesh filter 25 µm</li> <li>✓ Wall mounting</li> <li>✓ Compatible with Vento Connect, Transfero Connect</li> </ul>



I am looking for smart, accurate and insightful solutions.

**Need smart, accurate and insightful?  
– our measuring instruments are your solution.**

TA-SCOPE is now updated with new fine-tuned functionalities and smart technology to make hydronic balancing easier, faster and more accurate.

Breakthrough  
engineering for  
a better world

# Introduction

## Your profesional insurance

Describing the real behavior of a system or turning unexpected operating problems into figures is not a simple task. It requires the right smart tools.

Working together with you on many projects during the year is the best way to fully understand your needs.

Hydronic tools were specially tailored for you to simplify your job and above all to save your time and money.

If you run into trouble, you don't have to deal with it alone. You can always rely on our technical support, no matter where you are or how large your project is.



**Until you can measure something and express it in numbers, you are only beginning to understand.**

*- Lord Kelvin*



TA-SCOPE with DpS-Visio



TA Link

## Hydronic tools

F1		Balancing instruments .....65
F2		Software.....66



## F1 | Balancing instruments

### Hydronic tools



#### TA-SCOPE with DpS-Visio



- ✓ TA-SCOPE and DpS-Visio: Advanced measuring instruments for optimal hydronic balancing
- ✓ DpS-Visio: a compact and light Dp sensor
- ✓ Safer, easier and more accurate commissioning due to automatic electronic flushing and calibration
- ✓ Direct reading of measurement data thanks to OLED display on DpS-Visio
- ✓ Covers larger size installations up to 500 kPa. The high pressure (HP) version allows going up to 1000 kPa
- ✓ TA-Wireless – one person with one instrument can accurately balance complex systems with only one valve adjustment per valve necessary
- ✓ TA-Diagnostic – detects system errors, allowing for easy maintenance, troubleshooting and balancing calculations in existing buildings
- ✓ Self-sealing needles with integrated temperature sensor – designed to make measurement safer and more accurate
- ✓ System performance is improved, with more precise measurement and easier heating/cooling power logging
- ✓ Precise diagnostics with the help of stand-alone data-logging for up to 100 days on battery power



Automatic electronic  
flushing and calibration



Direct reading of data  
through an OLED display



One-person balancing  
cuts time, effort and cost

## F2 | Software

### Hydronic tools



#### HySelect



HySelect is computer software that:

- ✓ selects valves and determines the right valve size and setting
- ✓ helps to choose the correct type of actuator and available accessories
- ✓ calculates heating and cooling systems, also with diversity factors
- ✓ converts different units
- ✓ communicates with balancing instrument TA-SCOPE



#### HyTools



HyTools is an app packed with hydronic calculation tools. You can have all our products, hydronic calculators and unit conversion tools on your iPhone, iPad, iPod Touch\* or Android smartphone:

The HyTools functions include:

- ✓ Hydronic calculator:  $q$ -Kv-Dp; P-q-DT; q-Valve-Dp
- ✓ Zeparo Dp calculation
- ✓ Valve sizing and presetting
- ✓ Radiator power estimation (steel and cast iron)
- ✓ Sizing and presetting of thermostatic valves, balancing valves, Dp controllers and more
- ✓ Pipe sizing
- ✓ Unit conversion
- ✓ Run-time localisation selection (24 regions)
- ✓ Run-time language selection of 16 languages

Download HyTools now from the Apple\* App Store or Google Play. With HyTools, everything you need for complex hydronic calculation is just one touch away.



## F2 | Software

### IMI Hecos



IMI Hecos is a fully graphical computer program that helps you design waterborne heating and cooling systems in the technically correct, most economical and efficient way.

It makes it easy to calculate all the parts of hydronic loops including terminal units, valves, pumps and pipes.

You just need to describe the building, rooms and temperatures and define what the system should look like.

In return you can get the required pump head, detailed lists of optimally sized components, water volume of the system for further pressurisation unit calculation, full system specification and most importantly, your full plant's scheme to print out or export into CAD program.

- ✓ Easy to modify the calculation parameters and retrieve new results.
- ✓ Interactive communication between the drawing and result sheets.
- ✓ Availability of software application for one pipe radiator systems as well as a reverse return system.
- ✓ Joint drawing for the software showing the heating and the cooling network (e.g. 4-pipe fan coil system).
- ✓ Glycol correction.



### HyTune



Application for smartphones for digital configuration of TA-Slider actuators and TA-Smart:

- ✓ Easy to use
- ✓ Comfortable set up of TA-Sliders even in poorly lit environments
- ✓ Added protection against human error
- ✓ Access list of up to 10 last errors and operating statistics































Take control of where  
your energy flows















## Introduction

# Applications overview

### Balancing and control systems

Type	Solutions	Energy efficiency	Investment
 	Variable flow Pressure-independent balancing and control valves	low  high	low  high
 	Variable flow Combined balancing and control valves	low  high	low  high
 	Variable flow Balancing and standard control valves	low  high	low  high
	Variable flow Thermostatic radiator valves with pre-setting	low  high	low  high
	Variable flow AFC technology (Automatic Flow Control)	low  high	low  high
 	Constant flow Balancing and standard control valves	low  high	low  high
   	Variable flow Balancing and control valves with flow measuring capabilities	low  high	low  high

### Special solutions

Type	Solutions	Energy efficiency	Investment
	Variable flow Auto-adapting variable flow decoupling circuit	low  high	low  high
	Variable flow Zone temperature control (e.g. for use in apartments)	low  high	low  high
	Variable flow Four-pipe heating and cooling system	low  high	low  high
	Variable flow Computer room air handling (CRAH) unit	low  high	low  high

Solution examples show the most used applications in heating and cooling systems.

There are a large number of variants, combinations and unique solutions that are beyond the scope of the contents of this brochure.

Every system has its own specifics with regard to the source of heat or cold, type of control, investment limits etc.

Please do not hesitate to ask our hydronic specialists for help to choose the best solution for your project.

Your success is the greatest reward of the work we do every day.

## G1 | Heating system – variable flow

### Pressure-independent balancing and control valves

#### Energy efficiency

- ✓ Ensuring stable and precise temperature control in all operating conditions.
- ✓ Pressure-independent control with high valve authority for modulating/three-point control.
- ✓ Low energy consumption when pumping (no overflow).
- ✓ Low required differential pressure on IMI TA valves minimizes pump head.
- ✓ Optimisation of pump head possible thanks to unique valve diagnostic features.
- ✓ Lower return temperature increases the energy efficiency of heat pumps and condensing boilers.

#### Investment

- ✓ Solution with minimum number of valves installed.
- ✓ Use cheaper actuators (low required closing pressure).
- ✓ The extensive measurement and diagnostic capabilities of the IMI TA valves allow for complete system diagnostics without the need for additional equipment investments in other devices.
- ✓ Quick return on investment (highest quality, long service life, significant energy savings).
- ✓ High flexibility. Possibility of phased start-up or expansion without rebalancing of an already functioning part.







#### Sizing

- ✓ Simple matching of valves based on nominal flows.
- ✓ Selection of flow-based settings without the need for complete hydraulic calculations.
- ✓ No need to check the authority of the valves.
- ✓ Easy match of the correct actuator.
- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Auditor.

#### Commissioning

- ✓ Preset the required flow direct at the PIBCV, designed flow = real flow.
- ✓ Direct measurement of the actual flow and available differential pressure helps to set the minimum required pump head to achieve maximum energy efficiency.
- ✓ The extensive diagnostic capabilities of IMI TA valves in combination with TA-SCOPE make it easy to identify and solve any possible system faults.

#### Quick links

A2		<b>PIBCV</b>	Pressure independent balancing and control valves. ....	13
C1		<b>BV</b>	Balancing valves .....	32
D1		<b>EV</b>	Expansion vessels. ....	44
D3		<b>PSV</b>	Safety valves. ....	52
E1		<b>Zeparo Cyclone Max</b>	Dirt & Gas separators and Cyclonic vacuum degassing units .....	57
E1		<b>VENTO</b>	Cyclonic vacuum degasser .....	57

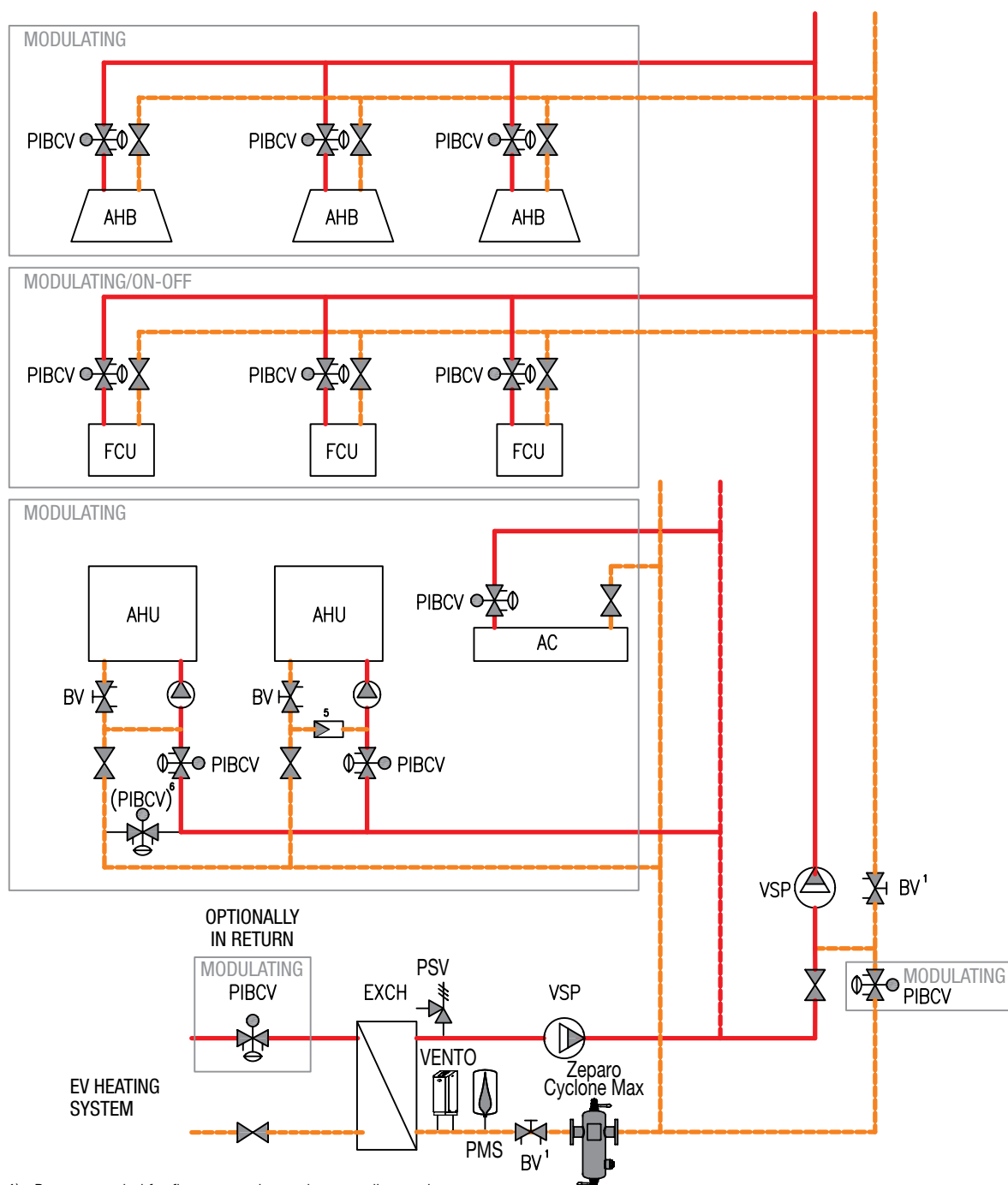


# G1 | Heating system – variable flow

Energy efficiency Low ☐ ☐ ☐ ☒ High

Investment Low ☐ ☐ ☒ ☐ High

**Recommended**



1) Recommended for flow measuring and system diagnostics

5) Check valve is recommended to protect AHU against freezing up if secondary pump fails

6) Optional/recommended for obtaining medium circulation in the system. Without or with an actuator that is interlocked in an inverted way with the main panel actuator

## Legend:

**AC** – Air curtain

**AHB** – Active heating beam

**AHU** – Air handling unit

**BV** – Balancing valve

**EXCH** – Heat exchanger

**FCU** – Fan-coil

**PIBCV** – Pressure independent balancing and control valve

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**VENTO** – Cyclonic vacuum degasser (not necessary for Transfero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

**Zeparo Cyclone Max** – Dirt & magnetite separator

## G2 | Heating system – variable flow

### Balancing, control and actuation

#### Energy efficiency

- ✓ Ensuring stable and precise temperature control in all operating conditions.
- ✓ Differential pressure regulators on branch connections stabilise the differential pressure to enable smooth valve control due to maintaining a good valve authority.
- ✓ Low energy consumption when pumping.
- ✓ Optimisation of pump head possible thanks to unique valve diagnostic features.
- ✓ Lower return temperature increases the energy efficiency of heat pumps and condensing boilers.
- ✓ Under certain conditions, on/off adjustment can cause overflow under partial load. This phenomenon can be limited already in the design phase.

#### Investment

- ✓ Recommended solution with a good balance between energy efficiency and investment.
- ✓ Depending on the system structure, this solution is usually cheaper compared to G1, despite the need for valves at the branches.
- ✓ Extraordinary measurement and diagnostic capabilities of the IMI TA valves allow for complete system diagnostics without the need for additional equipment investments in other devices.
- ✓ Quick return on investment (usually cost effective solutions, top quality products, long service life).
- ✓ High flexibility. Possibility of phased start-up or expansion without rebalancing of an already functioning part.








#### Sizing

- ✓ Simple valve matching based on nominal flow and minimum pressure drop (Typically 1/3 of the total pressure drop in the stabilized branch) for the correct level of authority.
- ✓ Need to check the closing pressure of the actuators.
- ✓ Recommended pressure independent balancing and control valves for single emitters connected directly to the main circuit to ensure proper authority and limit overflows.
- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Auditor.

#### Commissioning

- ✓ Preset of the valves based on hydraulic calculations with the option of final commissioning on site.
- ✓ Direct measurement of the actual flow and available differential pressure helps to set the minimum required head of the pump.
- ✓ Flow measurement on single control valves at the branch possible but not required.
- ✓ The extensive diagnostic capabilities of IMI TA valves in combination with TA-SCOPE make it easy to identify and solve any possible system faults.

#### Quick links

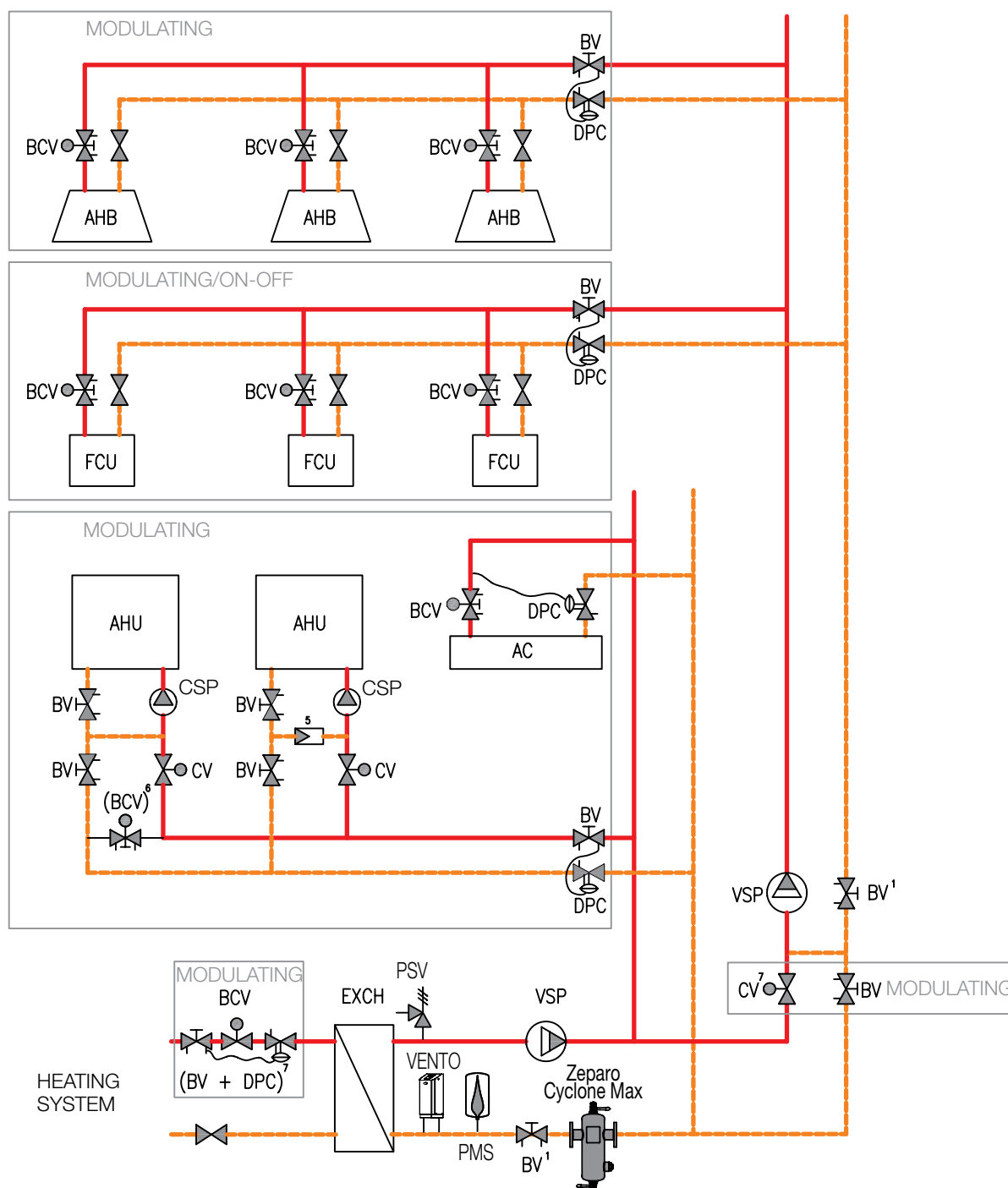
<b>A1</b>		<b>TA-SMART</b>	Smart valve.....	9
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<b>C1</b>		<b>BV</b>	Balancing valves.....	32
<b>C4</b>		<b>DPC</b>	Differential pressure controllers.....	37
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<b>E1</b>		<b>Zeparo Cyclone Max</b>	Dirt & Gas separators and Cyclonic vacuum degassing units.....	57

## G2a | Heating system – variable flow

Energy efficiency Low ☐ ☐ ☒ ☐ ☐ High

Investment Low ☐ ☒ ☐ ☐ ☐ High

# Recommended



1) Recommended for flow measuring and system diagnostics

5) Check valve is recommended to protect AHU against freezing up if secondary pump fails

6) Optional/recommended for obtaining medium circulation in the system. Without or with an actuator that is interlocked in an inverted way with the main panel actuator

7) Dp control is recommended if the authority of the control valve may drop below 0.25 during system operation due to significant variations in differential pressure.

### Legend:

**AC** – Air curtain

**AHB** – Active heating beam

**AHU** – Air handling unit

**BCV** – Combined balancing and control valve

**BV** – Balancing valve

**DPC** – Differential pressure controller

**FCU** – Fan-coil

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**VENTO** – Cyclonic vacuum degasser (not necessary for Transero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

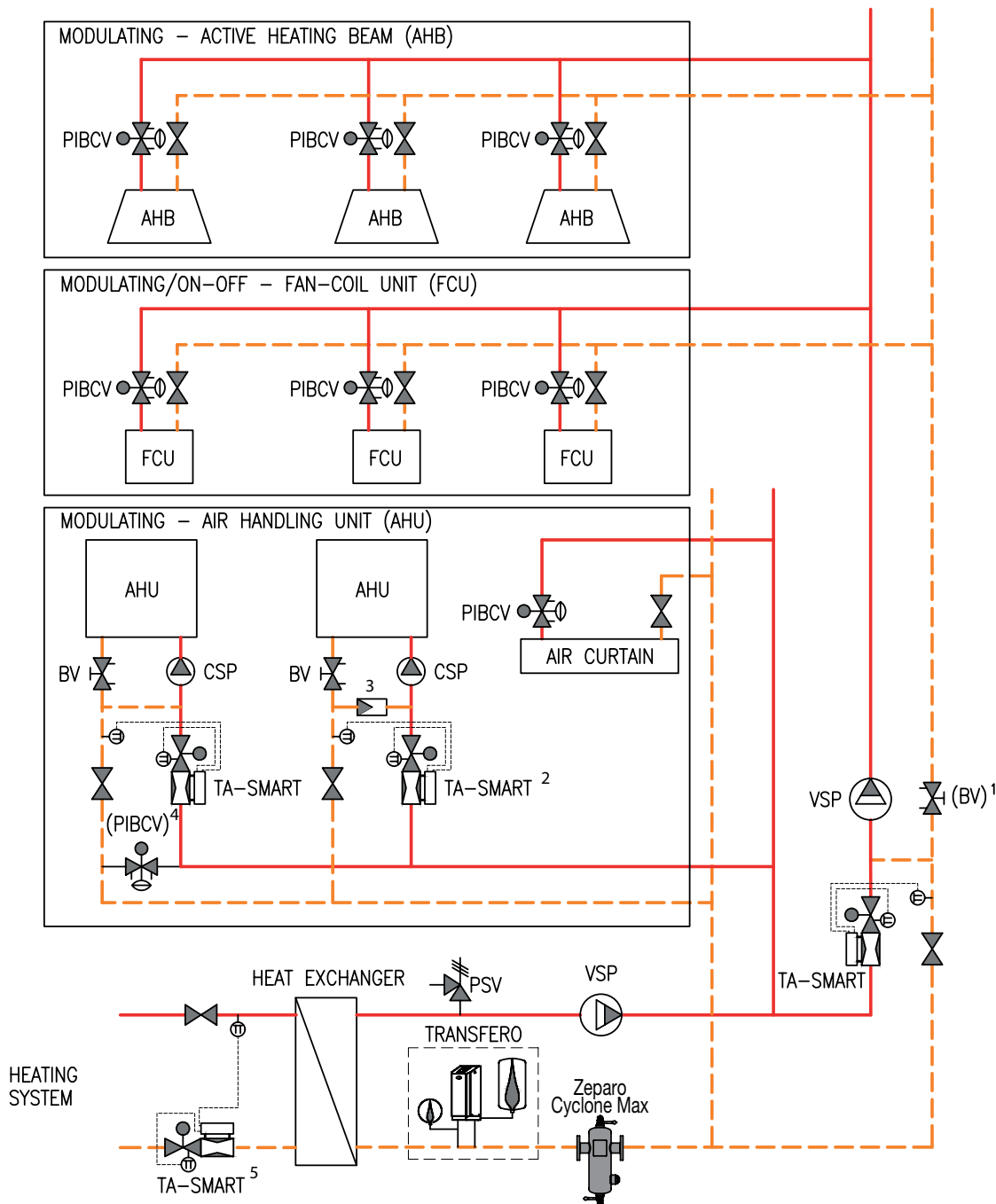
**Zeparo Cyclone Max** – Dirt & magnetite separator

## G2b | Heating system – variable flow

Energy efficiency Low ☐ ☐ ☐ ☒ High

Investment Low ☐ ☐ ☒ ☐ High

**Recommended**



1) Recommended for flow and energy measuring and system diagnostics close to TA-Smart

2) Recommended for AHU energy consumption analysis and optimization

3) Check valve is recommended to protect AHU against freezing up if secondary pump fails

4) Optional/recommended for obtaining medium circulation in the system. Without or with an actuator that is interlocked in an inverted way with the main panel actuator

5) Recommended for Heat exchanger energy analysis on the primary side understanding the energy consumption on the secondary side

### Legend:

**AHB** – Active heating beam

**AHU** – Air handling unit

**BV** – Balancing valve

**CSP** – Constant speed pump

**FCU** – Fan-coil

**PIBCV** – Pressure independent balancing and control valve

**PSV** – Safety valve



**TA-SMART** – Balancing and control valves with flow measuring capabilities



**VSP** – Variable speed pump control

**Zeparo Cyclone Max** – Dirt & magnetite separator

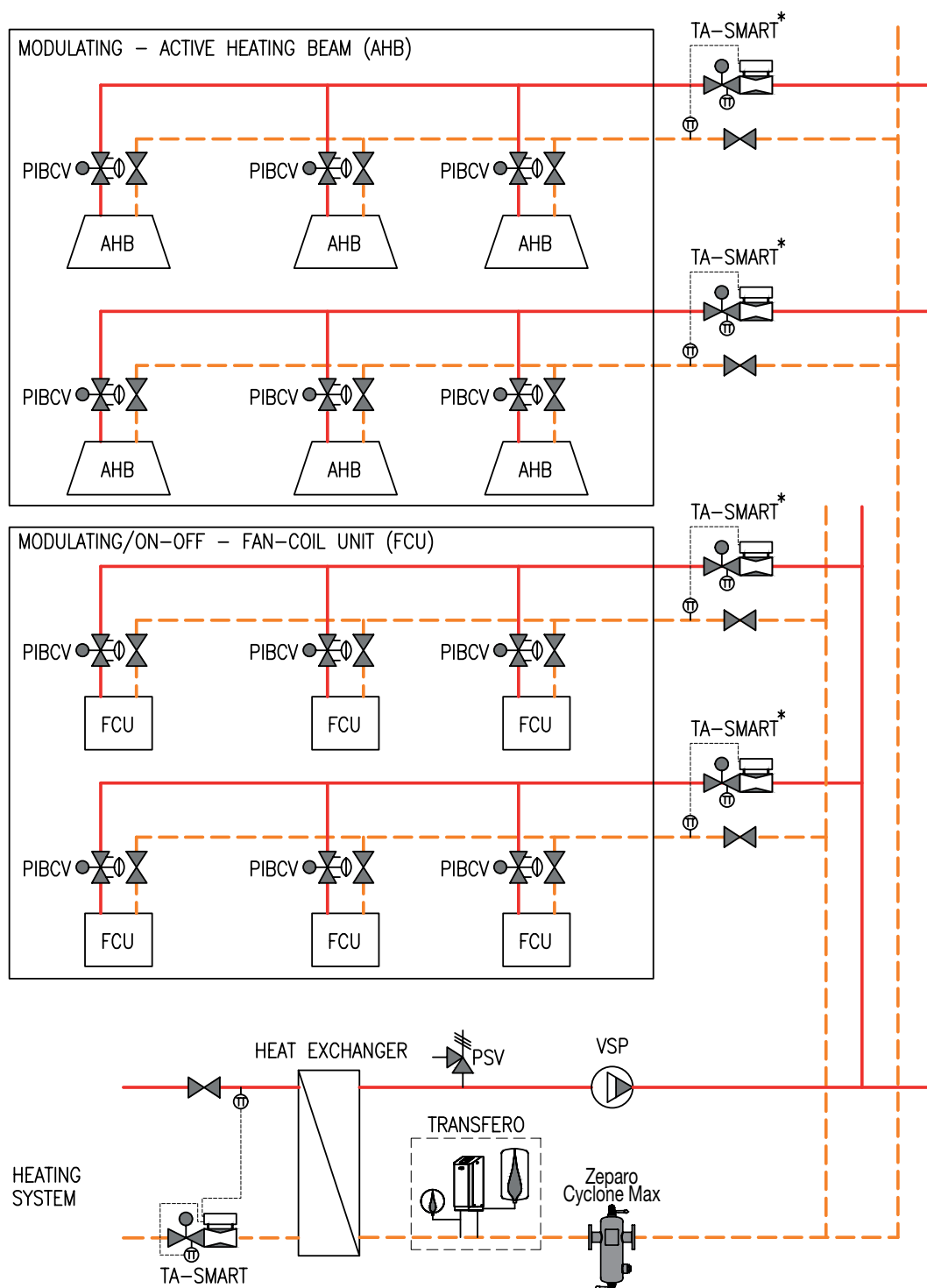
**TRANSFERO** – Pump based pressurization unit with water make-up and vacuum degassing

## G2c | Heating system – variable flow

Energy efficiency Low  High 

Investment Low  High 

# Recommended



\* Optional use of TA-SMART providing additional isolation of a zone and providing metering opportunities for power and flow.

### Legend:

**AHB** – Active heating beam

**BV** – Balancing valve

**CSP** – Constant speed pump

**FCU** – Fan-coil

**Zeparo Cyclone Max** – Dirt & magnetite separator

**PIBCV** – Pressure independent balancing and control valve

**PSV** – Safety valve

**TA-SMART** – Balancing and control valves with flow measuring capabilities

**TRANSFERO** – Pump based pressurization unit with water make-up and vacuum degassing

**VSP** – Variable speed pump control

## G3 | Heating system – variable flow

### Balancing and standard control valves

#### Energy efficiency

- ✓ Stable and precise temperature control in all operating conditions is guaranteed, if control valves, continuous key circuit parameters monitoring, driving fact-driven decisions and differential pressure controllers are properly matched.
- ✓ In the version with modulating control, the high authority of the valves is ensured by the differential pressure controllers, which stabilise the differential pressure.
- ✓ Low energy consumption when pumping.
- ✓ Reduction of heat loss in return pipes.

#### Investment

- ✓ Higher investment costs compared to G2 based on Balancing, control and actuation.
- ✓ High flow rates determine the large diameter of the Dp controllers (the use of TA-PILOT-R with its linear design reduces the diameter and thus the investment costs).
- ✓ Extraordinary measurement and diagnostic capabilities of the IMI TA valves allow for complete system diagnostics without the need for additional investments in other devices.
- ✓ High flexibility. Possibility of phased start-up or expansion without the need of rebalancing the already functioning part.
- ✓ Up to 5-year warranty\* on newest technology (TA-Smart).

#### Sizing








- ✓ Simple valve matching based on nominal flow and minimum pressure drop (1/3 of the total pressure drop in the stabilized cycle) for the correct authority level.
- ✓ Need to check the closing pressure of the actuators.
- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Auditor.

#### Commissioning

- ✓ Preset of the valves based on hydraulic calculations with the option of gentle correction on site.
- ✓ The Dp controllers should be set according to the actual pressure drops on the branch.
- ✓ Use precise IMI TA balancing methods to adjust flows while optimizing the pump's operating point.
- ✓ The extensive diagnostic capabilities of IMI TA valves in combination with TA-SCOPE make it easy to identify and resolve any possible system failure.
- ✓ Remote access to measured flows of different TA-Smart.

\* Conditions apply. For more information please contact your local IMI representative.

### Quick links

A1		TA-SMART	Smart valve.....	9
A5		CV	Standard control valves.....	24
C1		BV	Balancing valves.....	32
C4		DPC	Differential pressure controllers.....	37
D1		EV	Expansion vessels.....	44
D3		PSV	Safety valves.....	52
E1		Zeparo Cyclone Max	Dirt & Gas separators and Cyclonic vacuum degassing units.....	57

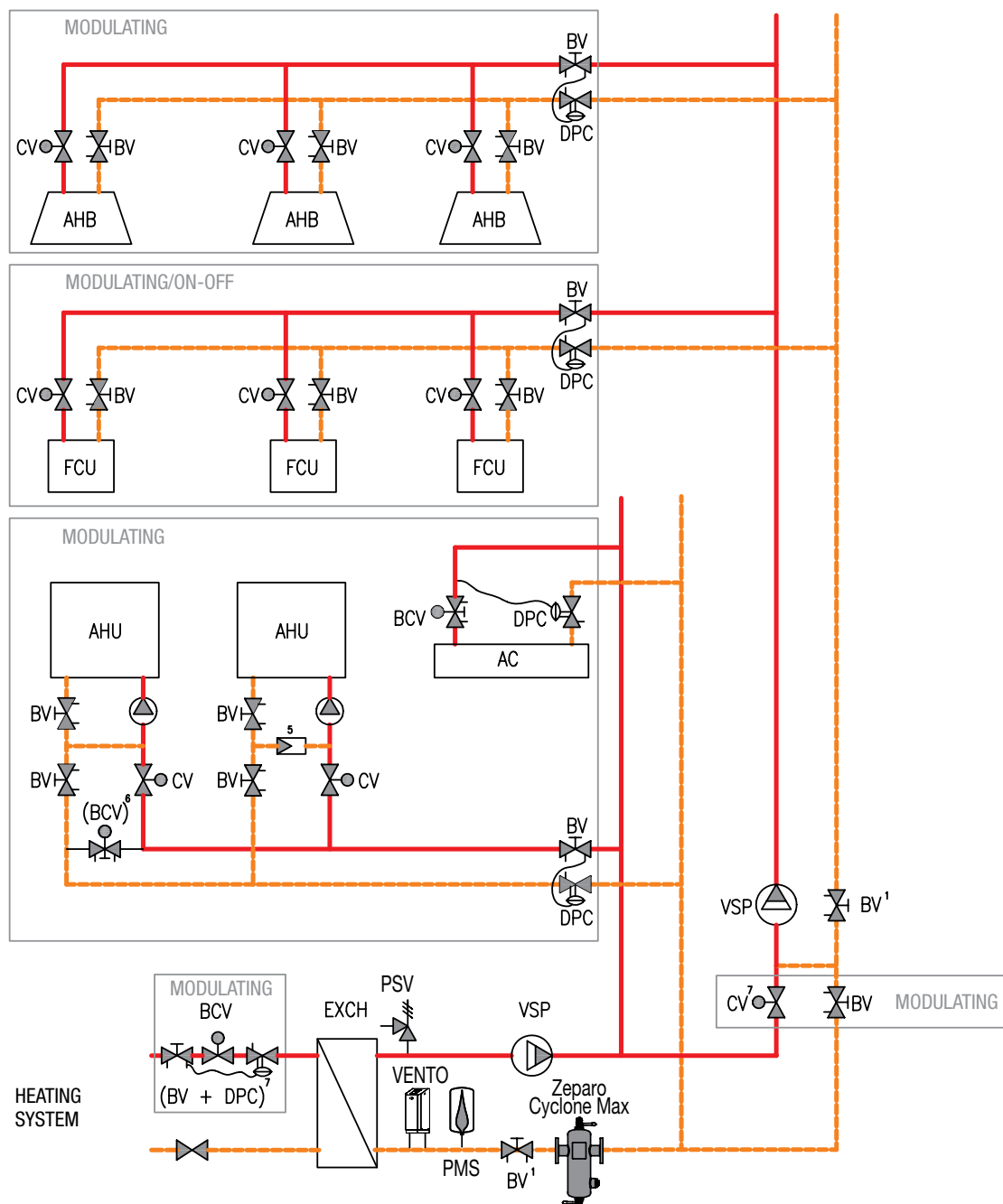


## G3a | Heating system – variable flow

Energy efficiency Low ☐ ☒ ☐ High

Investment Low ☐ ☒ ☐ High

# Acceptable



1) Recommended for flow measuring and system diagnostics

5) Check valve is recommended to protect AHU against freezing up if secondary pump fails

6) Optional/recommended for obtaining medium circulation in the system. Without or with an actuator that is interlocked in an inverted way with the main panel actuator

7) Dp control is recommended if the authority of the control valve may drop below 0.25 during system operation due to significant variations in differential pressure.

### Legend:

**AC** – Air curtain

**AHB** – Active heating beam

**AHU** – Air handling unit

**BCV** – Combined balancing and control valve

**BV** – Balancing valve

**CV** – 2-way control valve

**DPC** – Differential pressure controller

**EXCH** – Heat exchanger

**FCU** – Fan-coil

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**VENTO** – Cyclonic vacuum degasser (not necessary for Transfero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

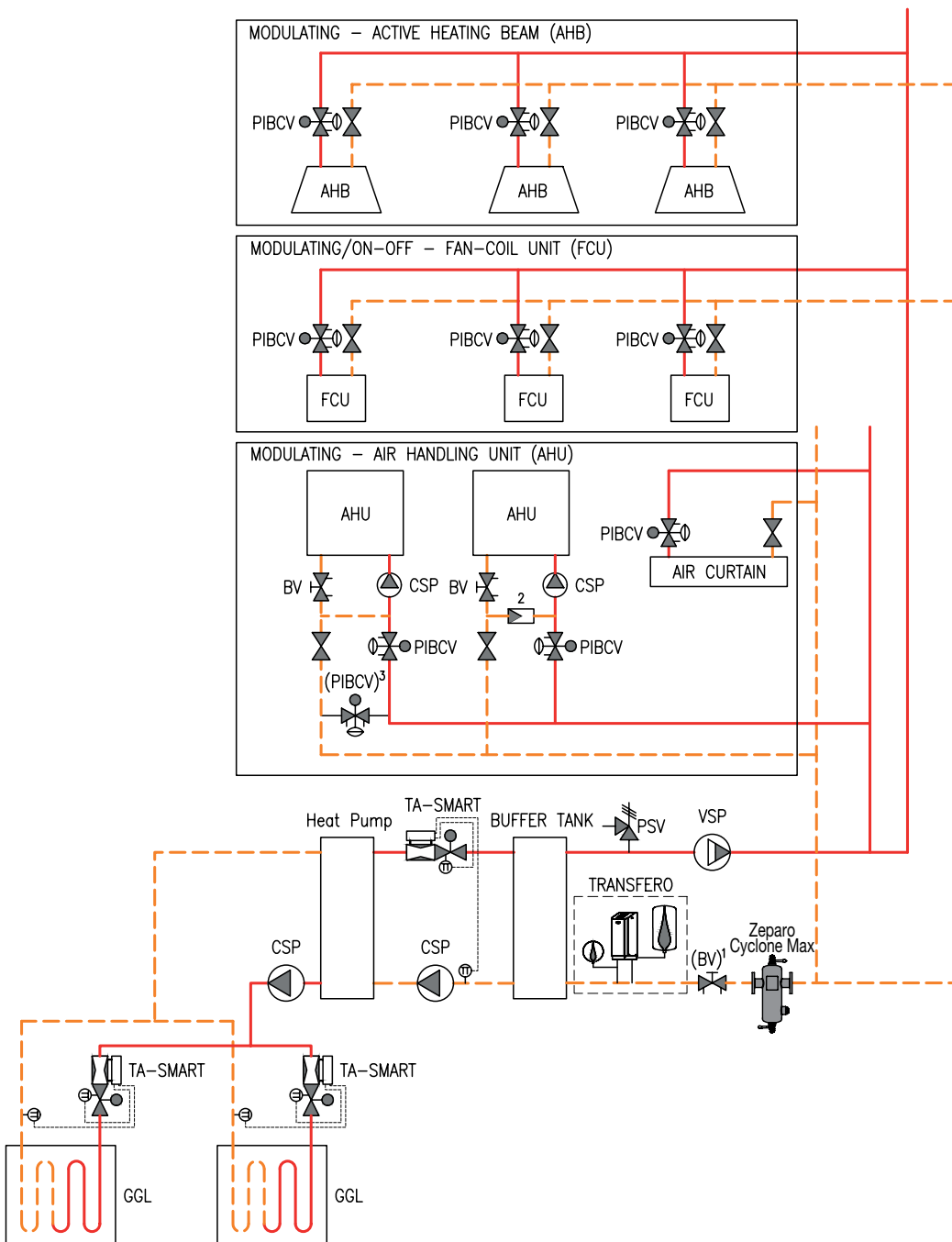
**Zeparo Cyclone Max** – Dirt & magnetite separator

## G3b | Heating system – variable flow

Energy efficiency Low ☐ ☐ ☐ ☐ ☒ High

Investment Low ☐ ☐ ☐ ☒ ☐ High

**Recommended**



1) Optional/recommended for flow measuring and system diagnostics. Optional/recommended for flow measuring and system diagnostics.

2) Check valve is recommended to protect AHU against freezing up if Check valve is recommended to protect AHU against freezing up if secondary pump fails.

3) Optional/recommended for maintaining hot water in the supply pipe. Optional/recommended for maintaining hot water in the supply pipe. (without or with actuator that opening when AHU control valve is fully closed).

### Legend:

**AHB** – Active heating beam

**AHU** – Air handling unit

**BV** – Balancing valve

**CSP** – Constant speed pump

**FCU** – Fan-coil

**GGL** – Geothermal ground loop

**PIBCV** – Pressure independent balancing and control valve

**PSV** – Safety valve

**TA-SMART** – Balancing and control valves with flow measuring capabilities

**TRANSFERO** – Pump based pressurization unit with water make-up and vacuum degassing

**VSP** – Variable speed pump control

**Zeparo Cyclone Max** – Dirt & magnetite separator

# TA-Smart



TA-Smart is a balancing and control valve designed for heating and cooling applications **constructed around 3 key principles:**



## Control

Versatility of valve control modes operating according to flow, power and valve position with outstanding controllability, even in part-load system conditions. A  $\Delta T$  limitation function can be added to any of the control modes.



## Measurement

Continuous measurement of flow, valve position, return/supply temperatures, temperature difference, power and energy.



## Communication

Communicates and stores: BLE, bus, Analog, Cloud. Fully digitally configurable: Hytune mobile app, web app.

## G4 | Heating system – variable flow

### Thermostatic radiator valves with pre-setting

#### Energy efficiency

- ✓ High level of thermal comfort and energy saving.
- ✓ Variable speed pump control and Dp controllers for stable differential pressure conditions on thermostatic valves allow to obtain low temperature deviations and quiet operation.
- ✓ Low energy consumption when pumping.
- ✓ Low return temperature increases the energy efficiency of heat pumps and condensing boilers.

#### Investment

- ✓ Low investment costs and fast return on investment.
- ✓ Highest quality and long service life.
- ✓ The return shut-off valves and connection kits facilitate maintenance work through the shut-off and drain functions of the radiator.
- ✓ Balancing valves and Dp controllers with outstanding measurement and diagnostic capabilities help you set the optimum pump head and identify possible system faults.
- ✓ High flexibility. Possibility of phased start-up or expansion without the need of rebalancing the already functioning part.

#### Sizing

- ✓ Matching of balancing valves and Dp controllers according to the design flow and required differential pressure for the TRVs with a 1-2K P-band.
- ✓ Balancing valves and Dp controllers in large systems are recommended for quiet and efficient operation.
- ✓ IMI Heimeier's extensive product portfolio offers optimum solutions for any type of radiator or floor heating.







**NOTES:** The use of pressure-independent balancing and control valves (PIBCV) is prohibited in systems with thermostatic valves. They only limit the maximum flow. At the same time, they increase the pump's head by allowing excess pressure to pass through to the thermostatic valves during most of the heating season due to the fact that the flows are below the nominal values.

- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Auditor.

#### Commissioning

- ✓ Preset of the valves based on hydraulic calculations with the option of final commissioning on site.
- ✓ Direct measurement of the actual flow and available differential pressure helps to set the minimum required head of the pump and ensure quiet and efficient operation.
- ✓ We recommend selecting the thermostatic heads depending on the room function and indicating the recommended temperature settings alternatively, they may be locked at the thermostatic head Halo B.

#### Quick links

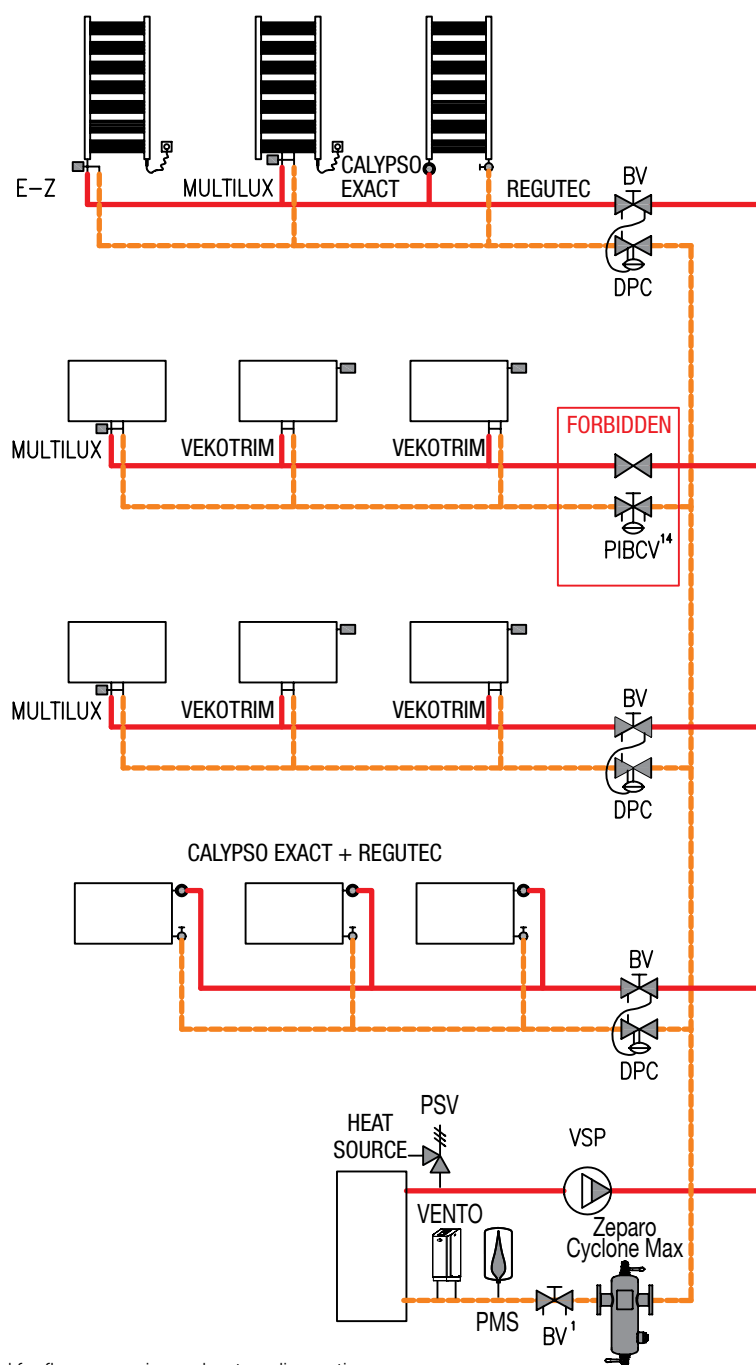
A2		PIBCV	Pressure independent balancing and control valves. ....	13
C1		BV	Balancing valves ....	32
C4		DPC	Differential pressure controllers ....	37
D1		EV	Expansion vessels. ....	44
D3		PSV	Safety valves. ....	52
E1		Zeparo Cyclone Max	Dirt & Gas separators and Cyclonic vacuum degassing units ....	57

## G4 | Heating system – variable flow

Energy efficiency Low ☐ ☐ ☒ ☐ High

Investment Low ☐ ☒ ☐ ☐ High

## Recommended



1) Recommended for flow measuring and system diagnostics

14) PIBCV (without actuator) limits the max. flow when all thermostatic valves (TRV) are open. During partial load, the PIBCV remains fully open and does not take overpressure. The result is a large drop in pressure at the valves at the end receivers, causing serious noise problems.

### Legend:

**BV** – Balancing valve

**CALYPSO EXACT** – Thermostatic radiator valve with preset

**DPC** – Differential pressure controller

**E-Z** – Thermostatic radiator valve with presetting for one-point connection

**MULTILUX** – Thermostatic radiator valve with preset for two-point connection

**PIBCV** – Pressure independent balancing and control valve

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**REGUTEC** – Radiator lockshield

**VEKOTRIM** – Radiator lockshield for two-point connection

**VENTO** – Cyclonic vacuum degasser (not necessary for Transfero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

**Zeparo Cyclone Max** – Dirt & magnetite separator

## G5 | Heating system – variable flow

### AFC technology (Automatic Flow Control)

#### Energy efficiency

- ✓ High level of thermal comfort in all working conditions.
- ✓ Automatic flow control limits overflow and helps to avoid underflow.
- ✓ Low energy consumption when pumping.
- ✓ Differential pressure control is required when the maximum available differential pressure for AFC technology can be exceeded.
- ✓ Low return temperature increases the energy efficiency of heat pumps and condensing boilers.

#### Investment

- ✓ Slightly higher investment costs are compensated for by very high energy efficiency, reliability of the system, quick cost recovery and easy installation and commissioning.
- ✓ Proper functioning of all radiators and floor heating systems without any complaints or additional maintenance costs.
- ✓ Quiet operation.
- ✓ Ideal for renovation - immediate improvement in system performance.
- ✓ High flexibility. The size of the installation can be increased or decreased without affecting the quality of the control system.






#### Sizing

- ✓ Simple matching of AFC products based on nominal flows.
- ✓ The requirements for minimum and maximum pressure must be observed.
- ✓ Ideal for renovations in buildings with concealed pipes in walls or floors. Simplified hydraulic calculation can be applied.
- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Audytur and nomograms.

#### Commissioning

- ✓ Simple valve setting resulting directly from the flow.
- ✓ Automatic hydraulic balancing.
- ✓ The head of the pump can be pre-set depending on the maximum flow rate. Proportional adjustment is recommended.
- ✓ In thermostatic valves, the insert can be dismantled under pressure using a special tool. Measurement of the available differential pressure is also available.

#### Quick links

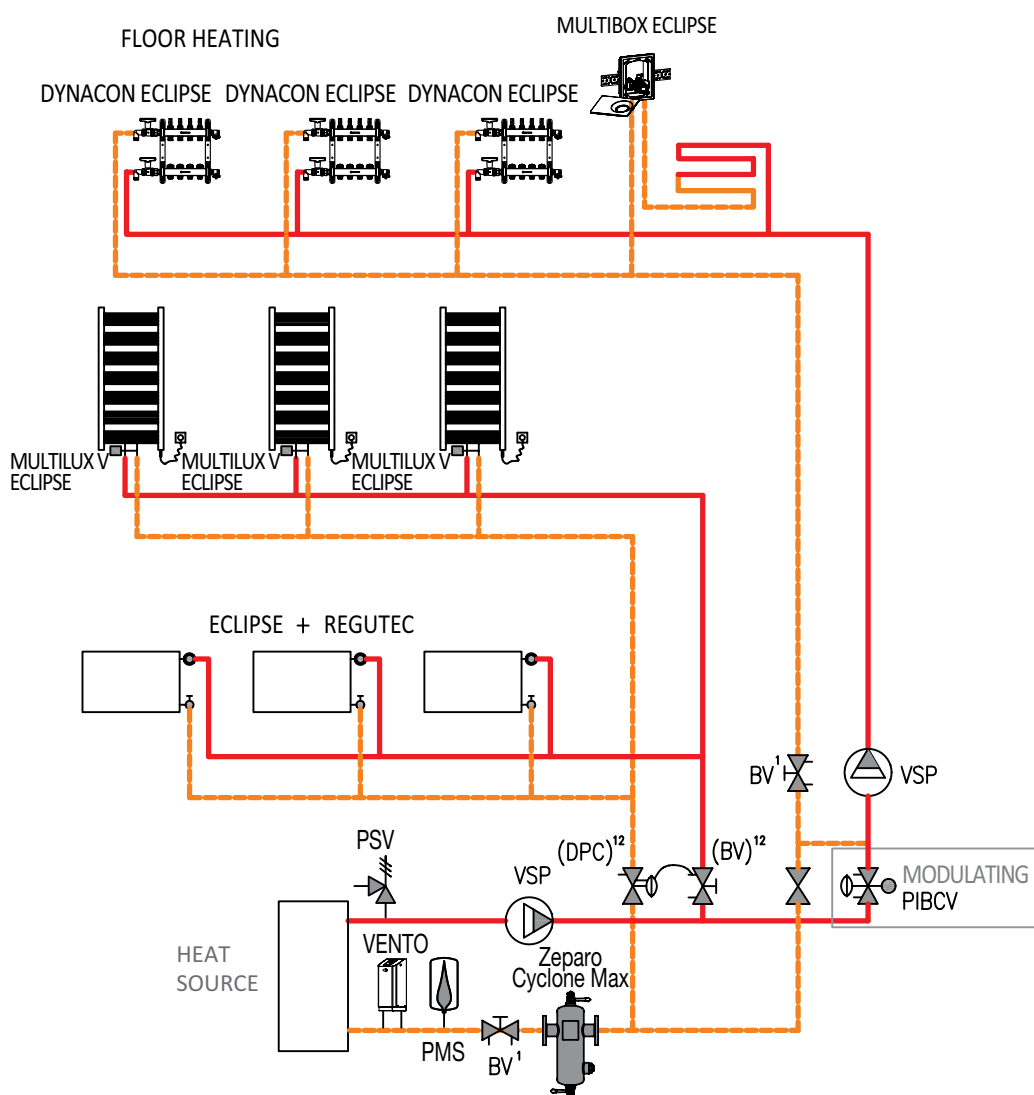
A2		<b>PIBCV</b>	Pressure independent balancing and control valves. ....	13
C1		<b>BV</b>	Balancing valves .....	32
D1		<b>EV</b>	Expansion vessels. ....	44
D3		<b>PSV</b>	Safety valves. ....	52
E1		<b>Zeparo Cyclone Max</b>	Dirt & Gas separators and Cyclonic vacuum degassing units .....	57

## G5 | Heating system – variable flow

Energy efficiency Low ☐ ☐ ☐ ☒ High

Investment Low ☐ ☐ ☒ High

# Recommended



1) Recommended for flow measuring and system diagnostics

12) A Dp controller is only required if the available pressure difference is higher than the maximum pressure difference for AFC technology..

### Legend:

**BV** – Balancing valve

**DYNACON ECLIPSE** – Floor heating manifold with AFC technology

**ECLIPSE** – Thermostatic radiator valve with AFC technology

**MULTIBOX ECLIPSE** – Floor heating control with AFC technology

**MULTILUX V ECLIPSE** – Thermostatic radiator valve with preset for two-point connection with AFC technology

**PIBCV** – Pressure independent balancing and control valve

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**REGUTEC** – Radiator lockshield

**VENTO** – Cyclonic vacuum degasser (not necessary for Transero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

**Zeparo Cyclone Max** – Dirt & magnetite separator



## G6 | Heating system – constant flow

### Balancing and standard control valves

#### Energy efficiency

- ✓ High control stability due to constant pressure distribution.
- ✓ Increased energy consumption when pumping due to constant flow throughout the heating season.
- ✓ High heat loss on return pipes under partial load.
- ✓ A high return temperature at partial heat demand reduces the efficiency of condensing boilers, and in the branches, it raises the return water temperature on the network side.
- ✓ Dirty filters and overflow significantly increase annual operating costs.

#### Investment

- ✓ Large number of valves installed.
- ✓ It is not possible to apply a diversity factor and reduce the size of pipes.
- ✓ Longer period of reimbursement of costs incurred for the purchase of electronic pumps and condensing boilers.
- ✓ Constant operating mode reduces pump life.







#### Sizing

- ✓ A hydraulic calculation is required for 3-way control valves and balancing valves.
- ✓ Adequate Kvs value is essential for the high authority of a 3-way valve.
- ✓ 3-way valves regulating small end receivers need a reduced Kvs value in the bypass direction or an additional balancing valve to restrict excess flow by bypassing partial load or when the valve is fully closed.
- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Auditor.


#### Commissioning


- ✓ Preset of the valves based on hydraulic calculations with optional final commissioning and flow verification.
- ✓ Preset of the pump head to achieve a constant nominal flow, a constant speed is necessary.
- ✓ During start-up, it is important to check the compatibility of the flow between primary and secondary flow in the air handling unit. The primary flow should be 5% higher if the nominal flow temperatures are identical.

### Quick links

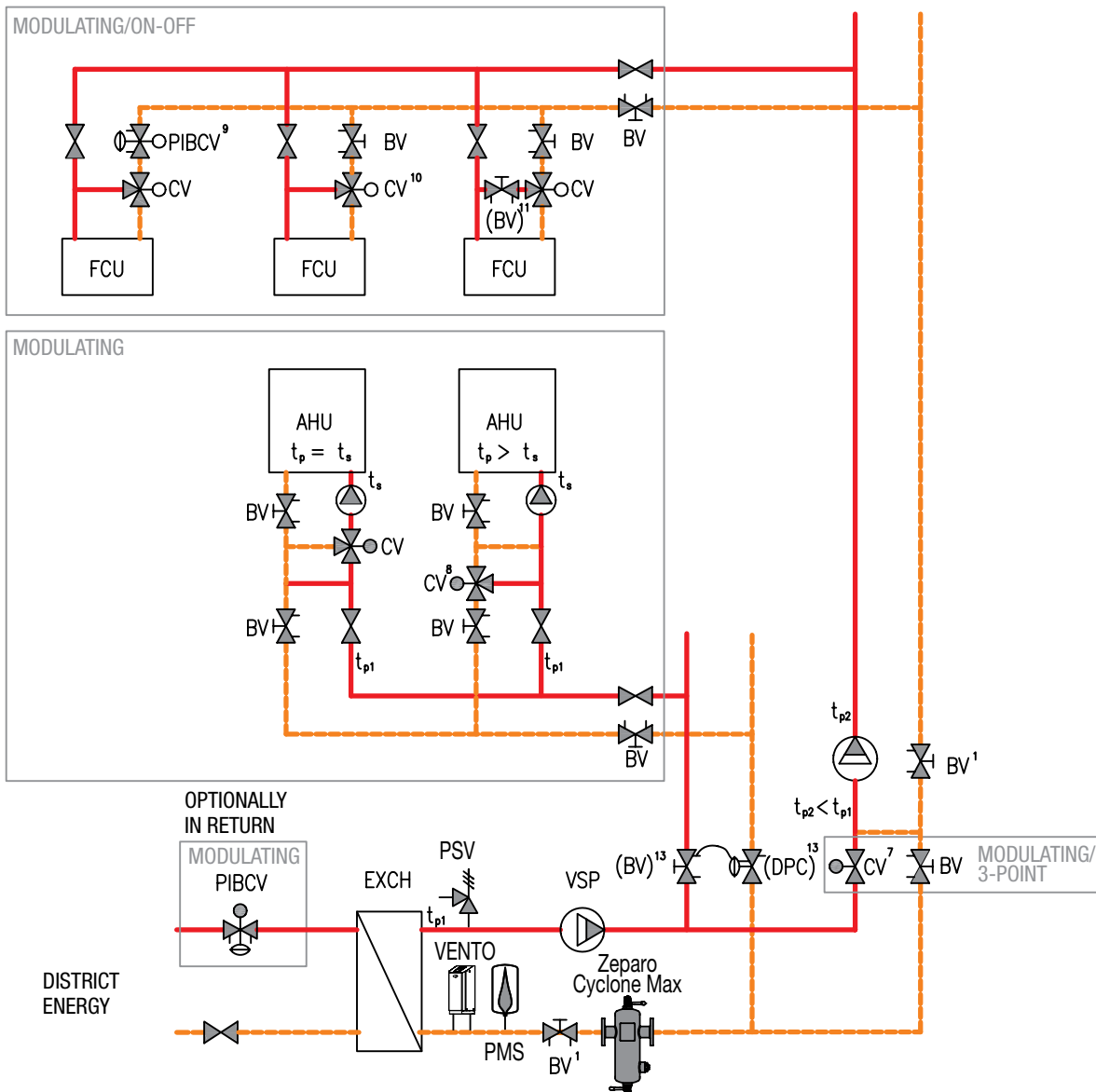
<b>A2</b>		<b>PIBCV</b>	Pressure independent balancing and control valves. ....	13
<b>A4</b>		<b>CV</b>	Actuators for standard control valves ....	19
<b>C1</b>		<b>BV</b>	Balancing valves ....	32
<b>D1</b>		<b>EV</b>	Expansion vessels. ....	44
<b>D3</b>		<b>PSV</b>	Safety valves. ....	52
<b>E1</b>		<b>Zeparo Cyclone Max</b>	Dirt & Gas separators and Cyclonic vacuum degassing units ....	57

## G6 | Heating system – constant flow

Energy efficiency Low  High

Investment Low  High

Acceptable



- 1) Recommended for flow measuring and system diagnostics
- 7) Dp control is recommended if the authority of the control valve may drop below 0.25 during system operation due to significant variations in pressure.
- 8) When the temperature difference in the primary circuit is higher, the size of the 3-way valve at this point may be smaller
- 9) 3-way valve without Kvs reduction in B-AB direction without bypass balancing, PIBCV without actuator is recommended for limiting the maximum flow
- 10) 3-way valve with Kvs reduction in B-AB direction
- 11) To balance the bypass in order to achieve the same pressure drop as the fan coil
- 13) It is recommended to use the Dp controller because the FCU circuit with variable flow rate runs parallel to the AHU circuit. This version occurs at different flow temperatures for AHU and small end users.

### Legend:

**AHU** – Air handling unit  
**BV** – Balancing valve  
**CV** – 2-way control valve  
**EXCH** – Heat exchanger  
**FCU** – Fan-coil  
**PIBCV** – Pressure independent balancing and control valve  
**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve  
**VENTO** – Cyclonic vacuum degasser (not necessary for Transero Connect PMS as vacuum degassing is integrated)  
**VSP** – Variable speed pump control  
**Zeparo Cyclone Max** – Dirt & magnetite separator

## G7 | Cooling system – variable flow

### Pressure independent balancing and control valves

#### Energy efficiency

- ✓ Ensuring stable and precise temperature control in all operating conditions.
- ✓ Pressure-independent control with high valve authority for modulating/three-point control.
- ✓ Low energy consumption when pumping (no overflow).
- ✓ Very low pressure drop in IMI TA valves minimizes pump head requirements.
- ✓ Optimisation of pump head is possible thanks to unique IMI TA valves diagnostic features.
- ✓ Minimal risk of low return temperatures and reduced energy efficiency of the refrigeration appliance.

#### Investment

- ✓ Solution with minimum number of valves installed.
- ✓ The extensive measurement and diagnostic capabilities of the IMI TA valves allow for complete system diagnostics without the need for additional equipment investments in other devices.
- ✓ Fast return on investment, usually under 3 years.
- ✓ High flexibility. Possibility of phased start-up or expansion without rebalancing of an already functioning part.






#### Sizing

- ✓ Simple matching of valves based on nominal flows.
- ✓ Selection of flow-based settings without the need for complete hydraulic calculations.
- ✓ No need to check the authority of the valves.
- ✓ Easy matching of the correct actuator.
- ✓ Complete range of valves for a wide range of flow rates.
- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Auditor.


#### Commissioning


- ✓ Preset the required flow direct at the PIBCV, designed flow = real flow.
- ✓ Direct measurement of the actual flow and available differential pressure helps to set the minimum required pump head to achieve maximum energy efficiency.
- ✓ The extensive diagnostic capabilities of IMI TA valves in combination with TA-SCOPE make it easy to identify and solve any possible system faults.

#### Quick links

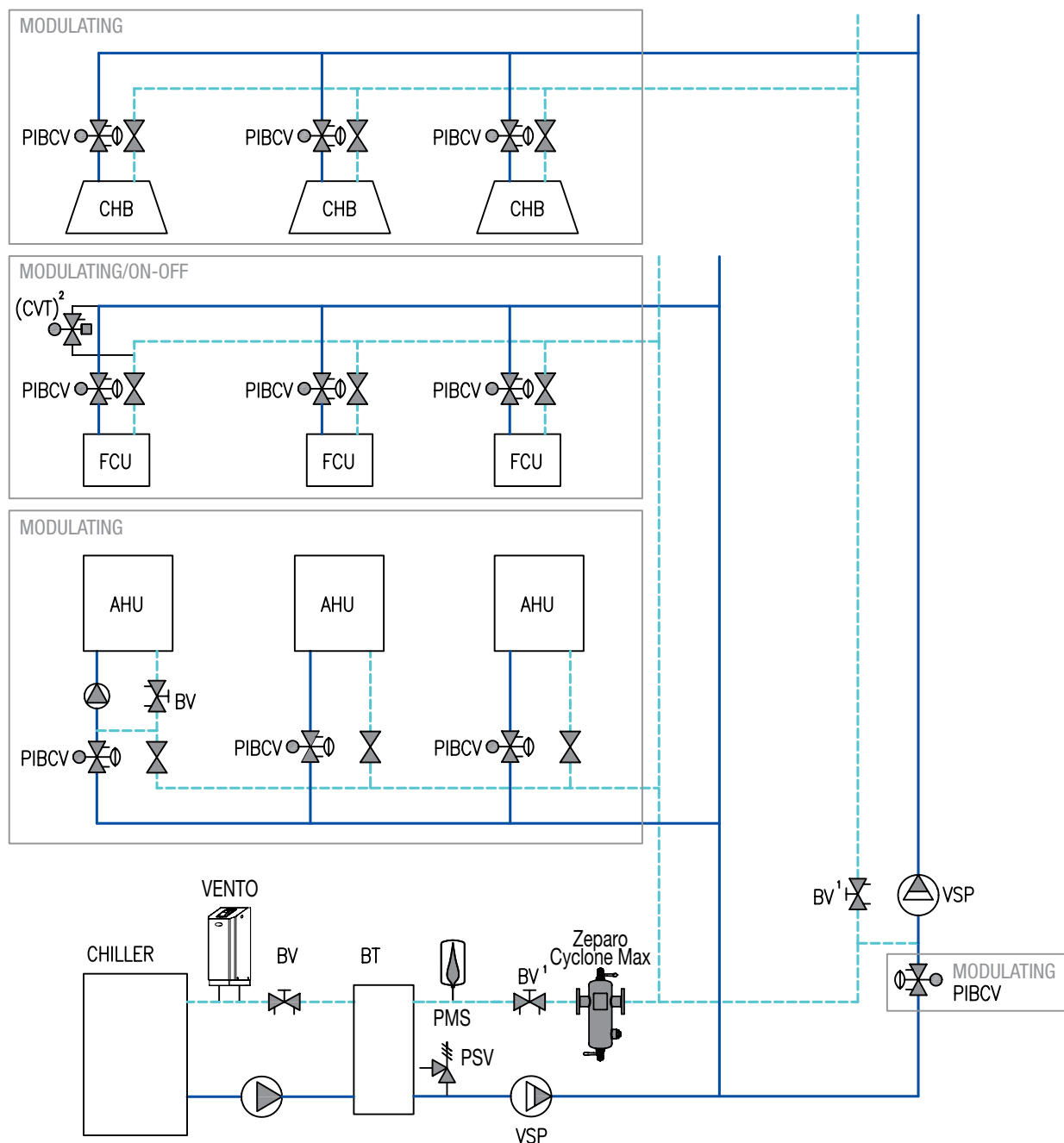
A2		<b>PIBCV</b>	Pressure independent balancing and control valves. ....	13
C1		<b>BV</b>	Balancing valves .....	32
D1		<b>EV</b>	Expansion vessels. ....	44
D3		<b>PSV</b>	Safety valves. ....	52
E1		<b>Zeparo Cyclone Max</b>	Dirt & Gas separators and Cyclonic vacuum degassing units .....	57

## G7 | Cooling system – variable flow

Energy efficiency Low  High

Investment Low  High

# Recommended



- 1) Recommended for flow measuring and system diagnostics
- 2) Optional for maintaining the circulation of the refrigerant in the circuit

### Legend:

**AHU** – Air handling unit

**BT** – Buffer tank

**BV** – Balancing valve

**CHB** – Chilled beam

**CVT** – Control valve with return temperature controller

**EV** – Expansion vessel

**FCU** – Fan-coil

**PIBCV** – Pressure independent balancing and control valve

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**VENTO** – Cyclonic vacuum degasser (not necessary for Transero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

**Zeparo Cyclone Max** – Dirt & magnetite separator

## G8 | Cooling system – variable flow

### Combined balancing and control valves

#### Energy efficiency

- ✓ Ensuring stable and precise temperature control in all operating conditions.
- ✓ Differential pressure regulators on branch connections stabilise the differential pressure for modulating adjustable valves and provide good level of authority.
- ✓ Low energy consumption when pumping.
- ✓ Optimisation of pump head possible thanks to unique valve diagnostic features.
- ✓ Minimal risk of low return temperatures and reduced energy efficiency of the refrigeration appliance.

#### Investment

- ✓ Recommended solution with a good balance between energy efficiency and investment.
- ✓ Depending on the system structure, this solution is usually cheaper compared to G7, despite the need for valves at the branches.
- ✓ Extraordinary measurement and diagnostic capabilities of the IMI TA valves allow for complete system diagnostics without the need for additional equipment investments in other devices.
- ✓ Fast return on investment, usually under 3 years.
- ✓ High flexibility. Possibility of phased start-up or expansion without rebalancing the already functioning part.








#### Sizing

- ✓ Simple valve matching based on nominal flow and minimum pressure drop (Typically 1/3 of the total pressure drop in the stabilized branch) for the correct level of authority.
- ✓ Under certain conditions, on/off adjustment can cause overflow under partial load. This phenomenon can be limited already in the design phase.
- ✓ Need to check the closing pressure of the actuators.
- ✓ It is recommended to use pressure-independent balancing and control valves for separate small end receivers connected directly to the main pipe to ensure authority and limit overflow and noise.
- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Auditor.

#### Commissioning

- ✓ Preset of the valves based on hydraulic calculations with the option of final commissioning on site.
- ✓ Direct measurement of the actual flow and available differential pressure helps to set the minimum required head of the pump.
- ✓ Flow measurement on single small control valves at the branch possible but not required.
- ✓ The extensive diagnostic capabilities of IMI TA valves in combination with TA-SCOPE make it easy to identify and solve any possible system faults.

#### Quick links

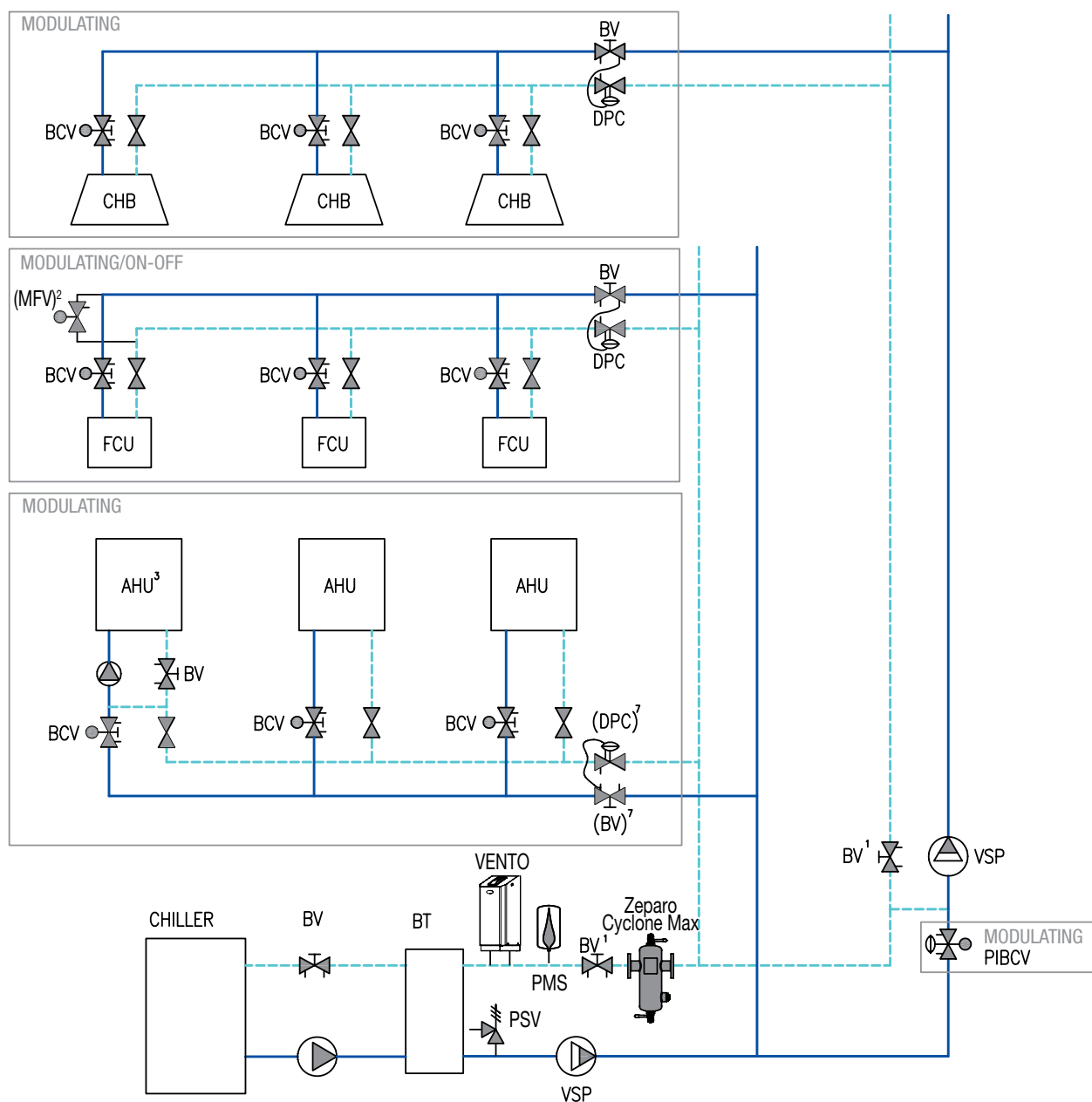
A2		<b>PBCV</b>	Pressure independent balancing and control valves. ....	13
A3		<b>BCV</b>	Combined balancing and control valves ....	15
C1		<b>BV</b>	Balancing valves ....	32
C4		<b>DPC</b>	Differential pressure controllers ....	37
D1		<b>EV</b>	Expansion vessels. ....	44
D3		<b>PSV</b>	Safety valves. ....	52
E1		<b>Zeparo Cyclone Max</b>	Dirt & Gas separators and Cyclonic vacuum degassing units ....	57

## G8 | Cooling system – variable flow

Energy efficiency Low ☐ ☐ ☐ ☒ High

Investment Low ☐ ☐ ☒ ☐ High

# Recommended



- 1) Recommended for flow measuring and system diagnostics
- 2) Valve set to limit maximum flow required and controlled partially according to specified parameters
- 3) Example for a desired flow temperature for AHU lower than the general flow temperature.
- 7) Dp control is recommended if the authority of the control valve may drop below 0.25 during system operation due to significant variations in pressure.

### Legend:

**AHU** – Air handling unit

**BCV** – Combined balancing and control valves

**BT** – Buffer tank

**BV** – Balancing valve

**CHB** – Chilled beam

**DPC** – Differential pressure controller

**FCU** – Fan-coil

**PIBCV** – Pressure independent balancing and control valve

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**VENTO** – Cyclonic vacuum degasser (not necessary for Transero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

**Zeparo Cyclone Max** – Dirt & magnetite separator

## G9 | Cooling system – variable flow

### Balancing and standard control valves

#### Energy efficiency

- ✓ Provides stable and precise temperature control under all operating conditions if control valves are appropriately matched and a good level of authority can be achieved.
- ✓ In the version with modulating control, the high authority of the valves is ensured by the differential pressure controllers, which stabilise the differential pressure.
- ✓ Low energy consumption when pumping
- ✓ Optimised setting of the pump head.

#### Investment

- ✓ Higher investment costs compared to G8 based on Combined balancing and control valves.
- ✓ High flow rates determine the large diameter of the Dp controllers (the use of TA-PILOT-R with its linear design reduces the diameter and thus the investment costs).
- ✓ Extraordinary measurement and diagnostic capabilities of the IMI TA valves allow for complete system diagnostics without the need for additional equipment investments in other devices.
- ✓ High flexibility. Possibility of phased start-up or expansion without rebalancing of an already functioning part.









#### Sizing

- ✓ Simple valve matching based on nominal flow and minimum pressure drop (Typically 1/3 of the total pressure drop in the stabilized branch) for correct level of authority.
- ✓ Need to check the closing pressure of the actuators.
- ✓ Quick matching with the use of software: HySelect, HyTools, Instal-therm, Auditor.

#### Commissioning

- ✓ Preset of the valves based on hydraulic calculations with the option of final commissioning on site.
- ✓ The Dp controllers should be set according to the actual pressure drops on the branch.
- ✓ Use precise IMI TA balancing methods to adjust flows while optimizing the pump's operating point.
- ✓ The extensive diagnostic capabilities of IMI TA valves in combination with TA-SCOPE make it easy to identify and solve any possible system faults.

#### Quick links

A1		<b>TA-SMART</b>	Smart valve .....9
A2		<b>PIBCV</b>	Pressure independent balancing and control valves. ....13
A3		<b>CV</b>	Combined balancing and control valves .....15
C1		<b>BV</b>	Balancing valves .....32
C4		<b>DPC</b>	Differential pressure controllers .....37
D1		<b>EV</b>	Expansion vessels. ....44
D3		<b>PSV</b>	Safety valves. ....52
E1		<b>Zeparo Cyclone Max</b>	Dirt & Gas separators and Cyclonic vacuum degassing units .....57

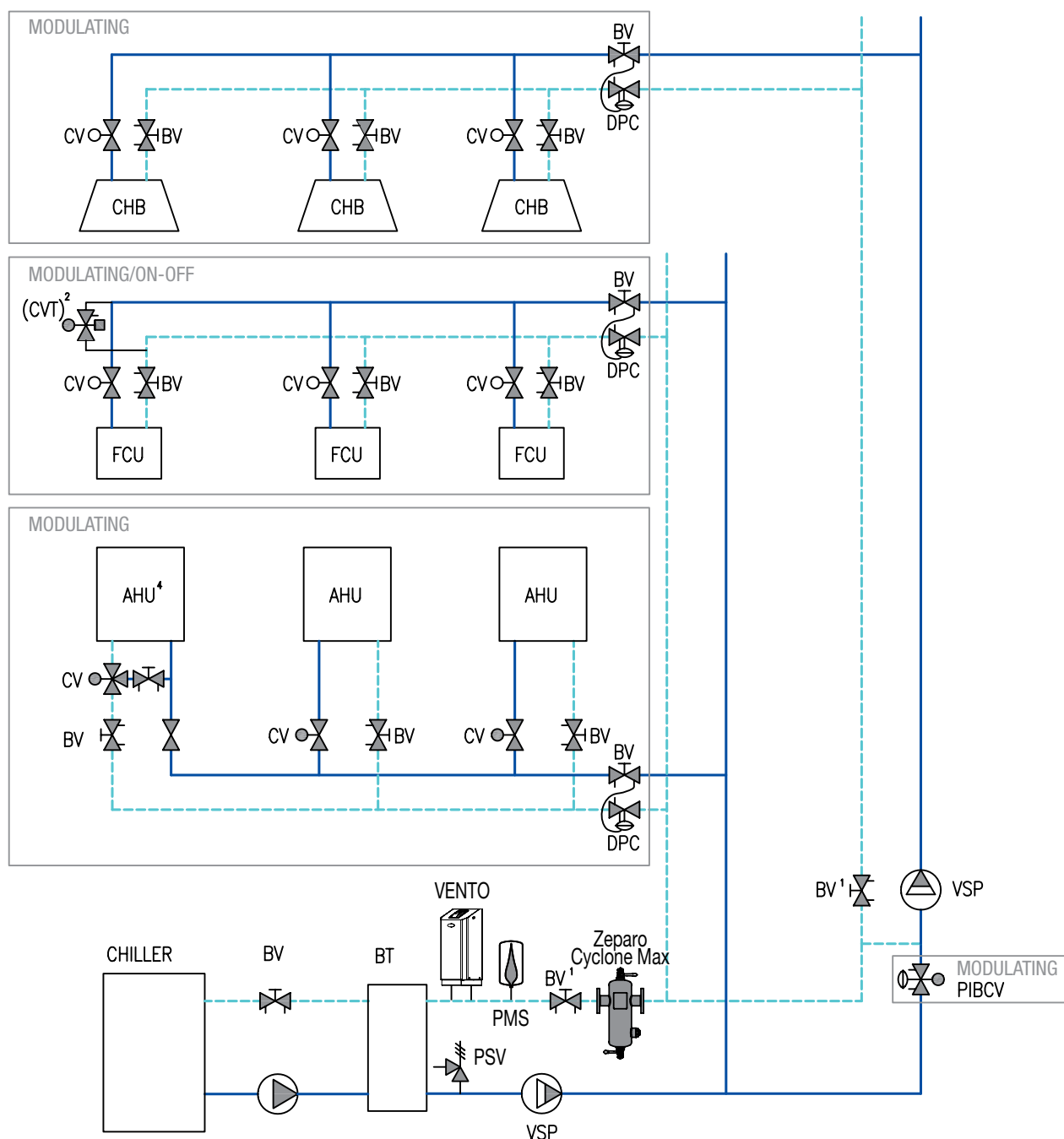


## G9a | Cooling system – variable flow

Energy efficiency Low ☐ ☒ ☐ ☐ ☐ High

Investment Low ☐ ☒ ☐ ☐ ☐ High

# Acceptable



- 1) Recommended for flow measuring and system diagnostics
- 2) Optional for maintaining the circulation of the refrigerant in the circuit
- 4) Example where minimum flow in a cooling system is required

### Legend:

**AHU** – Air handling unit

**BCV** – Combined balancing and control valves

**BT** – Buffer tank (hydraulic clutch function)

**CHB** – Chilled beam

**CV** – 3-way / 2-way control valve

**CVT** – Control valve with return temperature controller

**FCU** – Fan-coil

**PIBCV** – Pressure-independent balancing and control valve and control valve

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**VENTO** – Cyclonic vacuum degasser (not necessary for Transero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

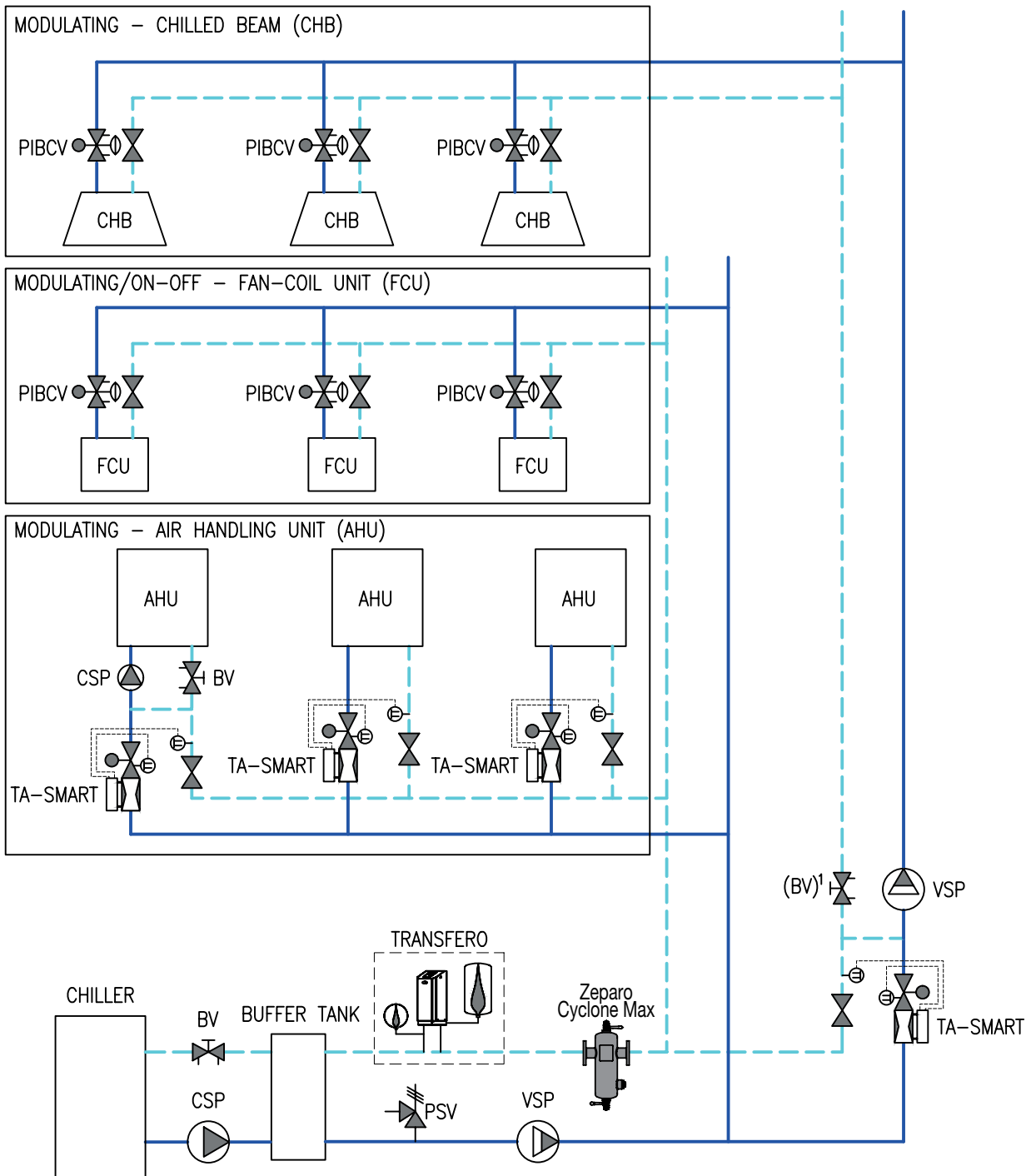
**Zeparo Cyclone Max** – Dirt & magnetite separator

## G9b | Cooling system – variable flow

Energy efficiency Low ☐ ☐ ☐ ☐ ☒ High

Investment Low ☐ ☐ ☐ ☒ ☐ High

**Recommended**



1) Optional/recommended for flow measuring and system diagnostics.

### Legend:

**AHU** – Air handling unit

**BT** – Buffer tank (hydraulic clutch function)

**CHB** – Chilled beam

**FCU** – Fan-coil

**Zeparo Cyclone Max** – Microbubble and dirt separator with Cyclonic technology

**PIBCV** – Pressure-independent balancing and control valve and control valve

**PSV** – Safety valve

**TRANSFERO** – Pump based pressurization unit with water make-up and vacuum degassing

**VSP** – Variable speed pump control

# Key features



**5YEAR**  
WARRANTY\*

- ✓ **Versatility of Control Modes**  
Operating according to flow, power and valve position. A  $\Delta T$  limitation can be added to any of the control modes
- ✓ **Flow, Power, Energy and temperature measurement**  
Highly accurate measurement of key circuit data
- ✓ **Wireless commissioning**  
Valve configuration done via Smartphone app without cables or adaptors
- ✓ **High Controllability & Rangeability**  
Best in class flow control and rangeability
- ✓ **Fast response time**  
Accurate and fast response to input changes to achieve the desired set point
- ✓ **Reduced size & weight**  
Compact size allows for seamless mounting capabilities, even in retrofit applications
- ✓ **Great installation flexibility & IP54**  
Only 2 components required to be installed with minimal diameters required before the valve

\* Conditions apply. For more information please contact your local IMI representative.

## G10 | Cooling system – constant flow

### Balancing and standard control valves

#### Energy efficiency

- ✓ High control stability due to constant pressure distribution.
- ✓ Increased energy consumption when pumping due to constant flow throughout the cooling season.
- ✓ Low return temperature at partial cooling demand reduces the efficiency of cooling sources.
- ✓ Dirty filters and overflows significantly increase annual operating costs.

#### Investment

- ✓ Large number of valves installed.
- ✓ It is not possible to apply a diversity factor and reduce the size of pipes.
- ✓ Longer period of reimbursement of costs incurred for the purchase of electronic pumps.
- ✓ Constant operating mode reduces pump life.







#### Sizing

- ✓ A hydraulic calculation is required for 3-way control valves and balancing valves.
- ✓ Adequate Kvs value is essential for the high authority of a 3-way valve.
- ✓ 3-way valves regulating small end receivers need a reduced Kvs value in the bypass direction to limit overflow by bypassing partial load. A solution is also to use the PIBCV (TA-Compact-P) valve as a flow limiter.
- ✓ Quick matching with the use of software: HySelect, HyTools.

#### Commissioning

- ✓ Preset of the valves based on hydraulic calculations with optional correction according to measurement on the balancing valve
- ✓ Preset of the pump's head to achieve a constant nominal flow, a constant speed is necessary.
- ✓ It is recommended to balance the flows during start-up. With AHU it is necessary to set the valves on the bypass in accordance with the coil resistance to avoid overflow through the bypass.

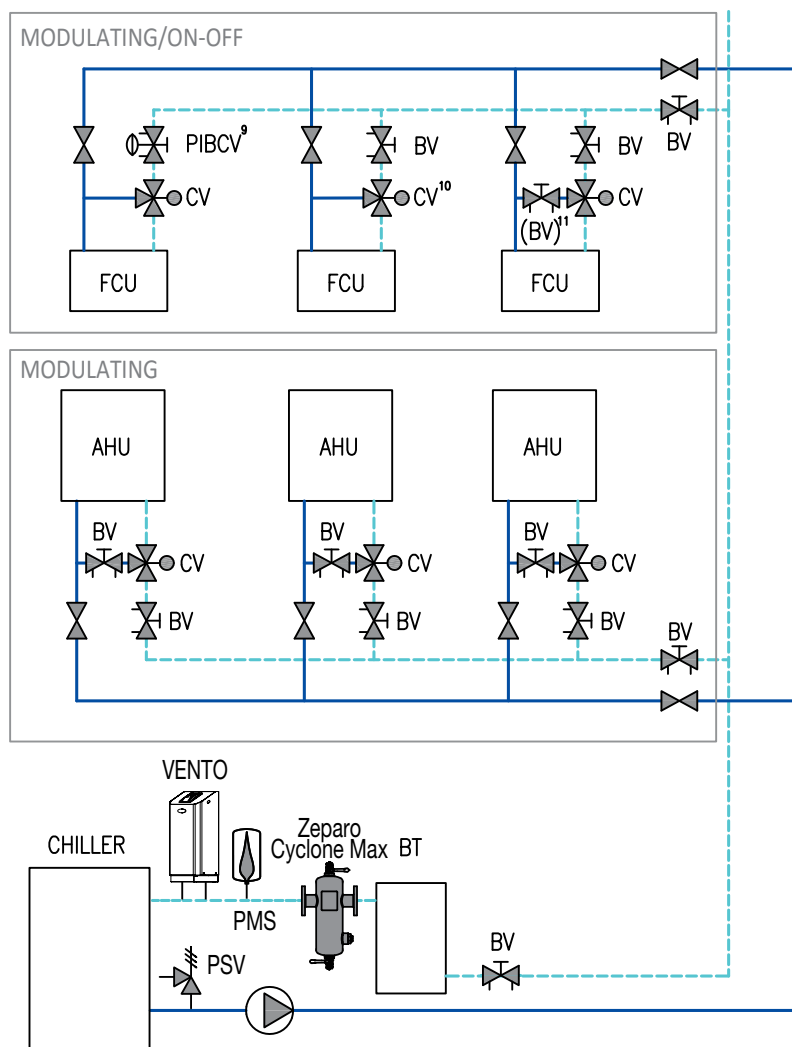
### Quick links

A2		PIBCV	Pressure independent balancing and control valves. ....	13
A3		CV	Combined balancing and control valves ....	15
C1		BV	Balancing valves ....	32
D1		EV	Expansion vessels. ....	44
D3		PSV	Safety valves. ....	52
E1		Zeparo Cyclone Max	Dirt & Gas separators and Cyclonic vacuum degassing units ....	57

## G10 | Cooling system – constant flow

Energy efficiency	Low	<div><div style="width: 25%;"></div></div>	High
Investment	Low	<div><div style="width: 25%;"></div></div>	High

# Acceptable



9) 3-way valve without Kvs reduction in B-AB direction without bypass balancing, PIBCV without actuator is recommended for limiting the maximum flow rate

10) 3-way valve with Kvs reduction in B-AB direction

11) To balance the bypass in order to achieve the same pressure drop as the fan-coil

### Legend:

**AHU** – Air handling unit

**BT** – Buffer tank

**BV** – Balancing valve

**CV** – 3-way / 2-way control valve

**FCU** – Fan-coil

**PIBCV** – Pressure independent balancing and control valve

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**VENTO** – Cyclonic vacuum degasser (not necessary for Transero Connect PMS as vacuum degassing is integrated)

**Zeparo Cyclone Max** – Dirt & magnetite separator

# G11 | Special solutions – variable flow

## Auto-adapting variable flow decoupling circuit

### Energy efficiency

- ✓ Ensuring proper working conditions for electronic pumps installed in series.
- ✓ Very high energy efficiency guaranteeing perfect and quiet operation of the system without negative hydraulic interactivity.
- ✓ The head of the secondary pump can be reduced by the pressure difference stabilised on the dP controller (primary pump supports secondary pump). The primary pump can supply the secondary circuit in the event of a secondary pump failure.
- ✓ No risk of low (cooling) or high (heating) return temperature affecting the energy efficiency of the system.
- ✓ Low energy consumption when pumping (variable flow).
- ✓ Minimum heat loss/gain on return pipes.
- ✓ Constant temperature of the feed water on the secondary side according to the primary side water temperature.
- ✓ Possibility to increase energy efficiency by using remote pressure relay for VSP.
- ✓ Powerful control mode without standard actuator control valve (no electrical controller required).

### Investment

- ✓ Very low investment compared to alternatives that reduce energy efficiency and increase the level of the system complexity.
- ✓ Easy installation, space-saving.
- ✓ Ideal for connecting high resistance circuits to low pressure networks. Ideal for supplying a heating manifold with heat pumps from a heat substation with its own circulation pump.
- ✓ Quick return on investment.
- ✓ Quiet work, no complaints.



### Sizing

- ✓ The bypass flow is usually no more than 10% of the source flow - that is why the bypass valve has small diameters.
- ✓ No need for additional solutions to ensure minimum flow for the primary pump.
- ✓ Size of the Dp controller selected for the secondary flow, the controller's resistance included in the primary pump.


### Commissioning

- ✓ Easy pre-setting of the balancing valve at the bypass.
- ✓ Setting the differential pressure on the Dp controller based on the flow measurement on the secondary side.

### Quick links

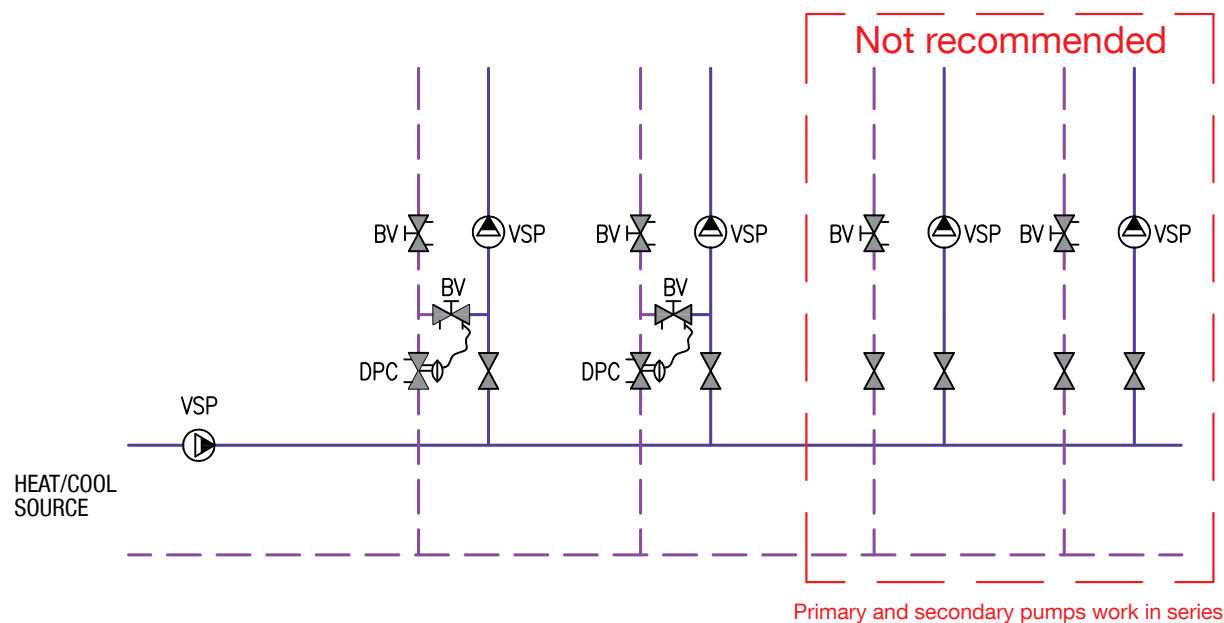
C1		BV	Balancing valves .....	32
C4		DPC	Differential pressure controllers .....	37

## G11 | Special solutions – variable flow

**Energy efficiency** Low  High

Investment Low  High

## Recommended



The self-regulating variable flow separation system is ideal for variable primary and secondary circuits where a secondary pump has to be used due to a lack of sufficient availability from the primary pump. Example: Compact heating circuit with integrated supply pump for the main distributor in the circulation pumps. The feed water temperature of individual circuits is maintained as supplied from the source. The nominal bypass flow is usually 10% of the total secondary flow, so the bypass balancing valve is small in size. The minimum flow through bypasses can also be determined by the minimum flow through the primary pump.

Ask your IMI technical advisor for more information on hydraulic balancing and selection.

**Legend:**

**BV** – Balancing valves

**DPC** – Differential pressure controllers

**VSP** – Variable speed pump



## G12 | Special solutions – variable flow

### Zone temperature control (e.g. for use in apartments)

#### Energy efficiency

- ✓ Zone temperature control can reduce energy bills by up to 20%.
- ✓ Maintains a lower temperature in the apartment when no one is present during the day.
- ✓ Enables central night-time temperature reduction.
- ✓ Limits the maximum flow to the apartment and saves pumping energy.
- ✓ Helps to protect the installation from noise.

#### Investment

- ✓ TA-COMPACT-DP replaces 3 valves: Zone Control Valve, Balancing Valve and Differential Pressure Controller - gives 60% cost savings.
- ✓ The installation is 3 times faster.
- ✓ Ideal solution for flats with central heat source (heat exchanger, boiler room, heat pump).
- ✓ Quiet operation without excessive flows, no complaints.






#### Sizing

- ✓ Simple matching based on design flow and required stabilization pressure.
- ✓ There is no need for additional Dp regulators and balancing valves, e.g. under verticals.
- ✓ Use IMI calculation software or technical support when matching the right solution.

#### Commissioning

- ✓ Easy setting of the desired project flow.
- ✓ Flow measurement with TA-SCOPE.
- ✓ Very compact design also fits into very confined spaces.
- ✓ EMO T actuators with IP54 protection give you the freedom to choose the mounting position.

### Quick links

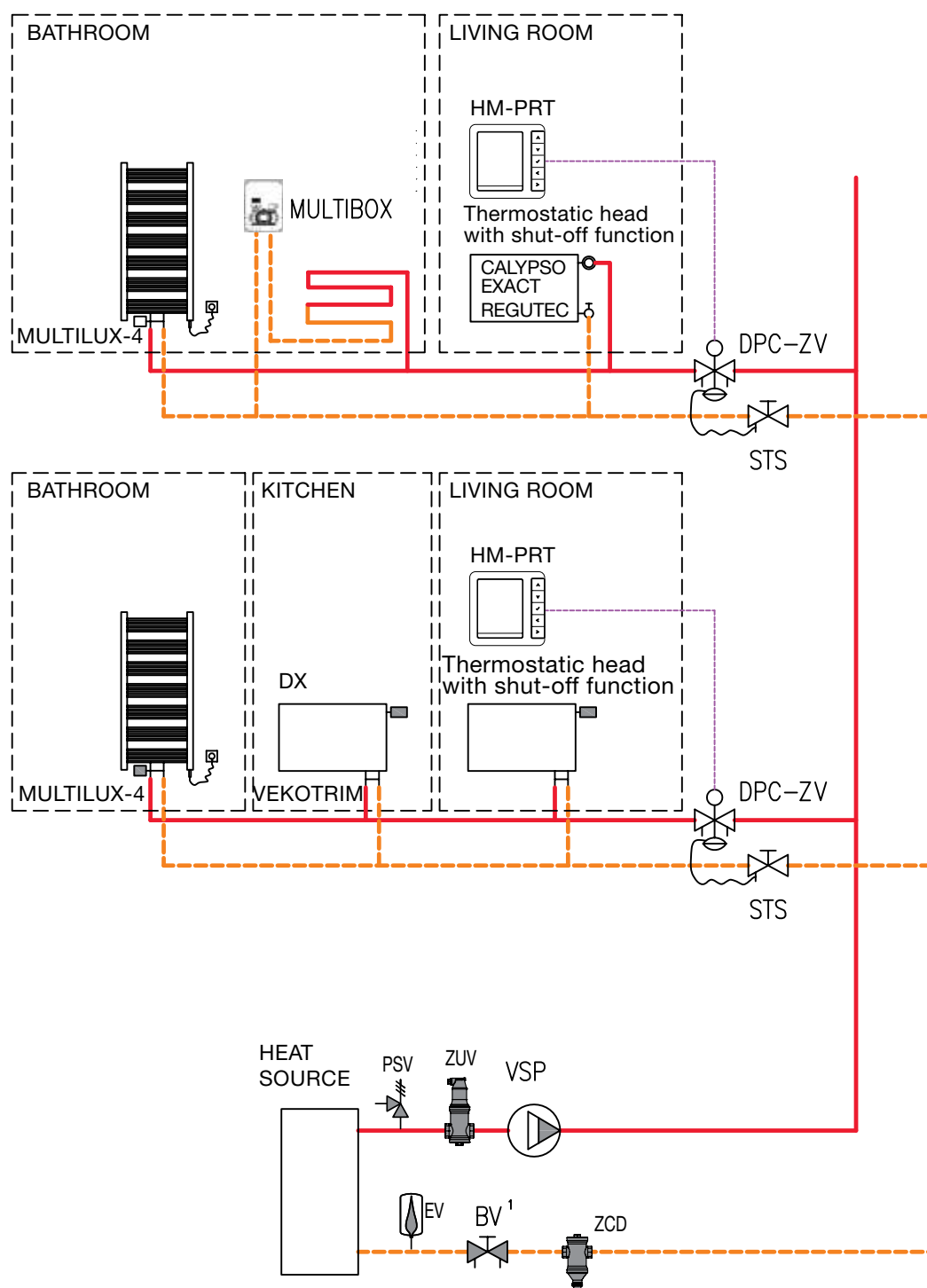
<b>C1</b>		<b>BV</b>	Balancing valves.....	32
<b>C4</b>		<b>DPC-ZV</b>	Differential pressure controllers .....	37
<b>D1</b>		<b>EV</b>	Expansion vessels.....	44
<b>D3</b>		<b>PSV</b>	Safety valves.....	52
<b>E1</b>		<b>ZCD/ZUV</b>	Dirt & Gas separators and Cyclonic vacuum degassing units .....	57

## G12 | Special solutions – variable flow

Energy efficiency Low ☐ ☐ ☐ ☐ ☒ High

Investment Low ☒ ☐ ☐ ☐ ☐ High

# Recommended



1) Recommended for flow measurement and diagnostics

### Legend:

**BV** – Balancing valve

**CALYPSO EXACT** – Thermostatic radiator valve with preset

**DPC-ZV** – Differential pressure controller with zone control valve (TA-COMPACT-DP)

**EV** – Expansion vessel

**K-HEAD** – Thermostatic head

**MULTIBOX** – Floor heating control in the wall

**MULTILUX-4** – Thermostatic radiator valve with preset

**PSV** – Safety valve

**REGUTEC** – Radiator lockshield

**STS** – Shut-off valve with measuring point and capillary connection

**HM-PRT** – Digital room temperature controller

**VEKOTRIM** – Radiator shut-off valve

**VSP** – Variable speed pump control

**ZCD** – Dirt and sludge separator

**ZUV** – Separator for micro bubbles

## G13 | Four-pipe heating and cooling system – variable flow

### Four-pipe heating and cooling system

#### Energy efficiency

- ✓ Stable and precise temperature control in all operating conditions, continuous key circuit parameters monitoring, driving fact-driven decisions.
- ✓ Precise volume flow for heating and cooling.
- ✓ Motorized drive with very low power consumption in standby mode.
- ✓ Pressure independent control with high authority for continuous control.
- ✓ Continuous monitoring of heating/cooling power, and access to energy consumption. Access to historical data collection
- ✓ Low energy consumption of the pump (no excessive flow).
- ✓ The very low pressure drop in the IMI TA valves reduces the required pump availability pressure.
- ✓ Lowest possible return temperatures for optimising the generators performance.

#### Investment

- ✓ A solution with as few valves as possible.
- ✓ Possibility of using cheaper actuators (lower closing pressure required).
- ✓ IMI TA valves have unique measurement and diagnostic functions for full system diagnostics at no additional cost.
- ✓ Quick return on investment (highest quality, extraordinary service life, large energy savings).
- ✓ Additional devices for stabilizing the differential pressure are not necessary.
- ✓ Economical 6-way valve without special Kvs inserts in the sockets.
- ✓ Error logs access help for troubleshooting procedure, maximising life of equipments.
- ✓ 5-year warranty\* on newest technology (TA-Smart).
- ✓ High flexibility. The heating system can be built or extended in stages without having to repeat the hydraulic balancing process. Simply adjust the pump settings to your new system requirements.

#### Sizing










- ✓ Simple matching of a valve based on nominal flow.
- ✓ Simple 6-way valve selection without the need to calculate the Kvs value, as it is only used as a switching valve.
- ✓ It is not necessary to verify the authority of the control valve.
- ✓ Easy matching of the correct actuator.
- ✓ HySelect for hydraulic calculations can also be applied.

#### Commissioning

- ✓ Simple setting of the maximum flow rate on each valve. Remote access to measured flows of different TA-Smart.
- ✓ Flows and all parameters are set directly with the use of HyTune.
- ✓ Menu settings that are displayed graphically in HyTune.
- ✓ Parameter settings of other identical drives can be easily copied.
- ✓ The flow and available differential pressure can be directly measured, helping to optimise pump operation.
- ✓ TA-SCOPE utilizes the outstanding diagnostic capabilities of IMI TA valves to detect and correct all potential faults.

\* Conditions apply. For more information please contact your local IMI representative.

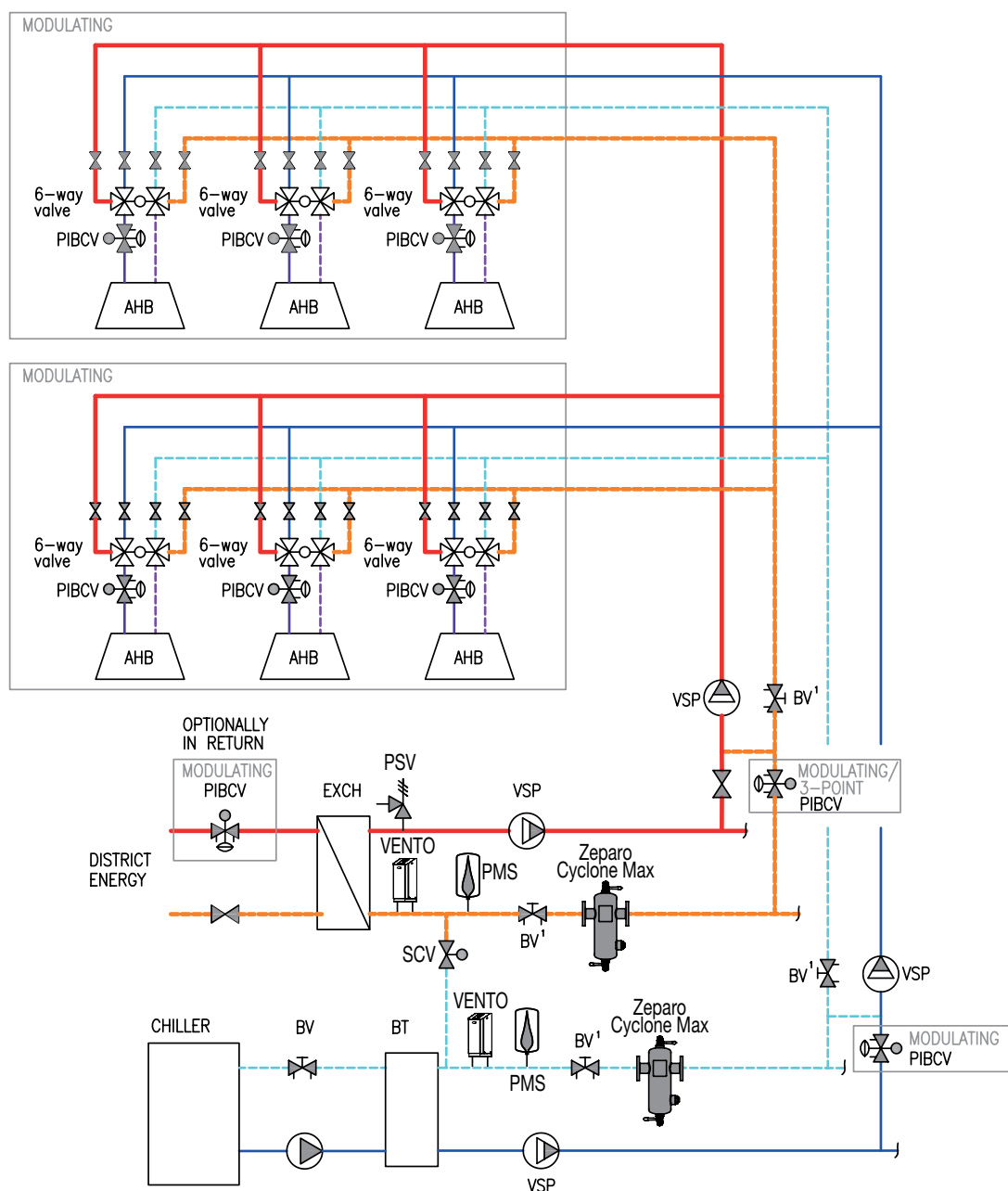
#### Quick links

A1		<b>TA-SMART</b>	Smart valve .....9
A2		<b>PIBCV</b>	Pressure independent balancing and control valves .....13
A4		<b>TA-Slider</b>	Actuators .....19
A5		<b>TA-6-way valve</b>	Standard control valves .....24
C1		<b>BV</b>	Balancing valves .....32
C4		<b>DPC-ZV</b>	Differential pressure controllers .....37
D1		<b>EV</b>	Expansion vessels .....44
D3		<b>PSV</b>	Safety valves .....52
E1		<b>Zeparo Cyclone Max</b>	Dirt & Gas separators and Cyclonic vacuum degassing units .....57

# G13a | Four-pipe heating and cooling system – variable flow

**Energy efficiency** Low ☐ ☐ ☐ ☐ ☒ High

**Investment** Low ☐ ☐ ☐ ☒ ☐ High



1) Recommended for flow measuring and system diagnostics

## Legend:

**AHB** – Radiant ceiling panels

**BT** – Buffer Tank

**BV** – Balancing valve

**EV** – Expansion vessel

**EXCH** – Heat exchanger

**FCU** – Fan-coil

**SCV** – If PMS is a Transfero / Compresso Connect, it is recommended to operate the pressurisation units in Master Slave IO (isolated operation). This ensures automatic and economic volume compensation because of the naturally and inevitably volume transfer during the operation of changeover systems.

**PIBCV** – Pressure-independent balancing and control valve (TA-Modulator) with TA-Slider 160 CO actuator (automatic adjustment of planned flow for heating and cooling)

**PMS** – Pressure Maintenance System: Pressurisation System + Water make-up

**PSV** – Safety valve

**6-WAY VALVE** – Special valve to switch between heating and cooling


**VENTO** – Cyclonic vacuum degasser (not necessary for Transfero Connect PMS as vacuum degassing is integrated)

**VSP** – Variable speed pump control

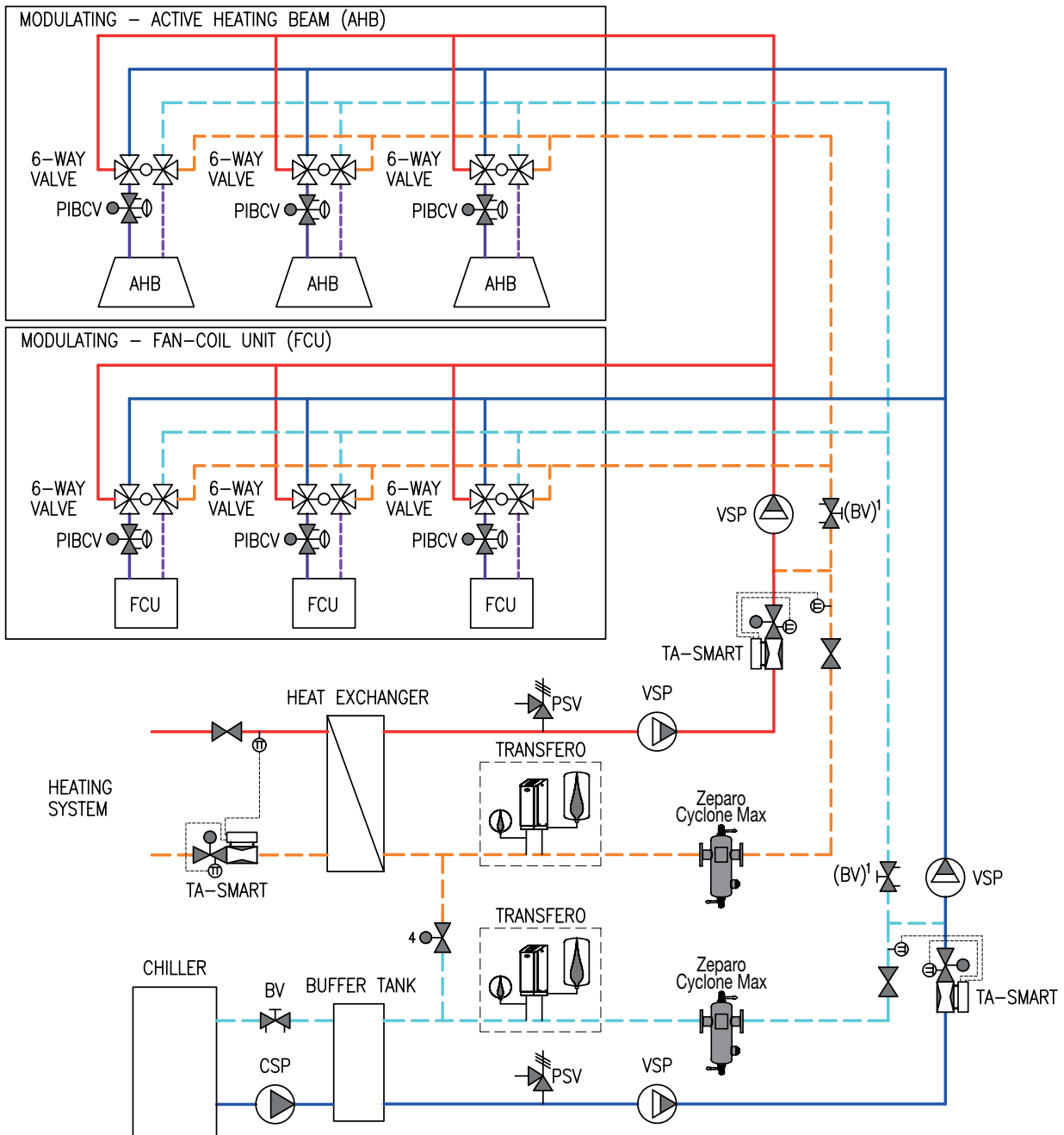
**Zeparo Cyclone Max** – Dirt & magnetite separator

## G13a | Four-pipe heating and cooling system – variable flow

**Energy efficiency** Low  High

Investment Low  High

## Recommended



- 1) Recommended for flow and energy measuring and system diagnostics close to TA-Smart
- 4) System connection valve to compensate for volume. This ensures automatic and economic volume compensation because of the naturally and inevitably volume transfer during the operation of changeover systems. Transfero Connect in heating and cooling system is recommended to operate the pressurisation units in Master Slave IO (isolated operation).

**Legend:**

**AHB** – Active heating beam

**BV** – Balancing valve

**CSP** – Constant speed pump

**FCU** – Fan-coil

### **Zeparo Cyclone Max – Dirt & magnetite separator**

**PIBCV** – Pressure independent balancing and control valve

**PSV** – Safety valve


**6-WAY VALVE** – Special valve to switch between heating and cooling


**TA-SMART** – Balancing and control valves with flow measuring capabilities

**VSP** – Variable speed pump control

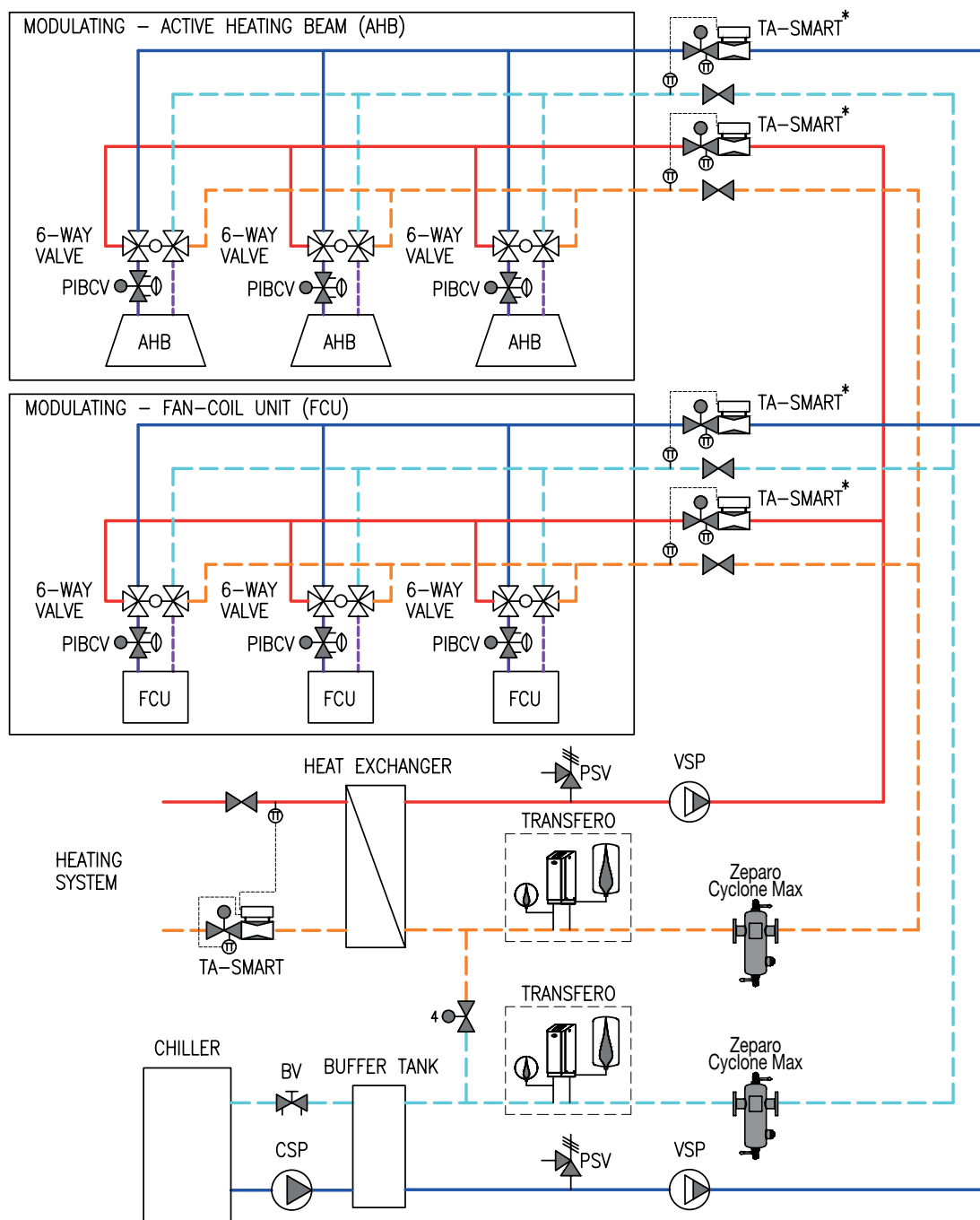
**TRANSFERO** – Pump based pressurization unit with water make-up and vacuum degassing

# G13c | Four-pipe heating and cooling system – variable flow

Energy efficiency Low  High

Investment Low  High

## Recommended



1) Recommended for flow and energy measuring and system diagnostics close to TA-Smart

\* Optional use of TA-SMART providing additional isolation of a zone and providing metering opportunities for power and flow.

4) System connection valve to compensate for volume. This ensures automatic and economic volume compensation because of the naturally and inevitably volume transfer during the operation of changeover systems. Transfero Connect in heating and cooling system is recommended to operate the pressurisation units in Master Slave IO (isolated operation).

### Legend:

**AHB** – Active heating beam

**BV** – Balancing valve

**CSP** – Constant speed pump

**FCU** – Fan-coil

**Zeparo Cyclone Max** – Dirt & magnetite separator

**PIBCV** – Pressure independent balancing and control valve

**PSV** – Safety valve

**6-WAY VALVE** – Special valve to switch between heating and cooling

**TA-SMART** – Balancing and control valves with flow measuring capabilities

**VSP** – Variable speed pump control

**TRANSFERO** – Pump based pressurization unit with water make-up and vacuum degassing

G14 | Special solutions – variable flow

Computer room air handling (CRAH) unit

Energy efficiency

- ✓ Stable and precise temperature control in all operating conditions.
- ✓ Continuous monitoring of system’s operation, including flow, temperatures, power and energy.
- ✓ Precise volume flow for direct cooling of CRAH units.
- ✓ Motorized drive with very low power consumption in standby mode.
- ✓ Wide range of addressable flows and loads adapting to the CRAH units’ load profiles.
- ✓ Pressure independent control with high authority for continuous control.
- ✓ Low energy consumption of the pump (no excessive flow).
- ✓ Very low pressure drop in the TA-Smart valves reduces the required pump availability pressure.
- ✓ ΔT limitation can be switched on to optimize return temperature to chillers.
- ✓ Possibility to switch in between control modes to find best parameters maximizing the energy efficiency.

Investment

- ✓ A solution with as few valves as possible. TA-Smart includes a heat meter, a control and balancing valve.
- ✓ TA-Smart have unique measurement and diagnostic functions for full system diagnostics at no additional costs.
- ✓ Quick return on investment (highest quality, extraordinary service life, large energy savings).
- ✓ Additional devices for stabilizing the differential pressure are not necessary.
- ✓ High flexibility. The cooling system can be built or extended in stages without having to repeat the hydraulic balancing process. Simply adjust the pump settings to your new system requirements.
- ✓ Extensive data gathering enables fact-driven maintenance to increase the installation’s life time.


Sizing

- ✓ Simple matching of a valve based on nominal flow.
- ✓ It is not necessary to verify the authority of the control valve.
- ✓ The valve comes pre-assembled from the factory, No requirement of matching an actuator with a valve.
- ✓ HySelect for hydraulic calculations can also be applied.

Commissioning



- ✓ Easy installation thanks to compact design.
- ✓ Simple setting of the maximum flow rate on each valve using a versatility of communication channels, like bus or MQTT.
- ✓ Flows and all parameters are set directly with the use of HyTune.
- ✓ Menu settings that are displayed graphically in HyTune.
- ✓ Parameter settings of other identical drives can be easily copied.
- ✓ Continuous monitoring of key circuit parameter facilitating commissioning and troubleshooting.



Quick links

A1	 TA-SMART	Smart valve .....9
C1	 BV	Balancing valves .....32

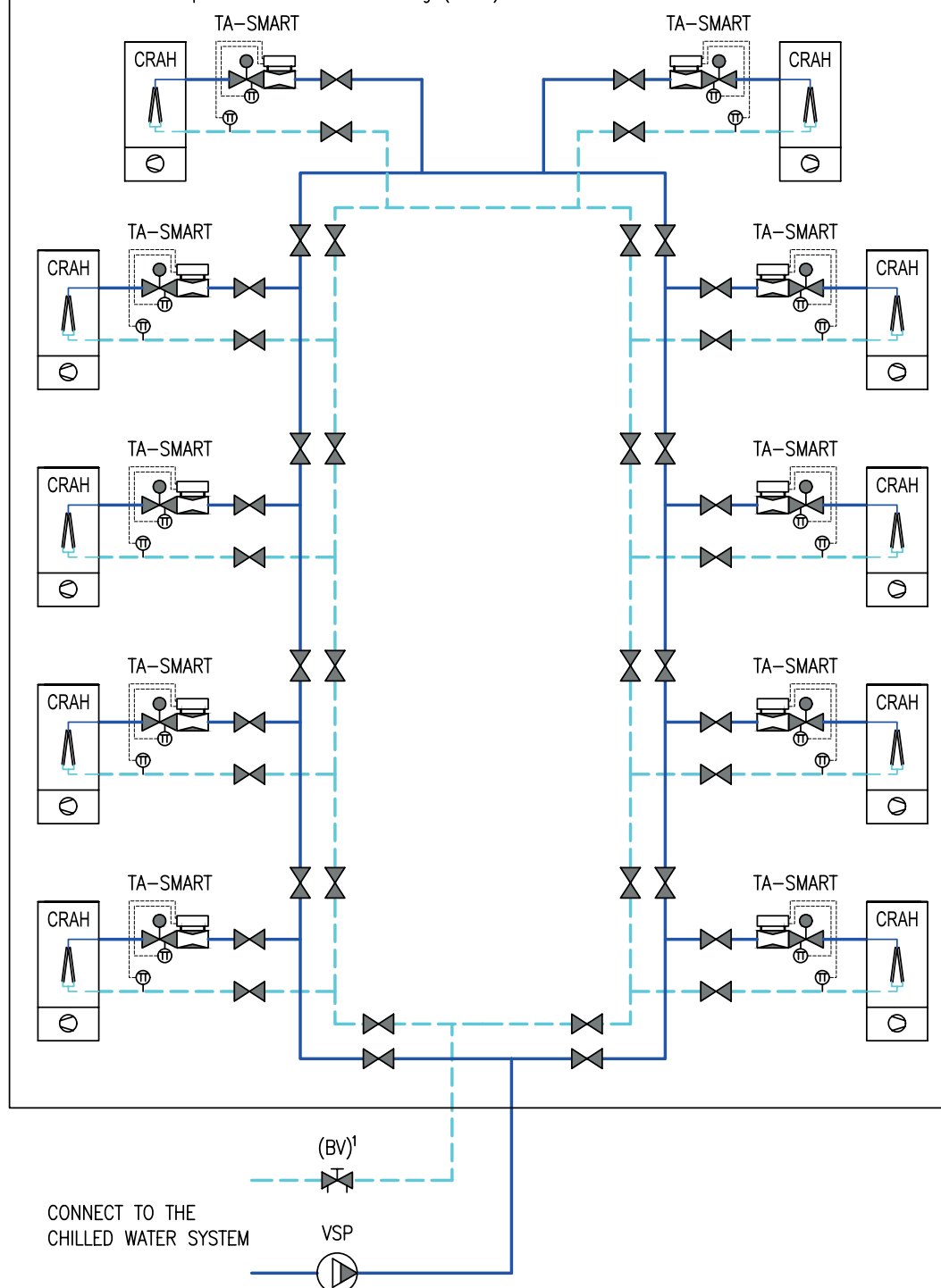


## G14 | Special solutions – variable flow

Energy efficiency Low  High 

Investment Low  High 

MODULATING – Computer room air conditioning (CRAH) unit



1) Recommended for flow and energy measuring and system diagnostics close to TA-Smart

### Legend:

**BV** – Balancing valve

**CRAH** – Computer room air handling unit

**TA-SMART** – Balancing and control valves with flow measuring capabilities

**VSP** – Variable speed pump control

# Simply Vento

## Taking care of your system so that you do not have to

The smart and compact vacuum cyclon degasser for HVAC systems provides you with all relevant data about your system's degassing status.

The information is accessible remotely through the internet or directly on out the BrainCube.

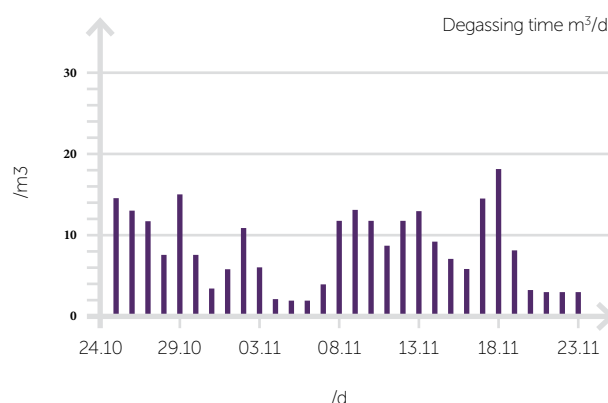
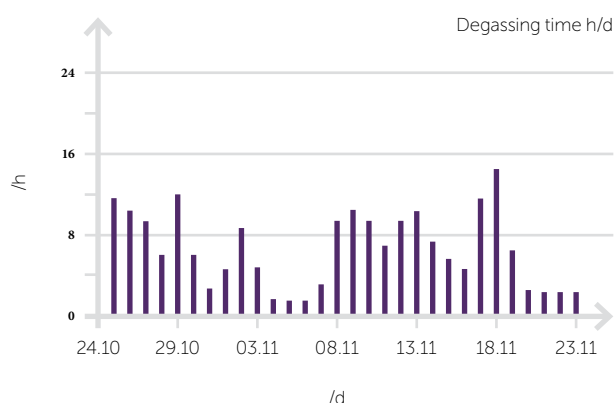
### Data collection:

- **NEW:** Enhanced analytical functions;
- Records all degassing data;
- The optional remote function provides access to all information, provided the control unit has a network connection;
- Programmable running time for optimal customer comfort.



### Remove air

Simply Vento



### Easy installation:

- Wall and floor mounting possible;
- Quick installation thanks to supplied, flexible connection hoses;
- Standard 1x 230 V supply voltage.

### Highly efficient vacuum cyclone degassing

- Highest degassing efficiency in the smallest space.

### BrainCube Connect Control

- Illuminated resistive 3.5" TFT color touchscreen display for intuitive operation with step-by-step commissioning and emergency assistance in pop-up windows;

- Multilingual full-text and/or graphical representation of all relevant parameters and operating states GLT-compatible via Modbus-TCP/RTU for monitoring and remote control;
- IMI web interface compatible for life-screen monitoring and remote control, measurement data acquisition and data analysis; easily connect via SMART phone, tablet, PC, web browser;

- **NEW:** Degassing term planning (night rest, holiday, weekday selection);
- **NEW:** Graphic and tabular representation of degassing operations with storage capability on USB stick.



## Climate Control

IMI Pneumatex  
IMI TA  
IMI Heimeier



# Limit return temperature and solve Low Delta T Syndrome

Discover the TA-Slider: A Digitally Configurable Actuator with T and 2T Features.

The new T and 2T feature allows the actuator to connect seamlessly to temperature sensors, enabling **direct measurement** and **optimisation** of **return temperatures**.

- ✓ **Ideal for renovation:** Easily mount actuators on existing valves, saving time and money.
- ✓ **Ease of Commissioning:** User-friendly features ensure a smooth and hassle-free setup.
- ✓ **Future-Readiness:** Optimise energy efficiency and comply with regulations.





## Case study

### Kalvebod Brygge

Discover how tailor-made products, value-enhancing services and commissioning efficiency were crucial for the success of this project.





## Case study

OPP Kalvebod Brygge is a completely new office building in the centre of Copenhagen, which covers an area of 40,000 m<sup>2</sup>. It hosts important players of the region such as the Danish Railroads, Danish Energy Agency, Danish Transport, Construction and Housing Authority and The Danish Road Directorate.

### The challenge

The project is a partnership between the public and private sector where project handling, commissioning, daily operation, maintenance and financing were all covered by a single contract between the government and the private sector.

This demanded highly reliable solutions and timely delivery of products. In addition, the BMS (Building Management System) supplier had specific requirements since they had a strong preference for KNX solutions on field level and actuators with low light or noise emission to not disturb the environment.

### The solution

Our TA-Slider 160 KNX solution was the perfect match to our customer's needs; it met the requirements of the BMS supplier and thanks to a tailor-made solution by IMI the KNX protocol was adjusted to include an option to shut off the actuator's lights.

In addition, this digitally configurable actuator, gave the installation company a competitive advantage thanks to fast and reliable product commissioning.

Furthermore, the BMS management system will benefit the future of the operation by ensuring it is effectively working at all times.

### The Outcome

IMI delivered 1,550 TA-Slider 160 KNX actuators and was also able to also cross sell 1,550 Calypso TRV-3 radiator valves.

Reliable products, value-enhancing services and commissioning efficiency were definitely crucial aspects for the success of this collaboration.



## Facts

<b>Project Type:</b>	Office Building
<b>Location:</b>	Copenhagen, Denmark
<b>Owner:</b>	Bygningsstyrelsen
<b>Consultant:</b>	MOE A/S
<b>Architect:</b>	Arkitema Architects
<b>System integrator:</b>	Grue & Hornstrup
<b>Gross area:</b>	40,000 m <sup>2</sup>

## Products installed

- ✓ TA-Slider 160 KNX
- ✓ Calypso TRV-3



## Pomona and Asterstraat Major Residential Complex

Refurbished with 2,940 IMI Heimeier Eclipse thermostatic valves in combination with IMI Heimeier K Heads.





## Case study

The Housing Association of Wageningen, in the Netherlands, refurbished one of their largest residential complexes to modernize the building and increase the comfort of the residents. One of the items that required extensive renovations was the 490 apartments, which needed their heating systems to be upgraded. IMI Hydronic won this project in May of 2019 and finalized it by October of the same year.

### The challenge

The two residential complexes are made up of more than 400 apartments and house a variety of residents. As a result of this diversity, owners have had a hard time finding a solution that ensured all tenants could benefit from a comfortable indoor climate while at the same time, keeping energy costs low.

### The solution

Ensuring all residents would benefit from energy savings without compromising on comfort, we advised the client to install IMI Heimeier Eclipse thermostatic valves in combination with Heimeier K-Heads, in the 490 apartments.

The IMI Heimeier Eclipse thermostatic valves, in combination with the K Head, was the best solution for the needs of the client. The Heimeier K-Head, with its built-in sensor and the AFC technology integrated into our Eclipse thermostatic valves, allows for highly precise temperature control in each room. These features were significant to the project as the client wanted a solution that allowed for personalization by the end-users to ensure their indoor comfort and wellbeing. In the long term, this combined solution provides energy savings as end-users will not feel the constant need to adjust the temperature creating inefficiencies in the system hence wasting energy.

Finally, due to the number of apartments, the owner needed a solution that could be installed in a variety of layouts and system setups. The Eclipse thermostatic valve was the perfect solution because, once the flow is set, it can not be exceeded, and the valve controls the flow rate independently from differential pressure, which can arise due to the system setups. The K-Head also tackled this challenge as its external sensors allow for installation in a variety of surroundings. The features of this solution ensured that the owner would not need to buy different thermostatic heads for each apartment.

The client was delighted with the benefits of the advised product and installed 2,940 Heimeier Eclipse Thermostatic Valves with Heimeier K-heads in the 490 apartments and is planning to use this technology in several upcoming renovations.



### Facts

<b>Project Type:</b>	Renovations, 490 apartments
<b>Location:</b>	Pomona and Asterstraat, Netherlands

### Products installed

- ✓ IMI Heimeier Eclipse thermostatic valves
- ✓ IMI Heimeier K-Heads



## Case study

### Royal Court of Appeals

Discover how the system has improved its performance with a stable indoor climate and improved energy efficiency as a result.



## Case study

The Royal Court of Appeal for Western Sweden is in central Gothenburg. The building was originally built in 1926 as headquarters for Broströms Rederi AB an important shipping company and in 1994 became the Royal Court of Appeals of Western Sweden and has been used for this purpose since. The building is 6 stories tall and hosts 110 offices, 8 courtrooms and a library in 5,070 sqm. The building is owned and operated by Platzer commercial real estate company managing 800km<sup>2</sup> of property in western Sweden.

### The challenge

The building has had problems with the cooling system for a long time, optimal comfort could not be achieved in the offices and courtrooms. The temperature difference of the district cooling was between 2°C and 3°C resulting in poor energy performance and high energy bills. The cooling system has a capacity of 160 kW and is operated by district cooling, serving chilled beams and two Air Handling Units (AHU). The heating system has a capacity of 350 kW and is operated by district heating serving radiators and the two AHUs.

### The solution

In 2021 a renovation of the system was made to get the system working properly. The renovation aimed to improve the water quality in the system and the air handling unit performance in controlling the room temperature.

#### Water quality improvement

- Cleaning the plate heat exchanger to the district cooling
- Installation of filters, flush and replace existing water

#### Air handling unit renovation

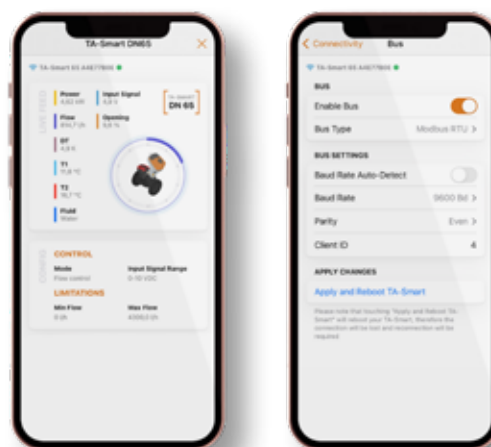
- Changed fan and coils on the air handling unit
- Installing TA-Smart on the air handling unit

After the energy renovation, the system has improved its performance with a stable indoor climate and improved energy efficiency as a result. During the previous 9 months, the room temperature has never deviated more than  $\pm 1^\circ\text{C}$  and is usually within  $\pm 0.5^\circ\text{C}$ . The temperature difference on the district cooling primary side is now improved and is between 8°C and 10°C instead of between 2°C and 3°C.

Marcus Andersson, the technical manager for the courthouse, wanted to try the TA-Smart to solve the problems they had with indoor climate and energy performance.

"We knew we needed to improve the building. I have always promoted pressure-independent solutions, either Differential pressure controllers (DPCV) or pressure-independent balancing and control valves (PIBCV). TA-Smart is the next step and I wanted to test how well it performed. What I like is that you get all the data and that it's very easy to commission. The data really helps identify what the problem is."

"We are very happy with how TA-Smart have performed in this installation. We usually try new technology on a small scale before we use it more broadly. Because of how well this test has gone we are now installing 17 more TA-Smart in another renovation we are doing."



## Facts

**Project Type:** Commercial Renovation  
**Location:** Gothenburg, Sweden

## Products installed

✓ TA-Smart DN40 & DN65



## Case study

# Harbord Diggers Memorial Club

Discover how the TA-6-way valve was able to deliver efficiency and control to a combined chilled and hot water climate control system.



## Case study

A world's first for community hubs, Harbord Diggers Memorial Club is creating an ideal indoor climate for entertainment, leisure and wellbeing. Improving the lives of the local community, both young and old, is the main focus of the redevelopment of the Harbord Diggers Memorial Club. It will provide a safe and secure living accommodation for older residents, while simultaneously delivering superb leisure facilities for the community as a whole.

### The challenge

The mixed-use nature of the project demanded a hydronic system capable of handling both chilled and hot water climate control. The solution would also have to employ innovative sequencing technologies to minimise piping and controls components and make the best use of limited space.

### The solution

A modulating system capable of providing accurate flow control to terminal units was seen as the ideal solution. IMI specified a bespoke solution using a combination of our ground-breaking digitally configurable actuators TA-Slider 160 with bus communication, pressure independent balancing and control valves, TA-Modulator and the recently launched TA-6-way valve.

It's a revolutionary solution that enables heating and cooling modes to be precisely controlled via single pipe system. Aside from delivering unparalleled flow control accuracy, it eliminates the need for multiple

valves and actuators and reduces both overall cost and the space taken up by the installation. And with the flexibility and ease-of-use provided by our leading-edge programmable digital actuators, ensuring maximum and minimum flow rates and a comfortable indoor climate at the touch of a button has never been easier.



### Facts

<b>Project Type:</b>	Leisure Facility
<b>Location:</b>	Australia
<b>Developer:</b>	Mounties Group
<b>Gross area:</b>	47,655 m <sup>2</sup>

### Products installed

- ✓ TA-6-way valve
- ✓ TA-Slider 160 Plus
- ✓ TA-Modulator



# Climate Control

Our product brands:  
IMI Pneumatex  
IMI TA  
IMI Heimeier

**Climate Control, a Sector of IMI plc**  
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