IMI

Climate Control

Our product brands:
IMI Pneumatex
IMI TA
IMI Heimeier

Commercial Solutions Guide

Balancing, Control and Actuators
Pressurisation and Water Quality



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IMI

Climate Control



IMI TA Balancing, Control and Actuation

Your trusted HVAC expert for precise control and energy efficiency

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.



2021

Introduction of the 2-way control valve **TA-Smart**, featuring uniquely shaped EQM characteristics and equipped with flow, temperature, and power measurement capabilities. In addition, customers can get a full overview of the TA-Smart performance and data through **HyCloud**.

Additionally available in two versions:
TA-Smart-Dp and TA-Smart Fail-safe



2025

TA-Nano, the evolution of our renowned TA-Compact-P. Innovatively designed with a slim body to maximize installation space and enhance integration.



2017

TA-SCOPE, our iconic measuring instrument, is updated with DpS-Visio to provide even simpler and more accurate measuring and balancing.



2016

Launch of **TA-Slider**, a digitally configurable actuator available with or without BUS communication.



2015

Introduction of the **TA-Modulator**, a highly precise modulating control valve.



2008

IMI TA reaches **100 000 project** wins.



1897

August Hilmer Andersson (AHA) began manufacturing water and heating fittings in Ljung, Sweden.



1957

We launched the first manual balancing valve in the world.



1977

AHA and Tour Agenturer merge to form Tour & Andersson AB (TA).



1997

IMI acquires TA and establishes IMI TA.

Control valves and Actuators

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 / TA-Nano
with **TA-Slider 160**



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



TA-Smart / TA-Modulator
with **TA-Slider 750**

KNX
BACnet
Modbus

Control valves and actuators

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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. Delta pV	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 [1]	
DN 65-150	16/25						

1 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 pL) TA-Smart-Dp Fail-safe: Pre-setting Delta p over the load (Delta pL) and failsafe setpoint
Reading	Flow, power, energy, supply/return temperature, Delta T, position Measuring (Delta pL) - TA-Smart-Dp
Manual override	via HyTune app

* Available with TA-Smart-Dp



Meet TA-Smart by **IMI TA**

Bringing DATA to life.

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 acccuracy and control performance in water and water-gylcol mixtures at all temperatures guarantees high comfort
- Versatility of communications with digital (BUS communications or Bluetooth mobile application) or analog (0(2)-10V and 0(4)-20 mA) provides full 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.



DN 15-50



DN 65-150

A1 | Smart Control

TA-Smart / TA-Smart-Dp / TA-Smart-Dp Fail-safe / TA-Smart Fail-safe DN 15-50	TA-Smart / TA-Smart-Dp / TA-Smart-Dp Fail-safe / TA-Smart Fail-safe DN 65-150
	
✓ Flow range up to 15000 l/h (DN 50) ✓ Compact and easy to mount valve enabling flexibility on site	✓ Flow range up to 165000 l/h (DN 150) ✓ 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

See applications G2 G3 G10 G14 G15

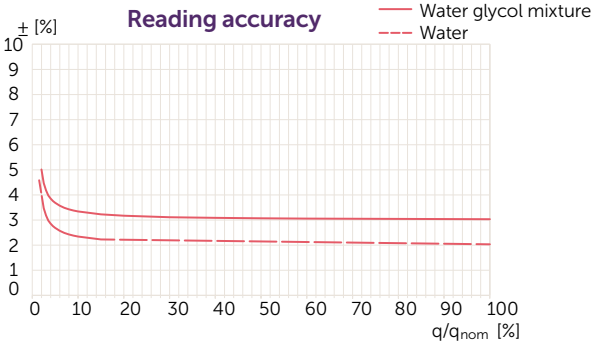
Measurement Accuracy

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

IMI valves were tested for performance and durability with the five following fluids:

- ✓ Water
- ✓ Water-Ethylene glycol mixtures up to 56%
- ✓ Water-Propylene glycol mixtures up to 57%
- ✓ Water-Kilfrost GEO mixtures up to 50°C for concentration up to 40% and up to 20°C for concentration up to 50%
- ✓ Glysofor E

Note: Kilfrost GEO and Glysofor E require TA-Smart firmware version 11.x.x or later.



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 15-50 and 5D for TA-Smart DN 65-150).

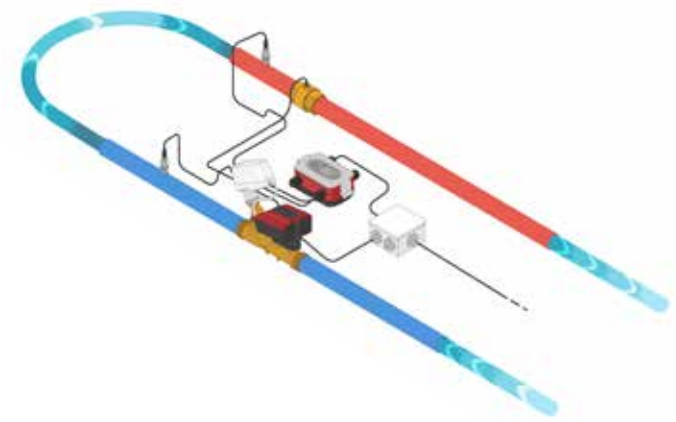
Product variants

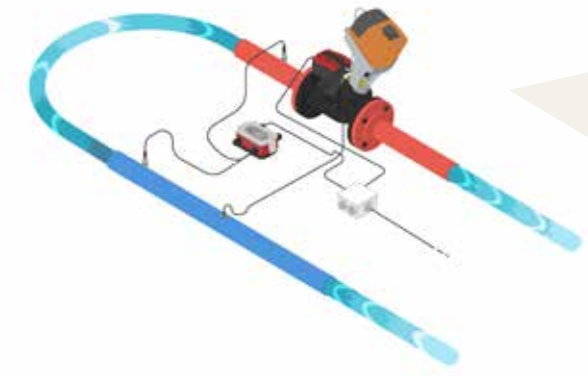
In addition to the standard TA-Smart valve, we have developed specific product variations to meet all system-specific needs.

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 DN 65-DN 150 variants perfectly match the size of STAP and TA-PILOT-R differential pressure controllers, ensuring a hassle-free integration.





Two different pressure modules depending on the circuit differential pressure:

Static pressure range:
TA-Sense-Dp-6: 0-6 bar
TA-Sense-Dp-10: 0-10 bar
TA-Sense-Dp-16: 0-16 bar
TA-Sense-Dp-25: 0-25 bar

Differential pressure range mapping:
Range can be adjusted continuously (depending on the static pressure range) using the buttons or the HyTune app.

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.

Fail-Safe
Good - Ready



Key Technical parameters in Differential pressure control mode

TA-Smart-Dp range	Input signal	Output signal
DN 15-150	BACnet/Modbus	BACnet/Modbus 0(2)-10 VDC

TA-Smart HyCloud

WATCH THE VIDEO

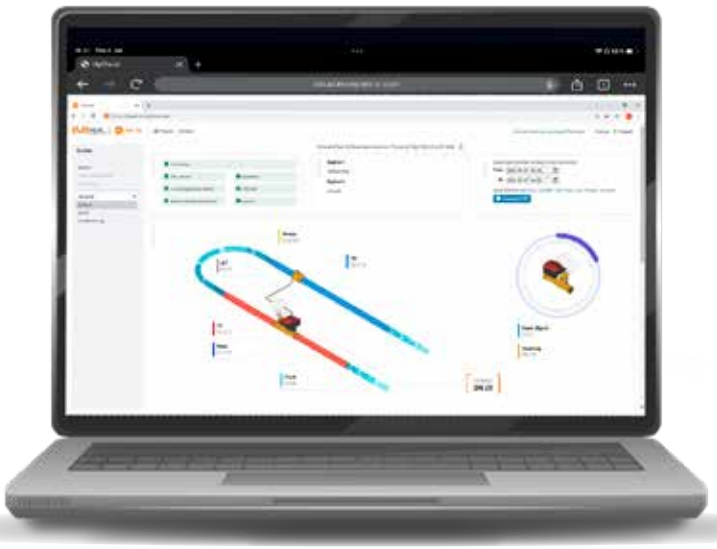
Revolutionise connectivity with TA-Smart valves via HyCloud

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.

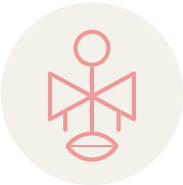
- Status of your valves
- Current and historical data reading of the valves
  - Flow
  - Position
  - Power
  - Supply, return and delta temperatures
  - Input signal



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. Delta p bar	Control characteristics	Dimensions											
						10	15	20	25	32	40	50	65	80	100	125	150	200
TA-Nano	25	-10	110	6	LIN	✓	✓	✓	✓									
TA-Nano Plus	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
TA-Nano	✓	✓	✓	✓					
TA-Nano Plus	✓	✓	✓	✓	✓	✓	✓	✓	✓
TA-Modulator	✓	✓	✓	✓	✓	✓	✓	✓	✓
KTM 512	✓	✓	✓	✓		✓	✓	✓	

A2 | Pressure independent balancing and control valves (PIBCV)

TA-Modulator

EQM



- **Expanded Flow Range:** Up to 329 m³/h (new DN 200), 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.

TA-Nano / TA-Nano Plus

LIN



- **Compact design:** Engineered to fit into tight spaces without compromising performance, making it ideal for varied installation environments.
- **Expanded flow range options:** TA-Nano DN 15 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.

KTM 512

EQM



- **Expanded Flow Range:** Up to 66.8 m³/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.

See applications G1 G4 G5 G7 G10 G11 G14

TA-Sixline:
Linear 6-way valve for 4-pipe systems

The TA-Sixline is a compact, linear 6-way valve specifically developed for 4-pipe systems that combine heating and cooling in a single terminal unit, such as climate ceilings. It ensures precise control and stable regulation in every position.

Designed to work seamlessly with the TA-Slider 200 actuator, it offers reliable performance, simplified commissioning, and fully integrated control.

Your benefits

- Ease of commissioning: Simple flow or Kv setup setup via TA-Slider, no Kv inserts or complex PLC programming required
- Ease of installation: Compact design with 360° actuator orientation
- Flexible product range: Standard and Pressure independent versions
- Wide flow range

TA-Sixline

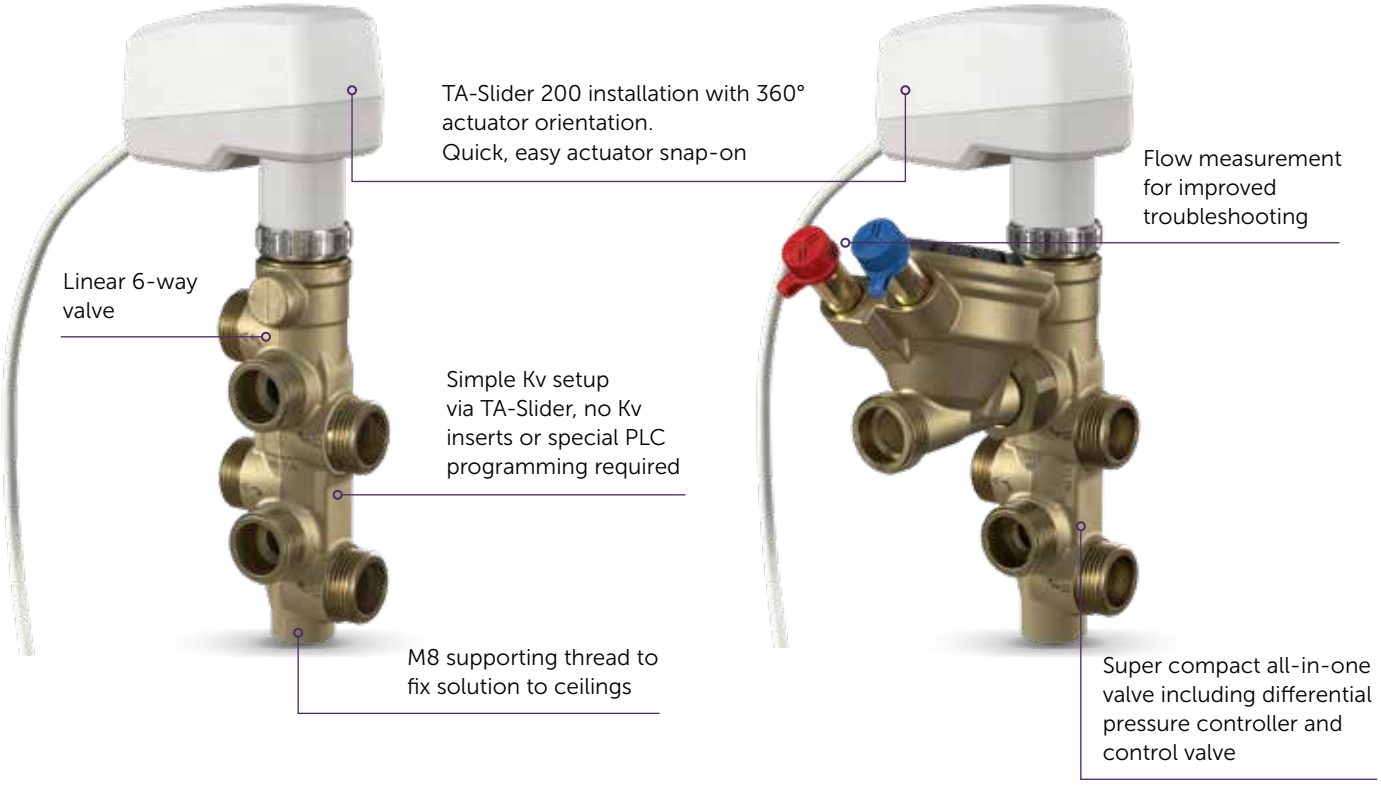
Standard linear 6-way valve

- Kv: 0.1 – 1.11
- One valve fits all no requirements of Kv inserts, Kv setup via actuator
- Actuator available in BUS (Modbus, BACnet, KNX)

TA-Sixline PI

Pressure Independent (PI) version

- Pressure independent valve
- Flow range: 30 – 560 l/h
- Actuator available in BUS (Modbus, BACnet, KNX)



Please contact your local sales representative for more information about product availability in your country.

A3 | Combined balancing and control valves



IMI TA combined balancing and control valves have all the advantages of control and balancing valves built in one body. They dramatically reduce the required number of valves by decreasing installation time and costs. All our combined balancing and control valves are equipped with measuring nipples providing extensive diagnostic functions for hydronic balancing and easy commissioning. A wide variety of control characteristics and actuators offer a unique range for different applications.

Your benefits

- Faster and cheaper installation
- Modulating, 3-point or On-Off control possible
- High energy efficiency and low pumping costs

Key technical parameters

A3 Combined balancing and control valves	PN class bar	Min temp. °C	Max temp. °C	Max. Delta p bar	Control characteristics	Dimensions										
						10	15	20	25	32	40	50	65	80	100	125	150
TBV-C	16	-20	120	9,7[1]	LIN[2]		✓	✓	✓								
TBV-CM	16	-20	120	9,7[1]	EQM		✓	✓	✓								

1 According to DN and type of actuator
2 Ideal for On-Off control

Functions

A3 Combined balancing and control valves	Control			Kv/Kvs setting	Shut-off	Measurement				
	On-off	3-point	Modulating			Flow	Pressure drop	Temperature	Available differential pressure	Power
TBV-C	✓			✓	✓	✓	✓	✓	✓	✓
TBV-CM		✓	✓	✓	✓	✓	✓	✓	✓	✓

A3 | Combined balancing and control valves

TBV-C	TBV-CM
LIN 	EQM 
✓ **Tailored for Small Terminal Units:** Perfect for precise On-Off control in compact spaces. ✓ **Effortless Installation:** M30x1.5 actuator connection for quick setup and reliability. ✓ **Greater Flexibility in System Design:** Lift independent of Kv pre-setting ✓ **Premium Material:** Crafted from patented alloy AMETAL®, guaranteeing durability and reliability for long-term use.	✓ **Precise Modulating Control:** EQM characteristics ensure precise modulation for optimal system performance. ✓ **Greater Flexibility in System Design:** Lift independent of Kv pre-setting ✓ **Effortless Installation:** M30x1.5 actuator connection for easy setup and reliability. ✓ **Premium Material:** Crafted from patented alloy AMETAL®, guaranteeing durability and reliability for long-term use.

Suitable actuators

See applications G2 G7 G8 G10

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

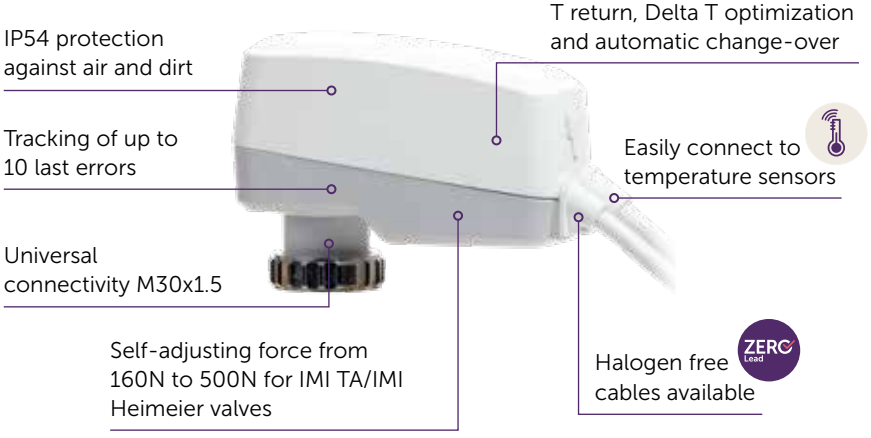
For control valves from DN 10 up to DN 50

	TA-Slider versions for **Non-BUS Systems**	TA-Slider versions for BUS **Communication Systems (RS-485)**	TA-Slider versions for **Fail-safe**	TA-Slider **T-2T**[1]
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

1 TA-Slider T-2T is a new version of the Slider that can be conected 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



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



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



TA-Slider 1600



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



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 Kv_{max} 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 (RS-485 or IP)

IMI

Climate Control



Meet TA-Slider + TA-Modulator by **IMI TA**

Optimal control and flexibility in buildings

- 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.

Breakthrough engineering for a better world

A4 | TA-Dongle

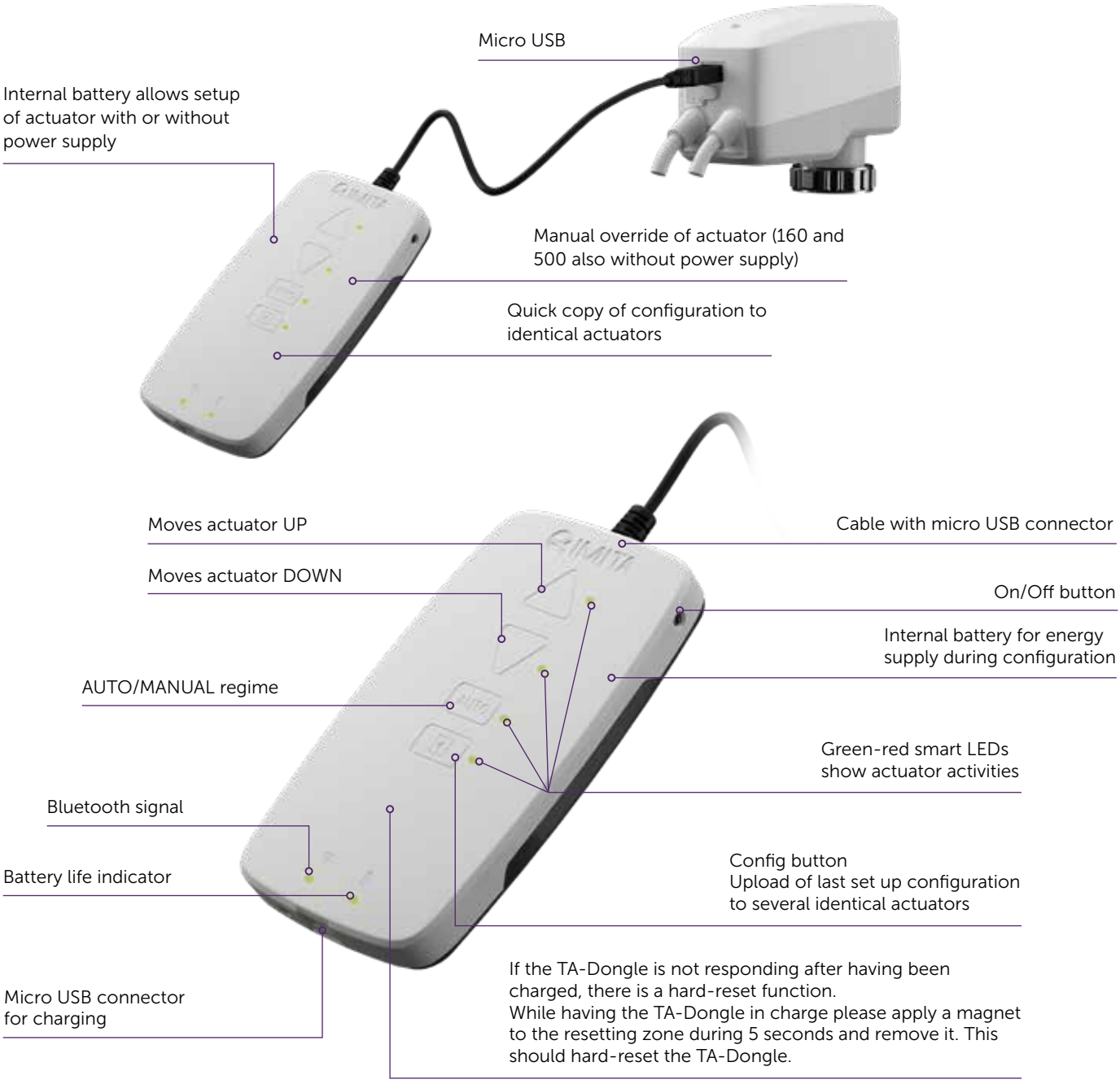
Actuators for balancing and control valves

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

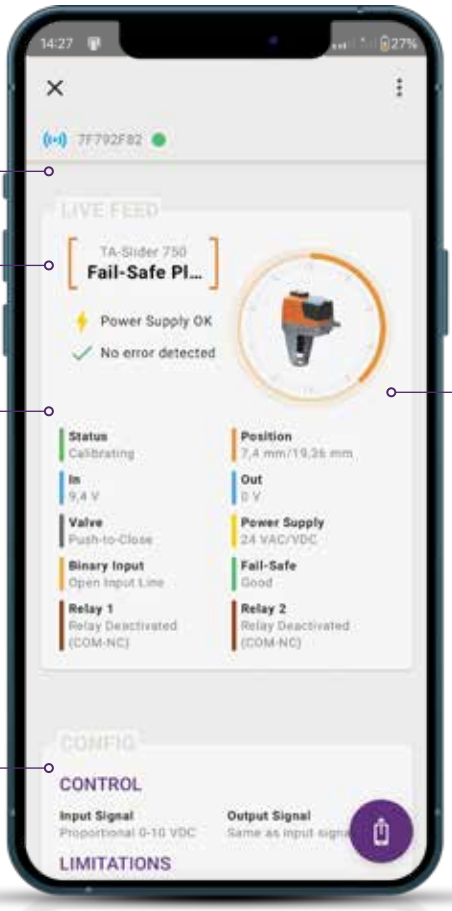
Mobile application for configuration and control of TA-Sliders via TA-Dongle

GET IT ON Google play

Available on the App Store

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"

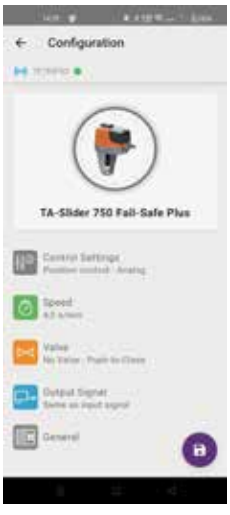
For smartphones using iOS version 5 or later and Android version 4.3 or later.

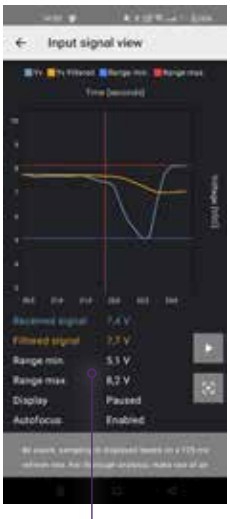
See the control signal received by the actuator

Oscilloscope function

Overview of actual operating statuses and actuator parameters







Min/max values of oscillation

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
TA-Slider 160 (optional I/O, CO, Plus, Fail-safe, T-2T)	Motorized	Modulating	24 VAC/VDC	0(2)-10VDC fully configurable [2]	0(2) -10 VDC	6.9	TBV-CM, TA-Modulator DN 10-32, TA-Nano
TA-Slider 160 BACnet, Modbus, KNX (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-Nano
TA-Slider 500 (optional I/O, Plus, Fail-safe, T-2T)	Motorized	Modulating	24 VAC/VDC	0(2)-10VDC fully configurable [2]	0(2)-10 VDC	16.2	TA-Modulator DN 40-50, KTM 512 DN 15-50, CV
TA-Slider 500 BACnet, Modbus (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
TA-Slider 750 (optional Plus, BACnet, Modbus, Fail-safe, 2T)	Motorized	Modulating	24 VAC/VDC, 230 VAC	0(2)-10 VDC, 0(4)-20 mA, 3-POINT, on-off [3]	0(2)-10 VDC, 0(4)-20 mA	22	KTM 512 DN 65-100[1], TA-Modulator DN 65-125, CV
TA-Slider 1600 (optional Plus, BACnet, Modbus, Fail-safe, 2T)	Motorized	Modulating	24 VAC/VDC, 230 VAC	0(2)-10 VDC, 0(4)-20 mA, 3-POINT, on-off [3]	0(2)-10 VDC, 0(4)-20 mA	33	KTM 80-125[1], TA-Modulator DN 100-200[1], CV
EMO T II	Thermoelectric	On-off/ PWM	24 VAC/VDC, 230 VAC	ON-OFF	-	4.7	TBV-C, TA-Nano
EMO TM II	Thermoelectric	Modulating	24 VAC/VDC	0-10	-	4.7	TBV-CM, TA-Modulator DN 10-20
TA-TRI	Motorized	3-point	24 VAC 230 VAC	3-POINT, ON-OFF	-	4.5	TBV-CM, TA-Modulator DN 10-32,
TA-MC55	Motorized	Modulating/ 3-point	24 VAC/VDC[4] 230 VAC	3-POINT	0(2)-10 VDC	20	KTM 512 DN 15-80
TA-MC55 Y	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
TA-MC100	Motorized	Modulating/ 3-point	24 VAC/ VDC[4], 230 VAC	0(2)-10 VDC, 0(4)-20 mA, 3-POINT	0(2)-10 VDC	20	KTM 512 DN 15-100

* Except KNX
1 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.
2 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.
3 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.
4 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	KTM 512	KTM 512
	DN 15-25	DN 15-25	DN 10-20	DN 25-32	DN 40-50	DN 65-80	DN 100-125	DN 125-200		DN 15-50	DN 65-125
TA-Slider 160	✓ 1	✓	✓	✓					✓		
TA-Slider 500					✓					✓	
TA-Slider 750					✓ 2	✓	✓ 3				✓ 4
TA-Slider 1600							✓	✓			✓ 4
EMO T II	✓								✓		
EMO TM II	✓		✓						✓		
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 TA-Modulator DN 100-DN 125 if Delta pV is lower than 400 kPa
4 Adapter required

A4 | Actuators for balancing and control valves

TA-Slider 160, 500



- Fully configurable by smartphone
- Manual override by TA-Dongle
- Memory for last 10 errors
- Available with electronic fail-safe function
- IP54 protection class in all positions
- Configurable relay and binary input
- BUS compatibility with BACnet, Modbus and KNX bus protocol
- Adjusting force: TA-Slider 160 (160/200N), TA-Slider 500 (500N)
- Change-over version available

TA-Slider 750, 1600



- Fully configurable by smartphone
- Manual override by hexagonal key or TA-Dongle
- Memory for last 10 errors
- Avaialable with electronic fail-safe function
- IP54 protection class
- Configurable 2 relays and binary input
- BUS compatibility with BACnet, Modbus protocols
- Adjusting force: TA-Slider 750 (750N), TA-Slider 1600 (1600N)

EMO T II



- Visible position indicator
- Connection M30x1.5 plastic snap-on ring
- IP54 protection class in all positions
- Adjusting force 100N

EMO TM II



- Visible position indicator
- Connection M30x1.5 plastic snap-on ring
- Auto-adaptation to input signal
- Automatic stroke adjustment
- IP54 protection class in all positions
- Adjusting force 100N

TA-TRI



- Automatic stroke adjustment
- Low-noise operation
- Low energy consumption
- Connection M30x1.5
- IP54 protection class in all positions
- Adjusting force 200N

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. Delta p 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[1]	EQM/ EQM-LIN [2]	✓	✓	✓	✓	✓								
HVAC	**CV206/216 GG, CV306/316 GG**	6/16	0 (-10)	150	1.6[1]	EQM/ EQM-LIN [2]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	TA-Sixline	16	-10	120	2	LINEAR	✓												
INDUSTRIAL[4]	**CV216/316**	16	0 (-30[1])	180 (350)[3]	1.6[1]	EQM/ EQM-LIN [2]										✓	✓	✓	✓
INDUSTRIAL[4]	**CV225/325**	16/25/40	0 (-30[1])	180 (350)[3]	4.0[1]	EQM/ EQM-LIN [2]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
INDUSTRIAL[4]	**CV240/340 S/E**	40	0 (-30[1])	180 (350)[3]	4.0[1]	EQM/ EQM-LIN [2]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
INDUSTRIAL[4]	**BR12WT**	6/16	-10	110	12[6]	N/A			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

1 According to DN and type of actuator
2 3-way control valves, EQM in direction A-AB, LIN in direction B-AB
3 Higher temperature available with special accessories
4 For more information please visit climatecontrol.imiplc.com

CV2xx = 2-way valves
CV3xx = 3-way valves

A5 | Control valves

TA-Sixline



- Two models: pressure-independent and standard.
- Compact, ideal for space-constrained installations.
- Adjustable via actuator Kvs, no inserts or PLC signal limits required.
- Perfect combination with TA-Smart-Dp.

CV216/316 RGA



- Kvs range: 0,63 - 40
- Ideal valve for 3-point or modulating control of mid sized HVAC applications
- Extensive actuator programme for different closing pressure and actuating time
- Delivered with connection fittings
- Wide range of accessories, silicon free version available

CV206/216 GG, CV306/316 GG



- Kvs range: 0,63 - 500
- Suitable for wide range of HVAC applications
- Extensive actuator programme for different closing pressure and actuating time
- Tight closed in both end-positions
- Wide range of accessories, silicon free version available

BR12WT



- Easy mounting by eyelets
- Centralised flap
- Manual operation with lever
- Rotation direction indication
- The flap and tight EPDM sealing for wide medium range

CV240/340 S/E



- Kvs range: 0,16 - 1250, special Kvs values available
- Version S: made from cast steel
- Version E: made from stainless steel
- Extensive range of actuators and accessories
- Also suitable for different media on request

CV216/316, CV225/325



- Kvs range: 0,16 - 1600, special Kvs values available
- Suitable in building and process engineering for various mediums
- 3-way version can be used as a mixing valve or a diverting valve
- Different body materials for various temperatures and pressures

Suitable actuators

See applications G3 G6 G10 G11 G14

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			✓ 2			✓			
TA-MC100	✓	✓	✓ 2		✓	✓ 2			
TA-MC160			✓ 3	✓		✓ 3	✓		
TA-MC161	✓ 1	✓ 1	✓ 2		✓ 1	✓			
TA-MC220						✓	✓		
TA-MC400			✓ 3	✓		✓ 3	✓	✓	✓ 4
TA-MC500			✓ 3	✓		✓ 3	✓	✓	✓
TA-MC1000								✓	✓
TA-Slider 750[5]	✓	✓	✓ 2		✓	✓ 2			
TA-Slider 1600[5]			✓ 3	✓		✓ 3	✓		

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[1]	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[1]	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[2]	Max. 20
TA-MC100/230[1]	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC[2]	Max. 20
TA-MC160/24	Modulating/3-Point	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC[2]	Max. 30
TA-MC160/230[1]	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC[2]	Max. 30
TA-MC161/24	Modulating/3-Point	24 VAC/VDC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC[2]	Max. 20
TA-MC161/230[1]	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC[2]	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[1]	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[2]	Max. 30 or 60
TA-MC400/230[1]	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC[2]	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[2]	Max. 30 or 60
TA-MC500/230[1]	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC[2]	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[2]	Max. 60
TA-MC1000/230[1]	Modulating/3-Point	230 VAC	0(2)-10 VDC/0(4)-20 mA 3-Point	0-10 VDC[2]	Max. 60
TA-Slider 750 (optional Plus, BACnet, Modbus, Fail-safe, T- 2T)	Motorized	24 VAC/VDC, 230 VAC	0(2)-10 VDC, 0(4)-20 mA, 3-Point, on-off	0(2)-10 VDC, 0(4)-20 mA	22
TA-Slider 1600 (optional Plus, BACnet, Modbus, Fail-safe, T- 2T)	Motorized	24 VAC/VDC, 230 VAC	0(2)-10 VDC, 0(4)-20 mA, 3-Point, on-off	0(2)-10 VDC, 0(4)-20 mA	33

1 Voltage 115 VAC available
2 Output signal 0(4)-20mA available as accessories

A6 | Actuators for standard control valves

TA-MC55, TA-MC55Y, TA-MC65



- Automatic stroke adaptation
- Binary input for frost protection function
- Blockage detection
- Manual mode
- Adjusting force 600N

TA-MC100



- 24V version enables modulating or 3-point control (switch)
- Automatic stroke adaptation
- Binary input for frost protection function
- Blockage detection
- Manual mode
- Adjusting force 1000N

TA-MC160, TA-MC161, TA-MC220, TA-MC223



- 24V version enables modulating or 3-point control (switch)
- Automatic stroke adaptation
- Binary input for frost protection function
- Blockage detection
- Wire breakage detection
- Manual mode
- Adjusting force 1600N (VAC), 1100N (VDC)

TA-MC400, TA-MC500, TA-MC1000



- Automatic stroke adaptation
- Min-Max position indicators
- Binary input for frost protection function
- Blockage, wire breakage and lock detection
- Overheating protection
- Internal temperature monitoring
- Automatic actuator heating
- Open circuit detection
- Adjustable hysteresis for input signal
- Different actuating times
- Autopause to avoid control hunting
- Manual mode
- Low power consumption
- Adjusting force:
  - MC400 4 kN
  - MC500 5 kN
  - MC1000 10 kN

Sensors

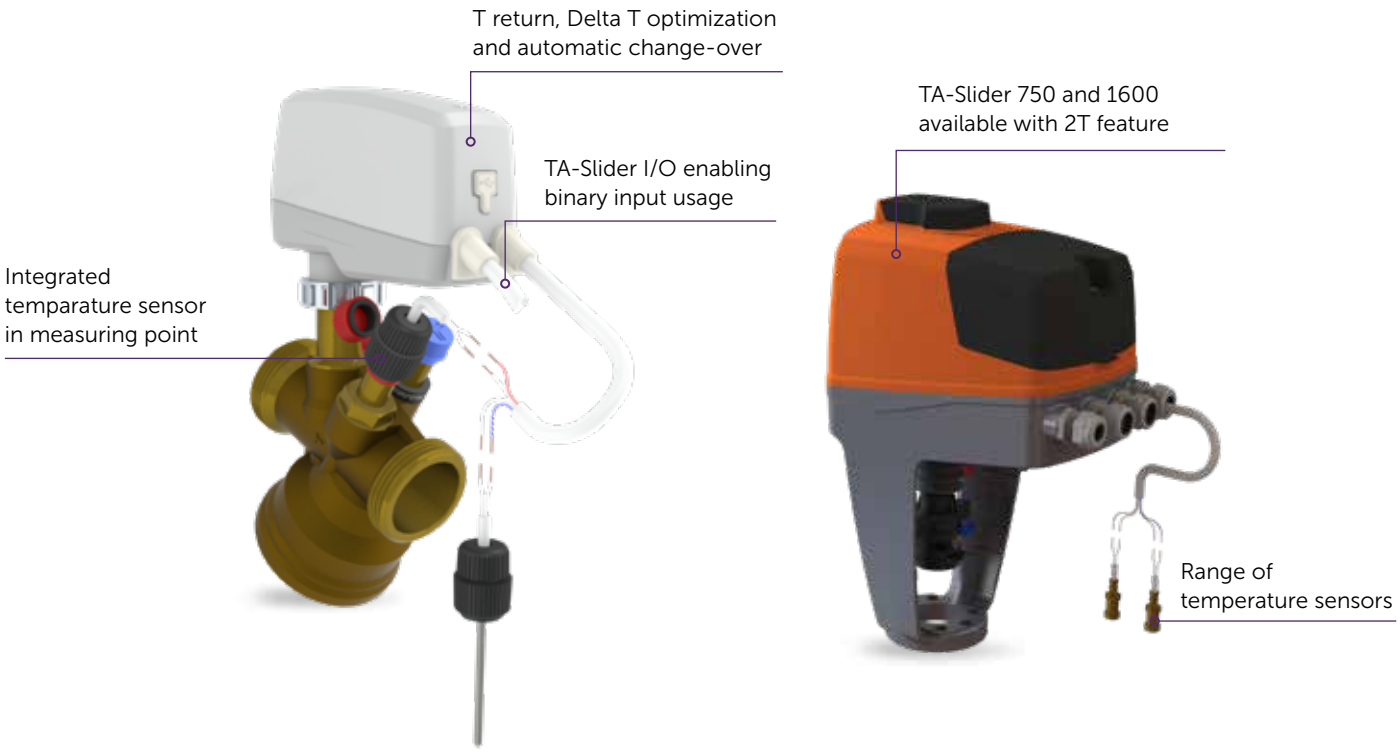
Introduction

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

B1 Temperature Sensors..... 31
B2 Differential Pressure Sensors..... 31

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
		
✓ Ideal for retrofit ✓ Accurate and fast response time ✓ Easy installation: No piping work ✓ Available for valves from DN 10-400	✓ Reliable and well-established market solution ✓ Available for piping from DN 10-DN 300	✓ Ideal for retrofit ✓ Easy installation: No piping work ✓ Requirement of insulation to ensure accuracy and good response time

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.

Differential pressure sensors can also be used to drive efficiently variable speed pumps.

TA-Sense-Dp



- ✓ Easy to install and robust differential pressure sensor accomodating for flexible system design.
- ✓ Sensor with visibility on Static Pressure and integration with TA-Smart.
- ✓ Pre-integrated sensor solution with no capillaries.
- ✓ Sensor to monitor high-power assets in large installations.
- ✓ Easy and versatile commissioning with HyTune App.

Hydronic System Balancing

Introduction

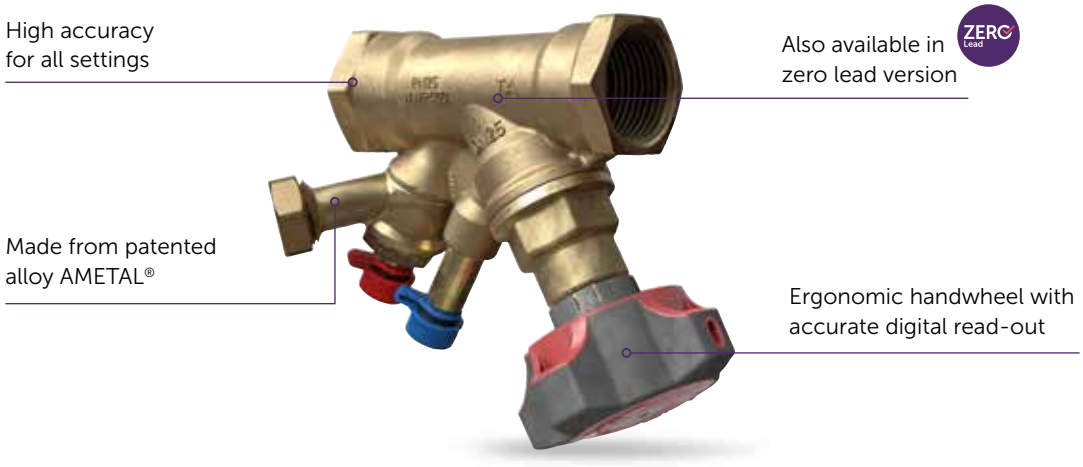
The first balancing valve in the World was manufactured in our factory in Sweden in 1957

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.



Hydronic System Balancing

C1 Balancing valves.....33
C2 Fixed orifices.....36
C3 Double regulating valves.....37
C4 Differential pressure controllers.....38
C5 Differential pressure relief valves.....40

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[1]	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	25	-10	120								✓	✓	✓	✓	✓	✓	✓	✓		
STAF-SG	16/25	-10	120			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TA-BVS 240/243	16/25 [2]	-20	DN 15-50: 120 DN 65-250: 200		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
TA-BVS 140/143	16/25 [2]	-20	DN 15-50: 120 DN 65-400: 200		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

1 Available as ZERO version
IMI Zero products are manufactured with ecobrass containing less than 0.1% lead.
2 Other PNs 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[1]	AMETAL® /ZERO	Threaded		✓ 1		
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			✓ 2	
STAF-R	Gunmetal	Flanged			✓ 2	
STAG	Ductile iron	Grooved			✓ 2	
STAF-SG	Ductile iron	Flanged			✓ 2	
TA-BVS 240/243	Stainless steel	Flanged / Welding				
TA-BVS 140/143	Steel	Flanged / Welding				

1 Special version available
2 from DN 100

TBV



- ✓ Ideal valve for balancing small terminal units
- ✓ Compact size
- ✓ Full measuring capabilities
- ✓ Made from patented alloy AMETAL®

STAD



- ✓ The most popular balancing valve worldwide
- ✓ Excellent measuring accuracy
- ✓ Ergonomic handwheel with accurate digital display of the setting number available with / without 3/4" draining
- ✓ Made from patented alloy AMETAL®
- ✓ Available as ZERO lead version

STAD-C



- ✓ The STAD-C balancing valve has been specially developed for use in indirect cooling systems.
- ✓ Double sealed measuring points with high protection against leakages
- ✓ Ergonomic handwheel with accurate digital display of the setting number
- ✓ External threads or smooth ends for tight and reliable connection
- ✓ Made from patented alloy AMETAL®

See applications G1 G2 G3 G4 G5 G6 G7 G8 G10 G11 G12 G13

C1 | Balancing valves

STAD-R



- Unique balancing valve for renovations with reduced Kv values
- No need to reduce pipe dimensions; decreases installation costs
- Ergonomic handwheel with accurate digital display of the setting number
- Full measuring posibilities with high accuracy
- Made from patented alloy AMETAL®
- Draining adapter at serial delivery

STAD-D



- Balancing valve for hot tap water systems with special protection against oxygen corrosion
- Certified to be used in systems with drinking water by RISE (Research Institutes of Sweden).
- Ergonomic handwheel with accurate digital display of the setting number
- Excellent measuring accuracy
- Made from patented alloy AMETAL®
- Draining adapter at serial delivery

STAF, STAF-SG



- Equipped with a digital display for the setting number, the handwheel ensures accurate and straightforward balancing
- Self-sealing measuring points for simple, accurate balancing
- Positive shut-off function for easy maintenance

STAG



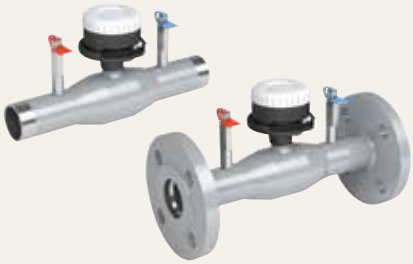
- Equipped with a digital display for the setting number, the handwheel ensures accurate and straightforward balancing
- Self-sealing measuring points for simple, accurate balancing
- Positive shut-off function for easy maintenance
- Grooved ends

STAF-R



- Body made from gunmetal with high resistance to corrosion for tap/industrial water systems
- Positive shut-off function for easy maintenance
- Self-sealing measuring points for simple, accurate balancing
- Bonnet, cone (PTFE-coated) and spindle made from patented alloy AMETAL®

TA-BVS 240/243, TA-BVS 140/143



- Stainless steel (240/243) or Steel (140/143) balancing valve with flanges or welding ends
- TA-BVS 240/243: Ideal for use mainly in industrial and high temperature application
- TA-BVS 140/143: Ideal for use on heating and cooling systems (HVAC/R) and other oxygen-free water applications
- Long life and maintenance free operation
- DN 200 - 400 with manual gear for easy shut-off

See applications G1 G2 G3 G4 G5 G6 G7 G8 G10 G11 G12 G13

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 betweeen 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
MDFO	16	-20	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MDFO	25	-20	110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
MDFO	40	-20	110						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

MDFO



- 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. Delta p 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	✓	✓	✓	✓

TA-PILOT-R			
DN	10-50	30-150	80-400
65	✓	✓	✓
80	✓	✓	✓
100	✓	✓	✓
125	✓	✓	✓
150	✓	✓	✓
200	✓	✓	✓

C4 | Differential pressure controllers

TA-Smart-Dp



- Precise and stable differential pressure control delivering desired differential pressure ensuring accurate balancing
- High flow and temperature measurement accuracies in all configurations (medium type, and temperature) for all flow regimes
- Remote access, monitoring, and performance adjustments.
- Compact and space-saving design reduces installation and commissioning time.
- Compatible with digital (BACnet, Modbus, MQTT) and analog (0–10 V / 4–20 mA) communication protocols

STAP DN 15-50



- Ideal Delta P controller with shut-off function for radiators/air conditioning circuits
- Measuring point for return temperature/pressure measurements
- Draining optional as an accessory, mounting without system draining
- Made from patented alloy AMETAL®
- Available as ZERO lead version

STAP DN 65-100



- Ideal Delta P controller for secondary circuits in HVAC systems
- Two measuring points for system diagnostics enabling the measurement of temperature and differential pressure
- Special measuring point for capillary connection on STAF is a part of delivery
- Works in all positions

DA 516 / DAF 516



- Patented In-line body for quiet operation under high differential pressures
- Particularly effective in systems with high temperatures and differential pressures
- Highly accurate differential pressure control with very low hysteresis
- Rust protection thanks to the electrophoretically painted ductile iron body
- Small and compact body for easy installation in small spaces
- Easy to insulate
- DAF for use in supply pipe, 2 capillaries

TA-PILOT-R



- First in-line Delta p controller operated by Pilot technology
- The smallest, the lightest and the most accurate Delta p control on the market
- Clearly visible setting lockable against tampering
- Measuring points for system diagnostics and exact setting according to system true parameters

TA-COMPACT-DP



- All in one zone control valve, balancing valve and differential pressure controller
- Ideal solution for zone control in apartment buildings
- Compact valve fits in areas where space is limited
- Enables flow measurement and system diagnostics
- Recommended actuator: EMO T II

See applications G2 G3 G4 G10 G12 G13

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



- Direct setting by handwheel with setting scale
- Low proportional hysteresis
- Very quiet in operation
- Made from corrosion resistant gunmetal

BPV



- Setting scale with protective cap against dirt and tampering
- Shut-off function
- Easy setting with 3mm hexagonal key
- Made from patented alloy AMETAL®

PM 512



- Pneumatic principle allows adjustable set-point from 0 to 16 bar
- In-line design for quiet operation
- Opens at increasing inlet pressure
- Setting dependent on static pressure in the system



IMI

Climate Control

IMI Pneumatex Pressure Maintenance and Water Quality

Your protection partner for long-lasting, energy-efficient, and eco-friendly solutions

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 air and dirt, ensuring longevity and reliability.

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

Breakthrough engineering for a better world

Brand at a glance

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.



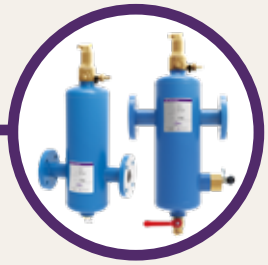
2017
Simply Compresso, plug & play with pre-assembled compressor.



2021
Simply Vento & **Vento Compact**
Cyclonic Vacuum Degassing technology.



2022
Zeparo ZT Turnable, air and dirt separator with exceptional flexible structure.



2024
Zeparo Cyclone Max & **Zeparo Aero**, dirt and air separators designed to operate with any flow rates and pipe sizes. Ideal for large applications.



2016
Zeparo G-Force, separator with Cyclonic technology for large installations.



2015
BrainCube Connect, the first cloud connected control unit.



2014
Zeparo Cyclone, dirt separator with the unique Cyclonic technology.

2007
IMI Pneumatex is established after acquisition by IMI.



1909
Carl Stücklin opens the doors of "Carl Stücklin Sanitäre Anlagen" in Basel, Switzerland.



1955
1st closed-system expansion vessels equipped with a Butyl Bag.



1995
Transfero, the first Pressure Maintenance System with pump.



1995
Vento, the first Vacuum Degasser solution.

Pressure maintenance

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, as it can lead to ruptures and premature failure. Pressure drops, on the other hand, can result in air intake causing 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.



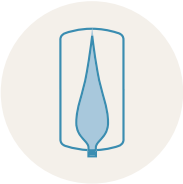
Effective pressurisation control is essential for ensuring optimal system performance and protecting components throughout their service life.

Pressure Maintenance

D1 Expansion vessels.....45
D2 Automatic pressure maintenance systems 51
D3 Safety valves 53
D4 Pressure reducing valves 55

D1 | Expansion vessels

Pressure maintenance



Under the IMI Pneumatex brand, IMI offers top-quality solutions to protect systems against pressure fluctuations. 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 suppliers. Butyl vulcanisation is carried out in our plants on custom-built machinery.

Your benefits

- Lowest gaseous diffusion coefficient on the market - 3.3% for expansion vessels
- Rich product range catering every needs
- Warranty up to 5 years* on the Butyl Bag

Key technical parameters

D1 Expansion vessels	PN-class bar	T min/max of media °C	volume l	Coupling	Max. glycol content	Mounting type	Construction
Statico SD	3 / 10	+5 / +70	8-80	R½" / R¾"	50%	hanging/lying	bag type
Statico SU	3 / 4 / 6 / 10	+5 / +70	140-800	R¾"	50%	standing	bag type
Statico SG	6 / 10	+5 / +70	1000 - 5000	R 1 ½"	50%	standing	bag type
Aquapresso AD	10	+5 / +70	8-80	R½" / R¾" / R 1"	-	hanging/lying	bag type
Aquapresso ADF	10	+5 / +70	8-80	2 x R½" / 2 x R¾" / 2 x R 1"	-	hanging/lying	bag type - flow
Aquapresso AU	10	+5 / +70	140-600	R 1¼"	-	standing	bag type
Aquapresso AUF	10	+5 / +70	140-500	2 x R 1¼"	-	standing	bag type - flow
Aquapresso AG	10 / 16	+5 / +70	700-3000 / 300-3000	DN 50 – DN 80	-	standing	bag type

Applications

Q / Power: 0 MW ····· ▶ 160 MW

Static Pressure 0 bar ····· ▶ 20 bar

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

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

D1 | Expansion vessels

Statico SD	Statico SU	Statico SG
		
✓ Butyl Bag ✓ Welded shell joints ✓ Media is closed in a bag without contact with the steel shell ✓ Gaseous diffusion coefficient below 3,3% ✓ Horizontal or vertical mounting	✓ Butyl Bag ✓ Welded shell joints ✓ Media is closed in a bag without contact with the steel shell ✓ Gaseous diffusion coefficient below 3,3% ✓ Upright installation	✓ Replaceable Butyl Bag ✓ Welded shell joints ✓ Media is closed in a bag without contact with the steel shell ✓ Gaseous diffusion coefficient below 3,3% ✓ Upright installation

Aquapresso AD, ADF	Aquapresso AU, AUF, AG
	
✓ Butyl Bag ✓ Media is closed in a bag without contact with the steel shell ✓ Gaseous diffusion coefficient below 3,3% ✓ ADF: full flow-through system to eliminate the risk of Legionella ✓ Hydrowatch inspection glass for bag tightness control ✓ Horizontal or vertical installation	✓ Butyl Bag ✓ AG: Replaceable Butyl Bag ✓ Welded shell joints ✓ Media is closed in a bag without contact with the steel shell ✓ Gaseous diffusion coefficient below 3,3% ✓ AUF: full flow-through system to eliminate the risk of Legionella ✓ Upright installation

IMI

Climate Control



BrainCube Connect by **IMI Pneumatex**

BrainCube Connect is the universal control unit of all IMI Pneumatex TecBoxes, providing control at any time, from anywhere.

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

Stefan Schwenk, Germany

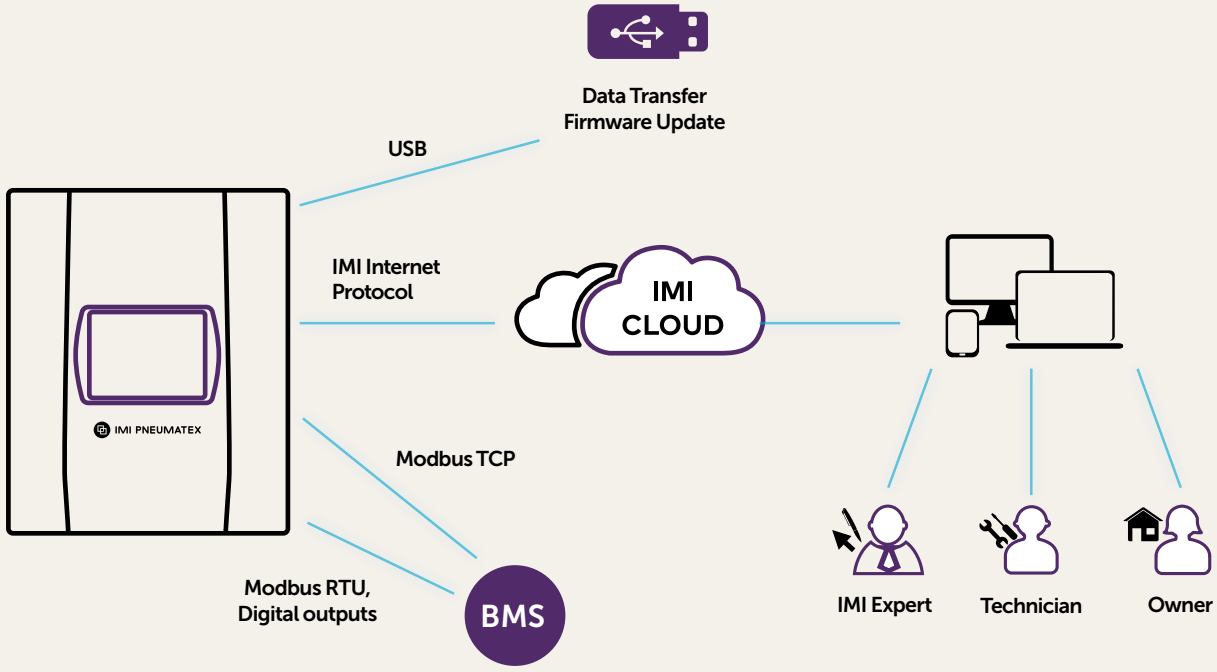
Breakthrough engineering for a better world

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

RS-485

Thanks to the RS-485 port you can easily connect your device to the BMS (Building Management 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 purposes.

- 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 and/or IMI Cloud Web-Interface via router or GSM gateway.

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

Seamless Integration

BrainCube Connect integrates with BMS via standardized Modbus protocol on RS-485 (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 Cloud Web-Interface solution for total visibility and control.

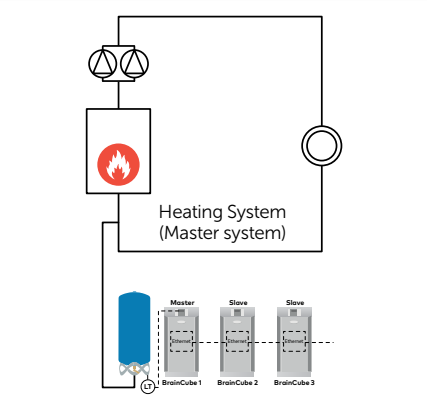
Master-Slave functionalities

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 pressurisation is driven by various reasons, such as:

- **Enhanced reliability and safety:** It enables parallel operations and redundancy, ensuring consistent, high-level performance.
- **Improved load distribution:** Distributing load for better partial load behaviour and optimised operations.
- **Maximum ease of maintenance:** Maintaining pressurisation during maintenance work on the device or expansion vessels.
- **Space optimisation:** 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.

To fulfil the requirements described above, different master-slave operating modes may be needed:



MS-PC
(Master-Slave Pressure Control)

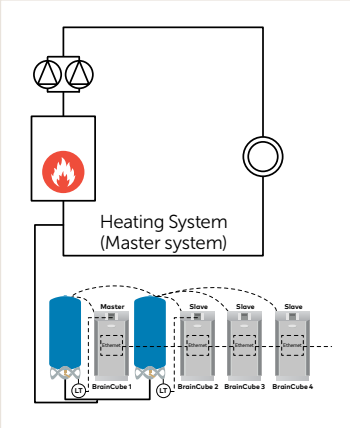
Multiple pressurisation stations in parallel for:

- 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.

This allows cascade operation with optimal partial load behaviour and enables individual devices or even device groups to serve as reserve or peak load devices. These can be activated when needed without prior stress or wear on the components.



MS-PCR
(Master-Slave Pressure Control Redundancy)

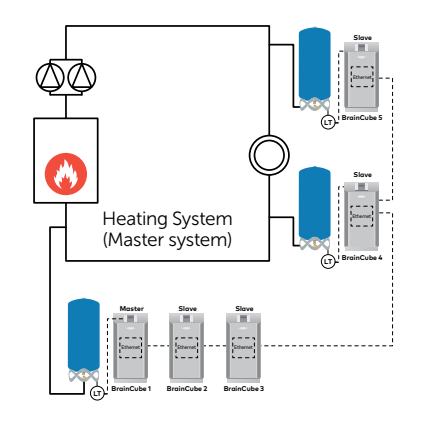
Multiple pressurisation stations in parallel for:

- ✓ improved load distribution,
- ✓ reliability,
- ✓ maximum ease of maintenance.

MS-PCR operation is an extended MS-PC functionality.

Each device achieves full component redundancy by using its own expansion vessel equipped with a base-mounted level transmitter (LT).

Depending on the device design, full redundancy of pressurisation capacity is possible. If additional expansion vessels with their own measuring feet are used, redundancy is also achieved for the expansion volume and at the same time pressurisation remains fully operational during service work and system upkeep.

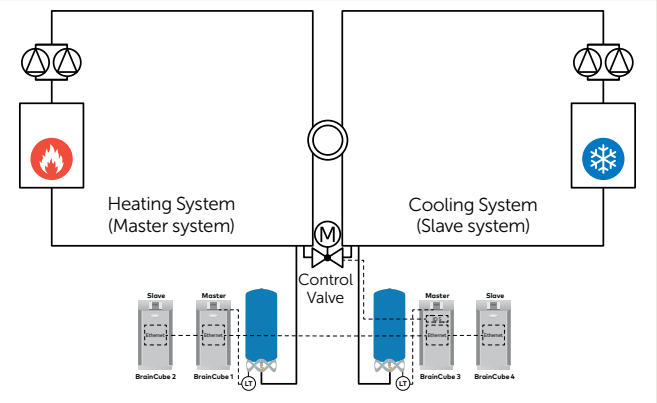


MS-LC
(Master-Slave Level Control)

Two or more pressurisation station at different locations within a single system for:

- ✓ space optimisation,
- ✓ volume recirculation,
- ✓ integration of installations,
- ✓ temporary autonomous operation.

MS-LC operation is required when multiple pressurisation units with individual expansion vessels are installed at different points within the system. It is also needed when the expansion vessels cannot balance their water levels automatically, using the principle of communicating water columns.



MS-IO
(Master-Slave Isolated Operation)

Two or more independent pressurisation stations in separate but interconnectable systems:

- ✓ volume recirculation,
- ✓ integration of installations,
- ✓ temporary autonomous operation.

MS-IO operation is required when multiple pressurisation vessels in separate systems must work together, whether hydraulically separated or connected. In hydraulically separated systems, pressurisation units operate in MS-IO mode to maintain system pressure. When hydraulically connected, 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 such as district heating and/or cooling–especially where multiple sub-plants are situated kilometres apart in addition to the main thermal power plant–, Master-Slave communication via Ethernet-Multicast is the optimal solution. It eliminates the need for additional cabling and efficiently utilises existing Ethernet network infrastructure, whether dedicated or public.

Efficient integration:

- **Multicast:** Communication via Ethernet eliminates the need for additional cabling.
- **Utilises existing networks:** Leverages existing network infrastructure effectively.

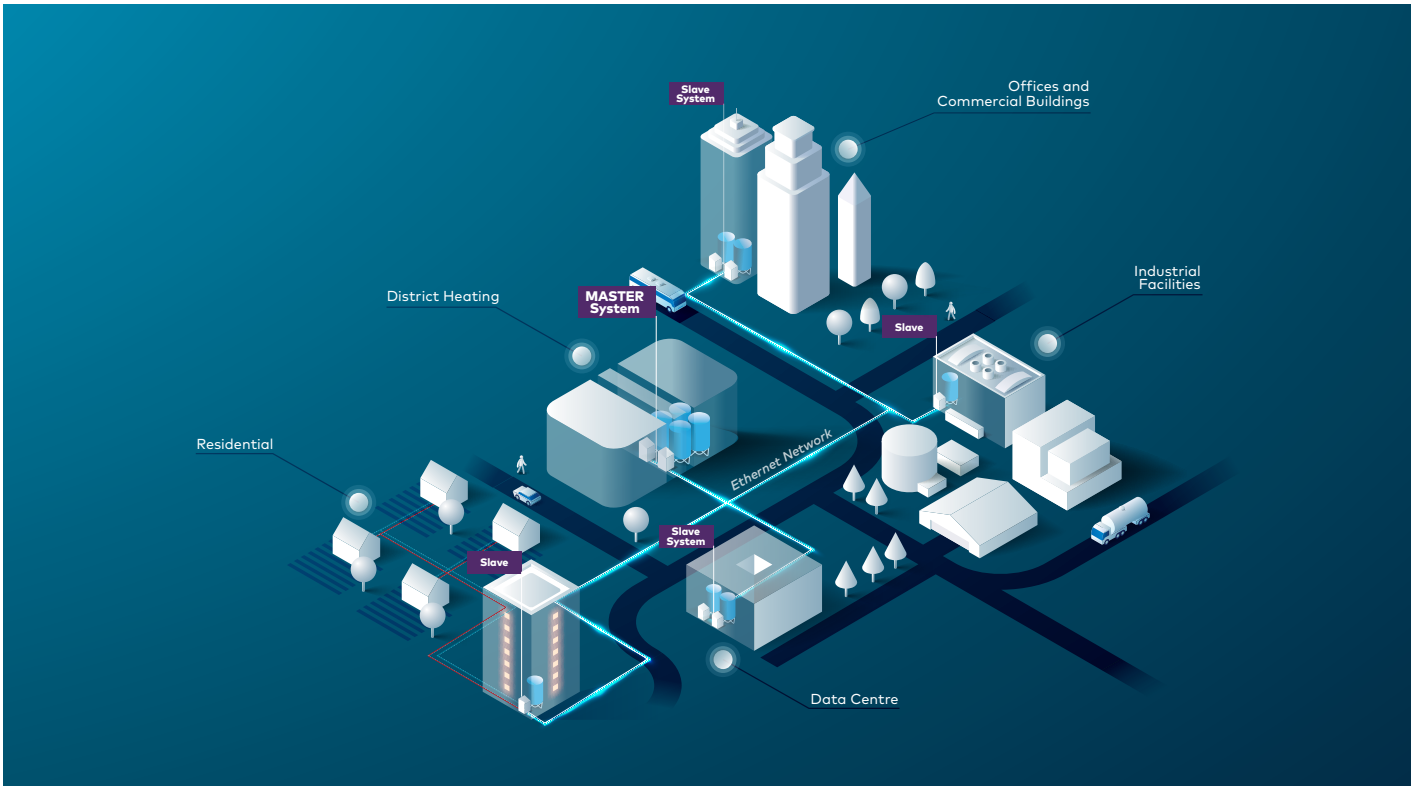
For Master-Slave combined operations, IMI Pneumatex offers two options: RS-485 with Modbus RTU protocol or Ethernet with the innovative multicast technology.

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.

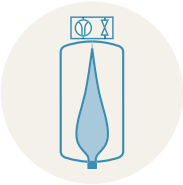
Each individual Ethernet network system can be operated with up to 40 devices with a common multicast IP and port. Using different multicast port numbers allows multiple Master-Slave networks to operate independently within an Ethernet network for enhanced flexibility.

Master-Slave communication via Ethernet-Multicast network.



D2 | Automatic pressure maintenance systems

Pressure maintenance



Automatic IMI Pneumatex pressure maintenance kits marked **Airproof** feature bag vessels. Sets in the Compresso range offer reduced noise levels thanks to the **SilentRun** feature. Transfero pump units with **VacuCyclonSplit** technology provide vacuum degassing.

Each product is equipped with a BrainCube Connect controller, which provides a number of unique operation functions as well as monitoring and on-line preview.

Your benefits

- Innovative BrainCube Connect controller
- Bag vessels with a diffusion coefficient of 3.3% - the lowest on the market
- Multiple functions available as standard in one instrument

Key technical parameters

D2 TecBox Hydraulic module		PN-class bar	Power supply V; kW	Dimensions TecBox width x depth x height (mm)	TecBox weight kg	Volume of vessels l
Simply Compresso	C2.1 80 S-4 C2.1 80 SWM-4	4	230; 0.3	603 x 481 x 1107	39-41	80/160
Compresso Connect F	C10.1-3.75 F C 10.1-4 F C10.1-5 F C10.1-6 F	3,75 4 5 6	230; 0.6	370 x 370 x 315	14	200-800
Compresso Connect	C10.1-3 C10.1-3.75 C10.1-4.2 C10.1-5 C10.1-6 C10.2-3 C10.2-3.75 C10.2-4.2 C10.2-5 C10.2-6 C15.1-6 C15.1-10 C15.2-6 C15.2-10	3 3.75 4.2 5 6 6 10 3 3.75 4.2 5 6 6 10	230; 0.6 230; 1,3 230; 1.2 230; 2,6	520 x 350 x 1060	21 42 35 62	200-5000
Transfero TV Connect	TV4.1E (H) (C) TV6.1E (H) (C) TV8.1E (H) (C) TV10.1E (H) C) TV14.1E (H) (C) TV4.2E (H) (C) TV6.2E (H) (C) TV8.2E (H) (C) TV10.2E (H) C) TV14.2E (H)(C)	10 10 10 10 13 10 10 10 10 13	230; 0.75 230; 1.1 230; 1.4 230; 1.7 230; 1.7 230; 1.5 230; 2.2 230; 2.8 230; 3.4 230; 3.4	500 x 530 x 920 500 x 530 x 920 500 x 530 x 920 500 x 530 x 1300 500 x 530 x 1300 680 x 530 x 920 680 x 530 x 920 680 x 530 x 920 680 x 530 x 1300 680 x 530 x 1300	42 - 43 44 - 45 45 - 46 50 - 51 69 - 70 54 - 55 57 - 58 60 - 61 70 - 71 97 - 98	200-5000
Transfero TVI Connect	TVI 19.1EH (C) TVI 25.1EH (C) TVI 19.2EH (C) TVI 25.2EH (C)	25	230; 2,6 230; 3,4 230; 5,2 230; 6,8	570 x 601 x 1086 570 x 601 x 1258 751 x 601 x 1086 751 x 601 x 1258	85 - 87 94 - 96 132 - 135 150 - 153	200-5000
Transfero TI Connect (Select models only. See datasheet for more.)	TI 90.2 PC1 TI 120.2 PC1 TI 150.2 PC1 TI 190.2 PC1 TI 230.2 PC1	16 16 16 25 25	3x400; 3,0 3x400; 3,8 3x400; 5,4 3x400; 5,4 3x400; 7,2	1100 x 1100 x 1200 1100 x 1100 x 1200 1100 x 1100 x 1200 1100 x 1100 x 1200 1100 x 1100 x 1300	135 145 170 195 215	1000-5000

Applications

Power: 0 MW ····· ▶ 160 MW

Static Pressure 0 bar ····· ▶ 20 bar

D2 TecBox Hydraulic module	Pressure maintenance with compressors	Pressure maintenance with pumps	Vacuum degassing	Communication: Modbus	Communication: Ethernet	Small Residential	Large Residential	Small Building	Super-market	Shopping Mall	Large Commercial Building	Hospital	Sky-scraper	District Energy	Industrial Facilities
Simply Compresso	✓			✓	✓		✓	✓	✓						
Compresso C, F	✓			✓	✓		✓	✓	✓	✓	✓	✓			
Transfero TV Connect		✓	✓	✓	✓			✓	✓	✓	✓	✓	✓		
Transfero TVI Connect		✓	✓	✓	✓						✓	✓	✓	✓	✓
Transfero TI Connect		✓		✓	✓								✓	✓	✓

D2 | Automatic pressure maintenance systems

Simply Compresso



- BrainCube Connect controller
- Modbus and Ethernet communication as standard
- Integrated compact design (TecBox with 80 litre vessel and extension by 80 l possible)
- Precision pressure maintenance ± 0.1 bar
- Media is closed in a bag without contact with the steel shell
- Plug and Play design
- Water refilling module

Compresso F Connect



- BrainCube Connect controller
- Modbus and Ethernet communication as standard
- Installation of the TecBox on the vessel, which reduces the space required
- Low noise level 59 dB(A) /1 bar
- Precision pressure maintenance ± 0.1 bar
- Media is closed in a bag without contact with the steel shell
- Water refilling module as option

Compresso C Connect



- BrainCube Connect controller
- Modbus and Ethernet communication as standard
- Low noise level: Silent-run compressor 53-62 dB(A) / 1-10 bar
- Precision pressure maintenance ± 0.1 bar
- Vessel range 200 - 5000 l
- Media is closed in a bag without contact with the steel shell
- Water refilling module as option

Compresso CX Connect



- BrainCube Connect controller for external compressed air supply
- Modbus and Ethernet communication as standard
- Precision pressure maintenance ± 0.1 bar
- Vessel range 200 - 5000 l
- Media is closed in a bag without contact with the steel shell
- Water refilling module as option

Transfero TV Connect



- BrainCube Connect controller
- Modbus and Ethernet communication as standard
- Vacuum degassing in a hydrocyclone with a capacity of ~ 1m³/h
- Precise pressure maintenance ± 0.2 bar
- Water refilling module
- Vessel range 200 - 5000 l
- Media is closed in a bag without contact with the steel shell

Transfero TVI Connect



- BrainCube Connect controller
- Modbus and Ethernet communication as standard
- Vacuum degassing in a hydrocyclone with a capacity of ~ 1m³/h
- Precise pressure maintenance ± 0.2 bar
- Water refilling module
- Vessel range 200 - 5000 l
- Media is closed in a bag without contact with the steel shell
- Suitable for systems with high static pressure

Transfero TI Connect



- BrainCube Connect controller
- Modbus and Ethernet communication as standard
- Precision pressure maintenance ± 0.2 bar
- Vessel range 1000 l - 5000 l (larger sizes on demand)
- Media is closed in a bag without contact with the steel shell
- Suitable for systems with high static pressure

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 compliance.
- A complete range of products, able to satisfy every application and norm's requirement.
- Warranty up to 5 years*

Features

D3 Safety valve	Heating systems	Cooling systems	Solar systems	Pressure range	Max. glycol 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



- Internal Thread
- Spring-loaded, manually released, membrane-secured spring chamber. Inlet and outlet sides with inner thread, outlet side enlarged.
- DN 15-50
- Vertical installation.

DSV...DGH



- Internal Thread
- Spring-loaded, aerated by hand lever, spring protected by a bellow, balanced pressure. Inlet and outlet sides with inner thread, outlet side enlarged.
- DN 15-32
- Vertical installation.

DSV...DGH



- Flanged
- Spring-loaded, aerated by hand lever, spring protected by a bellow.
- Flanged inlet and outlet connection, outlet side enlarged.
- DN 40-50
- Vertical installation.

DSV...SOL



- Internal Thread
- Spring-loaded, manually released, membrane-secured spring chamber. Inlet and outlet sides with inner thread, outlet side enlarged.
- DN 15-25
- Vertical installation.
- The valves are entirely made of metal; they can also be installed in high temperature or radiation environments.
- All materials are suitable for temperatures up to 160 °C.
- 2013 SOL type TÜV test certificate.

DSV...F



- Internal Thread
- The temperature of the water at atmospheric pressure must not reach boiling point.
- Spring-loaded, manually released, membrane secured spring chamber.
- Inlet and outlet sides with inner thread.
- DN 15-25
- Vertical installation.
- The valves are entirely made of metal, and can also be installed in high temperature or radiation environments.
- All materials are suitable for temperatures up to 150°C.
- TÜV - 293 F conformity.

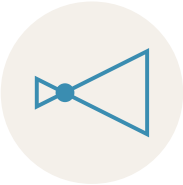
DSV...DGF



- Internal Thread
- Spring loaded, with manual blow-off lever.
- DN 15-50
- Vertical installation.
- Membrane-sealed and pressure-balanced spring chamber.
- Inlet and outlet sides with inner thread, outlet side enlarged.

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 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.
- Compliance 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-class bar	Output pressure bar	DN	T_{max} °C	Kvs (m^3/h)								
					DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100
Pressoreduct	16 (25*)	1,5-7	15-50	40	3,4	4,4	9,3	10,5	19,5	20,5			
Pressoreduct HP threaded	40	1-8	15-50	120	3	3,5	6,7	7,6	12,5	15			
Pressoreduct HP flanged	16	1-8	65-100	120							25	26	80

* Available on request

Pressoreduct



- Threaded pressure reducer with balanced seat
- Setting scale for trouble-free commissioning
- Integrated 160 µm filter easy to clean or replace
- Transprarent filter cup
- Complete with external connections
- Lead-free gunmetal
- DN 15-DN 50
- PN 16 (PN25 available on request)

Pressoreduct HP threaded



- Threaded pressure reducer with balanced seat
- Complete with pressure gauge and integrated filter (DN 15-DN 32 0,60mm, DN 40-DN 50 0,76mm)
- Complete with external connections
- Valve insert available as spare part
- DN 15-DN 50
- PN 40

Pressoreduct HP flanged



- Flanged pressure stabilising valve with balanced seat
- Complete with pressure gauges and integrated filter 0,76mm
- Valve insert available as spare part
- DN 65-DN 100
- PN 16

IMI

Climate Control



Danger is **below the surface**.

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

- **Optimise energy efficiency**: from year 3 onwards, enjoy savings of 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 size.
- **Enhanced flexibility**: separating dirt particles at all water speeds and pipe sizes. Can be installed both vertically and horizontally while also allowing for 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 in the sub 5-µm range, thanks to the most powerful magnet available on the dirt separator market.
- **Effortless maintenance**: an easy-to-clean design and user-friendly features make maintaining your HVAC system hassle-free.
- Also available in stainless steel



Air removal
Zeparo Aero

Dirt removal
Zeparo Cyclone Max

climatecontrol.imiplc.com

Scan the QR Code for additional information

* Visit our website to get more details: https://uqr.to/energy-facts

Water quality

Introduction

Why is Water Quality important?

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

It is only by thorough pre-venting before startup and ensuring uninterrupted operational degassing that stable working conditions can be guaranteed. This holds particularly true for extensive 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.



Sytem components damaged by water contamination



Zeparo Cyclone



Zeparo ZT turnable



Zeparo Cyclone Max



Vento Connect

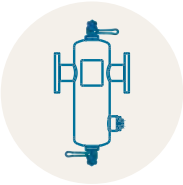
Water quality

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E2 WM Water refilling and treatment systems.....62

E1 | Dirt & microbubble separators and degassing units

Water 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 quickly and efficiently from system media - a feature called VacuCyclonSplit.

Your benefits

- Efficient cyclonic separation of sludge and gas
- Separators approved 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	$T_{max.}$ of media °C	SIze DN
Zeparo ZUT	10	110	15, 20, 25
Zeparo ZUTS	10	160	15

E1 Zeparo - Separators	PN-class bar	$T_{max.}$ of media °C	qN (m^3/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					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	$T_{min/max}$ of media °C	Power supply U, P V; kW	Dimensions TecBox W x H x D (mm)	TecBox weight kg	Delta pu 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)** **V 6.1 E (C)** **V 8.1 E (C)** **V 10.1 E (C)** **V 14.1 E (C)**	10 10 10 10 13	+0 / +90	230; 0,75 230; 1,1 230; 1,4 230; 1,7 230; 1,7	500 x 920 x 530 500 x 920 x 530 500 x 920 x 530 500 x 1300 x 530 500 x 1300 x 530	40 - 41 42 - 43 43 - 44 57 - 58 67 - 68	1.0 – 2.5 1.5 – 3.5 2.0 – 4.5 3.5 – 6.5 5.5 – 10.0	standing
Vento VI Connect	**V 2.1 S** **V 2.1 FE**	25	+0 / +90	3x400V; 2,6 3x400V; 3,4	570 x 1086 x 601 570 x 1258 x 601	78 - 86 85 - 94	6,5 – 15,5 10,5 – 20,5	standing

E1 | Dirt & microbubble separators and degassing units

Pressure maintenance

Applications

Static Pressure 0 bar ····► 20 bar

E1 Model	Air removal	Sludge removal	Vacuum degassing	Hydrocyclone technology	Magnet option	Small Residential	Large Residential	Small Building	Super-market	Shopping Mall	Large Commercial Building	Hospital	Sky-scraper	District Energy	Industrial Facilities
Zeparo ZUT, ZUTS	✓					✓	✓	✓	✓	✓	✓	✓	✓		
Zeparo ZUV, ZUVS	✓					✓	✓	✓	✓						
Zeparo ZTVI	✓					✓	✓	✓	✓						
Zeparo ZUM		✓			✓	✓	✓	✓	✓						
Zeparo ZTMI		✓			✓	✓	✓	✓	✓						
Zeparo ZUKM, ZUCM	✓	✓			✓	✓	✓	✓	✓						
Zeparo ZTKMI	✓	✓			✓	✓	✓	✓	✓						
Zeparo Cyclone		✓		✓	✓	✓	✓	✓	✓						
Zeparo Cyclone Max		✓		✓	✓				✓	✓	✓	✓	✓	✓	✓
Zeparo Aero	✓								✓	✓	✓	✓	✓	✓	✓
Simply Vento, Vento Compact	✓		✓				✓	✓							
Vento V, VI Connect	✓		✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
Ferro-Cleaner		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

E1 | Dirt & microbubble separators and degassing units

Zeparo ZUT, ZUTS



- Large anti-leakage float chamber: Leakfree function
- Ideal for installation on storage tanks and buffers
- Large connection diameters

Zeparo ZUV, ZUVS



- Helistill cartridge for effective separation and removal of air
- Equipped with ZUT air vent with Leakfree function
- Available in DN 20-40 with internal threads

Zeparo ZUM



- Helistill cartridge for best seperation performance of sludge
- Strong magnet rod in pocket tube for magnetite separation
- No risk of clogging. Reduces maintenance and associated costs over system lifetime
- Easy cleaning. Dirt can be flsushed out under operation

Zeparo ZUKM



- Combined air and dirt separator with magnet
- Combines the features of ZUV and ZUM

Zeparo ZUCM Collect



- Combined air and dirt separator and low loss header in one product
- Combines the features of ZUV and ZUM

Zeparo Cyclone



- Cyclonic separation technology
- Low flow resistance thanks to unique solutions
- Separate sludge chamber protected against secondary entrainment of particles
- Corrosion-resistant material: Body -> brass, insert Cyclone ->PPS Ryton
- No risk of clogging. Reduces maintenance and associated costs over system lifetime
- Easy cleaning. Dirt can easy be flushed out under operation

Zeparo ZTVI



- The separation chamber can be rotated 360 degrees, allowing the Zeparo ZTVI to be mounted in every position
- Separator for microbubbles, Vent version
- Helistill cartridge for effective separation and removal of air
- Leakfree air vent

E1 | Dirt & microbubble separators and degassing units

Zeparo ZTMI



- The separation chamber can be rotated 360 degrees, allowing the Zeparo ZTMI to be mounted in every position. Separator for sludge particles, Dirt version
- Helistill cartridge for best separation performance of sludge
- Easy cleaning - dirt can be removed without pressure, allowing for easy cleaning of the separator

Zeparo ZTKMI



- The separation chamber can be rotated 360 degrees, allowing the Zeparo ZTKMI to be mounted in every position
- Separator for microbubbles and sludge particles, Kombi version
- Combines the features of ZTVI and ZTMI

Ferro-Cleaner



- Magnetic flux filter system that system captures the finest magnetic particles
- Can be installed in any orientation
- Compact dimensions
- No risk of clogging - reduces maintenance and associated costs over system lifetime

Zeparo Cyclone Max



- Cyclonic separation technology
- Separate sludge chamber protected against secondary entrainment of particles
- Can be mounted on horizontal and vertical pipe
- Air extraction function after installation of the ZUTX air vent
- No risk of clogging - reduces maintenance and associated costs over system lifetime
- Optional magnet accessory optimizes separation efficiency for sludge and even for finer magnetic particles
- Easy cleaning - dirt can easy be flushed out under operation

Zeparo Aero



- Helicoidal microbubble separation
- Separation based on particle density difference and stream calming
- Low flow resistance
- No risk of clogging - reduces maintenance and associated costs over system lifetime
- Optional magnet accessory optimizes separation efficiency for sludge and even for finer magnetic particles
- Easy cleaning - dirt can easy be flushed out under operation

Simply Vento



- Vacuum degassing with Cyclonic technology - VacuCyclonSplit
- BrainCube Connect controller
- Modbus and Ethernet communication as standard
- Working pressure range from 0,5-2,5 bar
- Compact design for floor and wall hanging installation

Vento V, VI, Vento Compact



- Vacuum degassing with Cyclonic technology - VacuCyclonSplit
- BrainCube Connect controller
- Modbus and Ethernet communication as standard
- ECO degassing function (gas presence monitoring)
- Refilling module as standard
- Available in pressure ranges from 0,5 to 20 bar

E2 | Water make-up and treatment systems

Water quality



In addition to pressure maintenance and air removal, another important aspect to consider is to refill whatever media is lost during system operation.

IMI Hydronic offers water make-up systems with softening option. Water make-up is performed in a controlled process where refill quantities, durations and frequencies are closely monitored - **FillSafe** feature.

Your benefits

- Innovative BrainCube controller regulates and monitors the refilling process
- Multiple features available as standard in one device

Key technical parameters

E2 Model		PN-class bar	$T_{max.}$ of media °C	Power supply V; kW	Notes
Pleno PX		10	0 / +65	230; 0,02	Kvs = 1,4
Pleno PIX Connect		10	0 / +65	230; 0,04	Kvs = 1,4
Pleno PI x.x Connect	**PI 9.1 F** **PI 9.1** **PI 9.2**	10	+0 / +30	230; 0,75	1-8 bar pump
Pleno Refill Filter Decalcification	**6000** **12000** **16000** **36000** **48000**	8	+5 / +45	n.d	Compatible with Transfero Connect, Vento Connect and Pleno Connect For decalcification of make up water incl. 25 µm filter
Pleno Refill Filter Demineralisation	**2000** **4000** **13500** **18000**	8	+5 / +45	n.d	Compatible with Transfero Connect, Vento Connect and Pleno Connect For demineralisation of the make-up water according to VDI 2035, SWKI BT 102-1 incl. 25 µm filter

Applications

E2 Model	Refilling	Decalcification or Demineralisation	Controller	Built-in pump	Volume measurement	Small Residential	Large Residential	Small Building	Super-market	Shopping Mall	Large Commercial Building	Hospital	Sky-scraper	District Energy	Industrial Facilities
Pleno PX	✓				✓		✓	✓	✓	✓	✓	✓	✓		
Pleno PIX Connect	✓		✓		✓	✓	✓	✓	✓						
Pleno PI x.x Connect	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓			
Pleno Refill (Decalcification or Demineralisation)		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

E2 | Water make-up and treatment systems

Pleno PX



- Hydraulic unit with water meter and solenoid valve
- Water make-up without pumps
- Wall mounting

Pleno PIX Connect



- Water make-up without pumps
- Control unit TecBox - BrainCube Connect to control water make-up and Pleno Refill units
- Wall mounting
- Hydraulic unit with water meter and solenoid valve

Pleno PI 9F Connect



- Water make-up with pump
- Control unit TecBox -BrainCube Connect to control water make-up and Pleno Refill units
- Integrated wall mounting bracket

Pleno PI 9.1, 9.2 Connect



- Water make-up with pumps
- Control unit TecBox -BrainCube Connect to control water make-up and Pleno Refill units
- Standing mounting type

Pleno Refill 6000 - 12000, Pleno Refill Demin 2000 - 4000



- Decalcification or demineralisation cartridge
- Mesh filter
- Wall mounting
- Compatible with Pleno PX, Pleno PIX

Pleno Refill 16000 - 48000, Pleno Refill Demin 13500 - 18000



- Decalcification or demineralisation resin
- Mesh filter 25 µm
- Wall mounting
- Compatible with Vento Connect, Transfero Connect

IMI

Climate Control



Meet TA-SCOPE by **IMI TA**

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

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

Breakthrough engineering for a better world

Hydronic tools

Introduction

Your professional 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-Sense-Dp

Hydronic tools

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F2 Software 67

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 Delta p 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-Delta p; P-q-DT; q-Valve-Delta p
- Zeparo Delta p calculation
- Valve sizing and presetting
- Radiator power estimation (steel and cast iron)
- Sizing and presetting of thermostatic valves, balancing valves, Delta p 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.

IMI

GET IT ON Google play

Available on the App Store

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

IMI

GET IT ON Google play

Available on the App Store

Applications

Overview

Balancing and control systems

Type		Solutions	Energy efficiency	Investment
G1 G7	Variable flow	Pressure-independent balancing and control valves	low ■□□□□■ high	low ■□□□■□ high
G2 G8	Variable flow	Combined balancing and control valves	low ■□□□■□ high	low ■□□□■□ high
G3 G10	Variable flow	Balancing and standard control valves	low ■□□■□□ high	low ■□□□■□ high
G4	Variable flow	Thermostatic radiator valves with pre-setting	low ■□□□■□ high	low ■□□□■□ high
G5	Variable flow	AFC technology (Automatic Flow Control)	low ■□□□□■ high	low ■□□□■□ high
G9	Variable flow	Actuators with return temperature sensors	low ■□□□□■ high	low ■□□□■□ high
G6 G11	Constant flow	Balancing and standard control valves	low ■□□□□□ high	low ■□□□■□ high
G2 G2 G3 G10	Variable flow	Balancing and control valves with flow measuring capabilities	low ■□□□□■ high	low ■□□□■■ high

Special solutions

Type		Solutions	Energy efficiency	Investment
G12	Variable flow	Auto-adapting variable flow decoupling circuit	low ■□□□□■ high	low ■□□□□□ high
G13	Variable flow	Zone temperature control (e.g. for use in apartments)	low ■□□□□■ high	low ■□□□□□ high
G14	Variable flow	Four-pipe heating and cooling system	low ■□□□□■ high	low ■□□□■□ high
G15	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.

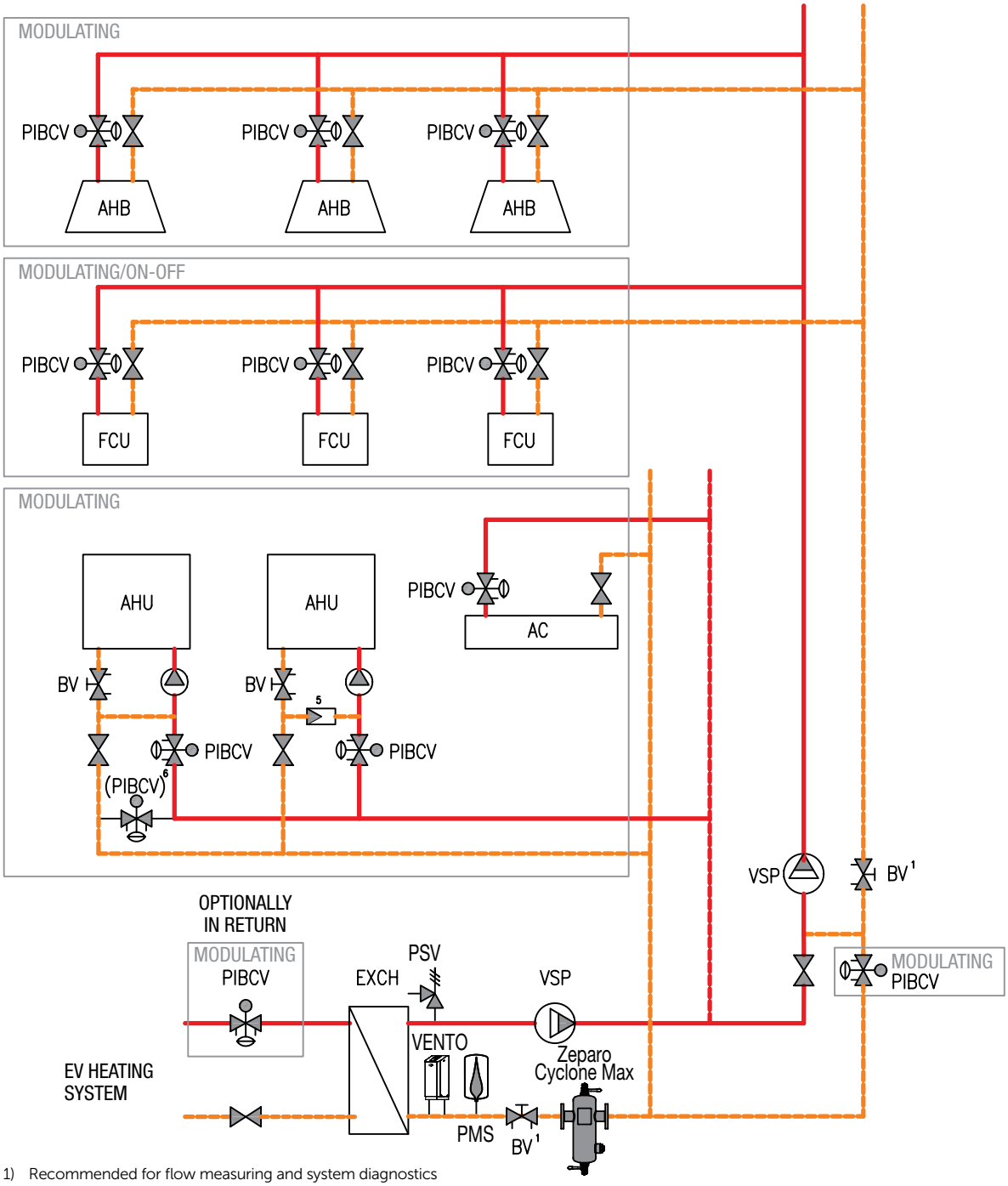
Quick links

A2		**PIBCV**	Pressure independent balancing and control valves. 12
C1		**BV**	Balancing valves 33
D1		**EV**	Expansion vessels. 45
D3		**PSV**	Safety valves. 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58
E1		**VENTO**	Cyclonic vacuum degasser 58

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 water 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.

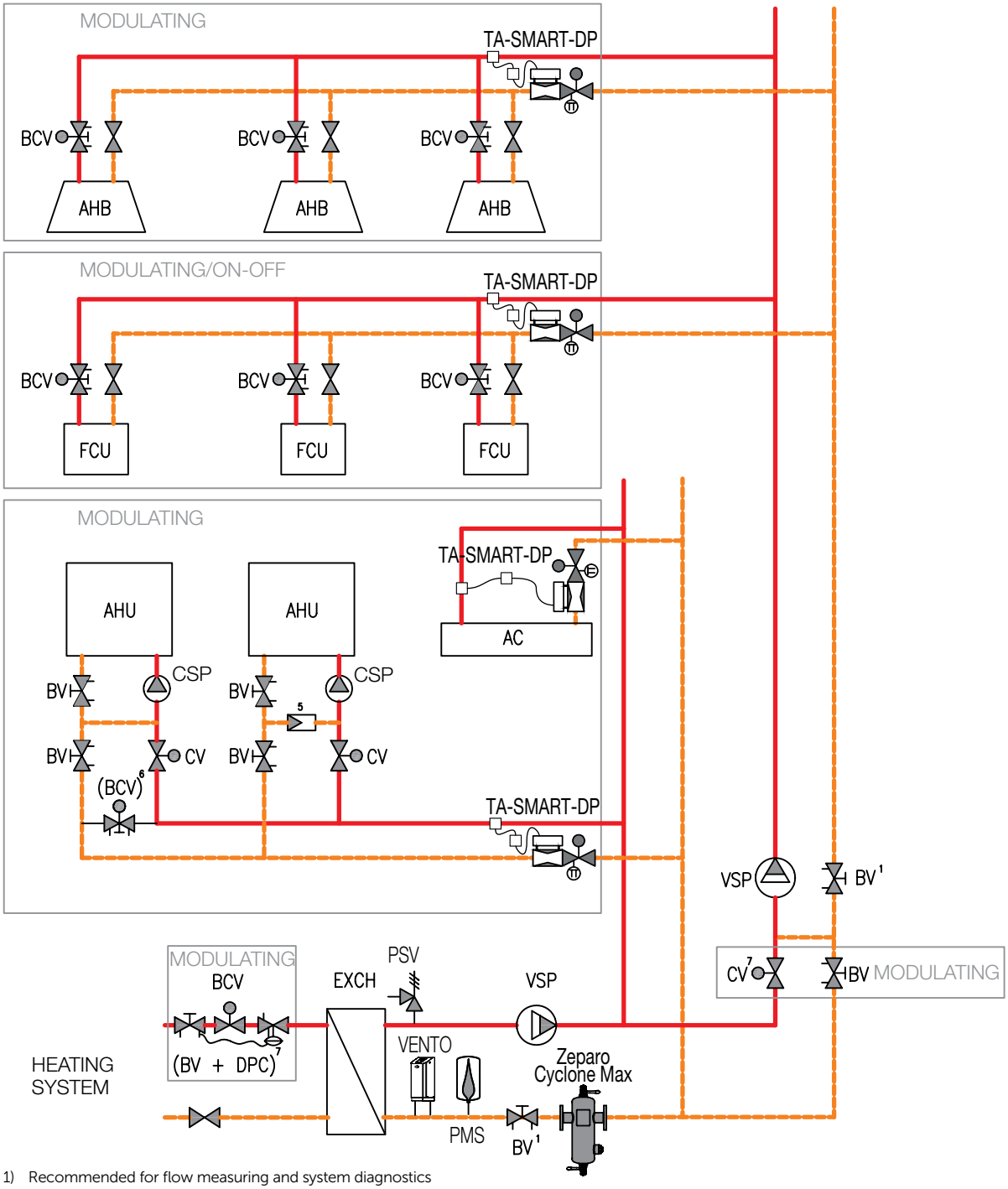
Quick links

A1		**TA-Smart**	Smart valve 9
A3		**BCV**	Combined balancing and control valves 15
C1		**BV**	Balancing valves 33
C4		**DPC**	Differential pressure controllers 38
D1		**EV**	Expansion vessels 45
D3		**PSV**	Safety valves 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

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 water circulation in the system. Without or with an actuator that is interlocked in an inverted way with the main panel actuator
7) Delta p 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.

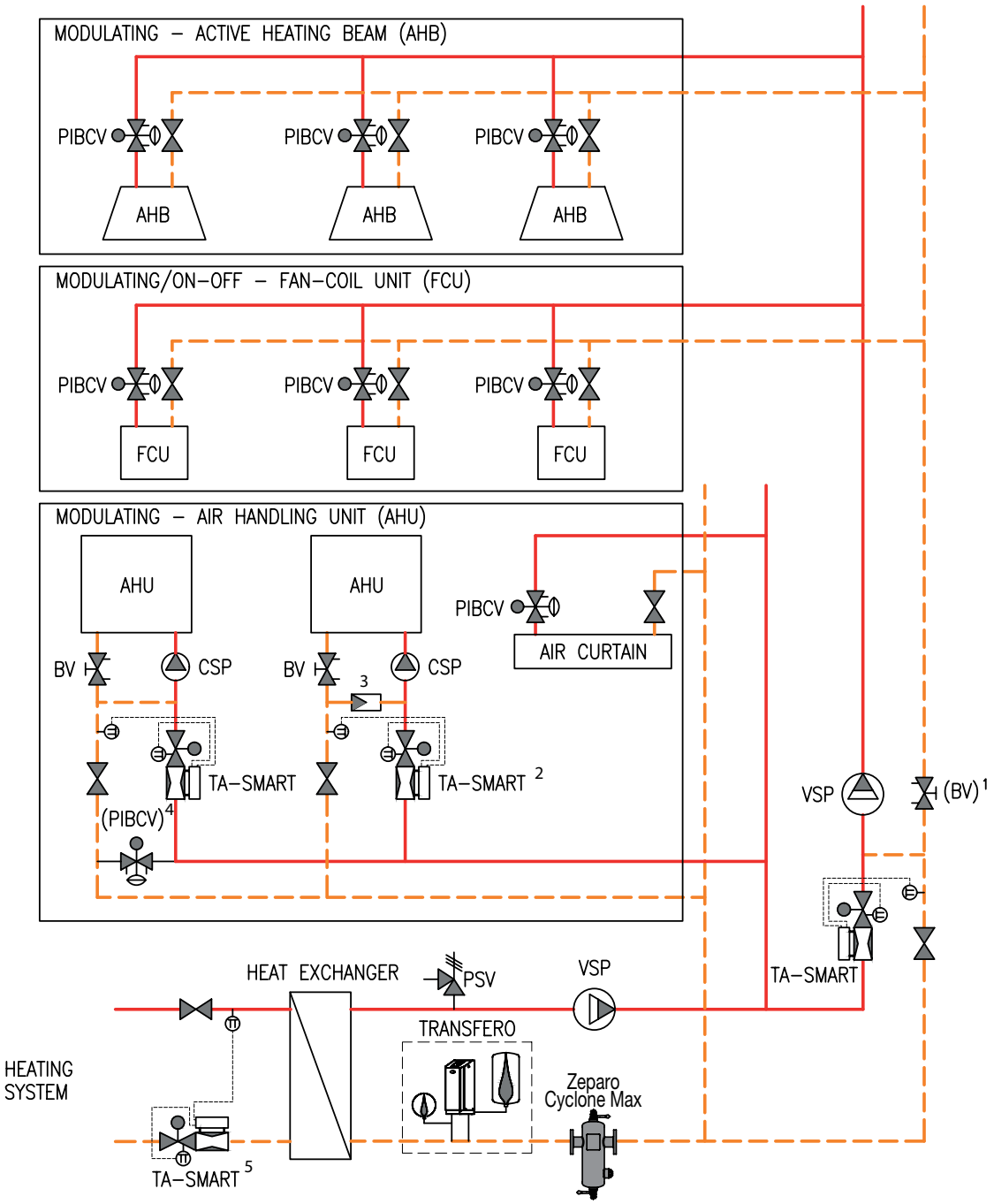
Legend:

AC – Air curtain
AHB – Active heating beam
AHU – Air handling unit
BCV – Combined balancing and control valve
BV – Balancing valve
TA-Smart-Dp – Smart valve
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

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 water 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

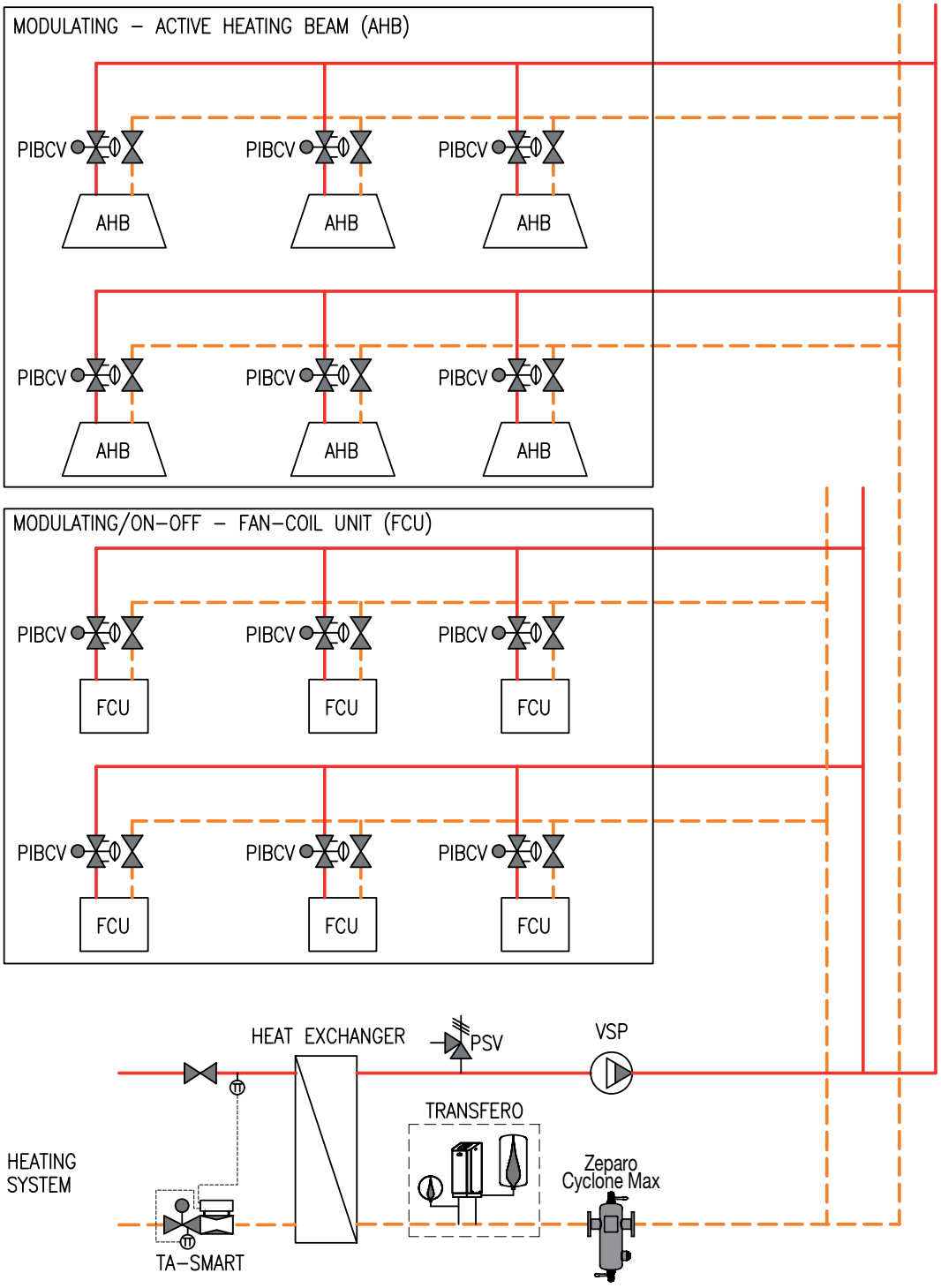
Legend:

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 pressurisation unit with water make-up and vacuum degassing

G2c | Heating system – variable flow

Energy efficiency	Low						High
Investment	Low						High

Recommended



.

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
TRANSFERO – Pump based pressurisation 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, continous 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 Delta p 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 Delta p 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.

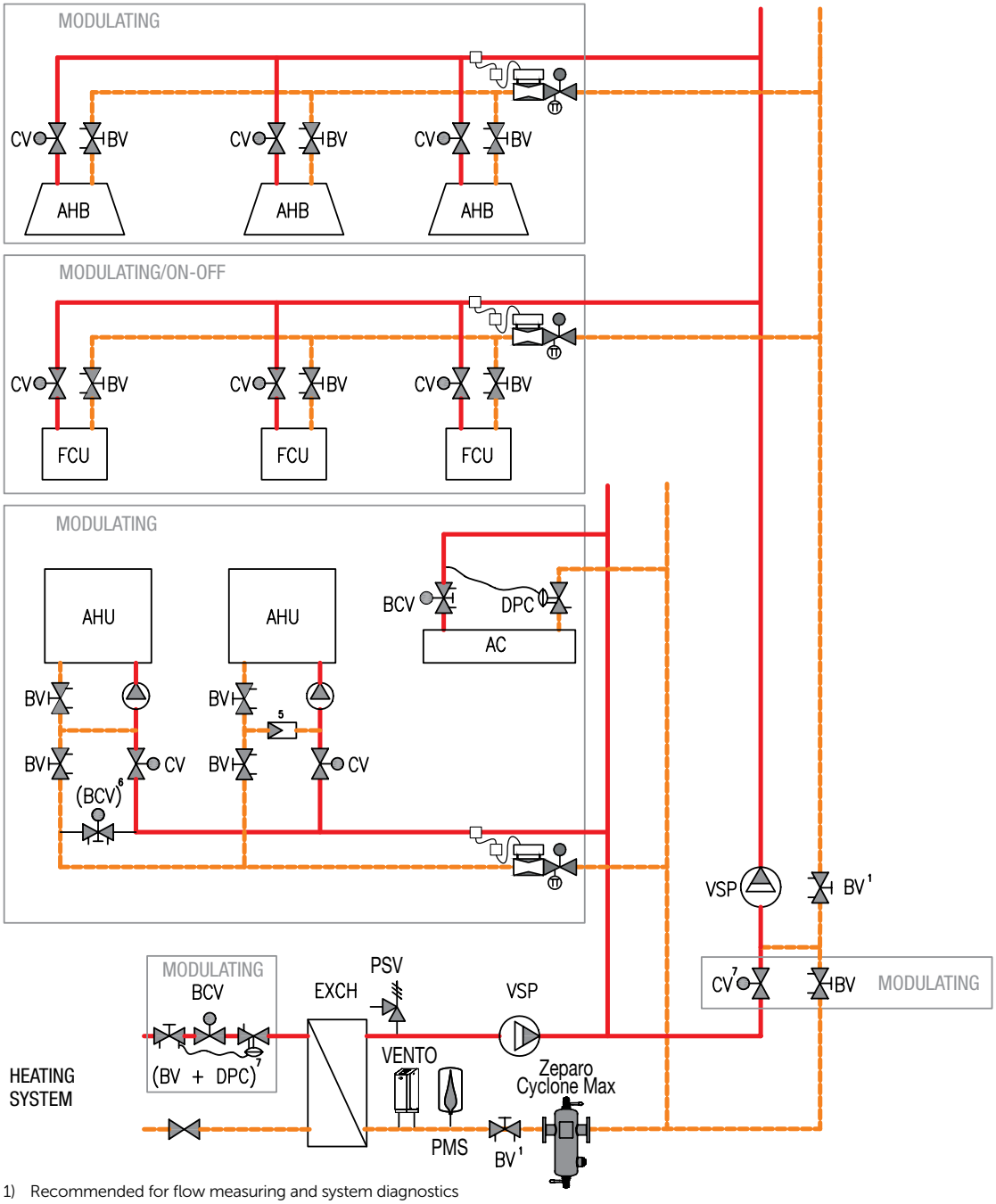
Quick links

A1	**TA-Smart**	Smart valve 9
A5	**CV**	Standard control valves 25
C1	**BV**	Balancing valves 33
C4	**DPC**	Differential pressure controllers 38
D1	**EV**	Expansion vessels 45
D3	**PSV**	Safety valves 53
E1	**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

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 water circulation in the system. Without or with an actuator that is interlocked in an inverted way with the main panel actuator)
7) Delta p 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.

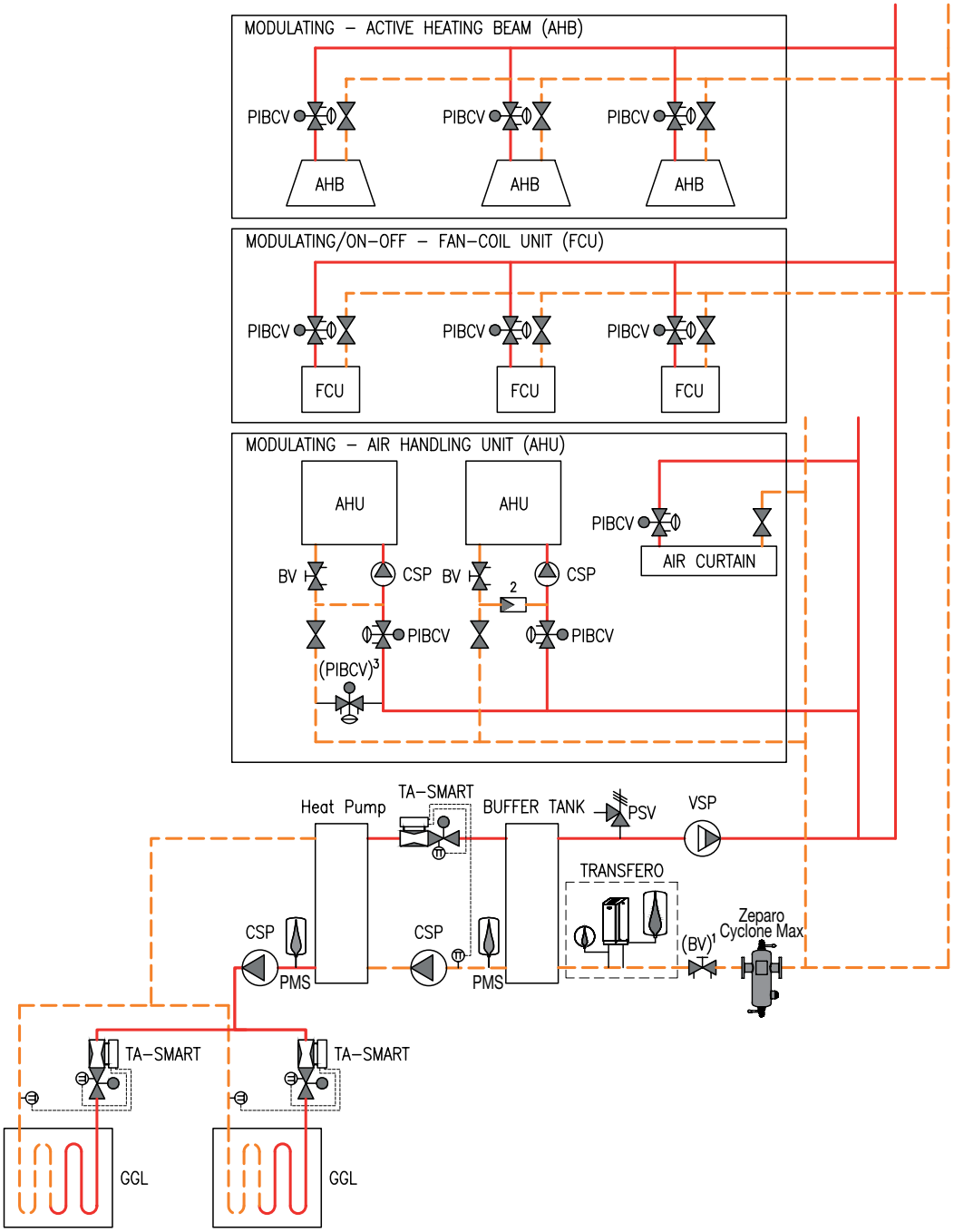
Legend:

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
TA-Smart-Dp – Smart valve
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 maintaing hot water in the supply pipe. Optional/recommended for maintaing 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 pressurisation unit with water make-up and vacuum degassing
VSP – Variable speed pump control
Zeparo Cyclone Max – Dirt & magnetite separator

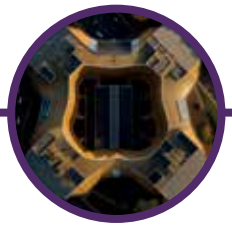
Better indoor climate for every application

By leveraging our extensive HVAC expertise in hydronic balancing & control, thermostatic & room control, water pressurisation, and water quality optimisation, we collaborate with our customers to maximise the benefits of greener buildings. We offer comprehensive HVAC systems and solutions that deliver on the specific requirements of a multitude of building types including:

Commercial



Hotels
Ensure superior guest comfort and improved staff performance.



Education
Create a safe, comfortable learning environment for students, educators, and staff.



Shopping malls
Enhance customer experience with superior air quality and indoor comfort.



Offices
Ensure a safe and comfortable work environment where your employees can thrive.



Healthcare
Guarantee the well-being of patients and staff with 24/7 precise temperature control in all hospital zones.



District heating and cooling
Provide uninterrupted energy year-round with our dependable systems and exceptional emergency technical support.



Data centers
Protect electrical components from overheating and prevent system damage with our reliable, efficient HVAC solutions for data centers.



Manufacturing
Ensure correct operation of machinery for successful manufacturing.

Residential



Large complexes
Improve cost and energy efficiency in residential complexes and enhance comfort.



Single households
Increase family's home's energy efficiency, save more, and enjoy greater comfort.

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 Delta p 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 Delta p 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 Delta p controllers according to the design flow and required differential pressure for the TRVs with a 1-2K P-band.
- Balancing valves and Delta p 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.

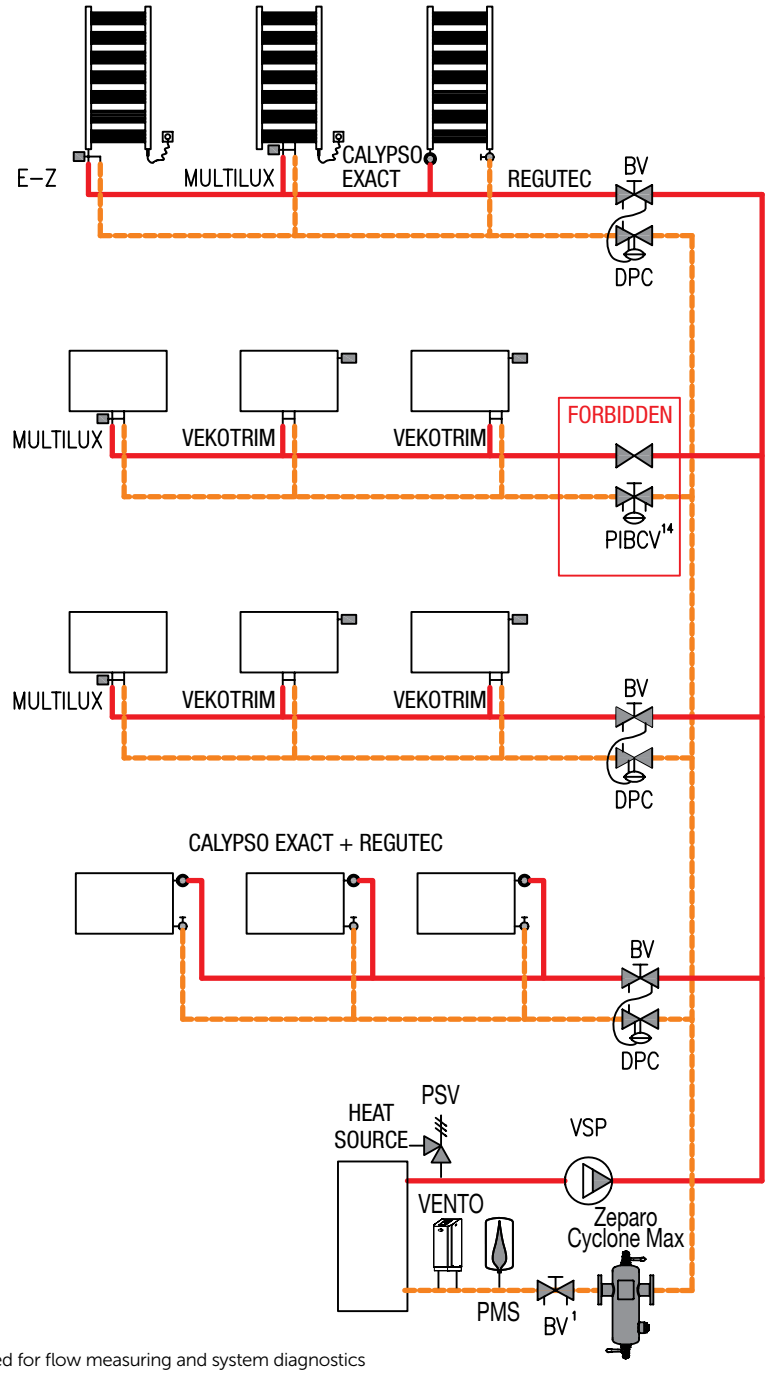
Quick links

A2		**PIBCV**	Pressure independent balancing and control valves. 12
C1		**BV**	Balancing valves 33
C4		**DPC**	Differential pressure controllers 38
D1		**EV**	Expansion vessels. 45
D3		**PSV**	Safety valves. 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

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, Audytor 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.

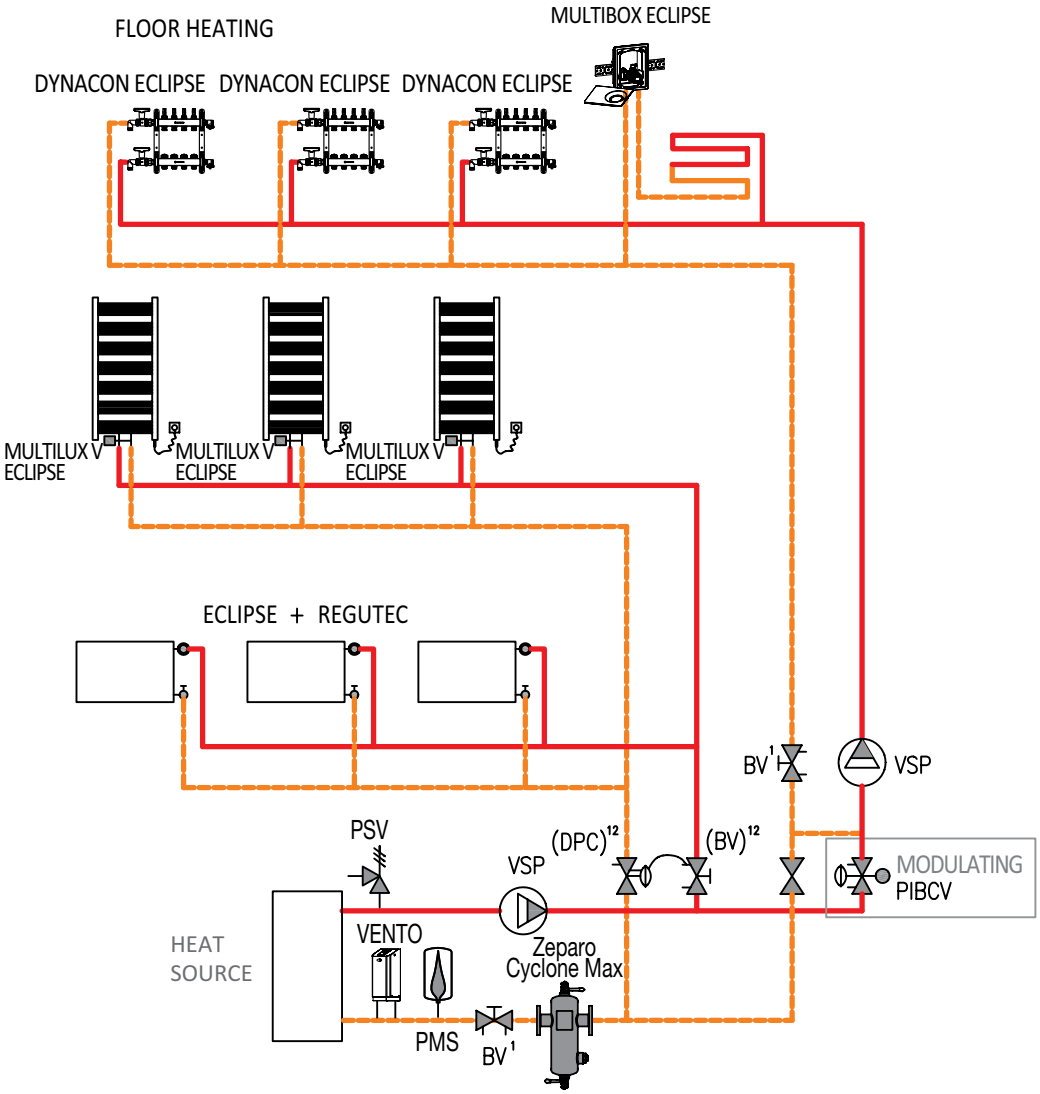
Quick links

A2		**PIBCV**	Pressure independent balancing and control valves. 12
C1		**BV**	Balancing valves 33
D1		**EV**	Expansion vessels. 45
D3		**PSV**	Safety valves. 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

G5 | Heating system – variable flow

Energy efficiency	Low						High
Investment	Low						High

Recommended



1) Recommended for flow measuring and system diagnostics

12) A Delta p 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 Transfero 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.

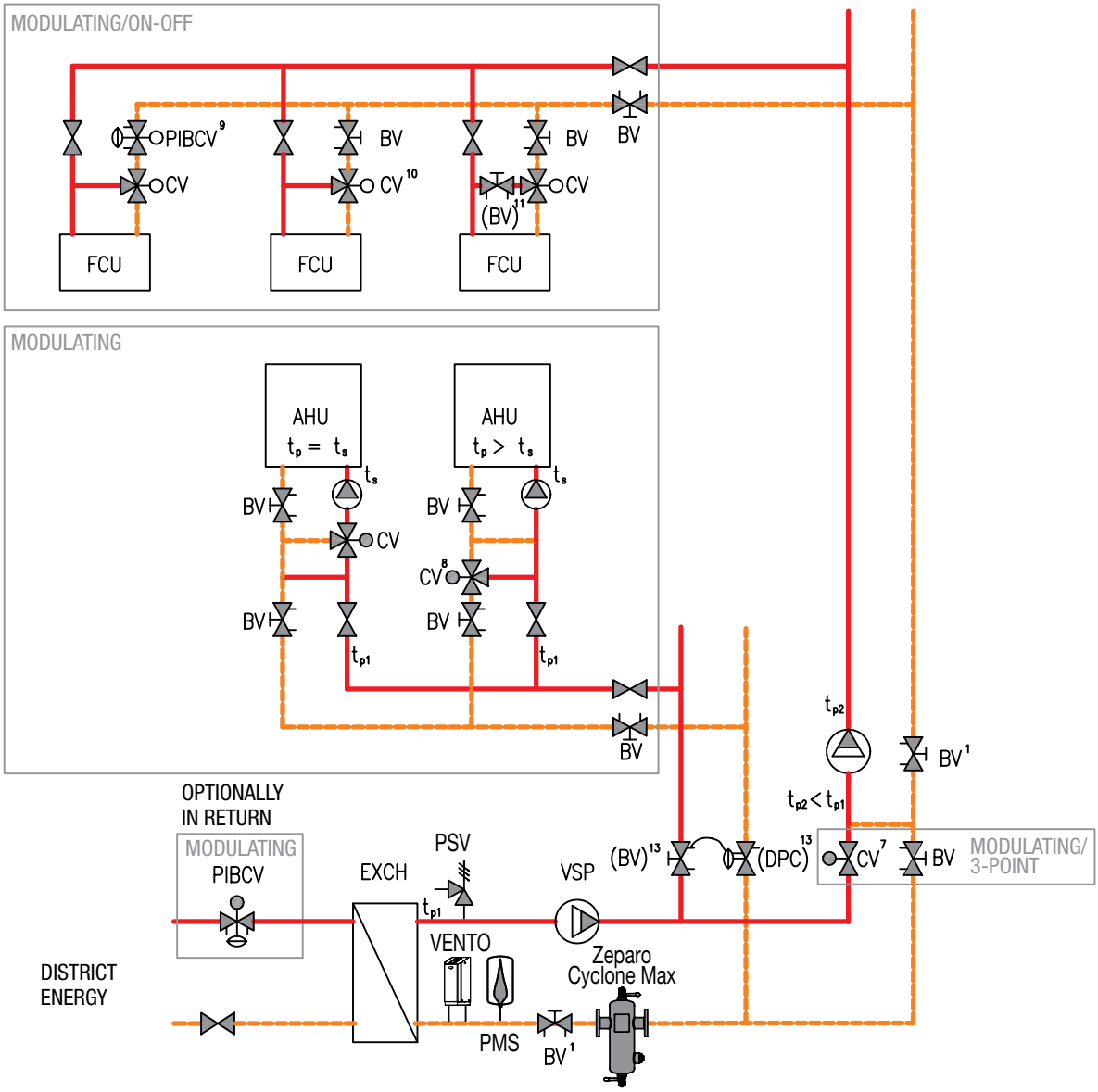
Quick links

A2		**PIBCV**	Pressure independent balancing and control valves. 12
A4		**CV**	Actuators for standard control valves 20
C1		**BV**	Balancing valves 33
D1		**EV**	Expansion vessels. 45
D3		**PSV**	Safety valves. 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

G6 | Heating system – constant flow

Energy efficiency	Low	■					High
Investment	Low			■			High

Acceptable



1) Recommended for flow measuring and system diagnostics
7) Delta p 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 Delta p 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 Transfero 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.

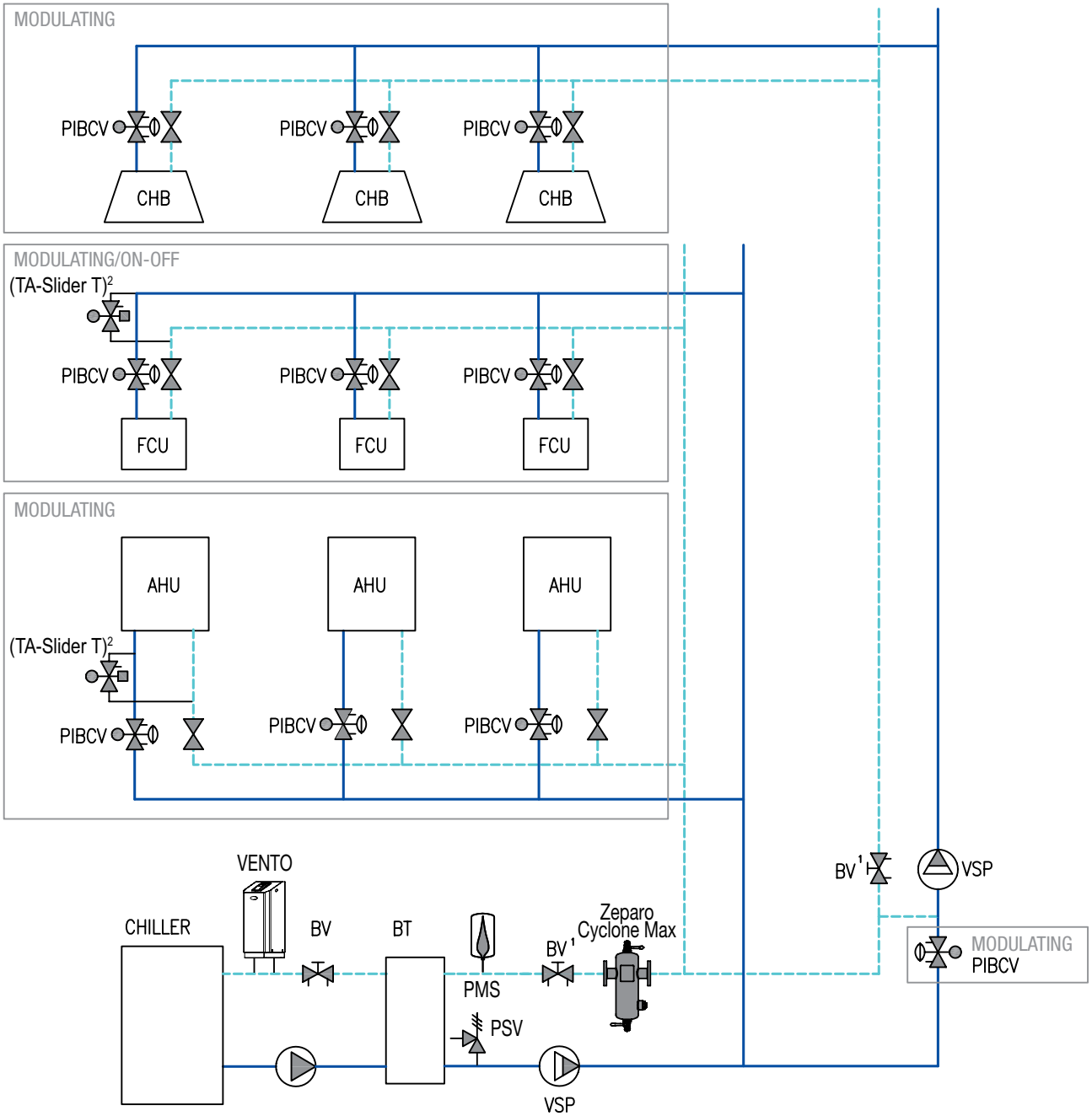
Quick links

A2		**PIBCV**	Pressure independent balancing and control valves. 12
C1		**BV**	Balancing valves 33
D1		**EV**	Expansion vessels. 45
D3		**PSV**	Safety valves. 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

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
TA-Slider T – Digitally configurable actuator with temperature sensor
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 Transfero 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.

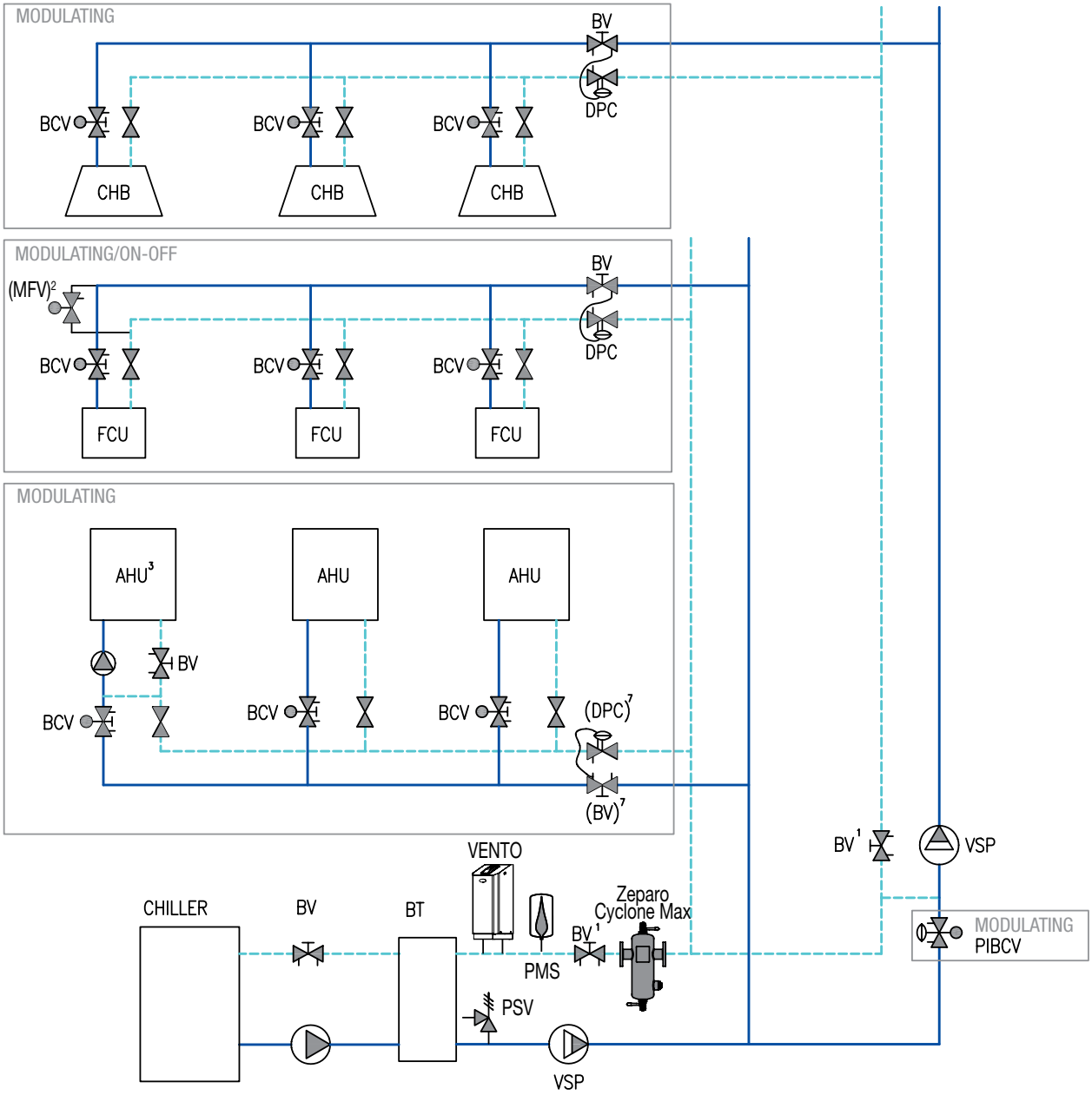
Quick links

A2		**PIBCV**	Pressure independent balancing and control valves. . . . 12
A3		**BCV**	Combined balancing and control valves . . . 15
C1		**BV**	Balancing valves . . . 33
C4		**DPC**	Differential pressure controllers . . . 38
D1		**EV**	Expansion vessels. . . . 45
D3		**PSV**	Safety valves. . . . 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units . . . 58

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) Delta p 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 Transfero Connect PMS as vacuum degassing is integrated)
VSP – Variable speed pump control
Zeparo Cyclone Max – Dirt & magnetite separator

G9 | Cooling system – variable flow

Actuators with return temperature sensors

Energy efficiency

- Limit return temperature and solve Low Delta T Syndrome.
- TA-Slider actuator connects seamlessly to temperature sensors, enabling direct measurement and optimisation of return temperatures.
- No risk of low temperatures and reduced energy efficiency of the refrigeration devices.
- Reduction of cooling loss in return pipes.
- Low energy consumption when pumping.
- Improved comfort in low speed FCU mode - reduced draught and local over-cooling.

Investment

- Simple installation and easy commissioning.
- High flexibility. Possibility of phased start-up or expansion without rebalancing of an already functioning part.

Sizing

- Ideal for renovations with incomplete data on the existing installation.
- Simple valve matching based on nominal flow and permissible water temperature deviation.
- Delta p controllers on branch connections are recommended.
  - if the maximum pressure difference can be exceeded.
  - in complex systems with elevated temperatures over the service life.
- Not recommended for systems where the flow temperature is not constant.

Commissioning

- Easy direct setting of the required return temperature.
- Setting the pump head according to hydraulic calculations.

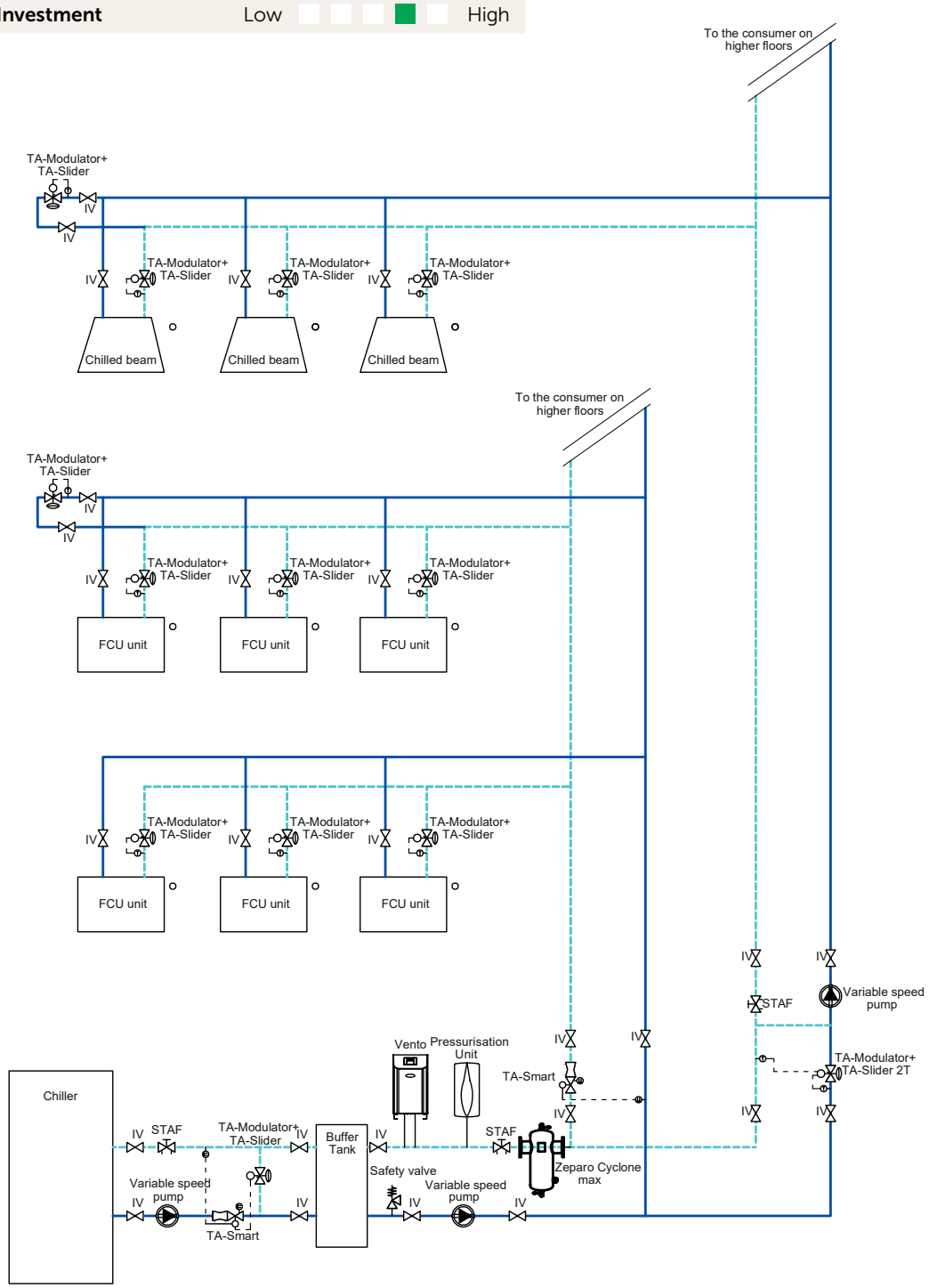
Quick links

A2		**PIBCV**	Pressure independent balancing and control valves. . . . 12
A4		**TA-Slider**	Actuators. . . . 20
C1		**BV**	Balancing valves 33
C4		**DPC**	Differential pressure controllers 38
D1		**EV**	Expansion vessels. . . . 45
D3		**PSV**	Safety valves. . . . 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

G9 | Cooling system – variable flow

Energy efficiency	Low						High
Investment	Low						High

Recommended



1) Recommended for flow measuring and system diagnostics
2) Differential pressure controllers are recommended when the maximum differential pressure for CVT valves can be exceeded

Legend:

BT – Buffer tank
BV – Balancing valve
CHB – Chilled beam
TA-Slider T – Digitally configurable actuator with temperature sensor
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 Transfero Connect PMS as vacuum degassing is integrated)
VSP – Variable speed pump control
Zeparo Cyclone Max – Dirt & magnetite separator

G10 | 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 Delta p 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 Delta p 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.

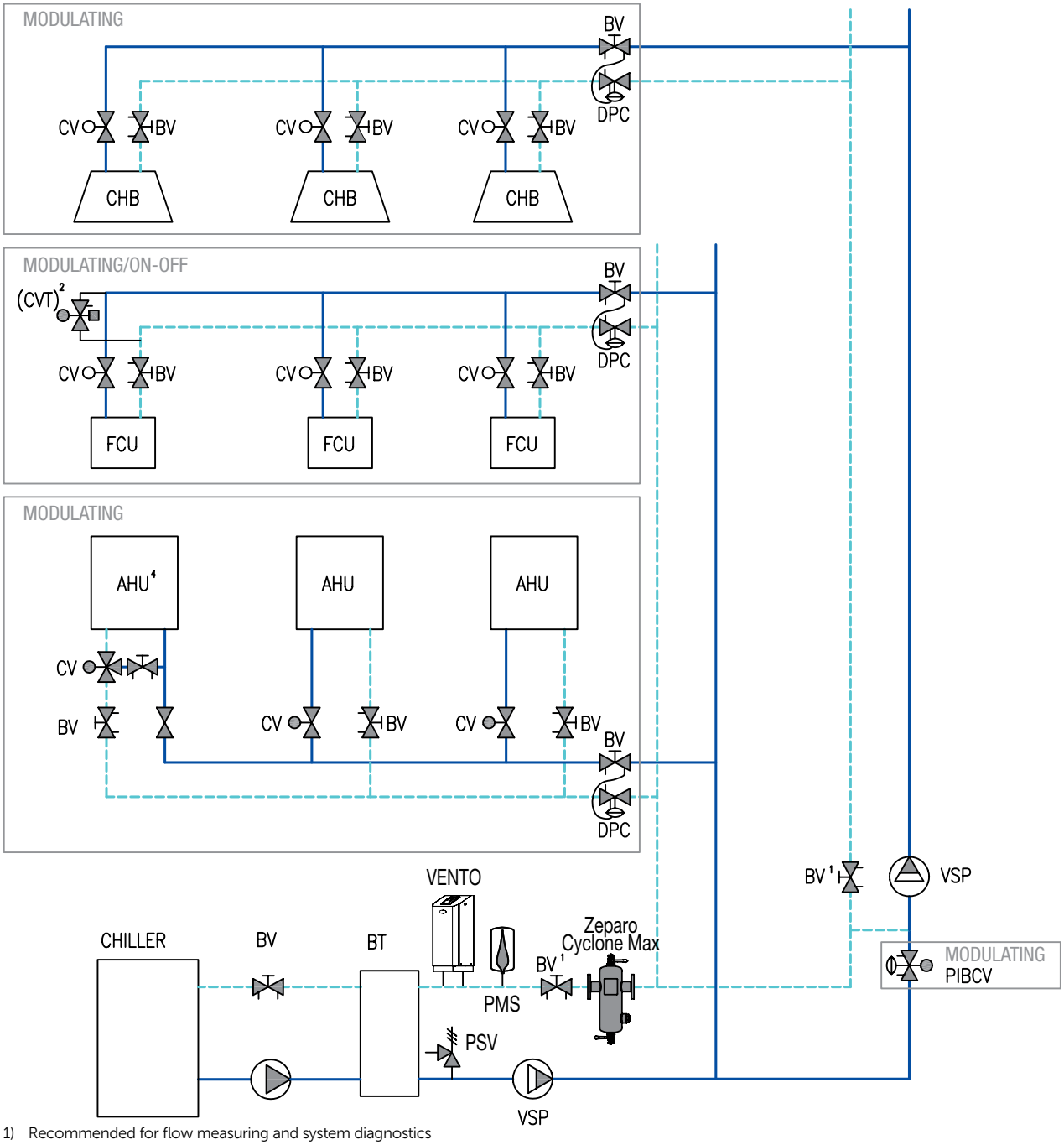
Quick links

A1		**TA-Smart**	Smart valve 9
A2		**PIBCV**	Pressure independent balancing and control valves. 12
A3		**CV**	Combined balancing and control valves 15
C1		**BV**	Balancing valves 33
C4		**DPC**	Differential pressure controllers 38
D1		**EV**	Expansion vessels 45
D3		**PSV**	Safety valves 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

G10a | 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

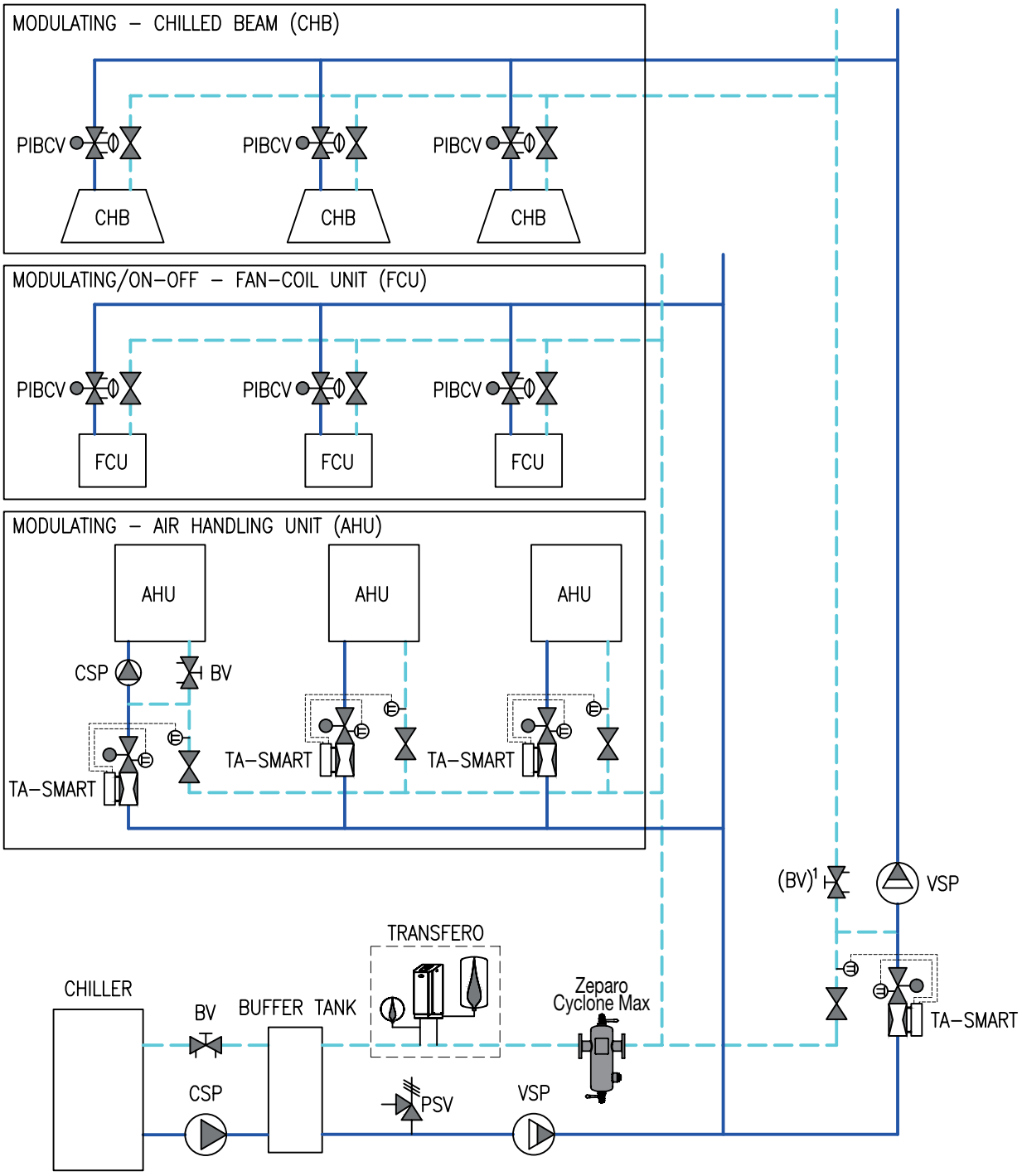
Legend:

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 Transfero Connect PMS as vacuum degassing is integrated)
VSP – Variable speed pump control
Zeparo Cyclone Max – Dirt & magnetite separator

G10b | 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 pressurisation unit with water make-up and vacuum degassing

VSP – Variable speed pump control

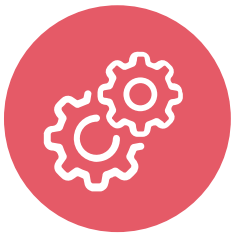
IMI

Climate Control



Sustainable Innovations

We innovate solutions and products that optimise the energy efficiency of HVAC systems in all building types, helping reduce their carbon footprint.



Sustainable Manufacturing

We actively and consistently improve our manufacturing practices to help mitigate climate change, reducing our impact on the world around us.



Expert Customer Support

We help you discovering HVAC energy-efficient opportunities by approaching each project individually and developing a solution tailored to you needs.

Breakthrough engineering for a better world

G11 | 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 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.

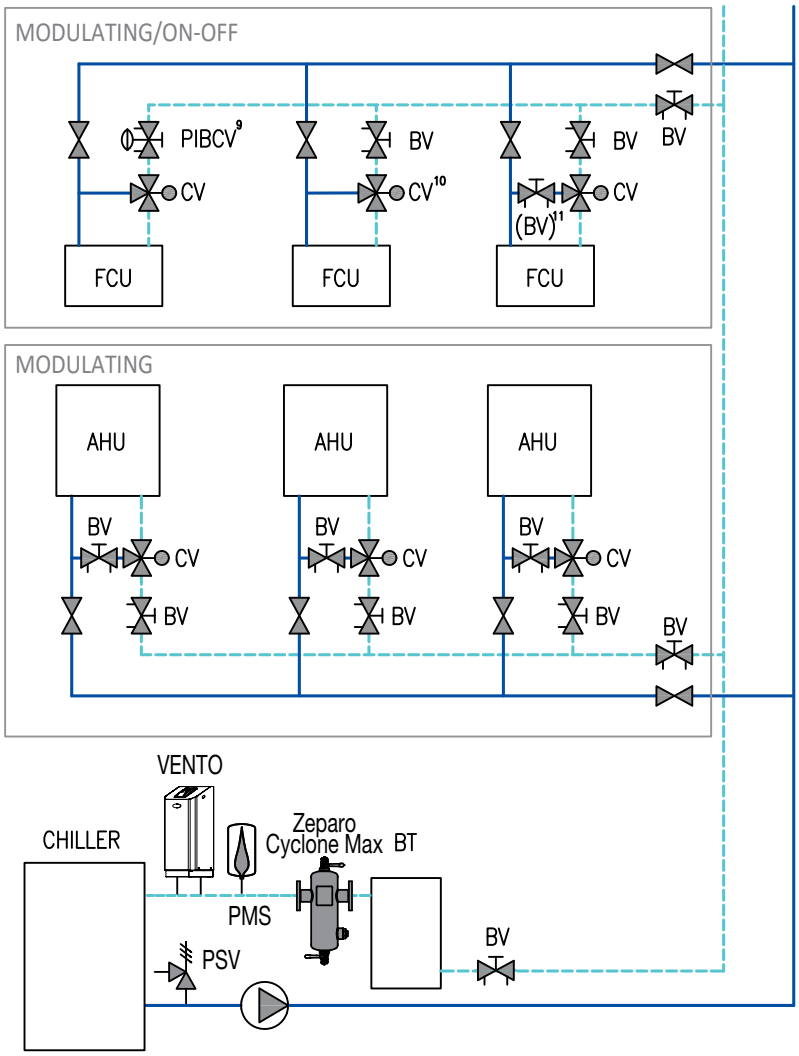
Quick links

A2		**PIBCV**	Pressure independent balancing and control valves. 12
A3		**CV**	Combined balancing and control valves 15
C1		**BV**	Balancing valves 33
D1		**EV**	Expansion vessels. 45
D3		**PSV**	Safety valves. 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

G11 | Cooling system – constant flow

Energy efficiency	Low	■					High
Investment	Low			■			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 Transfero Connect PMS as vacuum degassing is integrated)

Zeparo Cyclone Max – Dirt & magnetite separator

G12 | 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 Delta p 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 Delta p 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 Delta p controller based on the flow measurement on the secondary side.

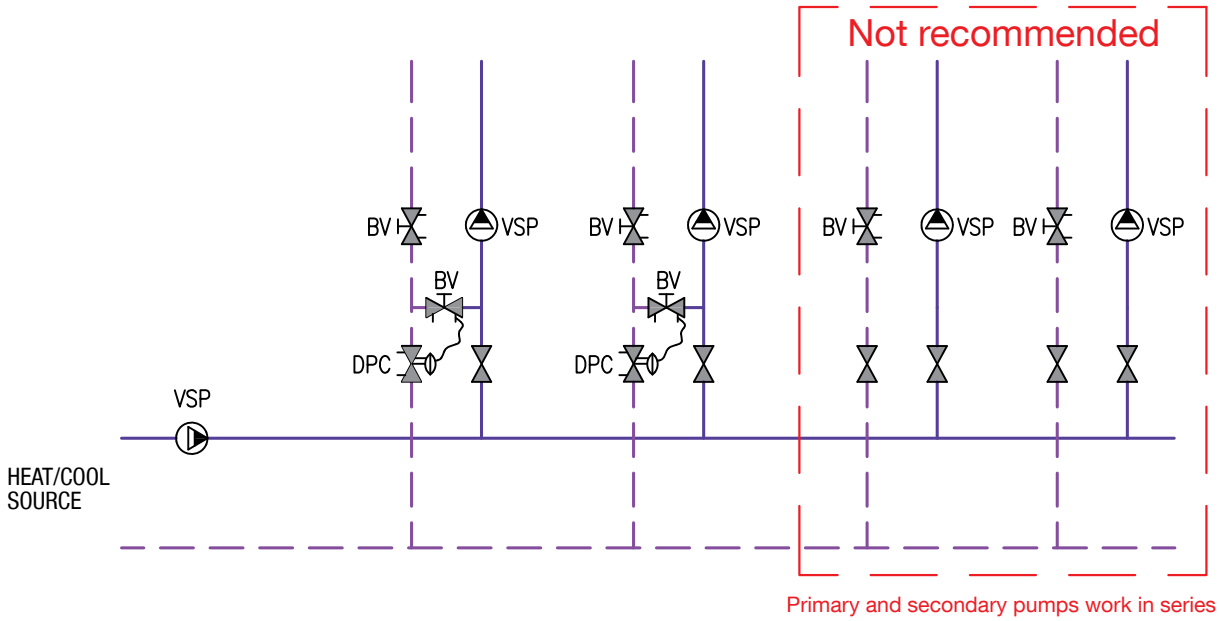
Quick links

C1		**BV**	Balancing valves 33
C4		**DPC**	Differential pressure controllers 38

G12 | 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

G13 | 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 Delta p 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 II actuators with IP54 protection give you the freedom to choose the mounting position.

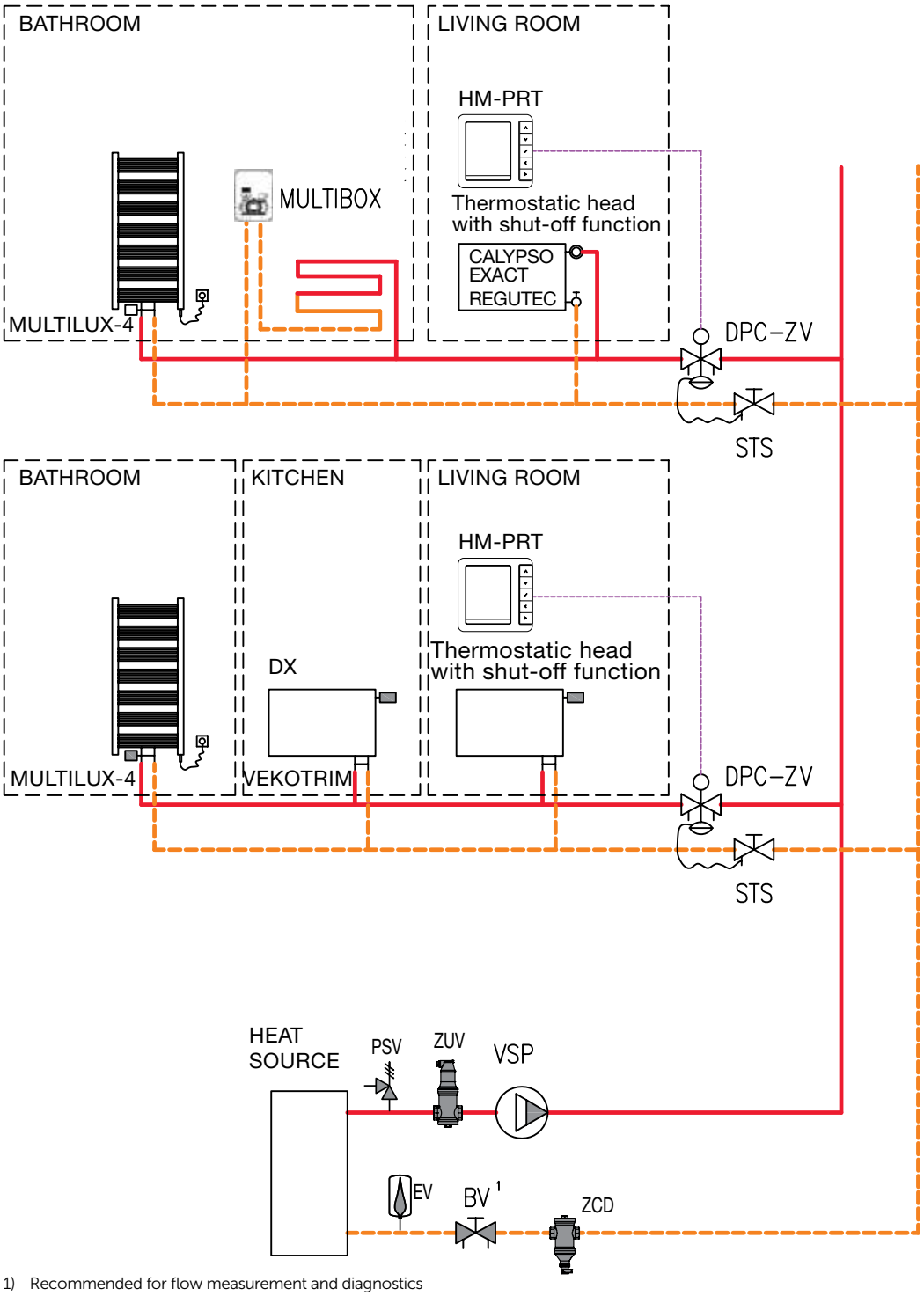
Quick links

C1		**BV**	Balancing valves 33
C4		**DPC-ZV**	Differential pressure controllers 38
D1		**EV**	Expansion vessels 45
D3		**PSV**	Safety valves 53
E1		**ZCD/ZUV**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

G13 | 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

G14 | 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, continous 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.
- 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.

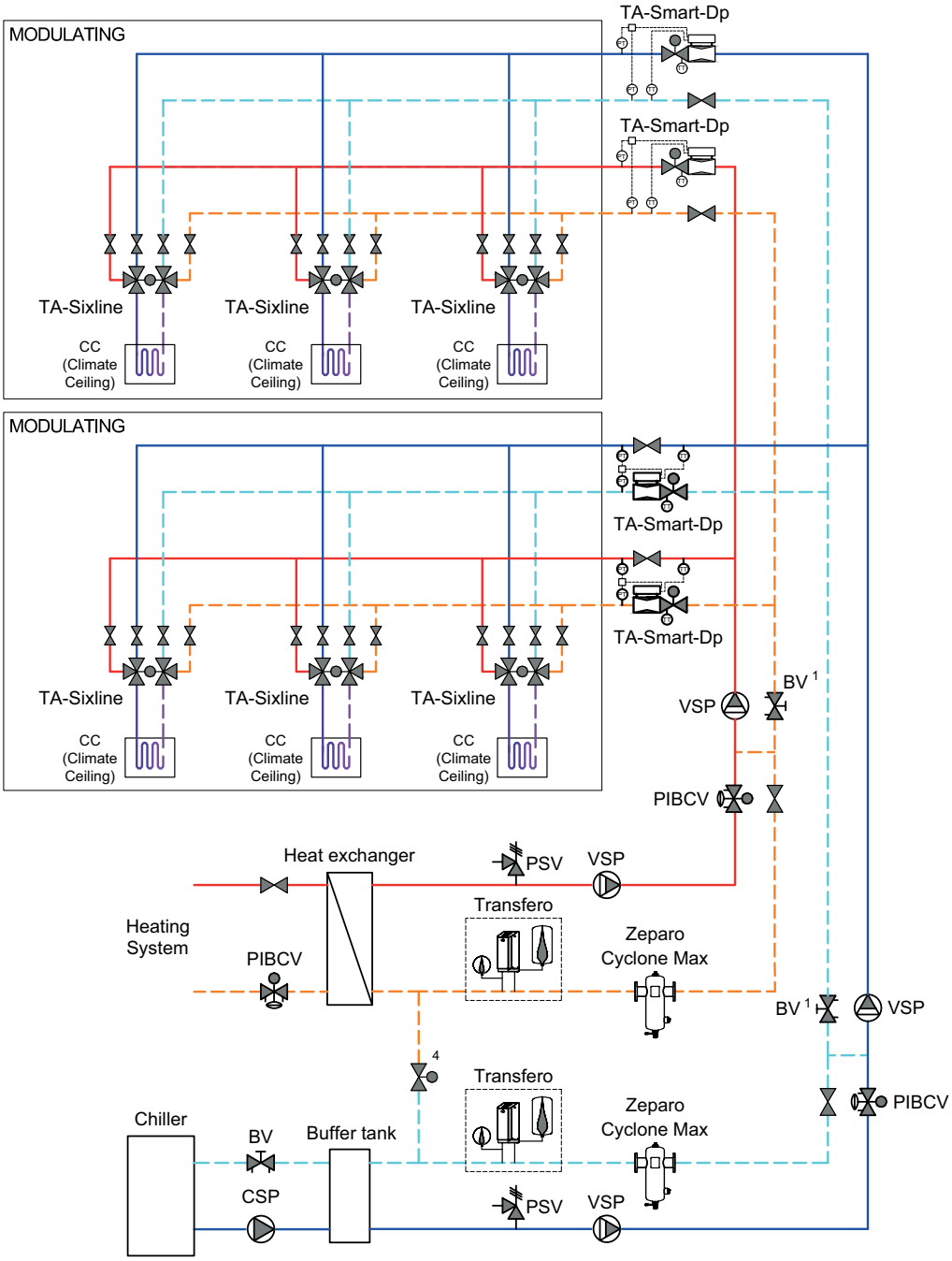
* Conditions apply. For more information please contact your local IMI representative.

Quick links

A1		**TA-Smart**	Smart valve 9
A2		**PIBCV**	Pressure independent balancing and control valves. 12
A5		**TA-Sixline**	Standard control valves 14
A4		**TA-Slider**	Actuators 20
C1		**BV**	Balancing valves 33
C4		**DPC-ZV**	Differential pressure controllers 38
D1		**EV**	Expansion vessels 45
D3		**PSV**	Safety valves 53
E1		**Zeparo Cyclone Max**	Dirt & Gas separators and Cyclonic vacuum degassing units 58

G14a | Four-pipe heating and cooling system – variable flow

Energy efficiency	Low						High
Investment	Low						High



1) Recommended for flow measuring and system diagnostics

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).

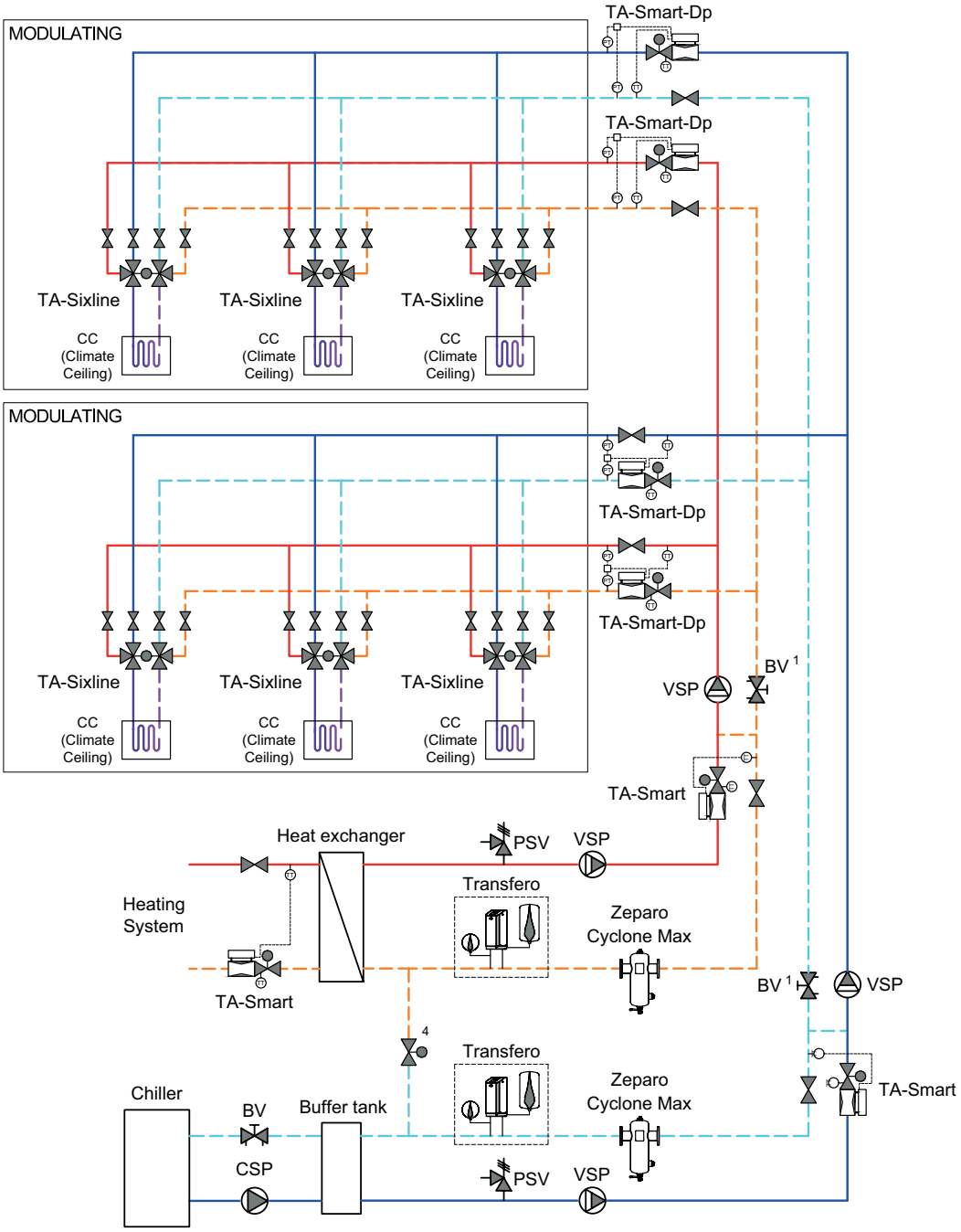
Legend:

AHB – Active heat beam
BV – Balancing valve
CSP – Constant speed pump
FCU – Fan-coil unit
PIBCV – Pressure-independent balancing and control valve
PSV – Safety valve
VSP – Variable speed pump
TA-Sixline – Linear 6-way valve for change-over systems
TA-Smart – Balancing and control valve with flow, temperature and power measurement capabilities
TA-Smart-Dp – Smart valve with DP control capabilities
Transfero – Pump based pressurization unit with water make-up and vacuum degassing
Zeparo Cyclone Max – Dirt and magnetite separator

G14b | Four-pipe heating and cooling system – variable flow

Energy efficiency	Low						High
Investment	Low						High

Recommended



1) Recommended for flow measuring and system diagnostics

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).

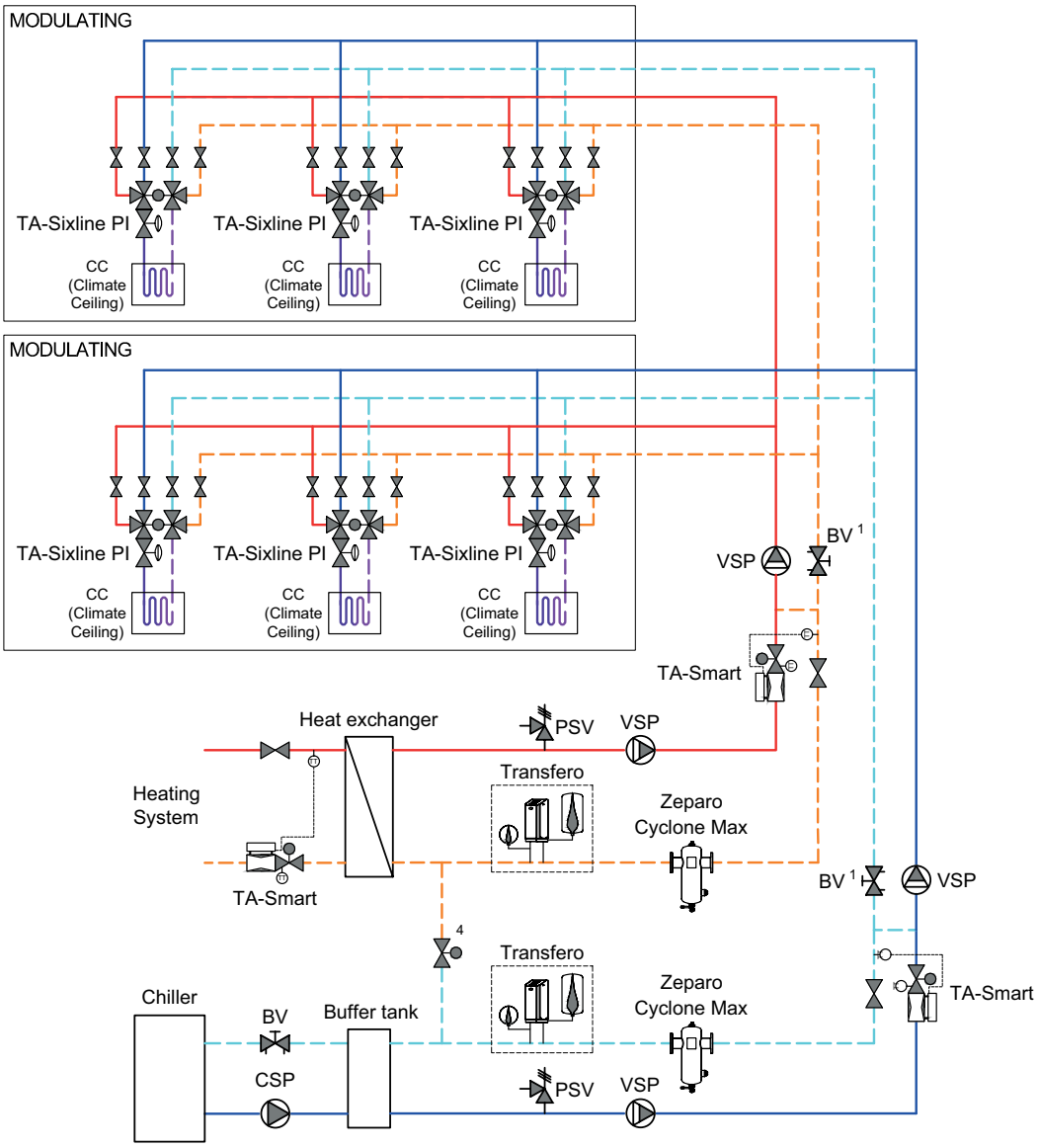
Legend:

AHB – Active heat beam
BV – Balancing valve
CSP – Constant speed pump
FCU – Fan-coil unit
PIBCV – Pressure-independent balancing and control valve
PSV – Safety valve
VSP – Variable speed pump
TA-Sixline – Linear 6-way valve for change-over systems
TA-Smart – Balancing and control valve with flow, temperature and power measurement capabilities
TA-Smart-Dp – Smart valve with DP control capabilities
Transfero – Pump based pressurization unit with water make-up and vacuum degassing
Zeparo Cyclone Max – Dirt and magnetite separator

G14c | Four-pipe heating and cooling system – variable flow

Energy efficiency	Low						High
Investment	Low						High

Recommended



1) Recommended for flow measuring and system diagnostics

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 heat beam
BV – Balancing valve
CSP – Constant speed pump
FCU – Fan-coil unit
PIBCV – Pressure-independent balancing and control valve
PSV – Safety valve
VSP – Variable speed pump
TA-Sixline PI – Pressure independent 6-way valve for change-over systems
TA-Smart – Balancing and control valve with flow, temperature and power measurement capabilities
Transfero – Pump based pressurization unit with water make-up and vacuum degassing
Zeparo Cyclone Max – Dirt and magnetite separator

G15 | 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.
- Delta T 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

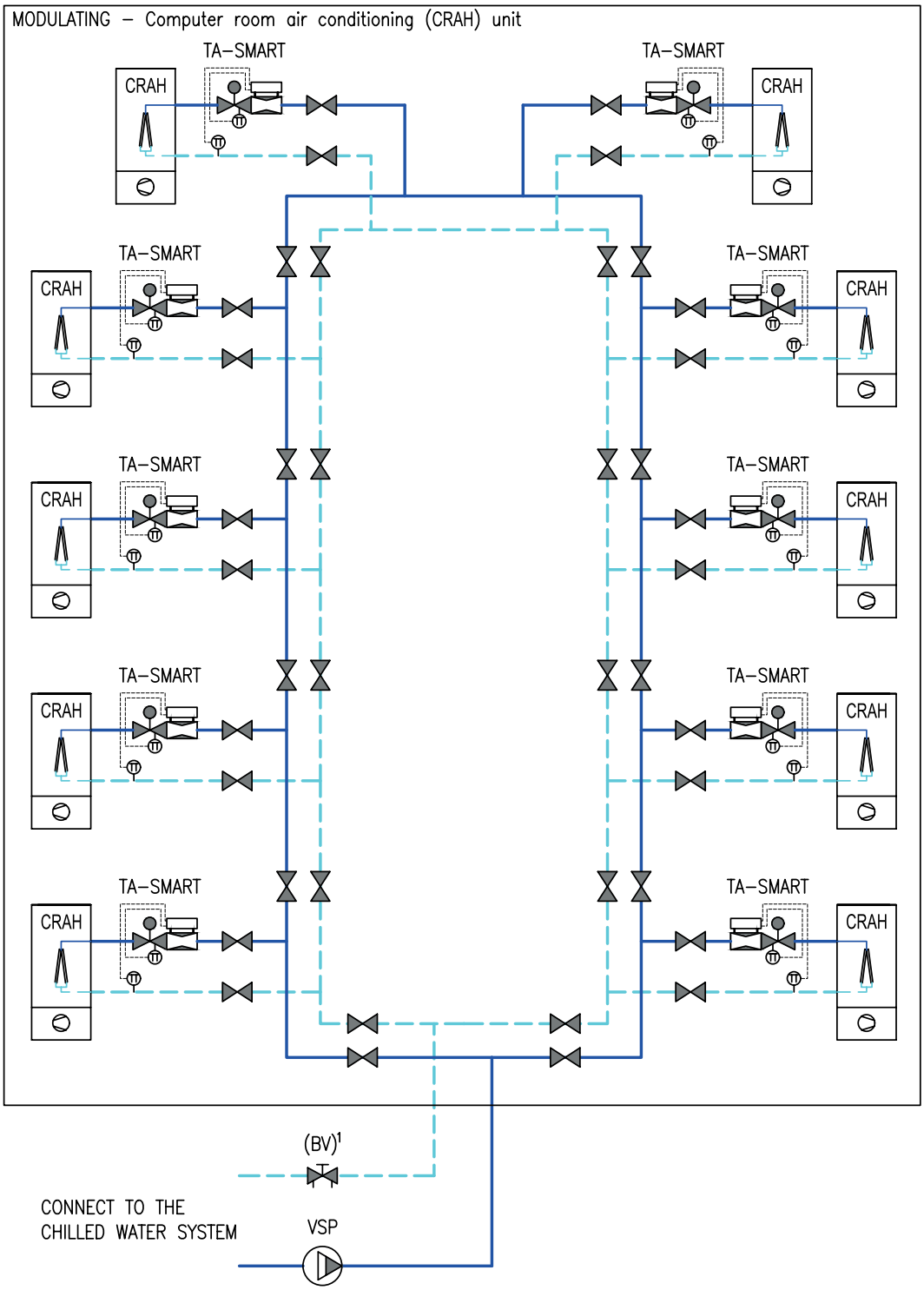
- Easy installation thanks to compact design.
- Simple setting of the maximum flow rate on each valve using a versatility of communication channels, like bus or MQTT.
- Flows and all parameters are set directly with the use of HyTune.
- Menu settings that are displayed graphically in HyTune.
- Parameter 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 33

G15 | Special solutions – variable flow

Energy efficiency	Low						High
Investment	Low						High



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

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^2. 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

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

Products installed

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

Case study

Sustainable Tropical Data Centre Testbed

Singapore's Sustainable Tropical Data Centre Testbed (STDCT) is the first data centre testbed* in the tropics.



Case study

The STDCT is a physical facility and a technology and operator-agnostic co-innovation program aimed at engaging various stakeholders in the data centre industry. STDCT aims to test solutions to determine which ones can meet the rigorous system requirements of data centers, specifically those located in a hot climate. This specific test aimed to test an HVAC solution that could achieve a minimum 25% reduction in energy consumption and greenhouse gas emissions compared to conventional air-cooled data centers.

The challenge

Established within a meticulously controlled testing environment, this experimental initiative assesses the feasibility of operating data centers in a tropical climate with temperatures of up to 38 degrees Celsius and ambient humidity levels of up to 90%. The primary focus of this test revolves around subjecting data servers to simulated conditions, encompassing scenarios like peak surges and data transfers, all while intentionally omitting any temperature or humidity regulation.

These tests aim to bolster Singapore's competitiveness in the rapidly evolving landscape of data centre technologies by addressing the region's unique demands posed by high temperature and high humidity conditions.

The solution

In pursuit of a comprehensive understanding, a comparative study is undertaken, evaluating the efficacy of distinct data centre cooling solutions: air-cooled server racks versus liquid-cooled server racks. This meticulous examination aims to elucidate how these cooling mechanisms perform under diverse conditions, shedding light on their adaptability to fluctuations in temperature and humidity.

IMI's solution involved integrating 24 pcs of TA-Smart DN 32 into the HVAC system. The connected control valves were the cornerstone of our monitoring infrastructure, precisely capturing essential data such as CHW flow rate, Supply/Return temperatures, Delta T, and cooling output (kW) through Schneider BMS with Modbus RTU. This implementation focuses on gathering accurate information for an in-depth analysis of energy consumption (kWh).

Distinguished by an exceptional accuracy of +/- 2% across all temperatures and equipped with high-precision PT1000 class AA temperature sensors, the TA-Smart valves ensure a reliable and consistent data flow under diverse thermal conditions. Moreover, they offer an outstanding level of control, enabling precise modulation down to 0.5% of nominal flow rates. This unparalleled control capability empowers system optimization with unprecedented granularity, enhancing operational efficiency in real-time.



* A testbed is a platform or facility for conducting rigorous, transparent, and replicable testing of scientific theories, computing.

Facts

Project Type: Data Centre System Testing and Analysis

Location: Singapore

Products installed

- ✓ TA-Smart DN 32

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 800 km^2 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

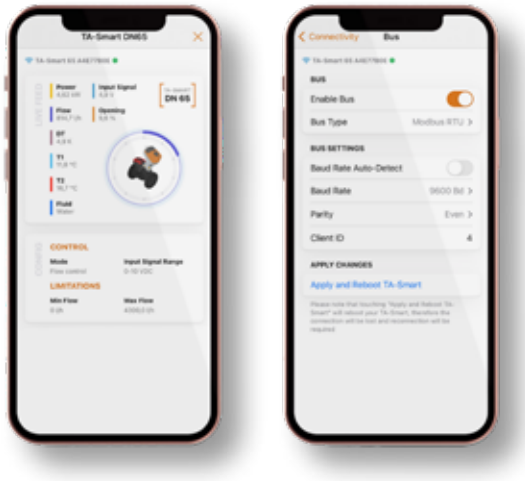
- Changed fan and coils on the air handling unit
- Installing TA-Smart on the air handling unit

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 ± 1°C and is usually within ±0.5°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 DN 40 & DN 65

Case study

Changi General Hospital, Singapore

At Changi General Hospital in Singapore, a pilot project tested TA-Smart technology on one air handling unit (AHU-B1-5-4).



Case study

The objective was to compare its smart control modes against conventional 2-way valve systems, with the goal of reducing chilled water energy use while maintaining precise indoor climate control.

The challenge

Hospitals face strict indoor climate requirements, operate 24/7, and are under increasing pressure to reduce energy consumption and meet sustainability targets. Rising energy costs and the need for reliable comfort in critical environments make chilled water systems a major challenge. The Changi General hospital needed a solution that could deliver measurable energy savings, reduce cooling loads, and improve system performance without compromising patient comfort or safety.

The solution

By applying TA-Smart's advanced control logic and optimising flow and cooling output, the project achieved:

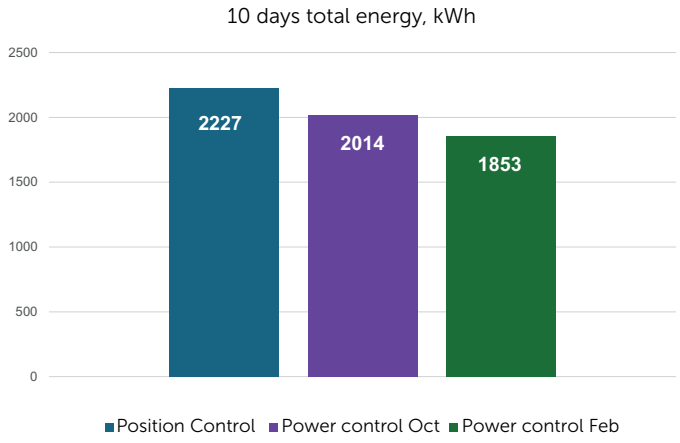
- Up to 17% energy savings on chilled water cooling
- 56% reduction in flow, improving pump efficiency
- 19% drop in cooling output, lowering peak load stress
- ΔT improvement of over 2°C, boosting chiller performance

In particular, TA-Smart's power control mode, configured with optimised flow (1.20 l/s) and cooling output (22.5 kW), delivered the most impact, especially during early morning peak demand. This resulted in a more stable return air temperature (RAT) and enhanced control accuracy.

With smart flow limitation at start-up and better temperature differential, the AHU operated more efficiently, consuming less energy while ensuring reliable comfort.

If rolled out across all 157 AHUs at Changi General Hospital, the hospital could save over 674,000 kWh annually with an ROI in just 33 months, well within the product's 5-year warranty. Additionally, reduced cooling demand could allow operation with three chillers instead of four during peak periods, cutting both capital and operational costs.

This pilot confirms that intelligent hydronic control is feasible, scalable, and economically sound, driving sustainability and performance in one of the most demanding environments: healthcare.



Facts

Project Type: Commercial/Hospital

Location: Singapore, Singapore

Products installed

- ✓ TA Smart DN40

IMI

Climate Control

Our product brands:
IMI Pneumatex
IMI TA
IMI Heimeier

Climate Control, a Sector of IMI plc
(Legally trading as IMI Hydronic Engineering International SA)
Route de Crassier 19
CH-1262 Eysins
Switzerland

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