

TA-Modulator – NPT threads



Combined control & balancing valves for small terminal units

Pressure independent balancing and control valve for modulating control



*Engineering
GREAT Solutions*

TA-Modulator – NPT threads

The new uniquely shaped EQM characteristics provide highly precise temperature control. The valve is compatible with linear proportional or 3-point actuators. A built-in differential pressure controller provides high control authority, control stability and automatic limitation of design flow. Measurement of flow and available pressure enables system optimisation and diagnostics.

Key features

- > **Precise temperature control**
Uniquely shaped EQM characteristic provides an up to 6 times larger operating stroke than linear valves.
- > **Quick hydronic balancing**
Automatic flow limitation when actuator is fully open protects entire system against overflows.
- > **Easy troubleshooting**
Flow and differential pressure measuring helps to reduce pump consumption and provides all necessary data for system diagnostics.
- > **High reliability**
AMETAL® and stainless steel guarantees high corrosion resistance and reduces the risk of leakage.



Technical description

Application:

Heating and cooling systems.

Functions:

Control (EQM)
Pre-setting (max. flow)
Differential pressure control
Measuring (ΔH , T, q)
Shut-off (for isolation during system maintenance – see also Leakage rate)

Dimensions:

DN 15-32

Pressure class:

PN 16

Differential pressure (ΔpV):

Max. differential pressure (ΔpV_{max}):
400 kPa = 4 bar

Min. differential pressure (ΔpV_{min}):

DN 15-20: 15 kPa = 0,15 bar

DN 25-32: 23 kPa = 0,23 bar

(Valid for position 10, fully open. Other positions will require lower differential pressure, check with the software HySelect.)

ΔpV_{max} = The maximum allowed pressure drop over the valve, to fulfill all stated performances.

ΔpV_{min} = The minimum recommended pressure drop over the valve, for proper differential pressure control.

Flow range:

The flow (q_{max}) can be set within the range:

DN 15: 92 - 480 l/h

DN 20: 200 - 975 l/h

DN 25: 340 - 1750 l/h

DN 32: 720 - 3600 l/h

q_{max} = l/h at each setting and fully open valve plug.

Temperature:

Max. working temperature: 90°C

Min. working temperature: 0°C

Media:

Water or neutral fluids, water-glycol mixtures.

Lift:

DN 15-20: 4 mm

DN 25-32: 6,5 mm

Leakage rate:

Leakage flow $\leq 0,01\%$ of max. q_{max} (setting 10) and correct flow direction. (Class IV according to EN 60534-4).

Characteristics:

Uniquely shaped EQM, best suited for modulating control.

Material:

Valve body: AMETAL®

Valve insert: AMETAL® and PPS

Valve plug: Stainless steel

Spindle: Stainless steel

Spindle seal: EPDM O-ring

Δp insert: PPS

Membrane: EPDM and HNBR

Springs: Stainless steel

O-rings: EPDM

AMETAL® is the dezincification resistant alloy of IMI Hydronic Engineering.

Marking:

TA, IMI, PN 16, DN and flow direction arrow. Grey handwheel and black identification ring on measuring point: TA-Modulator and DN.

Connection:

Male thread according to ISO 228.

Connections (accessories) with female and male threads NPT according to ANSI/ASME B1.20.1-1983, or for soldering according to ASME/ANSI B16.18.

Connection to actuator:

M30x1,5

Actuators:

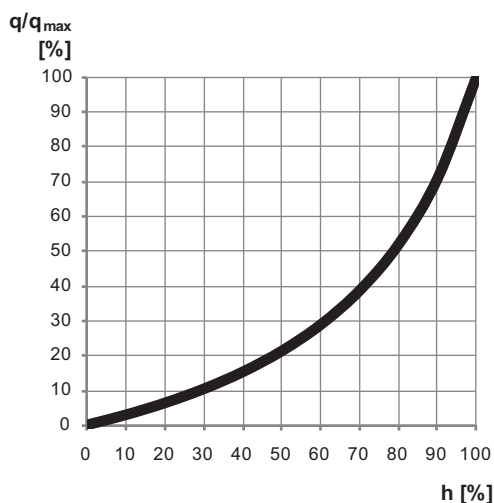
DN 15-20: TA-Slider 160, EMO TM

DN 25-32: TA-Slider 160

See separate information on EMO TM and TA-Slider 160.

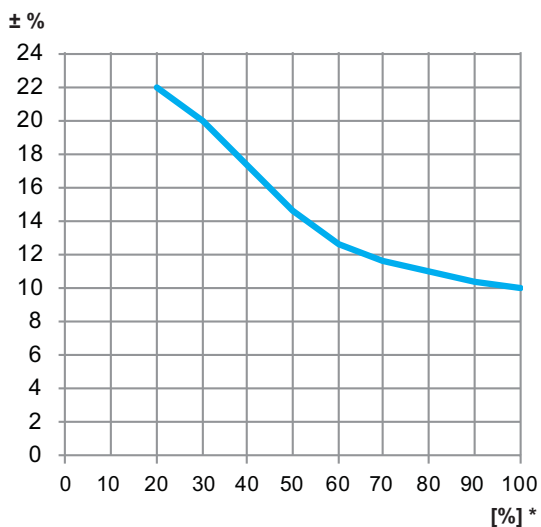
Valve characteristics

Nominal valve characteristic for all settings.



Measuring accuracy

Maximum flow deviation at different settings



*) Setting (%) of fully open valve.

Correction factors

The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water (≤ 20 cSt = $3^\circ E = 100 S.U.$), it is only necessary to compensate for the specific density. However, at low temperatures, the viscosity increases and laminar flow may occur in the valves. This causes

a flow deviation that increases with small valves, low settings and low differential pressures. Correction for this deviation can be made with the software HySelect or directly in our balancing instruments.

Noise

In order to avoid noise in the installation, the valve must be correctly installed and the water de-aerated.

Actuators

Actuator EMO TM and TA-Slider 160

For more details about EMO TM and TA-Slider 160, see separate catalogue leaflets.

TA-Modulator is developed to work together with the EMO TM and TA-Slider 160 actuators. Actuators of other brands require;

Working range (setting 1-10)

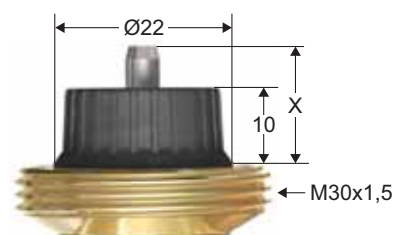
DN 15-20: X (closed - fully open) = 11.6 - 15.85

DN 25-32: X (closed - fully open) = 10.1 - 16.85

Closing force

DN 15-20: Min. 125 N (max. 500 N)

DN 25-32: Min. 190 N (max. 500 N)



IMI Hydronic Engineering will not be held responsible for the control function if other brands of actuator are used.

Max. recommended pressure drop (ΔpV) for valve and actuator combination

The maximum recommended pressure drop over a valve and actuator combination for close off (ΔpV_{close}) and to fulfill all stated performances (ΔpV_{max}).

DN	EMO TM * [kPa]	TA-Slider 160 * [kPa]
15	400	400
20	400	400
25	-	400
32	-	400

*) Closing force 125 N (EMO TM) and 190 N (TA-Slider 160).

ΔpV_{close} = The maximum pressure drop that the valve can close against from an opened position, with a specified force (actuator) without exceeding stated leakage rate.

ΔpV_{max} = The maximum allowed pressure drop over the valve, to fulfill all stated performances.

Sizing

1. Choose the smallest valve size that can obtain the design flow with some safety margin, see " q_{max} values". The setting should be as open as possible.
2. Check that the available ΔpV is within the working range 15-400 kPa or 23-400 kPa.

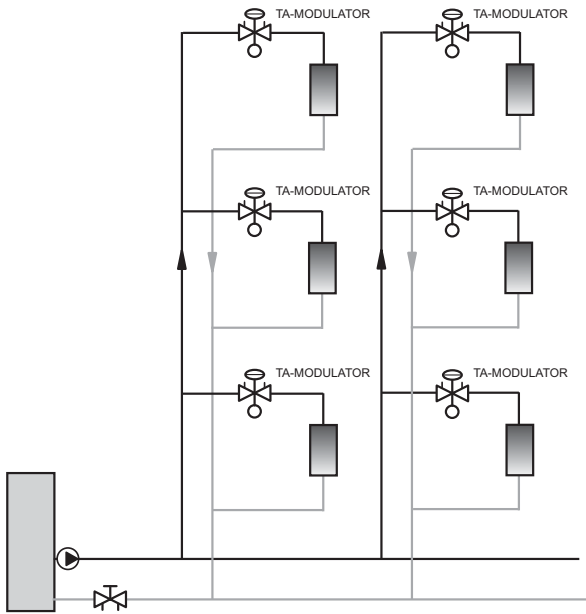
q_{max} values

	Position									
	1	2	3	4	5	6	7	8	9	10
DN 15	92	114	140	170	210	265	325	390	445	480
DN 20	200	260	360	460	565	670	770	850	920	975
DN 25	340	440	600	810	1010	1200	1350	1520	1640	1750
DN 32	720	960	1350	1750	2150	2530	2850	3130	3380	3600

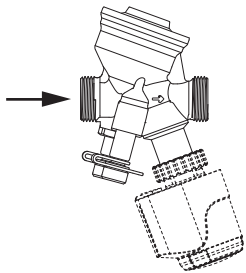
q_{max} = l/h at each setting and fully open valve plug.

Installation

Application example

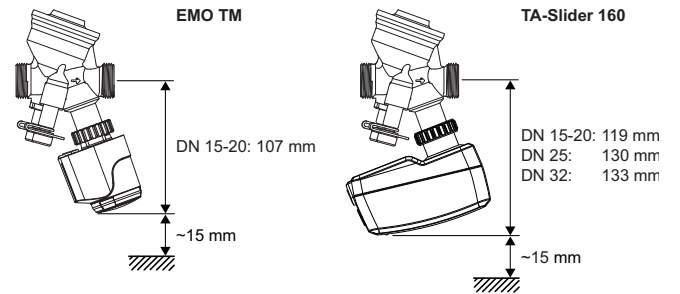


Flow direction

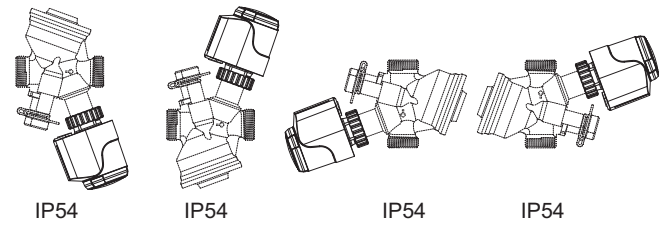


Installation of actuator

Approx. 15 mm of free space is required above the actuator.

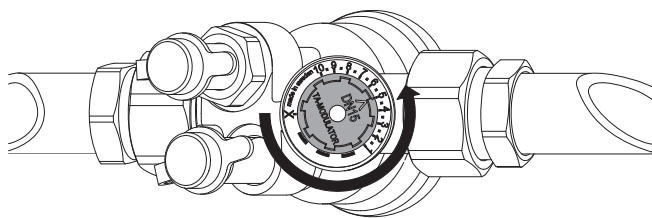


TA-Modulator + EMO TM/TA-Slider 160



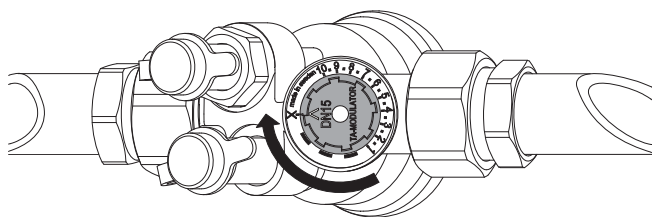
Operating function

Setting



1. Turn the setting wheel to desired value, e.g. 5.0.

Shut-off

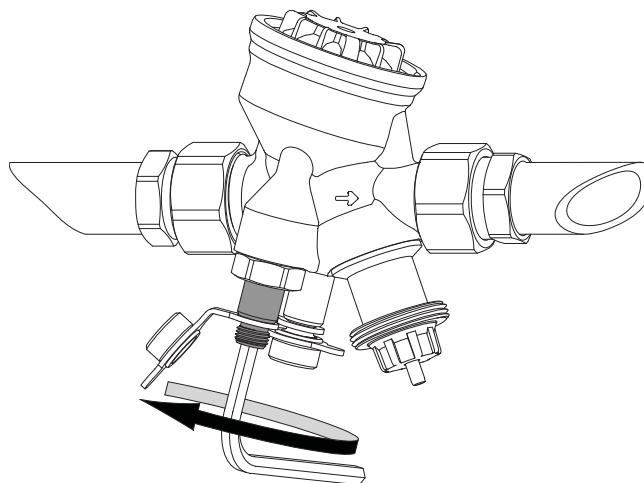


1. Turn the setting wheel clockwise to X.

Measuring q

1. Remove any actuator.
2. Connect the IMI TA balancing instrument to the measuring points.
3. Input the valve type, size and setting and the actual flow is displayed.

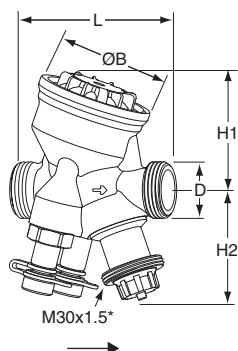
Measuring ΔH



1. Remove any actuator.
2. Close the valve according to "Shut-off".
3. Bypass the Δp -part by opening the bypass spindle ≈ 1 turn anticlockwise, with a 5 mm Allen key.
4. Connect the IMI TA balancing instrument to the measuring points and measure.

Important! Reopen the valve to previous setting and close the bypass spindle after the measurement is completed.

Articles



Male thread

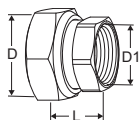
Threads according to ISO 228

DN	D	L	H1	H2	B	q _{max} [l/h]	Kg	EAN	Article No
15	G3/4	74	55	55	54	480	0,54	7318794027008	52 164-315
20	G1	85	64	55	64	975	0,69	7318794027107	52 164-320
25	G1 1/4	93	64	67	64	1750	0,79	7318794027206	52 164-325
32	G1 1/2	117	78	70	78	3600	1,5	7318794027305	52 164-332

*) Connection to actuator.

→ = Flow direction

Connections

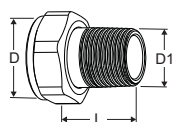


With female thread NPT

Threads according to ANSI/ASME B1.20.1-1983.

Swivelling nut

Valve DN	D	D1	L*	EAN	Article No
15	G3/4	1/2 NPT	25	7318794017900	52 163-215
20	G1	1/2 NPT	18	7318794018303	52 163-320
20	G1	3/4 NPT	23	7318794018006	52 163-220
25	G1 1/4	3/4 NPT	27	7318794018402	52 163-325
25	G1 1/4	1 NPT	27	7318794018105	52 163-225
32	G1 1/2	1 NPT	27	7318794018501	52 163-332
32	G1 1/2	1 1/4 NPT	31	7318794018204	52 163-232

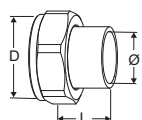


With male thread NPT

Threads according to ANSI/ASME B1.20.1-1983.

Swivelling nut

Valve DN	D	D1	L*	EAN	Article No
15	G3/4	1/2 NPT	29	4024052928415	2400-02.350
20	G1	3/4 NPT	32,5	4024052928514	2400-03.350
25	G1 1/4	1 NPT	35	4024052928613	2400-04.350
32	-	-	-	-	-



Soldering connection

According to ASME/ANSI B16.18

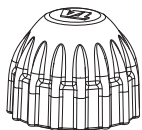
Swivelling nut

Valve DN	D	Pipe Ø [in]	~ [mm]	L*	EAN	Article No
15	G3/4	0.629	16.0	16	7318794022904	52 009-715
20	G3/4	0.879	22	22	7318794023000	52 009-720
25	G1 1/4	1.130	29	26	7318794023109	52 009-725
32	G1 1/2	1.380	35	28	7318794023208	52 009-732

*) Fitting length (from the gasket surface to the end of the connection).

Other type of connections (ISO), see international version of TA-Modulator.

Accessories



Protection cap

For TA-COMPACT-P/-DP, TA-Modulator (DN 15-20), TBV-C/-CM/-CMP, KTCM 512.

For valve		EAN	Article No
DN 15-20	Red	7318793961105	52 143-100