IMI TA

TA-PICL

Prefabricated units

Pressure independent control loop

IMI Hydronic Engineering

Breakthrough Engineering

TA-PICL

TA-PICL is a 2-way control loop for temperature control. TA-PICL is pressure independent on the primary side and suitable in ventilation heat exchangers, radiator systems, floor heating systems etc.

Key features

- **Pressure independent control**
  The pressure independent control valve TA-Modulator ensures accurate control and independent balancing of the primary side.
- **Precise temperature control**
  TA-Modulator provide uniquely shaped EQM characteristic for best modulating control.
- **Easy balancing and good compatibility**
  The balancing valve STAD ensures accurate and easy balancing of the secondary side.
- **Easy diagnostics**
  Measuring points enables data for full system diagnostics.

Technical description

Applications:
TA-PICL is made for control loops with variable flow in primary side and constant flow in secondary side.

Functions:
Measuring (ΔH, t, q)
Shut-off
Draining

Primary side:
Control (EQM)
Pre-setting (max. flow)
Differential pressure control

Secondary side:
Balancing
Pre-setting

Dimensions:
DN 15-50

Pressure class:
All components in the product are classified to at least PN 6.

Temperature:
Max. working temperature: 90°C
Min. working temperature: -10°C
These temperature limitations are for TA-PICL. Also check the limitations of the chosen circulation pump.

Media:
Water or neutral fluids, water-glycol mixtures (0-57%).

Pump connection:
Pump connections; swivelling nut with female threads included.
DN 15-40: G1 1/2
DN 50: G2

Shut-off valves:
STS

Balancing valve:
STAD

Control valve:
TA-Modulator

Actuators:
DN 15-32: TA-Slider 160 (24 VAC/VDC; 0(2)-10 VDC).
DN 40-50: TA-Slider 500 (24 VAC/VDC; 0(2)-10 VDC).
All actuators with halogen free cable.

Thermometers:
Temperature range 0 – +120°C for heating, -40 – +40°C for cooling.

Insulation:
Heating: Non-combustible mineral wool
Cooling: Armaflex condensate insulation

Protective box:
Plastic laminated sheet metal.

Mechanical construction

General
TA-PICL is produced in sizes from DN 15 to DN 50. TA-PICL is connected by means of pipe threads.

Balancing
The secondary side is provided with the balancing valve STAD. The primary side is provided with the pressure independent control valve TA-Modulator.

Shut-off
All circuits are provieded with STAD or STS with shut-off function.

Measuring
All valves included in the TA-PICL are provided with measuring points, to permit measurement of available pressure, pressure drop, flow, temperature and power in connected circuits.
Use IMI Hydronic Engineering's balancing instrument TA-SCOPE.
NOTE: In softwares (HySelect, HyTools) and balancing instrument (TA-SCOPE) the STAD, PN 25 version, is named STAD*.

Pump
TA-PICL is prepared for pump installation. Two premounted pump connections are included.
DN 15-40 pump DN 25.
DN 50 pump DN 32.

Insulation – box
TA-PICL is insulated as standard with non-flammable mineral wool for heating systems and with Armaflex condensation insulation for cooling systems.
External valves and couplings are not insulated.
The product has a protective box of plastic laminated sheet metal, which is easy to dismantle for inspection.

Mounting
TA-PICL is reversible for shifting primary and secondary side. A bracket for wall mounting is included as standard. A floor mounting stand is available as an option.

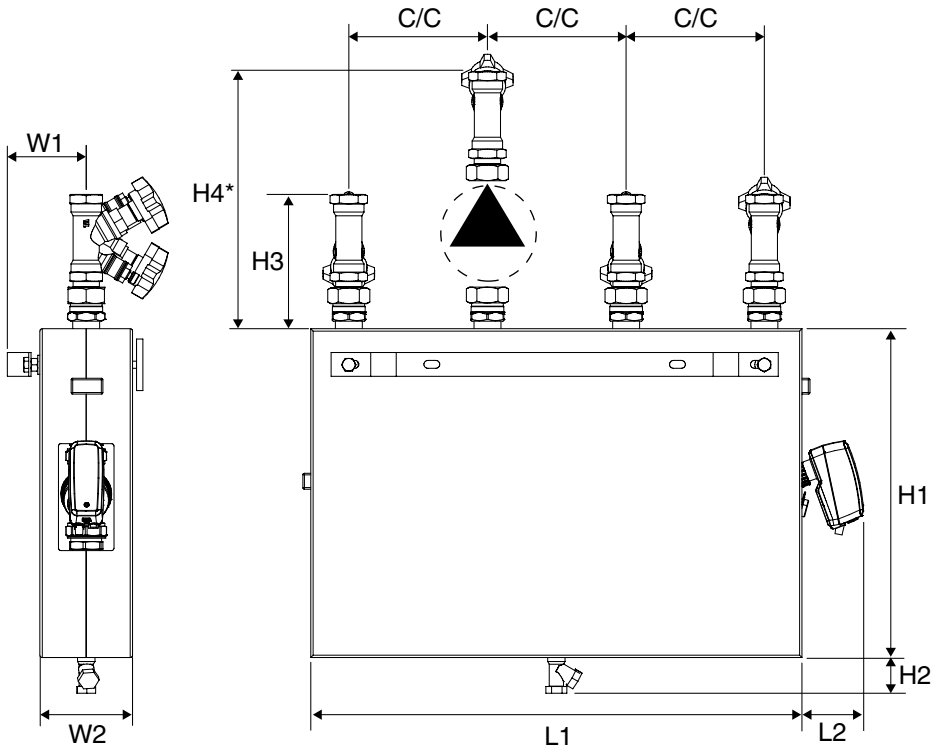
Type plate
A self-adhesive type plate is supplied and shall be visible fixed on the box. The type plate includes the following:
- Pos specifies the section of the installation which the control circuit serves
- Type gives the characteristic data of the product
- Year of manufacture

Document
Mounting and operating instruction is included.

Thermometers
4 thermometers are installed on each unit.
Thermometer scale:
0 – +120°C for heating.
-40 – +40°C for cooling.

Actuators
TA-Slider 160 (24 VAC/VDC) for DN 15-32 and TA-Slider 500 (24 VAC/VDC) for DN 40-50 included in TA-PICL.
All actuators with halogen free cable.
See separate technical leaflets "TA-Slider 160" and "TA-Slider 500" for more details.

Dimension sketch



DN	C/C	L1	L1	L2	H1	H2	H3	H4*	W1	W2	Weight** [kg]
		Heating	Cooling	(TA-Slider 160)							
15	120	430	450	70	310	55	129	174	90	100	8,5
20	120	430	450	70	310	55	142	172	90	100	10
25	170	600	620	70	415	55	160	170	100	110	15
32	170	600	620	70	415	55	181	185	100	110	21
				(TA-Slider 500)							
40	220	770	800	150	530	55	201	221	115	140	31
50	220	770	800	150	530	55	230	280	120	140	39

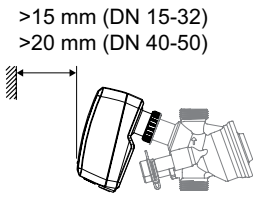
*) Excl pump, face to face length.
**) Excl pump.

Correction factors

The flow calculations are valid for water (+20°C). For other liquids with approximately the same viscosity as water (≤20 cSt = 3°E=100S.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.

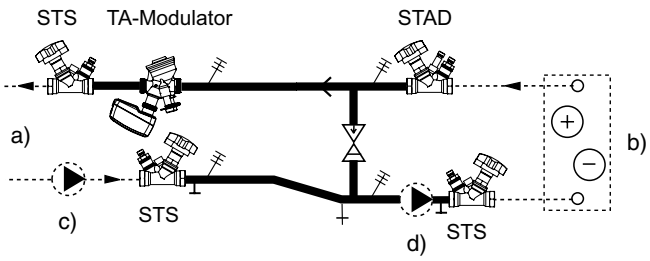
Installation

Free space is required above the actuator for easy mounting/ dismounting.



Fundamental design

Variable flow in primary circuit and constant flow in secondary circuit
The flow in the secondary circuit shall be greater than or equal to the flow in the primary circuit.



a) Heating or cooling supply - primary
b) Load - secondary
c) Main pump - primary
d) Pump - secondary

Sizing

Sizing example (1200 l/h primary and 1800 l/h secondary)

1. Choose size of TA-PICL in the diagram called “Primary side”. Each dimensioning field also contains presetting values for the pressure independent control valve TA-Modulator. Strive for as high presetting value as possible.
In this case: TA-PICL DN 25, setting 6,0.

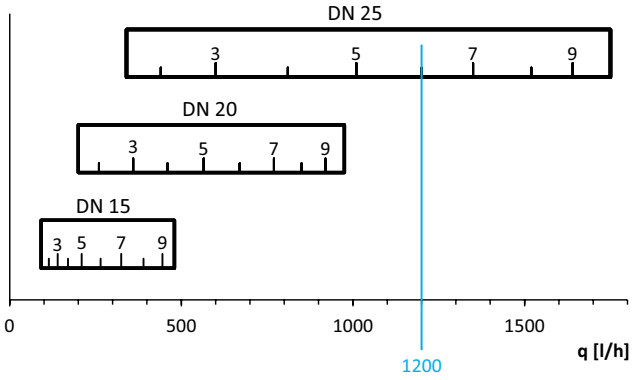
2. Check that the available differential pressure ΔH is higher than, or equal to ΔH_{min} for the chosen dimension and presetting of TA-Modulator. See “Flow tables – Primary side”.

3. Use the diagram “Secondary side” for sizing of the pump on the secondary side. 1800 l/h requires a pressure drop of 17,5 kPa. Add 17,5 to the pressure drop in the secondary circuit to calculate the smallest needed pump head.

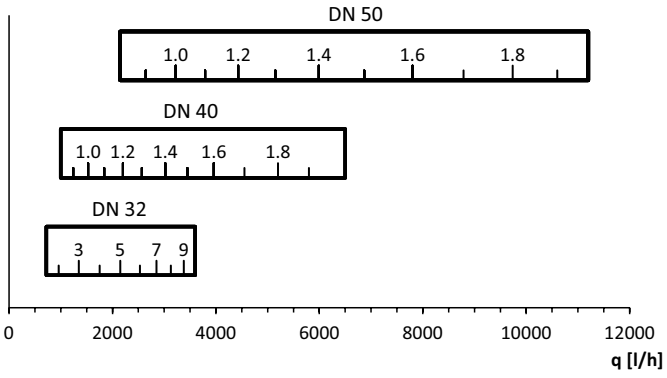
4. The chosen product is TA-PICL DN 25.

Primary side

DN 15-25

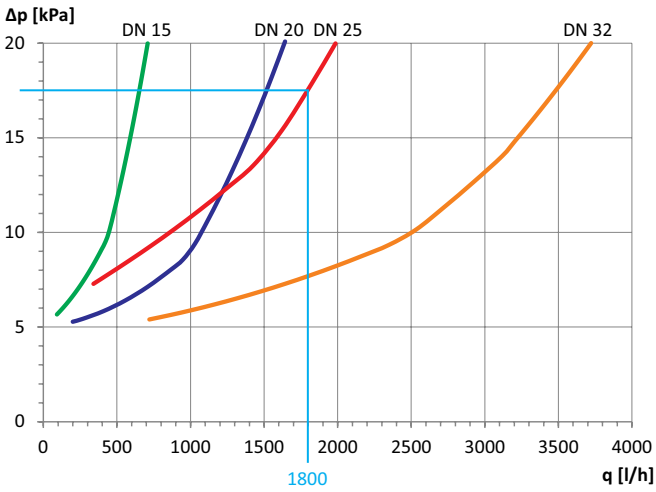


DN 32-50

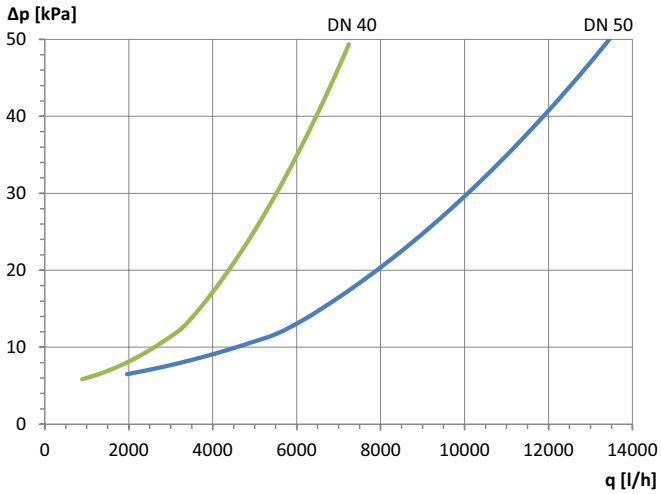


Secondary side

DN 15-32



DN 40-50



Note: Min. 3 kPa in STAD included in the diagram.

NOTE: In softwares (HySelect, HyTools) and balancing instrument (TA-SCOPE) the STAD, PN 25 version, is named STAD*.

Flow tables – Primary side

DN 15

Position	1	2	3	4	5	6	7	8	9	10
q_{max}	92	114	140	170	210	265	325	390	445	480
ΔH_{min}	14,0	14,2	14,6	15,1	15,9	17,1	18,8	20,9	22,8	24,2

DN 20

Position	1	2	3	4	5	6	7	8	9	10
q_{max}	200	260	360	460	565	670	770	850	920	975
ΔH_{min}	14,0	14,1	14,5	15,0	15,8	16,8	17,8	18,6	19,3	19,9

DN 25

Position	1	2	3	4	5	6	7	8	9	10
q_{max}	340	440	600	810	1010	1200	1350	1520	1640	1750
ΔH_{min}	16,3	16,7	17,3	18,5	20,0	21,7	23,6	25,8	27,8	29,8

DN 32

Position	1	2	3	4	5	6	7	8	9	10
q_{max}	720	960	1350	1750	2150	2530	2850	3130	3380	3600
ΔH_{min}	19,0	19,6	20,6	22,1	23,9	26,3	28,6	30,8	33,0	35,1

DN 40

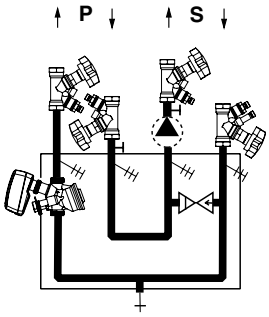
Position	0,8	0,9	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	1,9	2,0
q_{max}	1000	1240	1530	1840	2200	2570	3020	3450	3960	4550	5200	5800	6500
ΔH_{min}	27,4	27,7	28,1	28,3	28,8	29,9	31,5	32,8	34,9	38,6	43,2	47,8	53,7

DN 50

Position	0,8	0,9	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	1,9	2,0
q_{max}	2150	2640	3220	3790	4430	5150	5990	6870	7800	8790	9740	10600	11200
ΔH_{min}	26,2	26,4	26,9	27,3	28,1	29,9	32,4	35,6	39,4	45,1	51,2	56,7	60,6

q_{max} = l/h at each setting and fully open valve plug.
ΔH_{min} = minimum needed differential pressure over the TA-PICL's primary side.

Articles



Heating
Note: Circulation pump not included.

DN	EAN	Article No
15	7318794031005	54 194-215
20	7318794031104	54 194-220
25	7318794031203	54 194-225
32	7318794031302	54 194-232
40	7318794040809	54 194-240
50	7318794040908	54 194-250

Cooling
Note: Circulation pump not included.

DN	EAN	Article No
15	7318794031401	54 194-315
20	7318794031500	54 194-320
25	7318794031609	54 194-325
32	7318794031708	54 194-332
40	7318794041004	54 194-340
50	7318794041103	54 194-350

P = Primary side
S = Secondary side