

**Climate  
Control**

**IMI Pneumatex**

# Vento Connect



## **Cyclonic vacuum degassing**

For heating, solar, and chilled water systems

## Vento Connect

Vento Connect is a cyclonic vacuum degasser for heating and solar systems, and chilled water systems. Its use is particularly recommended where high performance, compact design and precision are required. The industrial version VI is especially designed for high pressure applications up to 20.5 bar. The **BrainCube Connect** control panel allows a new level of connectivity, enabling communication with the BMS system, other BrainCubes as well as remote operation of the pressurisation system through live viewing.



### Key features

#### Higher efficiency cyclonic vacuum degassing

Significantly higher efficiency than most other vacuum degassing systems.

#### Direct degassing of make-up water

For additional protection against corrosion.

#### Easy Commissioning, Remote Access and Trouble-shooting

Integrated standard connections to our IMI Webserver and to BMS.

#### Vento Compact

Compact design for floor and wall hanging installation

#### Optional sound-absorbing wall bracket

For Vento Compact in installation locations particularly sensitive to structure-borne sound

### Technical description – Control unit TecBox

#### Applications:

Closed heating, solar and chilled water systems. For systems according to EN 12828, SWKI HE301-01, EN 12976, ENV 12977, EN 12952, EN 12953

#### Media:

Non-aggressive and non-toxic system media. Ethylene or propylene glycol-based antifreeze up to 50%.

#### Pressure:

Min. admissible pressure, PSmin: -1 bar  
Max. admissible pressure, PS: see Articles

#### Temperature:

Min. admissible temperature,  
 $t_{Smin}$ : 0°C  
Max. admissible temperature,  
 $t_{Smax}$ : 90°C  
Max. admissible ambient temperature,  
 $t_{Amax}$ : 40°C  
Min. admissible ambient temperature,  
 $t_{Amin}$ : 0°C

#### Supply voltage:

Vento V/VF:  
1 x 230 V ( $\pm 10\%$ ) / 50 Hz  
Vento VI:  
Main voltage: 3x400V ( $\pm 10\%$ ) / 50Hz (3P+PE)  
Control voltage: 230V ( $\pm 10\%$ ) / 50Hz (P+N+PE)

#### Electrical connections:

Onsite fuses according to power demand and local norms  
4 (V/VI) or 3 (VF) potential-free outputs (NO) for external alarm indication (230V max. 2A)  
1 RS 485 In/Output  
1 Ethernet RJ45 plug socket  
1 USB Hub plug socket  
Terminal strip in PowerCube for direct wiring (Vento VI).

#### Enclosure class:

IP54 according to EN 60529

#### Mechanical connections:

Vento V/VI:  
Sin1: inlet from the system G3/4"  
Sout: outlet to the system G3/4"  
Swm: inlet water make-up G3/4"

#### Vento VF:

Sin1: inlet from the system G1/2"  
Sout: outlet to the system G1/2"  
Swm: inlet water make-up G3/4"

#### Material:

Metal components with medium contact: carbon steel, cast iron, stainless steel, AMETAL®, brass, gun metal.

#### Transportation and storage:

In frostless, dry places.

#### Standard:

Constructed according to MD 2006/42/EC, Annex II 1.A  
EMC-D. 2014/30/EU

## Function, Equipment, Features

### Control unit TecBox

- BrainCube Connect control for an intelligent, fully automatic, safe system operation. Self-optimising with memory function.
- Resistive 3.5" TFT illuminated colour touch display. Web-based interface with remote control and live view. User-friendly, operation-orientated menu layout with slide and tap operation, step-by-step start up procedure guide and direct help in pop-up windows. Representation of all relevant parameters and operation status in plain text and/or graphical, multilingual.
- Standardised integrated connections (Ethernet, RS 485) to the IMI webserver and BMS (Modbus and IMI Pneumatex protocol).
- Software updates and data logging possible via USB connection
- Data logging and system analysis, chronological message memory with prioritisation, remotely controllable with live view.
- Periodical automatic self-test, daily checking the vacuum.
- The BrainCube Connect generates an alarm if necessary.
- High quality metal cover.

### Vacuum Degassing

- Flow capacity of approx. 1000 l/h (Vento V/VI) and 200 l/h (Vento Compact) for system degassing.
- Vacusplit: Degassing programs for permanent operation with cyclonic technology. Gas under saturation of system water of nearly 100%. Eco automatic operation when no air is detected, savings on electricity consumption of the pump.
- Oxystop degassing: Direct degassing of make-up water. Significant oxygen reduction in the make-up water. Safely degasses both system and make-up water in a specially designed cyclone vessel (inside the Tecbox), with the advantage of low keeping temperature of the expansion vessel, without the need to insulate the vessel. Protects the system against corrosion.

### Water make-up

- Fillsafe: water-make up monitoring and control with integrated contact water flow meter and solenoid valve.
- Connection for optional Pleno P BA4R/AB5(R) water make-up devices for tap water protection following EN 1717.
- Connection for optional water make-up devices can be used for external fluid tanks.
- Softsafe monitoring and control for an optional refill water treatment device.

## DNe/DNet standard values for connection pipes for Vento V/VI/Compact

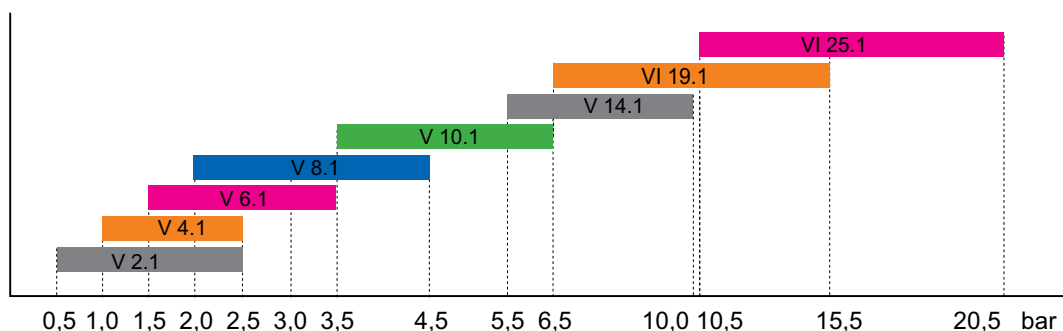
		V 2.1	V 4.1	V 6.1	V 8.1	V 10.1	V 14.1	VI 19.1	VI 25.1
Length up to approx. 10 m	<b>DNe/DNet</b>	25/n.a.	25/25	25/25	25/25	25/25	25/25	25/25	25/25
Length up to approx. 20 m	<b>DNe/DNet</b>	25/n.a.	25/32	25/32	25/32	25/32	25/32	25/32	25/32
Length up to approx. 30 m	<b>DNe/DNet</b>	32/n.a.	32/32	32/32	32/32	32/32	32/32	32/32	32/32

DNet: Pipe dimension for the connection of an optional external tank

n.a.: Not applicable

## Quick selection

Operation range dpu  
Type



dpu

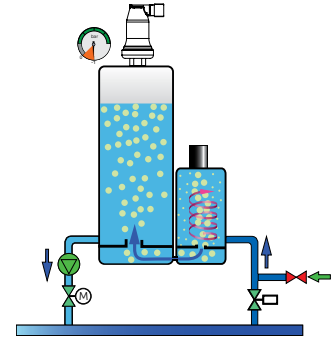
		V 2.1	V 4.1	V 6.1	V 8.1	V 10.1	V 14.1	VI 19.1	VI 25.1
dpu min	bar	0.5	1	1.5	2	3.5	5.5	6.5	10.5
dpu max	bar	2.5	2.5	3.5	4.5	6.5	10	15.5	20.5

## IMI Pneumatex cyclonic vacuum degassing - the technology

### How does cyclonic vacuum degassing work?

In cyclonic vacuum degassing, part of the medium is passed to a special degassing tank where it is exposed to strong negative pressure. An orifice in the inlet pipe limits the flow rate of the water to less than what the pump is able to deliver. This releases the dissolved gases inside the container. The resulting fluid is milky in appearance because of the many tiny bubbles it contains. In conventional systems, the problem at this point is how to separate and expel these gas microbubbles from the medium. Various technologies are available, but none of them is particularly effective.

IMI Pneumatex has devised a solution using revolutionary cyclone technology. The patented Cyclone vacuum degassing technology quickly concentrates the tiny gas bubbles in the middle, where they rapidly form larger bubbles that are very easily removed from a second tank.

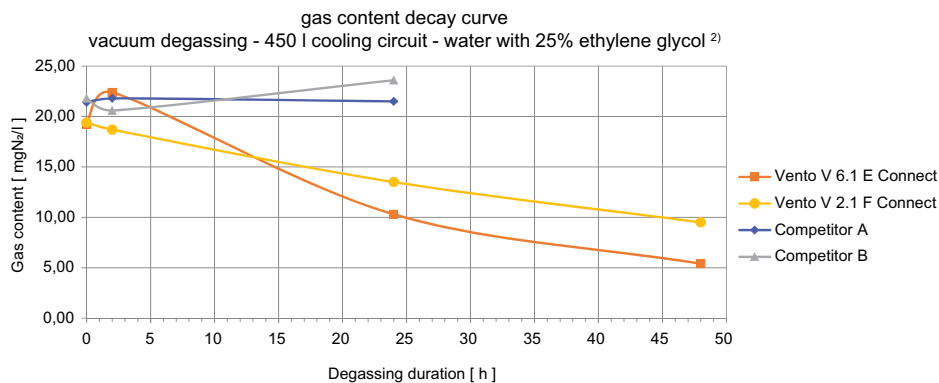
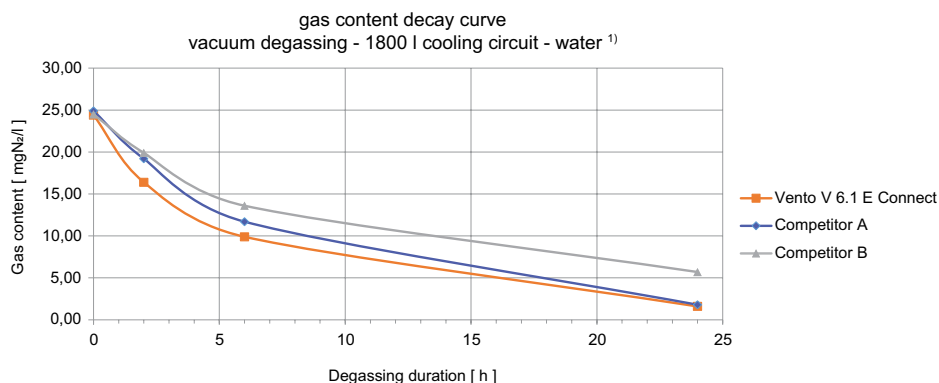


### Cyclonic vacuum degassing in Vento Connect

Cyclonic vacuum degassing occurs in a standalone unit that is called Vento Connect in the IMI Pneumatex product range. The Vento Connect can be connected in parallel for higher performance and operated with any type of system pressurisation, either with stand-alone pressure monitoring together with static expansion vessels or together with pressurisation devices that do not have system degassing or make-up water degassing, such as compressor-controlled pressurisation.

## IMI Pneumatex cyclonic vacuum degassing - efficiency and measurements

To verify the high efficiency of the IMI Pneumatex cyclonic vacuum degassing process in real applications, the Technische Universität Dresden, Professur für Gebäudeenergie-technik und Wärmeversorgung was commissioned to carry out various series of tests. For a better classification of the efficiency of IMI cyclonic vacuum degassing, other commercially available vacuum degassers were also measured in the same systems and under the same conditions.



Tests for Competitors A and B were stopped after 24 hours because no degassing effect was visible.

The increase in measurement values can be explained by the subsequent dissolution of N2 gas bubbles in the circuit.

- 1) Rühling, K. "Test von Entgasern in Technikums-Kreislaufen mit Wasser" Technische Universität Dresden, Professur für Gebäudeenergie-technik und Wärmeversorgung im Auftrag der IMI Hydronic Engineering Switzerland AG, November 2017 & January 2018.
- 2) Koch, F.; Rühling, K.; Heymann, M. "Test von Entgasern in Technikums-Kreislaufen mit Wasser-Ethylenglykol-Gemisch" Technische Universität Dresden, Professur für Gebäudeenergie-technik und Wärmeversorgung, February 2022

## Equipment

### Connection pipes

Vento V\_: table DNe

### Pleno Refill

Water softening and demineralization modules in combination with Vento V Connect. The control is made through the BrainCube of the TecBox. Connected water softening units must have a minimum flow rate of 1300 l/h for direct connection. If the water treatment unit has a lower flow rate a flow limiter in the inlet of the water meter must be used (a 240 l/h flow limiter is enclosed with the Vento).

### Pleno

Water make-up modules in combination with Vento V Connect. Control is made through the BrainCube of the Vento V TecBox.

### Zeparo

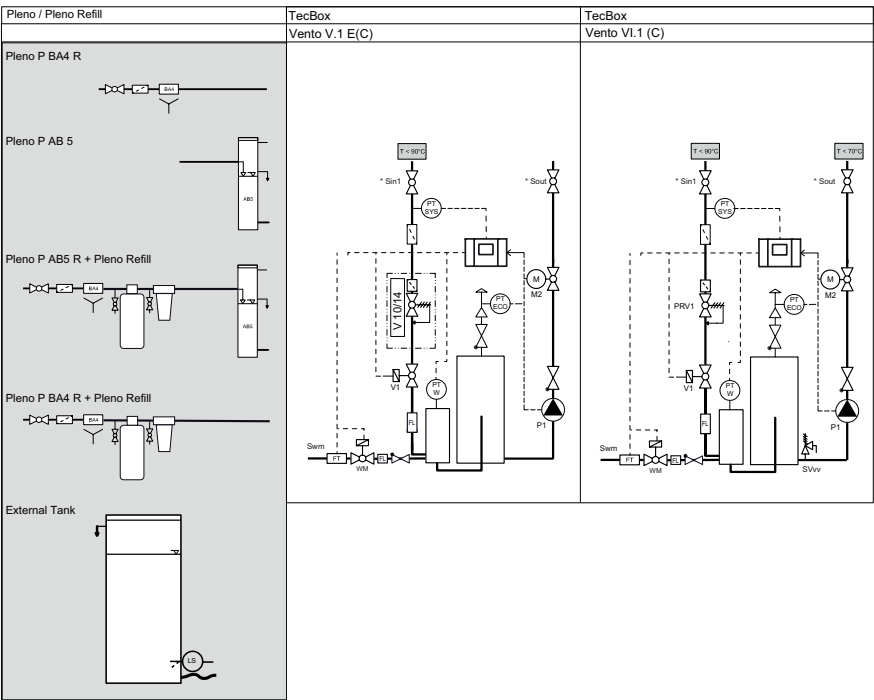
Air vent Zeparo ZUT or ZUP at each high point for venting during the filling and during the draining process. Separator for sludge and magnetite in each system in the main return to the heat generator.

**Further accessories, product and selection details:** Datasheets Pleno Refill, Zeparo and Accessories.

## Principle scheme

### Vento V/VI Connect

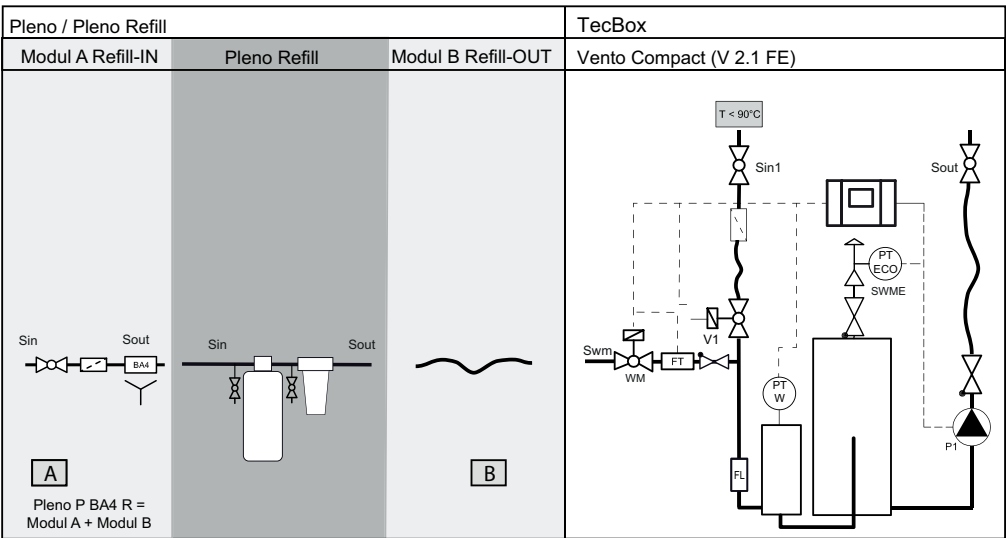
Grey area is optional



\* When connecting to rigid piping, it is essential to ensure that there is no axial, vertical or horizontal tension. The connections must not be loaded with any additional weights. Maximum tightening torques must be observed where specified. If tightening torques are not specified, the state of the art for the respective connection must be observed. **A flexible connection is preferable to a rigid connection.**

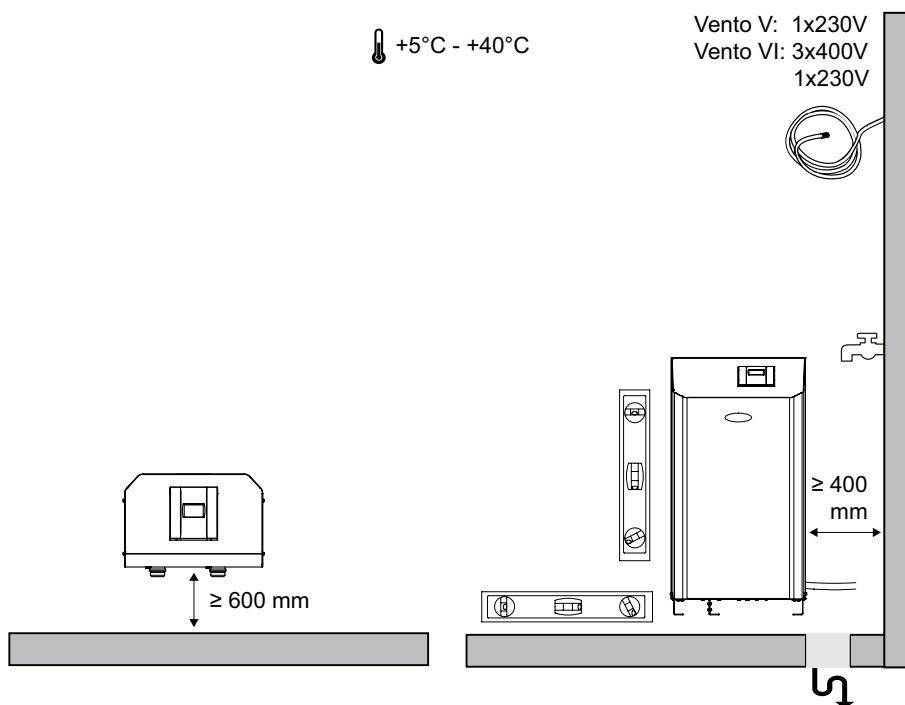
### Vento Compact Connect (V 2.1 FE)

Grey area is optional

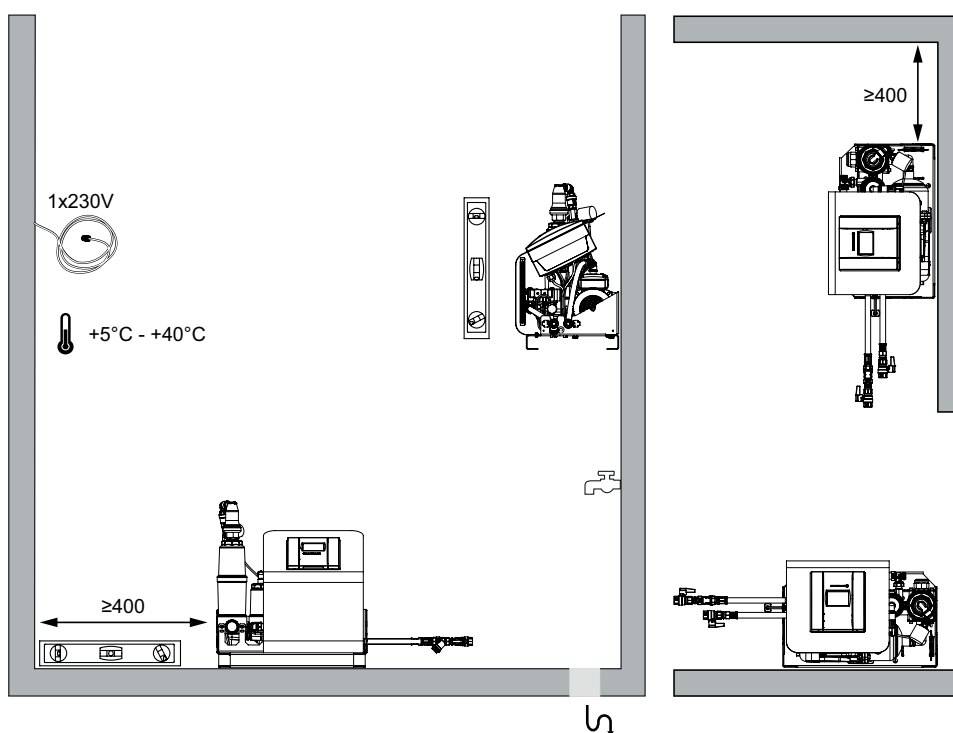


## Installation

### Vento V/VI Connect



### Vento V 2.1 FE Connect



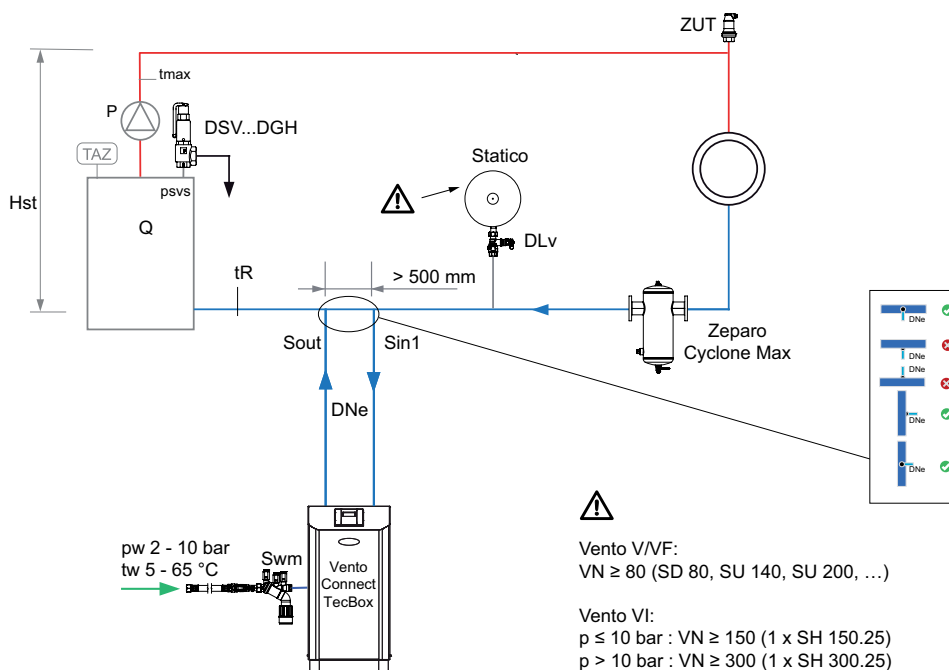
## Application examples

### Vento V/VI/VF Connect for heating

TecBox with 1 pump, cyclonic vacuum degassing and Pleno P BA4 R for water make-up.

#### Example for heating systems, return temperature $t_r \leq 90^\circ\text{C}$

(May require changes to meet local legislation)

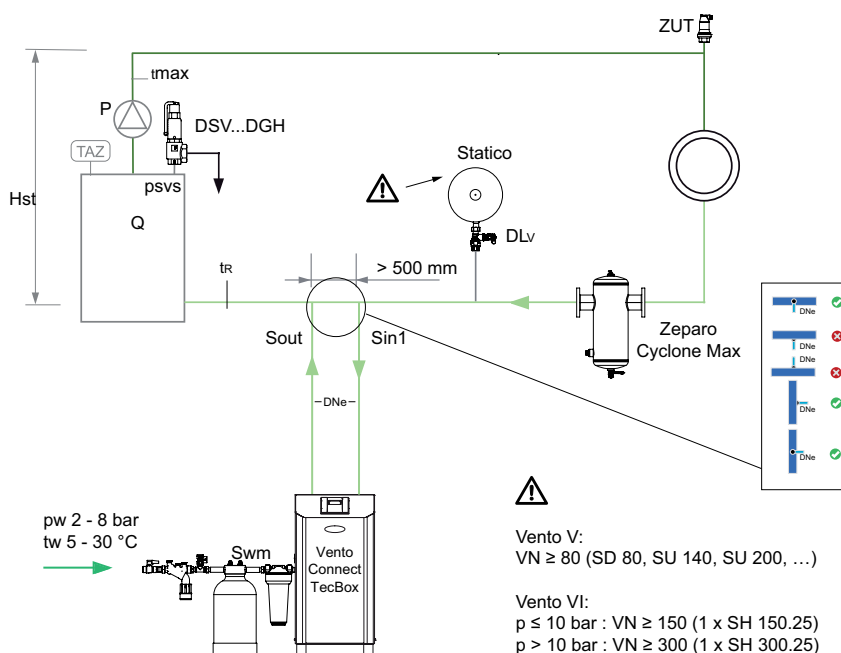


### Vento V/VI 1.EC Connect for cooling

TecBox with 1 pump, cyclonic vacuum degassing, Pleno P AB5 R for water make-up and Pleno Refill for water treatment unit for softening or demineralising the make-up water.

#### Example for cooling systems, return temperature $0^\circ\text{C} < t_r \leq 5^\circ\text{C}$

(May require changes to meet local legislation)

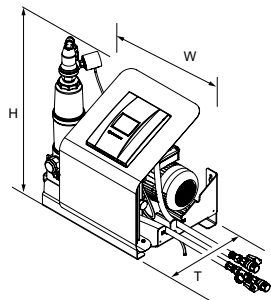


**Zeparo Cyclone Max** for the central separation of sludge.

**Zeparo ZUT** for automatic venting during filling and during draining.

**Further accessories, product and selection details, see:** Datasheet Pleno Connect, Zeparo and Accessories.

## Control unit TecBox, Vento Compact Connect Heating

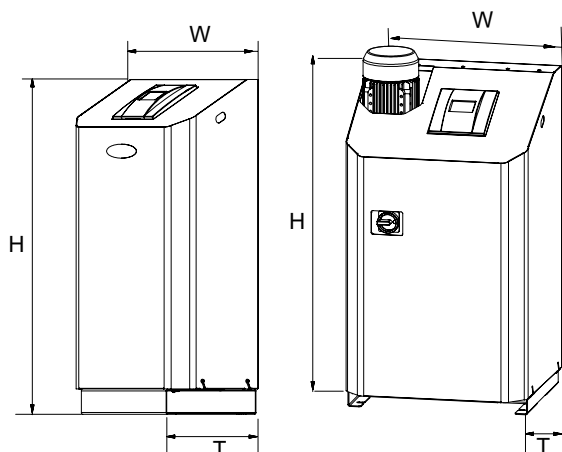


### Vento Compact Connect

Cyclonic vacuum degassing unit. 1 pump and 2 solenoid valves, cyclonic vacuum degassing unit, connection for water make-up with solenoid valve and water meter, and BrainCube Connect control. 2 connection hoses with ball valves. Connections G1/2".

Type	W	H	T	m [kg]	Pel [kW]	VNd [m³]	SPL [dB(A)]	dpu [bar]	EAN	Article No
<b>10 bar (PS)</b>										
V 2.1 FE	520	575	350	32	0,75	10	~55*	0,5 - 2,5	7640161642294	303030-20400

## Control unit TecBox, Vento Connect Heating



### Vento V/VI .1 E Connect

Cyclonic vacuum degassing unit. 1 pump, 1 solenoid valve and 1 motor driven valve, 1 cyclonic vacuum degassing unit, connection for water make-up with solenoid valve and water meter, and BrainCube Connect control.

Type	W	H	T	m [kg]	Pel [kW]	VNd [m³]	SPL [dB(A)]	dpu [bar]	EAN	Article No
<b>10 bar (PS)</b>										
V 4.1 E	500	920	530	40	0,75	300	~55*	1-2,5	7640161629752	812 1101
V 6.1 E	500	920	530	42	1,1	300	~55*	1,5-3,5	7640161629769	812 1102
V 8.1 E	500	920	530	43	1,4	300	~55*	2-4,5	7640161629776	812 1103
V 10.1 E	500	1300	530	57	1,7	300	~60*	3,5-6,5	7640161629783	812 1104
<b>13 bar (PS)</b>										
V 14.1 E	500	1300	530	67	1,7	300	~60*	5,5-10	7640161629790	812 1105
<b>25 bar (PS)</b>										
VI 19.1 E	570	1086	601	78	2,6	300	~60*	6,5-15,5	7640161636774	303031-60600
VI 25.1 E	570	1258	601	85	3,4	300	~60*	10,5-20,5	7640161636781	303031-60700

T = Depth of the device

VNd = Water capacity for which a device is rated

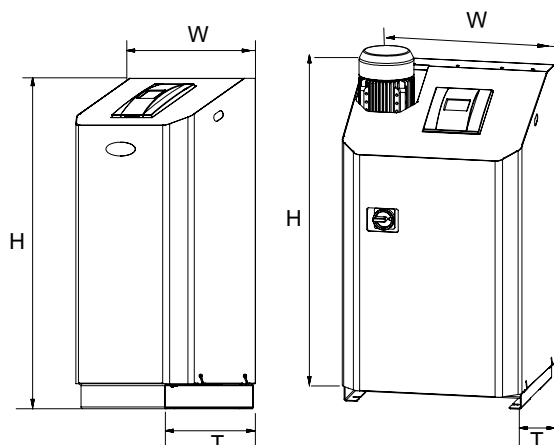
Pel = Electric load

dpu = Working pressure range

\*) Pump operation



## Control unit TecBox, Vento Connect Cooling



### Vento V/VI .1 EC Connect

Cyclonic vacuum degassing unit. 1 pump, 1 solenoid valve and 1 motor driven valve, 1 cyclonic vacuum degassing unit, connection for water make-up with solenoid valve and water meter, and BrainCube Connect control. Cooling insulation with condensation water protection.

Type	W	H	T	m [kg]	Pel [kW]	VNd [m³]	SPL [dB(A)]	dpu [bar]	EAN	Article No
<b>10 bar (PS)</b>										
V 4.1 EC	500	920	530	41	0,75	300	~55*	1-2,5	7640161629806	812 1201
V 6.1 EC	500	920	530	43	1,1	300	~55*	1,5-3,5	7640161629813	812 1202
V 8.1 EC	500	920	530	44	1,4	300	~55*	2-4,5	7640161629820	812 1203
V 10.1 EC	500	1300	530	58	1,7	300	~60*	3,5-6,5	7640161629837	812 1204
<b>13 bar (PS)</b>										
V 14.1 EC	500	1300	530	68	1,7	300	~60*	5,5-10	7640161629844	812 1205
<b>25 bar (PS)</b>										
VI 19.1 EC	570	1086	601	86	2,6	300	~60*	6,5-15,5	7640161636958	303031-70600
VI 25.1 EC	570	1258	601	94	3,4	300	~60*	10,5-20,5	7640161636941	303031-70700

T = Depth of the device

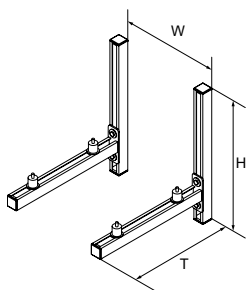
VNd = Water capacity for which a device is rated

Pel = Electric load

dpu = Working pressure range

\*) Pump operation

## Sound-absorbing wall bracket for Vento VS/VF Connect



### Wall bracket WB VSF

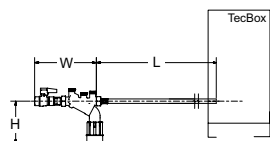
Sound-absorbing wall bracket for Simply Vento Connect and Vento Compact Connect.

Reliably reduces the transmission of structure-borne sound from the unit to the mounting wall to a minimum.

Type	W*	H	T	m [kg]	EAN	Article No
WB VSF	376	500	520	7,5		301032-30021

\*) Centre-to-centre distance for optimum mounting

## Pleno P water make-up module for Vento V/VI/VF



### Pleno P BA4 R

Hydraulic unit for water make-up operation with Vento/Transfero Connect, Pleno PX/PIX, Simply Compresso C 2.1-80 SWM and in combination with Pleno Refill modules. Features a shut off valve, check valve, filter and a type BA backflow preventer (protection class 4) according to EN 1717. Connection (Swm): G1/2

Type	PS [bar]	W	L	H	m [kg]	qwm [l/h]	EAN	Article No
BA4 R	10	210	1300	135	1,1	350* 250** 50*** q(pw-pout) ****	7640161630147	813 3310

qwm = make-up water flow

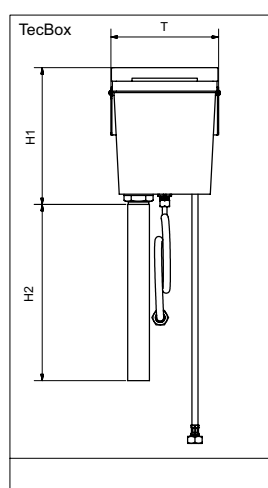
\* maximum average value for make-up water degassing with Vento V/VI and Transfero TV/TVI

\*\* maximum average value for make-up water degassing with Vento Compact

\*\*\* when using flow limiter for operation with low flow water treatment cartridges

\*\*\*\* for combination with Pleno PX/PIX see see q(pw-pout) diagramm in Pleno Connect datasheet

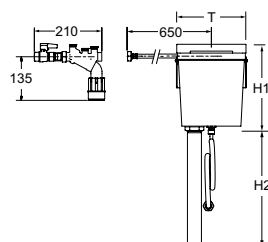
## Pleno P water make-up modules for Vento V/VI



### Pleno P AB5

Hydraulic unit for water make up operation with Vento/Transfero Connect. Consists of a breaktank type AB (protection class 5) according to EN 1717. For installation on the back of each unit. Can be used for 3rd party softening modules which do not fulfil the requirement of qwm min 1300 l/h and therefore can't be directly connected.

Type	PS [bar]	T	H1	H2	m [kg]	qwm [l/h]	EAN	Article No
AB5	10	220	280	1000	1,83	200	7640161630154	813 3320



### Pleno P AB5 R

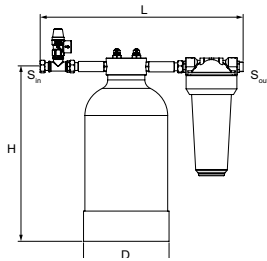
Hydraulic unit for water make up operation with Vento/Transfero Connect. Consists of Pleno P BA4 R back flow preventer and Pleno P AB5 modules, with protection class 5 according to EN 1717.

Type	PS [bar]	T	H1	H2	m [kg]	qwm [l/h]	EAN	Article No
AB5 R	10	220	280	1000	3,8	200	7640161630161	813 3330

qwm = make-up water flow

T = Depth of the device

## Pleno Refill



### Pleno Refill

Hydraulic unit for water softening together with Vento/Transfero Connect Tec Boxes. Filter with 25 µm mesh size to protect the hydronic system. Softening bottle filled with high grade resin.

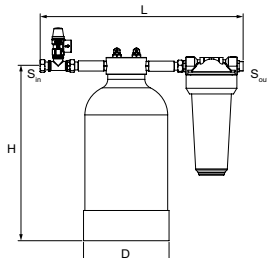
3/4" swivelling nut, 3/4" external thread suitable for flat gasket.

Nominal pressure: PS 8

Max. working temperature: 45°C

Min. working temperature: > 4°C

Type	Capacity l x °dH	S <sub>in</sub>	S <sub>out</sub>	D	H	L	m [kg]	EAN	Article No
Refill 16000	16000	G3/4	G3/4	195	383	455	9,1	7640161630475	813 3210
Refill 36000	36000	G3/4	G3/4	220	466	455	13	7640161630482	813 3220
Refill 48000	48000	G3/4	G3/4	270	458	455	16,2	7640161630499	813 3230



### Pleno Refill Demin

Hydraulic unit for water demineralisation together with Vento/Transfero Connect Tec Boxes. Filter with 25 µm mesh size to protect the hydronic system. Desalination bottle filled with high grade resin.

3/4" swivelling nut, 3/4" external thread suitable for flat gasket.

Nominal pressure: PS 8

Max. working temperature: 45°C

Min. working temperature: > 4°C

Type	Capacity l x °dH	S <sub>in</sub>	S <sub>out</sub>	D	H	L	m [kg]	EAN	Article No
Refill Demin 13500	13500	G3/4	G3/4	220	466	455	13	7640161630505	813 3260
Refill Demin 18000	18000	G3/4	G3/4	270	458	455	16,2	7640161630512	813 3270

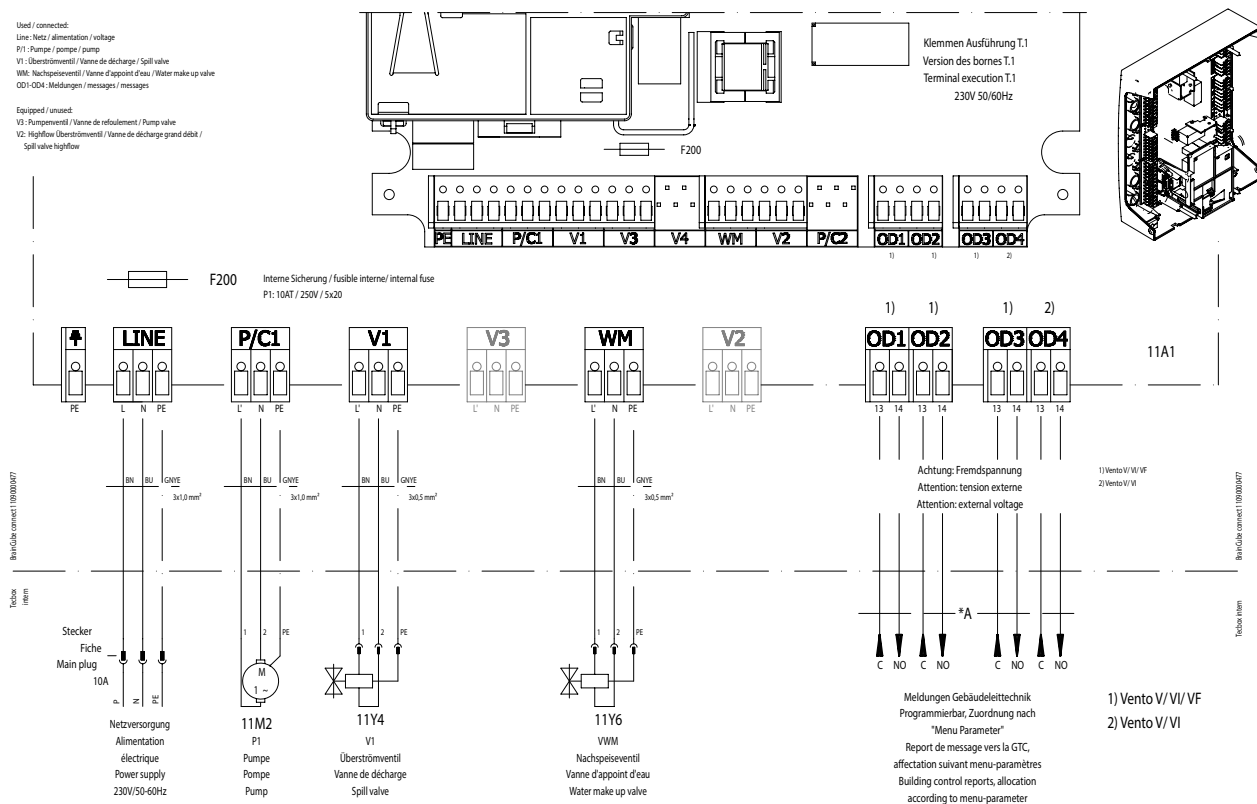
→ = Flow direction

### Additional information:

**Calculation:** Software HySelect

**Further accessories, product and selection details, see:**  
Datasheet Pleno, Zeparo and Accessories.

### Power supply Vento V/VF



**SELV ( $\leq 35$  VDC)**

**LAN**

TD+ 1, TD- 2, RD+ 3, RD- 4, IC 5, RD+ 6, RD- 7, IC 8

**ID6**

**ID5**

**IDA3**

**ID7**

**ID8**

**Jumper (RS485):**  
 off = Offen / déconnecté / open  
 on = Gesteckt / connecté / connected

**RS485**

**USB**

**Ethernet**  
 WEB-interface  
 LAN-connection

**FT**  
 Kontaktwasserzähler  
 Compteur d'eau à impulsions  
 Flow-sensor

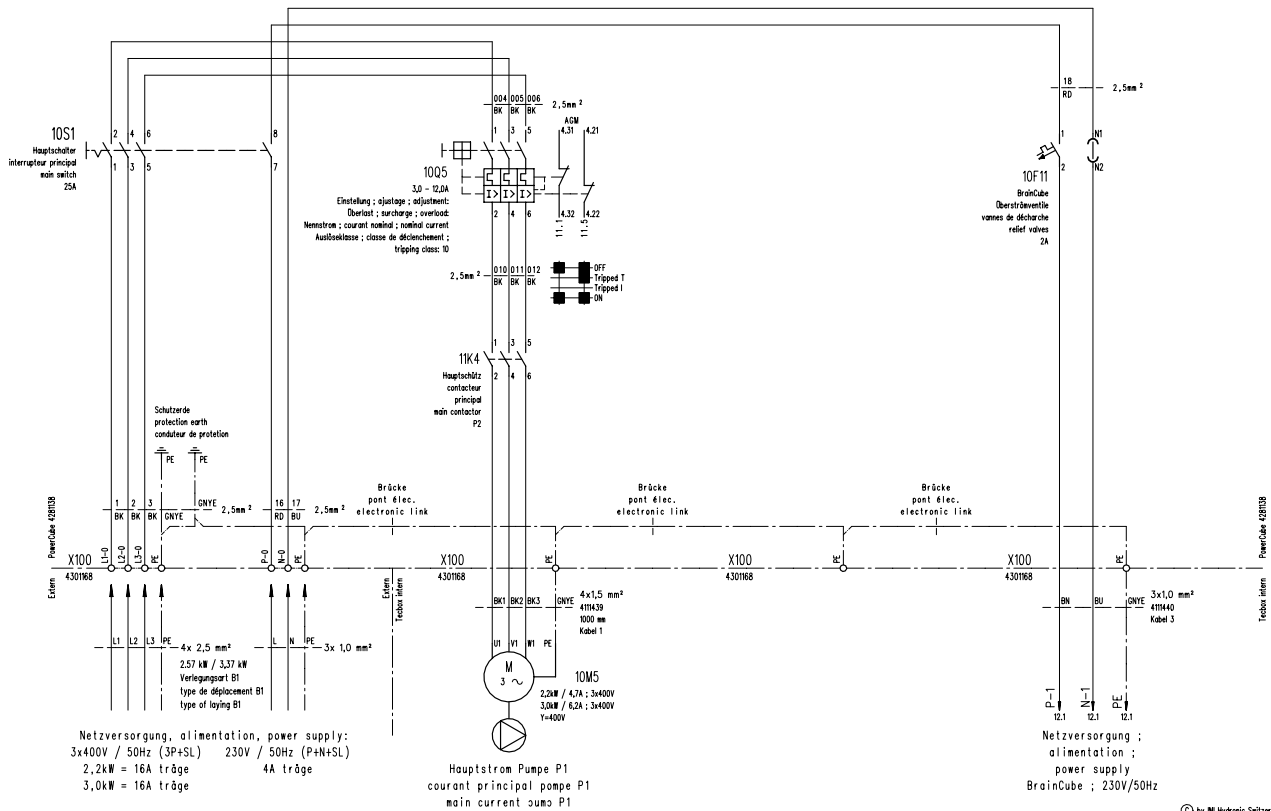
**RS485 Interface**

**USB**

**RS485**  
 - Verbund (Gerätekommunikation)  
 Fonctionnement combiné  
 Master-Slave connection  
 - Nachspeisung  
 Apport d'eau  
 Water make up  
 - Gebäudeleittechnik GLT  
 Gestion technique du bâtiment GTB  
 Building control system BCS

## Wiring diagrams - Vento VI

### Power supply Vento VI at PowerCube PCI



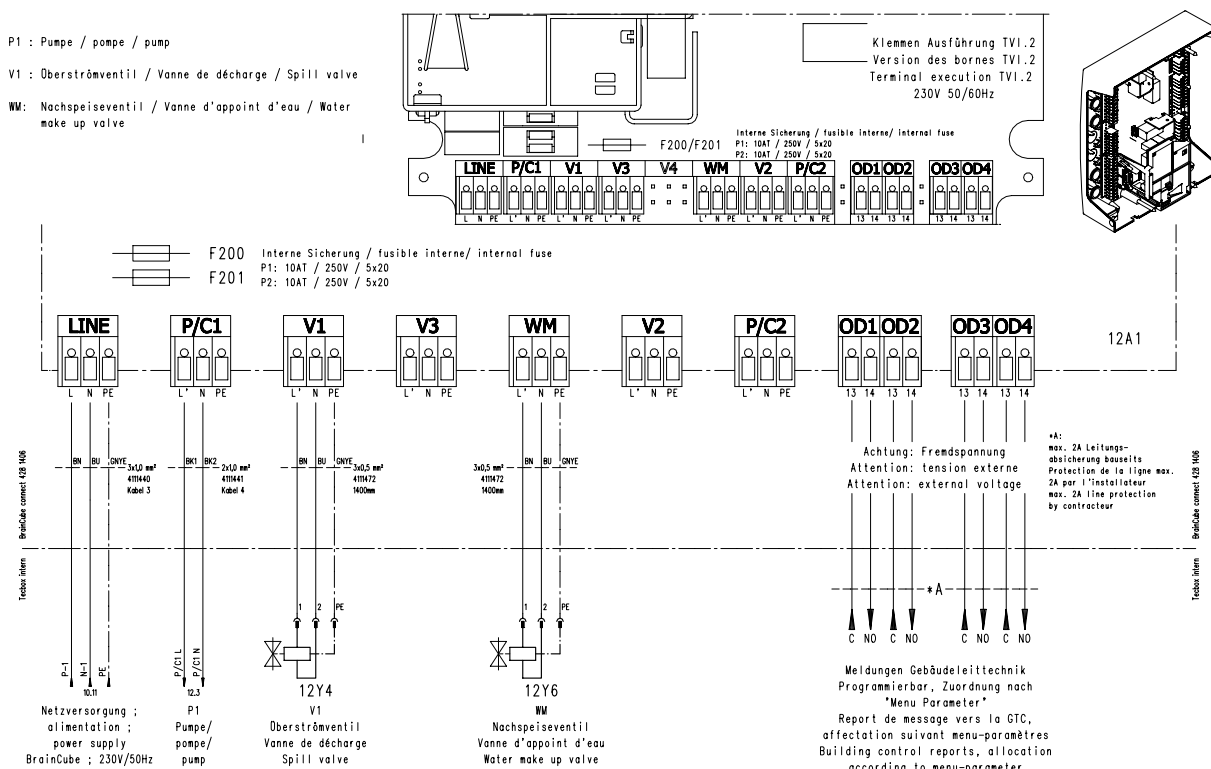
© by IMI Hydronic Switzerland AG

### 230V Section of the BrainCube

P1 : Pumpe / pompe / pump

V1 : Überströmventil / Vanne de décharge / Spill valve

WM: Nachspeiseventil / Vanne d'appoint d'eau / Water make up valve



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