Steam Humidifier

TSH series units are steam humidifiers with electrodes used to humidify the air duct or air handling unit cell.

The steam is channelled through the stainless steel distributor into the air duct or air handling unit. It can be easily assembled. It can be used by hanging on the switchboard or the ground. It is sufficient to connect the water inlet connection, the water drainage line connection, the steam and distribution connection, the electrical wiring and the humidity sensor connection and to put the steam humidification unit into operation.

Auto humidification is accomplished thanks to the smart humidity and power control system. Humidification systems from the TSH series can be used on air handling units that don't have humidity control. The humidity sensor signal required for humidity control is provided by the air handling unit manufacturer's control panel.

Humidifier Casing

It is made of galvanized sheet electrostatically powder-coated.

Automatic Water Level Control

It automatically adjusts water consumption according to the steam output.

Steam Cylinder

Technowell steam cylinder is an essential component of steam humidification units. The steam cylinder accumulates deposits produced during the steam process, which can be easily cleaned. Steam cylinders that have reached the end of their useful life can be quickly replaced to ensure reliable humidity control.
Due to their advanced conductivity management and use of current-regulated electrodes, steam cylinders can operate precisely.

Digital Display Control Panel

User interface with MODBUS protocol provides detailed operational control.

Drain Valve

An automatic and effective drain valve that minimizes water loss.

Functional Description

The Technowell TSH steam humidifier is a non-pressure steam generator using electrode heating.

This unit is designed for air humidification through a steam distributor (steam distribution pipe, external fan unit).

Steam Production

Electrodes with high electrical conductivity and long working life are contained inside the steam cylinder. The electrodes are supplied with current settings as the device needs steam. The inlet valve opens at the same time, causing water to enter the steam cylinder from below through the water chamber and feed line.

When the electrodes come into contact with water, a current begins to flow between the electrodes, eventually heating and vaporizing the water.

The more water that comes into contact with the electrode surface, the higher the current consumption and therefore the steam capacity.
The inlet valve closes when the desired steam capacity is reached. The inlet valve opens until the necessary capacity is restored if the steam generation falls below a certain capacity or a certain percentage due to the lowering of the water level (e.g. due to evaporation or evacuation).

If the required steam output is less than the actual output, the inlet valve is closed until the desired output is reached by lowering the water level (evaporation process).

Level Monitoring

When the water level rises, a sensor in the steam cylinder cover detects it.
The inlet valve closes when the sensor comes into contact with water.

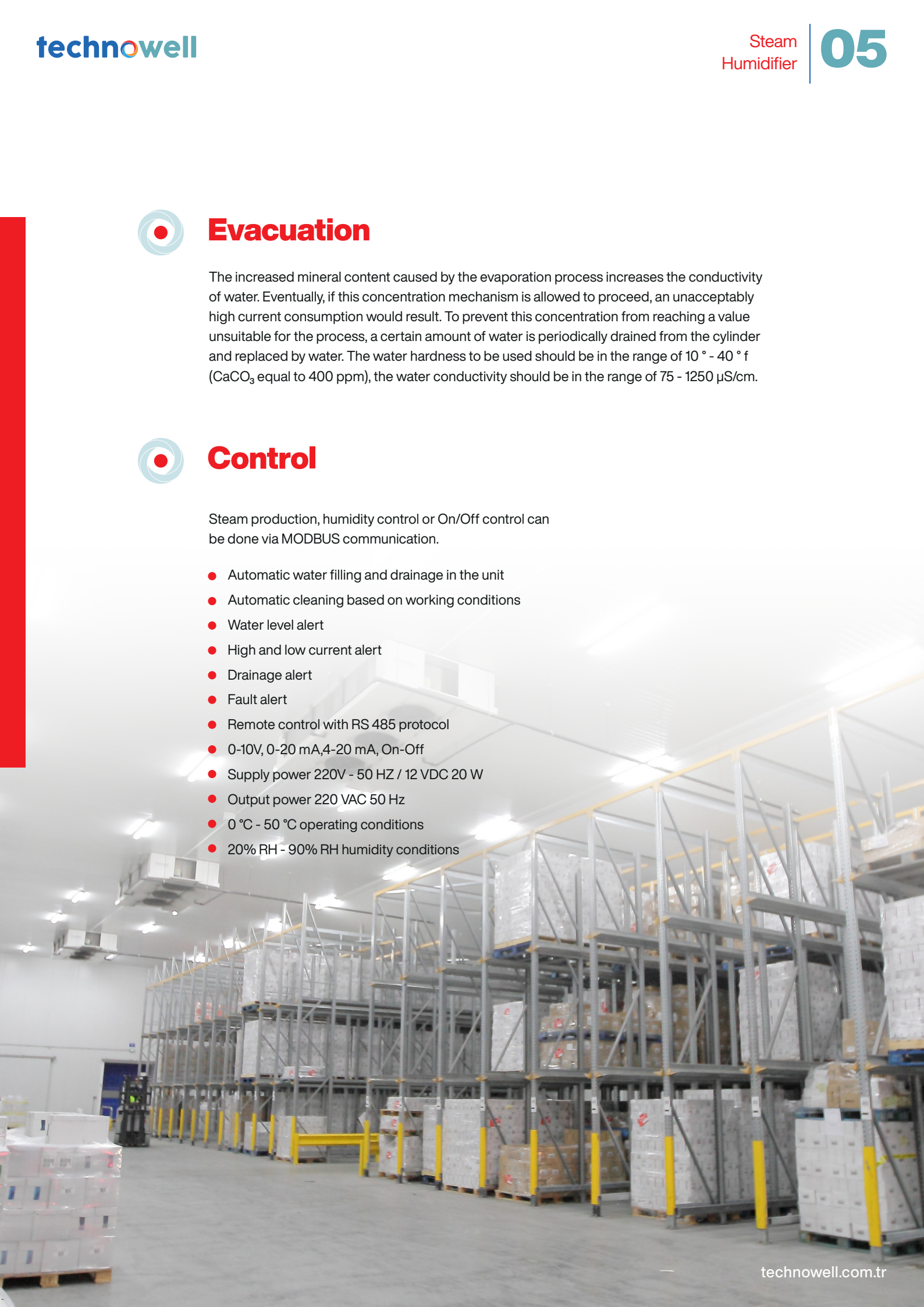
Evacuation

The increased mineral content caused by the evaporation process increases the conductivity of water. Eventually, if this concentration mechanism is allowed to proceed, an unacceptably high current consumption would result. To prevent this concentration from reaching a value unsuitable for the process, a certain amount of water is periodically drained from the cylinder and replaced by water. The water hardness to be used should be in the range of 10 ° - 40 ° f ($CaCO_3$ equal to 400 ppm), the water conductivity should be in the range of 75 - 1250 µS/cm.

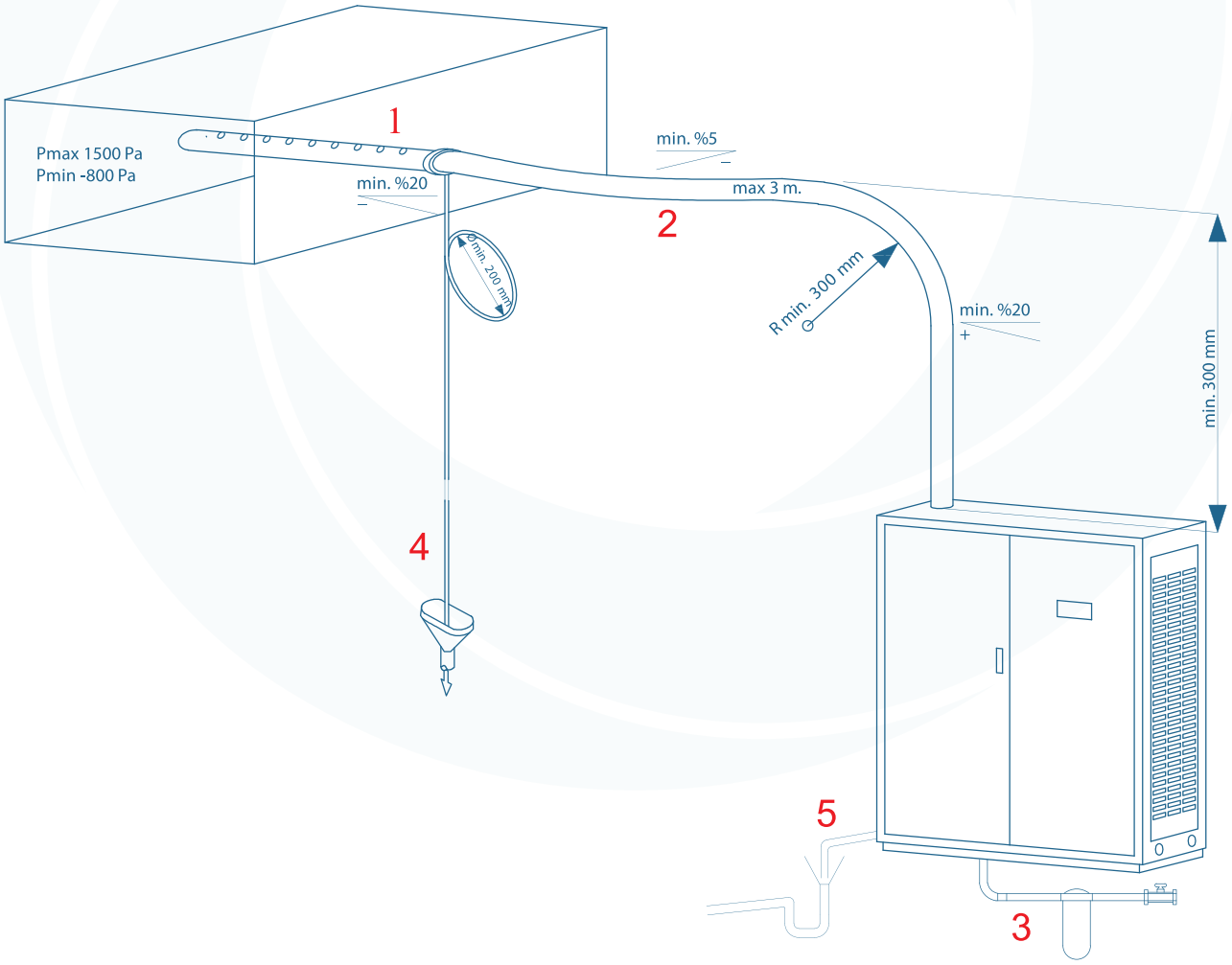
Control

Steam production, humidity control or On/Off control can be done via MODBUS communication.

- Automatic water filling and drainage in the unit
- Automatic cleaning based on working conditions
- Water level alert
- High and low current alert
- Drainage alert
- Fault alert
- Remote control with RS 485 protocol
- 0-10V, 0-20 mA,4-20 mA, On-Off
- Supply power 220V - 50 HZ / 12 VDC 20 W
- Output power 220 VAC 50 Hz
- 0 °C - 50 °C operating conditions
- 20% RH - 90% RH humidity conditions



Steam Humidifier
Accessories



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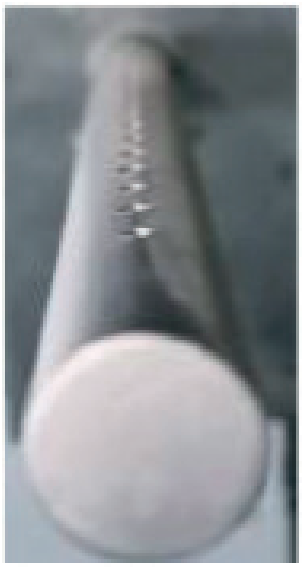

Steam distribution diffuser for air duct or air handling unit humidification cell installation

It ensures that the steam obtained from the steam humidifier is distributed homogeneously in the air duct or air handling unit humidifier. The steam distribution diffuser is made of stainless steel material. The steam distribution diffuser is chosen based on the steam humidifier's capacity and the channel width for horizontal installation or the channel height for vertical installation.

2

Steam distribution hose

It provides the steam obtained in the steam cylinder to enter the steam distribution diffuser. Long-lasting and free of toxic materials, the steam distribution hose is made of special medical rubber that can withstand temperatures of up to 120 °C. The length of the steam delivery hose should be no more than 3 meters. The bend radius of the steam distribution hose must be at least r=300 mm, with an upward slope of 20% or a downward slope of 5%.

3

Water inlet hose

The steam humidifier's water inlet hose was manufactured specifically for it. One connection end is made of G 3/4 "plastic and the other side is made of G 1/2"copper material. The hose is made of a durable rubber material.

4

Condensate drain hose

The condensate drain hose is made of plastic that can withstand high temperatures. Its structure is pliable. The condensate drain hose is shaped into a siphon and guided to the discharge funnel with a minimum inclination of 20% (minimum hose bending diameter Ø200mm).

5

Drainage hose

It is used to remove water from the steam cylinder that has risen in mineral concentration as a result of the evaporation process.

MODEL	TSH-4	TSH-8	TSH-15	TSH-30
STEAM CAPACITY	0,8 - 5,0 kg/h	1,6 - 13,0 kg/h	3,0 - 18,0 kg/h	6,0 - 35,0 kg/h
POWER SUPPLY	380 V -50 Hz	380 V -50 Hz	380 V -50 Hz	380 V -50 Hz
OPERATION CURRENT	1-6A	2-15A	3,5-20A	6,8-39A
RATED POWER	0,60 -3,75 kW	1,20 -9,75 kW	2,25 -13,50 kW	4,50 -26,25 kW
STEAM OUTLET	1xØ 30mm	1xØ 30mm	1xØ 30mm	1xØ 30mm
WATER TANK QUANTITY	1	1	1	1
WORKING CONDITIONS	1 °C - 40 °C %10 - % 90 RH	1 °C - 40 °C %10 - % 90 RH	1 °C - 40 °C %10 - % 90 RH	1 °C - 40 °C %10 - % 90 RH
STORAGE CONDITIONS	1 °C - 70 °C %5 - % 95 RH	1 °C - 70 °C %5 - % 95 RH	1 °C - 70 °C %5 - % 95 RH	1 °C - 70 °C %5 - % 95 RH
WATER INLET CONNECTION	G 1/2”	G 1/2”	G 1/2”	G 1/2”
WATER INLET TEMPERATURE	1 °C - 40 °C	1 °C - 40 °C	1 °C - 40 °C	1 °C - 40 °C
WATER INLET PRESSURE	1 - 8 bar	1 - 8 bar	1 - 8 bar	1 - 8 bar
DRAINAGE FLOWRATE	1,2 lt/min	1,2 lt/min	1,2 lt/min	1,2 lt/min
WATER HARDNESS	15 -40 F°s	15 -40 F°s	15 -40 F°s	15 -40 F°s
WATER CONDUCTIVITY	125 -1250 µS/cm	125 -1250 µS/cm	125 -1250 µS/cm	125 -1250 µS/cm
DRAINAGE TEMPERATURE	≤ 100 °C	≤ 100 °C	≤ 100 °C	≤ 100 °C
DRAINAGE PIPE CONNECTION	Ø 22mm / Ø 30mm	Ø22mm / Ø 30mm	Ø22mm / Ø 30mm	Ø 22mm / Ø 30mm
DIMENSIONS (A X B X C)	410x565x320 mm	410x565x320 mm	465x670x320 mm	620x810x430 mm

MODEL	TSH-42	TSH-60	TSH-84	TSH-120
STEAM CAPACITY	8 -45 kg/h	12 -70 kg/h	16 -90 kg/h	25 -140 kg/h
POWER SUPPLY	380 V -50 Hz	380 V -50 Hz	380 V -50 Hz	380 V -50 Hz
OPERATION CURRENT	9 -51 A	2x6,8 A -2x39 A	2x9 A -2x51 A	3x9 A -3x51 A
RATED POWER	6,00 -33,75 kW	9,00 -52,50 kW	12,00 -67,50 kW	18,75 -105 kW
STEAM OUTLET	1xØ 30mm	2xØ 30 mm	2xØ 30 mm	3xØ 30mm
WATER TANK QUANTITY	1	2	2	3
WORKING CONDITIONS	1 °C - 40 °C %10 - % 90 RH	1 °C - 40 °C %10 - % 90 RH	1 °C - 40 °C %10 - % 90 RH	1 °C - 40 °C %10 - % 90 RH
STORAGE CONDITIONS	1 °C - 70 °C %5 - % 95 RH	1 °C - 70 °C %5 - % 95 RH	1 °C - 70 °C %5 - % 95 RH	1 °C - 70 °C %5 - % 95 RH
WATER INLET CONNECTION	G 1/2”	G 1/2”	G 1/2”	G 1/2”
WATER INLET TEMPERATURE	1 °C - 40 °C	1 °C - 40 °C	1 °C - 40 °C	1 °C - 40 °C
WATER INLET PRESSURE	1 - 8 bar	1 - 8 bar	1 - 8 bar	1 - 8 bar
DRAINAGE FLOWRATE	4 lt/min	2x4 lt/min	2x4 lt/min	3x4 lt/min
WATER HARDNESS	15 -40 F°s	15 -40 F°s	15 -40 F°s	15 -40 F°s
WATER CONDUCTIVITY	300 -1250 µS/cm	300 -1250 µS/cm	300 -1250 µS/cm	300 -1250 µS/cm
DRAINAGE TEMPERATURE	≤ 100 °C	≤ 100 °C	≤ 100 °C	≤ 100 °C
DRAINAGE PIPE CONNECTION	Ø 22mm / Ø 30mm	Ø22mm / Ø 30mm	Ø22mm / Ø 30mm	Ø 22mm / Ø 30mm
DIMENSIONS (A X B X C)	620x810x430 mm	1000x810x430 mm	1000x810x430 mm	1390x810x430 mm

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