

**Data Book**

T\_CVWALL\_0322\_EN

Elca Engine ver.

# CVWALL

**78-418 kW**

Water cooled air coolers for IT Cooling.



**HP C**  
Hydronic Plant Connect

- ✓ PERIMETER INSTALLATION IN TECHNICAL AISLE
- ✓ VARIABLE AIR AND WATER FLOW
- ✓ HORIZONTAL AIR FLOW
- ✓ PLUG FANS WITH EC ELECTRIC MOTORS
- ✓ 2-WAY WATER VALVE
- ✓ AIR INLET TEMPERATURE UP TO 40°C

# CVWALL

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# CERTIFICATIONS

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**ISO 9001 CERTIFICATION**  
Quality Management System



**ISO 14001 CERTIFICATION**  
Environmental Management System



**BS OHSAS 18001 CERTIFICATION**  
Occupational Health and Safety Management System



CE MARKING

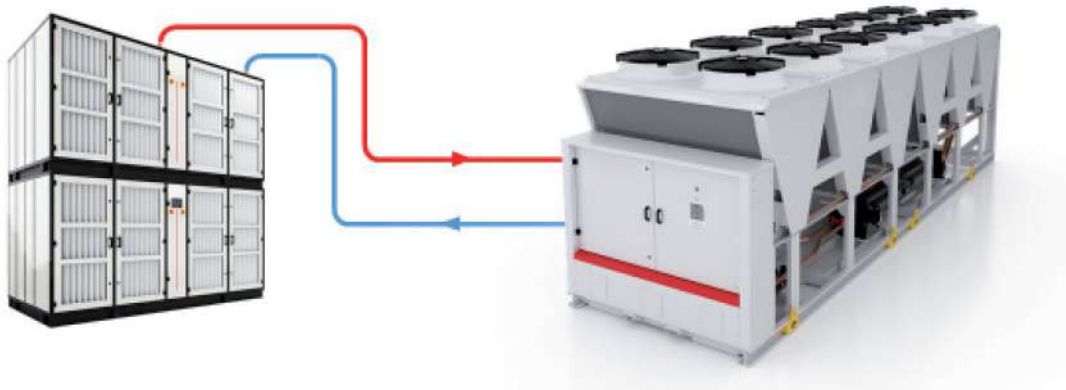
**N.B.:** Other certifications are available on request

## Water-cooled air coolers for IT Cooling with variable air flow.

The range comprises 12 models available in the horizontal flow version. Sizes 081, 091, 131, 151, 201, 231 consist of one single module, sizes 162, 182, 262, 303, 402, 462 consist of two modules one above the other.

They are optimized to handle high air flows and high outlet temperatures.

Cooling capacity: **78 ÷ 418 kW**



The machines are made for indoor installation.

The constructive solutions and the internal lay-out allow high application flexibility and the frontal access to the main components for the inspection and routine maintenance.

The installation requires electrical and hydraulic connections.

Final assembly on all machines before shipment including running test, reading and monitoring of operating parameters, alarms simulation and visual check.

## PRODUCT FEATURES AND BENEFITS

- No dehumidification
- High density of cooling capacity per m<sup>2</sup> of space used
- Optimization of the hydraulic circuit.
- New plug fans with EC electric motors and impeller in latest generation composite material which guarantees a reduction of power consumption.
- New fans electric motor that do not require maintenance.
- Improvement of the control software with advanced control logic.
- Option of stacking and flanking units to increase power density for the same footprint.
- Total front access for routine maintenance.
- Fully removable panels to facilitate extraordinary maintenance.

## INSTALLATION

### HORIZONTAL AIR DELIVERY

The units are typically installed around the perimeter.

They are installed around the Data Center in the technical aisle and draw air in from the hot aisle and transfer it directly to the server room.

The air is distributed via special cold aisles positioned in front of the row of racks, thus forming an area for the diffusion of air. Hot air (in the hot aisle) is expelled out through ducts behind the racks.

It is advisable to compartmentalize the cold aisle for optimal installation.

Some solutions involve a service aisle around the server room where the units can be installed. In this case, an air intake plenum is required for each unit. With this solution, all the space of the Data Center is available for installation of the racks.

### OPTIONAL ACCESSORIES

An extensive list of accessories allows the unit to adapt effectively to the real needs of the system, reducing the time and cost of installation.

## INSTALLATION OF THE MODULES

The fanwall modules are designed and made to be stacked during installation. The customer can install single or dual (stacked) modules depending on the configuration and/or size of the data center.

In the case of stacked modules, the lower module will be used to house all the local controls for regulation and control of both units.

The modules can be installed independently in "top" or "bottom" position. The installer simply connects the keyboards to the unit that will be used as the "bottom" one, following the procedure illustrated on the unit. The keyboards are supplied with each unit along with the mechanical and hydraulic connection kit for the two units.

The modules are configured to be connected in parallel.

## MODEL IDENTIFICATION

Water-cooled air coolers for IT Cooling

Model: **CVWALL - 201**

CVWALL: Series

-201: **Cooling capacity / no. stacked modules**

## TRANSPORT AND STORAGE TEMPERATURE


During transport and if the machine is not installed at the reception, do not remove the packaging and place the machine in an enclosed, dry and protected from sunlight site at temperatures ranging between -30°C and 50°C in absence of superficial condensation.

# GENERAL CHARACTERISTICS

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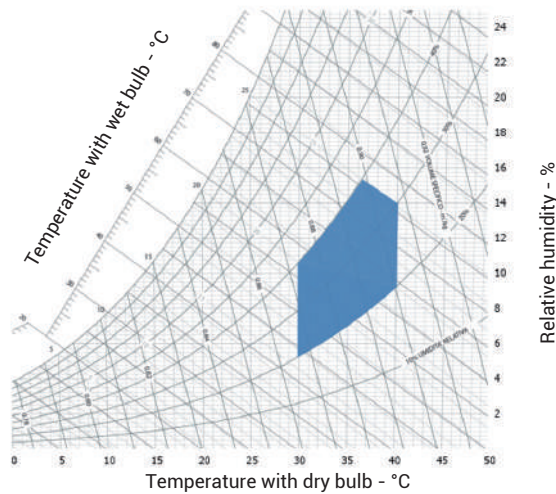
## THE SERIES

There are 12 models in the range:

<b>081</b>	<b>131</b>	<b>201</b>	1750 mm
			
<b>091</b>	<b>151</b>	<b>231</b>	2000 mm
			
<b>162</b>	<b>262</b>	<b>402</b>	3500 mm
			
<b>182</b>	<b>302</b>	<b>462</b>	4000 mm
			

# OPERATING RANGE

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## WHITE SPACE AIR CONDITIONS

Room air temperature:

15,5°C	Minimum temperature with wet bulb.
25°C	Maximum temperature with wet bulb.
30°C	Minimum temperature with dry bulb.
40°C	Maximum temperature with dry bulb.

AREA "A". Machine operating envelope.

## ROOM AIR HUMIDITY

20%UR	Minimum relative humidity.
40%UR	Maximum relative humidity.

## CHILLED WATER TEMPERATURE

6,5°C	Minimum chilled water inlet temperature.
23°C	Maximum chilled water inlet temperature.
$\Delta T$ 8°C	Minimum temperature difference between chilled water inlet and outlet.
$\Delta T$ 12°C	Maximum temperature difference between chilled water inlet and outlet.

## HYDRAULIC CIRCUIT

$\Delta P$ 5-120kPa	Hydraulic circuit pressure drop range.
10 Bar	Maximum working pressure of the hydraulic circuit.

## POWER SUPPLY

$\pm 10\%$	Maximum tolerance of the supply voltage (V).
$\pm 2\%$	Maximum phase imbalance.

## TEMPERATURE LIMITS OF THE CHILLED INLET WATER

The table shows the recommended minimum water temperature at the unit's inlet (°C), at different ambient air conditions. Lower water temperatures can create condensation problems

		Ambient air temperature				
		30°C	33°C	35°C	37°C	40°C
Relative Humidity	40%	16,9	19,5	21,3	23,1	-
	35%	14,8	17,4	19,2	20,9	-
	30%	12,5	15,1	16,8	18,5	21,0
	25%	9,8	12,3	14,0	15,6	18,2
	20%	6,5	9,0	10,6	12,2	14,7





## **FRAMEWORK**

- Base plate painted with epoxy powder. Colour RAL 9005;
- Frame consisting of aluminium profiles hot-coated with epoxy powder. Nylon knots on the corners. Colour RAL 9005;
- Insulating panels made of two sheet metal boxes inside which there is polyurethane with an average density of 45 kg/m<sup>3</sup>. The panels guarantee thermal and acoustic insulation and air tightness. External finish in RAL 9010;
- Hinged front panels with quick release removal system.
- Total front access for routine maintenance.
- Removable lateral and top side panels.
- Compartment for electrical panel on unit front for direct access to control and regulation devices;

## **FILTER SECTION**

- ePM10 washable air filters with 50% efficiency (according to ISO EN 16890), with cells in synthetic fibre and metallic frame.
- Front access to the air filters.
- Clogged filter sensor connected to air side differential pressure switch.

## **COOLING SECTION**

- Heat exchanger coil with internally corrugated copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops.
- Motorized 2-way valve for water flow control; 0-10 VDC with manual emergency control.
- Galvanized sheet metal frame.
- Condensate tray in peraluman with PVC flexible discharge pipe.
- Temperature sensor on air inlet with temperature display function.
- Temperature sensor on air outlet with function of control and regulation.
- Temperature sensors on chilled water inlet and outlet.

## **FAN SECTION**

The fan section is inside the unit and includes:

- Centrifugal fans with backward curved blades with wing profile, single suction and without scroll housings (Plug-fans), directly coupled to external rotor electric motor.
- Impeller in corrosion-resistant composite material.
- Brushless type synchronous EC motor with integrated electronic commutated system and continuous variation of the rotation speed.

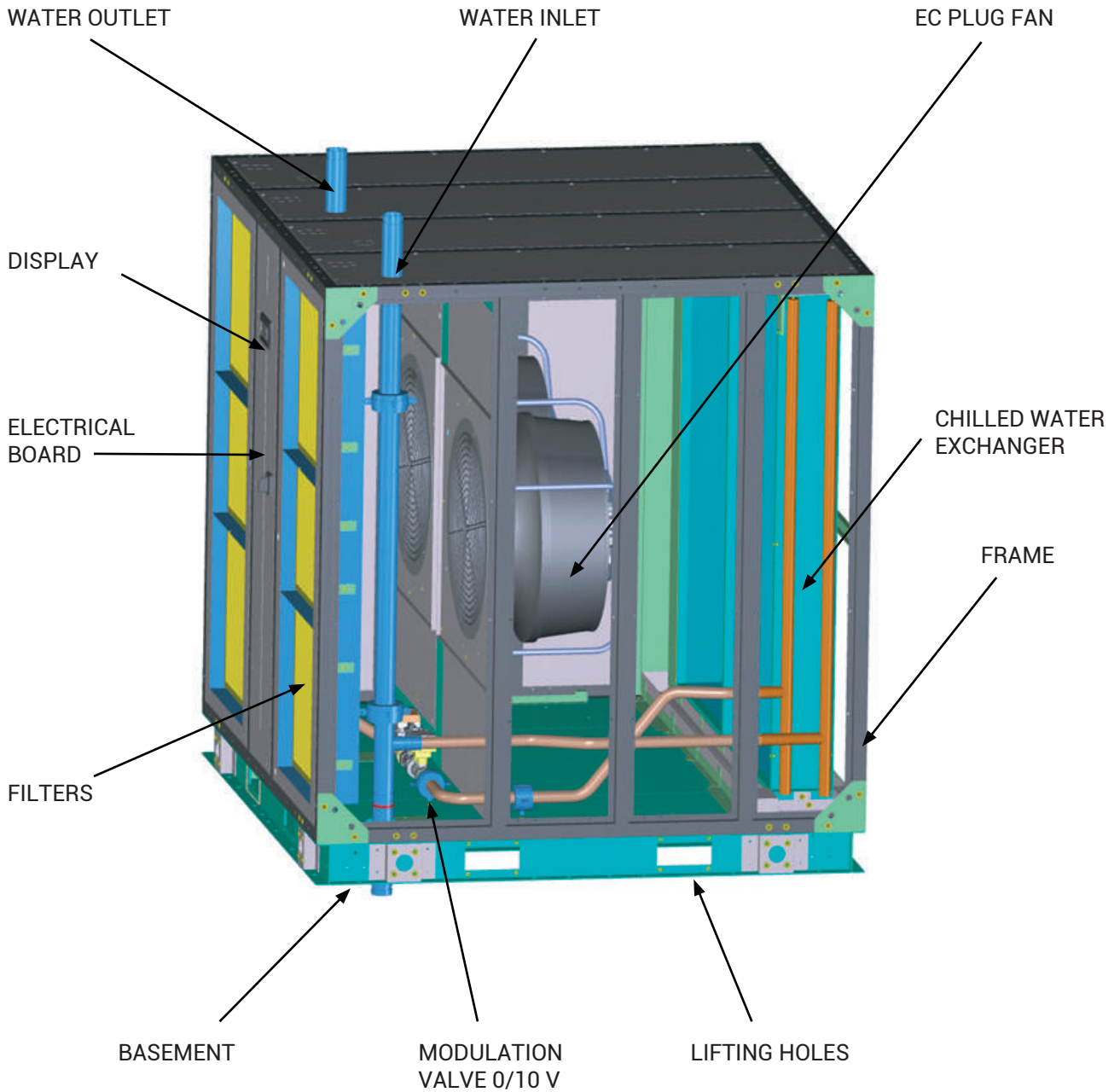
- The motor rotation control is obtained with the EC system (Electronic Commutation) that manage the motor according to the signal coming from the microprocessor control.
- Fan control via ModBus. In the event of an anomaly, the control stops the fan concerned, indicating the type of fault. A unit with more than one fan is not stopped.
- Adjustable External Static Pressure (ESP).
- Protection grilles with rubber supports.
- Tilting system that allows 90° rotation of the fan module to gain full access to the coil.

## **ELECTRICAL PANEL**

In accordance with EN60204-1 norms, suitable for indoor installation, complete with:

- Main switch with door lock safety on frontal panel
- Magnetothermic switches for the fans
- Transformer for auxiliary circuit and microprocessor supply.
- Numbered wirings.
- OUTPUT terminal board:
  - Voltage free deviating contact for General Alarm 1-2.
  - Voltage free contact for supply fans status.
  - Voltage free contact for smoke / fire sensor (the sensors are accessories)
- INPUT terminal board:
  - External enabling.
- Power supply: 400/3+N/50

**MAIN COMPONENTS IN DETAIL**



## ACCESSORIES PROVIDED WITH STANDARD UNIT



### MAGNETIC LED LIGHT

LED light with magnetic coupling that can be placed anywhere inside the machine to facilitate routine and extraordinary maintenance.



### INTAKE/DELIVERY TEMPERATURE SENSOR

The probes are installed on the air intake and delivery line of the unit. Standard temperature control and regulation are on the air delivery. The "Air intake temperature control" accessory A791 can be used to control and regulate the temperature on the air intake.

### HYDRAULIC COUPLING KIT

For models 162-182-262-302-402-462, a hydraulic coupling kit will be provided to connect the hoses of the upper module with the lower one (only in the case of vertical connections). If provided the accessory 2961 Lateral unit connections, the coupling kit is not necessary.

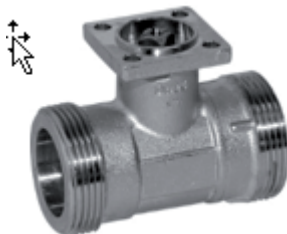
## 2-WAY BALL VALVE FOR CONTROLLING THE FLOW OF CHILLED WATER



An **equal percentage 2-way modulating ball valve with characterizing disc** controls the flow of water in the finned coil.

This type of valve offers the following advantages:

- Equal percentage characteristic.
- No initial power surges.
- Extremely stable control thanks to the disc.
- Excellent modulation.
- Stable control.
- Maintenance-free.
- Self-cleaning.



### CHARACTERISTICS OF THE 2-WAY BALL VALVE

- Airtight seal with class A leakage rate (EN 12266-1)
- Maximum fluid pressure  $P_s = 1600$  kPa.
- Maximum close-off pressure  $\Delta P_s = 1400$  kPa

The regulating rotary actuator is controlled by a 0 ...10 VDC signal from the microprocessor control. The actuator has a button for manual emergency operation and is maintenance-free.

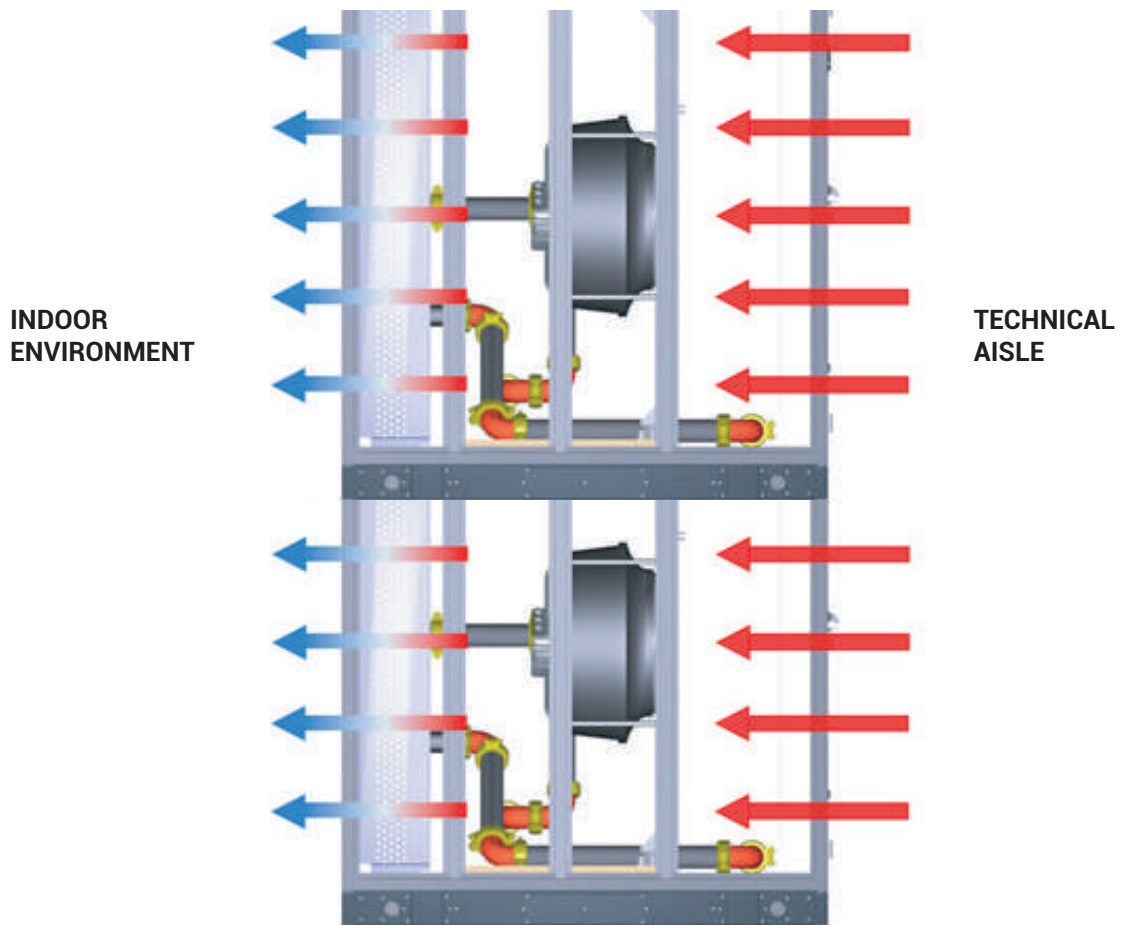


## CLOGGED FILTER SENSOR

The system includes a differential pressure switch installed in the electrical panel or in the air intake compartment and the plastic pipes to measure the pressure upstream and downstream of the air filters.

Operating range: 0.3 ... 4.0 mbar (30 ... 400 Pa)

Tripping differential: 0.15 mbar (15 Pa)



The flow of hot air, channelled in the technical aisle where the unit is installed, is filtered and horizontally flushed towards the water-cooled heat exchanger. Cooling of the air flow is monitored by measuring the temperature at the outlet of the cooling coil to ensure that it remains within the specified range.

# TECHNICAL DATA

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MODEL		081	091	131	151	201	231	162
Frame		1B1	1H1	2B1	2H1	3B1	3H1	2X1B1
<b>COOLING CAPACITY (1)</b>								
<b>Total</b>	kW	77,7	89,2	131,0	142,0	198	209	155
<b>Sensible</b>	kW	77,7	89,2	131,0	142,0	198	209	155
SHR (2)		1	1	1	1	1	1	1
"EC" FANS	n.	2	2	3	3	4	4	4
Air flow	m³/h	21150	24100	34400	36300	47400	48800	42300
External static pressure	Pa	50	50	50	50	50	50	50
Power input (3)	kW	4,53	5,44	8,25	8,31	11,1	11,1	9,06
<b>COOLING COIL</b>								
Water flow rate	m³/h	6,7	7,7	11,3	12,2	17,3	20,1	13,7
coil + valve dP (4)	kPa	41,3	45,9	49,2	49,6	40,1	38,7	41,4
Water content	L	21,6	25,3	55,6	65,1	92,8	108,8	43,2
<b>AIR FILTERS</b>								
Filtering surface	m²	1,4	1,6	2,24	2,56	3,5	4,0	2,8
Efficiency (ISO EN 16890)	ePM10	50%	50%	50%	50%	50%	50%	50%
<b>POWER SUPPLY</b>	V/Ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
<b>ENERGY INDEX</b>								
EER - Energy Efficiency Ratio	kW/kW	17,2	16,4	15,9	17,1	17,8	18,8	17,1
<b>DIMENSIONS</b>								
Length	mm	1600	1600	1600	1600	1600	1600	1600
Width	mm	1800	1800	2700	2700	3600	3600	1800
Height	mm	1750	2000	1750	2000	1750	2000	3500
<b>OVER NET WEIGHT</b>	kg	720	800	950	1000	1333	1433	1440
<b>HYDRAULIC CONNECTION</b>								
Water Inlet / Outlet - DN/ Inches (5)(6)	Ø	50/2"	50/2"	65/2"½	65/2"½	65/2"½	80/3"	50/2"
<b>CONDENSATE DISCHARGE</b>								
Rubber pipe - internal diameter	Ø mm	19	19	19	19	19	19	19

## THE COOLING CAPACITY DOES NOT CONSIDER THE SUPPLY FAN MOTOR THERMAL LOAD

1. Gross value. Characteristics referred to incoming air 37°C-25% RH with chilled water 20-30°C - 0% glycol. ESP=50Pa.
2. SHR = Sensible cooling capacity / Total cooling capacity.
3. Corresponding to the nominal external static pressure.
4. The modules are in parallel. The pressure drop refers to the single module
5. The connections refer to the supply manifold for stacked modules.
6. Grooved connection. The grooved flexible joint is not supplied

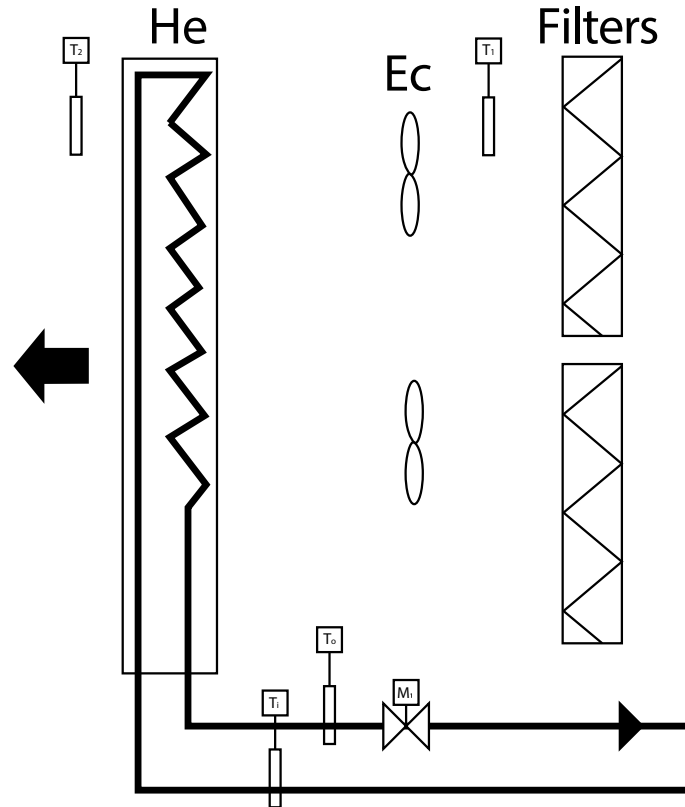
# TECHNICAL DATA

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MODEL		182	262	302	402	462
Frame		2x1H1	2x2B1	2x2H1	2x3B1	2x3H1
<b>COOLING CAPACITY (1)</b>						
<b>Total</b>	kW	178,0	262,0	283,0	397,0	418,0
<b>Sensible</b>	kW	178,0	262,0	283,0	397,0	418,0
SHR (2)		1	1	1	1	1
"EC" FANS	n.	4	6	6	8	8
Air flow	m <sup>3</sup> /h	48200	68800	72600	94800	97600
External static pressure	Pa	50	50	50	50	50
Power input (3)	kW	11,1	16,5	16,6	22,1	22,1
<b>COOLING COIL</b>						
Water flow rate	m <sup>3</sup> /h	15,4	22,7	24,5	34,3	36,0
coil + valve dP (4)	kPa	45,9	49,2	49,6	40,1	38,7
Water content	L	50,6	111,2	130,2	185,6	217,6
<b>AIR FILTERS</b>						
Filtering surface	m <sup>2</sup>	3,2	4,48	5,12	7,0	8,0
Efficiency (ISO EN 16890)	ePM10	50%	50%	50%	50%	50%
<b>POWER SUPPLY</b>	V/Ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
<b>ENERGY INDEX</b>						
EER - Energy Efficiency Ratio	kW/kW	16,0	15,9	17,0	18,0	18,9
<b>DIMENSIONS</b>						
Length	mm	1600	1600	1600	1600	1600
Width	mm	1800	2700	2700	3600	3600
Height	mm	4000	3500	4000	3500	4000
<b>OVER NET WEIGHT</b>	kg	1600	1900	2000	2666	2866
<b>HYDRAULIC CONNECTION</b>						
Water Inlet / Outlet - DN/ Inches (5)(6)	Ø	50/2"	65/2"½	65/2"½	65/2"½	80/3"
<b>CONDENSATE DISCHARGE</b>						
Rubber pipe - internal diameter	Ø mm	19	19	19	19	19

Below is a hydraulic diagram of the standard configuration without accessories.



### LEGEND

- M1 2-way modulating valve for main coil
- HE Main coil
- Ec Plug Fan.
- T1 Air return temperature probe
- T2 Air delivery temperature probe
- Ti Chilled water inlet temperature probe
- T0 Chilled water outlet temperature probe



Acoustic data of the standard unit working at full load.

**WARNING:**

In a closed room the noise produced by a sound source reaches the listener in two different ways:

- Directly
- Reflected from the surrounding walls, floor, ceiling, from furniture

With the same sound source, the noise produced in a closed room is greater than that produced outdoors. In fact, the sound pressure level generated by the source, must be added to the one reflected from the room. Also, the shape of the room affects the sound.

MODEL		081	091	131	151	201	231	162	182	262
SIZE		1	1	2	2	3	3	1	1	2
SOUND LEVEL (1)										
On the delivery side	dB(A)	88	89	90	90	91	91	91	91	93

1. Noise pressure level at 1 meter in free field - ISO 3744

MODEL		302	402	462
SIZE		2	3	3
SOUND LEVEL (1)				
On the delivery side	dB(A)	93	94	94

# ELECTRICAL DATA

**WARNING:**

The electric data indicated refer only to the indoor unit.

Optional accessory electric data are included within the dedicated chapters and must be added.

Please refer to ELCA WORLD selection program to calculate the electrical data of the air conditioner according to the requested optional accessories

MODEL		081	091	131	151	201	231
SIZE		1	1	2	2	3	3
Power supply		400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
Maximum absorbed current (FLA)	dB(A)	11	11	16,5	16,5	22	22

MODEL		162	182	262	302	402	462
SIZE		1	1	2	2	3	3
Power supply		400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
Maximum absorbed current (FLA)	dB(A)	22	22	33	33	44	44

The values shown in the table must be guaranteed during the entire life cycle of the machine.

	Description	Symbol	Range values
1	<b>Hydrogen ions</b>	pH	7.5 ÷ 9
2	<b>Presence of calcium (Ca) and magnesium (Mg)</b>	Hardness	4 ÷ 8.5 °D
3	<b>Chloride ions</b>	Cl <sup>-</sup>	< 150 ppm
4	<b>Iron ions</b>	Fe <sup>3+</sup>	< 0.5 ppm
5	<b>Manganese ions</b>	Mn <sup>2+</sup>	< 0.05 ppm
6	<b>Carbon dioxide</b>	CO <sub>2</sub>	< 10 ppm
7	<b>Hydrogen sulphide</b>	H <sub>2</sub> S	< 50 ppb
8	<b>Oxygen</b>	O <sub>2</sub>	< 0.1 ppm
9	<b>Chlorine</b>	Cl <sub>2</sub>	< 0.5 ppm
10	<b>Ammonia NH<sub>3</sub></b>	NH <sub>3</sub>	< 0.5 ppm
11	<b>Ratio between carbonates and sulphates</b>	HCO <sub>3</sub> <sup>-</sup> /SO <sub>4</sub> <sup>2-</sup>	> 1
12	<b>Sulphate ions</b>	SO <sub>4</sub> <sup>-</sup>	< 100 ppm
13	<b>Phosphate ions</b>	PO <sub>4</sub> <sup>3-</sup>	< 2.0 ppm

where: 1/1.78°D = 1°Fr with 1°Fr = 10 gr CaCO<sub>3</sub> / m<sup>3</sup>

ppm = parts for millions

ppb = parts per billion

Explanatory notes:

<b>ref. 1:</b>	Concentrations of hydrogen ions greater than those indicated implies a high risk of deposits, whereas concentrations of hydrogen ions lower than those indicated implies a high risk of corrosion;
<b>ref. 2:</b>	The hardness measures the amount of Ca and Mg carbonate dissolved in the water with a temperature lower than 100°C (temporary hardness). A high hardness implies a high risk of deposits;
<b>ref. 3:</b>	Concentrations of chloride ions higher than those indicated causes corrosion;
<b>ref. 4 - 5 - 8:</b>	The presence of iron and manganese ions and oxygen leads to corrosion;
<b>ref. 6 - 7:</b>	Carbon dioxide and hydrogen sulphide are impurities that promote corrosion;
<b>ref. 9:</b>	In water from the waterworks it is a value of between 0.2 and 0.3 ppm. High values cause corrosion;
<b>ref. 10:</b>	The presence of ammonia reinforces the oxidising power of oxygen;
<b>ref. 11:</b>	Below the value shown in the table, there is a risk of corrosion due to the trigger of galvanic currents between copper and other less noble metals,
<b>ref. 12:</b>	The presence of sulphate ions leads to corrosion;
<b>ref. 13:</b>	The presence of phosphate ions leads to corrosion;

Checks should be carried out on a regular basis, taking samples at various points of the hydraulic system. During the first year of operation, it is recommended to perform checks every 4 months. Checks can then be performed once every six months as from the second year of operation.

### **WARNING:**

Parameter values outside the indicated ranges may lead to the formation of deposits and scale, and/or encourage the occurrence of corrosive phenomena inside the system. In case of service fluids other than water (e.g. ethylene or propylene glycol), it is advisable to always use special inhibitors that offer thermal stability within the operating temperature ranges and protection against corrosion phenomena. It is absolutely essential that, in the presence of dirty and/or aggressive water, an intermediate heat exchanger is placed upstream of the heat exchangers.

### **ANTI-FREEZE SOLUTIONS**

In plants that are not adequately protected by heating cables, protect the hydraulic circuit with an anti-freeze mixture when the ambient air temperature can drop below 5°C.

Minimum ambient air temperature	°C	5	0	-5	-10	-15	-20	-25	-30
GLICOLE ETILENICO (% suggerita in peso)	%	0	12	20	30	35	40	45	50
Minimum ambient air temperature	°C	5	2	-3	-9	-13	-17	-23	-29
PROPYLENE GLYCOL (suggested % in weight)	%	0	10	20	30	35	40	45	50

The values shown are indicative and may vary depending on the manufacturer. Refer to your glycol supplier for more details.

The values indicated consider a precautionary difference of 5°C between the minimum outside air temperature and the freezing temperature of the solution.

Do not use fluids other than water or ethylene glycol/propylene glycol water solutions in the hydraulic circuit. If other products are provided, in addition to mixtures of water and ethylene or propylene glycol, contact the Manufacturer to check the compatibility with the machine components.



Controller



Keyboard and display






The unit is equipped with the controller connected to a 6 keys keyboard with graphic display on which all information in English language or easily identifiable symbols are displayed.

For units 162-182-262-302-402-462, the display of the upper module is brought down next to the display of the lower module.

The controller disposes of a "flash" memory that preserves the information even in absence of power supply. Part of memory is dedicated to the registration of intervened events - up to 200 events.




The system can manage up to 4 T/H probes on air intake, 4 T/H probes on air delivery, 4 remote T/H probes and a T/H probe for outdoor air.

## DISPLAY - KEYBOARD FUNCTIONS

	<b>ALARM</b>	Alarm presence with red light. Push for alarm description. In case of more alarms scroll by UP / DOWN.
	<b>PRG</b>	Menu list, scrolled by UP/DOWN: Unit; Set-point; In/Out; Clock; History; User; Service; Factory. ENTER to execute.
	<b>ESC</b>	Home. Used to come back to the previous menu level or to the main screen.
	<b>UP DOWN</b>	Changes pages and values of sets. By pressing in HOME mask, the synoptic of the main controls is displayed.
	<b>ENTER</b>	Moves the cursor over the editable fields of the program. Press to confirm the changes. Press ENTER to get out the fields.

## DISPLAY - MAIN MASK

The main mask shows time, date, room temperature and humidity values (if the relative probe is present) and areas for displaying operating and alarm status with dedicated icons:

		AREA 12	H	H	:	M	M	G	G	/	M	M	/	A	A	
AREA 11	AREA 1		-	9	9	.	9	°C								
	AREA 2		-	9	9	.	9	%								
	AREA 3		-	9	9	.	9	%								
	AREA 3_A															
	AREA 4	AREA 5	AREA 6	AREA 7												

Area 1: Status of the unit: on / off

Area 2: Status detail

Area 3: Type of event (only in case of an event)

Area 3\_A: Code and type of event

Area 4: Active cooling devices

Area 5: Active free-cooling devices

Area 6: Active humidity devices

Area 7: Active heating devices

Area 8: on / off parameters

Area 9: BMS address

Area 10: LAN address

Area 11: Schematic representation of units

Area 12: Active function presence icon

## CONNECTIVITY

Through the optional serial port, the microprocessor control enables communication with the modern buildings BMS systems with the following protocols: MODBUS; LON; BACNET MS/TP RS485; BACNET OVER IP.

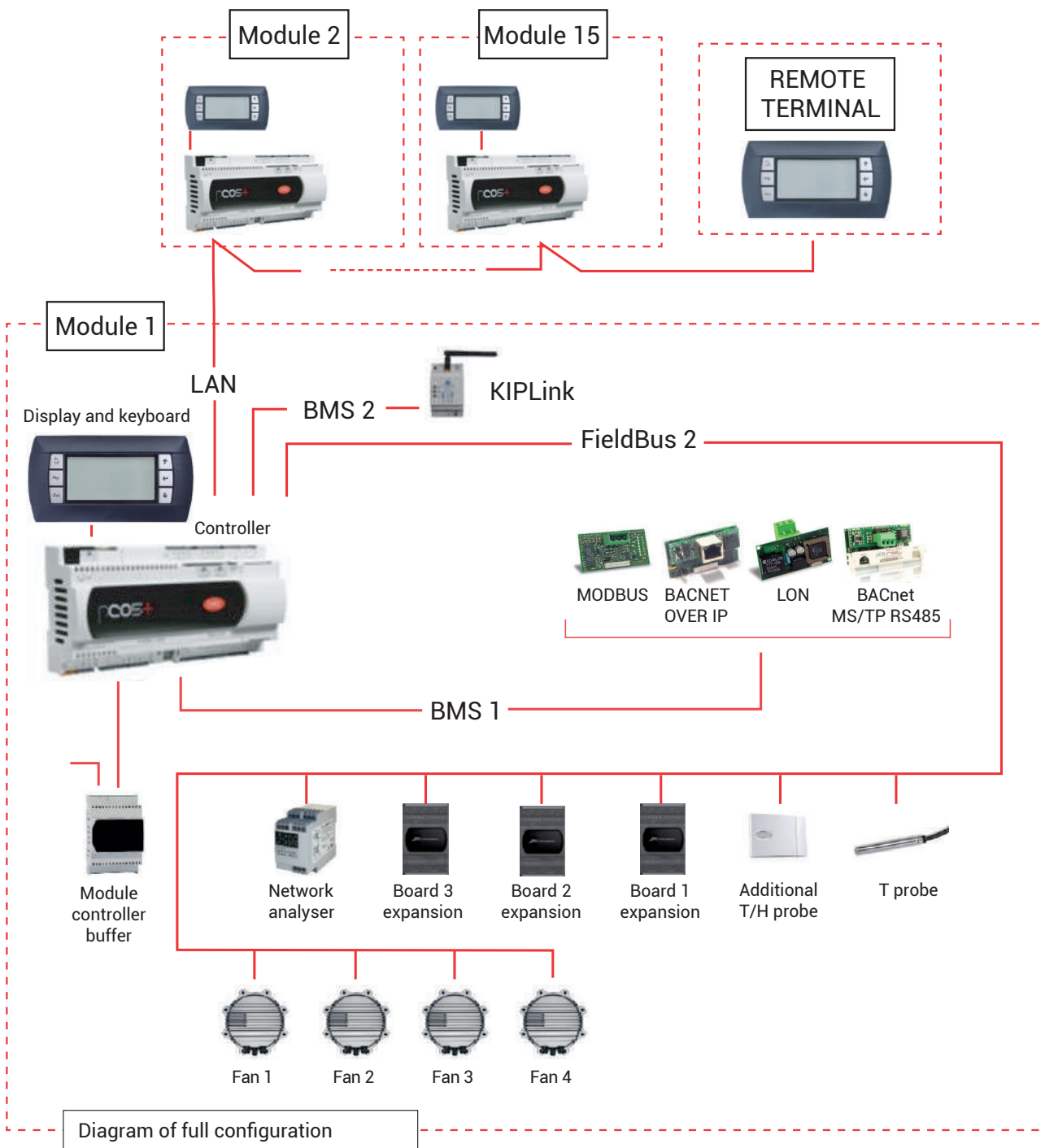
## PASSWORD

Level 1: On request of the End User. Allowing to reach USER menu

Level 2: Asks to Service: Allowing to reach SERVICE menu

Level 3: Asks to Service: Allowing to reach FACTORY menu

No passwords request to enter: UNIT, SETPOINT, IN/OUT, CLOCK, HISTORY menu



## LAN NETWORK

The LAN is part of the control software and it is possible to connect up to 15 modules. This type of connection allows to control the units in coherent way, moreover the units can be controlled and managed from a shared remote terminal.

## LIST OF LAN ADDRESSES

Module no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Remote terminal
Controller address	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	---
Display & Keyboard address	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	32

The unit connection to the local network (LAN) allows to perform the following functions:

- Balancing the operating hours among the different units by rotating the reserve units.
- Turning on the reserve units in case other units should turn off due to an alarm, maintenance or power feed interruption.
- Turning on reserve units to offset the excessive thermal load.
- Operating with all units based on the average temperature and humidity values read by the temperature probes only in the operating units
- DYNAMIC MASTER function that makes the role of the Master unit dynamic. In case of alarm, shutdown, maintenance, power failure, etc. on the Master unit, the function automatically elects a new Master unit.

## ACTIVE REDUNDANCY

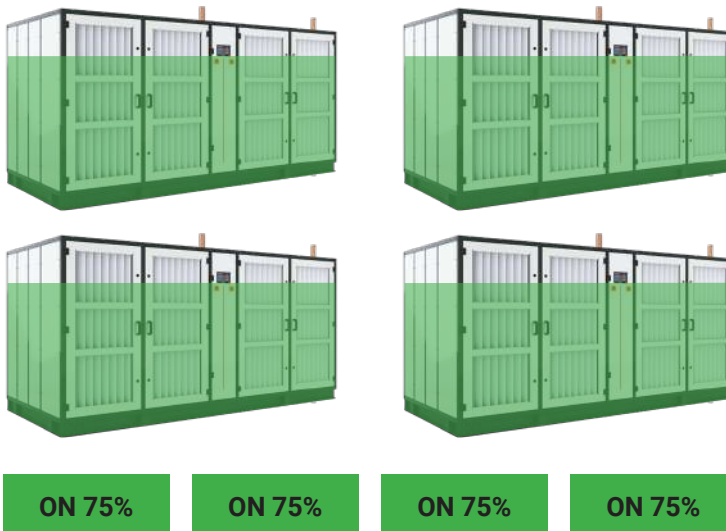
The combination of EC electronic switching fans, motorized 2-way valves for controlling the flow of water, and a new load distribution algorithm for the various units on the network (including those on standby) allow for ACTIVE REDUNDANCY and dependability, efficiency and cost-effective running of the water-cooled units.



## PASSIVE REDUNDANCY



## ACTIVE REDUNDANCY





The descriptions of these additional components can be found in Chapter OPTIONAL ACCESSORIES.

<b>A548</b>	Constant head. Automatic air pressure regulation system. The system controls the rotation speed of the fans to maintain constant air pressure via a differential pressure transmitter connected to the microprocessor control.
<b>A547</b>	Constant flow rate: automatic system for controlling the air flow rate in the raised floor (Under)/duct (Over). The system controls the rotation speed of the fans to maintain constant air flow in the raised flow/duct via a differential pressure transmitter connected to the microprocessor control. Not compatible with constant head control system
<b>383</b>	Numbered wirings + UK requests.
<b>A842</b>	Network analyzer. Multifunctional instrument for calculating and displaying the electrical measurements of the unit.
<b>P111</b>	Double power supply. System for double power supply with automatic changeover.
<b>4501</b>	Fast restart (UPS EXCLUDED)
<b>4503</b>	Fast restart (ULTRACAP)
<b>4181/4182/4184/4185</b>	Serial cards: 4181 - MODBUS protocol card; 4182 - LON protocol card; 4184 - BACNET MS/TP RS485 card; 4185 - BACNET OVER IP card
<b>1441</b>	KIPlink + COMPACT KEYBOARD.
<b>1442</b>	KIPlink +7 INCH TOUCH SCREEN.
<b>6195</b>	7 INCH TOUCH SCREEN.
<b>6196</b>	KIPlink.
<b>B912</b>	K200 remote keyboard.
<b>A491</b>	Water leakage detector. Supplied in mounting kit.
<b>A492</b>	Water leakage detector + additional detector. Supplied in mounting kit
<b>A511</b>	Smoke detector. Supplied in mounting kit.
<b>A521</b>	Fire detector. Supplied in mounting kit.
<b>B811</b>	Air flow sensor
<b>P161</b>	Air return T/rH probe Combined Temperature / Humidity sensor on air intake. The optional replace the standard temperature sensor on machine air intake.
<b>P071/P072/P073/P074</b>	Remote T/rH probe. Combined Temperature / Relative Humidity probe for remote installation, in addition to the combined probe on the air intake of the unit.
<b>A791</b>	Air intake temperature control.
<b>B806</b>	Spring return 0-10V 2-way valve
<b>B807</b>	EPIV 2-way valve
<b>B809</b>	EPIV 2-way valve (modbus)
<b>6461</b>	HPC.
<b>A532</b>	Spring return damper. Non-return air damper with frame installed over the air outlet of the unit
<b>P011</b>	Plenum.
<b>A272</b>	CL.0 or A1 (EN 13501-1) insulation: Panelling with fire reaction in class "0" or "A1";
<b>9973</b>	Packing with wooden crate. The units are delivered on a wooden pallet, shrink-wrapped in a wooden crate.

## OPTIONAL ACCESSORIES

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2911	Flanged connections
2961	Side connections to the unit
P611	Kit for lifting with eyebolts.
9979	Slides for container

### WARNING:

The Manufacturer reserves the right to accept any combinations of accessories installed on the unit.

### **2911 - FLANGED CONNECTIONS**

The 2 hydraulic connections, water inlet and outlet, are provided with a flanged connection. Only for the sizes 162, 182, 262, 302, 402, 462 in which there is the presence of the accessory "2961-LATERAL UNIT CONNECTIONS" the number of connections provided will be 4, two inlet and two outlet, and consequently also the output, the flanged connections will be 4.

### **2961 - UNIT SIDE CONNECTIONS**

Water inlet and outlet connections shall be located on the side of the unit. For sizes 162, 182, 262,302, 402,462 there will be 4 connections, 2 for each module.

### **P611 - LIFTING KIT WITH EYEBOLTS**



### **B806-SPRING RETURN 0/10 VALVE**

In addition to the ordinary functions of an 0/10 valve, the actuator moves the valve to its normal operating position while simultaneously loading the return spring. The valve returns to its safe position by spring force when the power is interrupted.



### **B807-2-WAY EPIV 0/10 VALVE**

The electronically controlled 2-way ball valve consists of three elements: the ball control valve, the measuring hose with the flow sensor and the actuator. The maximum flow rate ( $V_{max}$ ) is assigned to the maximum control signal (usually 10 V / 100%). The final control device can be controlled with bus or analogue communication signals. The sensor in the measuring section detects the fluid and calculates the flow rate. The value thus determined is compared with the setpoint. The actuator corrects the discrepancy between setpoint and actual value by changing the position of the ball, regardless of the pressure in the circuit.



### **B809-EPIV VALVE (MODBUS)**

The electronically controlled 2-way ball valve consists of three elements: the ball control valve, the measuring hose with the flow sensor and the actuator.

Thanks to the possibility of using Modbus communication, it is possible to obtain the reading of the flow rate and the cooling capacity.



**OPTIONAL ACCESSORIES: A547/A548 - CONSTANT FLOW RATE/  
CONSTANT HEAD**

The accessory is a differential pressure sensor with 0...20mA output signal and is installed in the unit.

The sensor is connected to the microprocessor control of the indoor unit and it monitors:

**A547 - CONSTANT FLOW RATE**

The system controls the flow rate of the air conditioner by measuring the static pressure upstream of the fan intake with static pressure in the inlet ring.

Pressure control range from 0 to 1000 Pa.

The air flow control system is not compatible with the air pressure control system.

**A548 - CONSTANT HEAD**

The system controls the delivery air pressure. The rotation speed of the fans is controlled by means of the pipe that measures the pressure in the room (low pressure side) and of the fan's air delivery line (high pressure side), to keep the air pressure value constant.

Pressure control range from 0 to 100 Pa.

For sizes 162, 182, 262,302, 402,462 two sensors are supplied, one for each module.



**OPTIONAL ACCESSORIES: 4503 - FAST RESTART (ULTRACAP)**

The indoor UPS (buffer battery) powers the microprocessor for a few minutes in the case of a power cut or voltage fluctuations, to avoid restarting of the controller. A relay for monitoring the power is also provided.

For sizes 162, 182, 262,302, 402,462 two sensors 4503 are supplied, one for each module.

**OPTIONAL ACCESSORIES: 4501 - FAST RESTART (UPS EXCLUDED)**

The accessory is installed in the electrical panel.

The system has a separate 24V power line for the microprocessor and auxiliaries, allowing the customer to install an outdoor UPS if required.

A relay for monitoring the main line is also provided.

**OPTIONAL ACCESSORIES: 383 - NUMBERED WIRINGS + UK REQUESTS**

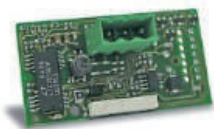
The machine's electrical cables are all numbered for easy identification.

For the power section it is possible to change the colour for the UK market.

CABLE	383 - COLOUR FOR UK
EARTH	YELLOW / GREEN
NEUTRAL	BLUE SKY
PHASE 1 (L1)	BROWN
PHASE 2 (L2)	BLACK
PHASE 3 (L3)	GREY
AUXILIARIES	RED

## OPTIONAL ACCESSORIES

Data Book  
T\_CVWALL\_0322\_EN



### OPTIONAL ACCESSORIES:

#### 4181 - MODBUS PROTOCOL SERIAL CARD

The card is factory installed.

The serial card permits use of the ModBus communication protocol via an RS485 3-wire connection.

Consult the interface manual for all technical information.

For sizes 162, 182, 262,302, 402,462 two serial cards are provided one, for each module.



### OPTIONAL ACCESSORIES: 4182 - LON PROTOCOL SERIAL CARD

The card is factory installed. The serial card permits use of the LonWorks communication protocol via the FTT-10 connection. The manufacturer will provide the serial card and an .NXE file and an .XIF file for the LonWorks technicians to configure the network. The card is programmed by the technician responsible for the integration. Consult the interface manual for all technical information.

For sizes 162, 182, 262,302, 402,462 two serial cards are provided one, for each module.



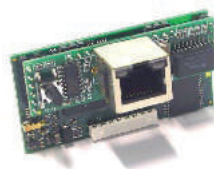
### OPTIONAL ACCESSORIES:

#### 4184 - BACNET MS/TP RS485 SERIAL CARD

The card is factory installed. The serial card permits use of the BACnet MS/TP communication protocol via an RS485 3-wire connection.

Consult the interface manual for all technical information.

For sizes 162, 182, 262,302, 402,462 two serial cards are provided one, for each module.



### OPTIONAL ACCESSORIES: 4185 - BACNET OVER IP SERIAL CARD

The card is factory installed. The supervision network is set up by the technicians developing the BACnet interface. The Modbus protocol database is used for interfacing. The manufacturer will supply the cards and .MIB file necessary for the technicians to configure the network.

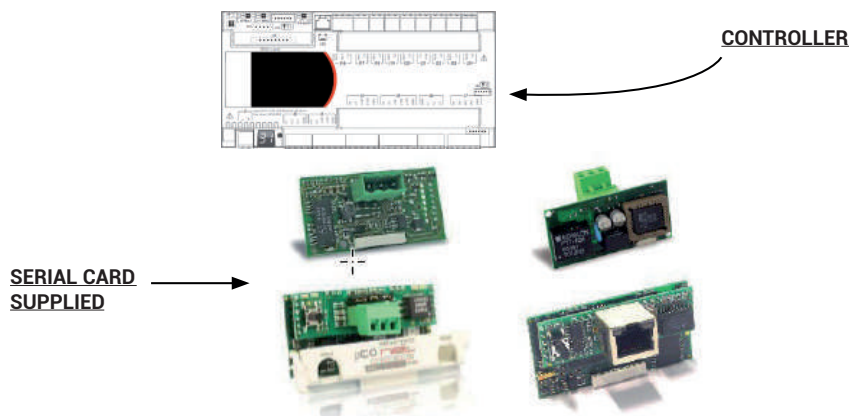
The board is programmed by the technician in charge of the integration.

The serial card permits use of the BACnet IP, Modbus TCP/IP and SNMP communication protocol via a standard Ethernet connection.

Consult the Interface Manual for all the technical information and what is necessary for the Internet connection to view and modify the variables.

For sizes 162, 182, 262,302, 402,462 two serial cards are provided one, for each module.

**THE CONTROLLER EXPANSION IS EASILY INSTALLED ONLY ONE SERIAL CARD AT TIME CAN BE SUPPORTED BY THE CONTROLLER.**





**OPTIONAL ACCESSORIES:**

**A491 - WATER LEAKAGE DETECTOR**

The system includes an electronic relay installed in the electrical panel of the unit and a water detector.

The electrical connections for the probe and the alarm contact are present in the unit's terminal board.

The water sensor is supplied in a mounting kit. For sizes 162, 182, 262,302, 402,462 two sensors are provided one, for each module.



**OPTIONAL ACCESSORIES: A492 - WATER LEAKAGE DETECTOR + ADDITIONAL DETECTOR**

The system includes an electronic relay installed in the electrical panel of the indoor unit, and 2 detectors to be connected in series.

The electrical connections for the probe and the alarm contact are present in the terminal board of the indoor unit.

The sensors are supplied in a mounting kit. For sizes 162, 182, 262,302, 402,462 two sensors are provided one, for each module.



**ACCESSORIES: A511 - SMOKE DETECTOR**

**OPTIONAL ACCESSORIES: A521 - FIRE DETECTOR**

Sensors are supplied in mounting kit. Installation within the room at customer care

**A511 - SMOKE DETECTOR**

The device is supplied in mounting kit.

The optical smoke detector senses the presence of combustion by-products (visible smoke) and activates an alarm.

The operating principle is based on the light scattering technique (Tyndall effect). The device is in conformity to EN 54-7 standard.

**Technical characteristics:**

Material	ABS	Relative humidity	<93% non-condensing
Power supply	12...28 Vdc	Index of protection	IP 20
Normal current	50µA at 24 Vdc	Testing by magnet	Yes
Alarm current	25µA at 24 Vdc	Relay	max. 1A 30Vdc
LED visibility	360° (double LED)	Signal repeater	14mA a 24 Vdc
Storage temperature	-10...+70°C	Covered area	40m2 max.
Operating temperature	-10...+70°C	Shielded connection	Min. 0.5 mm2
Max. speed air	0.2 m/s	Colour	White

Supplied with unit to be connected and installed at customer care close to the unit. For sizes 162, 182, 262,302, 402,462 two sensors are provided one, for each module.

**A521 - FIRE DETECTOR**

The device is supplied in mounting kit.

The fire detector has been designed to identify temperatures at which fires may start. When the temperature exceeds the set threshold or when there is a rapid variation in temperature, the relay is activated to signal an alarm. The device is in conformity to EN 54-5 standard.

## OPTIONAL ACCESSORIES

### Technical characteristics:

Material	ABS	Index of protection	IP 20
Power supply	12...28 Vdc	Testing by magnet	Yes
Normal current	50µA at 24 Vdc	Relay	max. 1A 30Vdc
Alarm current	25µA at 24 Vdc	Signal repeater	14mA a 24 Vdc
LED visibility	360° (double LED)	Alarm threshold temperature	62°C
Storage temperature	-10...+70°C	Covered area	40m2 max.
Operating temperature	-10...+70°C	Shielded connection	Min. 0.5 mm <sup>2</sup>
Relative humidity	<93% non-condensing	Colour	White

Supplied with unit to be connected and installed at customer care close to the unit.

For sizes 162, 182, 262,302, 402,462 two sensors are provided one, for each module.



### B811- AIR FLOW SENSOR

The system comprises a differential pressure switch installed in the electrical panel or at the front of the machine and the plastic hoses for measuring the fan intake pressure.

Control range: 0.2 ... 2.0 mbar (20 ... 200 Pa)

Differential for intervention: 0.1 mbar (10 Pa)

Intervention value set at 0.2 mbar, not modifiable.

For sizes 162, 182, 262,302, 402,462 two sensors are provided one, for each module.



## OPTIONAL ACCESSORIES: 6196 - CONTROL UNIT VIA KIPLINK

The optional is factory installed.

KIPLink is an innovative system based on Wi-Fi technology that allows to operate on a unit directly from Smartphone or Tablet via an APP.

### WI-FI MODULE

- Standard: IEEE 802.11n - 802.11g
- Frequencies: 2.4 - 2.4835 GHz
- Output power: <20 dBm (equivalent to <100mW)
- Safety: WPA2
- Flow: < 20m

### APP MEHITS

Operating System: Android 5® or higher, IOS 8® or higher, Windows 10® or higher

Download: Google Play®, Apple Store® and Microsoft Store®.



Logos, marks and company names are property of correspondent manufacturers,

### HOW TO USE KIPLINK

KIPLink can be used in three ways:

#### Proximity keyboard:

Approaching the machine with a Smartphone or a Tablet with the MEHITS APP installed, you can connect to the unit via Wi-Fi and you can control it as you would from the standard controller keyboard. It is possible to switch the unit on and off, change the sets and reset alarms. Knowing the relative passwords, you access the parameters of the USER, SERVICE and MANUFACTURER menus.

#### Local Monitoring:

Using a Smartphone, a Tablet or PC connected to the LAN of the building where the unit is also connected. Access is via WEB via a browser. The system has two access profiles: ONLY READ and READ & WRITE.

ONLY READ allows only the visualization of the parameters and it is not possible to control the unit.

READ & WRITE allows you to switch the unit on and off, change the sets and reset alarms. Knowing the relative passwords, you access the parameters of the USER, SERVICE and MANUFACTURER menus.

#### Remote monitoring:

You can use a Smartphone, Tablet or PC connected to the VPN of the building where the unit is also connected to monitor the unit from any geographical location where there is an internet connection. Use a secure VPN to avoid access by third parties who could compromise operation of the unit. The user is responsible for ensuring a secure connection.

## STORING DATA

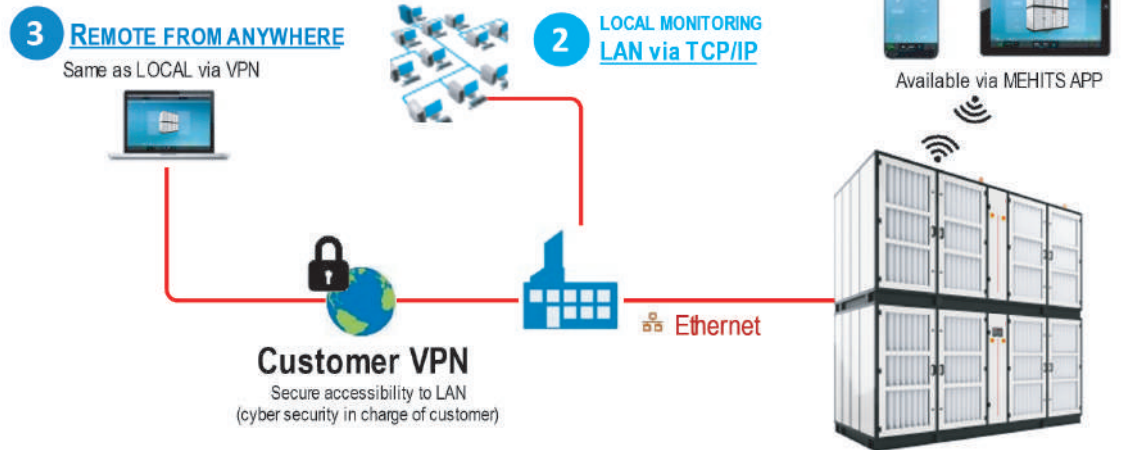
The system can store some data on a 1GB MicroSD card to be installed on the device. The data can be used for Service diagnostics. The card is not provided.

## KIPLink NETWORK

It is possible to set up mixed networks consisting of several KIPLink devices (10 maximum), to display information from different devices (called Client KIPLink) on one single device (called Master KIPLink). The information is collected from the various Client KIPLink devices connected to EVOLUTION+ / W3000 TE/ CX-4 controllers and sent through the Wi-Fi or Ethernet network to the Master KIPLink device, which stores them and makes them available through an appropriate user interface. The connection with the Master KIPLink can take place via Wi-Fi, via Ethernet or a combination of the two. For complete information on the KIPLink system, please consult the relative technical documentation.

### KIPLink: LOCAL and REMOTE MONITORING FUNCTIONS

Monitor and control the unit from a LAN device (PC, laptop, mobile phone) with a **simple web browser**



For sizes 162, 182, 262,302, 402,462 two KIPLINK re provided one, for each module.

# HPC

Hydronic Plant Connect

## OPTIONAL ACCESSORIES: 6461 - HPC

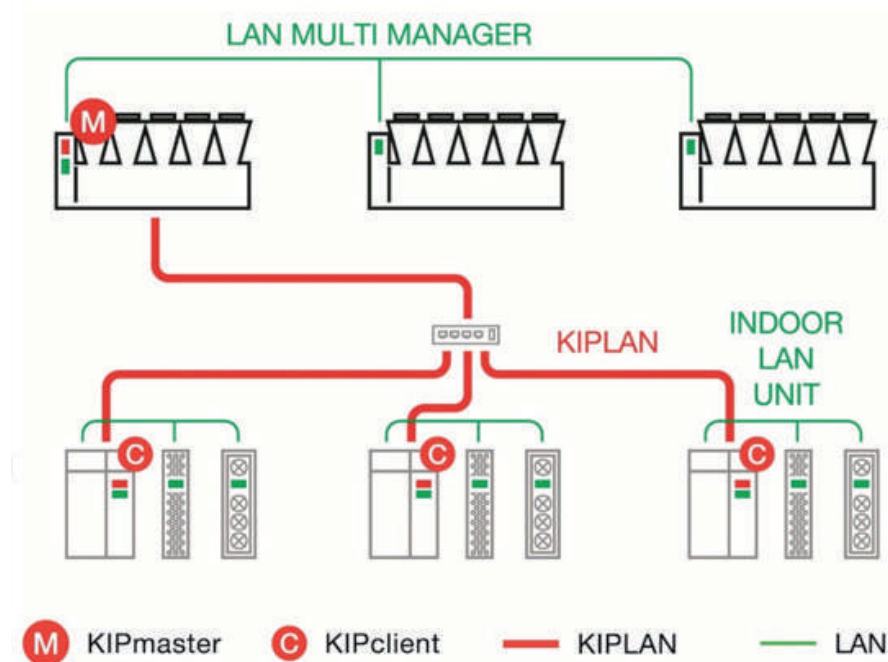
HPC is the new advanced, fully integrated control feature designed by MEHITS to optimize hydronic systems. It connects MEHITS chillers and indoor CRAH units without the need for any external devices

### INFRASTRUCTURE

The HPC function is based on LAN groups and the KIPLink (KIPLAN) network.

- Each indoor and outdoor unit must be KIPLink-enabled.
- Each outdoor unit must be equipped with Multi Manager.
- HPC supports up to 20 LAN groups of indoor air conditioners (maximum 15 units per group) and 1 LAN group of outdoor chillers (maximum 8 units).
- HPC requires a KIPLAN (KIPLink network) consisting of one unit per LAN group.
- The result is a KIPLAN consisting of 1 chiller (KIP Master) and up to 20 indoor units (KIP Clients).
- The KIPLAN network allows HPC-related data to be sent between different LAN groups (internal and external).

KIPLink allows direct access to all HPC variables and parameters with dedicated menus and pages. The main parameters are also available on the compact/large keyboard.



Further information is available in the relevant manuals (W3000+, Evolution+, KIPLink).

### WORK LOGICS

The control logics of the HPC improve system efficiency in terms of partial loads, redundant drives, and favourable environmental conditions.

The HPC acts in time intervals. The time interval between each intervention of the HPC can be set from 1 up to 500 minutes. The time until the next intervention of the HPC is shown in the group interface section of the KIPLink.

Based on the instantaneous operating conditions detected in the chilled water system, the HPC adjusts: the setpoint of the chillers, the speed of the pumps, and the valves and fans of the indoor air conditioners.

### The main variables considered are:

- Cooling demand of each group of indoor units
  - Room temperature
  - Fan speed
  - Opening of the valve
- Temperature of the chilled water,
- Speed of the pumps,
- Operating status of the external chiller units (outside air temperature, availability of FC)

The greatest benefits are achieved in systems with VSD pumps and free-cooling chillers.

Meeting the required IT heat load is critical. HPC always prioritizes cooling of the room to ensure maximum reliability. Actions are therefore taken based on the status of the groups of indoor units.

#### 1. Reset

This occurs when the cooling demand of at least one group of indoor units suddenly increases. The contribution made by the HPC is reset and suspended until the Reset button is deactivated.

The system immediately increases the cooling capacity.

#### 2. Reduce

This occurs when the cooling demand of at least one group of indoor units increases slightly. The contribution of the HPC is reduced. The system increases the cooling capacity.

#### 3. Optimization On

This occurs when the cooling demand of all the groups of indoor units remains stable or decreases. The HPC optimizes the system, increasing its contribution.

#### 4. No action

This occurs when the cooling demand of all the groups of indoor units remains stable or decreases, but the HPC has already brought the system up to the best performance achievable under current conditions. No further action is taken.



## BENEFITS

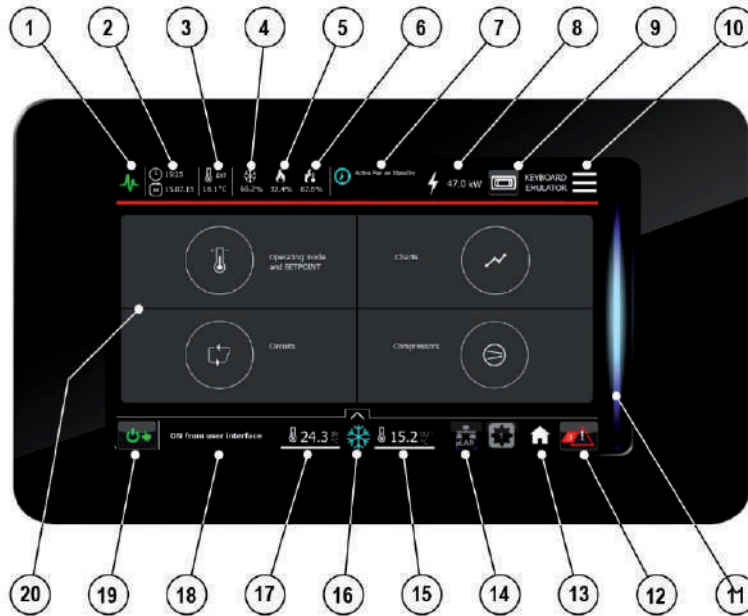
- Fully developed in-house and patent pending
- Fully integrated, no external devices required
- Based on proprietary logics and devices (Multi Manager, KIPlink)
- Energy simulations, comparisons and payback analysis available with the ELCA Energy Analysis software
- Ideal for completing and securing the supply of a complete MEHITS cold water system (chillers and CRAH)

**OPTIONAL ACCESSORIES: 6195 - "EVOLUTION TOUCH" GRAPHIC DISPLAY**

7" Touch-Screen graphic display with 16.7 million colours for the management and monitoring of operating and alarm states.

The Display is equipped with a MicroUSB port for the service connection.

The navigation bars are always present on the display for the purpose of quick and intuitive navigation.



**BOTTOM NAVIGATION BAR**

- 1. Controller Connection status: Green:  
OK / Red: error
- 2. Date and Time
- 3. Ambient air temperature from dedicated probe
- 4. Percentage active in cooling mode
- 5. Percentage active in heating mode
- 6. Percentage active in post-heating mode
- 7. Unit active functions
- 8. Energy meter
- 9. Standard 6-key display simulator

**TOP NAVIGATION BAR**

- 10. Rapid access to the menu
- 11. Illuminated unit status bar
- 12. Signalling and management of alarms
- 13. Home button
- 14. pLAN network
- 15. Delivery of air into room: air temperature  
or relative humidity value
- 16. Operating mode of the unit
- 17. Intake of air from room: air temperature value
- 18. Unit status
- 19. Unit on/off

**WORKING AREA**

- 20. Main menus
  - a. Operating mode and Setpoint
  - b. Circuits
  - c. Graphs
  - d. Compressors

For complete information on the Graphic Display, please consult the relative technical documentation.

### OPTIONAL ACCESSORIES: A352 - NO DISPLAY

The unit is supplied without display and adjustment is only possible with the KipLink accessory



### OPTIONAL ACCESSORIES: A842 - NETWORK ANALYZER

L'accessorio è installato nel quadro elettrico a valle dell'interruttore generale blocco-porta e comprende:

- A network transducer;
- One current transformer for each power phase cable.

This device provides continuous measurement of power consumption, monitoring current, voltage and power. The values are made available to the microprocessor of the unit through an RS485 serial line cable connection, as indicated in the wiring diagram on board of the machine.

The displayed variables are:

- Phase to phase voltage, only for three-phase units;
- Phase voltage (phase-neutral);
- Phase current;
- Neutral current only for three-phase units;
- Active phase power, only for three-phase units;
- Total active power;
- Active energy;
- Hour counts

For sizes 162, 182, 262,302, 402,462 two network analyzers re provided one, for each module.



**OPTIONAL ACCESSORIES: P161 - AIR RETURN T/RH PROBE**  
**OPTIONAL ACCESSORIES: P071 / P072 / P073 / P074 REMOTE T/RH PROBE**  
**P071 / P072 / P073 / P074: SONDE T/RH REMOTE**

In addition to the on-board temperature probes, the unit control can handle up to 4 remote T/RH probes (optional), to measure the return and delivery air temperature at different locations.

Depending on the individual characteristics of the room and the cooling system, the customer can choose where to install the additional probes to achieve the best measurement results (No. return probes + No. delivery probes ≤ 4).

The probes can be configured in the controller's Service menu.

The enabled probes contribute to the calculation of the return and delivery temperature used for capacity control.

The customer can choose between different types of calculation:

- Temperature of the first probe enabled
- Average temperature of the probes
- Highest temperature of the probes
- Lowest temperature of the probes

**Notes:**

If a probe is connected but not enabled, its measurement can still be read on the display and by the BMS, but it is not used to calculate the adjustment temperature. It is possible to disable the probe on the unit and use only the remote probes for capacity control..

- **P071:** One probe.
- **P072:** Two probes.
- **P073:** Three probes.
- **P074:** Four probes.

For the sizes consisting of two modules 162, 182, 262, 302, 402, 462 the number of probes supplied will respectively be

- **P071:** Two probes.
- **P072:** Four probes.
- **P073:** Six probes.
- **P074:** Eight probes.

**OPTIONAL ACCESSORIES: P111 - DUAL SUPPLY KIT**



The motorised changeover switches automatically manage changeover under load between two three-phase power supplies, or manually for emergency operations.

These devices are suitable for low voltage systems with interruption of the supply to the load during transfer.

The model supplied in the automatic version checks the source and switches over automatically, based on configurable parameters

**OPEN TRANSITION TYPE TRANSFER SWITCH WITH A MINIMUM INTERRUPTION OF THE SUPPLY DURING TRANSFER.**

It is recommended to use the accessory "4502 - FAST RESTART (INTERNAL UPS) to keep the microprocessor powered and avoid restarting it. Internal UPS (buffer battery) powers the microprocessor for a few minutes in absence of power supply.

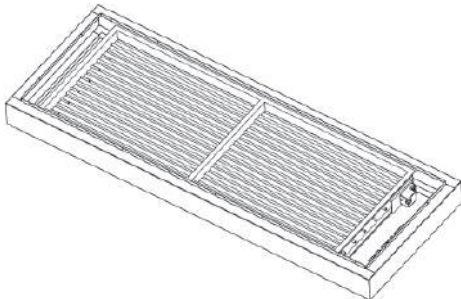
**INSTALLATION**

Frame	Power supply	Installation	Code
1	400/3+N/50	Indoor, on the machine	OTM40F4C20D400C
2	400/3+N/50	Indoor, on the machine	OTM40F4C20D400C
3	400/3+N/50	Indoor, on the machine	OTM40F4C20D400C

Since that each module is equipped with autonomous power supply for sizes 162, 182, 262, 302, 402, 462 consisting in two modules, two P111 accessories are supplied.

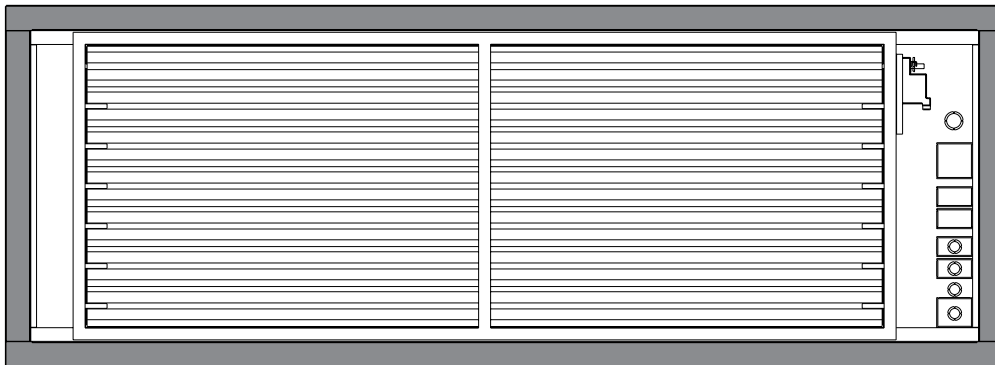
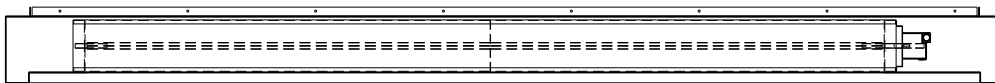
## OPTIONAL ACCESSORIES: A532 - SPRING-TYPENON-RETURN DAMPERS

Motorized non-return air damper in the frame.  
The accessory is installed on the air delivery of the unit and can be combined with the plenums and the floor stand.  
The accessory requires the presence of the accessory "9973 Packing with wooden crate".



### FRAMEWORK

- Frame in galvanized steel sheet with protective surface treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and with epoxy powder coating. Colour RAL 9005;
- Opposed blade damper in sheet steel;
- Servomotor for damper control;
- Terminal board for electrical connection with the unit.



The dampers completely cover the front surface of the unit and extend the depth of the unit by 150-160 mm.

### WORKING LOGIC

The damper opens at supply fans activation to allow air flow.

When the fans stop for failure or stop command, the damper closes, preventing air flow into the unit.

## ACCESSORIES: P011 - EMPTY PLENUM

### OPTIONAL ACCESSORIES: A272 - CL.0 or A1 (EN13501-1) INSULATION

The optional is designed **TO SUPPLY THE PANELING ONLY WITH FIRE REACTION IN CLASS "0" OR "A1 (EN 13501-1)";** furthermore, allows a noise insulation of the panels of the air conditioners.

The pressure level reduction of the unit is about 2 dB(A). The reduction refers **ONLY** to the sound level radiated from the unit or in front of the unit. The noise level data on return and delivery air do not undergo reductions.

The accessory consists of replacing the internal insulation of the side and top insulation panels with rock wool of a density of 90 kg/m<sup>3</sup>.

### REACTION TO FIRE CLASSIFICATION

On Italian territory, the classification is per the D.M. of June 26, 1984 and subsequent amendments, providing for a sort in "Classes" from 0 (non-combustible material) to 5 (extremely flammable material). The EN 13501-1 regulation is ordered in classes from A1 (non-combustible material) to F (extremely flammable material).



A comparison of the classes is not possible because the methods and evaluation criteria are completely different. The comparison table below is being considered purely indicative.

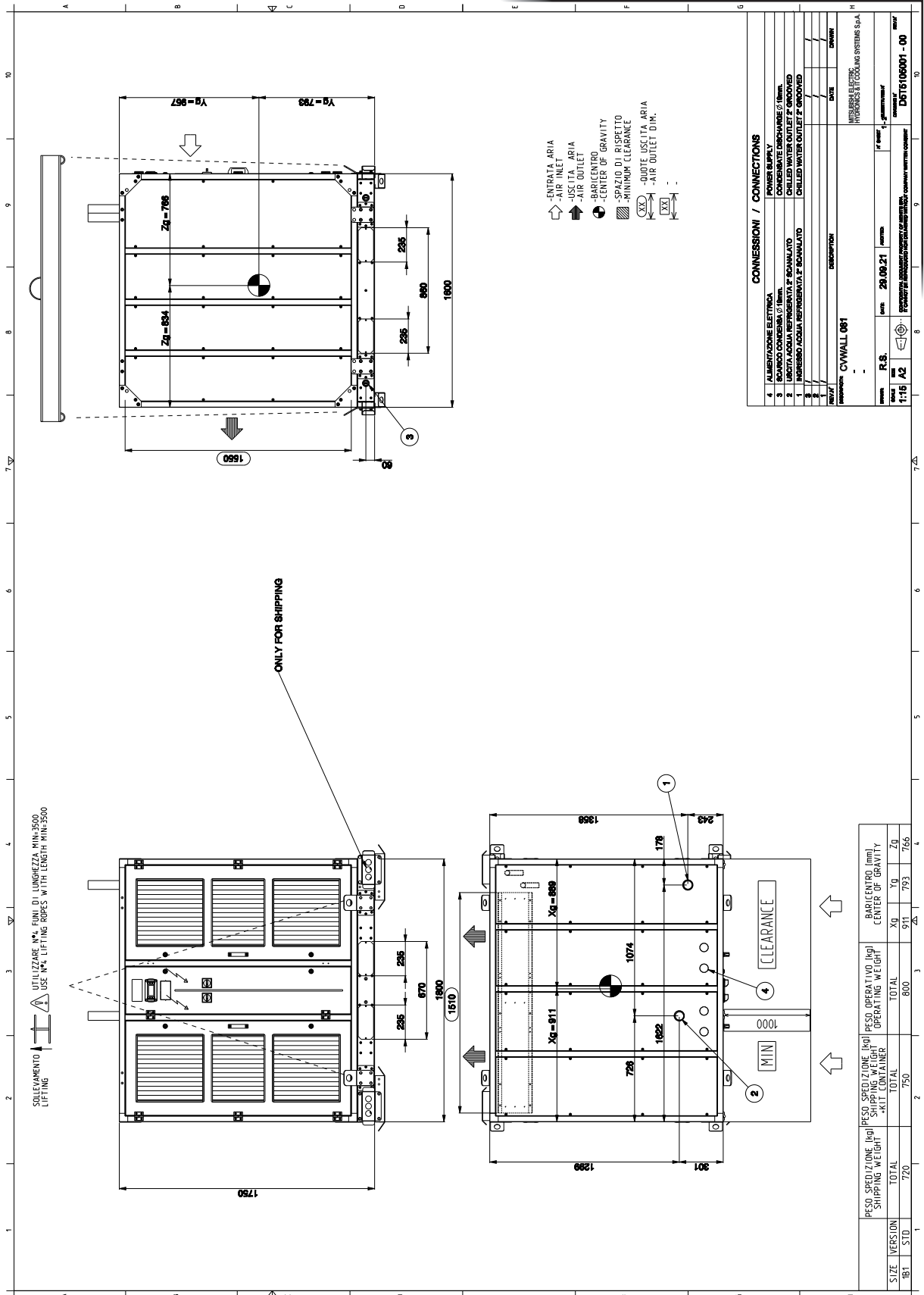
Definition	Italian classes	EN 13501-1
Non-combustible material	Class 0	A1
Combustible material, very limited contribution to fire.	Class 1	A2 - B
Combustible material, limited contribution to fire	Class 2	A2 - B - C
Combustible material, medium contribution to fire	Class 3	C - D
Combustible material, medium contribution to fire	Class 4	E
Combustible material, easily flammable	Class 5	F

The accessory increases the weight of the unit.

CVWALL							
Size		081	091	131	151	201	231
Increase in weight (1)	kg	7	7,6	8,2	8,9	9,5	10,2

1. Value to be added to the total weight of the unit

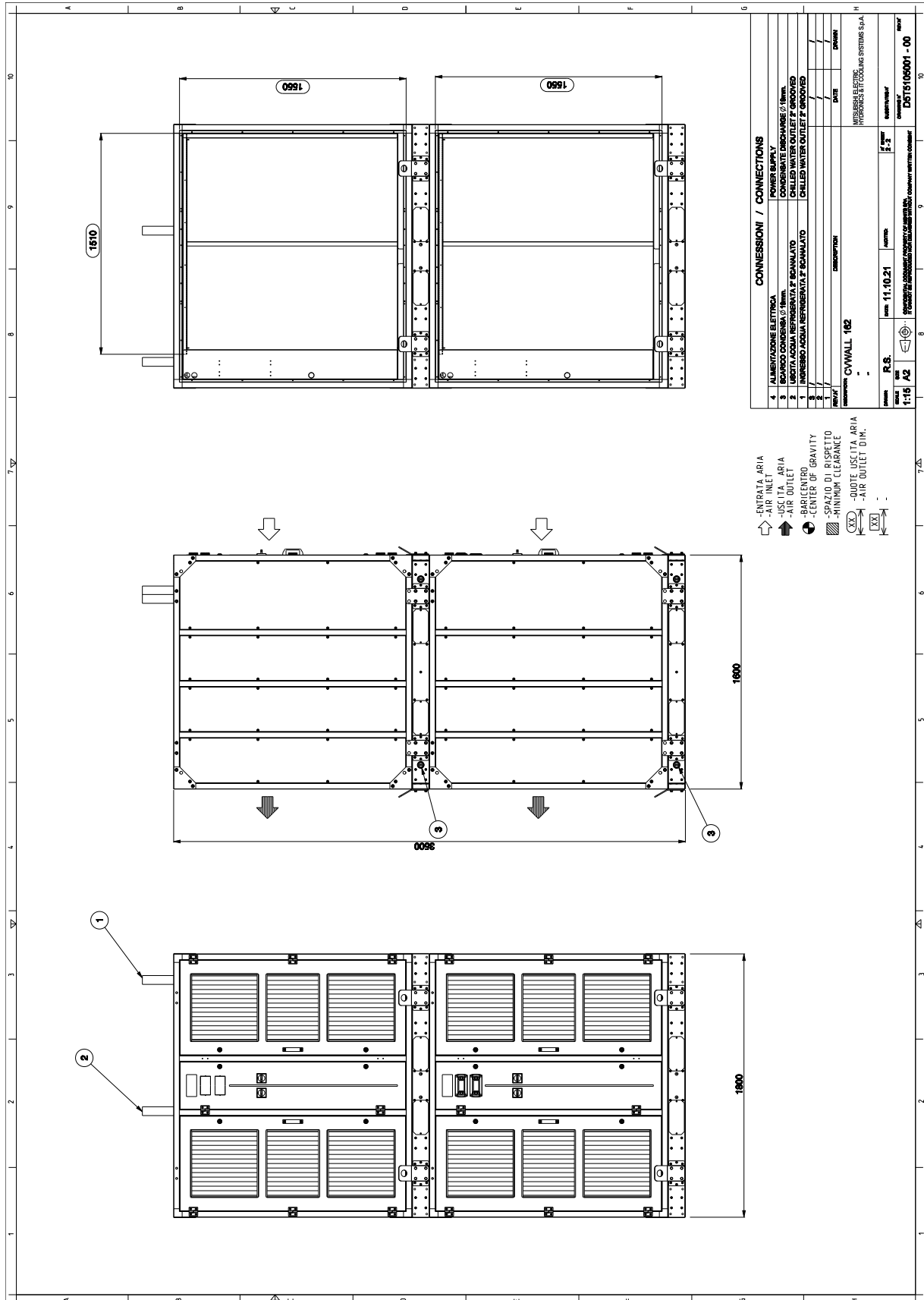
Dimensions in mm



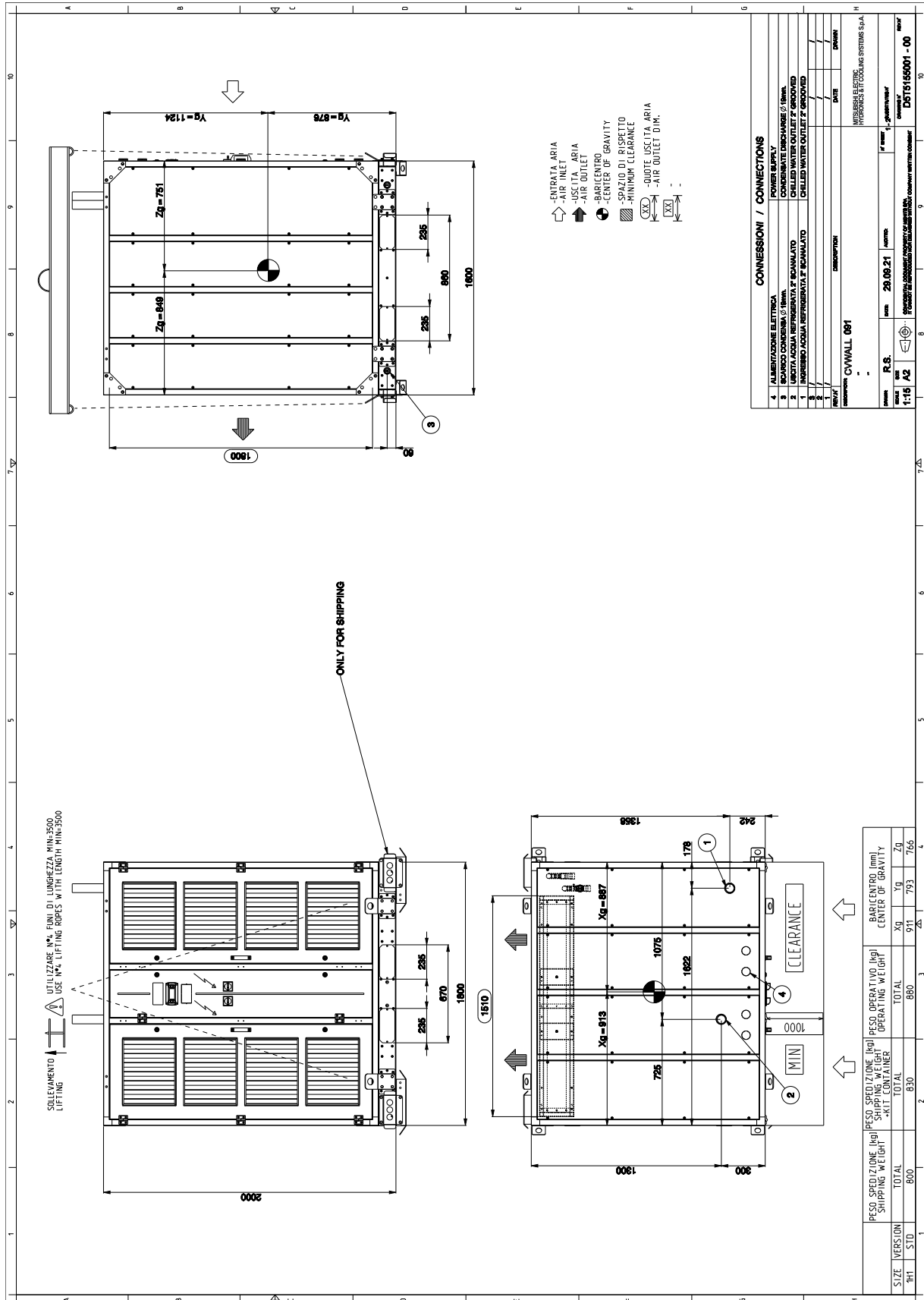
# UNIT DRAWINGS

Data Book  
T\_CVWALL\_0322\_EN

Dimensions in mm



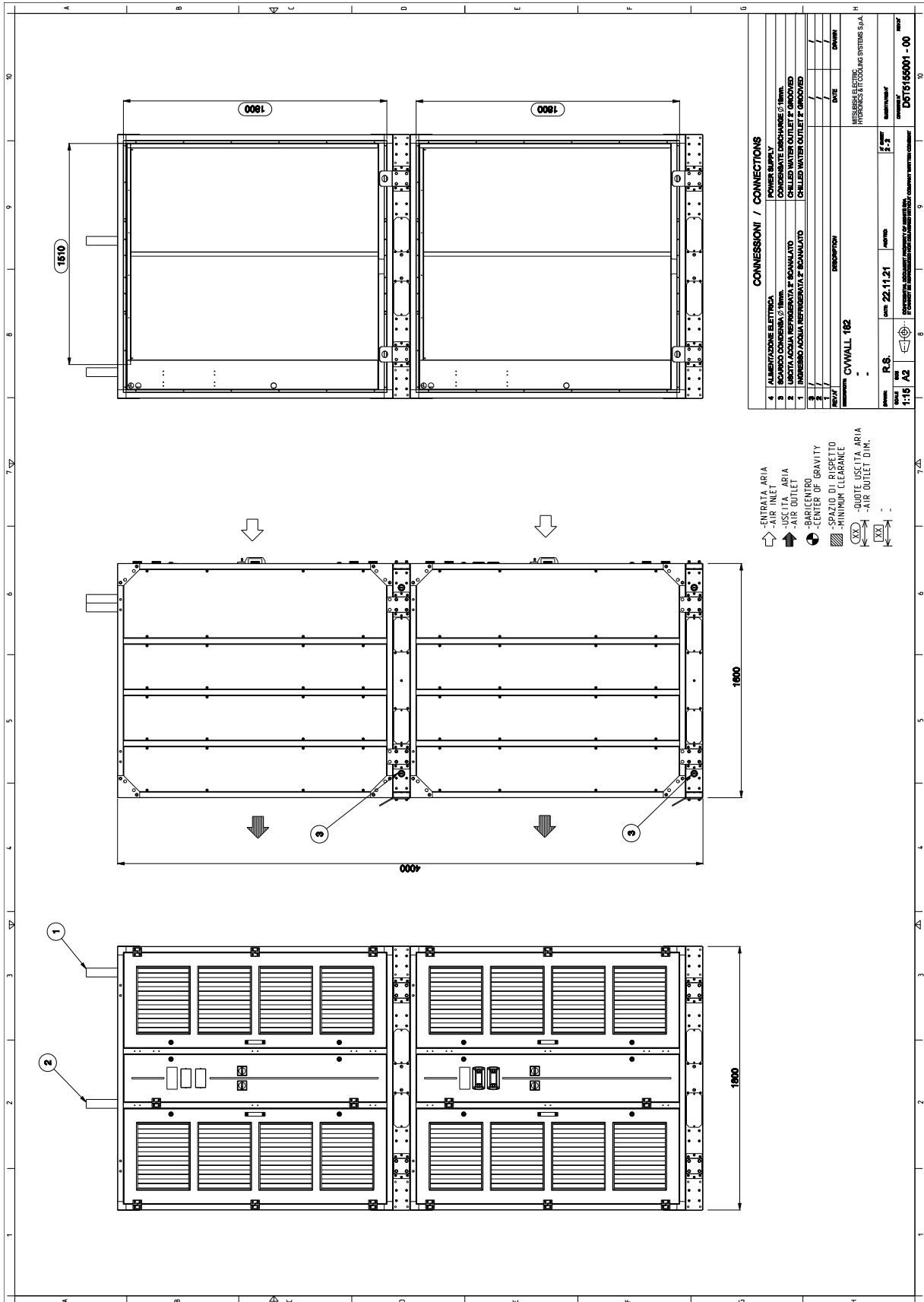
Dimensions in mm



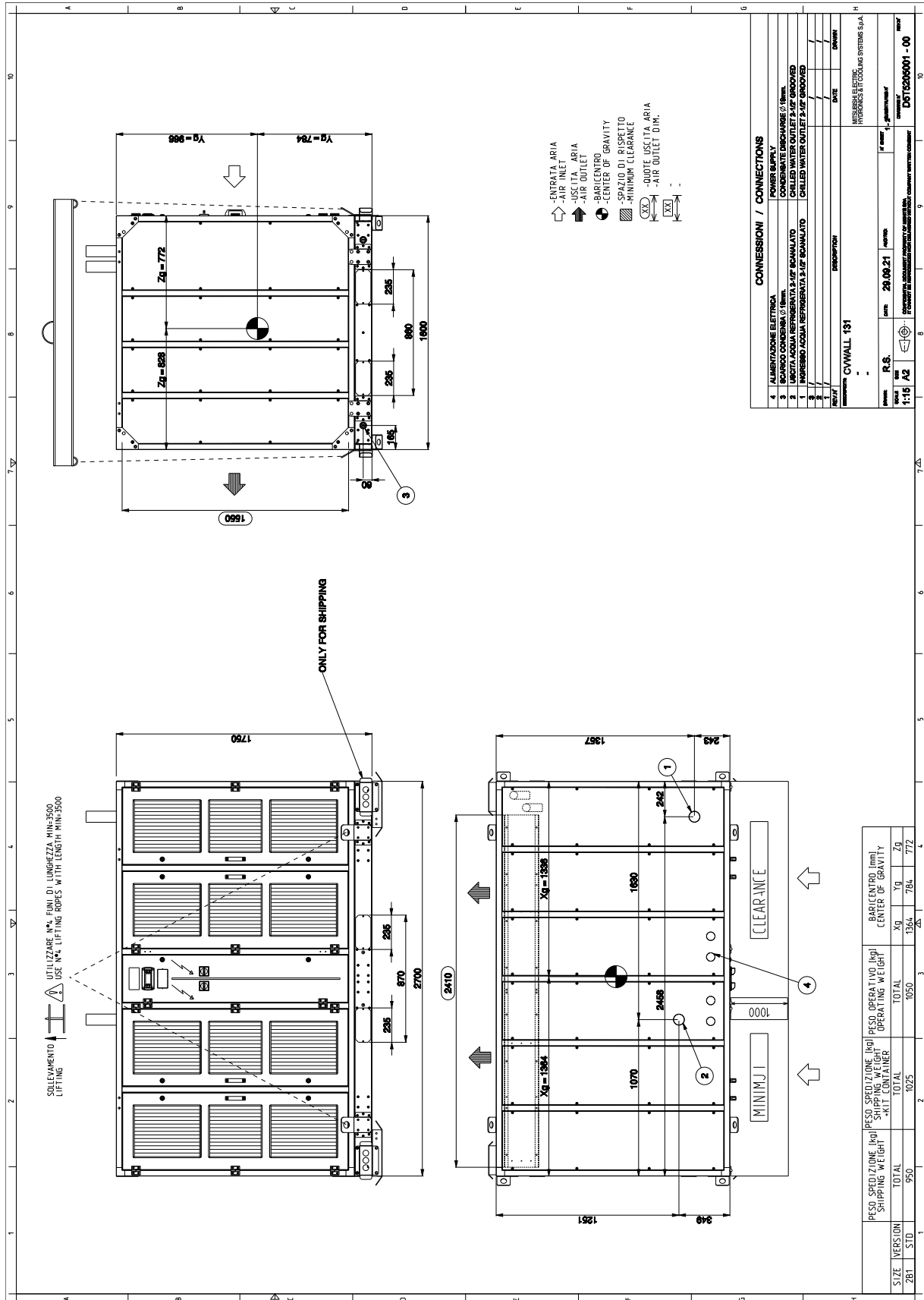
# UNIT DRAWINGS

Data Book  
T\_CVWALL\_0322\_EN

Dimensions in mm

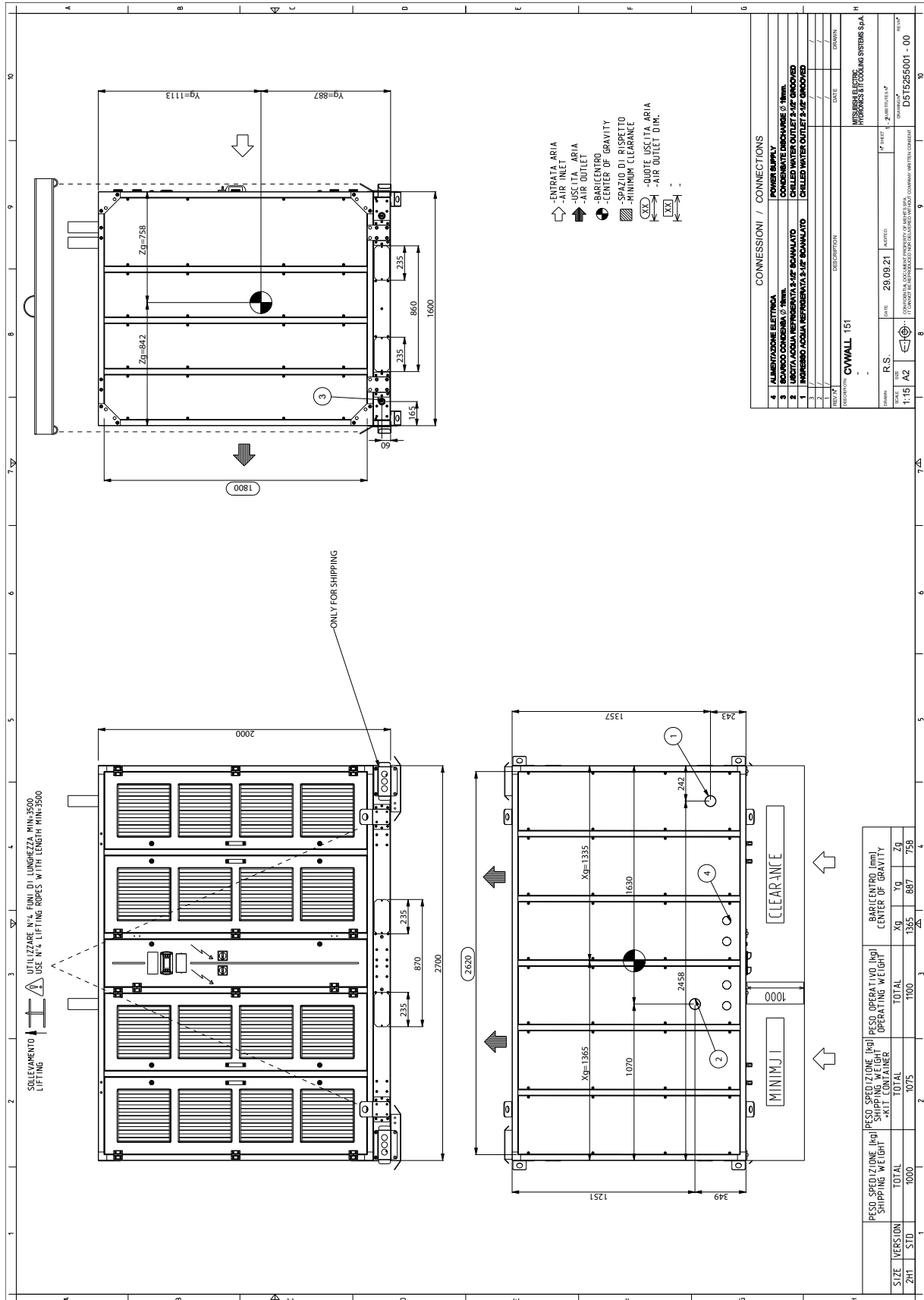


Dimensions in mm





Dimensions in mm

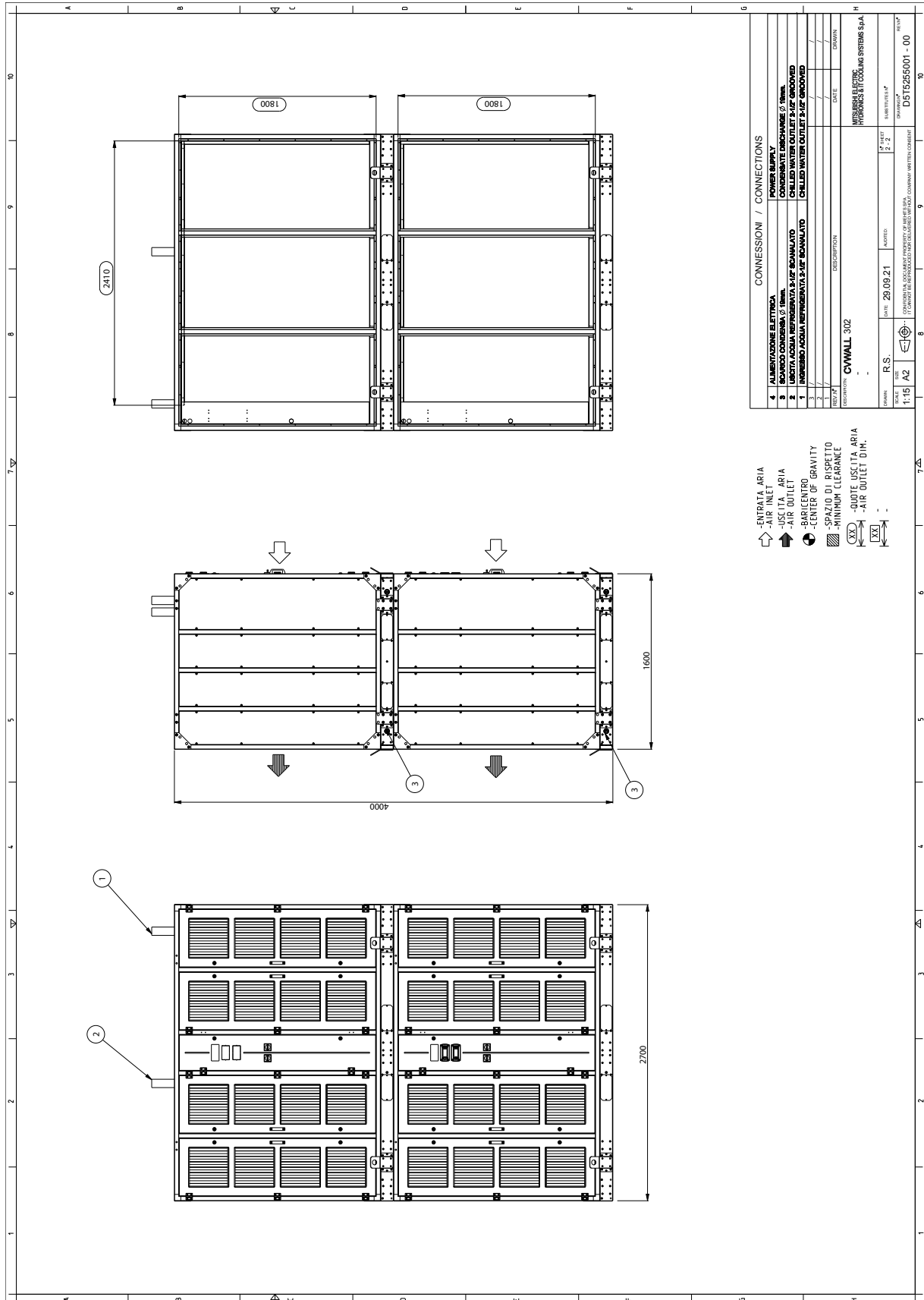




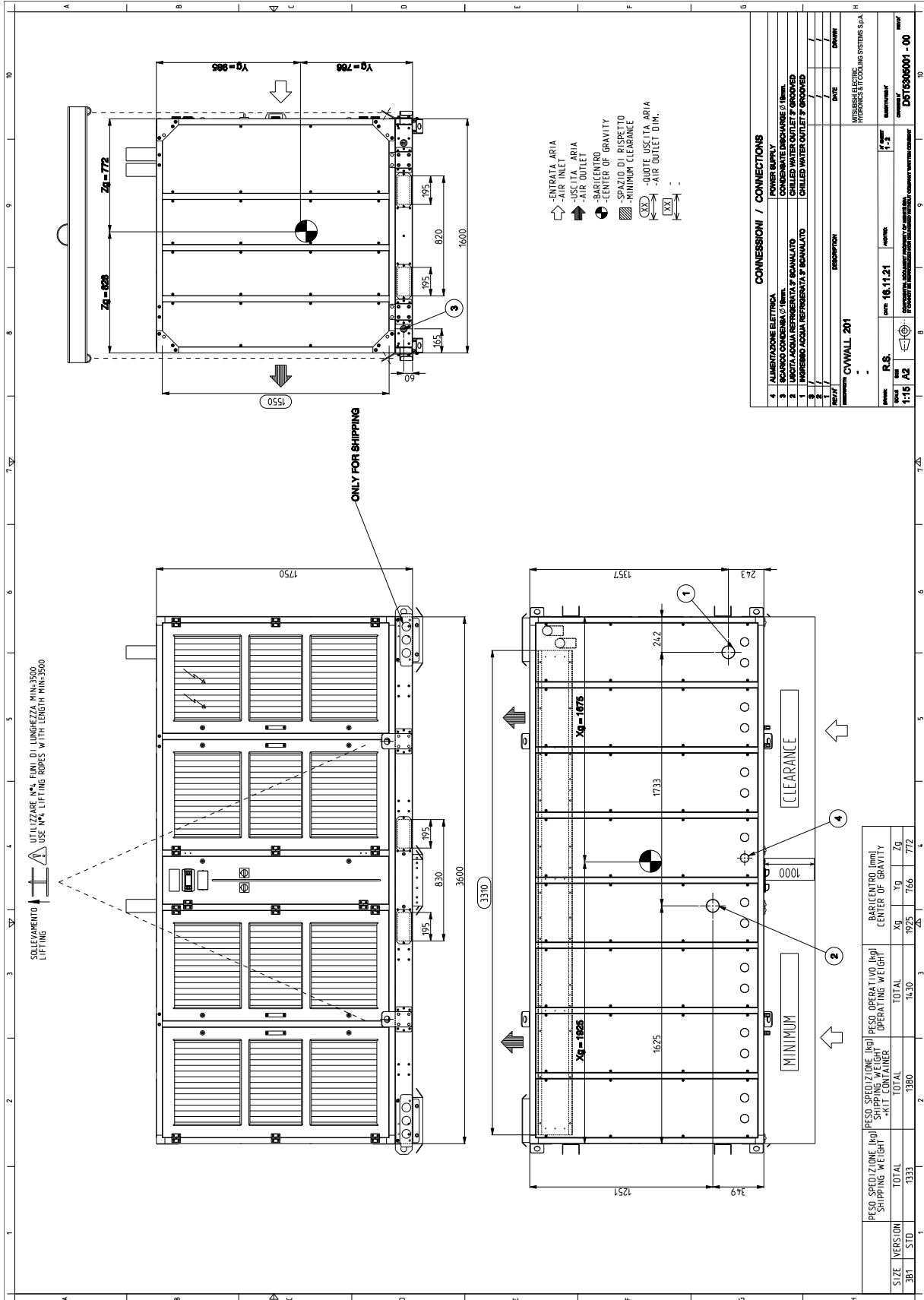
# UNIT DRAWINGS

Data Book  
T\_CVWALL\_0322\_EN

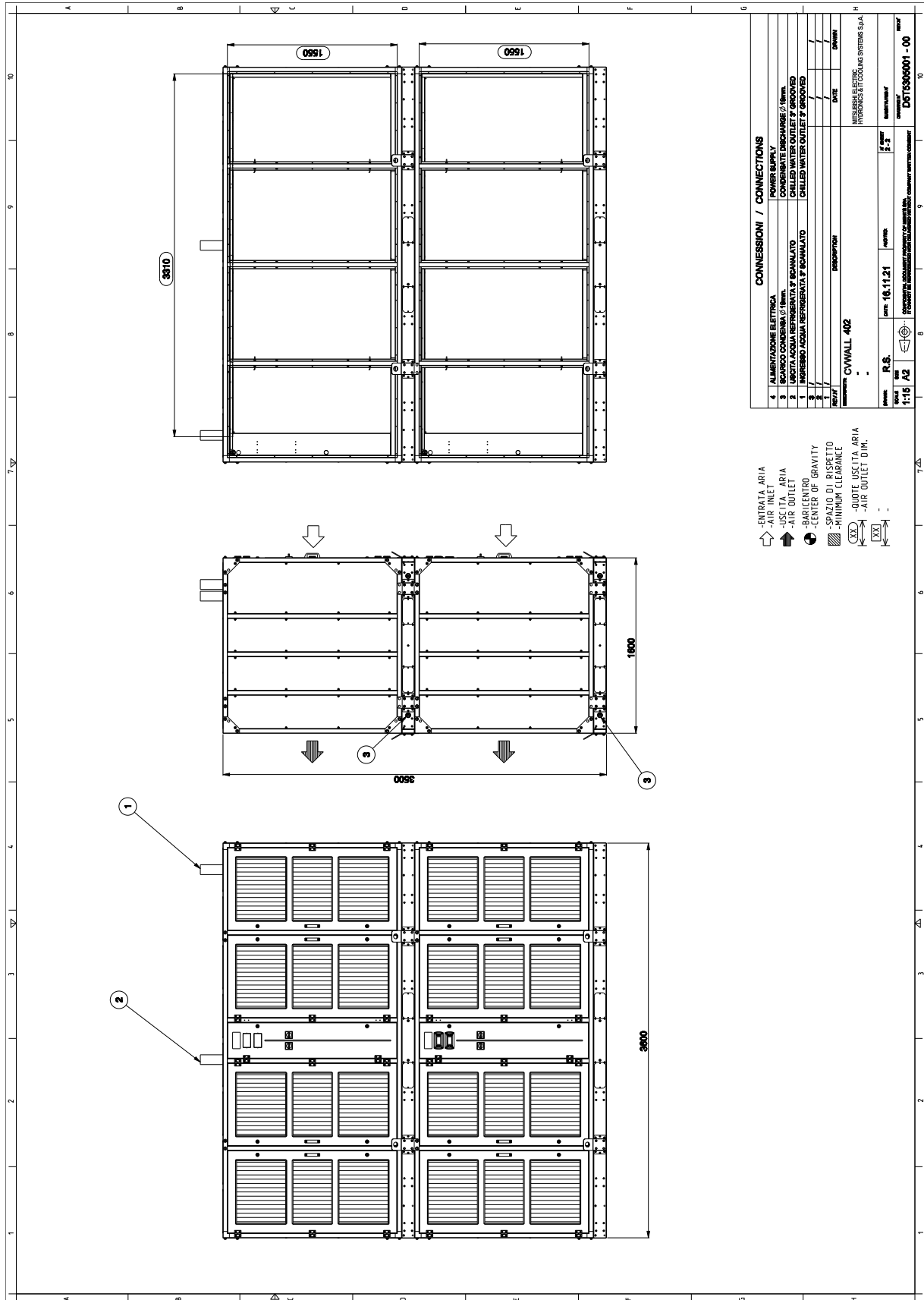
Dimensions in mm



Dimensions in mm



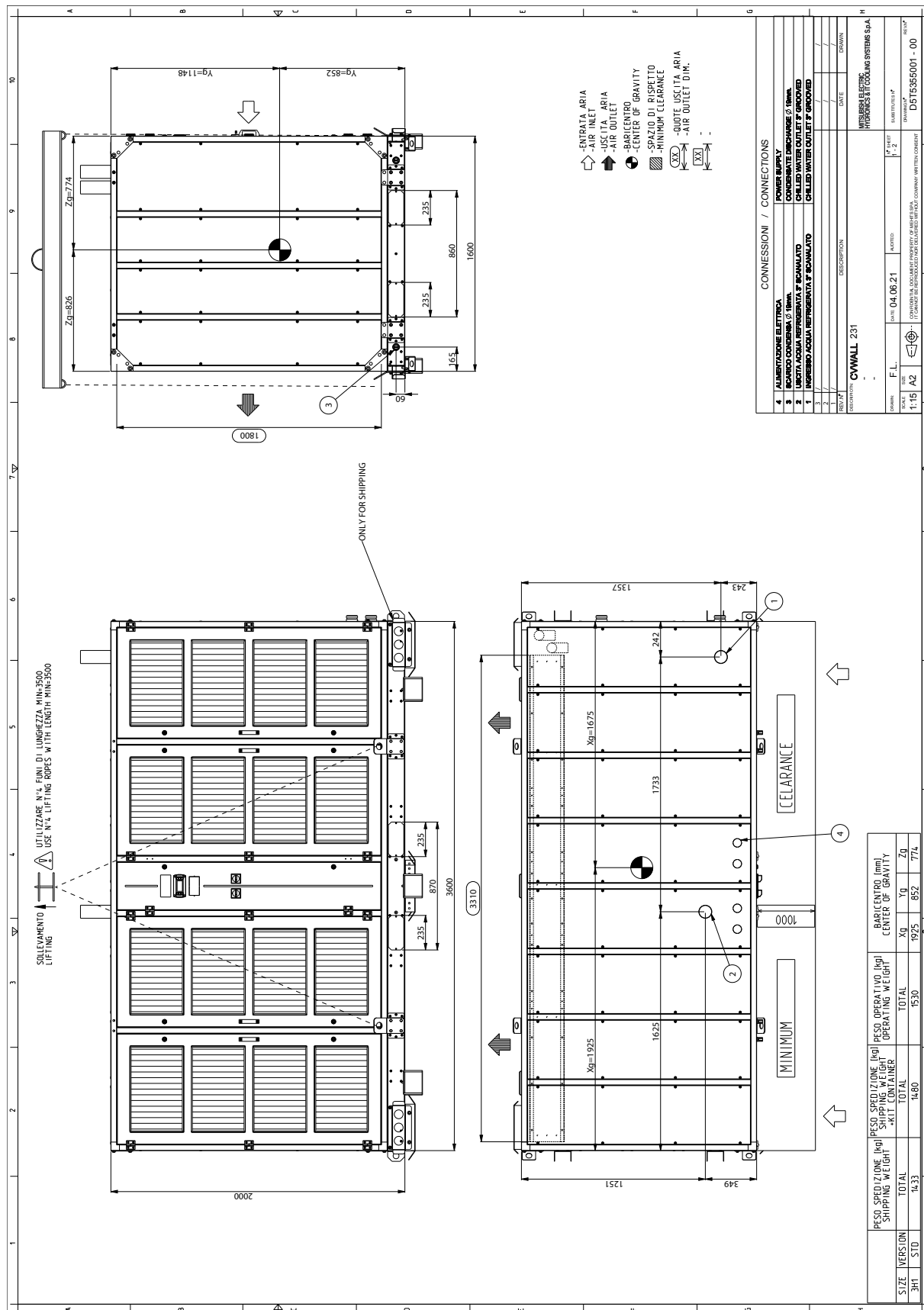
Dimensions in mm



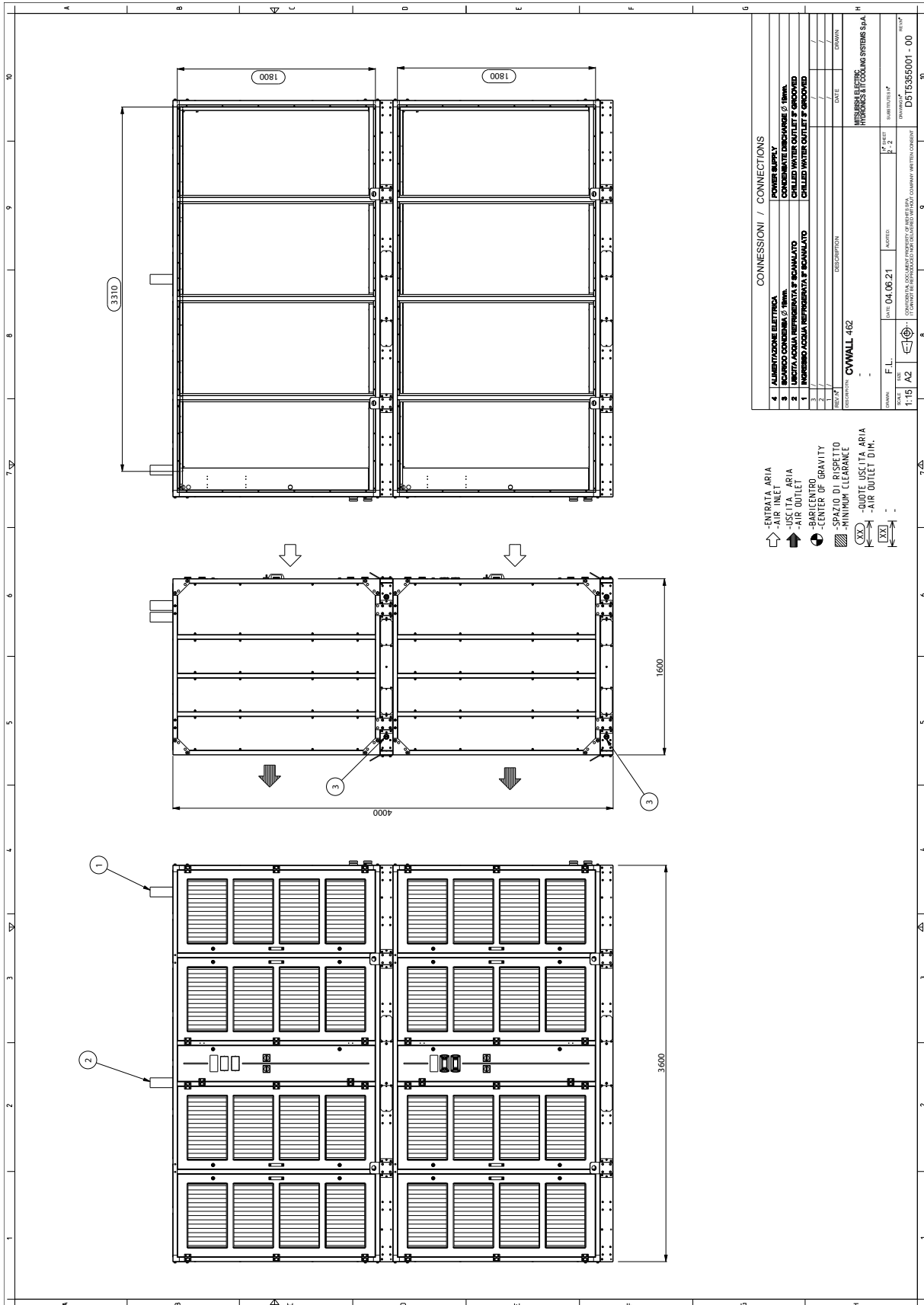
# UNIT DRAWINGS

Data Book  
T\_CVWALL\_0322\_EN

Dimensions in mm

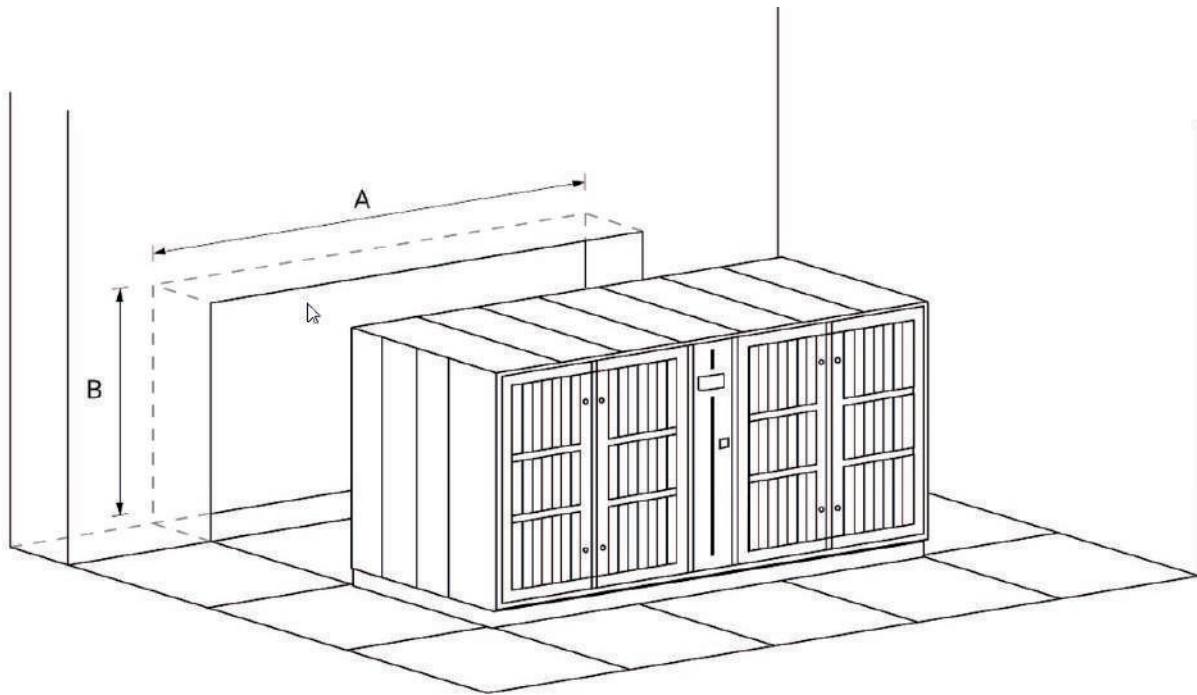


Dimensions in mm



# WALL DRILLING FOR UNIT INSTALLATION

Data Book  
T\_CVWALL\_0322\_EN

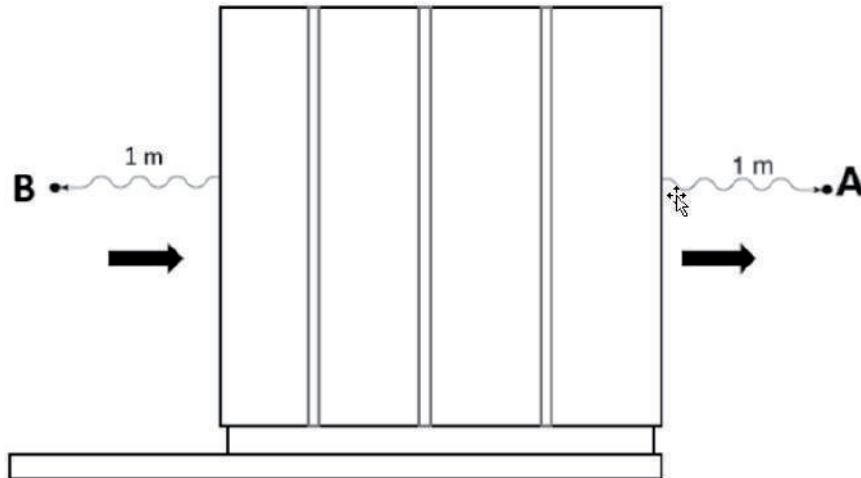


Drill a hole in the floor of at least the size in the table:

SIZE		081	091	131	151	201	231	162	182
A	mm	1800	1800	2700	2700	3600	3600	1800	1800
B	mm	1750	2000	1750	2000	1750	2000	3500	4000

SIZE		262	302	402	462
A	mm	2700	2700	3600	3600
B	mm	3500	4000	3500	4000

## EXAMPLES OF CALCULATION OF THE SOUND EMISSION OF UNITS



Lp **A** = Design value on delivery  
Lp **B** = Design value on intake

## CALCULATION OF THE PRESSURE DROP OF A VALVE IN RELATION TO THE WATER FLOW RATE

ELCAdoc 03/02/2022

Data Book  
T\_CVWALL\_0322\_EN

The flow coefficient kv defines the flow of water (between 5° and 40°) expressed in m<sup>3</sup>/h that passes through a valve with a pressure drop of 1 bar (100kPa).

This data can be used to calculate the localized pressure drop of the valve in relation to the water flow rate.

$$\Delta P = (Q / k_v)^2$$

$\Delta P$  (bar) = localized pressure drop of the valve;

Q (m<sup>3</sup>/h) = water flow rate - varies with the desired operating conditions;

kv (m<sup>3</sup>/h) = flow coefficient of the valve.

The formula is used to calculate the localized pressure drop value in bar.

The pressure drop values given in the documentation are expressed in kPa.

It is possible to change the unit of measure with the following conversion.

$$1 \text{ bar} = 100 \text{ kPa}$$

### EXAMPLE OF CALCULATION OF PRESSURE DROP OF THE 2-WAY VALVE IN RELATION TO THE FLOW RATE OF WATER TO THE COLD WATER COIL.

#### Model 081 - COLD WATER COIL

Example at nominal conditions. Characteristics referred to incoming air 37°C-25% RH with chilled water 20-30°C - 0% glycol.

Water flow rate: 6.7 m<sup>3</sup>/h

Flow coefficient of the valve kv: 16 m<sup>3</sup>/h

Pressure drop of 2-way valve for bypass:  $DP = (Q / k_v)^2 = (6.7 / 16)^2 = 0.175 \text{ (bar)} * 100 \text{ (kPa / bar)} = 17.5 \text{ kPa}$



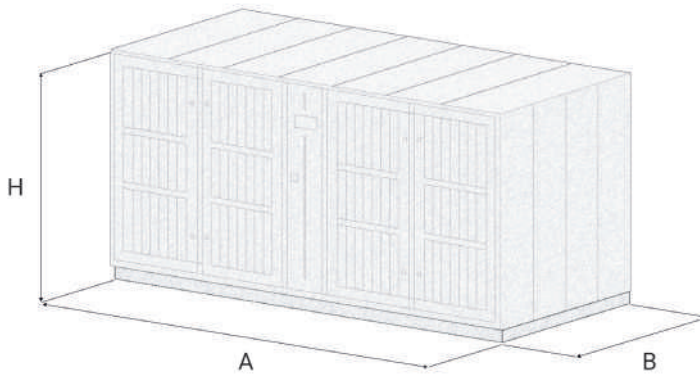
## SHIPMENT: PACKING DIMENSIONS

Data Book  
T\_CVWALL\_0322\_EN

Values referred to basic machine. The presence of some accessories increases the weight of the unit.

The units are shrink-wrapped on a pallet for shipping.

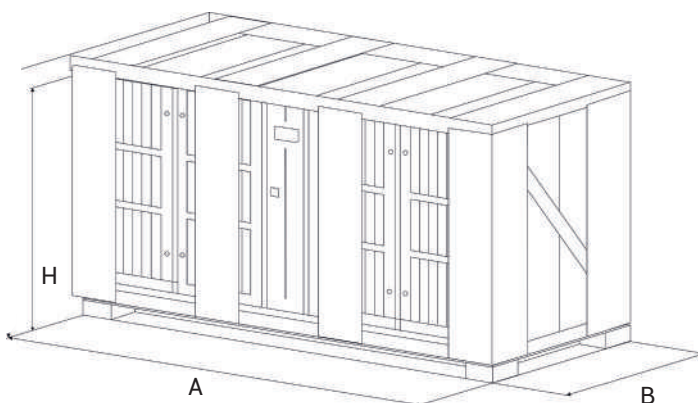
### STANDARD PACKING DIMENSIONS



Model	A (mm)	B (mm)	H (mm)
081	1800	1600	1750
091	1800	1600	2000
131	2700	1600	1750
151	2700	1600	2000
201	3600	1600	1750
231	3600	1600	2000

For sizes 162, 182, 262, 302, 402, 462 will be provided two packages for size, one for each module: respectively 2 x 081, 2 x 091, 2 x 131, 2 x 151, 2 x 201, 2 x 231.

### ACCESSORY 9973: PACKING IN CRATE DIMENSIONS



Size	A (mm)	B (mm)	H (mm)
E3P	2100	2050	2100
E4	3000	2050	2100
E5	3900	2050	2100
E6	2100	2050	2350
E7	3000	2050	2350
E8	3900	2050	2350

The units are shipped shrink-wrapped and in a wooden crate.

For sizes 162, 182, 262, 302, 402, 462 will be provided two wooden packages for size, one for each module: respectively 2 x 081, 2 x 091, 2 x 131, 2 x 151, 2 x 201, 2 x 231.

## SHIPMENT: SHIPPING WEIGHT

Data Book  
T\_CVWALL\_0322\_EN

### ACCESSORY: 9979 - PACKING FOR CONTAINER

The units are shipped shrink-wrapped and with container sledges.

#### STANDARD PACKING

Model		081	091	131	151	201	231
Size		1	1	2	2	3	3
Weight	kg	720	800	950	1000	1333	1433

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