diamond schmitt

SUBMITTAL REVIEW FORM

384 Adelaide Street West, Suite 100
Toronto, ON M5V 1R7
t: 416 862 8800

1050 West Pender Street, Suite 2010
Vancouver, BC V6E 3S7
t: 604 674 0866

1776 Broadway, Suite 2200
New York, NY 10019
t: 212 710 4329

www.dsai.ca
info@dsai.ca

To:	Rafat General Contractor Inc. 8850 George Bolton Parkway Caledon, ON L7E 2Y4	Submittal No:	048
		Project No:	201014
		File No:	4-6-1-23
Attention:	Pino Antelope, Bashar Mikha	Date:	March-28-24

Project: Chris Gibson Recreation Centre

The Architect's review is for the sole purpose of ascertaining conformance with the general design concept and for general arrangement. This review shall not mean approval of the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for all dimensions to be confirmed and correlated at the job site, for information that pertains solely to the fabrication processes, quantities or to techniques of construction and installation and for co-ordination with related work.

Contractor Package #	Spec Section	Description	Reviewed by	Status
048	23 00 00	Heat Pump - WSHP 02A & 02B	CFSM, IRB, RJC, DSA	**RN**

Status Legend: **R** – Reviewed **RN** – Reviewed As Noted **RR** – Revise and Resubmit **N** – Not Reviewed

Comments:

Review Consultant review comments throughout Submittal.

Per: Patrick Johnson

RAFAT

8850 GEORGE BOLTON PARKWAY, CALEDON, ONTARIO L7E 2Y4

Shop Drawings Transmittal No:	48

Project Name:	Renovation of Chris Gibson Recreation Centre Drive	Project No.	T2023-125
		DATE:	19-Jan-2024
		Submittal Required Return Date:	Feb 05 2024
Submittal No:	48		

Title:	Heat Pump - WSHP 02A & 02B

To:	Patrick Johnson Contract Administrator Halima Namugga Admin Project Coordinator 384 Adelaide Street West, Suite 100 Toronto, Ontario, Canada M5V 1R7 PJohnson@dsai.ca

Checked by:	Hasan Zaidi (Rafat General Contractor Inc/Corebuild)	To Be Reviewed By the Following Consultants	1. CFSM 2. INT 3. RJC 4.DSA

Submitted for:	REVIEW
Consultants Response	RJC: reviewed for loads to structures only.

SHOP DRAWING REVIEW
EFFECT ON BASE BUILDING STRUCTURE

REVIEWED ONLY FOR EFFECT OF THIS ITEM ON THE BASE BUILDING STRUCTURE. STRUCTURAL CAPACITY OF THIS ITEM, INCLUDING ANCHORAGE AND SEISMIC RESTRAINT, IS NOT BY READ JONES CHRISTOFFERSEN LTD.

Read Jones Christoffersen Ltd. does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the submitting party.

- [x] Reviewed
- [ ] Reviewed as Modified
- [ ] Revise and Resubmit
- [ ] Not Reviewed

RJC Number: TOR.126799.01
Reviewed by: pli
Reviewed on: 2024/03/27

rjc Engineers
Read Jones Christoffersen Ltd.
100 University Avenue, North Tower, Suite 400
Toronto, ON M5J 2X4 Canada
tel 416-977-5335
fax 416-977-1427

V1.11

RAFAT COR IHSA

SUBMITTAL REVIEW

For general compliance with the design concept and contract documents. Subcontractor is solely responsible for jobsite correlation and correctness of all ratings, sizings, type, style, dimensions, finish, quantities and satisfactory fitting to other work and equipment. This review does not change the intent of the contract document.

- [x] Reviewed
- [ ] Make Corrections
- [ ] Resubmit
- [ ] Rejected

Per: HassanZaidi
Date: 19-Jan-2024

CFMS-WEST CONSULTING INC.
Serving South Western Ontario

The receipt/review of this submission is for the sole purpose of reviewing general conformance with the construction and/or design concepts only. The review of this submission does not, in any way, relieve the contractor of the complete responsibility for errors or omissions, or for non-compliance with the contract documents. It also does not constitute authority to vary the requirements of the contract documents as they relate to this submission.

RESPONSE: Please see comments made regarding requirements outlined by manufacture representative and coordination with other trades.

REVIEWED BY: Kevin Pellerin

DATE REVIEWED: January 23, 2024

SUBMITTAL REVIEW

INTROBA
380 Wellington Street West
Toronto, ON
M5V 1E3

Introba

- [ ] REVIEWED
- [x] REVIEWED AS NOTED
- [ ] REJECTED - REVISE AND RESUBMIT
- [ ] NOT REVIEWED

CHECKED BY: ILITTLEY
DISCIPLINE: M&E
DATE: 2/1/2024

REVIEWED FOR GENERAL DESIGN AND COMPLIANCE WITH CONTRACT DOCUMENTS. DIMENSIONS AND SUITABILITY FOR SITE CONDITIONS ARE THE RESPONSIBILITY OF THE CONTRACTOR. THIS REVIEW OF THE DRAWING SHALL NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE CONDITIONS OF THE CONTRACT DOCUMENTS.

---

1. Please note we require the review to be returned before Feb 01 2024 as this is a long lead item and need to mitigate any delays in procurement of the material. Rafat
2. The specification referenced in this shop drawing 23 81 10 is not included as part of IFT & IFC specification issued by INT

IRB Comments:
- Final unit locations to be coordinated on site with all required clearances, drawings allow for units to shift south as needed.
- Contractor to coordinate closely with manufacturer's representative for balancing and pressure drop to ensure that manufacturer's requirements to meet performance are met as noted on submittal and any other documentation shared with the installers.
- Coordinate with electrical contractor.

200 Tesma Way,
Concord, ON, L4K 5C2
(905) 738-1400

Submittal Package 23-214 - 019

Jan 18, 2024

PROJECT NAME	PROJECT NUMBER	PROJECT ADDRESS	DUE DATE
CHRIS GIBSON REC CENTRE	23-214	125 McLaughlin Rd N, Brampton, ON, L6X 1N9	Feb 1, 2024

To

NAME	EMAIL
Hassan Zaid	hzaidi@corebuildconstruction.com
COMPANY	**ADDRESS**
RAFAT GENERAL CONTRACTOR INC.	8850 GEORGE BOLTON PKWY, BOLTON, ON, L7E 2Y4

From

NAME	EMAIL
JOSHUA STEPHENSON	josh.s@consultmechanical.com
COMPANY	**ADDRESS**
Consult Mechanical	200 Tesma Way, Vaughan, ON, L4K 5C2

Subject

Water Source Heat Pumps

Package Items

Spec	Subsection	Description
Mechanical	HVAC	WSHP-02A & WSHP-02B

200 Tesma Way,
Concord, ON, L4K 5C2
(905) 738-1400

Submittal Item Information

Jan 18, 2024

Spec Section

Mechanical

Sub Section

HVAC

Description

WSHP-02A & WSHP-02B

Submittal # 73049 **APPROVAL REQUIRED**

Project	22006063-MECH-4- Chris Gibson Recreation Centre
Leader	Nevin Wong
Job Site	125 McLaughlin Rd N, Brampton, Ontario
Submission Date	2024-01-12
Sold To	CONSULT MECH
Submitted By	Nevin Wong

Contacts

Role	Customer	Our Rep
Mechanical Contractor	Con-Sult Mechanical Inc.*	Nevin Wong
Designer	Integral Group	Graham Coote

Deliverables

Track #	243754	243755	
Tag	WSHP-02A	WSHP-02B	
Description	Water Cooled Chiller with Heat Pump, and Pump Package options	Water Source Simultaneous heating and cooling unit with Pump Package options	
Quantity	1	1	
Manufacturer	Aermec	Aermec	
Model #	NXW0750	NXP14004L8	
Specification	23 81 10	23 81 10	
Production Lead Time	40 - 50 Weeks	40 - 50 Weeks	
Revision #	0	0	

Attention:

1) HTS will provide equipment in accordance with the attached shop drawings.
2) Upon approved submittal and customer release, HTS will release equipment to fabrication per the published lead times. Any storage fees associated with project schedule changes will be the responsibility of the purchaser.
3) HTS can provide freight and logistics to the purchaser as an added benefit of doing business with HTS. When freight is received by the purchaser, any noticeable damage must be recorded. Otherwise, HTS is not responsible for subsequent damage claims.

Approval Stamps

HTS Toronto

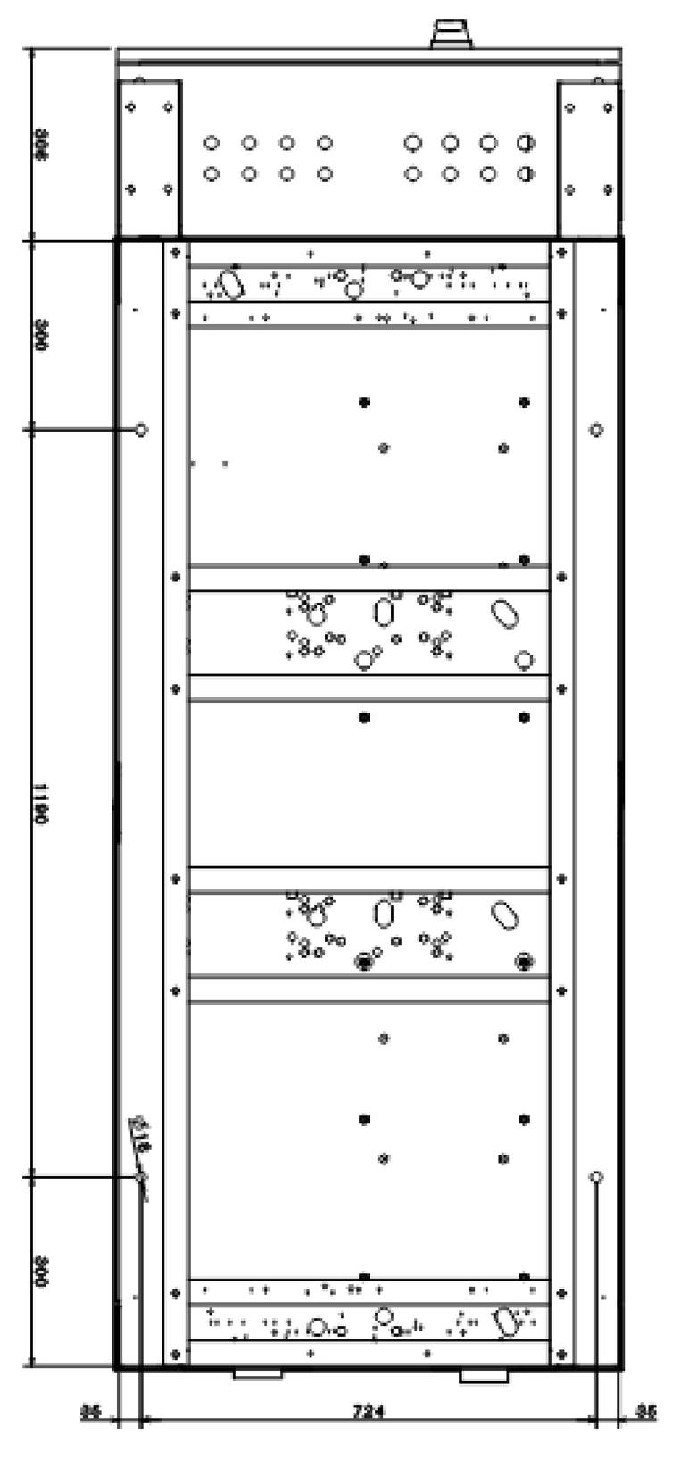
115 Norfinch Drive
Toronto, ON M3N 1W8
T 1.800.850.0567
F 416.661.0100

hts.com/ontario

Compliance Review

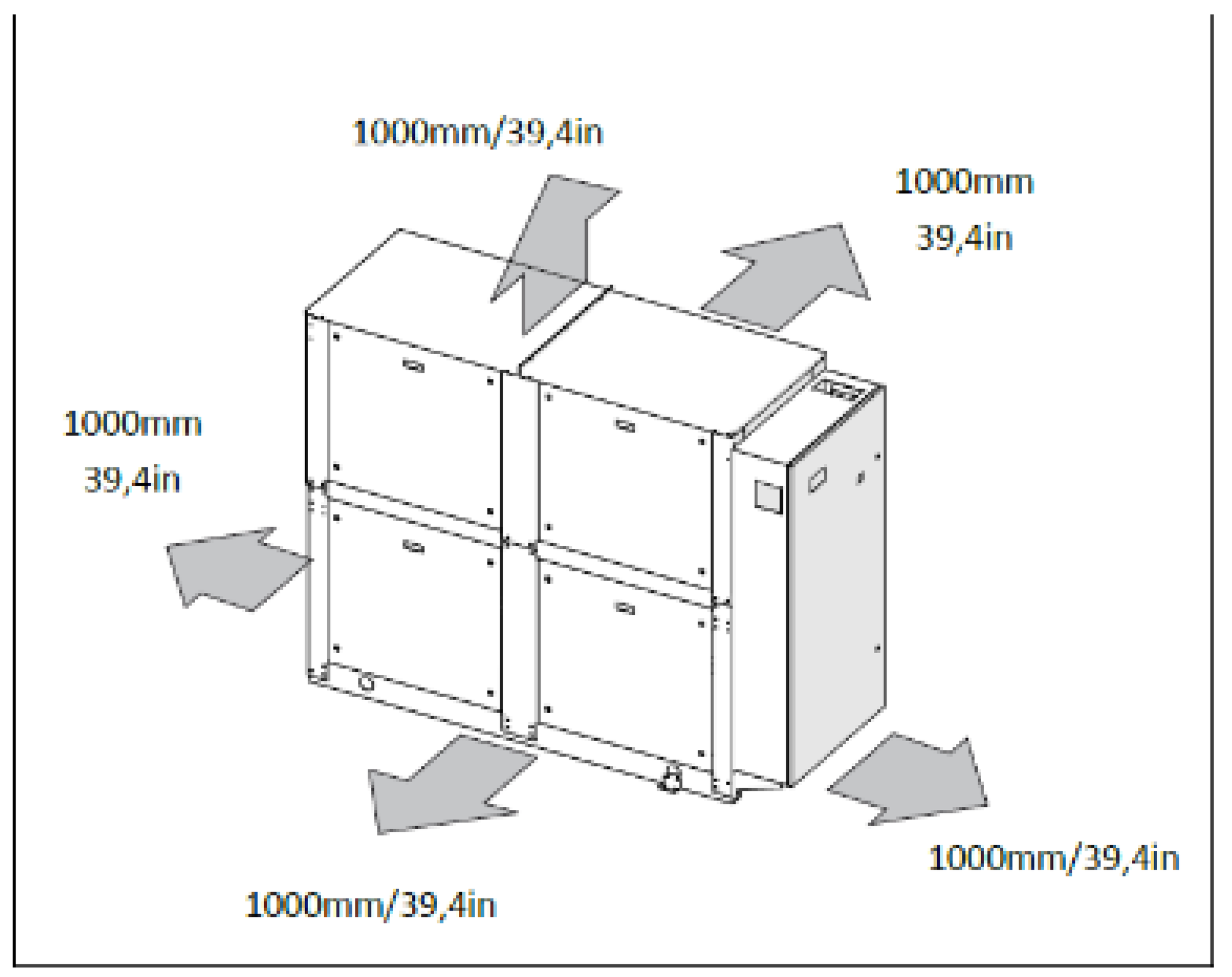
WSHP-02A

Electrical panel side



Water connections on this side

Clearance



GENERAL NOTES:

A. FINAL LOCATION OF ALL DIFFUSERS AND GRILLES TO BE COORDINATED ON SITE WITH ARCHITECTURAL AND LIGHTING.

B. ALL IN-SLAB HEATING MANIFOLDS TO BE INSTALLED AT UNDERSIDE OF LEVEL 2 SLAB AT ARENA VIEWING AREA IN TAMPER-PROOF CASES.

C. COORDINATE INSTALLATION OF IN SLAB HEATING PIPING ON SITE WITH OTHER TRADES. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS.

KEYED NOTES:

1. RESERVED.

Radiant Slab Heating Manifold Schedule

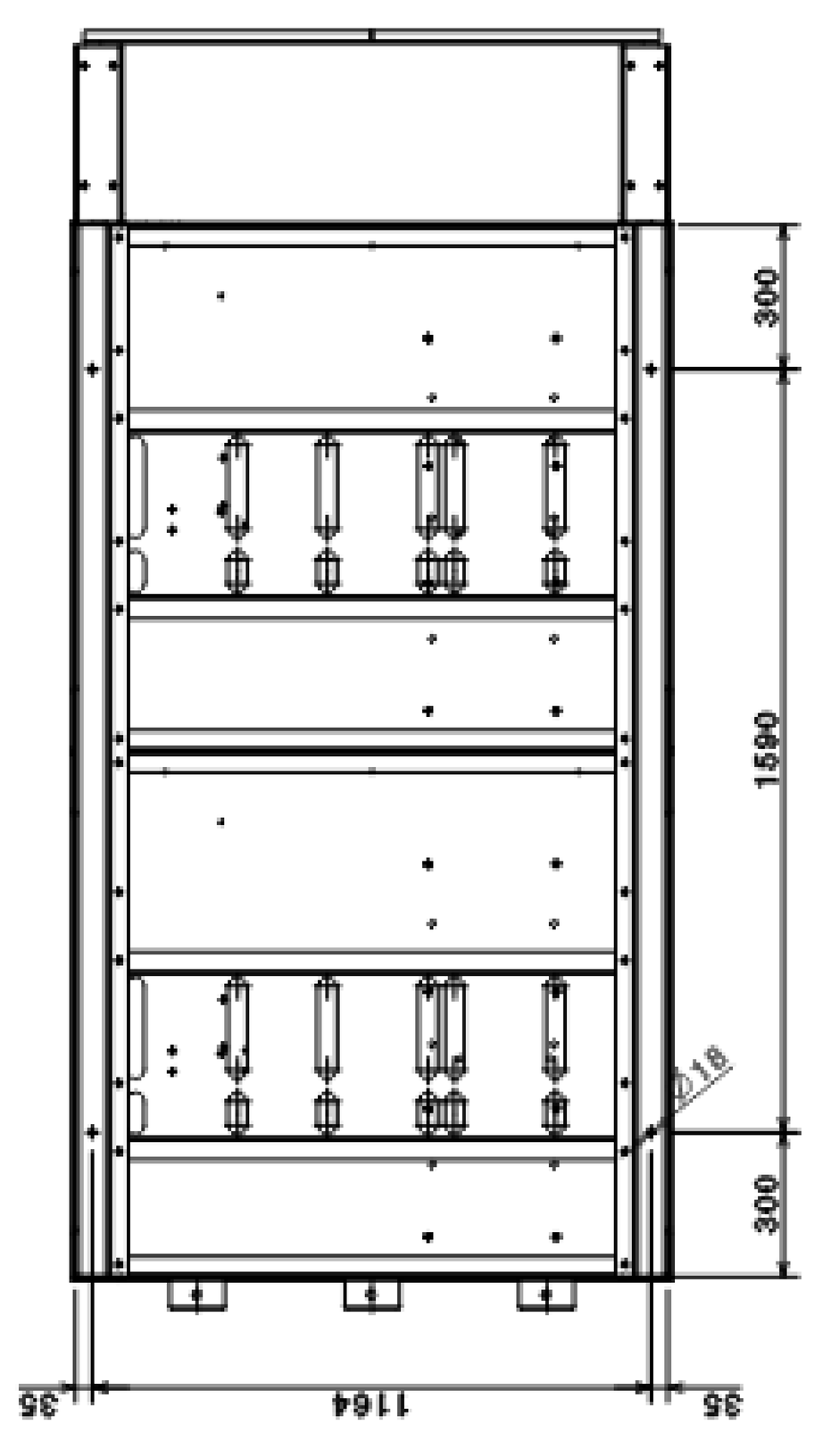
Manifold	Zone	Area		Load		Fluid	Flow		WPD		EWT		LWT		Notes
		m2	ft2	(kW)	(btuh)		(l/s)	(GPM)	(kPa)	ft. wc.	(°C)	(°F)	(°C)	(°F)	
RM-L01-01	RH-L01-01	89.2	960	10.1	34,570	30% P.G.	0.23	3.6	37.7	12.6	42.2	108	30.5	86.9	1, 2, 3, 4, 5
RM-L01-02	RH-L01-02	149.4	1608	17.0	57,886	30% P.G.	0.38	6.1	51.7	17.3	42.2	108	30.5	86.9	1, 2, 3, 4, 5
RM-L01-03	RH-L01-03	75.9	817	8.6	29,419	30% P.G.	0.20	3.1	52.3	17.5	42.2	108	30.5	86.9	1, 2, 3, 4, 5
RM-L02-01	RH-L02-01	131.7	1418	15.6	53,175	30% P.G.	0.47	7.5	16.4	5.5	42.2	108	33.5	92.2	1, 2, 3, 4, 5
RM-L02-02	RH-L02-02	131.9	1420	15.6	53,250	30% P.G.	0.47	7.5	16.4	5.5	42.2	108	33.5	92.2	1, 2, 3, 4, 5

Notes:

1. P.G. = Propylene Glycol
2. Maximum Pressure Drop per Circuit is 10 ft. w.c.
3. 15.8mm dia. Pipe Diameter
4. 225mm pipe spacing on centre
5. Refer to specifications for pressure testing and warrenty requirements.
6. Refer to details for installation requirements and minimum concrete cover

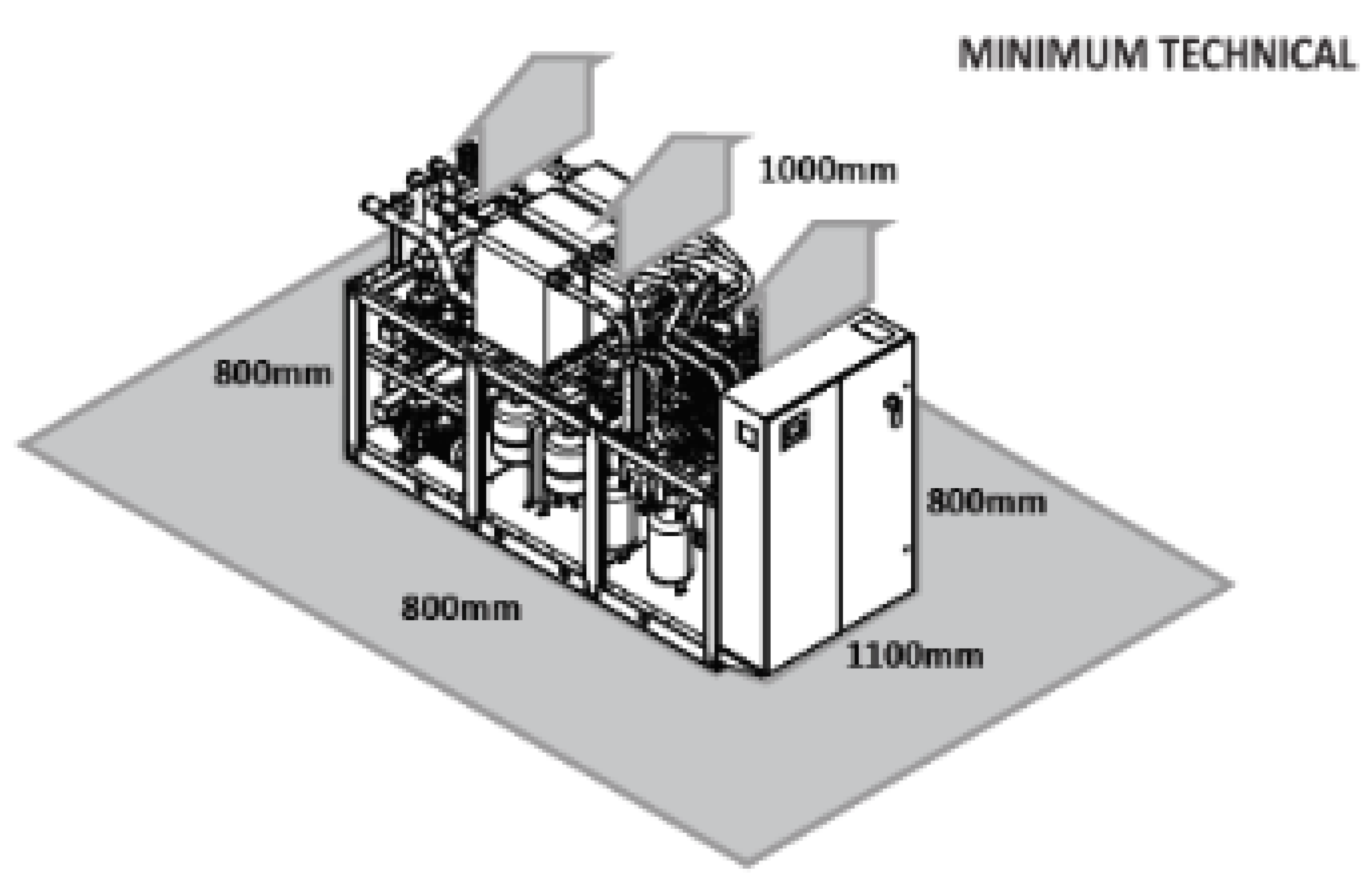
WSHP-02B

Electrical panel side

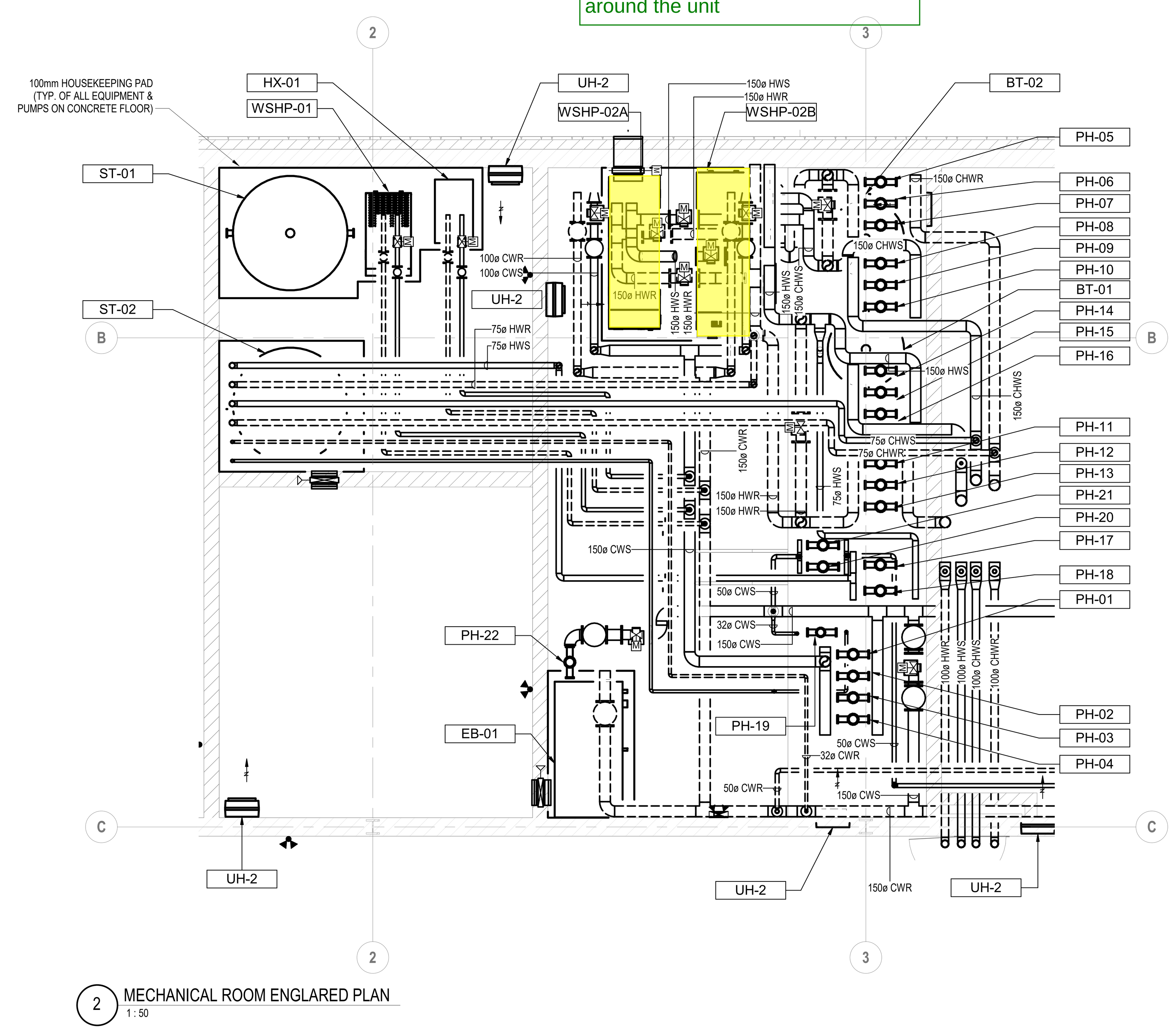


Water connections on this side

Clearance



Units appear to be close to the wall. Refer to required service clearance around the unit



2 MECHANICAL ROOM ENGLARED PLAN
1 : 50

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ISSUED

No.	Date	Description
1	2020-12-14	ISSUED FOR 60% DD
2	2021-03-26	ISSUED FOR 100% DD
3	2021-06-17	ISSUED FOR 50% CD REVIEW
4	2021-09-24	ISSUED FOR 90% CD
5	2021-11-01	ISSUED FOR REVIEW
6	2021-11-10	ISSUED FOR 100% CD
7	2022-02-18	ISSUED FOR TENDER
8	2022-06-03	ISSUED FOR BUILDING PERMIT
9	2022-07-20	REISSUED FOR PERMIT
10	2022-08-05	REISSUED FOR PERMIT
11	2022-10-05	REISSUED FOR PERMIT
12	2023-03-31	ISSUED FOR TENDER
13	2023-05-02	ADDENDUM M-1
14	2023-09-08	ISSUED FOR CONSTRUCTION

INTEGRAL
Toronto Design Studio
380 Wellington Street West,
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Registered: Integral Group Consulting (BC) LLP

Project North

True North

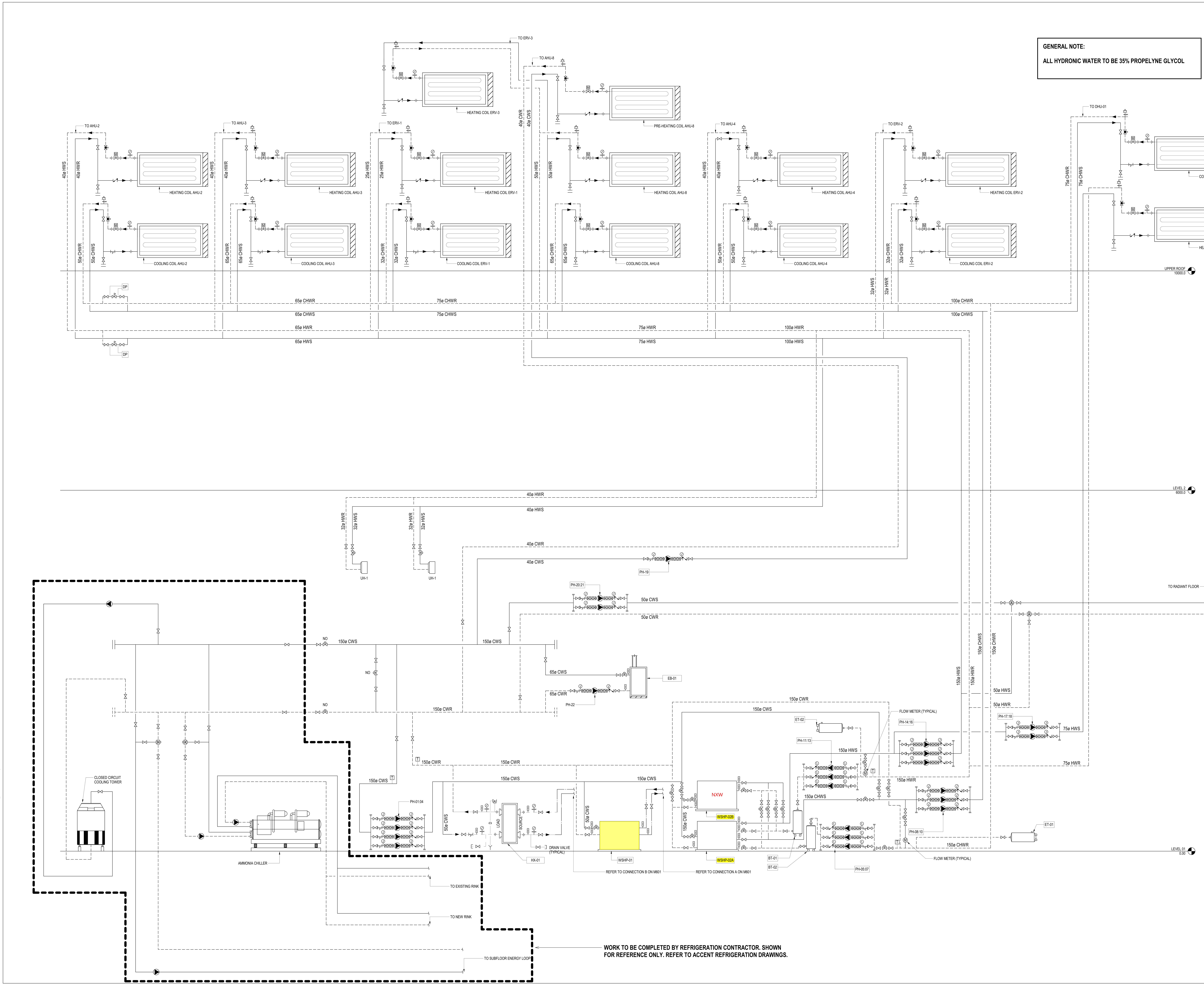
Chris Gibson Recreation Centre
Renovation and Addition

125 McLaughlin Road North
Brampton, ON
L6X 1Y7

LEVEL 01 - NORTH HVAC PLAN

Scale: As indicated
Project No: 210305
Date: 2022-04-06

M400A



TO ERV-3
TO AHU-8
HEATING COIL ERV-3
PRE-HEATING COIL AHU-8
TO AHU-2
TO AHU-3
TO ERV-1
TO AHU-4
TO ERV-2
TO DHU-01
HEATING COIL AHU-2
HEATING COIL AHU-3
HEATING COIL ERV-1
HEATING COIL AHU-8
HEATING COIL AHU-4
HEATING COIL ERV-2
COOLING COIL DHU-1
HEATING COIL DHU-1
COOLING COIL AHU-2
COOLING COIL AHU-3
COOLING COIL ERV-1
COOLING COIL AHU-8
COOLING COIL AHU-4
COOLING COIL ERV-2
UPPER ROOF
10000.0
LEVEL 2
6000.0
LEVEL 01
0.00
65ø CHWR
65ø CHWS
75ø CHWR
75ø CHWS
100ø CHWR
100ø CHWS
65ø HWR
65ø HWS
75ø HWR
75ø HWS
100ø HWR
100ø HWS
40ø HWR
40ø HWS
40ø CWR
40ø CWS
UH-1
PH-19
PH-20:21
50ø CWS
50ø CWR
TO RADIANT FLOOR
150ø CWS
150ø CWR
65ø CWS
65ø CWR
EB-01
PH-22
150ø CHWR
150ø CHWS
150ø HWS
150ø HWR
50ø HWS
50ø HWR
75ø HWS
75ø HWR
PH-17:18
FLOW METER (TYPICAL)
ET-02
ET-01
PH-14:16
PH-11:13
PH-08:10
PH-05:07
PH-01:04
NXW
WSHP-02B
WSHP-02A
WSHP-01
BT-01
BT-02
HX-01
DRAIN VALVE (TYPICAL)
CLOSED CIRCUIT COOLING TOWER
AMMONIA CHILLER
REFER TO CONNECTION B ON M601
REFER TO CONNECTION A ON M601
TO EXISTING RINK
TO NEW RINK
TO SUBFLOOR ENERGY LOOP
WORK TO BE COMPLETED BY REFRIGERATION CONTRACTOR. SHOWN FOR REFERENCE ONLY. REFER TO ACCENT REFRIGERATION DRAWINGS.

GENERAL NOTE:

ALL HYDRONIC WATER TO BE 35% PROPELYNE GLYCOL

UNLESS NOTED OTHERWISE, ALL DIMENSIONS:
- ARE TO EXTERIOR FACE OF SHEATHING, FACE OF STUD OR EXTERIOR FACE OF CMU.
- ARE IN MILLIMETRES

VERIFY ALL DIMENSIONS, ELEVATIONS, AND DATUM; REPORT ANY ERRORS AND/ OR DISCREPANCIES TO THE INTEGRAL GROUP PRIOR TO CONSTRUCTION.

DO NOT SCALE DRAWINGS.

THIS DRAWING SUPERCEDES PREVIOUS ISSUES.

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ISSUED

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L6X 1Y7

HYDRONIC SCHEMATIC

Scale: 1 : 100
Project No: 210305
Date: 2022-04-06

M605

WATER SOURCE HEAT PUMP SCHEDULE

	MARK	MFR.	MODEL	LOCATION	SERVICE	TYPE	REFRIG. TYPE	MOTOR HP	EVAPORATOR COOLING CAPACITY (MBH)	EVAPORATOR FLOW (GPM)	EVAPORATOR EWT (°F)	EVAPORATOR LWT (°F)	EVAPORATOR WATER PD (FT. H2O)	EVAPORATOR COP	CONDENSER HEAT (MBH)	CONDENSER FLOW (GPM)	CONDENSER EWT (°F)	CONDENSER LWT (°F)	CONDENSER WATER PD (FT. H2O)	COMPRESSO... HP	MCA/MOP	V/Ph/Hz	OPER. WEIGHT (LBS)	NOTES
	WSHP-01	NYLE	C270WM	NORTH MECH ROOM	DHW	4 PIPE	R134a	30	163.3	-	60	63.5	-	3	245	-	130	140	-	30	64/70	460/3/60	1300	
Refer to tech datasheets on performance	WSHP--02A	AERMEC	NXW0750HL8	NORTH MECH ROOM	AIR HANDLING UNITS	4 PIPE	R410A	60	553	99.3	52	40	2.67	4.22	730	146	85	95	4.69	60	86.2/107	575/3/60	2600	Cooling Mode Setpoint 40F, Heating Mode Setpoint 120F
Refer to tech datasheets on performance	WSHP-02B	AERMEC	NXP1400L8	NORTH MECH ROOM	AIR HANDLING UNITS	6 PIPE	R410A	60	549.6	98.7	52	40	6.48	4.03	725	145	85	95	19.96	60		575/3/60	3000	Cooling Mode Setpoint 40F, Heating Mode Setpoint 120F SIMUMLTANEOUS HEATING AND COOLING

NOTES:

1. TWO SIDED SCROLL COMPRESSOR.
2. DOUBLE-SIDED CONDENSATE PAN AND DRAIN.
3. R-XXXX OR R-XXXX REFRIGERANT ONLY.
4. COOLING UNIT ONLY. HEATING FUNCTION LOCKED OUT.
5. CONNECT TO DDC SYSTEM.

BIM 360://201014-CGRC-R20/210305-MECH-IG-R20.rvt

2023-09-07 5:21:47 PM

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ISSUED

No.	Date	Description
1	2020-12-14	ISSUED FOR 60% DD
2	2021-03-26	ISSUED FOR 100% DD
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Project North

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125 McLaughlin Road North
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L6X 1Y7

MECHANICAL EQUIPMENT SCHEDULES

Scale:
Project No: 210305
Date: 2022-04-06

M800

1. GENERAL

1.1 Related Work

.1 This Specification Section forms part of Contract Documents and are to be read, interpreted and coordinated with other parts.

1.2 Warranty

Comply .1 Refrigeration compressors to be warrantied for five years.

2. PRODUCTS

Comply 2.1 Heat Pumps Units - Water to Water

.1 Standard of Acceptance: Multistack, Aermec.

.2 Water to water (fluid to fluid) extended range units, suitable for ground source heat pump application.

.3 General:

.1 AHRI 320 Water Source Heat Pumps certification, UL and CSA approvals.

.2 Rated in compliance with the AHRI/ISO Standard 13256-2 Water to Water and Brine to Water Heat Pumps – Testing and Rating for Performance.

.3 Units to be in compliance with the applicable codes and standards, including NFPA 70 - National Electric Code, meet or exceed applicable Underwriters'' Laboratories safety requirements, ASHRAE 90 A - "Energy Conservation in New Building Design".

.4 Factory packaged, self-contained and pre-wired.

.5 Unit and refrigeration components shall be rated for use with environmentally friendly refrigerant (R-134a, R-407C, R-410A). CFC and HCFC refrigerants subject to Montreal Protocol are not acceptable. Field conversion of refrigerants will not be acceptable.

.6 Heat pumps shall be guaranteed to produce a Coefficient of Performance (COP) of 4 for hydronic units or better, and 3 for Domestic Water units or better when tested in accordance with AHRI/ISO Standard 13256-1.

.7 Heat pumps shall be hooked up to water and functionally tested at factory, including safety controls, and operation over voltage tolerance range.

.8 Entire refrigeration circuit shall be warrantied against defects in material and workmanship for period of five years.

.9 Cabinet:

.1 Heavy gauge galvanized steel finished with baked enamel or powder coat paint.

.2 10 ga (3.51 mm) welded steel frame.

.3 ½" (12 mm) thick high density and coated cabinet insulation, insulated access panels for inspection and access to internal components, insulated partition between blower and compressor compartments.

.4 Galvanized steel condensate drain pan. Pan insulated and pitched for drainage.

.10 Compressor:

.1 Heat pump duty hermetic, internally sprung and externally isolated.

.2 Thermal overload protection.

.3 Thermal expansion device to meter refrigerant between air and water coils. Capillary tubes not acceptable.

.4 Compressor motor overload protection.

.5 Capability to reset compressor lockout circuit at either remote thermostat or circuit breaker.

.6 Insulated compressor (high density sound attenuating blanket) for noise attenuation.

.11 Refrigerant Loop and Reversing Valve:

.1 Factory-sealed refrigeration system, insulated with minimum ⅜" (10 mm) elastomeric insulation.

.2 Schrader access valves on high and low pressure lines.

.3 Insulated refrigerant loop to prevent condensation at low temperatures.

.4 Liquid line filter dryers in each refrigerant circuit.

.5 High and low temperature cut-outs.

.6 Hermetic construction with replaceable external electrical solenoid coil.

.7 Reversing valve shall be pilot operated sliding piston type with replaceable encapsulated magnetic coil.

.12 Water Coil:

.1 Axial tube-in-tube type with water flowing through inner serpentine copper coil, with cupronickel inner tube designed for low water pressure drop and low water flow, or brazed plate type heat exchangers with 316 stainless steel plates capable of withstanding 650 psi (4,480 kPa) working pressure on refrigerant side and 450 psi (3,105 kPa) on water side.

.2 Insulated to prevent condensation. Insulation shall be manufactured without use of CFCs or HCFs.

.13 Control Panel:

.1 Controls shall interface with BMS via acceptable approved gateway – BACnet or equal. BMS shall monitor room temperature and provide start stop signal, and supply air temperature re-set signal.

.2 Factory wired and mounted control circuit complete with compressor contactor, 24 V transformer and blower relay.

.3 Controls shall include high pressure and freeze protectors.

.4 Relays and transformers suitable for 24 V remote control.

.5 Lock-out relay reset from BMS.

.6 Status and alarm monitoring through BMS.

.4 Accessories:

.1 Hanger/vibration isolator kit complete with brackets.

.2 Controller capable supporting building DDC system protocol.

.3 Hose kits - hose kits shall include two 12" (300 mm) long flexible reinforced rubber hoses (rated at 200 psi (1,380 kPa) working pressure) with brass pipe connections (swivel on one end).

.4 One spare set of filters for each unit.

By others **3. EXECUTION**

3.1 General

.1 Install units as indicated and to Manufacturer's recommendations.

.2 Provide and install refrigerant piping and electrical connection between "split" units.

.3 For all water or glycol cooled units, the connecting hose kit shall be complete with autoflow controlled flow valve, supply and return isolation valves, Wye strainer on supply side pipe, P+T ports and lock drain on terminal side of isolation valves for unit maintenance.

.4 Where the condensing unit is suspended in parkades, or wherever condensation is formed during seasonal operation, provide a sealed drip pan with minimum 2" (50 mm) lips and a 1" (25 mm) drain over to a local column or wall to direct the condensation to a drainable location.

3.2 Equipment Preparation and Start-Up

.1 Provide services of Manufacturer's Field Engineer to set and adjust equipment for operation as specified.

3.3 Heat Pump Unit Installation

.1 Install in accordance with Manufacturer's recommendations.

.2 Piping connections to units shall be flexible hoses.

.3 Provide balancing valve in return piping connection and isolating valve in supply piping connection to each unit.

.4 Provide condensate drain and trap at each unit. Inlet leg of trap to be minimum 1" (25 mm) higher than outlet leg.

.5 Condensate drain to be graded towards plumbing drain at minimum $1/16$ in/ft (1:200 mm).

.6 P/T plugs shall be provided on supply and return piping connections to each unit.

.7 Install temporary bypass piping arrangement, using flexible hoses, before piping is chemically cleaned. Replace permanent connections after piping has been flushed out.

.8 Manufacturer's Representative to check out and start-up units.

.9 Ceiling tiles used for access to unit to be marked and easily removable. Avoid running electrical and mechanical services close to tile.

.10 Insulate all refrigerant piping between condensing unit and indoor fan coil.

END OF SECTION 23 81 10

HTS Toronto

115 Norfinch Drive
Toronto, ON M3N 1W8
T 1.800.850.0567
F 416.661.0100

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Product Datasheets

Tag: WSHP-02A

AERMEC

air conditioning

60Hz R410A RS485

NXW0750°HL°°8°°

Chris Gibson Recreation Centre

SUBMITTALS

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Contents

Nomenclature

Field	Type	Selection	Description
1,2,3	Code	NXW	Water cooled chiller for indoor installation
4,5,6,7	Size	0750	Selected unit Size
8	Application	°	Mechanical thermostatic valve
9	Model	H	Heat Pump
10	Version	L	Low noise
11	Evaporator	°	Standard BPHE exchanger
12	Heat recovery	°	Without heat recovery
13	Power supply	8	575 volts 3 phase 60 Hz with magnetic circuit switches
14	System side pumps	°	No pumps provided
15	Source side pumps	°	No pumps provided

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Unit Selection - NXW0750°HL°°8°°

Cooling

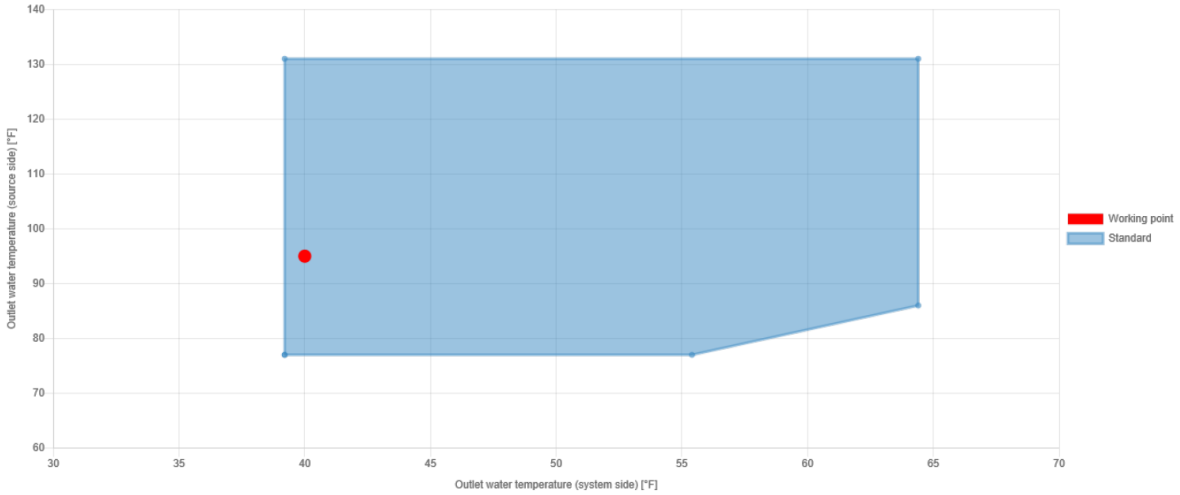
Cooling			
Capacity	ton		46.08
Input power	kW		38.37
Input current	A		53
EER	Btu/W		14.41
IPLV.IP	Btu/W		22.38

		Source side	System side
Inlet water temperature	°F	85.00	52.00
Outlet water temperature	°F	95.00	40.00
Propylene glycol	%	35	35
Water flow rate	gpm	146.0	99.30
Pressure drops	ft H2O	4.69	2.67
Fouling factor	(h ft² °F)/Btu	0.000250	0.000100

IPLV.IP calculated as per AHRI standard 550/590.
IPLV.SI calculated as per AHRI standard 551/591.

Cooling operating limits

Cooling



Unit operation for cooling mode must be in the blue area. The unit is being designed to work to the indicated working point.

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Heating

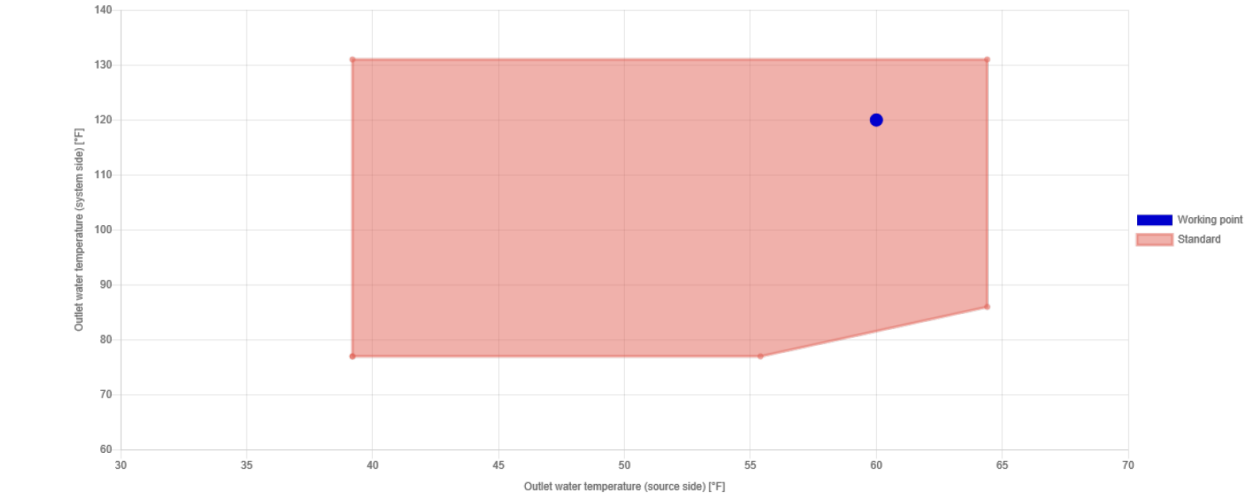
Heating		
Capacity	Btu/h	835700
Input power	kW	51.94
Input current	A	63.8
COP	kW/kW	4.715

		Source side	System side
Inlet water temperature	°F	70.00	100.00
Outlet water temperature	°F	60.00	120.00
Propylene glycol	%	35	35
Water flow rate	gpm	141.2	88.97
Pressure drops	ft H2O	4.67	1.85
Fouling factor	(h ft² °F)/Btu	0.000250	0.000100

The heating side is rated with the minimum water flow rate the unit can handle. Attention to balancing and pressure drop must be prioritized on site. If the pressure drop goes up (dirty strainer) the flow rate will go down and can cause nusince alarms.

Heating operating limits

Heating



Unit operation for heating mode must be in the red area. The unit is being designed to work to the indicated working point.

Selection Notes:

- The factory is going to use this selection to design the TX valve on the unit. If the conditions change in the field, this will need to be reviewed by an Aermec Technician. In some cases, the TX valve may need to be altered or change in the field if you are not working to these designed conditions.
- The selection is designed with constant flow with the specified flow rates. If the flow rates are different on site your operating temperatures will be different on site.
- If this will change you may not get the operation or output as designed. A change to these conditions must be reviewed by HTS and Aermec.

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General Data

Refrigerant		R410A
Compressor type		Scroll
Number of compressors	N.	4
Number of cooling circuits	N.	2
Evaporator type		Plate
Evaporator water connections		3” (with field installed BSP/NPT adaptor)
Condenser type		Plate
Condenser water connections		3” (with field installed BSP/NPT adaptor)

Electrical Data

LRA	A	165
MCA	A	86.2
MOP	A	106.1
SCCR	kA	10
Power Supply		575V-3PH-60HZ

Sound Data

Model	Total Sound Levels		Octave Band [Hz]						
	Power dB(A)	Pressure dB(A)/10m	125	250	500	1000	2000	4000	8000
			Sound power by central band frequency [dBA]						
0750HL	79.9	56.9	56.0	61.0	74.9	77.6	68.0	62.5	45.9

Dimensional Data

Height	In	74.1
Width	In	31.5
Depth	In	82.7
Weight (empty)	Lb	2,271
Weight (running)	Lb	2,403

Minimum Water Content

NXW		0750
Minimum Water Content	gal/ton[1]	3.7
	gal/ton[2]	**7.5**

(1) minimum water content
(2) minimum water content in the case of process applications or applications with low load

Live example for low load (25% or lower) scenario minimum water content.
7.4 (Gal/Ton minimum) x 52 (Nominal tons) = 385 gallons active as a minimum. If this water volume is not met in this scenario, additional buffer tanks should be added on site. If combining multiple units the minimum water volume per unit must be added together.

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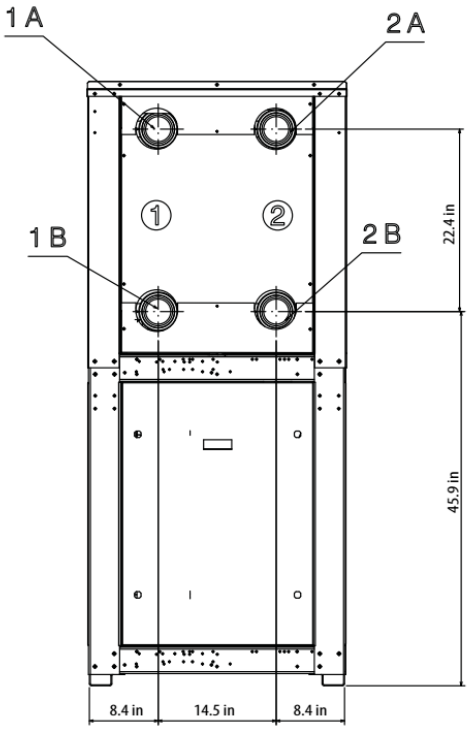
Hydronic Connections



NXW0750HL		
1A	In	3”
1B		3”
2A		3”
2B		3”

CFMS-W: Please note the requirements below. Water treatment report to be submitted prior to system startup.

Hydronic Components

- *Do not fill up the hydraulic system by glycol near the suction of the pump. High concentration of glycol could stuck the pump. Do not use the pump to mix water and glycol.*
- *NOTE: Always provide a water filter upstream (inlet) of the heat exchanger. In order to ensure the limits of acceptability of the water, it is recommended to use a filter with N25 mesh (French numbering), mesh size 0.87 mm.*

Intermediate exchangers (suitably sized by the designer) are required upstream of the heat exchangers of the refrigeration unit in all cases where strict compliance with the above limits is not guaranteed or in the presence of dirty/aggressive water. Failure to comply with the above requirement shall invalidate the warranty.

WATER CHARACTERISTICS

System: Chiller with plate heat exchanger	
PH	7,5 - 9
Total hardness	4,5 - 8,5 °dH
Temperature	< 65 °C
Oxygen content	< 0,1 ppm
Max. glycol amount	50 %
Phosphates (PO_4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO_3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Sulphate ions (SO_4)	< 50 ppm
Sulphide ion (S)	None
Ammonium ions (NH_4)	None
Silica (SiO_2)	< 30 ppm

WARNING under no circumstances does the unit have to be operated with water circulating on the heat exchanger whose characteristics are different from those indicated in the table WATER CHARACTERISTICS, under penalty of the warranty expiration. Aermec cannot be held responsible for any malfunction of the units which are operated with water whose characteristics are outside the limits in the table WATER CHARACTERISTICS and for their consequences.

It is of fundamental importance to keep the oxygen concentration in the water under control, especially in open vessel systems. This type of system, in fact, is very sensitive to the phenomenon of extra-oxygenation of the water (an event that can be encouraged by the incorrect positioning of some components). This phenomenon can trigger corrosion processes and subsequent drilling of the heat exchanger and pipes.

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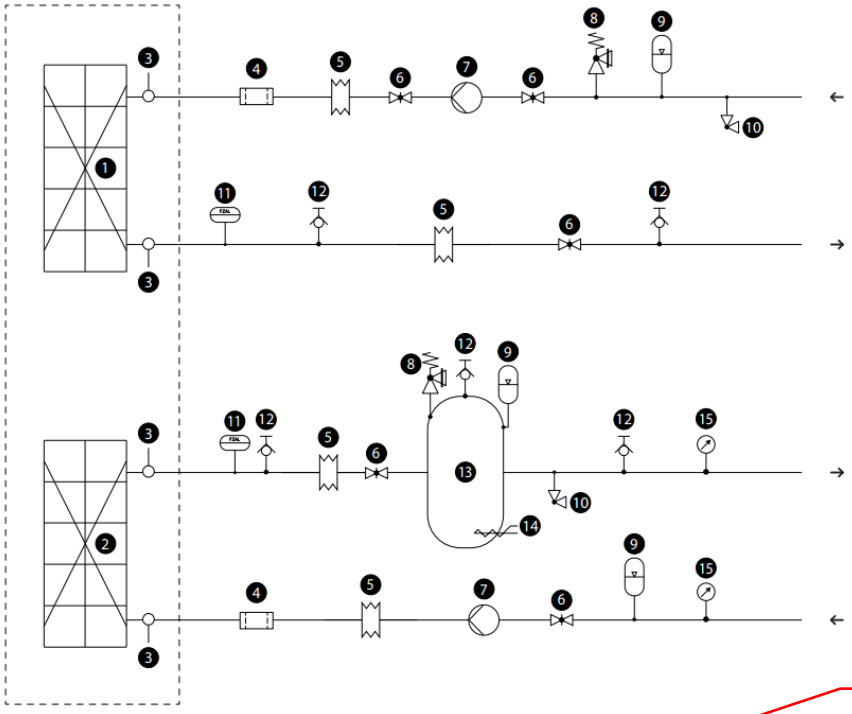
WITHOUT HYDRONIC KIT



CFMS-W: Please note the following components not provided. Recommend confirming items are carried by mechanical trade.

Also recommend confirming who will be controlling flow shut-off valves (OEM or BAS).

Components as standard

1 Condenser
2 Evaporator
3 Water temperature sensors (IN/OUT)

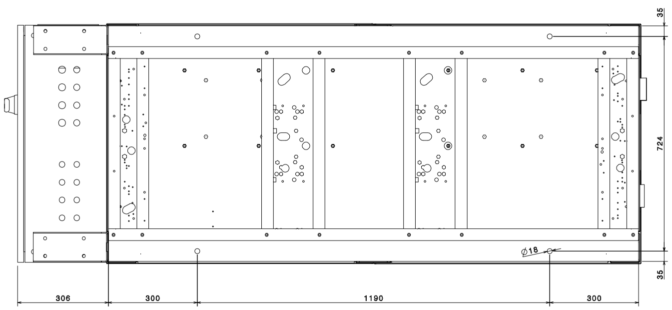
Components not provided and responsibility of the installer

4 Water filter (MANDATORY)
5 Anti-vibration joints
6 Flow shut-off valves
7 Pump
8 Pressure relief valve
9 Expansion vessel
10 Drain valve
11 Flow switch (MANDATORY)
12 Air drain valve
13 Storage tank
14 Antifreeze electric heater
15 Pressure gauge

Buffer tanks are not provided and should be considered in case the system volume is insufficient.

NXW_[0750-0800]_[°-X]_[H]_[L]_[°]_[°]_[6-7-8-9]_[°]_[°]

HEAT EXCHANGER	NXW-H-	WATER CONNECTIONS
1A	SYSTEM SIDE INLET	3" VICTAULIC
1B	SISTEM SIDE OUTLET	3" VICTAULIC
2A	GEOTHERMAL SIDE OUTLET	3" VICTAULIC
2B	GEOTHERMAL SIDE INLET	3" VICTAULIC



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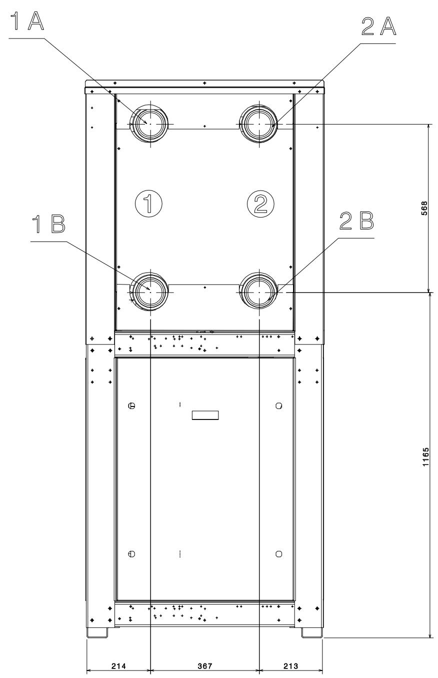
Scala: 1:6



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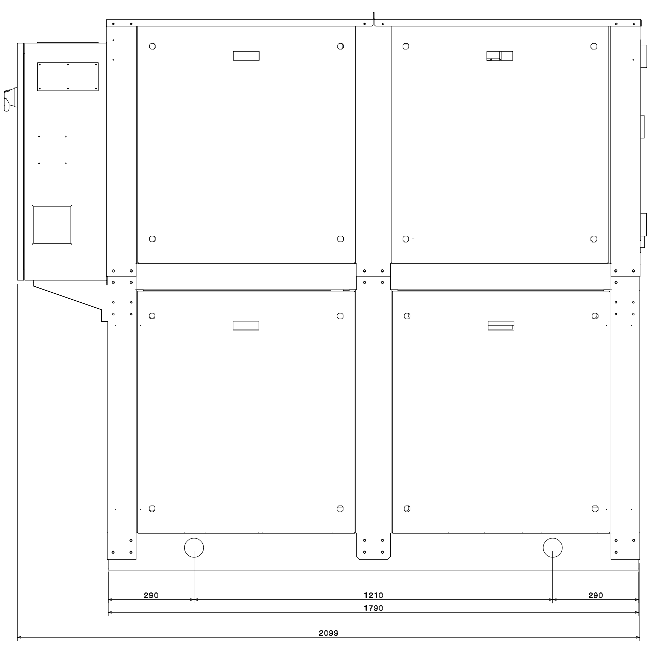

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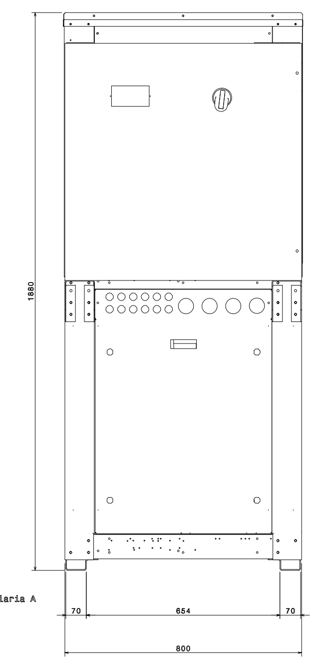

Vista ausiliaria A
Scala: 1:6

AERMEC S.P.A.
BEVILACQUA (VERONA) ITALY

AERMEC

MODELLO NXW0750 H

PARTICOLARE LAYOUT

CODICE NXW 60HZ

FOGLIO 1/1

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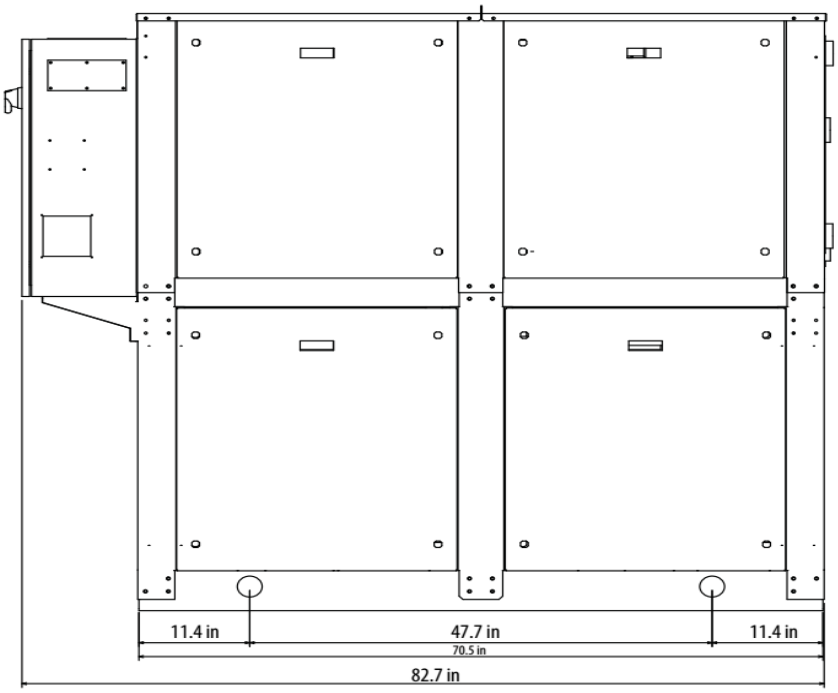
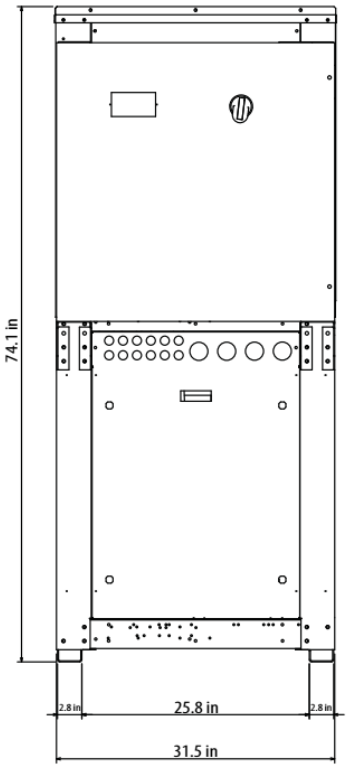
Unit Dimensions





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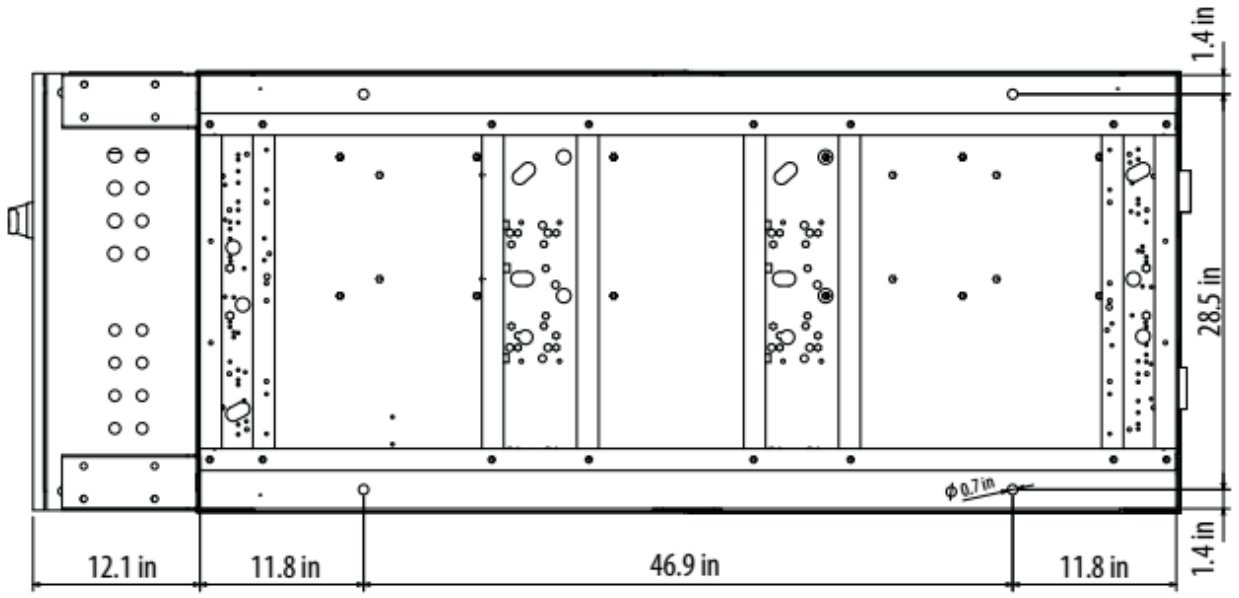
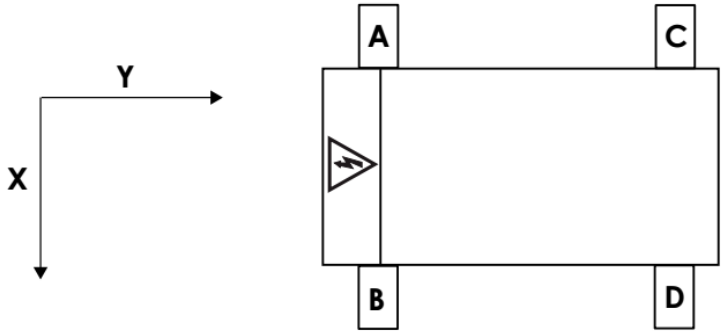
Weight Distribution





Size			0750
Weights			
Empty weight	L	lbs	2,271
Weight functioning	L	lbs	2,381
Centre of gravity (empty)			
X	L	in	16.0
Y	L	in	46.7
Weight distribution in % on the supports (empty)			
A	L	%	22.1%
B	L	%	22.8%
C	L	%	27.1%
D	L	%	28.0%

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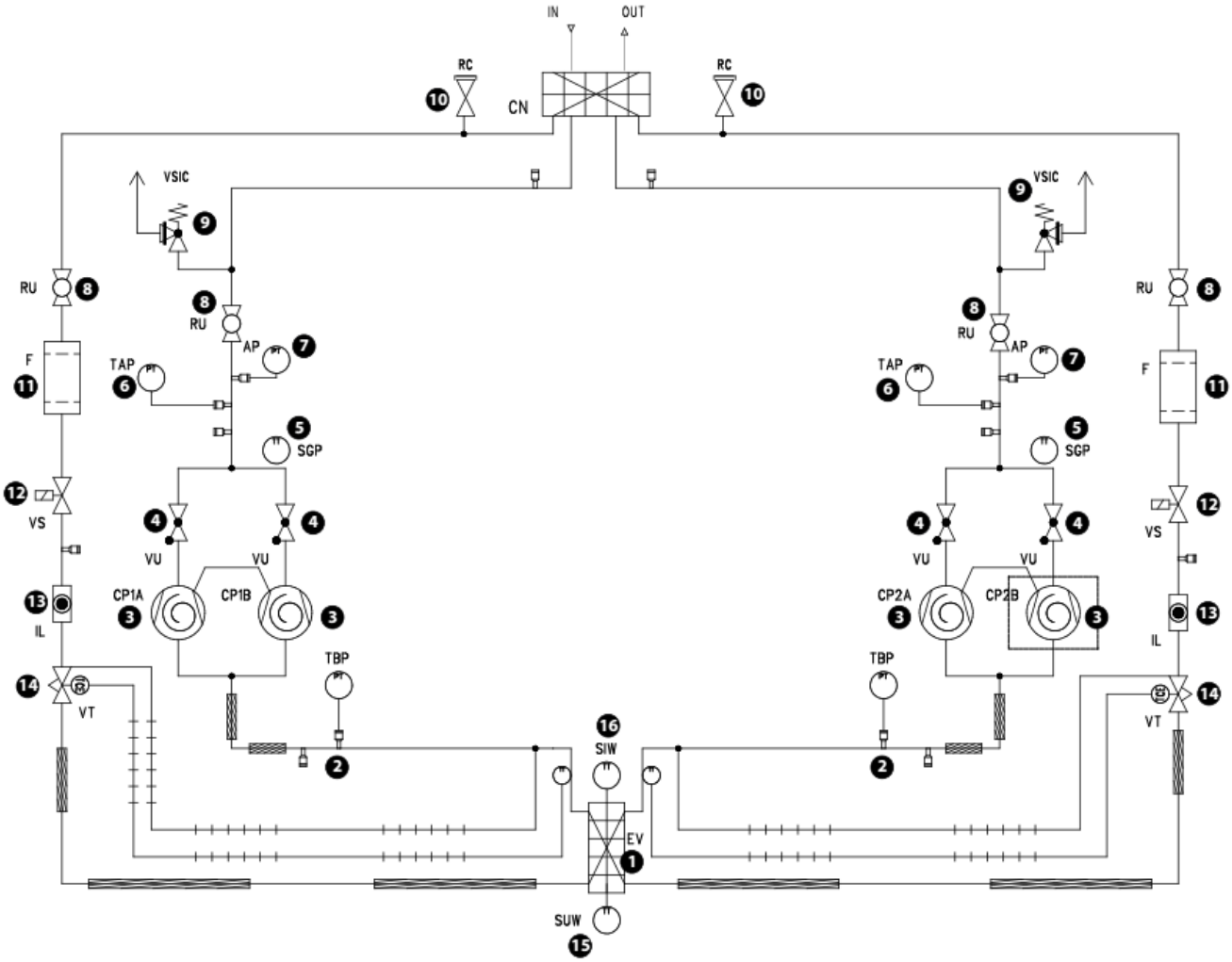
Refrigerant Diagram



Key:

1 Exchanger
2 Low pressure transducer
3 Compressor
4 One-way valve
5 Discharge temperature sensor
6 High pressure transducer
7 High pressure switch
8 Isolation valve
9 Pressure relief valve
10 Charging connection
11 Filter drier
12 Solenoid valve
13 Sight glass
14 Electronic expansion valve
15 Water outlet temperature probe
16 Water inlet temperature sensor

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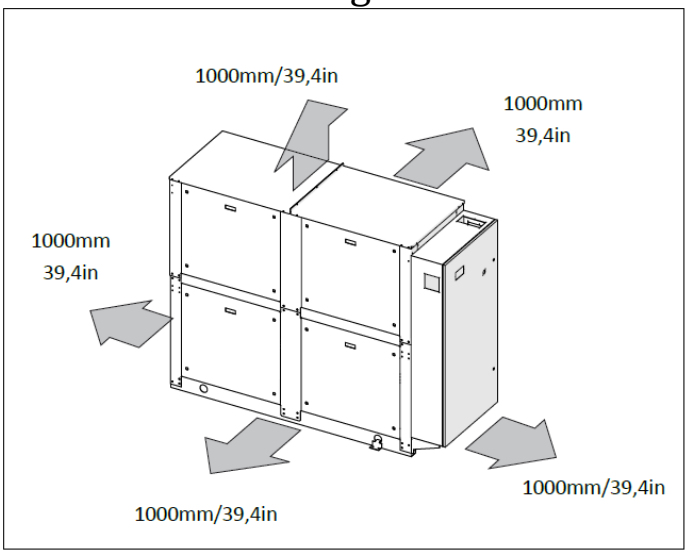
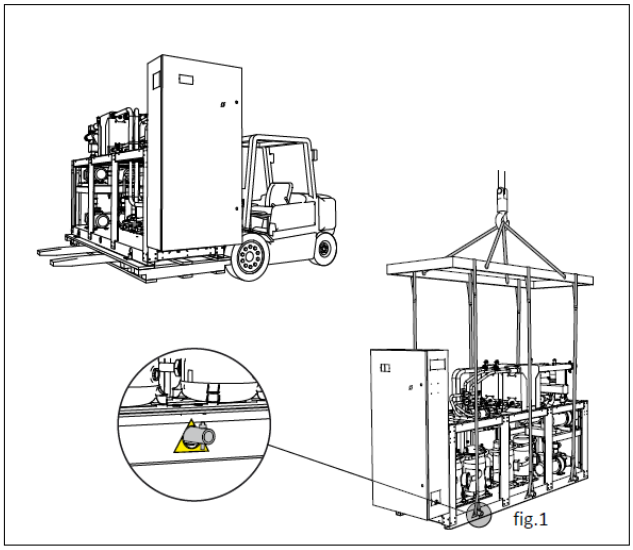
Clearance and lifting





ATTENTION
Use all of the available holes for lifting
The blades not included

Control and safety parameters calibration

Cooling set	Water inlet temperature in cooling mode	Min.	39.2
		Max.	59.0
		Default	44.6
Antifreeze intervention	Antifreeze alarm intervention temperature on EV side (water output temperature).	Min.	15.8
		Max.	39.2
		Default	37.4
Total differential	Proportional temperature band within which the compressors are activated and deactivated	Min.	5.4
		Max.	18
		Default	10

- Operating with glycol and low temperatures on the source side, these settings must be changed on startup and commissioning.

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Water to water Chiller

Range

Supply and placement of the latest generation NXW range water-cooled water chiller unit.

The machine is set-up to manage both hydraulic circuits (evaporator and condenser), allowing operation in cooling and heat pump modes, via cycle reverse on the refrigerant side. The protection rate of the machine is IP20.

Cooling circuit

- Made with a copper pipe with welded silver alloy joints.
- Thermostatic valve that modulates gas flow depending on chiller load.
- 4-way reverse cycle valve for winter/summer operation changeover.
- Filter-drier: it can collect debris and any traces of humidity in the refrigerant circuit.
- Sight glass: used to check the refrigerating gas load and any humidity in the refrigerant circuit.
- Solenoid valve: it closes when the compressor turns off, preventing the flow of refrigerant gas towards the evaporator. It is envisaged only if no mechanical thermostatic valve is fitted.
- Liquid and pressing line taps: allow the refrigerant to be intercepted in the event of extraordinary maintenance.

Circuit number: 2
Compressor number: 4

Refrigerant

HFC R410A, this is characterized by zero ODP (ozone depletion potential) and is classified A1 within the safety group in accordance with the ASHRAE 34-1997 standard.

Support frame

Supporting structure made of hot-dipped galvanized steel sheets, painted with polyester powders, built to guarantee easy accessibility for service and maintenance.

Sound protection covering

All versions are equipped as standard with an acoustic protection cover for compressors: it consists of a compartment in very thick galvanized steel sheet with a soundproofing material lining. It permits the acoustic power emitted by the unit to be reduced and furthermore protects the compressors from the atmospheric agents.

Composition

The NXW range has been studied to optimize yield, by reducing clearance to its maximum. With a width of only 31.5 inches.

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Description of the compressors

The scroll-type hermetic compressor is characterized by high performance and low electrical power consumption. Supplied as standard with an antifreeze electric heating element (oil heater) coiled around the casing that is automatically powered when the unit pauses, as long as the unit is kept powered up. Mounted on rubber vibration dampers on the base. The use of multiple compressors, put into operation depending on the load requirements of the system, allows effective "step" regulation of the power supplied from the unit, obtaining very efficient operation at partial loads. All this translates into significant seasonal energy efficiency ratios.

Heat exchangers (evaporator and condenser)

High-efficiency, dry expansion refrigerant/water heat plate heat exchanger made out of brazed AISI 316 stainless steel, externally insulated with closed-cell material to prevent condensation and reduce heat loss. Water connections (inlet - outlet): 3" US - 3" US

Electric Control Board

Contains the power section, the management of the controls and safety devices and the on-board control panel. It is equipped with a door-lock disconnecting switch to disconnect the power supply by using the opening lever itself. This lever can be blocked with padlocks during maintenance to prevent the machine from being accidentally powered. All the cables are numbered so they can be immediately recognized.

Safety devices and protections

- High-pressure switch (one for each circuit): factory-calibrated, installed downstream of the compressor with the function of stopping machine operation in the event of abnormal pressure.
- Refrigerant circuit safety valve on the high pressure side: it kicks in by releasing overpressure in the event of abnormal working pressure levels.
- Electric control board access door interlock system.
- Compressor protection fuses or circuit breakers.

Electronic adjustment

The microprocessor has the following functions:

- Control board with microprocessor.
- Control panel.
- Remote ON/OFF with external contact without voltage.
- Multi-language menu.
- Independent control of the individual compressors.
- Amperometric transformer.
- Cumulative faults block signal.
- Historical alarms function.
- Daily/weekly programming.
- Temperature display of the input and output water.

- Alarms display.
- Integral proportional adjustment of the output water temperature (precision up to ±0.1K).
- Function with double set-point linked to an external contact.
- Pump unit check.
- Always Working function. In the case of critical conditions (e.g. an environmental temperature that is too high) the machine does not stop but can adjust itself and supply the maximum power in those conditions.
- PDC "Pull Down Control" function for preventing the activation of the power steps when the temperature of the water quickly approaches the set-point. Optimizes machine functioning when working normally and in the presence of load variation, ensuring the best efficiency of the machine in all situations.
- Compensation of the set-point on the basis of the external temperature or from external analogue signal (4-20 mA).
- Compressor rotation management.

Evaporator side hydronic unit

- Water temperature sensor (inlet).
- Water temperature sensor (outlet).
- **Flow switch is supplied loose for field installation.**
- **Balancing valves and strainers are not supplied, but must be field installed.**

Condenser side hydronic unit

- Water temperature sensor (inlet).
- Water temperature sensor (outlet).
- **Flow switch is supplied loose for field installation.**
- **Balancing valves and strainers are not supplied, but must be field installed.**

Conformity

The installation and user manual is present inside every appliance, complete with declaration of conformity with reference to the appliance's serial number. The feature plate must have the CE mark.

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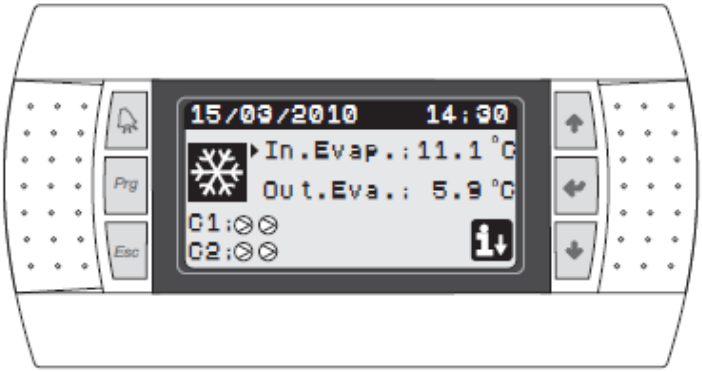
User interface

User interface

The unit control panel allows quick setting of the machine functioning parameters and their display. The display is made up from a graphical matrix with 132 x 64 pixel in order to signal the type of functioning, displaying set parameters and any alarms that have intervened. All default settings and any modifications are memorised in the board. With installation of the PGD1 remote panel, it is possible to replicate all functions and settings available from the machine at a distance. After a power cut, the unit can re-start automatically keeping the original settings.

The user interface is represented by a graphical display with six keys for navigation. The displays are organised via a hierarchy of menus, which can be activated by pressing the navigation keys. The display default of these menus is represented by the main menu. Navigation among the various parameters takes place using the arrow keys positioned on the right side of the panel. These keys are also used to modify the selected parameters.



• INTERFACE COMMAND KEYS:

Function	Key
	ALARMS key • One press displays the list of active alarms; • One prolonged press (at least 5 seconds) resets the active alarm;
Prg	**MENU ACTIVATION key** • Pressing this key activates navigation among the menus;
Esc	**MENU EXIT key** • Pressing this key goes back to the display of the previous menu;
	NAVIGATION key (+) • Pressing this key while navigating among the menus/parameters, allows to pass to the next menu/parameter; • Pressing this key during modification of a parameter, increases the value of the parameter selected;
	NAVIGATION key (enter) • Pressing this key while navigating among the menus, allows to enter the menu selected; • Pressing this key during navigation among parameters, allows to select the parameter displayed and enter the modification mode; • Pressing this key during modification of a parameter, confirms the modifications to the value of the parameter selected;
	NAVIGATION key (-) • Pressing this key while navigating among the menus/parameters, allows to pass to the previous menu/parameter; • Pressing this key during modification of a parameter, decreases the value of the parameter selected;

• MAIN MENU ICONS:

Icon	Meaning
	Cooling mode activated
	Heating mode activated
	Simultaneous defrosting mode activated
	Separate defrosting mode activated. This mode is only available for twin-circuit models, in which it is possible to proceed with defrosting engaging just one circuit;

Icon	Meaning
	• FIXED icon = Compressor OFF; • FLASHING icon = Compressor in switch-on phase, in stand-by due to safety times;
	• FIXED icon = Compressor ON; • FLASHING icon = Compressor in switch-off phase, in stand-by due to safety times;
	Compressor forded off;
	Limited compressor;
	Compressor in alarm conditions;
	Access to the "quick menu" by pressing the key

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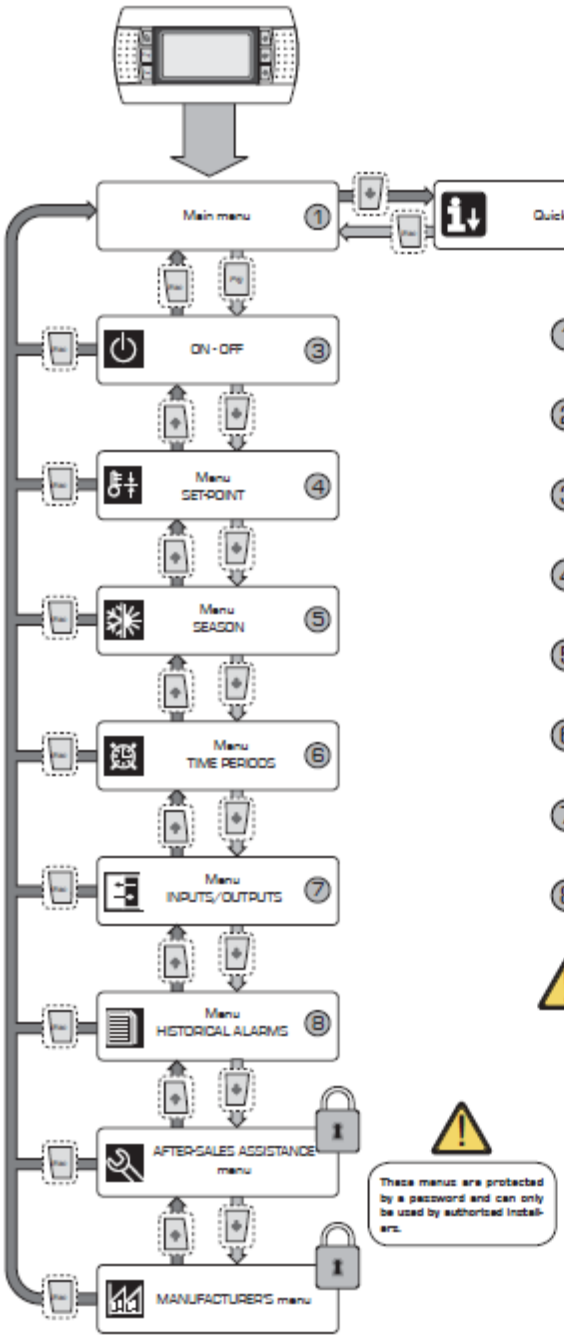
Menu structure and navigation

Navigation in the various menus for the management of the NXW units is represented by the layout shown at the side. In this layout find the representation of the various menus, via which the unit functions are managed, ordered by sequence and highlighting which function keys must be pressed to navigate among the various menus.



1. The fundamental information regarding use of the unit is available in the main menu;
2. The quick menu contains some information regarding the cooling circuit and the unit compressors;
3. This menu contains the commands for switching the unit on and off;
4. This menu contains the parameters for setting the work set points for the various functioning modes of the unit;
5. This menu contains the parameters for selecting the various functioning modes of the unit;
6. This menu contains the parameters for setting the timer periods;
7. This menu contains the parameters linked to the management of the inputs and the outputs piloted by the unit boards;
8. This menu contains the list of the alarms occurring on the unit, ordered by date;

For further details regarding the parameters contained in every menu, please refer to the relative chapters at every menu.

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Use operational procedures

To manage or modify the operational parameters of the NXW units, the control panel interface on the machine must be used. The fundamental operations that the user must be able to perform for correct use of the unit are the following:

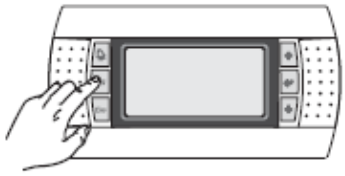
(1) Pass from one menu to another;

(2) Select and modify a parameter;

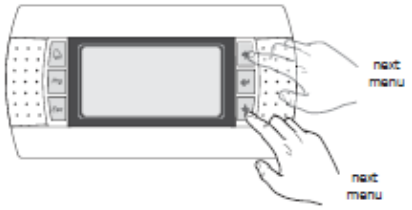
1

Pass from one menu to another

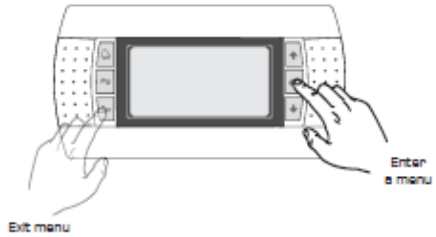
(a) In order to scroll the various menus (the order with which the menus are displayed is represented in the previous page) it is first necessary to enter the menu selection mode by pressing the [ ] key;



(b) Once the menu selection mode has been entered, scroll these using the arrow keys: the [ ] key to pass to the previous menu and the [ ] key to pass to the next menu;



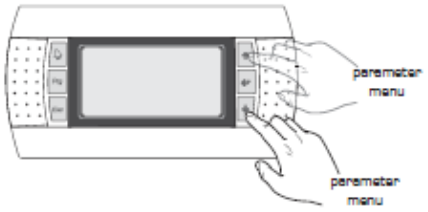
(c) When the desired menu is displayed, press the [ ] key to enter the menu. To exit the menu and go back to the menu selection mode, press the [ ] key;



2

Selecting and modifying a parameter

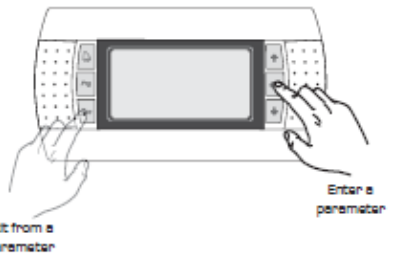
(a) Once the selected menu has been entered (following the procedure (1)) it is possible to scroll the windows that make it up using the arrow keys, using the [ ] key to pass to the previous parameter and the [ ] key to pass to the next parameter;



(c) When the desired parameter is displayed, press the [ ] key to enter the parameter. To exit the parameter and go back to the parameter selection mode, press the [ ] key;

ATTENTION:
Once a parameter has been selected, by pressing the [ ] key, automatically enter the modification mode of that parameter. From this mode it is possible to set the desired values for the parameters, following the procedure below:
(1) pressing the [ ] key, a flashing cursor will appear near to the first field of the parameter that can be modified (if fields that can be modified are not displayed, no cursor will appear);
(2) pressing the [ ] key or the [ ] key, the value of the field will increase or decrease;
(3) by pressing the [ ] key, the modifications to the field value will be confirmed, saving it in the memory;

On the basis of the type of parameter selected, the number of fields that can be modified may vary;



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Accessories included

AERBACP

Interface for supervising systems with BACnet/IP protocol

CFMS-W: Please coordinate with BAS contractor. Recommend confirming if data drop will be provided by BAS or owner IT representative.

Accessory installation:

The board is designed to be connected directly to the control card of the unit using the slot available on the "BMS board" (in case it is connected to the pCO5), while for the units that use a different board, it will have only one slot serial compatible with the AERBACP accessory, making it impossible to mistake the connection between the accessory and the control board.

Procedure for "UPDATED Setting":

The procedure for this setting is the following:

1. Connect the AERBACP accessory to the unit control board;
2. Physically connect (via network cable) the AERBACP accessory to the PC used to configure it; this connection will take place in "point to point" mode (N.B: a specific network connection must be created on the PC in order to access the device, consistent with the need to then connect to the IP address 172.16.0.1 and Subnet mask 255.255.0.0 set by default on the accessory);
3. Make sure that the unit card is powered (if so, after booting the card, the green LED on the accessory will remain steady);
4. Using the PC browser connect to the address http://172.16.0.1 (Fig.1);
5. Select the "DO NOT RESTRICT ACCESS" button;
6. Enter the login credentials (Username: admin / Password: fadmin);
7. Select the "Configuration" tab (Fig. 2);
8. Select the "pCO Com" tab and set the data according to the following configuration (Fig. 3):

— Protocol = Modbus Extended;
— Baud rate = 19200;
— Modbus slave address = 1;
— Digital variables = 2048;
— Analog variables = 5000;
— Integer variables = 5000;

9. Confirm by pressing the button "Submit";
10. Select the "BACnet" tab and set the data according to the following configuration (Fig. 4): and set the data relating to the "pCO mapping Parameters" section

— Maximun mapped analog variables = 2048;
— Maximun mapped integer variables = 2048;
— Maximun mapped digital variables = 2048;

11. Confirm by pressing the button "Submit";
12. Select the "ModbusTCP" tab and set the data according to the following configuration (Fig. 5):

— Modbus TCP Status = Enabled;

13. Confirm by pressing the button "Submit";

Procedure for "CLASSIC Setting":

The procedure for this setting is the following:

1. Connect the AERBACP accessory to the unit control board;
2. Physically connect (via network cable) the AERBACP accessory to the PC used to configure it; this connection will take place in "point to point" mode (N.B: a specific network connection must be created on the PC in order to access the device, consistent with the need to then connect to the IP address 172.16.0.1 and Subnet mask 255.255.0.0 set by default on the accessory);
3. Make sure that the unit card is powered (if so, after booting the card, the green LED on the accessory will remain steady);
4. Using the PC browser connect to the address http://172.16.0.1 (Fig.1);
5. Select the "DO NOT RESTRICT ACCESS" button;
6. Enter the login credentials (Username: admin / Password: fadmin);
7. Select the "Configuration" tab (Fig. 2);
8. Select the "pCO Com" tab and set the data according to the following configuration (Fig. 6):

— Protocol = Carel;
— Baud rate = 19200;
— Communication start-up = Compatible;

9. Confirm by pressing the button "Submit";
10. Select the "BACnet" tab and set the data according to the following configuration (Fig. 7): and set the data relating to the "pCO mapping Parameters" section

— Maximun mapped analog variables = 207;
— Maximun mapped integer variables = 207;
— Maximun mapped digital variables = 207;

11. Confirm by pressing the button "Submit";
12. Select the "ModbusTCP" tab and set the data according to the following configuration (Fig. 5):

— Modbus TCP Status = Enabled;

13. Confirm by pressing the button "Submit";

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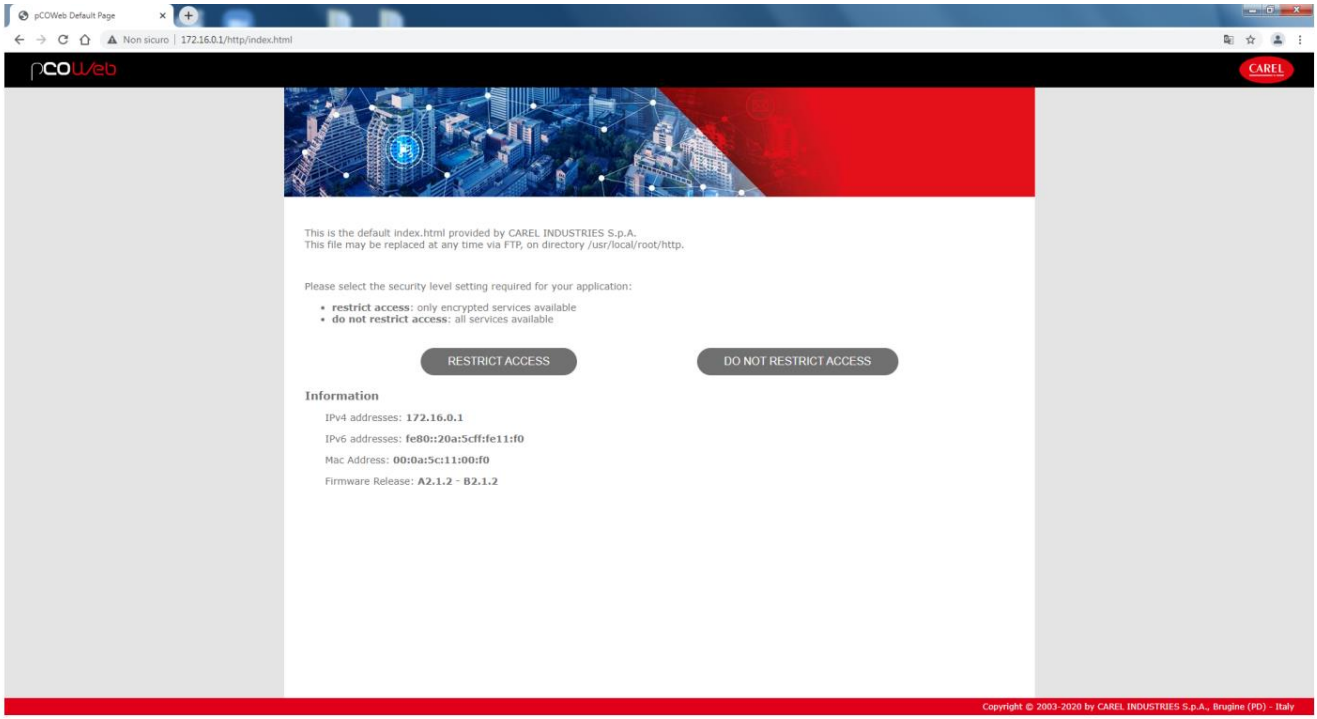

Fig. 1 - Home settings AERBACP

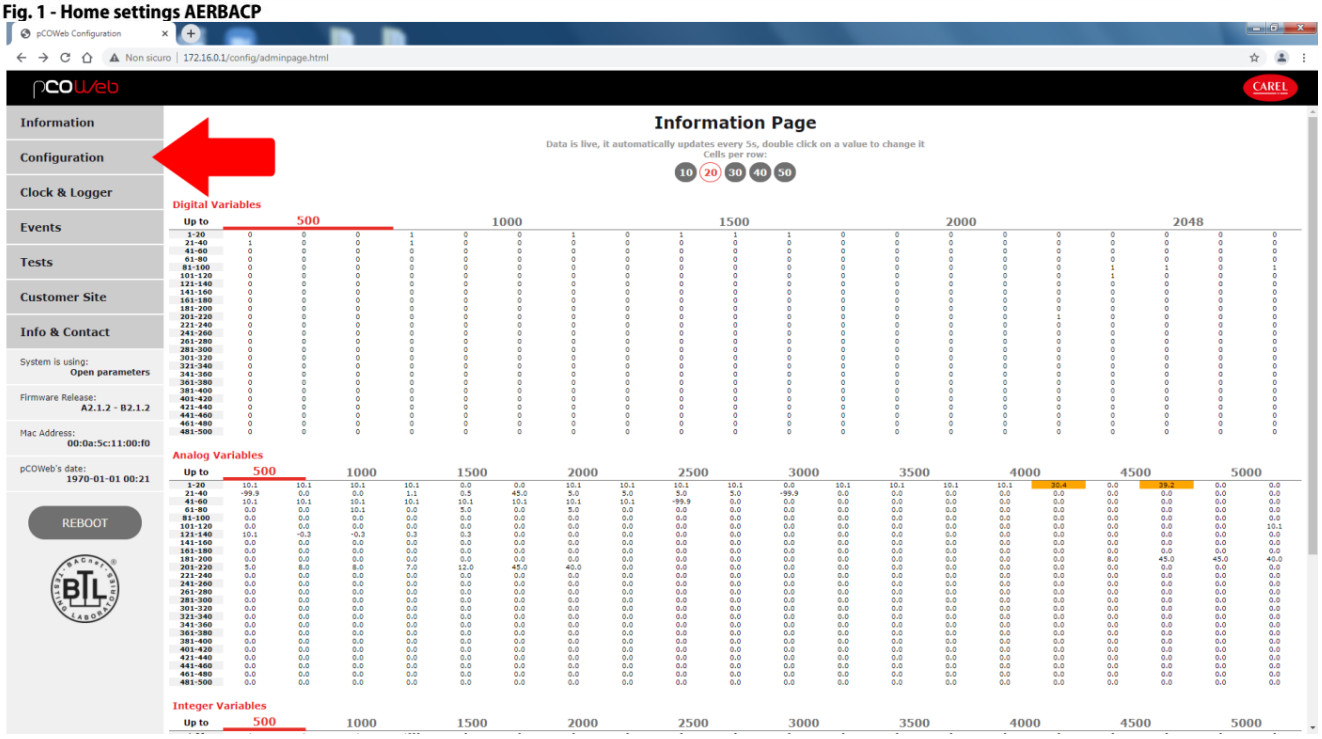

Fig. 2 - Selection of the Configuration page

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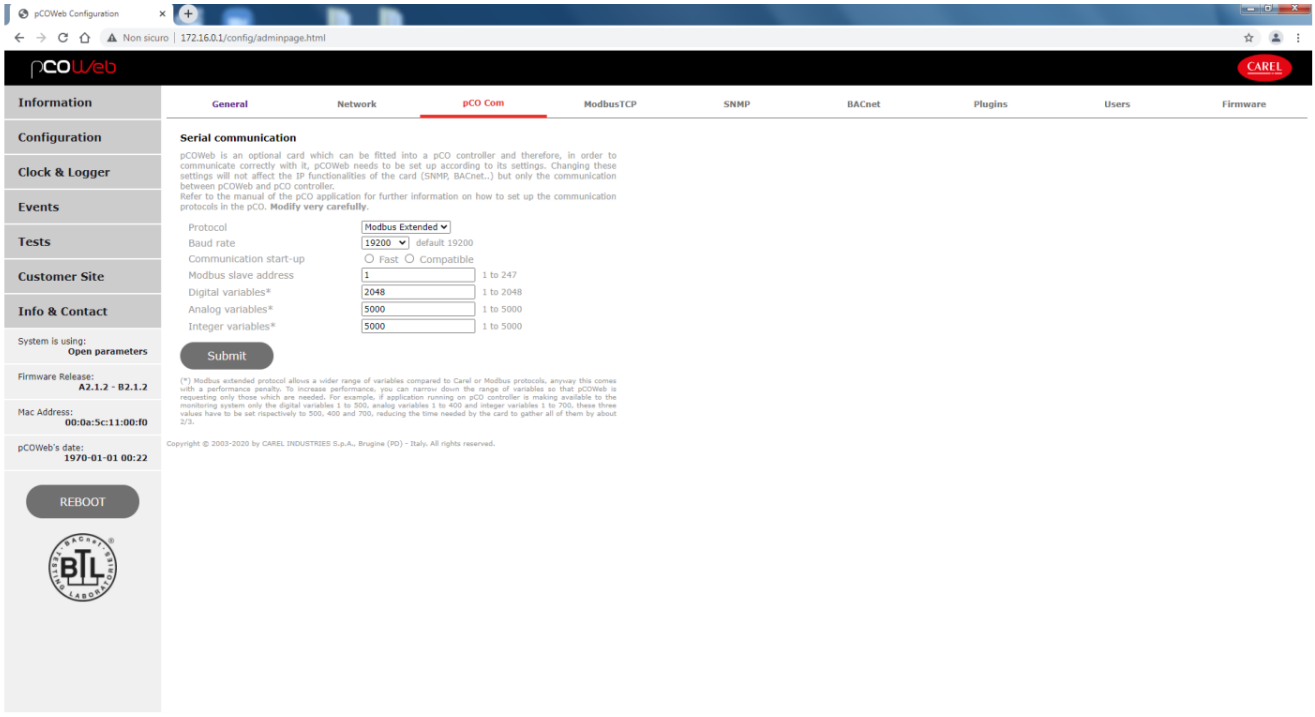

Fig. 3 - Values of the pCO Com page (UPDATED setting)

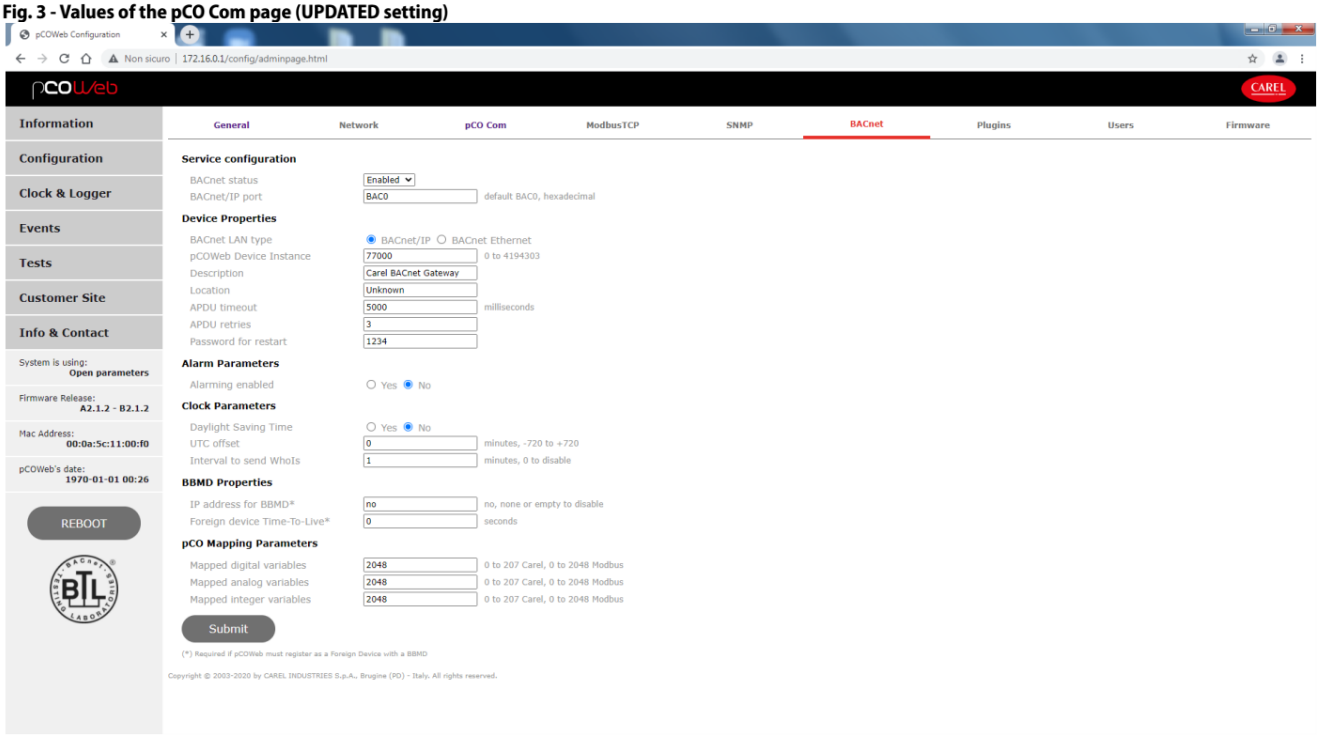

Fig. 4 - Values of the BACnet page (UPDATED setting)

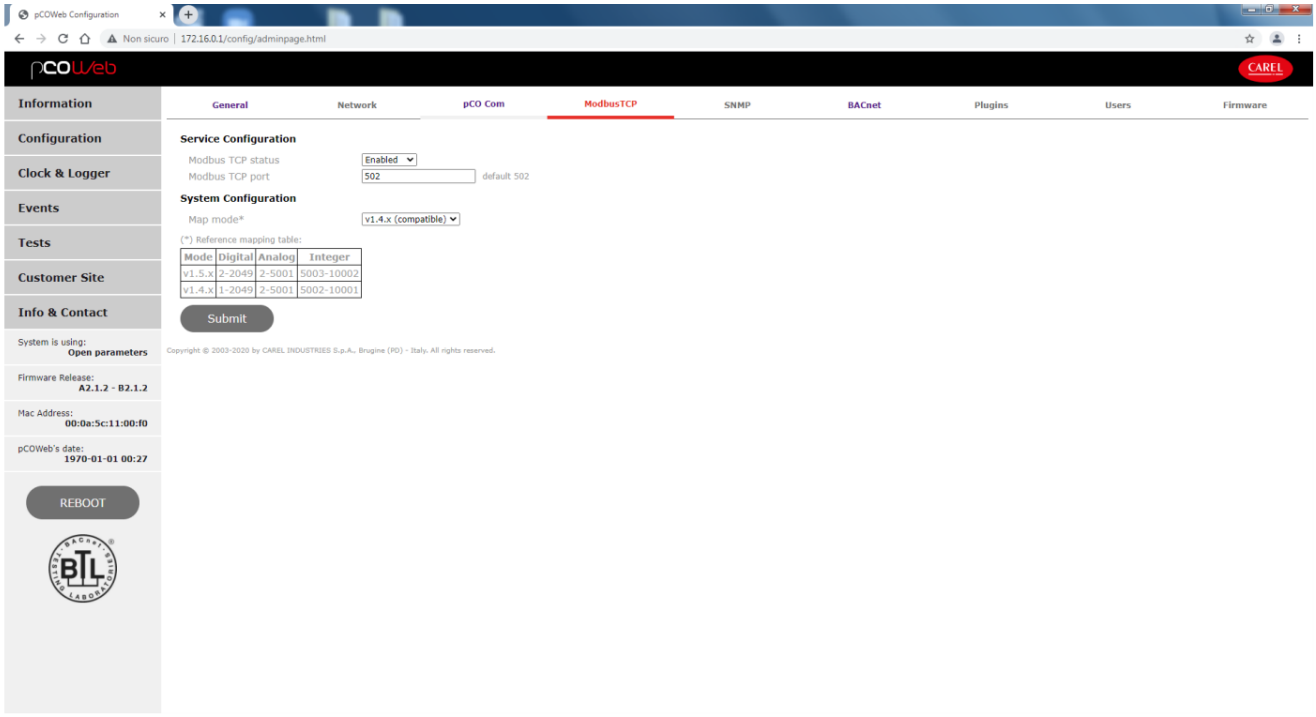

Fig. 5 - Values of the ModbusTCP page

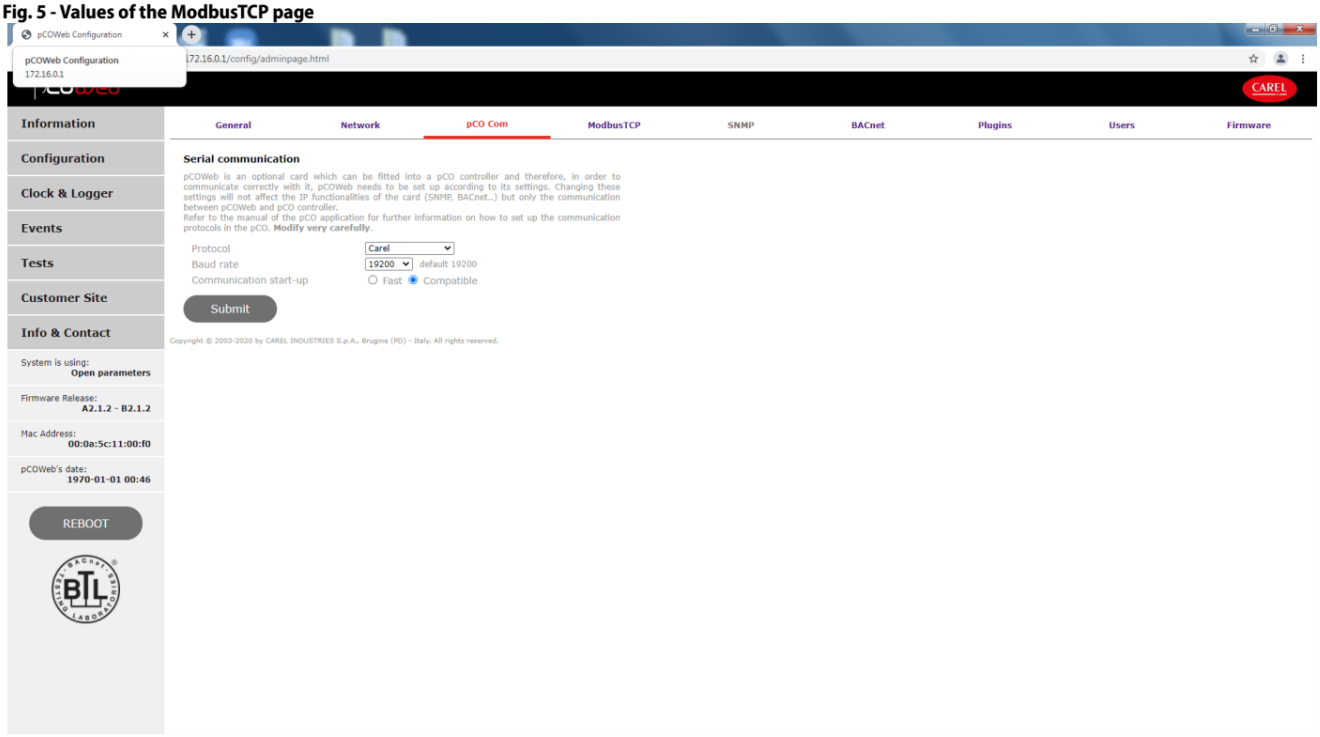

Fig. 6 - Values of the pCO Com page (CLASSIC setting)

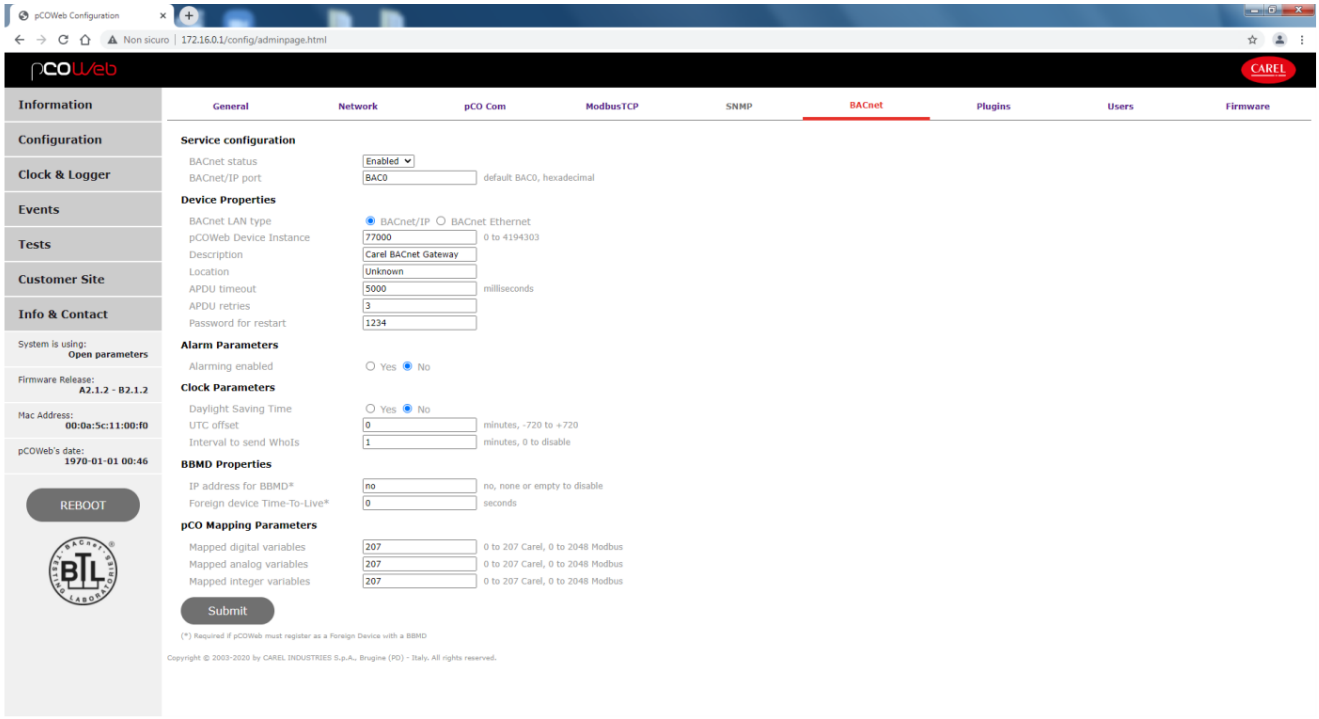

Fig. 7 - Values of the BACnet page (CLASSIC setting)

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Flow Switch

Shipped loose for Field installation. Mandatory.

Function

The Uni-Switch™ flow switch detects whether there is any flow in the piping and opens or closes an electrical contact. It is normally used in heating, air-conditioning, refrigeration, water treatment, additive pumping and process systems in general. The flow switch can control devices such as pumps, burners, compressors, refrigerators, motorized valves; to turn on indicator and alarm devices and regulate equipment for dosing water additives.

In heating systems, the flow switch will switch the burner off in case of a lack of fluid circulation in heating circuit. A lack of fluid circulation would otherwise impair the operation of the temperature-sensitive safety and protection devices.

c UL us LISTED 30V9

CE

Product range

Code 626600A	Flow switch	Size 1" NPT male
Code 626009	Replacement paddles (blades) assembly	for pipe diameters 1" to 8"

Technical specifications

Materials

Body:	brass
Cover:	self-extinguishing polycarbonate
Microswitch protection casing:	self-extinguishing polycarbonate
Bellows rod and bellows:	stainless steel
Paddle (Blades) for pipes:	stainless steel
Microswitch spring:	stainless steel
O-Ring seals:	peroxide-cured EPDM

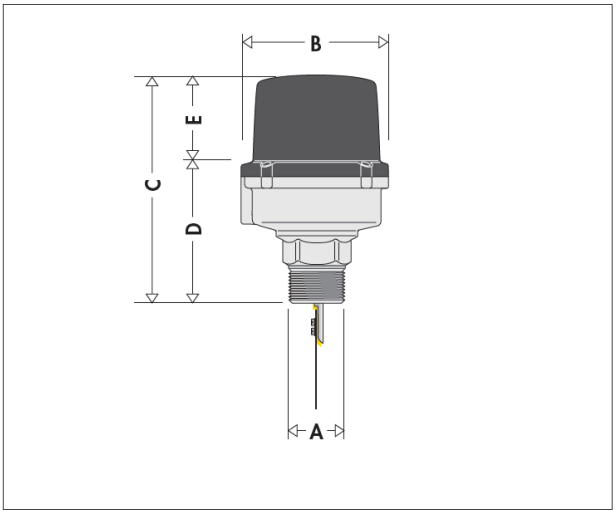
Performance

Suitable fluids:	water and glycol solutions
Max. percentage of glycol:	50%
Max. working pressure:	150 psi (10 bar)
Fluid temperature range:	-20–250°F (-30–120°C)
Max. ambient temperature:	130°F (55°C)
Pipe connection:	1" NPT male
Pipe adjustability:	from 1" to 8"

Electric specifications

Voltage:	250 V
Electrical connection:	1/2" NPT female
Current:	15 (5) A
Protection class:	NEMA Type 3
	IP 54
Certification:	CE, C-UL

Dimensions



Code	A	B	C	D	E	Weight (lb)
626600A	1"	3 7/16"	5 5/16"	2 15/16"	2 3/8"	2.30

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Installation and startup notes

Preparation for start up form need to be submitted in order to avoid delay and request a date for remote startup. Form can be found at https://aermec.formstack.com/forms/preparation_for_startup

Below documents should be approved prior to placing Sales Order:

- **Drawing Schedule**
- **Piping Schematic**
- **Sequence of Operation**

CFMS-W: Contractor to submit the following forms and include them in O&M / Closeout documents.

A Pre-start up form must be completed and submitted a minimum of 2 weeks before the anticipated startup date. It can be found with the following link: https://www.aermec.us/tech-support/online-forms/

Commissioning and startup forms must be filled in and submitted at time of startup. The form can be found with the following link: https://www.aermec.us/tech-support/online-forms/

General Notes:

1. Always refer to the units IOM for delivery, storage, installation, and maintenance.

2. This project was designed with the conditions on pages 4 (Unit Selection Part). If these conditions or flow rates are changed on site, it must be approved by Sales Rep (Name of the Sales Rep) and Mits Air Staff to ensure correct operation.

3. Correct water volume and water flow are critical for correct unit operation.

4. Pre-startup and startup/commissioning forms must be submitted online in order to start the unit warranty.

Website Link of the Unit

https://www.aermec.us/products-2/water-to-water-units/nxw-31-139-tons/

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Warranty terms and condition

LIMITED EXPRESS WARRANTY

This warranty is extended by Mits Airconditioning Inc., a company incorporated under the laws of the Province of Ontario, Canada (hereinafter referred to as "Mitsair"), to the buyer ("Buyer"). It is expressly understood that statements made by Mitsair or its representatives, relating to products that Mitsair sells, whether oral, written or contained in any quote, sales literature, catalogue, or any agreement, are not express warranties. EXCEPT AS SPECIFICALLY SET FORTH HEREIN, THERE IS NO EXPRESS WARRANTY AS TO ANY AERMEC S.P.A. MANUFACTURED PRODUCTS THAT MITSAIR SELLS.

1. WARRANTY DESCRIPTION.

Mitsair warrants Aermec S.p.A. products purchased from Mitsair & retained in the United States of America ("USA") and Canada to be free from defects in material & workmanship under normal use & maintenance only as follows:

I. All chillers, heat pumps (modular or standard), and fan coils for a period of the lesser of twelve (12) months from the date of unit start-up OR fifteen (15) months from the date of delivery, whichever comes first and is less, depending on fulfilling the "Conditions of Complete & Proper Start-Up" (see Section 2 below), and depending on authorization from Aermec S.p.A.

II. Replacement parts for ninety (90) days from date of shipment from the Mitsair warehouse.

ALL WARRANTY CLAIMS ARE FIRST SUBJECT TO APPROVAL BY AERMEC S.P.A. ONLY *AFTER SUCH APPROVAL* WILL MITSAIR ASSIST IN PROVIDING ANY REPLACEMENT PARTS OR REMEDIES AS EXPLICITLY AUTHORIZED AND PROVIDED FOR BY AERMEC S.P.A. The Limited Express Warranty on any part repaired or replaced under warranty expires at the end of the original warranty period. Dead on Arrival ("DOA") claims must be submitted within thirty (30) days of startup, so long as such claims are made within the warranty period as outlined above in Section 1(I) and (II).

2. WARRANTY PROCESS.

All warranty claims must be made through the Online Warranty Request Form available at aermec.us and aermec.ca (see "Online Forms"). All claims are first subject to approval by Aermec S.p.A. only ***after such approval*** will Mitsair assist in providing any replacement parts or remedies as explicitly authorized and provided for by Aermec S.p.A. ***Upon approval***, faulty parts must be returned to the Mitsair head office in Mississauga, Ontario, Canada, freight prepaid, no later than thirty (30) days after the date of the Warranty claim approval. Mitsair shall, when such part has been either replaced or repaired, return such to a Mitsair recognized dealer, contractor, or service organization, F.O.B. any Mitsair company warehouse location, freight prepaid.

3. CONDITIONS FOR WARRANTY.

I. COMPLETE & PROPER START-UP.

i. **Proper Installation**. THIS LIMITED EXPRESS WARRANTY APPLIES **ONLY** TO PRODUCTS THAT HAVE BEEN INSTALLED IN ACCORDANCE WITH (I) ALL INSTALLATION, PRODUCT AND OPERATION MANUALS OR INSTRUCTIONS PROVIDED BY AERMEC S.P.A. AND MITSAIR (INCLUDING BUT NOT LIMITED TO THE SPECIFIC GUIDELINES AND RESTRICTIONS OUTLINED HEREIN IN SECTION 2); (II) ALL APPLICABLE BUILDING CODES AND PERMITS; (III) GOOD TRADE PRACTICES.

ii. **Registration of Pre-Startup and Startup Forms.** The pre-startup and start-up forms must be completed accurately and received on time by the Aermec Technical Department at Mitsair. All forms are available online at: https://www.aermec.us. The forms are as follows:

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1-800-567-2221 (CAN)

1. The "Pre-Startup Checklist" must be submitted at least ten (10) business days prior to the proposed start up date. The full description of parts/products in question must be provided to Mistair, including the AERMEC part number and original equipment serial number.
2. The "Commissioning and Start-Up Form" must be submitted within seven (7) days of completion of the successful start-up.

iii. **Commissioning by Certified Technician**. The commissioning start up technician must be a Certified Technician approved by the Aermec Technical Department at Mitsair, otherwise the warranty terms expressed within this Limited Express Warranty will be null and void. The Aermec Technical Department at Mitsair is available to assist contractors/technicians with start-ups via webinar. To book a training, please contact service@aermec.us.

iv. **Flow Switches & Filters**. Flow switches and water filters (strainers) are mandatory for all units. Some units may have pre-installed flow switches and/or strainers from the Aermec S.p.A. factory, but others must be field installed in accordance with the Aermec S.p.A. Installation & Technical Manuals that are provided with all units.

v. **Water Volume Requirements.** The system (or the primary loop with the unit) must have PROPER WATER VOLUME (USG) AND FLOW RATE (GPM) according to the Aermec S.p.A. specifications. Flow must be balanced and measured across the unit. Required Water Volume can be found online at https://www.aermec.us.

vi. **Torquing Requirements.** All fan coils and products that require torquing must be TORQUED IN COMPLETE COMPLIANCE with the Aermec S.p.A. guidelines and instructions.

vii. **Glycol Requirements.** The Glycol content must be maintained to the correct level.

viii. **Factory Settings**. Any alteration to the manufacturer settings other than those explicitly recommended by Aermec S.p.A. or the Aermec Technical department at Mitsair will void this warranty in its entirety.

II. **WARRANTY EXCLUSIONS.**

MITSAIR IS NOT LIABLE WHATSOEVER FOR ANY PRODUCTS, OR COSTS RELATING TO PRODUCTS, THAT HAVE BEEN INSTALLED, ALETERED, REPAIRED, MAINTAINED, SERVICED, OR OPERATED IN A MANNER INCONSISTENT IN ANY WAY WITH THE INSTRUCTIONS PROVIDED BY AERMEC S.P.A. & MITSAIR (SUCH AS BUT NOT LIMITED TO PRODUCT MANUALS). ANY SUCH IMPROPER INSTALLATION, MAINTENANCE OR APPLICATION NULLIFIES THIS LIMITED EXPRESS WARRANTY IN ITS ENTIRETY. FURTHER, ANY FAILURE TO FOLLOW EXACT MANUFACTURER INSTRUCTIONS REGARDING FLOW SWITCH/FILTER, WATER VOLUME AND TORQUING REQUIREMENTS NULLIFIES THIS LIMITED EXPRESS WARRANTY IN ITS ENTIRETY.

This Limited Express Warranty does not apply to: latent defects; Fuses, refrigerant, fluids, oils; Products relocated after initial installation; Any portion or component of the system that is not supplied by Mitsair, regardless of the cause of the failure of such portion or component; Products on which the module identification tags or labels have been removed or defaced; Products on which payment to Mitsair is or has been in default; Products that have been modified by others; Repairs or alterations by a party other than the manufacturer that adversely affect the stability or reliability of the product; operation of product with any accessory, equipment or part not approved by the manufacturer; Product damage caused by accident, negligence, misuse, abuse, or misapplication of the product; Product damage which has resulted from third party parts or components used to install the system, including but not limited to pipes, wires, pumps, switches, adaptors, covers, line set and fittings etc.; Product damage due to wiring, electrical imbalance characteristics or maintenance (including, without limitation, defects or damages cause by voltage surges, inadequate voltage condition, phase imbalance, any form of electric disturbances, inadequate or improper electrical circuit installation or protection, failure to perform common maintenance, etc.); Products which have defects or damage which result from a contaminated or corrosive air or liquid supply, operation at abnormal temperatures, or unauthorized opening of refrigerant circuit; Products operated in an abrasive, corrosive, or wet environment with exposure to materials such as chlorine, fluorine, or any other hazardous, harmful chemicals, or environmental materials such as sea or salt water; Mold, fungus, bacteria damage; Products which have defects, damage, or insufficient performance as a result of insufficient or incorrect system design/size or system matching; Products which have defects or damages due to freezing of the water supply, an inadequate or interrupted water supply, or improper/inadequate filtration/treatment of the water or air supply; Products which have been damaged due to force majeure including but not limited to fire and flood; Products where unnecessary delays incurred in return of defective component.

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1-800-567-2221 (CAN)

III. WARRANTY LIMITATIONS.

i. **Limitation of Remedies.** Upon notification of a warranty claim, Mitsair will communicate any product issues to the manufacturer Aermec S.p.A. in Italy. Mitsair will only be obligated at Mitsair's option, and upon the approval from Aermec S.p.A., to furnish a new or rebuilt part or module from Aermec S.p.A. in exchange for the part or module which has failed. Mitsair makes no warranty whatsoever to labour and all such labour costs and liabilities lie exclusively with the Buyer and the installer.

ii. **Limitation of Liability.** Mitsair shall have no liability for damages if manufacturer's performance is delayed for any reason or is prevented to any extent by any event such as, but not limited to, any war, civil unrest, government restrictions or restraints, strikes or work stoppages, fire, flood, shortage of transportation, fuel, material, or labour, acts of God or any other reason beyond the sole control of Mitsair. Mitsair makes no warranty whatsoever express, implied, or statutory to any person or entity other than Buyer. Mitsair makes no representation or warranty, express or implied, regarding prevention of mold/mould, fungus, bacteria, microbial growth, or any other contaminates. Except as expressly outlined in this Limited Express Warranty, Mitsair does not make, and hereby expressly disclaims, any warranties, express or implied, concerning its products, equipment or services, including without limitation, any warranty of design, merchantability or of fitness for a particular purpose, or others that are alleged to arise from course of dealing or trade. Mitsair disclaims all liability for the acts, omissions, and conduct of all third parties (including, without limitation, the installer) in connection with or related to the products covered under this Limited Express Warranty. Under no circumstances shall Mitsair be liable for any indirect, incidental, special, punitive or consequential damages or for any infringement of third party rights, lost goodwill, lost revenues or profits, work stoppage, system failure, impairment of other goods, costs of removal and reinstallation of the system, loss of use, injury to persons or property arising out or related to the system, whether any of these above mentioned possible claims are based on breach of warranty, breach of contract, tort or otherwise, even if Mitsair has been advised of the possibility of such damage.

iii. **Disputes.** Except as otherwise decided by Mitsair, any disputes regarding this warranty shall be decided by neutral, binding arbitration, rather than in court by jury trial. All disputes will be governed by and interpreted in accordance with the internal laws of the Province of Ontario, Canada, or other government jurisdiction in which the Mitsair principal place of business resides.

4. ADDITIONAL/OPTIONAL WARRANTIES.

The following additional/optional warranties from a third party are available for purchase upon request.

I. **Delayed Start-Up**. If the unit start-up is not scheduled within ninety (90) days of delivery at site, Delayed Start-Up coverage is recommended, and must be purchased prior to unit delivery. Delayed Start-Up options are: two (2) months, six (6) months, twelve (12) months, eighteen (18) months, and twenty-four (24) months.

II. **Extended Warranty.** There are multiple types of extended warranties available via a third party, including: (i) Compressor Warranty of two (2) – five (5) years, not including labour; (ii) Complete Unit Warranty of one (1) year, parts & labour (iii) Complete Unit Warranty of three (3) years, parts & labour; (iv)Complete Unit Warranty of five (5) years, parts & labour.

III. **Premium Warranty Package.** One (1) year of labour is covered for certain types of units offered by Aermec North America or Mitsair from the start-up date, based on the fulfillment of the following conditions: (i) Balanced flow according to the Selection; and (ii) Remote monitoring by Aernet.

To ensure proper flow in the system, a flow balancing report must be produced. The system can also have a flow adjusting valve at the primary loop so that the flow can be adjusted according to the design flow. For more information on the models that are eligible for the Premium Warranty Package, please contact service@aermec.us. For more information on Extended Warranties, please contact help@aermec.us.

5. OBTAINING WARRANTY PERFORMANCE.

The installing contractor or service organization provides parts and labour warranty performance for the owner. The installing contractor may contact Mitsair to arrange for the exchange of parts upon warranty claim approval.

If assistance is required in obtaining warranty performance, contact: Mits Airconditioning Inc., 1608 Bonhill Road, Mississauga, Ontario, Canada L5T 1C7, (905) 564-2221, help@aermec.us. Please refer to the manufacturer supplied Installation, Operation, and Maintenance manuals for operating and maintenance instructions.

MITS AIRCONDITIONING INC.
H.V.A.C. DISTRIBUTOR

AERMEC air conditioning

1608 Bonhill Road, Mississauga, Ontario, L5T 1C7, Canada
Tel: 905-564-2221 Fax: 905-564-2205

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Maintenance- List of the recommended periodic interventions

General interventions

DESCRIPTION	Note	FREQUENCY 3 Mths	6 Mths	12 Mths
GENERAL INTERVENTIONS				
Refrigerant leak control (this operation must be performed with the frequency suggested by current European regulations)		•		
Unit supply voltage control		•		
Compressor supply voltage control		•		
Solenoid valve control		•		
Pressure switch operation and calibration control, if applicable		•		
Pressure/temperature probe control and reading		•		
Control and replacement, if necessary, of the filter driers				•
Compressor contactor control		•		
Check for the presence of rust or signs of corrosion in the components, paying particular attention to pressurised containers. In that case, replace them or use specific products			•	•
General unit cleaning				•
Vent the hydraulic circuit and the heat exchangers, the coexistence of air and water reduces performance and can promote the formation of rust			•	

INTERVENTIONS ON THE CIRCUIT

Interventions on the circuit

DESCRIPTION	Note	FREQUENCY 3 Mths	6 Mths	12 Mths
INTERVENTIONS ON THE COOLING CIRCUIT OPERATING WITH FULL LOAD				
Measurement of the overheating temperature			•	
Measurement of the undercooling temperature			•	
Measurement of the exhaust gas temperature			•	
Measurement of compressor input			•	
COMPRESSOR CONTROLS				
Oil level control		•		
Oil acidity control				•
Control of proper operation of the carter heater			•	
Control of the oil level sensor, if present			•	
HYDRAULIC CIRCUIT CONTROLS				
Measurement of pump input			•	
Check the rotor seal of the pump(s)		•		
Control of flexible joints		•		
Control of the proper operation and calibration of the flow switch, if present		•		
Control of the proper operation of the differential pressure switch, if present		•		
Control the concentration of the glycol solution, if applicable	(1)	•		
Cleaning the water filter		•		

(1) If the glycol must be changed, refer to the documentation provided by the supplier.

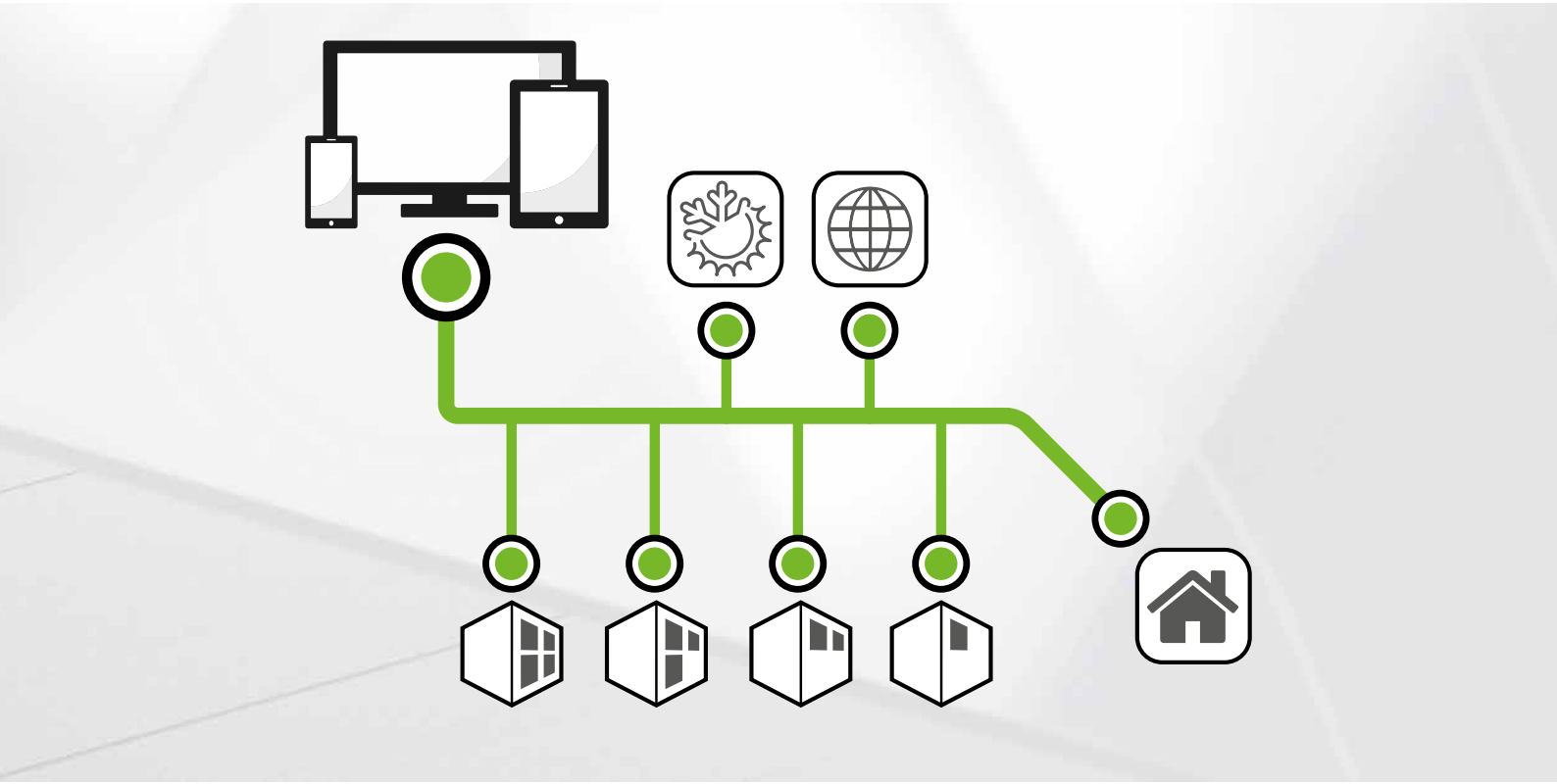
WARNING The frequency of the operations described here is only approximate, they can vary based on how the unit is used and the type of system where it is installed. If the unit is installed in aggressive environments, we recommend reducing the intervention times.

EN

10/01/22 – BMS_NXP_Y_UN50_00
Translation of Original instructions

BMS

Installation Manual



BACNET / MODBUS VARIABLE LIST

AERMEC

www.aermec.com

Dear Customer,
Thank you for wanting to learn about a product Aermec. This product is the result of many years of experience and in-depth engineering research, and it is built using top quality materials and advanced technologies.
The manual you are about to read is meant to present the product and help you select the unit that best meets the needs of your system.
However, please note that for a more accurate selection, you can also use the Magellano selection program, available on our website.
Aermec Aermec, always attentive to the continuous changes in the market and its regulations, reserves the right to make all the changes deemed necessary for improving the product, including technical data.
Thank you again.

AERMEC S.p.A.

TABLE OF CONTENTS

1 AERBACP INSTALLATION AND CONFIGURATION (FOR BACNET)

For the BACnet protocol, the NXP units must use the **AERBACP** accessory in order to communicate with a BMS.

Warning: For the assembly and configuration of the **AERBACP** accessory, refer to its respective manual.

2 RS485 INSTALLATION AND CONFIGURATION (FOR MODBUS)

For the MODBUS protocol, the NXP units must use the **AER485P1** accessory in order to communicate with a BMS.

Warning: For the assembly and configuration of the **AER485P1** accessory, refer to its respective manual.

3 CAREL/BACNET/MODBUS MAPPING

ANALOG VARIABLES

Carel Type	Carel address	BACnet Obj.name	Modbus address	Description	UOM	Min	Max	Read/Write
A	1	A001	1	SUW - Evap. outlet temp. 1	°C	-999.9	999.9	R
A	2	A002	2	SIW - Evap. inlet temp. 1	°C	-999.9	999.9	R
A	3	A003	3	Geothermal outlet temperature	°C	-999.9	999.9	R
A	4	A004	4	Geothermal inlet temperature	°C	-999.9	999.9	R
A	5	A005	5	SUR1 - Circ.1 recovery outlet temp.	°C	-999.9	999.9	R
A	6	A006	6	SIR - Recovery inlet temp.	°C	-999.9	999.9	R
A	7	A007	7	TAP1 - Circ.1 high pressure	Bar	-999.9	999.9	R
A	8	A008	8	TBP1 - Circ.1 low pressure	Bar	-999.9	999.9	R
A	9	A009	9	TAP2 - Circ.2 high pressure	Bar	-999.9	999.9	R
A	10	A010	10	TBP2 - Circ.2 low pressure	Bar	-999.9	999.9	R
A	12	A012	12	TGP1 - Pressing line gas temp. circ.1	°C	-999.9	999.9	R
A	13	A013	13	TGP2 - Pressing line gas temp. circ.2	°C	-999.9	999.9	R
A	14	A014	14	SL1 - Liquid temp. circ.1	°C	-999.9	999.9	R
A	15	A015	15	SL2 - Liquid temp. circ.2	°C	-999.9	999.9	R
A	19	A019	19	Multi-function input	---	-999.9	999.9	R
A	21	A021	21	SUW com - Common evap. outlet temp.	°C	-999.9	999.9	R
A	22	A022	22	SUR com - Common recovery outlet temp.	°C	-999.9	999.9	R
A	23	A023	23	SSAN Domestic Hot Water Temperature	°C	-999.9	999.9	R
A	24	A024	24	Software version	---	0	9.9	R
A	191	A191	191	Current set-point geo pump	bar_g	0	999.9	R
A	195	A195	195	Active recovery differential	°C	0	999.9	R
A	196	A196	196	Active recovery set-point	°C	-999.9	999.9	R
A	197	A197	197	Active plant differential	°C	0	999.9	R
A	198	A198	198	Current plant set-point	°C	-999.9	999.9	R
A	199	A199	199	Total recovery set-point 1	°C	0	999.9	R/W
A	200	A200	200	Total recovery set-point 2	°C	0	999.9	R/W
A	201	A201	201	Total recovery differential	°C	0	999.9	R/W
A	202	A202	202	Plant summer differential	°C	0	999.9	R/W
A	203	A203	203	Plant winter differential	°C	0	999.9	R/W
A	204	A204	204	Set point 1, summer	°C	-999.9	999.9	R/W
A	205	A205	205	Set point 2, summer	°C	-999.9	999.9	R/W
A	206	A206	206	Set point 1, winter	°C	-999.9	999.9	R/W
A	207	A207	207	Set point 2, winter	°C	-999.9	999.9	R/W

INTEGER VARIABLES

Carel Type	Carel address	BACnet Obj.name	Modbus address	Description	UOM	Min	Max	Read/Write
I	1	A1001	209	Plant On/Off Mode (OFF;ON;"ECONOMY";TIME ZONE;)	---	0	3	R/W
I	2	A1002	210	Recovery On/Off Mode (OFF;ON;"ECONOMY";TIME ZONE;)	---	0	3	R/W
I	3	A1003	211	Summer winter selection (;SUMMER;WINTER;By External T.;By DIN, By BMS, By Scheduler)	---	0	3	R/W
I	6	A1006	214	Plant active power (0...100)	%	0	100	R
I	7	A1007	215	Recovery active power (0...100)	%	0	100	R
I	8	A1008	216	Top part timer, Plant 1 pumps	---	0	999	R
I	9	A1009	217	Bottom part timer, Plant 1 pumps	h	0	999	R
I	11	A1011	219	Unit state (0=Off,1=CH,CH+Rec,PD,Rec,)	---	0	20	R
I	12	A1012	220	Top bottom timer, comp.1 circ.1	---	0	999	R
I	13	A1013	221	Bottom part timer, comp.1 circ.1	h	0	999	R
I	14	A1014	222	Top part timer, comp.2 circ.1	---	0	999	R
I	15	A1015	223	Bottom part timer, comp.2 circ.1	h	0	999	R
I	18	A1018	226	Top part timer, comp.1 circ.2	---	0	999	R
I	19	A1019	227	Bottom part timer, comp.1 circ.2	h	0	999	R
I	20	A1020	228	Top part timer, comp.2 circ.2	---	0	999	R
I	21	A1021	229	Bottom part timer, comp.2 circ.2	h	0	999	R
I	24	A1024	232	Total power request (0-100%)	%	0	100	R
I	27	A1027	235	Geothermal pump speed (0..100%)	%	0	100	R
I	29	A1029	237	Plant side power request (0...100)	%	0	100	R
I	30	A1030	238	Domestic side power request (0...100)	%	0	100	R
I	31	A1031	239	Top bottom timer, recovery 1 pumps	---	0	999	R
I	32	A1032	240	Bottom part timer, recovery 1 pumps	h	0	999	R
I	33	A1033	241	Top part timer, recovery pumps 2	---	0	999	R
I	34	A1034	242	Bottom part timer, recovery 2 pumps	h	0	999	R
I	35	A1035	243	Top part timer, Plant 2 pumps	---	0	999	R
I	36	A1036	244	Bottom part timer, Plant 2 pumps	h	0	999	R
I	200	A1200	408	Circ 1 power request (0..100%)	%	0	999	R
I	201	A1201	409	Circ 2 power request (0..100%)	%	0	999	R
I	204	A1204	412	Circ.2 State (0=C2;1=CH;2=CH+R;3=PC;4=Rec;5=Stop;6=6;7=7;8=8;9=9;10=Wait10;11=Ok; 12=Defr12;13=Wait13;14=Defr14;15=Defr15;16=16;17=Defr17;18=18;19=19)	---	0	99	R
I	205	A1205	413	Circ.1 State (0=C2;1=CH;2=CH+R;3=PC;4=Rec;5=Stop;6=6;7=7;8=8;9=9;10=Wait10;11=Ok; 12=Defr12;13=Wait13;14=Defr14;15=Defr15;16=16;17=Defr17;18=18;19=19)	---	0	99	R

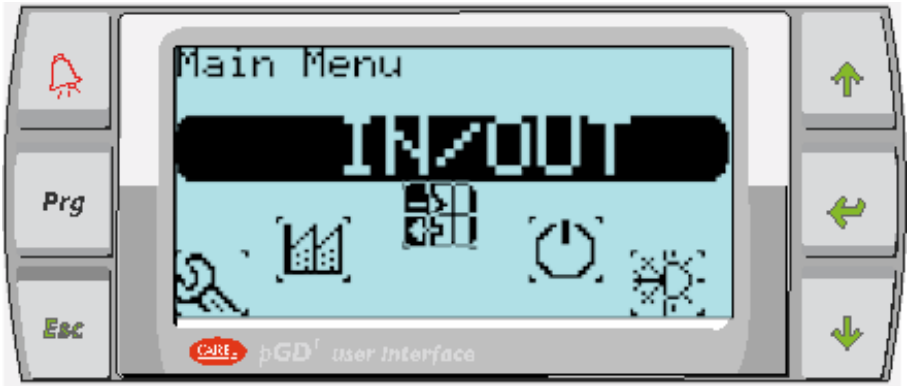
DIGITAL VARIABLES

BACnet type	Carel address	BACnet Obj.name	Modbus address	Description	Read/Write
D	1	D001	1	Unit On/Off	R
D	2	D002	2	Summer/Winter request from Supervisor	R/W
D	3	D003	3	Reset alarms (1= reset)	R/W
D	4	D004	4	Plant switch-on request from digital input	R
D	5	D005	5	Plant cold/hot request from digital input (closed = Cold)	R
D	6	D006	6	Recovery switch-on request from digital input	R
D	9	D009	9	Recovery On/Off from Superv.	R/W
D	10	D010	10	Plant On/Off from Superv.	R/W
D	22	D022	22	Alarm inlet water geothermal probe	R
D	23	D023	23	Alarm outlet water geothermal probe	R
D	24	D024	24	Alarm overload geo pump	R
D	25	D025	25	Alarm antifreeze geo	R
D	26	D026	26	Alarm flow switch geo	R
D	28	D028	28	Recovery low load function active	R
D	29	D029	29	Plant low load function active	R
D	30	D030	30	Pump 1 evaporator	R
D	31	D031	31	Pump 2 evaporator	R
D	34	D034	34	Recovery pump 1	R
D	35	D035	35	Recovery pump 2	R
D	36	D036	36	CCP1 - Compressor 1 circ.1	R
D	37	D037	37	CP1A - Compressor 2 circ.1	R
D	39	D039	39	CCP2 - Compressor 1 circ.2	R
D	40	D040	40	CCP2A - Compressor 1 circ.2	R
D	42	D042	42	MPG – Geothermal pump	R
D	44	D044	44	VIC- cycle reversing valve, Circ 1	R
D	45	D045	45	VIC- cycle reversing valve, Circ 2	R
D	46	D046	46	VS1 - liquid solenoid valve 1 circ.1	R
D	47	D047	47	VS1 - liquid solenoid valve 1 circ.2	R
D	48	D048	48	VS2 - liquid solenoid valve 2 circ.1	R
D	49	D049	49	VS2 - liquid solenoid valve 2 circ.2	R
D	50	D050	50	VIR Recovery reversing valve, circ. 1	R
D	51	D051	51	VIR Recovery reversing valve, circ. 2	R
D	52	D052	52	VS-B - Condensation solenoid valve circ.1	R
D	53	D053	53	VS-B - Condensation solenoid valve circ.2	R
D	54	D054	54	VS-R - Recovery solenoid valve circ.1	R
D	55	D055	55	VS-R - Recovery solenoid valve circ.2	R
D	58	D058	58	VS-E - Evaporator solenoid valve circ.1	R
D	59	D059	59	VS-E - Evaporator solenoid valve circ.2	R
D	100	D100	100	Sum of all alarms	R
D	101	D101	101	AL38 - evaporator flow meter alarm	R
D	102	D102	102	AL39 - recovery flow meter alarm	R
D	103	D103	103	AL24 - Evaporator pump 1 circuit breaker alarm	R
D	104	D104	104	AL25 - Evaporator pump 2 circuit breaker alarm	R
D	107	D107	107	AL26 - Recovery pump 1 circuit breaker alarm	R
D	108	D108	108	AL27 - Recovery pump 2 circuit breaker alarm	R
D	109	D109	109	AL23- Compressor 1 circ.1 circuit breaker alarm	R
D	110	D110	110	AL51- Compressor 2 circ.1 hours maintenance alarm	R
D	112	D112	112	AL53- Compressor 1 circ.2 circuit breaker alarm	R
D	113	113	113	AL54- Compressor 2 circ.2 hours maintenance alarm	R
D	117	D117	117	AL40 - Evap. antifreeze alarm	R
D	119	D119	119	AL30 - Circ.1 low pressure gauge alarm	R
D	120	D120	120	AL64 - Circ.2 low pressure gauge alarm	R
D	121	D121	121	AL31 - Circ.1 low pressure alarm	R
D	122	D122	122	AL65 - Circ.1 low pressure alarm	R
D	123	D123	123	AL34 - Circ.1 critical low pressure alarm	R
D	124	D124	124	AL35 - Circ.2 critical low pressure alarm	R
D	125	D125	125	AL32 - Circ.1 high pressure gauge alarm	R
D	126	D126	126	AL66 - Circ.2 high pressure gauge alarm	R
D	127	D127	127	AL33 - Circ.1 high pressure alarm	R
D	128	D128	128	AL67 - Circ.2 high pressure alarm	R
D	129	D129	129	AL03 - Phase monitor alarm	R
D	130	D130	130	AL10 - Evap.1 outlet faulty probe alarm	R
D	131	D131	131	AL09 - Evap.1 inlet faulty probe alarm	R
D	134	D134	134	AL13- Recovery 1 outlet faulty probe alarm	R
D	135	D135	135	AL12- Recovery 1 inlet faulty probe alarm	R
D	136	D136	136	AL05 - Circ.1 high pressure faulty probe alarm	R
D	137	D137	137	AL07 - Circ.1 low pressure faulty probe alarm	R
D	138	D138	138	AL06 - Circ.2 high pressure faulty probe alarm	R
D	139	D139	139	AL08 - Circ.2 low pressure faulty probe alarm	R
D	141	D141	141	AL48 - Pressing line 1 gas temp. faulty probe alarm	R
D	142	D142	142	AL49 - Pressing line 1 gas temp. faulty probe alarm	R
D	143	D143	143	AL17 - Circ.1 liquid temp. faulty probe alarm	R
D	144	D144	144	AL18 - Circ.2 liquid temp. faulty probe alarm	R

BACnet type	Carel address	BACnet Obj.name	Modbus address	Description	Read/Write
D	147	D147	147	AL01 - Dead clock battery alarm	R
D	148	D148	148	AL02 - pCO memory error alarm	R
D	149	D149	149	AL14- Recovery 2 outlet probe faulty alarm	R
D	150	D150	150	AL15- Com recovery outlet faulty probe alarm	R
D	151	D151	151	AL19 -Comp.1 circ.1 hours maintenance alarm	R
D	153	D153	153	AL21 - Recovery 1 pumps hours maintenance alarm	R
D	154	D154	154	AL22 - Evap, pumps hours maintenance alarm 1	R
D	158	D158	158	AL36 - Circ.1 high pressure prevention	R
D	159	D159	159	AL37 - Circ.1 high pressure prevention	R
D	160	D160	160	AL41 - Com. evap. antifreeze alarm	R
D	161	D161	161	AL42 - Rec. 1 antifreeze alarm	R
D	162	D162	162	AL43 - Rec. 2 antifreeze alarm	R
D	163	D163	163	AL44 - Com. rec. antifreeze alarm	R
D	164	D164	164	AL45 - uPC expansion offline alarm	R
D	166	D166	166	AL47 - Recovery 1 forcing alarm off	R
D	168	D168	168	AL57 - Recovery 2 pumps hours maintenance alarm	R
D	169	D169	169	AL58 - Evap.2 pumps hours maintenance alarm	R
D	170	D170	170	AL59- Compressor 2 circ.1 circuit breaker alarm	R
D	172	D172	172	AL61- Compressor 1 circ.2 circuit breaker alarm	R
D	173	D173	173	AL62- Compressor 2 circ.2 circuit breaker alarm	R
D	176	D176	176	AL11 - Com. evap. outlet faulty probe alarm	R
D	177	D177	177	AL68 - Circ.1 low pressure prevention	R
D	178	D178	178	AL69 - Circ.1 low pressure prevention	R
D	180	D180	180	AL71 - Recovery 2 forcing alarm off	R
D	181	D181	181	AL72 - Com recovery forcing alarm off	R
D	182	D182	182	AL73 - Pressing line gas high temp. prevention	R
D	183	D183	183	AL74 - Pressing line gas high temp. prevention	R
D	184	D184	184	AL75 - Circ.1 pressing line gas high temp. alarm	R
D	185	D185	185	AL76 - Circ.2 pressing line gas high temp. alarm	R
D	190	D190	190	AL84 - High recovery temperature	R
D	191	D191	191	AL85 - High Plant temperature	R
D	192	D192	192	AL86 – Force off plant high temperature 1	R
D	193	D193	193	AL87 – Force off plant high temperature 2	R
D	194	D194	194	AL88 – Force off plant low temperature 1	R
D	195	D195	195	AL89 – Force off plant low temperature 2	R
D	196	D196	196	AL93 - pLAN Master offline	R
D	197	D197	197	AL94 - pLAN Slave offline	R
D	198	D198	198	AL95 - Slave alarm	R
D	199	D199	199	AL96 - Master alarm	R
D	200	D200	200	AL97 - Alarm B5 uPC	R

4 CONTROL CARD COMMUNICATION SETUP (FOR BACNET AND MODBUS)

Push Prg button and it will appear this page:



Push ↓ button more times until reach SERVICE page, then push ↵ button

Icon	Text
	IN/OUT
	ON/OFF
	PLANT
	RECOVERY
	CLOCK
	SERVICE
	MANUFACTURE

The SERVICE masks are protected from password. The default password is 0442 but it is possible to change it by USER masks. If you insert a wrong password you will have a error message.
The password will become 0 after 5 minutes if none use the user interface.

Write the password 0442 using button ↓ , ↑ and ↵. If the password is right you will see the following page:

Push ↓ button more times until reach OPTIONS page, then push ↵ button.

Icon	Text
	LANGUAGES
	INFO
	PLANT
	RECOVERY
	FANS
	PUMPS
	HOUR METER
	FORCE
	OPTIONS
	CONFIGURATION PLANT
	MISCELLANEO
	IN/OUT

BACNET

Settings to use:

MODBUS

Regarding the MODBUS data, you can set the respective parameters (highlighted in black) as you prefer:

Description	Values		UOM	Min	Max	Read/Write
Parameters						
Type of protocol	0= CAREL, **1=MODBUS**, 2=LON, 3=pCOWEB,		---	0	3	R/W
Speed of communication	**0: 1200**	**3: 9600**	baud	0	4	R/W
	1: 2400	**4: 19200**				
	2: 4800					
Supervisor address			---	0	207	

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10/01/22 – BMS_NXP_Y_UN50_00

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Product Datasheets

Tag: WSHP-02B

NXP1400°4L8°°
Chris Gibson Recreation Centre
SUBMITTALS

MITS AIRCONDITIONING INC.
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AERMEC air conditioning

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Contents

Unit Nomenclature

Field	Type	Selection	Description
1,2,3	Code	NXP	Water cooled unit for indoor installation with scroll compressors
4,5,6,7	Size	1400	Selected unit Size
8	Field of use	°	Standard mechanical thermostatic expansion valve
9	System Type	4	4-pipe system (cooling + heating)
10	Version	L	Low noise
11	Power supply	8	575 volts 3 phase 60 Hz
12	Evaporator side pumps	°	without pumps or buffer tank
13	Condenser side pumps	°	without pumps or buffer tank

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Unit Selection - Model: NXP1400°4L8°°

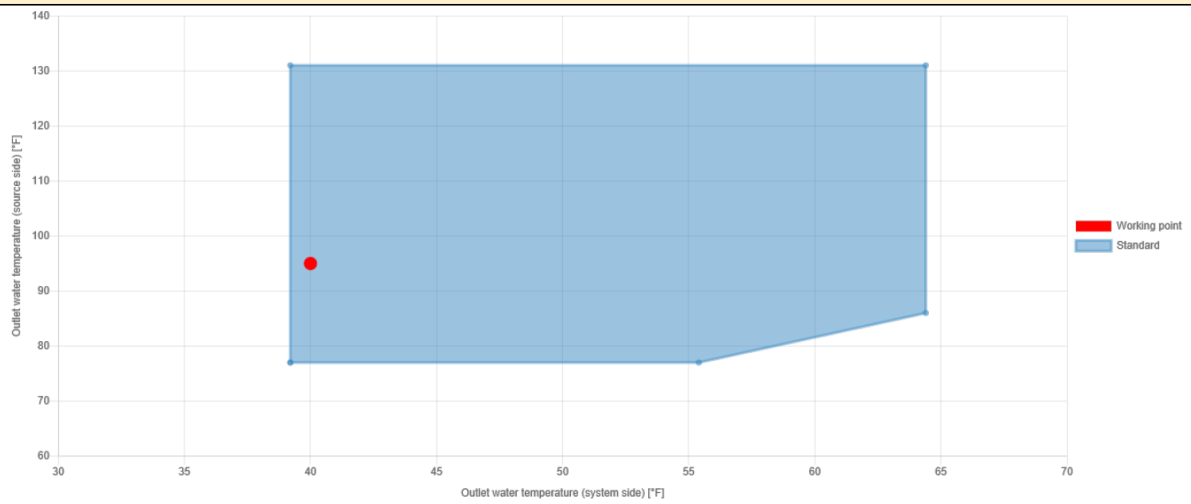
Cooling

Cooling			
Capacity	ton		90.2
Input power	kW		77.1
Input current	A		91
EER	Btu/W		14.03

		Source side	System side
Inlet water temperature	°F	85.0	52.0
Outlet water temperature	°F	95.0	40.0
Propylene glycol	%	35	35
Water flow rate	gpm	284.5	194.4
Pressure drops	ft H2O	8.47	4.52
Fouling factor	(h ft² °F)/Btu	0	0

Cooling Operating Limits

Cooling



Unit operation for cooling mode must be in the blue area. The unit is being designed to work to the indicated working point.

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Heating

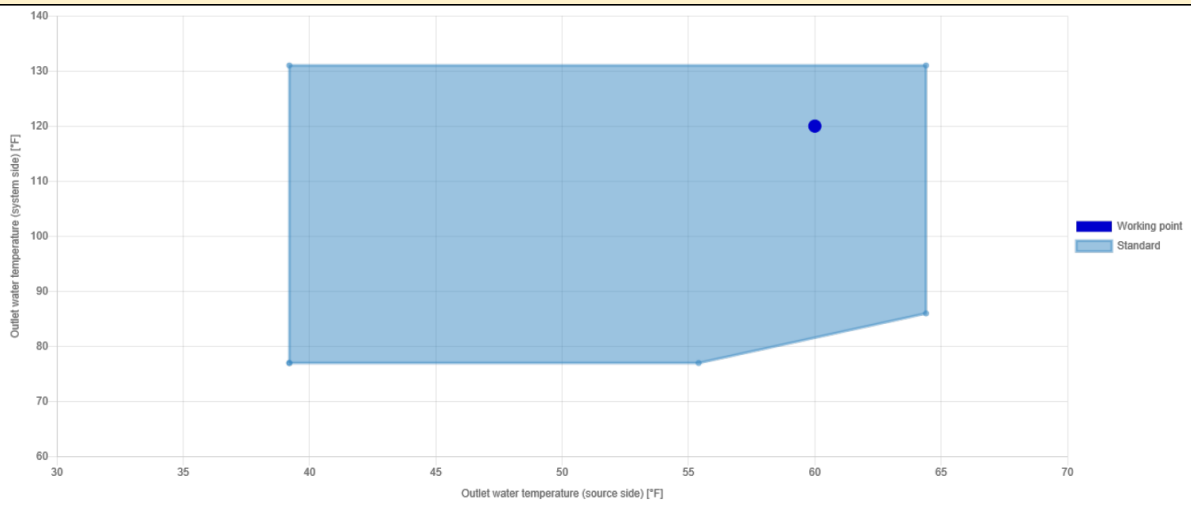
Heating		
Capacity	Btu/h	1,619,000
Input power	kW	101.0
Input current	A	114.3
COP	kW/kW	4.70

		Source side	System side
Inlet water temperature	°F	70.0	100.0
Outlet water temperature	°F	60.0	120.0
Propylene glycol	%	35	35
Water flow rate	gpm	277.1	172.4
Pressure drops	ft H2O	8.54	3.06
Fouling factor	(h ft² °F)/Btu	0	0

The heating side is rated with the minimum water flow rate the unit can handle. Attention to balancing and pressure drop must be prioritized on site. If the pressure drop goes up (dirty strainer) the flow rate will go down and can cause nusince alarms.

Heating Operating Limits

Heating



Unit operation for heating mode must be in the blue area. The unit is being designed to work to the indicated working point.

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Simultaneous Operation

Simultaneous operation		
Cooling capacity	ton	72.5
Heating capacity	Btu/h	1,247,960
Input power	kW	102.6
Input current	A	120.6
TER	Btu/W	20.65

		Cooling	**Heating**
Inlet water temperature	°F	50.3	104.3
Outlet water temperature	°F	40.0	120.0
Propylene glycol	%	35	35
Water flow rate	gpm	194.4	172.4
Pressure drops	ft H2O	4.52	3.05
Fouling factor	(h ft² °F)/Btu	0	0

Selection Notes:

- The factory is going to use this selection to design the TX valve on the unit. If the conditions change in the field, this will need to be reviewed by an Aermec Technician. In some cases, the TX valve may need to be altered or change in the field if you are not working to these designed conditions.
- The selection is designed with constant flow with the specified flow rates. If the flow rates are different on site your operating temperatures will be different on site.
- If the flow rate will change you may not get the operation or output as designed. A change to these conditions must be reviewed by HTS and Aermec.

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General Data

Refrigerant		R410A
Compressor type		Scroll
Number of compressors	N.	4
Number of cooling circuits	N.	2
Heat Exchanger type		Plate
Number of heat exchanger	N.	3
Evaporator water connections		4”
Refrigerant Charge	Lbs (C1 / C2)	68.3 / 68.3

Electrical Data

LRA	A	337.9
MCA	A	149.9
MOP	A	184.7
SCCR	kA	10
Power Supply		575V-3PH-60HZ

Sound Data

Model	Total Sound Levels		Octave Band [Hz]						
	Power dBA	Pressure dBA/10m	125	250	500	1000	2000	4000	8000
			Sound power by central band frequency [dB(A)]						
1400	90.0	66.5	50.5	70.3	77.2	85.9	71.8	77.3	62.1

Dimensional Data

Height	In	83.5
Width	In	49.3
Depth	In	102.4
Empty Weight	Lb	5,203
Running Weight	Lb	5,600

Minimum Water Content

NXP		1400
Minimum Water Content	Cooling/ Heating side gal/ton HVAC load	6.5
	Cooling / Heating side gal/ton Process or low load	13.0

Minimum water content in the case of applications in process or operation at low / part load
*This is per unit. For final water volume we must consider total tonnage multiplied by the minimum for the application

Example Process / low load (25% Load) scenario
Cooling = 102 tons (nominal) x 13 = 1,326 Gallons actively flowing as a minimum.
Heating = 1,313,146 / 12000 = 109 tons (nominal) x 13 = 1,417 Gallons actively flowing as a minimum.
If this water volume is not met in this scenario, additional buffer tanks should be added on site. If combining multiple units, the minimum water volume per unit must be added together.

Water Flow rate

This unit requires constant speed pumping on the heating and cooling side. This unit is being designed with the flow and water temperatures shown in “Unit Selection - Model: NXP1400°4L8°°” section. If this will change you may not get the operation or output as designed. A change to these conditions must be reviewed by HTS and Aermec.
Minimum flow rate = 148 GPM
Maximum flow rate = 462 GPM

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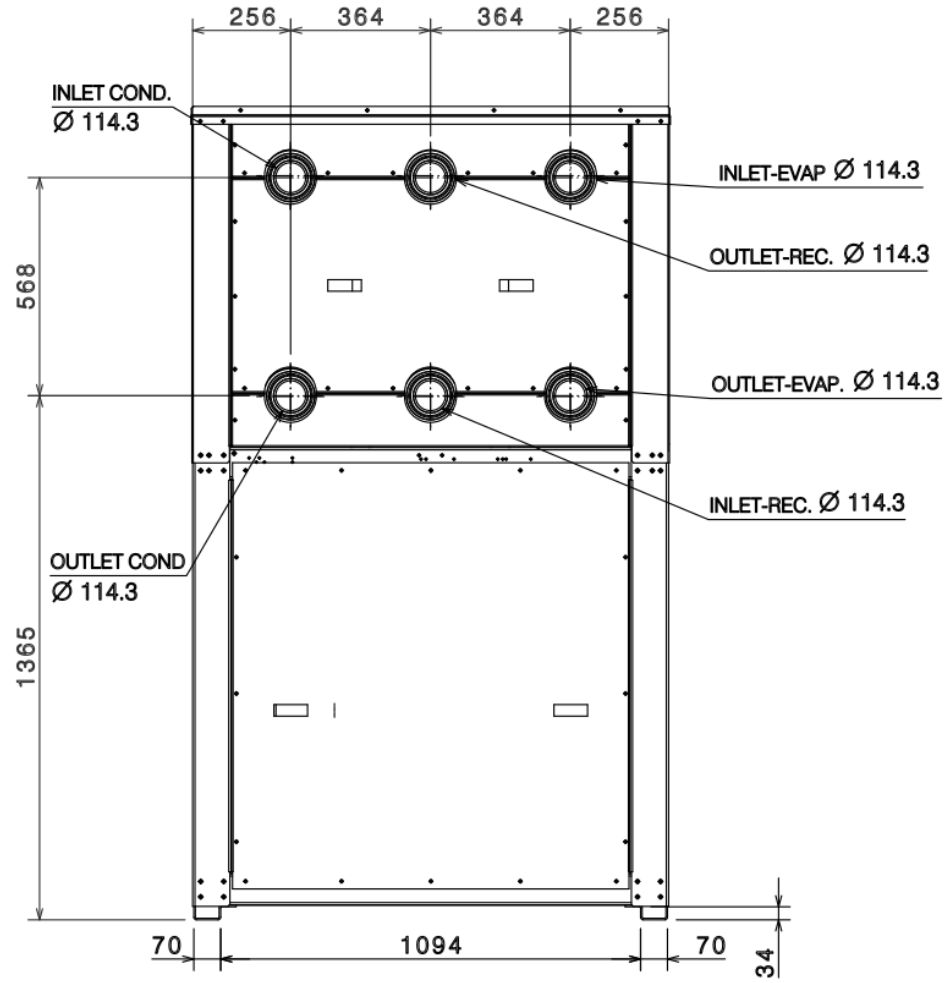
Hydraulic Connection



HYDRAULIC CONNECTIONS	
Ø (mm)	**inch**
76.1	2" 1/2
88.9	3"
114.3	4"

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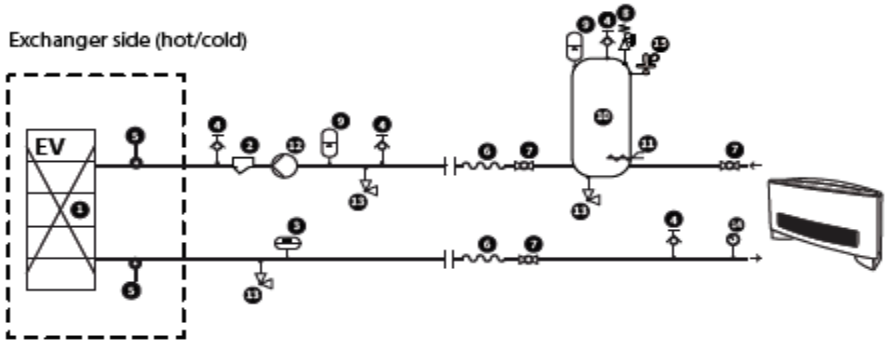
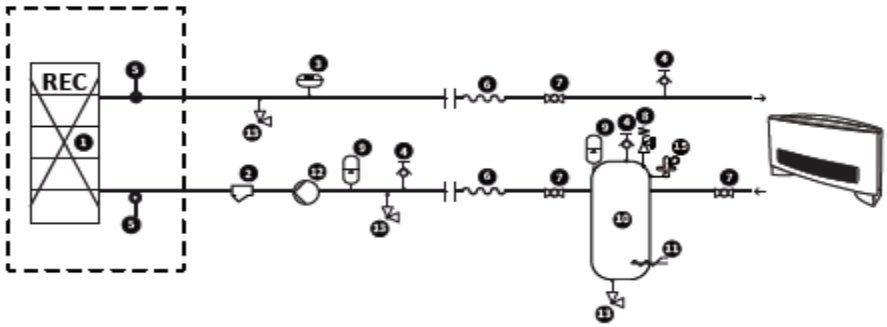
Hydronic Components

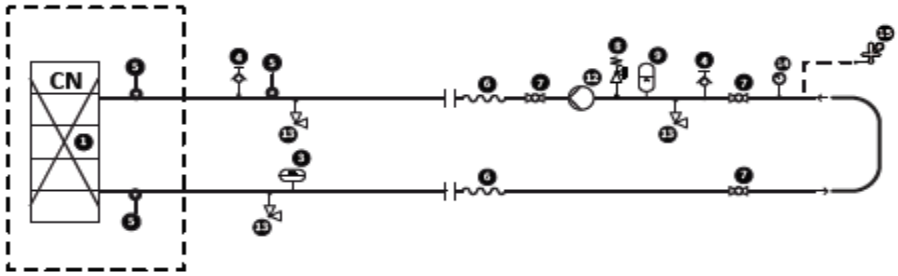
Exchanger side (hot/cold)



Exchanger side (DHW)



Exchanger side (geothermal)



COMPONENTS SUPPLIED AS PER STANDARD
1 - Plate exchanger
5 - Water temperature probes (IN/OUT)

RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE
2 - Water filter
3 - Fow switch
4 - Air vent valve
6 - Anti-vibration joints
7 - Cut-off valve
8 - Safety valve
9 - Expansion Tank
10 - System buffer tank (installation recommended whenever the system water content is less than that indicated in tab.)
11 - Antifreeze electric heater
12 - Pump
13 - Drain valve
14 - Gauge
15 - Automatic fill point

CFMS-W: Please note the following requirements.

Strainers are not supplied or installed. A minimum or 100 Micron rated strainer is mandatory to be field supplied and installed.

Flow Switches are provided and not installed. It is mandatory to install all flow switches on site.

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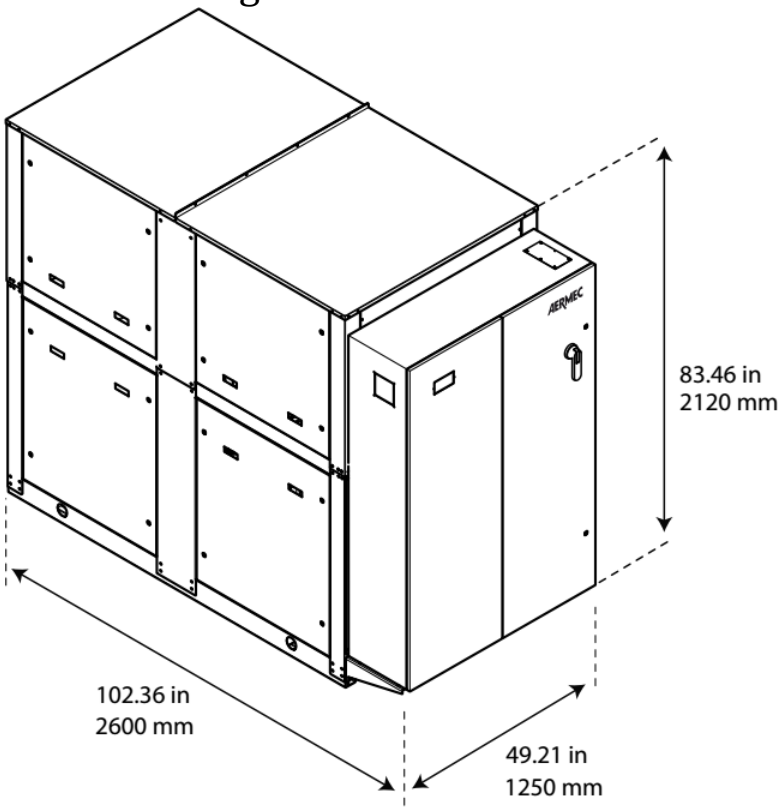
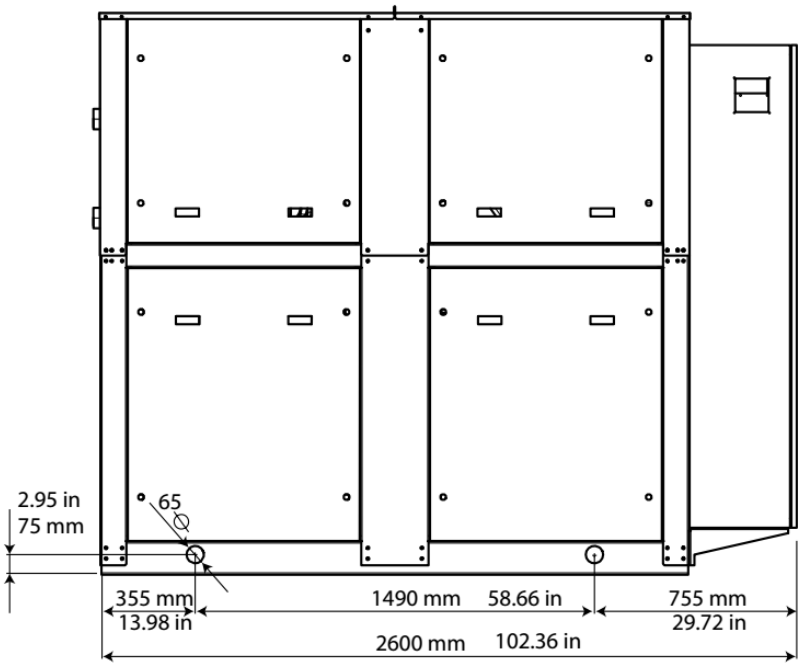
Dimensions & Lifting





NXP_[1000-1250-1400-1500-1650]_[°]_[L]_[2-4]_[°]_[6-7-8-9]_[°]_[°]

Legenda
EVAP = Scambiatore lato (caldo/freddo)
REC = Scambiatore lato (sanitario)
COND = Scambiatore lato (geotermico)

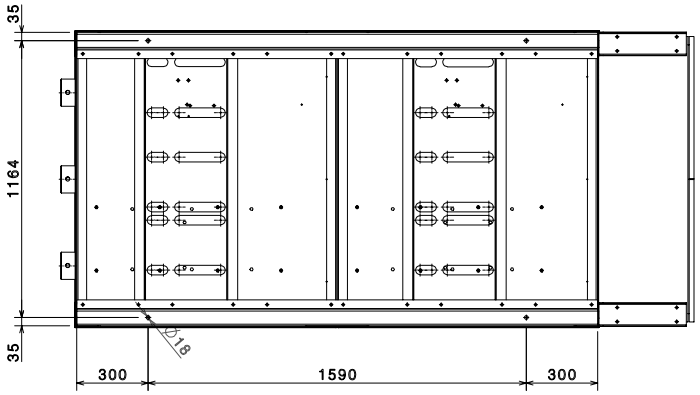
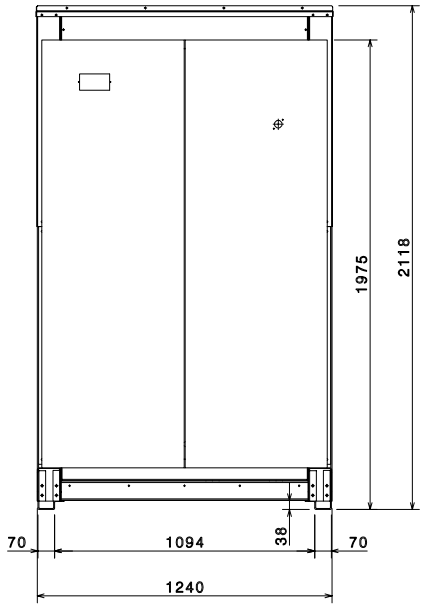
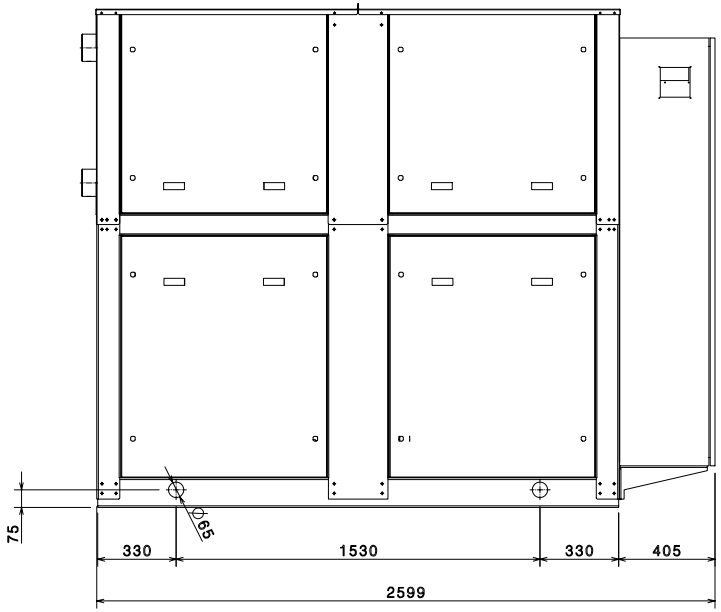
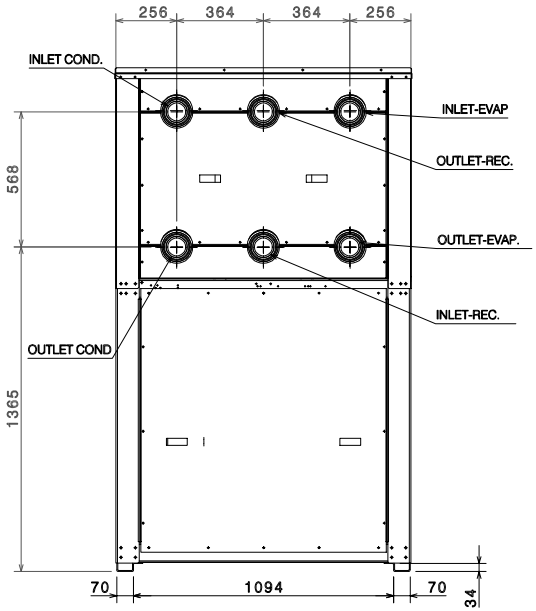


TABELLA ATTACCHI IDRAULICI			
MODELLO	DIAMETRO	POLLICI	
NXP1000	Ø 114.3	4"	
NXP1250	Ø 114.3	4"	
NXP1400	Ø 114.3	4"	
NXP1500	Ø 114.3	4"	
NXP1650	Ø 114.3	4"	







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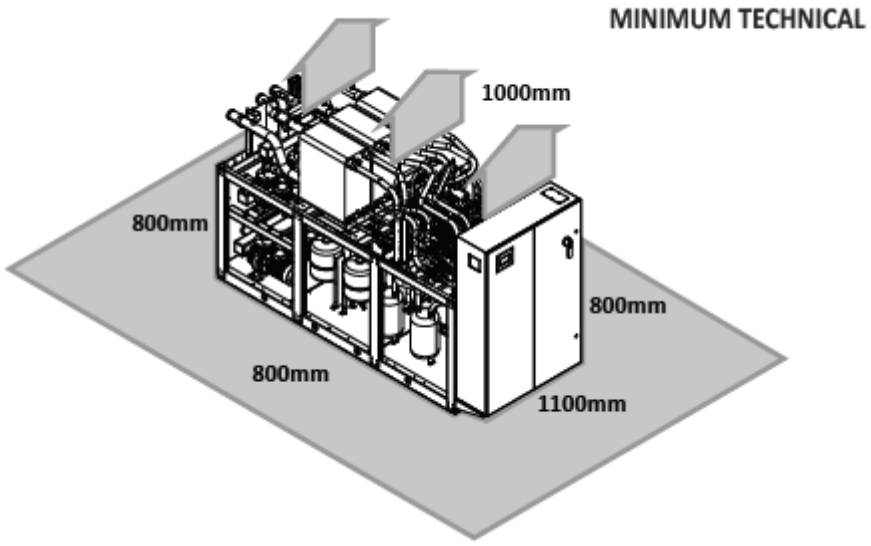
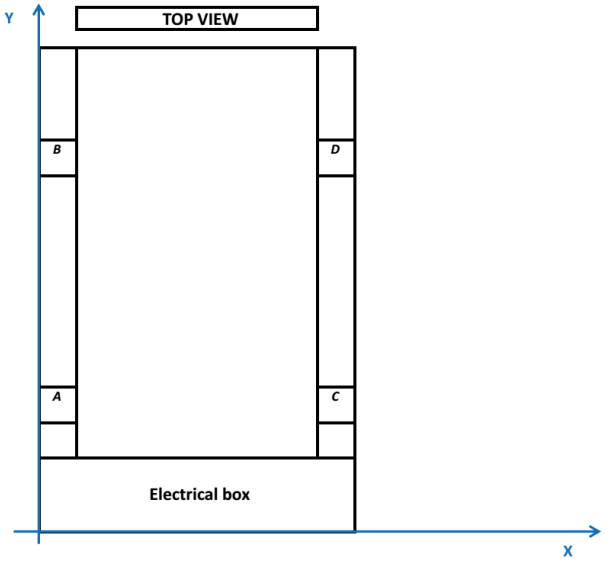
Clearance



Weight Distribution



Empty Weight	Running Weight	X	Y	A	B	C	D
5,203	5,600	27.8 IN	66.1 IN	17%	27%	34%	22%

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Standard Safety settings

16. CONTROL AND SAFETY DEVICE SETTINGS

CONTROL PARAMETER			
Cooling setpoint	Water inlet temperature in cooling mode operation.	**MIN.**	4°C
		MAX.	15°C
		DEFAULT	7.0°C
Heating setpoint	Water inlet temperature in heating mode operation.	**MIN.**	30°C
		MAX.	50°C
		DEFAULT	50°C
Anti-freeze setting	Anti-freeze alarm setting on the EV side (outlet water temperature).	**MIN.**	-9°C
		MAX.	4°C
		DEFAULT	3°C
Total differential	Proportional temperature band within which the compressors are activated and deactivated.	**MIN.**	3°C
		MAX.	10°C
		DEFAULT	5°C
Autostart	Auto		

- Operating with glycol and low temperatures on the source side, these settings must be changed on startup and commissioning.

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Water to water heat pump

Unit Description - 4 Pipe System

- The multipurpose 4-pipe units have been made to respond to the demands of shopping centers, offices or facilities with large windows, where there can be the simultaneous demand for hot and cold water with a system which does not require season changeover and therefore is a valid alternative to traditional systems based on the chiller-boiler combination. The microprocessor control logic mounted ensures perfect satisfaction of heating and cooling loads. The operating modes are:
- Production of cooled water only: The multipurpose unit acts as a classical chiller: disposal of condensation heat through the heat exchanger from the geothermal side.
- Production of hot water only: The multipurpose unit behaves as a heat pump, using the heat of the geothermal side, through the plate heat exchanger (evaporator) to raise the temperature of the water to be sent to the system through a plate heat exchanger (condenser). The main difference with respect to traditional heat pumps with cycle inversion is that the heated water is produced in an exchanger different to that used for the production of cold water. This is to keep the heating and cooling sections necessary for 4-pipe systems well distinguished.
- Combined Production: If the utility requires simultaneous hot and cold water, the unit acts as a water/water heat pump, controlling condensation and evaporation on two distinct plate heat exchangers associated to the circulation of cold and hot water in the system. It automatically changes from one configuration to the other (managed by on-board microprocessor) to optimize the energy spent depending on the demand by the utility.

Refrigerant

NXP range chillers use HFC R410A near-azeotropic mixture as a refrigerant; it is characterized by nil ODP (Ozone Depletion Potential) and classified within the safety group A1 according to the ASHRAE 34-1997 Standard.

Heat Exchangers (3)

System Side Heat Exchanger - Braze welded AISI 316 steel plate exchanger, insulated externally with closed cell neoprene anti-condensation material.

System Heating Side (4 Pipe) - Braze welded AISI 316 steel plate exchanger, insulated externally with closed cell neoprene anti-condensation material.

Source Side Exchanger - Braze welded AISI 316 steel plate exchanger, insulated externally with closed cell neoprene anti-condensation material.

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Description of the compressors

Hermetic scroll rotary compressors. All compressors come with casing resistance, electronic thermal protection with centralized manual rearm and two-pole electric motor

Thermostatic Valve:

Standard mechanical thermostatic valve with outdoor equalizer placed at the exit of the evaporator, and bulb sensitive to the intake temperature. Depending on the heat load, it modulates the gas flow, while maintaining the correct degree of superheat of the intake gas to the compressor. This makes it possible to work with a minimum temperature of the produced water above 39.2 °F. Refer to operating limits section.

Electric Control Board

Electric control board incompliance with EN 60204-1/ IEC 204-1 Standards, complete with:

- transformer for the control circuit,
- door lock main isolating switch,
- fuses and contactors for compressors and fans,
- clamps for REMOTE PANEL (PGD1),
- spring type control circuit terminal board,
- outdoor electric board with double door and gaskets,
- electronic controller,
- evaporator pump and recovery pump control consent relay (for versions without pump units only),
- All numbered cables.

Safety devices and protections

The heat pump is always provided with the following devices:

- Low Pressure Transducer - Positioned on the low pressure side of the cooling circuit, it informs the control board of the work pressure, generating a pre-alarm in the event of anomalous pressure.
- High pressure transducer- Positioned on the high pressures side of the cooling circuit, it informs the control board of the work pressure, generating a pre-alarm in the event of anomalous pressure.
- High Pressure Switch - With fixed calibration, placed on high pressure side of cooling circuit, inhibits compressor operation if abnormal work pressure occurs.
- Cooling Circuit Safety Valves - They intervene by discharging the overpressure in the event of anomalous pressures. - Calibrated at 45 bar on HP branch. - Calibrated at 30 bar on LP branch.
- The electric control board is protected by an interlock system of the access door: this lever can be locked using one or more padlocks during maintenance work to prevent the unit from being powered up accidentally.
- The electric board comes complete with: a transformer for the control circuit, a door-lock isolating switch, fuses for compressors and fans, clamps for the remote panel, spring type

control circuit terminals, electrical board to be mounted outside with double door and gaskets, electronic controller, control consent relay for evaporator and recovery pumps (only for models without pump units);

- Compressor Circuit breakers

Electronic Controller

The microprocessor has the following functions:

Functions Performed:
• control of evaporator water inlet temperatures with up to 6 stages
• compressor delay start timer;
• sequential compressor rotation;
• compressor hour counter;
• start/stop
• reset;
• permanent alarm memory;
• autostart after power loss.
• multi -lingual display.
• operation with local or remote control. (accessory PGD1)
Unit Status Display:
• ON/OFF compressors;
• Alarm history.
Alarms:
• high pressure;
• flow switch;
• low pressure;
• anti -freeze;
• compressor overload;
• pump overload.
Display of the Following parameters:
• Water inlet temperature.
• Water outlet temperature.
• Δ t;
• high pressure;
• low pressure;
• time delay before restart.
• alarms display

Settings:
• cooling setpoint
• total differential

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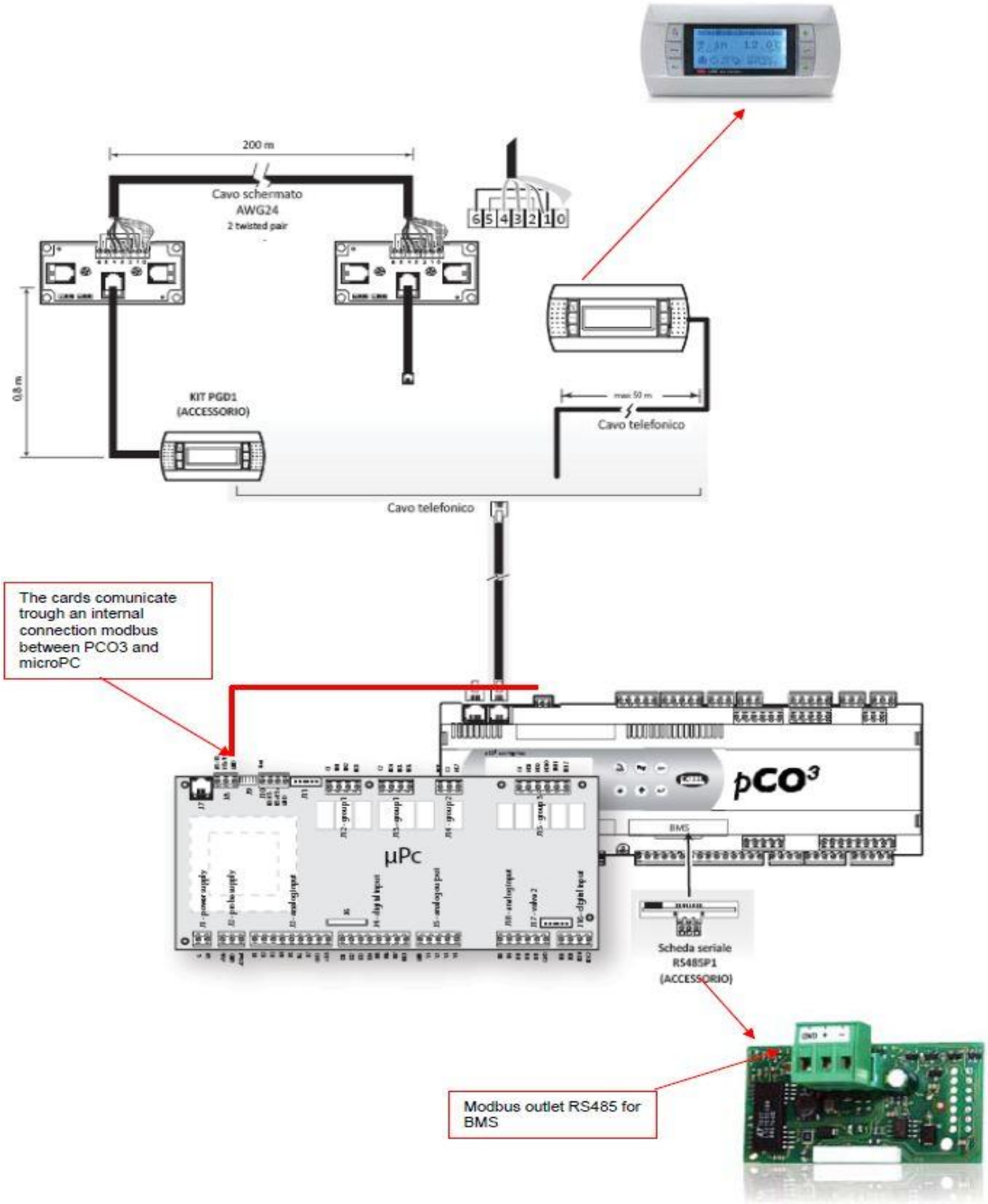
Unit Controller



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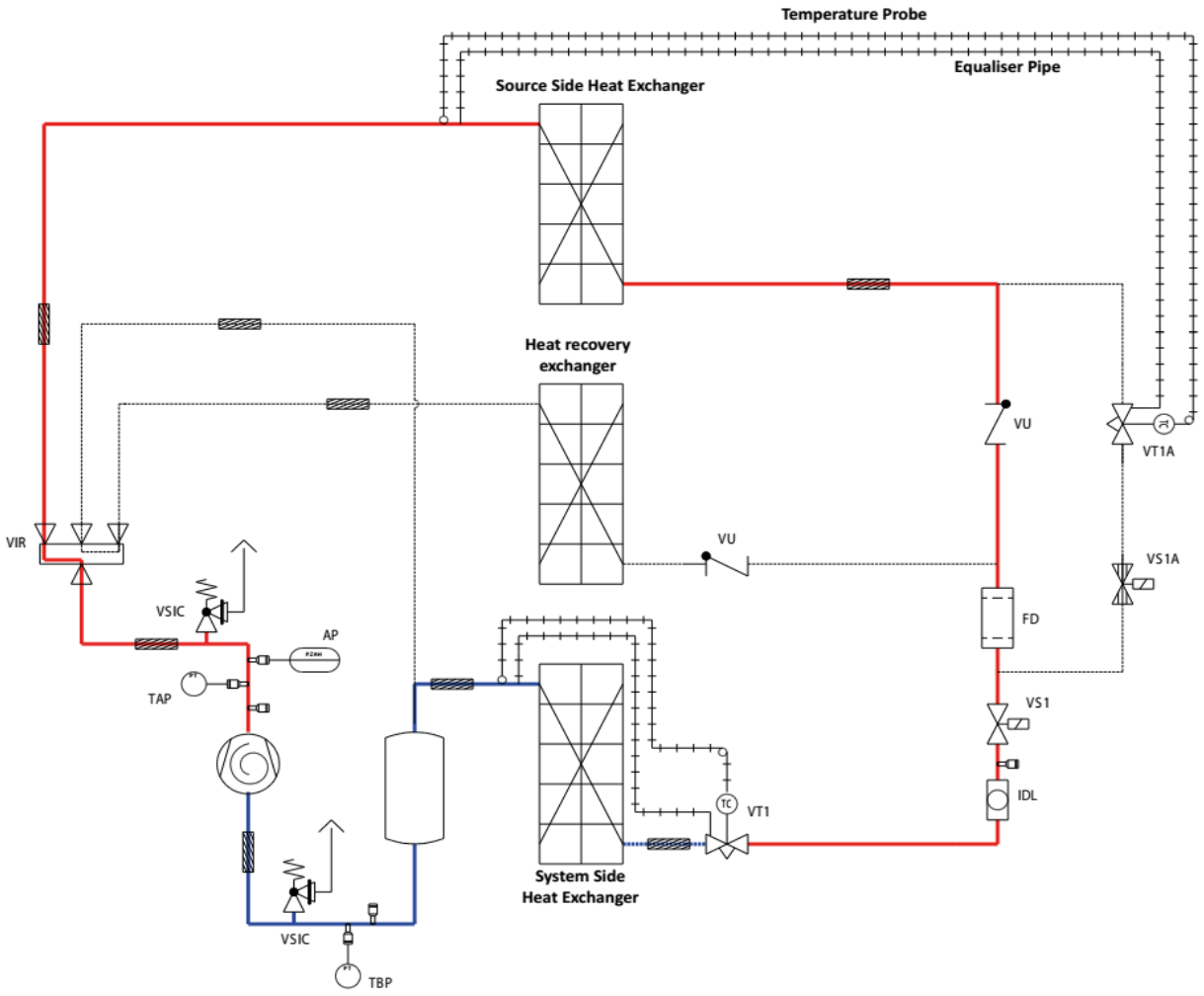
Refrigerant diagram

NXP 4 Pipes - Cooling Only



Key			
	One-way valve		Dehydrator filter
	Mechanical thermostatic valve		Safety valve
	Liquid sight glass		Refrigerant line
	4-way cycle inversion valve		Control line
	Solenoid Valve VS1 - VS1A		

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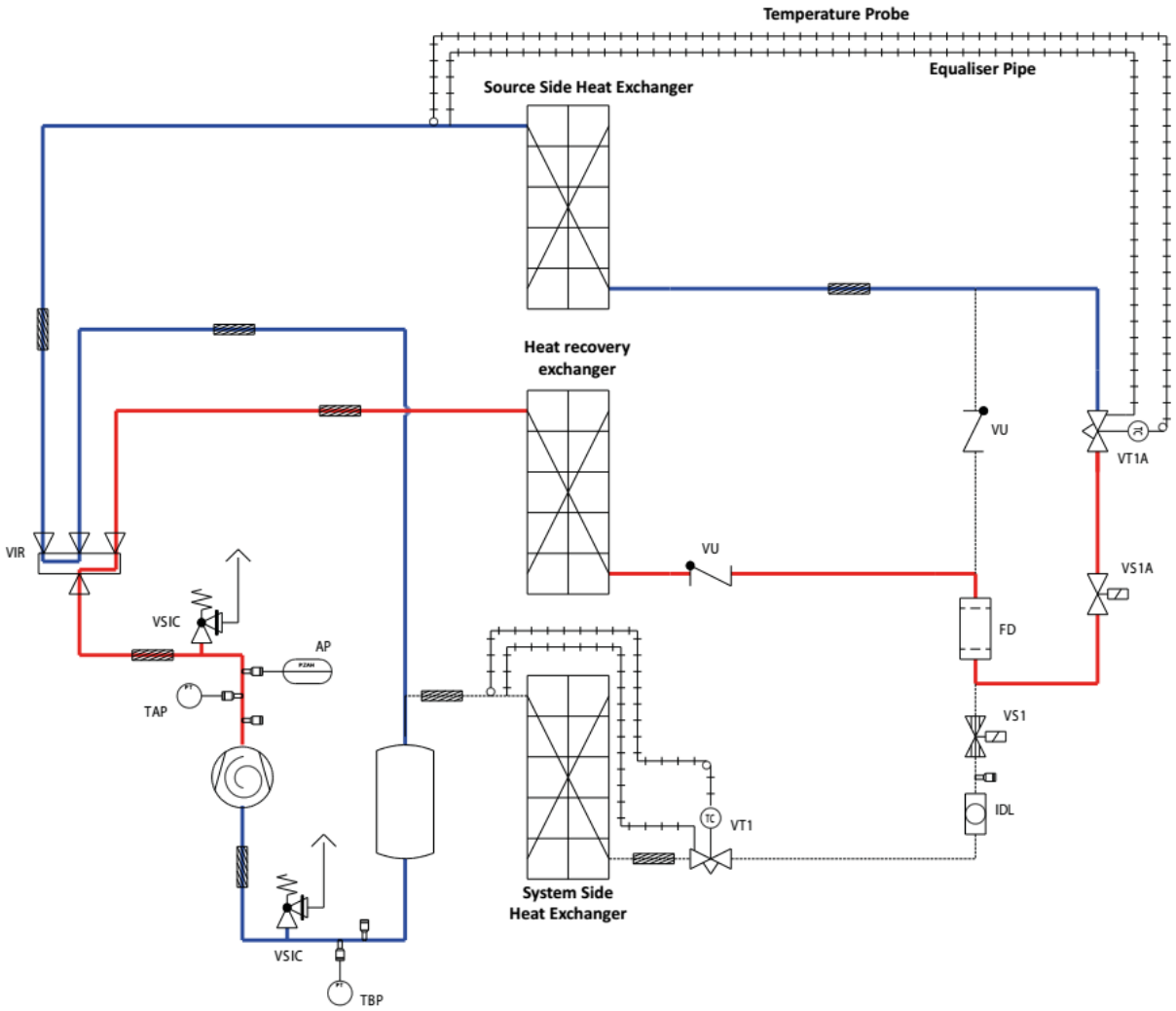
NXP 4 Pipes - Heating Mode



Key			
	One-way valve		Dehydrator filter
	Mechanical thermostatic valve		Safety valve
	Liquid sight glass		Refrigerant line
	4-way cycle inversion valve		Control line
	Solenoid Valve VS1 - VS1A		

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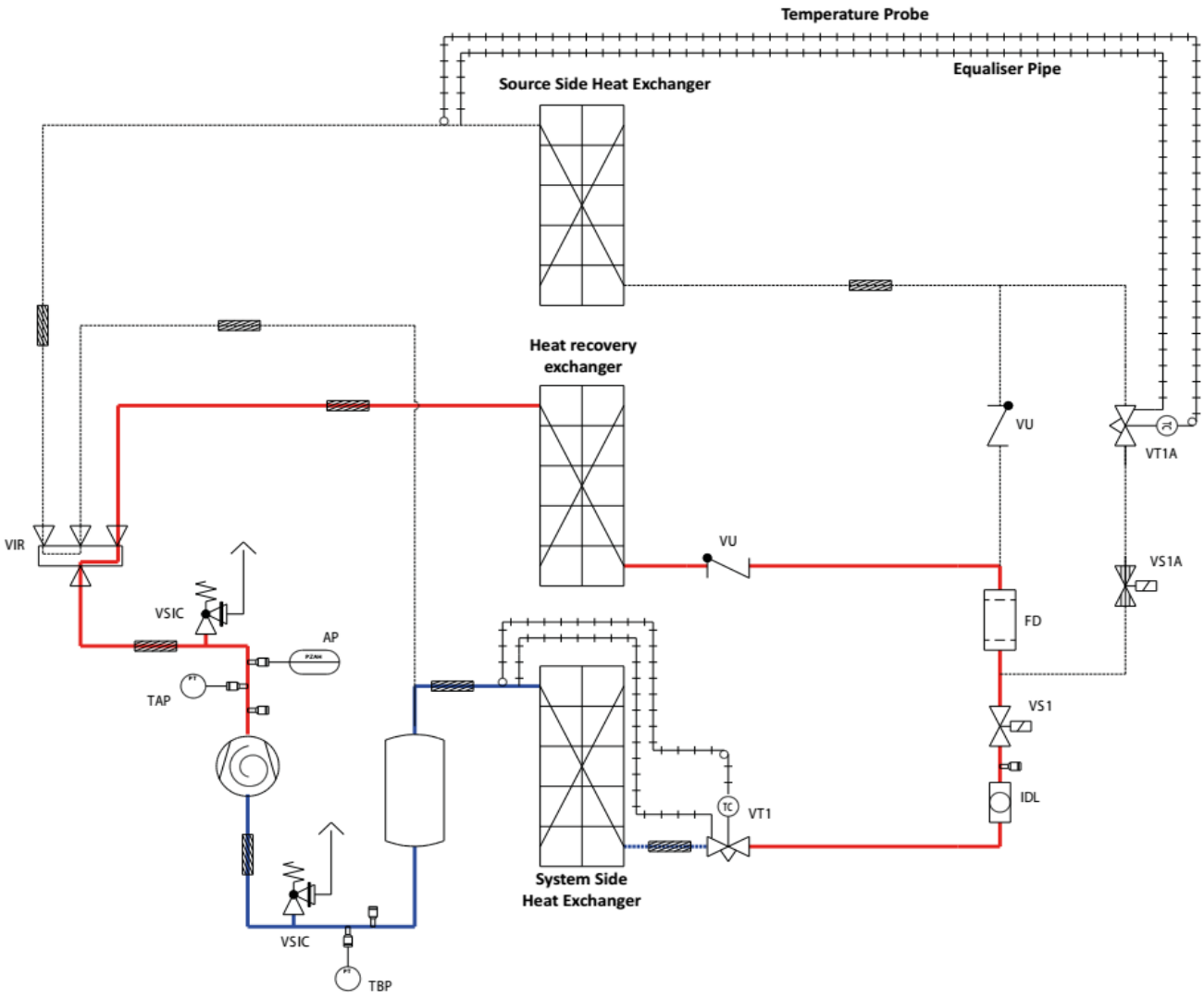
NXP 4 Pipes - Cooling mode with heat



Key			
	One-way valve		Dehydrator filter
	Mechanical thermostatic valve		Safety valve
	Liquid sight glass		Refrigerant line
	4-way cycle inversion valve		Control line
	Solenoid Valve VS1 - VS1A		

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Tel: 905-564-2221 Fax: 905-564-2205

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1-888-567-2227 (US)
1-800-567-2221 (CAN)

Accessories included

AERBACP

Interface for supervising systems with BACnet/IP protocol

Accessory installation:

The board is designed to be connected directly to the control card of the unit using the slot available on the "BMS board" (in case it is connected to the pCO5), while for the units that use a different board, it will have only one slot serial compatible with the AERBACP accessory, making it impossible to mistake the connection between the accessory and the control board.

Procedure for "UPDATED Setting":

The procedure for this setting is the following:

1. Connect the AERBACP accessory to the unit control board;
2. Physically connect (via network cable) the AERBACP accessory to the PC used to configure it; this connection will take place in "point to point" mode (N.B: a specific network connection must be created on the PC in order to access the device, consistent with the need to then connect to the IP address 172.16.0.1 and Subnet mask 255.255.0.0 set by default on the accessory);
3. Make sure that the unit card is powered (if so, after booting the card, the green LED on the accessory will remain steady);
4. Using the PC browser connect to the address http://172.16.0.1 (Fig.1);
5. Select the "DO NOT RESTRICT ACCESS" button;
6. Enter the login credentials (Username: admin / Password: fadmin);
7. Select the "Configuration" tab (Fig. 2);
8. Select the "pCO Com" tab and set the data according to the following configuration (Fig. 3):

— Protocol = Modbus Extended;
— Baud rate = 19200;
— Modbus slave address = 1;
— Digital variables = 2048;
— Analog variables = 5000;
— Integer variables = 5000;

9. Confirm by pressing the button "Submit";
10. Select the "BACnet" tab and set the data according to the following configuration (Fig. 4): and set the data relating to the "pCO mapping Parameters" section

— Maximun mapped analog variables = 2048;
— Maximun mapped integer variables = 2048;
— Maximun mapped digital variables = 2048;

11. Confirm by pressing the button "Submit";
12. Select the "ModbusTCP" tab and set the data according to the following configuration (Fig. 5):

— Modbus TCP Status = Enabled;

13. Confirm by pressing the button "Submit";

Procedure for "CLASSIC Setting":

The procedure for this setting is the following:

1. Connect the AERBACP accessory to the unit control board;
2. Physically connect (via network cable) the AERBACP accessory to the PC used to configure it; this connection will take place in "point to point" mode (N.B: a specific network connection must be created on the PC in order to access the device, consistent with the need to then connect to the IP address 172.16.0.1 and Subnet mask 255.255.0.0 set by default on the accessory);
3. Make sure that the unit card is powered (if so, after booting the card, the green LED on the accessory will remain steady);
4. Using the PC browser connect to the address http://172.16.0.1 (Fig.1);
5. Select the "DO NOT RESTRICT ACCESS" button;
6. Enter the login credentials (Username: admin / Password: fadmin);
7. Select the "Configuration" tab (Fig. 2);
8. Select the "pCO Com" tab and set the data according to the following configuration (Fig. 6):

— Protocol = Carel;
— Baud rate = 19200;
— Communication start-up = Compatible;

9. Confirm by pressing the button "Submit";
10. Select the "BACnet" tab and set the data according to the following configuration (Fig. 7): and set the data relating to the "pCO mapping Parameters" section

— Maximun mapped analog variables = 207;
— Maximun mapped integer variables = 207;
— Maximun mapped digital variables = 207;

11. Confirm by pressing the button "Submit";
12. Select the "ModbusTCP" tab and set the data according to the following configuration (Fig. 5):

— Modbus TCP Status = Enabled;

13. Confirm by pressing the button "Submit";

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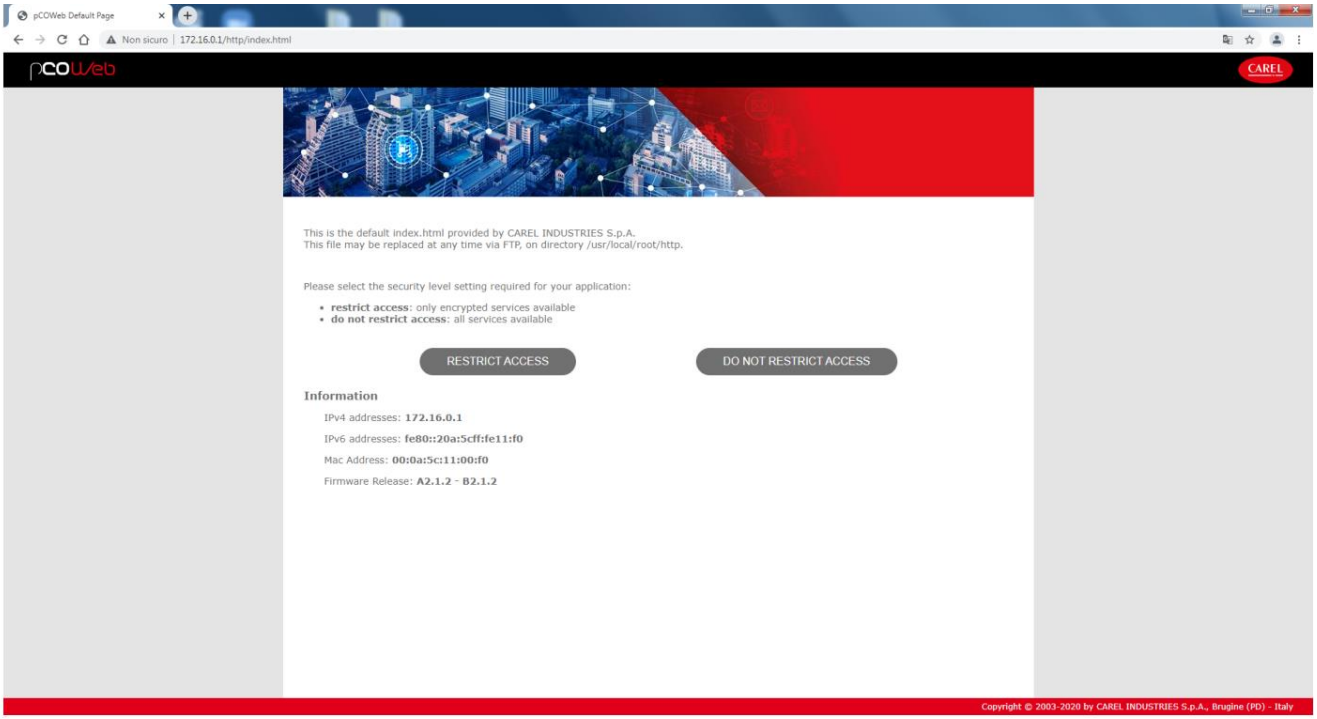

Fig. 1 - Home settings AERBACP

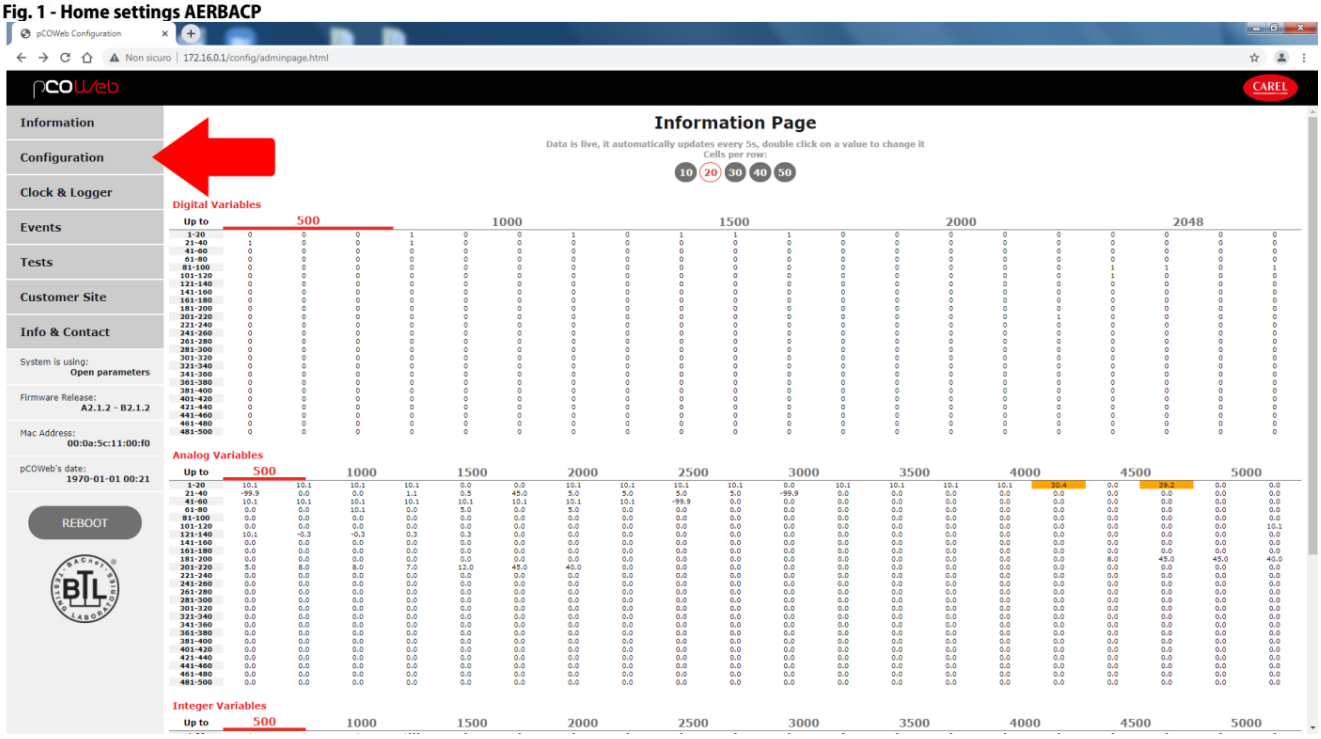

Fig. 2 - Selection of the Configuration page

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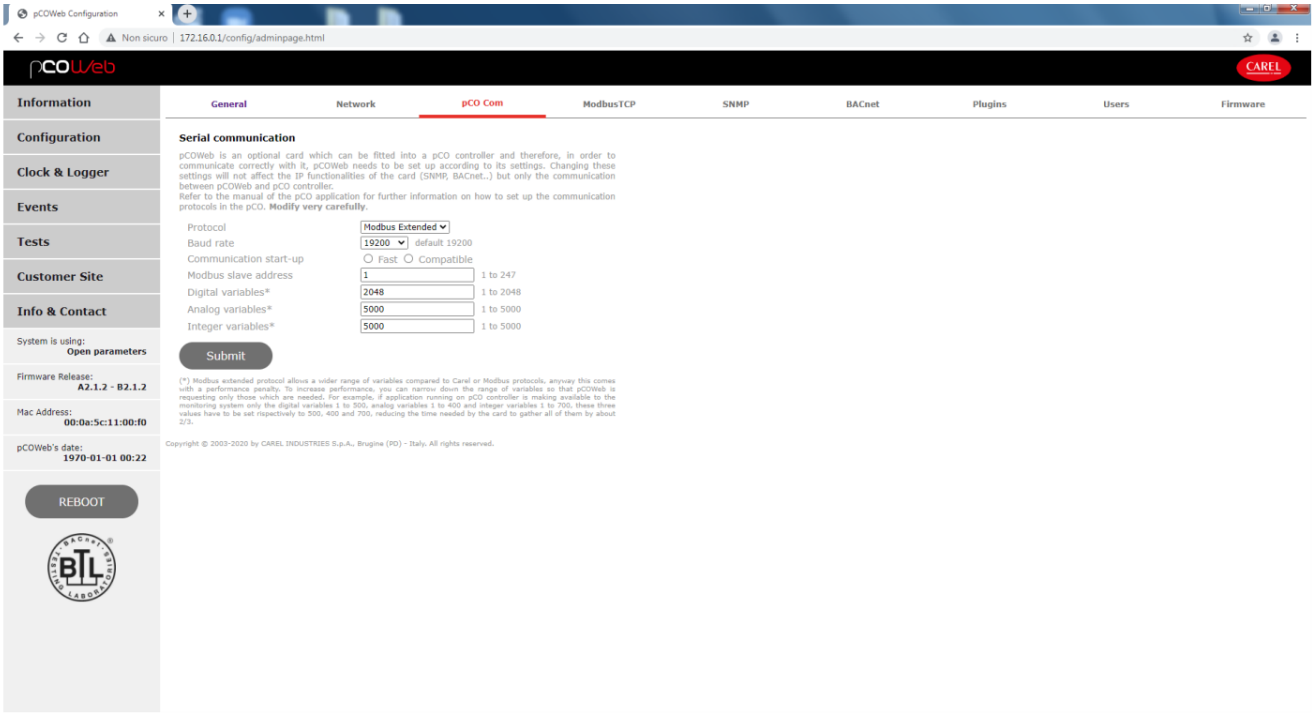

Fig. 3 - Values of the pCO Com page (UPDATED setting)

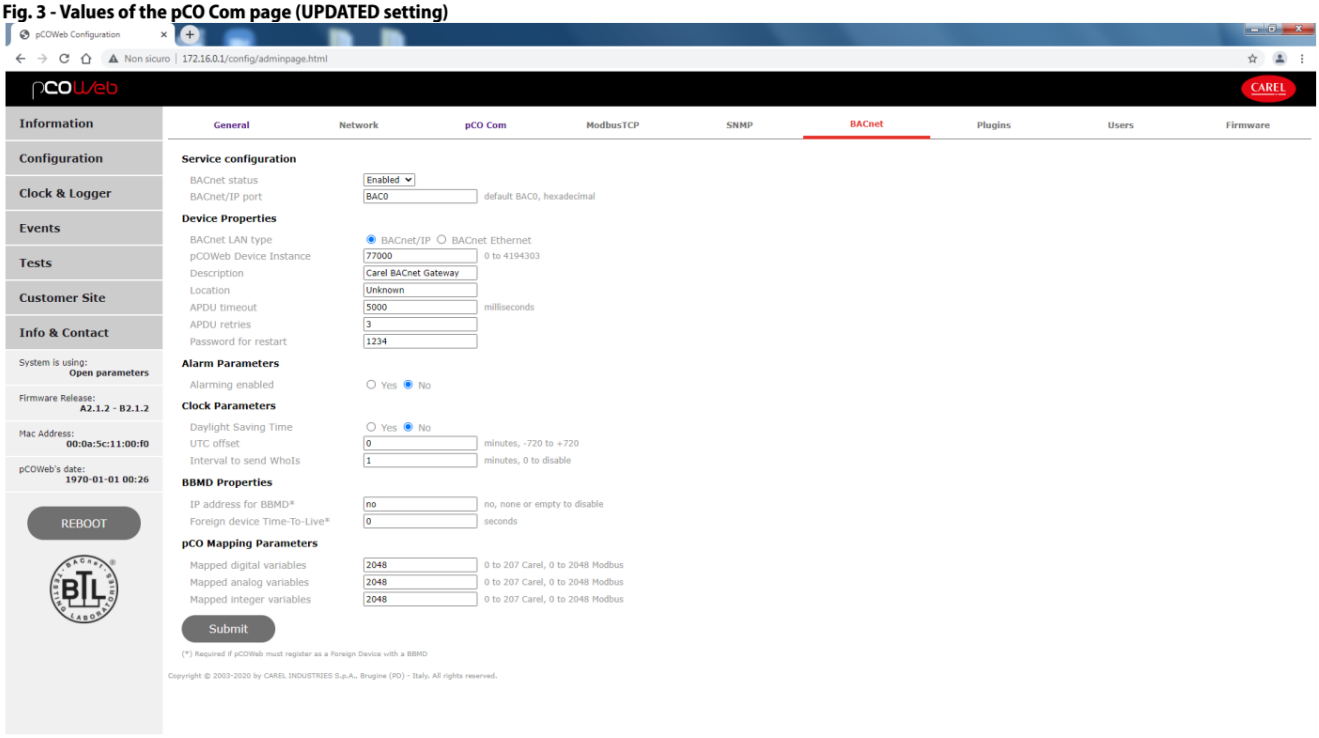

Fig. 4 - Values of the BACnet page (UPDATED setting)

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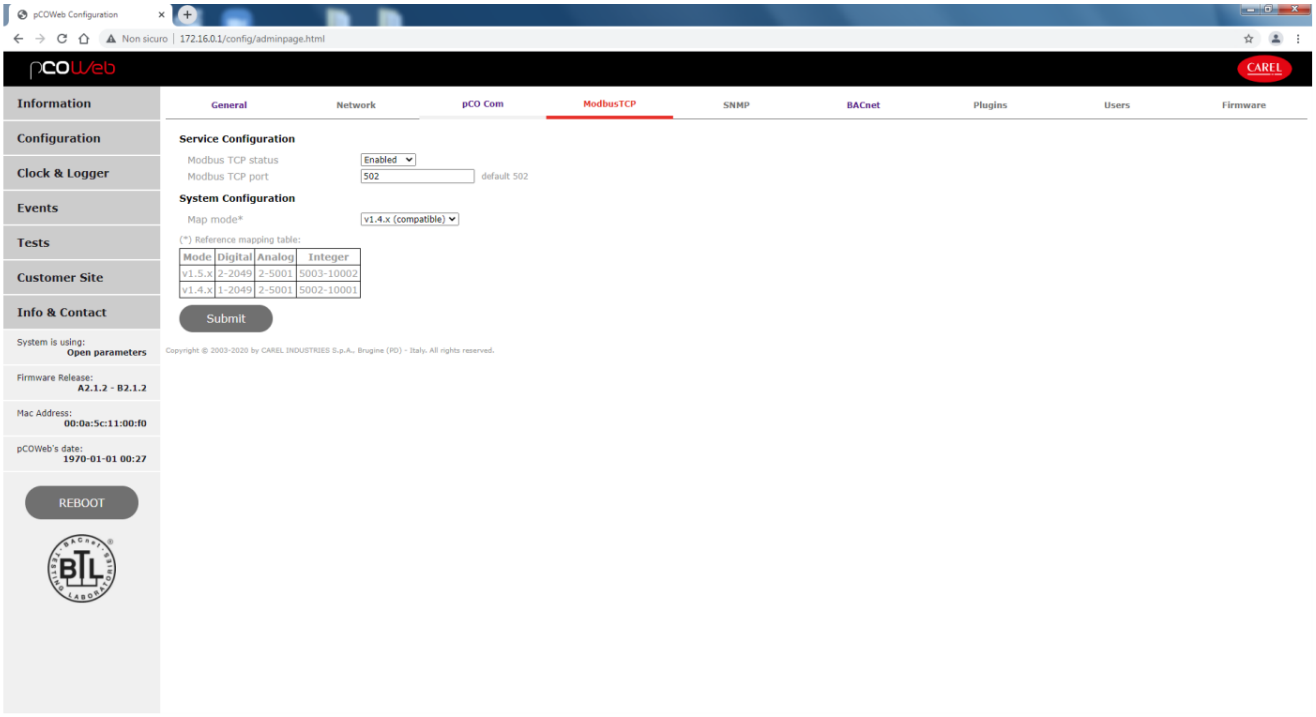

Fig. 5 - Values of the ModbusTCP page

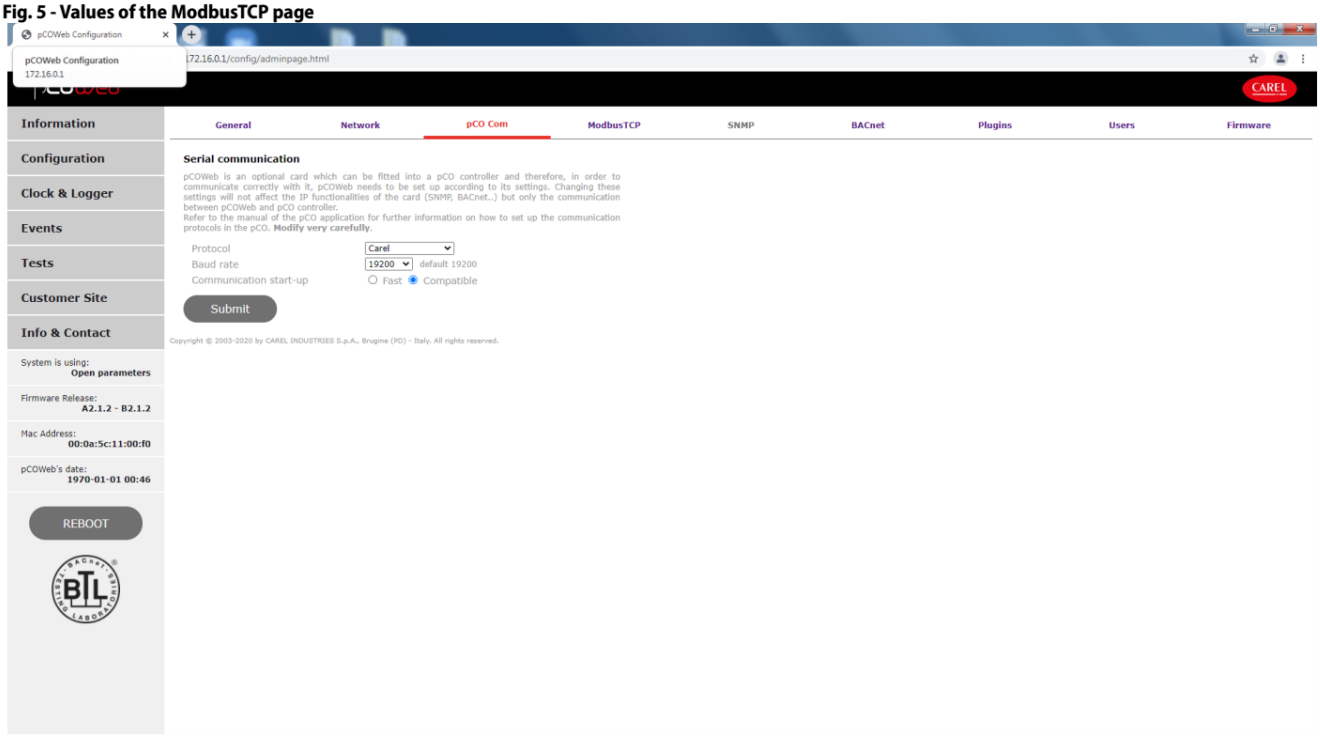

Fig. 6 - Values of the pCO Com page (CLASSIC setting)

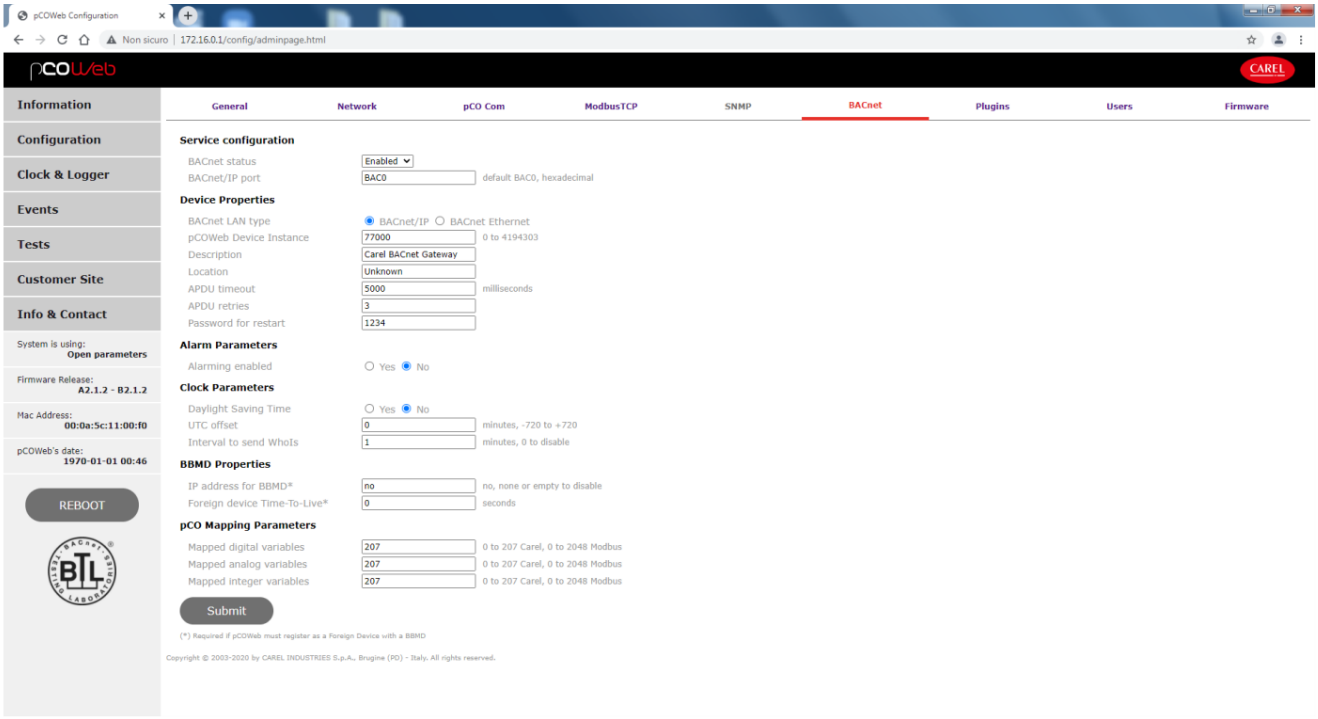

Fig. 7 - Values of the BACnet page (CLASSIC setting)

BACnet point lists

BACnet point lists are provided as a separate pdf

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Flow Switch

Shipped loose for Field installation. Mandatory.

Function

The Uni-Switch™ flow switch detects whether there is any flow in the piping and opens or closes an electrical contact. It is normally used in heating, air-conditioning, refrigeration, water treatment, additive pumping and process systems in general. The flow switch can control devices such as pumps, burners, compressors, refrigerators, motorized valves; to turn on indicator and alarm devices and regulate equipment for dosing water additives.

In heating systems, the flow switch will switch the burner off in case of a lack of fluid circulation in heating circuit. A lack of fluid circulation would otherwise impair the operation of the temperature-sensitive safety and protection devices.

c UL us LISTED 30V9

CE

Product range

Code 626600A	Flow switch	Size 1" NPT male
Code 626009	Replacement paddles (blades) assembly	for pipe diameters 1" to 8"

Technical specifications

Materials

Body:	brass
Cover:	self-extinguishing polycarbonate
Microswitch protection casing:	self-extinguishing polycarbonate
Bellows rod and bellows:	stainless steel
Paddle (Blades) for pipes:	stainless steel
Microswitch spring:	stainless steel
O-Ring seals:	peroxide-cured EPDM

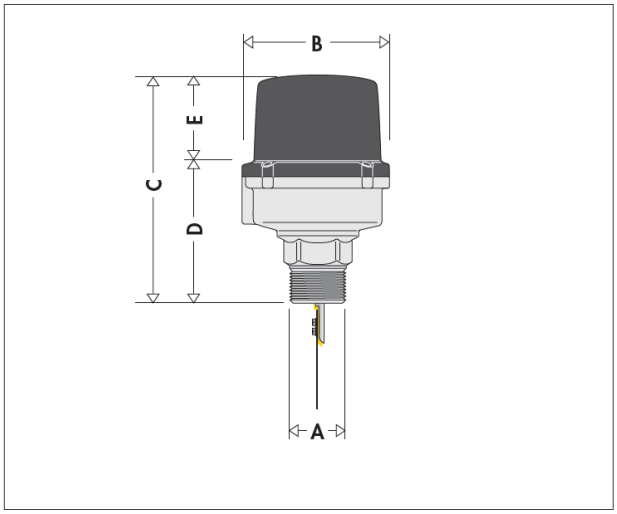
Performance

Suitable fluids:	water and glycol solutions
Max. percentage of glycol:	50%
Max. working pressure:	150 psi (10 bar)
Fluid temperature range:	-20–250°F (-30–120°C)
Max. ambient temperature:	130°F (55°C)
Pipe connection:	1" NPT male
Pipe adjustability:	from 1" to 8"

Electric specifications

Voltage:	250 V
Electrical connection:	1/2" NPT female
Current:	15 (5) A
Protection class:	NEMA Type 3
	IP 54
Certification:	CE, C-UL

Dimensions



Code	A	B	C	D	E	Weight (lb)
626600A	1"	3 7/16"	5 5/16"	2 15/16"	2 3/8"	2.30

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Installation and startup notes

Preparation for start up form need to be submitted in order to avoid delay and request a date for remote startup. Form can be found at https://aermec.formstack.com/forms/preparation_for_startup

Below documents should be approved prior to placing Sales Order:

- **Drawing Schedule**
- **Piping Schematic**
- **Sequence of Operation**

A Pre-start up form must be completed and submitted a minimum of 2 weeks before the anticipated startup date. It can be found with the following link: https://www.aermec.us/tech-support/online-forms/

Commissioning and startup forms must be filled in and submitted at time of startup. The form can be found with the following link: https://www.aermec.us/tech-support/online-forms/

General Notes:

1. Always refer to the units IOM for delivery, storage, installation, and maintenance.

2. This project was designed with the conditions on pages 4 (Unit Selection Part). If these conditions or flow rates are changed on site, it must be approved by Sales Rep (Name of the Sales Rep) and Mits Air Staff to ensure correct operation.

3. Correct water volume and water flow are critical for correct unit operation.

4. Pre-startup and startup/commissioning forms must be submitted online in order to start the unit warranty.

Website Link of the Unit

https://www.aermec.us/products-2/water-to-water-units/nxp-31-129-tons/

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Warranty terms and conditions

LIMITED EXPRESS WARRANTY

This warranty is extended by Mits Airconditioning Inc., a company incorporated under the laws of the Province of Ontario, Canada (hereinafter referred to as "Mitsair"), to the buyer ("Buyer"). It is expressly understood that statements made by Mitsair or its representatives, relating to products that Mitsair sells, whether oral, written or contained in any quote, sales literature, catalogue, or any agreement, are not express warranties. EXCEPT AS SPECIFICALLY SET FORTH HEREIN, THERE IS NO EXPRESS WARRANTY AS TO ANY AERMEC S.P.A. MANUFACTURED PRODUCTS THAT MITSAIR SELLS.

1. WARRANTY DESCRIPTION.

Mitsair warrants Aermec S.p.A. products purchased from Mitsair & retained in the United States of America ("USA") and Canada to be free from defects in material & workmanship under normal use & maintenance only as follows:

I. All chillers, heat pumps (modular or standard), and fan coils for a period of the lesser of twelve (12) months from the date of unit start-up OR fifteen (15) months from the date of delivery, whichever comes first and is less, depending on fulfilling the "Conditions of Complete & Proper Start-Up" (see Section 2 below), and depending on authorization from Aermec S.p.A.

II. Replacement parts for ninety (90) days from date of shipment from the Mitsair warehouse.

ALL WARRANTY CLAIMS ARE FIRST SUBJECT TO APPROVAL BY AERMEC S.P.A. ONLY *AFTER SUCH APPROVAL* WILL MITSAIR ASSIST IN PROVIDING ANY REPLACEMENT PARTS OR REMEDIES AS EXPLICITLY AUTHORIZED AND PROVIDED FOR BY AERMEC S.P.A. The Limited Express Warranty on any part repaired or replaced under warranty expires at the end of the original warranty period. Dead on Arrival ("DOA") claims must be submitted within thirty (30) days of startup, so long as such claims are made within the warranty period as outlined above in Section 1(I) and (II).

2. WARRANTY PROCESS.

All warranty claims must be made through the Online Warranty Request Form available at aermec.us and aermec.ca (see "Online Forms"). All claims are first subject to approval by Aermec S.p.A. only ***after such approval*** will Mitsair assist in providing any replacement parts or remedies as explicitly authorized and provided for by Aermec S.p.A. ***Upon approval***, faulty parts must be returned to the Mitsair head office in Mississauga, Ontario, Canada, freight prepaid, no later than thirty (30) days after the date of the Warranty claim approval. Mitsair shall, when such part has been either replaced or repaired, return such to a Mitsair recognized dealer, contractor, or service organization, F.O.B. any Mitsair company warehouse location, freight prepaid.

3. CONDITIONS FOR WARRANTY.

I. COMPLETE & PROPER START-UP.

i. **Proper Installation**. THIS LIMITED EXPRESS WARRANTY APPLIES **ONLY** TO PRODUCTS THAT HAVE BEEN INSTALLED IN ACCORDANCE WITH (I) ALL INSTALLATION, PRODUCT AND OPERATION MANUALS OR INSTRUCTIONS PROVIDED BY AERMEC S.P.A. AND MITSAIR (INCLUDING BUT NOT LIMITED TO THE SPECIFIC GUIDELINES AND RESTRICTIONS OUTLINED HEREIN IN SECTION 2); (II) ALL APPLICABLE BUILDING CODES AND PERMITS; (III) GOOD TRADE PRACTICES.

ii. **Registration of Pre-Startup and Startup Forms.** The pre-startup and start-up forms must be completed accurately and received on time by the Aermec Technical Department at Mitsair. All forms are available online at: https://www.aermec.us. The forms are as follows:

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1-800-567-2221 (CAN)

1. The "Pre-Startup Checklist" must be submitted at least ten (10) business days prior to the proposed start up date. The full description of parts/products in question must be provided to Mistair, including the AERMEC part number and original equipment serial number.
2. The "Commissioning and Start-Up Form" must be submitted within seven (7) days of completion of the successful start-up.

iii. **Commissioning by Certified Technician**. The commissioning start up technician must be a Certified Technician approved by the Aermec Technical Department at Mitsair, otherwise the warranty terms expressed within this Limited Express Warranty will be null and void. The Aermec Technical Department at Mitsair is available to assist contractors/technicians with start-ups via webinar. To book a training, please contact service@aermec.us.

iv. **Flow Switches & Filters**. Flow switches and water filters (strainers) are mandatory for all units. Some units may have pre-installed flow switches and/or strainers from the Aermec S.p.A. factory, but others must be field installed in accordance with the Aermec S.p.A. Installation & Technical Manuals that are provided with all units.

v. **Water Volume Requirements.** The system (or the primary loop with the unit) must have PROPER WATER VOLUME (USG) AND FLOW RATE (GPM) according to the Aermec S.p.A. specifications. Flow must be balanced and measured across the unit. Required Water Volume can be found online at https://www.aermec.us.

vi. **Torquing Requirements.** All fan coils and products that require torquing must be TORQUED IN COMPLETE COMPLIANCE with the Aermec S.p.A. guidelines and instructions.

vii. **Glycol Requirements.** The Glycol content must be maintained to the correct level.

viii. **Factory Settings**. Any alteration to the manufacturer settings other than those explicitly recommended by Aermec S.p.A. or the Aermec Technical department at Mitsair will void this warranty in its entirety.

II. **WARRANTY EXCLUSIONS.**

MITSAIR IS NOT LIABLE WHATSOEVER FOR ANY PRODUCTS, OR COSTS RELATING TO PRODUCTS, THAT HAVE BEEN INSTALLED, ALETERED, REPAIRED, MAINTAINED, SERVICED, OR OPERATED IN A MANNER INCONSISTENT IN ANY WAY WITH THE INSTRUCTIONS PROVIDED BY AERMEC S.P.A. & MITSAIR (SUCH AS BUT NOT LIMITED TO PRODUCT MANUALS). ANY SUCH IMPROPER INSTALLATION, MAINTENANCE OR APPLICATION NULLIFIES THIS LIMITED EXPRESS WARRANTY IN ITS ENTIRETY. FURTHER, ANY FAILURE TO FOLLOW EXACT MANUFACTURER INSTRUCTIONS REGARDING FLOW SWITCH/FILTER, WATER VOLUME AND TORQUING REQUIREMENTS NULLIFIES THIS LIMITED EXPRESS WARRANTY IN ITS ENTIRETY.

This Limited Express Warranty does not apply to: latent defects; Fuses, refrigerant, fluids, oils; Products relocated after initial installation; Any portion or component of the system that is not supplied by Mitsair, regardless of the cause of the failure of such portion or component; Products on which the module identification tags or labels have been removed or defaced; Products on which payment to Mitsair is or has been in default; Products that have been modified by others; Repairs or alterations by a party other than the manufacturer that adversely affect the stability or reliability of the product; operation of product with any accessory, equipment or part not approved by the manufacturer; Product damage caused by accident, negligence, misuse, abuse, or misapplication of the product; Product damage which has resulted from third party parts or components used to install the system, including but not limited to pipes, wires, pumps, switches, adaptors, covers, line set and fittings etc.; Product damage due to wiring, electrical imbalance characteristics or maintenance (including, without limitation, defects or damages cause by voltage surges, inadequate voltage condition, phase imbalance, any form of electric disturbances, inadequate or improper electrical circuit installation or protection, failure to perform common maintenance, etc.); Products which have defects or damage which result from a contaminated or corrosive air or liquid supply, operation at abnormal temperatures, or unauthorized opening of refrigerant circuit; Products operated in an abrasive, corrosive, or wet environment with exposure to materials such as chlorine, fluorine, or any other hazardous, harmful chemicals, or environmental materials such as sea or salt water; Mold, fungus, bacteria damage; Products which have defects, damage, or insufficient performance as a result of insufficient or incorrect system design/size or system matching; Products which have defects or damages due to freezing of the water supply, an inadequate or interrupted water supply, or improper/inadequate filtration/treatment of the water or air supply; Products which have been damaged due to force majeure including but not limited to fire and flood; Products where unnecessary delays incurred in return of defective component.

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III. WARRANTY LIMITATIONS.

i. **Limitation of Remedies.** Upon notification of a warranty claim, Mitsair will communicate any product issues to the manufacturer Aermec S.p.A. in Italy. Mitsair will only be obligated at Mitsair's option, and upon the approval from Aermec S.p.A., to furnish a new or rebuilt part or module from Aermec S.p.A. in exchange for the part or module which has failed. Mitsair makes no warranty whatsoever to labour and all such labour costs and liabilities lie exclusively with the Buyer and the installer.

ii. **Limitation of Liability.** Mitsair shall have no liability for damages if manufacturer's performance is delayed for any reason or is prevented to any extent by any event such as, but not limited to, any war, civil unrest, government restrictions or restraints, strikes or work stoppages, fire, flood, shortage of transportation, fuel, material, or labour, acts of God or any other reason beyond the sole control of Mitsair. Mitsair makes no warranty whatsoever express, implied, or statutory to any person or entity other than Buyer. Mitsair makes no representation or warranty, express or implied, regarding prevention of mold/mould, fungus, bacteria, microbial growth, or any other contaminates. Except as expressly outlined in this Limited Express Warranty, Mitsair does not make, and hereby expressly disclaims, any warranties, express or implied, concerning its products, equipment or services, including without limitation, any warranty of design, merchantability or of fitness for a particular purpose, or others that are alleged to arise from course of dealing or trade. Mitsair disclaims all liability for the acts, omissions, and conduct of all third parties (including, without limitation, the installer) in connection with or related to the products covered under this Limited Express Warranty. Under no circumstances shall Mitsair be liable for any indirect, incidental, special, punitive or consequential damages or for any infringement of third party rights, lost goodwill, lost revenues or profits, work stoppage, system failure, impairment of other goods, costs of removal and reinstallation of the system, loss of use, injury to persons or property arising out or related to the system, whether any of these above mentioned possible claims are based on breach of warranty, breach of contract, tort or otherwise, even if Mitsair has been advised of the possibility of such damage.

iii. **Disputes.** Except as otherwise decided by Mitsair, any disputes regarding this warranty shall be decided by neutral, binding arbitration, rather than in court by jury trial. All disputes will be governed by and interpreted in accordance with the internal laws of the Province of Ontario, Canada, or other government jurisdiction in which the Mitsair principal place of business resides.

4. ADDITIONAL/OPTIONAL WARRANTIES.

The following additional/optional warranties from a third party are available for purchase upon request.

I. **Delayed Start-Up**. If the unit start-up is not scheduled within ninety (90) days of delivery at site, Delayed Start-Up coverage is recommended, and must be purchased prior to unit delivery. Delayed Start-Up options are: two (2) months, six (6) months, twelve (12) months, eighteen (18) months, and twenty-four (24) months.

II. **Extended Warranty.** There are multiple types of extended warranties available via a third party, including: (i) Compressor Warranty of two (2) – five (5) years, not including labour; (ii) Complete Unit Warranty of one (1) year, parts & labour (iii) Complete Unit Warranty of three (3) years, parts & labour; (iv)Complete Unit Warranty of five (5) years, parts & labour.

III. **Premium Warranty Package.** One (1) year of labour is covered for certain types of units offered by Aermec North America or Mitsair from the start-up date, based on the fulfillment of the following conditions: (i) Balanced flow according to the Selection; and (ii) Remote monitoring by Aernet.

To ensure proper flow in the system, a flow balancing report must be produced. The system can also have a flow adjusting valve at the primary loop so that the flow can be adjusted according to the design flow. For more information on the models that are eligible for the Premium Warranty Package, please contact service@aermec.us. For more information on Extended Warranties, please contact help@aermec.us.

5. OBTAINING WARRANTY PERFORMANCE.

The installing contractor or service organization provides parts and labour warranty performance for the owner. The installing contractor may contact Mitsair to arrange for the exchange of parts upon warranty claim approval.

If assistance is required in obtaining warranty performance, contact: Mits Airconditioning Inc., 1608 Bonhill Road, Mississauga, Ontario, Canada L5T 1C7, (905) 564-2221, help@aermec.us. Please refer to the manufacturer supplied Installation, Operation, and Maintenance manuals for operating and maintenance instructions.

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Maintenance- List of the recommended periodic interventions

DESCRIPTION	Note	FREQUENCY 3 Mths	6 Mths	12 Mths
GENERAL INTERVENTIONS				
Refrigerant leak control (this operation must be performed with the frequency suggested by current European regulations)		•		
Unit supply voltage control		•		
Compressor supply voltage control		•		
Solenoid valve control		•		
Pressure switch operation and calibration control, if applicable		•		
Pressure/temperature probe control and reading		•		
Control and replacement, if necessary, of the filter driers				•
Compressor contactor control		•		
Check for the presence of rust or signs of corrosion in the components, paying particular attention to pressurised containers. In that case, replace them or use specific products			•	•
General unit cleaning				•
Vent the hydraulic circuit and the heat exchangers, the coexistence of air and water reduces performance and can promote the formation of rust			•	

Every 12 months, check that all electrical connection are correctly fixes, and that the terminals are adequately closed.

INTERVENTIONS ON THE CIRCUIT

DESCRIPTION	Note	FREQUENCY 3 Mths	6 Mths	12 Mths
INTERVENTIONS ON THE COOLING CIRCUIT OPERATING WITH FULL LOAD				
Measurement of the overheating temperature			•	
Measurement of the undercooling temperature			•	
Measurement of the exhaust gas temperature			•	
Measurement of compressor input			•	
COMPRESSOR CONTROLS				
Oil level control		•		
Oil acidity control				•
Control of proper operation of the carter heater			•	
Control of the oil level sensor, if present			•	
HYDRAULIC CIRCUIT CONTROLS				
Measurement of pump input			•	
Check the rotor seal of the pump(s)		•		
Control of flexible joints		•		
Control of the proper operation and calibration of the flow switch, if present		•		
Control of the proper operation of the differential pressure switch, if present		•		
Control the concentration of the glycol solution, if applicable	(1)	•		
Cleaning the water filter		•		

(1) If the glycol must be changed, refer to the documentation provided by the supplier.

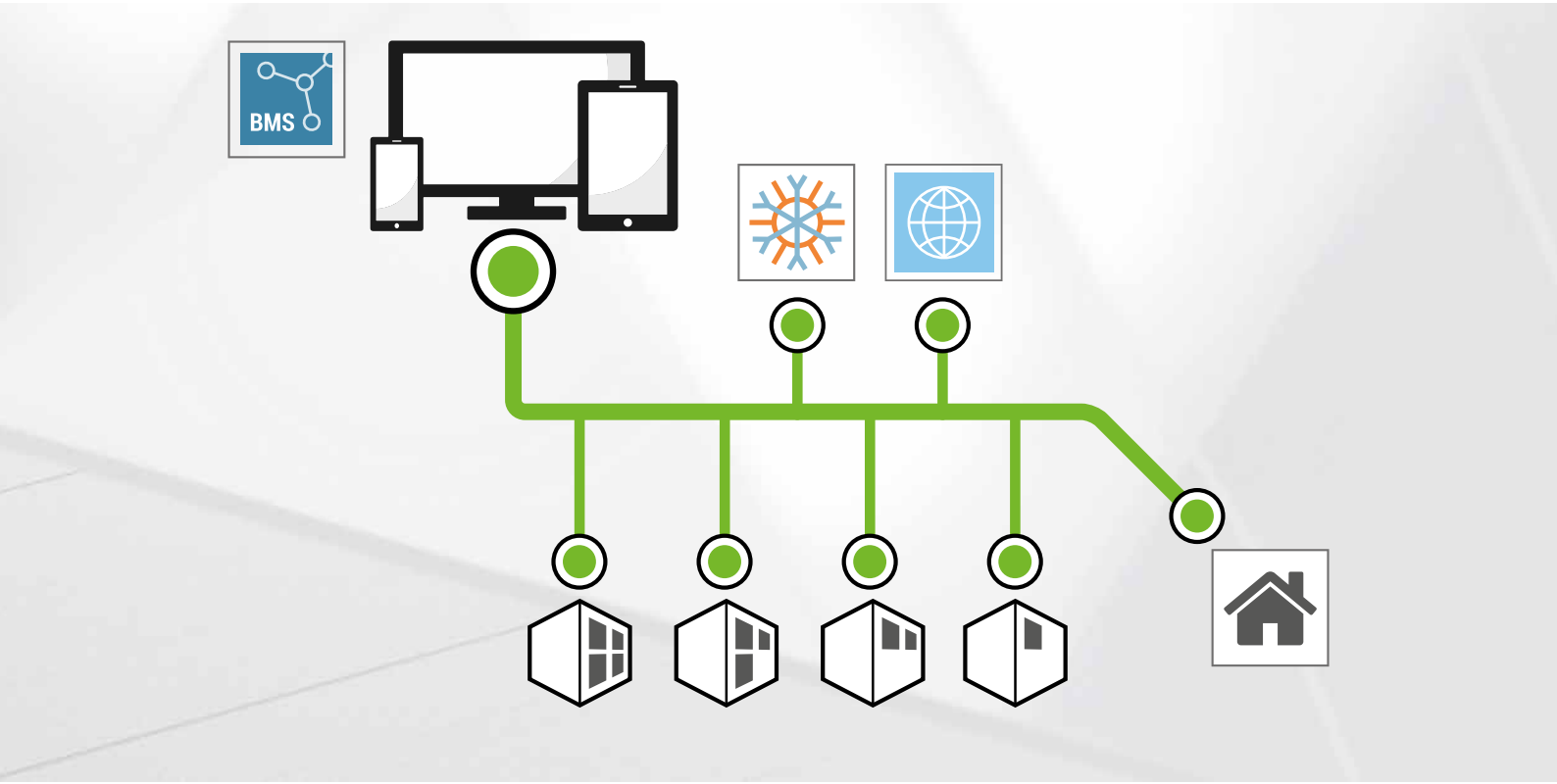
WARNING The frequency of the operations described here is only approximate, they can vary based on how the unit is used and the type of system where it is installed. If the unit is installed in aggressive environments, we recommend reducing the intervention times.

EN

23/09 - BMS_W/W_SCROLL_Y_UN50_01
Translation of Original instructions

BMS

Installation Manual



BACNET / MODBUS VARIABLE LIST

AERMEC

www.aermec.com

Dear Customer,

Thank you for wanting to learn about a product Aermec. This product is the result of many years of experience and in-depth engineering research, and it is built using top quality materials and advanced technologies.

The manual you are about to read is meant to present the product and help you select the unit that best meets the needs of your system.

However, please note that for a more accurate selection, you can also use the Magellano selection program, available on our website.

Aermec, always attentive to the continuous changes in the market and its regulations, reserves the right to make all the changes deemed necessary for improving the product, including technical data.

Thank you again.

Aermec S.p.A.

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1 AERBACP INSTALLATION AND CONFIGURATION (FOR BACNET)

For the BACnet protocol, the WWM, WRK, WWB, NXW units must use the **AERBACP** accessory in order to communicate with a BMS.

Warning: For the assembly and configuration of the **AERBACP** accessory, refer to its respective manual.

2 RS485 INSTALLATION AND CONFIGURATION (FOR MODBUS)

For the MODBUS protocol, the WWM, WRK, WWB, NXW units must use the **AER485P1** accessory in order to communicate with a BMS.

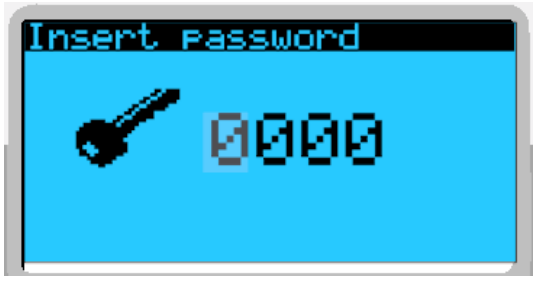
Warning: For the assembly and configuration of the **AER485P1** accessory, refer to its respective manual.

3 CONTROL CARD CONFIGURATION (FOR BACNET AND MODBUS)

1. Push Prg button and it will appear this page:

2. Push ↓ button more times until reach "Installer":

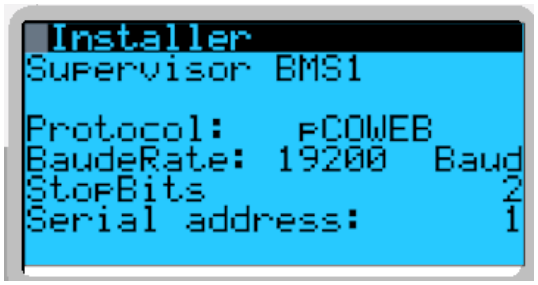
And push ↵ button. It will appear this page:



Push ↵ button. The password is **0000**.

For **Modbus** set this parameters:

For **BACnet** set this parameters:



4 CAREL/BACNET/MODBUS MAPPING

The communication is based on the RTU mode via RS485. The remote supervisor must have the following configurations:

Mode of communication	RTU
Type of communication	RS485 standard, asynchronous, 1 start bit
Speed of communication	19200 baud
Stop_Bit	2 stop bit
Parity_mode	no parity

4.1 ANALOG VARIABLES

Key:
R: Modbus command code = 3
R/W: Modbus command code = 6

BACnet address	Modbus address	Description	WWM		WRK	WWB	NXW	UOM	Min	Max	Read/Write
			Monoc.	Bicirc.							
A001	1	SUW - Evap. outlet temp.	X	X	X	X	X	°C	-99.9	99.9	R
A002	2	SIW - Evap. inlet temp.	X	X	X	X	X	°C	-99.9	99.9	R
A003	3	Circuit Condenser Output	X	X	X	X	X	°C	-99.9	99.9	R
A004	4	Circuit Condenser input	X	X	X	X	X	°C	-99.9	99.9	R
A005	5	SUR1 - Circ.1 recovery outlet temp.					X	°C	-99.9	99.9	R
A006	6	SIR - Recovery inlet temp.					X	°C	-99.9	99.9	R
A007	7	TAP1 - Circ.1 high pressure	X	X	X	X	X	Bar	-99.9	99.9	R
A008	8	TBP1 - Circ.1 low pressure	X	X	X	X	X	Bar	-99.9	99.9	R
A009	9	TAP2 - Circ.2 high pressure		X	X	X	X	Bar	-99.9	99.9	R
A010	10	TBP2 - Circ.2 low pressure		X	X	X	X	Bar	-99.9	99.9	R
A011	11	TAE - External air temp. 1			X	X	X	°C	-99.9	99.9	R
A012	12	TGP1 - Pressing line gas temp. circ.1	X	X	X	X		°C	-999.9	999.9	R
A013	13	TGP2 - Pressing line gas temp. circ.2		X	X	X		°C	-999.9	999.9	R
A014	14	SL1 - Liquid temp. circ.1 (Not for WWM Bicircuit with Huba)	X	X	X	X		°C	-99.9	99.9	R
A015	15	SL2 - Liquid temp. circ.2 (Not for WWM Bicircuit with Huba)		X	X	X		°C	-99.9	99.9	R
	16	DO NOT USE									
	17	DO NOT USE									
	18	DO NOT USE									
A019	19	Multi-function input			X	X	X	---	-99.9	99.9	R
	20	DO NOT USE									
A021	21	SUW com - Common evap. outlet temp. (master-slave)					X	°C	-99.9	99.9	R
A024	24	Software version	X	X	X	X	X	---	0,00	99.9	R
A025	25	Software revision	X	X	X	X	X		0,00	999,00	R
	26	DO NOT USE									
A027	27	SUW2 - Evap. output temp. 2 (DK cold only)					X	°C	-99.9	99.9	R
A028	28	SUWC - Evap. output temp. Common (DK cold only)					X	°C	-99.9	99.9	R
A029	29	SUWH2 - Temp. Cond. Out. 2 (DK cold only)					X	°C	-99.9	99.9	R
A030	30	SUCC - Temp. Cond. Out. Common (DK cold only)					X	°C	-99.9	99.9	R
A031	31	SUWH com - Com. Output temp. (Master-slave)					X	°C	-99.9	99.9	R
A035	35	SAC – Storage tank probe			X	X		°C	-99.9	99.9	R
	36										
A037	37	SUR2 - Recovery outlet temp. 2					X	°C	-99.9	99.9	R
A038	38	SUR com - Common recovery outlet temp.					X	°C	0	99.9	R
A120	120	SGA1 - Intake temperature probe Circuit 1	X	X	X	X		°C	-99.9	99.9	R
A121	121	SGA2 - Intake temperature probe Circuit 2		X	X	X		°C	-99.9	99.9	R
A181	181	System proportional error	X	X	X	X	X	---	0,00	100.0	R
A183	183	System supplementary error	X	X	X	X	X	---	0,00	100.0	R
A197	197	Active plant differential	X	X	X	X	X	°C	0,00	99.9	R
A198	198	Current system setpoint	X	X	X	X	X	°C	-999.9	999.9	R
A199	199	Total recovery set-point 1					X	°C	0,00	99.9	R/W
A201	201	Total recovery differential					X	°C	0,00	99.9	R/W
A202	202	Plant summer differential	X	X	X	X	X	°C	0,00	99.9	R/W
A203	203	Plant winter differential	X	X	X	X	X	°C	0,00	99.9	R/W
A204	204	Setpoint 1, summer	X	X	X	X	X	°C	-99.9	99.9	R/W
A205	205	Setpoint 2, summer	X	X	X	X	X	°C	-99.9	99.9	R/W
A206	206	Set point 1, winter	X	X	X	X	X	°C	-99.9	99.9	R/W
A207	207	Set point 2, winter	X	X	X	X	X	°C	-99.9	99.9	R/W

4.2 INTEGER VARIABLES

Key:
R: Modbus command code = 3
R/W: Modbus command code = 6

Carel address	BACnet address	Modbus address (BMS1)	Modbus EXT address (BMS2)	Description	WWM		WRK	WWB		UOM	Min	Max	Read/ Write
					Monoc.	Bicirc.		WWB	NXW				
I001	A1001	209	5002	Mode On/Off system (1=ON,2=Set2,3=FROM BANDS)	X	X	X	X	X	---	1	3	R/W
I002	A1002	210	5003	Mode On/Off Recovery (1=ON,2=Set2,3=FROM BANDS)					X	---	1	3	R/W
I003	A1003	211	5004	Summer/winter selection (0=SUMMER,1=WINTER,2=From ext. temp.,3= From DIN,4= From BMS, 5=From Calendar)	X	X	X	X	X	---	0	5	R/W
I004		212	5005	Demand limit	X	X	X	X	X	0.1%	0	1000	R/W
I005		213	5006	Remote thermostat (enabled by coil 22)	X	X	X	X	X	%	0	100	R/W
I006	A1006	214	5007	Plant active power (0...100)	X	X	X	X	X	%	0	100.0	R
I008	A1008	216	5009	Top part timer, Plant 1 pumps			X		X	---	0	999	R
I009	A1009	217	5010	Bottom part timer, Plant 1 pumps			X		X	h	0	999	R
I010	A1010	218	5011	Top part timer, Plant 2 pumps			X		X	---	0	999	R
I011	A1011	219	5012	Bottom part timer, Plant 2 pumps			X		X	---	0	999	R
I012	A1012	220	5013	Top part timer, comp.1 circ.1	X	X	X	X	X	---	0	999	R
I013	A1013	221	5014	Bottom part timer, comp.1 circ.1	X	X	X	X	X	h	0	999	R
I014	A1014	222	5015	Top part timer, comp.2 circ.1	X		X	X	X	---	0	999	R
I015	A1015	223	5016	Bottom part timer, comp.2 circ.1	X		X	X	X	h	0	999	R
I016		224	5017	Top part timer, comp.3 circ.1						---	0	999	R
I017		225	5018	Bottom part timer, comp.3 circ.1						h	0	999	R
I018	A1018	226	5019	Top part timer, comp.1 circ.2		X	X	X	X	---	0	999	R
I019	A1019	227	5020	Bottom part timer, comp.1 circ.2		X	X	X	X	h	0	999	R
I020	A1020	228	5021	Top part timer, comp.2 circ.2			X	X	X	---	0	999	R
I021	A1021	229	5022	Bottom part timer, comp.2 circ.2			X	X	X	h	0	999	R
I022		230	5023	Top part timer, comp.3 circ.2						---	0	999	R
I023		231	5024	Bottom part timer, comp.3 circ.2						h	0	999	R
I024		232	5025	DO NOT USE									
I025		233	5026	DO NOT USE									
I026	A1026	234	5027	Condenser valve/pump modulation	X	X	X	X	X	%	0	100	R
I027	A1027	235	5028	Evaporator pump modulation					X	%	0	100	R
I028	A1028	236	5029	Type of Chiller the communication is taking place with. Booster				X		%	0	100	R
I029	A1029	237	5030	Plant side power request (0...100)	X	X	X	X	X	%	0	100.0	R
I030		238	5031	Domestic side power request (0...100)					X	%	0	100.0	R
I035	A1035	243	5036	Upper part inrush counter, pump system 1			X		X	---	0	999	R
I036	A1036	244	5037	Lower part inrush counter, pump system 1			X		X	---	0	999	R
I037	A1037	245	5038	Upper part inrush counter, pump system 2			X		X	---	0	999	R
I038	A1038	246	5039	Lower part inrush counter, pump system 2			X		X	---	0	999	R
I043	A1043	251	5044	Upper part inrush counter, CP1 circuit 1	X	X	X	X	X	---	0	999	R
I044	A1044	252	5045	Lower part inrush counter, CP1 circuit 1	X	X	X	X	X	---	0	999	R
I045	A1045	253	5046	Upper part inrush counter, CP1A circuit 1	X		X	X	X	---	0	999	R
I046	A1046	254	5047	Lower part inrush counter, CP1A circuit 1	X		X	X	X	---	0	999	R
I047		255	5048	Upper part inrush counter, CP1B circuit 1						---	0	999	R
I048		256	5049	Lower part inrush counter, CP1B circuit 1						---	0	999	R
I049	A1049	257	5050	Upper part inrush counter, CP1 circuit 2		X	X	X	X	---	0	999	R
I050	A1050	258	5051	Lower part inrush counter, CP1 circuit 2		X	X	X	X	---	0	999	R
I051	A1051	259	5052	Upper part inrush counter, CP1A circuit 2			X	X	X	---	0	999	R
I052	A1052	260	5053	Lower part inrush counter, CP1A circuit 2			X	X	X	---	0	999	R
I053		261	5054	Upper part inrush counter, CP1B circuit 2						---	0	999	R
I054		262	5055	Lower part inrush counter, CP1B circuit 2						---	0	999	R
I055	A1055	263	5056	Fan speed 1 (0..100%)					X	---	0	1000	R
I056	A1056	264	5057	Fan speed 2 (0..100%)					X	---	0	1000	R
I057	A1057	265	5058	Fan speed 3 (0..100%)					X	---	0	1000	R
I058		266	5059	Evaporator Inlet Bypass Valve				X		---	0	1000	R
I071	A1071	279	5072	Upper part hour counter, pumps 1 cond.			X		X	---	0	999	R
I072	A1072	280	5073	Lower part hour counter, pumps 1 cond.			X		X	---	0	999	R
I073	A1073	281	5074	Upper part hour counter, pumps 2 cond.			X		X	---	0	999	R
I074	A1074	282	5075	Lower part hour counter, pumps 2 cond.			X		X	---	0	999	R
I075	A1075	283	5076	Upper part inrush counter, pump 1 cond.			X		X	---	0	999	R
I076	A1076	284	5077	Lower part inrush counter, pump 1 cond.			X		X	---	0	999	R
I077	A1077	285	5078	Upper part inrush counter, pump 2 cond.			X		X	---	0	999	R
I078	A1078	286	5079	Lower part inrush counter, pump 2 cond.			X		X	---	0	999	R
I079	A1079	287	5080	Differential transmitter Huba (if present)	X	X					0	999	R
I192	A1192	400	5193	Countdown compressor 1 circuit 1	X	X	X	X	X	---	0	999	R
I193	A1193	401	5194	Countdown compressor 2 circuit 1	X		X	X	X	---	0	999	R
I194	A1194	402	5195	Countdown compressor 3 circuit 1						---	0	999	R
I195	A1195	403	5196	Countdown compressor 1 circuit 2		X	X	X	X	---	0	999	R
I196	A1196	404	5197	Countdown compressor 2 circuit 2			X	X	X	---	0	999	R

Carel address	BACnet address	Modbus address (BMS1)	Modbus EXT address (BMS2)	Description	WWM		WRK	WWB		UOM	Min	Max	Read/ Write
					Monoc.	Bicirc.		WWB	NXW				
I197	A1197	405	5198	Countdown compressor 3 circuit 2						---	0	999	R
I198		406	5199										
I199		407	5200										
I200	A1200	408	5201	Power Circ 1	X	X	X	X	X	%	0	100.0	R
I201	A1201	409	5202	Power Circ 2		X	X	X	X	%	0	100.0	R
I202		410	5203										
I203		411	5204										
I204		412	5205										
I205	A1205	413	5206	Countdown cond. pumps			X		X	---	0	999	R
I206	A1206	414	5207	Countdown evap/flow switch pumps			X		X	---	0	999	R
I207		415	5208	LAST ADDRESS THAT CAN BE USED WITH THE CURRENT CONFIGURATION (Modbus extended + BMS extensions)									

NB: By default, the BMS1 protocol is set to: "Modbus Extended" and therefore the addresses in the 2nd Modbus column starting from the left will be used. This parameter has been set in this way since software version 1.0.0. It is possible to set the BMS1 protocol on Modbus, but this will result in NOT reading the alarms from the digital address 208.

4.3 DIGITAL VARIABLES

Key:
R: Modbus command code = 1
R/W: Modbus command code = 5

BACnet address	Modbus address	Description	WWM		WRK	WWB	NXW	Read/Write	SW version
			Monoc.	Bicirc.					
D001	1	Unit On/Off	X	X	X	X	X	R	
D002	2	Summer/Winter request from Supervisor	X	X	X		X	R/W	
D003	3	Reset alarms (1= reset)	X	X	X	X	X	R/W	
D004	4	Plant switch-on request from digital input	X	X	X	X	X	R	
D005	5	Plant cold/hot request from digital input (closed = Cold)	X	X	X		X	R	
	6								
D007	7	Summer/Winter status	X	X	X	X	X	R	
	8								
D010	10	Plant On/Off	X	X	X	X	X	R/W	
	11								
D012	12	Cold adjustment on fixed set (0) or climatic curve (1)			X	X	X	R/W	
D013	13	Winter adjustment on fixed set (0) or climatic curve (1)			X	X	X	R/W	
D015	15	Enables ONLY system pump			X		X	R/W	
D022	22	Enables remote thermostat (register 213)	X	X	X	X	X	R/W	
D023	23	Enabling Fahrenheit in BMS	X	X	X	X	X	R/W	
D024	24	V2VE - Two Way Evaporator Valve (0 = Closed, 1 = Open)	X	X				R	
	27								
D029	29	System low load function active						R	
D030	30	Pump 1 evaporator			X		X	R	
D031	31	Pump 2 evaporator			X		X	R	
D034	34	Recovery pump 1					X	R	
D036	36	CCP1 - Compressor 1 circ.1	X	X	X	X	X	R	
D037	37	CCP1A - Compressor 2 circ.1	X		X	X	X	R	
D038	38	CCP1B - Compressor 3 circ.1						R	
D039	39	CCP2 - Compressor 1 circ.2		X	X	X	X	R	
D040	40	CCP2A - Compressor 2 circ.2			X	X	X	R	
D041	41	CCP2B - Compressor 3 circ.2						R	
D042	42	Pump 1 condenser			X		X	R	
D043	43	Pump 2 condenser			X		X	R	
D044	44	VIC - cycle reversing valve, Circ 1	X	X	X	X	X	R	
D045	45	VIC - cycle reversing valve, Circ 2	X	X	X	X	X	R	
D046	46	VSL - liquid solenoid valve circ.1	X	X	X	X	X	R	
D047	47	VSL - liquid solenoid valve circ.2	X	X	X	X	X	R	
D050	50	VRT Recovery inversion valve,circ.1					X	R	
D051	51	VRT Recovery inversion valve,circ.2					X	R	
D052	52	VSB - Condensation solenoid valve circ.1					X	R	
D053	53	VSB - Condensation solenoid valve circ.2					X	R	
D054	54	VSR - Recovery solenoid valve circ.1					X	R	
D055	55	VSR - Recovery solenoid valve circ.2					X	R	
D058	58	Oil return valve from recovery circ.1					X	R	
D059	59	Oil return valve from recovery circ.2					X	R	
D060	60	Fan 1 (for NXW MotoEvaporator)					X	R	
D061	61	Fan 2 (for NXW MotoEvaporator)					X	R	
D097	97	Alarm circuit 1	X	X	X	X	X	R	
D098	98	Alarm circuit 2		X	X	X	X	R	

BACnet address	Modbus address	Description	WWM		WRK	WWB	NXW	Read/Write	SW version
			Monoc.	Bicirc.					
	99								
D0100	100	Sum of all alarms	X	X	X	X	X	R	
D0101	101	AL38 - evaporator flow meter alarm	X	X	X	X	X	R	
D0102	102	AL39 - recovery flow meter alarm					X	R	
D0103	103	AL24 - Overload evap. pump 1 alarm			X		X	R	
D0104	104	AL25 – Overload evap. pump 2 alarm			X		X	R	
D0107	107	AL26 - Recovery pump 1 circuit breaker alarm					X	R	
D0109	109	AL19 -Comp.1 circ.1 hours maintenance alarm 1 circ.1	X	X	X	X	X	R	
D0110	110	AL51- Compressor 2 circ.1 hours maintenance alarm	X		X	X	X	R	
D0111	111	AL52- Compressor 3 circ.1 hours maintenance alarm						R	
D0112	112	AL53- Compressor 1 circ.2 circuit breaker alarm		X	X	X	X	R	
D0113	113	AL54- Compressor 2 circ.2 hours maintenance alarm			X	X	X	R	
D0114	114	AL55- Compressor 3 circ.2 hours maintenance alarm						R	
D0115	115	AL28- Fan thermal alarm 1 (NXW - Condenserless)					X	R	
D0116	116	AL29 - Fan thermal alarm 2 (NXW - Condenserless)					X	R	
D0117	117	AL40 - Evap. antifreeze alarm	X	X	X	X	X	R	
D0121	121	AL31 - Circ.1 low pressure alarm	X	X	X	X	X	R	
D0122	122	AL65 - Circ.2 low pressure alarm		X	X	X	X	R	
D0123	123	AL34 - Circ.1 critical low pressure alarm	X	X	X	X	X	R	
D0124	124	AL35 - Circ.2 critical low pressure alarm		X	X	X	X	R	
D0125	125	AL32 - Circ.1 high pressure gauge alarm	X	X	X	X	X	R	
D0126	126	AL66 - Circ.2 high pressure gauge alarm		X	X	X	X	R	
D0127	127	AL33 - Circ.1 high pressure alarm	X	X	X	X	X	R	
D0128	128	AL67 - Circ.2 high pressure alarm		X	X	X	X	R	
D0129	129	AL03 - Phase monitor alarm	X	X	X	X	X	R	
D0130	130	AL10 - Evap. (1) outlet faulty probe alarm	X	X	X	X	X	R	
D0131	131	AL09 - Evap.(1) inlet faulty probe alarm	X	X	X	X	X	R	
D0134	134	AL13- Recovery 1 outlet faulty probe alarm					X	R	
D0135	135	AL12- Recovery 1 inlet faulty probe alarm					X	R	
D0136	136	AL05 - Circ.1 high pressure faulty probe alarm	X	X	X	X	X	R	
D0137	137	AL07 - Circ.1 low pressure faulty probe alarm	X	X	X	X	X	R	
D0138	138	AL06 - Circ.2 high pressure faulty probe alarm		X	X	X	X	R	
D0139	139	AL08 - Circ.2 low pressure faulty probe alarm		X	X	X	X	R	
D0140	140	AL16 - External temperature faulty probe alarm			X	X	X	R	
D0141	141	AL48 - Pressing line 1 gas temp. faulty probe alarm	X	X	X	X		R	
D0142	142	AL49 - Pressing line 2 gas temp. faulty probe alarm		X	X	X		R	
D0143	143	AL17 - Circ.1 liquid temp. faulty probe alarm	X	X	X	X		R	
D0144	144	AL18 - Circ.2 liquid temp. faulty probe alarm		X	X	X		R	
D0147	147	AL01 - Dead clock battery alarm	X	X	X	X	X	R	
D0148	148	AL02 - pCO memory error alarm	X	X	X	X	X	R	
D0149	149	AL14- Recovery 2 outlet probe faulty alarm					X	R	
D0159	159	AL70 - Alarm com. cond. anti-freeze (master-slave)					X		
D0160	160	AL41 - Com. evap. antifreeze alarm (master-slave)					X	R	
D0161	161	AL42 - Rec. 1 antifreeze alarm					X	R	
D0162	162	AL43 - Rec. 2 antifreeze alarm					X	R	
D0164	164	AL45 - uPC expansion offline alarm			X	X		R	
D0165	165	AL46 - Pcoe expansion offline alarm					X	R	
D0169	169	AL23 - Overload compressor 1 circ.1 alarm	X	X	X	X	X	R	
D0170	170	AL59- Compressor 2 circ.1 circuit breaker alarm	X		X	X	X	R	
D0171	171	AL60 - Compressor 3 circ.1 circuit breaker alarm						R	
D0172	172	AL61 - Compressor 1 circ.2 circuit breaker alarm		X	X	X	X	R	
D0173	173	AL62 - Compressor 2 circ.2 circuit breaker alarm			X	X	X	R	
D0174	174	AL63 - Compressor 3 circ.2 circuit breaker alarm						R	
D0175	175	AL56- Com recovery outlet faulty probe alarm (master – slave)					X	R	
D0176	176	AL11 - Com. evap. outlet faulty probe alarm (master – slave)					X	R	
D0184	184	AL75 - Circ.1 pressing line gas high temp. alarm	X	X	X	X		R	
D0185	185	AL76 - Circ.2 pressing line gas high temp. alarm		X	X	X		R	
D0190	190	AL85 - High Plant temperature	X	X	X	X	X	R	
D0191	191	AL86 – SAC storage tank probe faulty					X	R	
D0192	192	AL87 – Master offline					X	R	
D0193	193	AL88 – Slave offline					X	R	
D0195	195	AL91 – Slave alarm summary					X	R	
D0198	198	AL94 – pCOE expansion offline (address=3) Unit DK					X	R	
D0199	199	AL95 – Common evaporator output probe broken or not connected (DK)					X	R	
D0200	200	AL96 - Evaporator 2 output probe broken or not connected (DK)					X	R	
D0206	206	AL102 – Evaporator water input temperature outside operating limits	X	X	X	X	X	R	
D0207	207	AL103 – DeltaP alarm Circuit 1	X	X	X	X	X	R	
D0208	208	AL104 – DeltaP alarm Circuit 2		X	X	X	X	R	
D0209	209	AL105 - pCOE WWM expansion offline alarm		X				R	
D0210	210	AL106 – Cond. input probe faulty alarm	X	X	X	X	X	R	

BACnet address	Modbus address	Description	WWM		WRK	WWB	NXW	Read/Write	SW version
			Monoc.	Bicirc.					
D0211	211	AL107 – Cond. output probe faulty alarm	X	X	X	X	X	R	
D0212	212	AL108 – Cond. pump thermal alarm 1			X		X	R	
D0213	213	AL109 – Cond. pump thermal alarm 2			X		X	R	
D0214	214	AL110 – Intake sensor alarm Circ.1	X	X	X	X		R	
D0215	215	AL111 – Intake sensor alarm Circ.2		X	X	X		R	
D0216	216	AL112 - Freezing alarm Capacitor	X	X	X	X	X	R	
D0217	217	AL113 - High Temperat. Condens.	X	X	X	X	X	R	
D0218	218	AL114 – Condenser water input temperature outside operating limits	X	X	X	X	X	R	
D0219	219	AL115 – Gas leak Circ.1	X	X	X	X	X	R	
D0220	220	AL116 – Gas leak Circ.2	X	X	X	X	X	R	
D0221	221	AL117 – Diff.Huba trans. alarm	X	X				R	
D0222	222	AL118 – Huba probe alarm	X	X				R	
D0223	223	AL119 – Cond. flow switch alarm	X	X	X	X	X	R	
D0224	224	AL120 – Compressor Envelope alarm Circuit 1	X	X	X	X		R	
D0225	225	AL121 – Compressor Envelope alarm Circuit 2		X	X	X		R	
D0226	226	AL122 – Electrical panel high temperature alarm			X	X		R	
D0227	227	AL123 – Chiller connected to WWB alarm				X		R	
D0228	228	AL124 – Chiller connected to WWB not communicating alarm				X		R	
D0229	229	AL125 –lack of communication with Driver EVD alarm				X		R	
D0230	230	AL126 – Driver 1 circ. intake temperature low alarm				X		R	
D0231	231	AL127 – LAN Driver EVD error alarm				X		R	
D0232	232	AL128 – Eeprom alarm damaged				X		R	
D0233	233	AL129 - Probe S1 alarm Circ.1 Driver EVD				X		R	
D0234	234	AL130 - Probe S2 alarm Circ. 1 Driver A				X		R	
D0235	235	AL131 – EVD driver circuit 1 EEV motor error alarm				X		R	
D0236	236	AL132 - LOP alarm circ.1 Driver EVD (Low Evaporation Temp.)				X		R	
D0237	237	AL133 – MOP Driver A alarm (high evaporation temperature)				X		R	
D0238	238	AL134 – LowSH circuit 1 Driver EVD alarm (low overheating)				X		R	
D0239	239	AL135 - HiTcond alarm circ.1 Driver EVD (High Evaporation Temp.)				X		R	
D0240	240	AL136 - Probe S3 alarm Circ.2 Driver EVD				X		R	
D0241	241	AL137 - Probe S4 alarm Circ.2 Driver EVD				X		R	
D0242	242	AL138 – LowSH circuit 2 Driver EVD alarm (low overheating)				X		R	
D0243	243	AL139 - LOP alarm circ.2 Driver EVD (Low Evaporation Temp.)				X		R	
D0244	244	AL140 - MOP alarm circ.2 Driver EVD (High Evaporation Temp.)				X		R	
D0245	245	AL141 – EVD Driver 2 circ. intake temperature low alarm				X		R	
D0246	246	AL142 – EVD driver circuit 2 EEV motor error alarm				X		R	
D0247	247	AL143 – Driver EVD inefficient adaptive adjustment				X		R	
D0248	248	AL144 - Common condenser output probe broken or not connected (DK)					X	R	
D0249	249	AL145 - Condenser 2 output probe broken or not connected (DK)					X	R	
D0250	250	AL146 – Leak Detector (if enable from menu assistance)				X		R	≥ 1.1.6
D0251	251	AL 147 - Alarm Valve 1 Driver circuit 1				X	X	R	≥ 1.1.6
D0252	252	AL 148 - Alarm Valve 1 Driver circuit 2				X	X	R	≥ 1.1.6

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