# SPECIFICATIONS

temperzone

| **Model** | **OPA 970RLTB2FPQD** Econex Pro |
|---|---|
| Configuration | Horizontal Supply Air |
| Item No. (Standard / Opposite Hand) | 876-097-701 / 876-097-710 |
| Configuration | Downward Supply Air |
| Item No. (Standard / Opposite Hand) | 876-097-723 / 876-097-732 |
| Cooling capacity (net) [1] | 91 kW |
| Cooling capacity range (gross) | 16 ~ 102 kW |
| Heating capacity [1] | 95.8 kW |
| Heating capacity range | 13 ~ 110 kW |
| Electrical input - cooling | 29.9 kW |
| Electrical input - heating | 28.7 kW |
| EER / AEER (cooling) [1] | 3.04 / 3.03 |
| COP / ACOP (heating) [1] | 3.34 / 3.33 |
| Operating Range (outdoor ambient) - cooling | –10°C ~ 50°C |
| Operating Range (outdoor ambient) - heating | –10°C ~ 25°C |
| Master Controller | *c.pCO* |
| Slave Controllers | UC8 (x2) |
| Refrigerant | R32 |
| Refrigerant Charge | 10 kg/sys. |
| Minimum floor area (@2.4m below ceiling diffuser) | 53 $m^2$ |
| Compressor oil type | POE-46 (NXG5020 or equivalent) |
| Compressor type | inverter scroll (x2) |
| Power supply [2] | 3 ph. 400 V ac 50 Hz + N + E |
| Compressor (3ph.) run amps at rating cond. | 19 A/ph. (x2) |
| Compressor + VSD circuit breaker | 40 A (x2) |
| Indoor fan motor size | EC Plug 500 dia. 3.65kW (x2) |
| Nominal air flow at rating conditions | 4 700 l/s |
| Indoor fan motor (3ph.) - full load | 4.5 A/ph. (x2) |
| Outdoor fan motor (3ph.) - full load | 5.5 A/ph. (x2) |
| Outdoor fan max. static pressure@ 10 560 l/s | 125 Pa |
| Control circuit breaker (internal) | 2 A |
| Single phase socket circuit breaker | 10 A |
| Running amps (total system) [1] | 46 / 41 / 47 A. |
| Max. running amps (total system) | 74 / 74 / 77 A |
| RCD type recommended | type B, 30mA, 3 pole |
| Net weight | 1270 kg |
| Shipping weight | 1296 kg |

Accessories:

| | |
|---|---|
| Remote wired Service Interface Display (*pGD1*) | 201-000-867 |
| Filters - rated EU4/G4 disposable | 019-400-004 500x500x50 (x9) [3] |
| Filters - rated EU4/G4 washable (NZ Only) | 019-000-033 500x500x50 (x9) [3] |
| Drain tundish (2 per set; 2 sets required) | 060-000-653 |

Refer to temperzone for other options.

[1] Tested in accordance with AS/NZS 3823
[2] Voltage range: 380–440V
[3] Filter sizes are nominal; refer to Temperzone for actual measurements.

22014

econex
nex gen R32 inverter

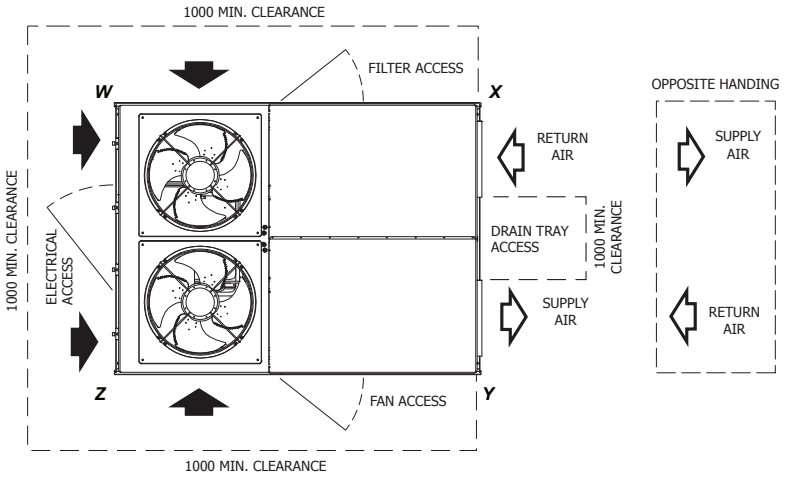
# DIMENSIONS (mm)

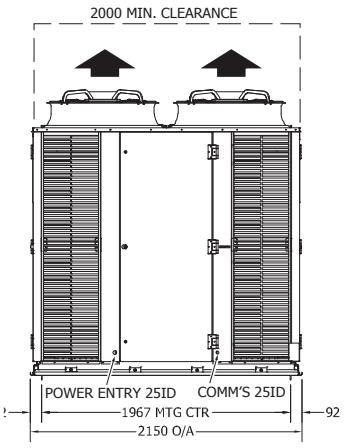
PROJECTION

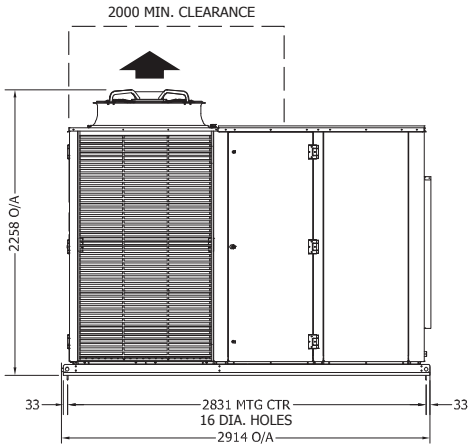
Not to Scale

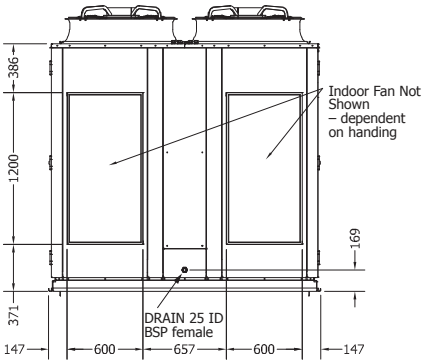
## **OPA 970RLTBFPQD01** Standard Hand, Horizontal Supply

| POINT LOADS (kg) | | | |
|---|---|---|---|
| W | X | Y | Z |
| 341 | 266 | 280 | 383 |



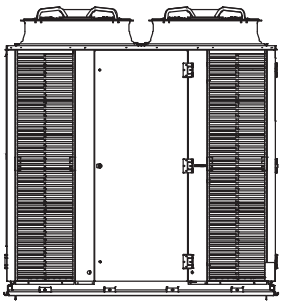



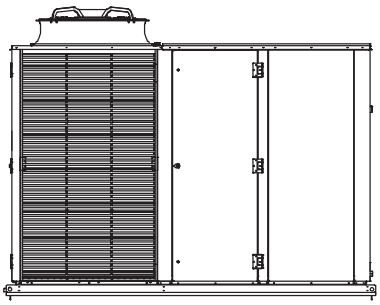



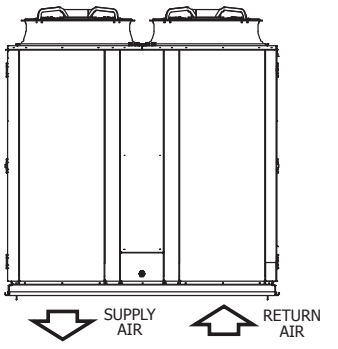



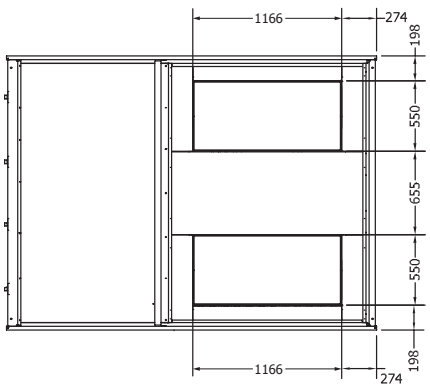

## **OPA 970RLTBFPQD23** Standard Hand, Downward Supply

Clearances as above








BOTTOM VIEW

**NOTE**
Specifications are subject to change without notice due to the manufacturer's ongoing research and development programme.

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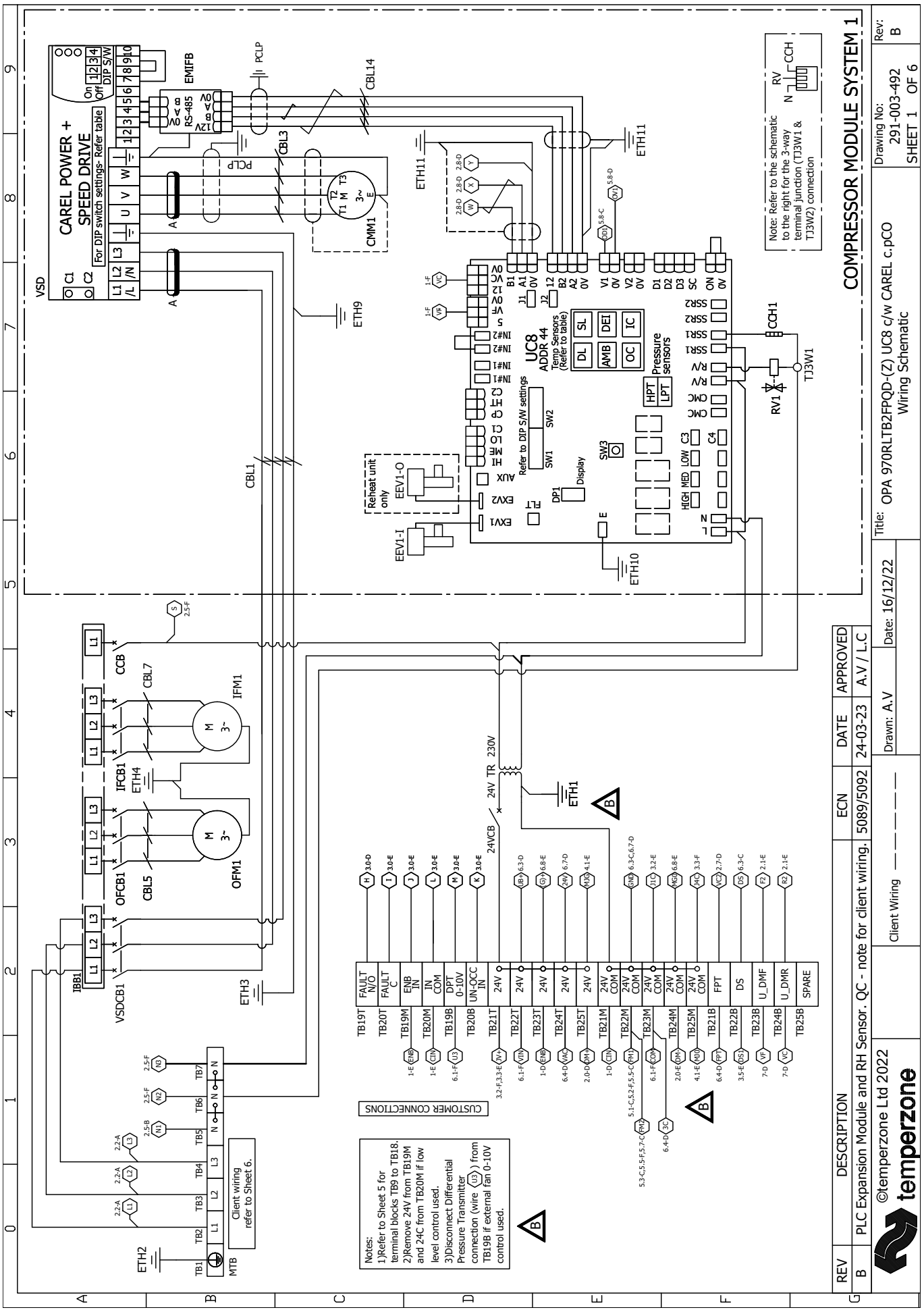
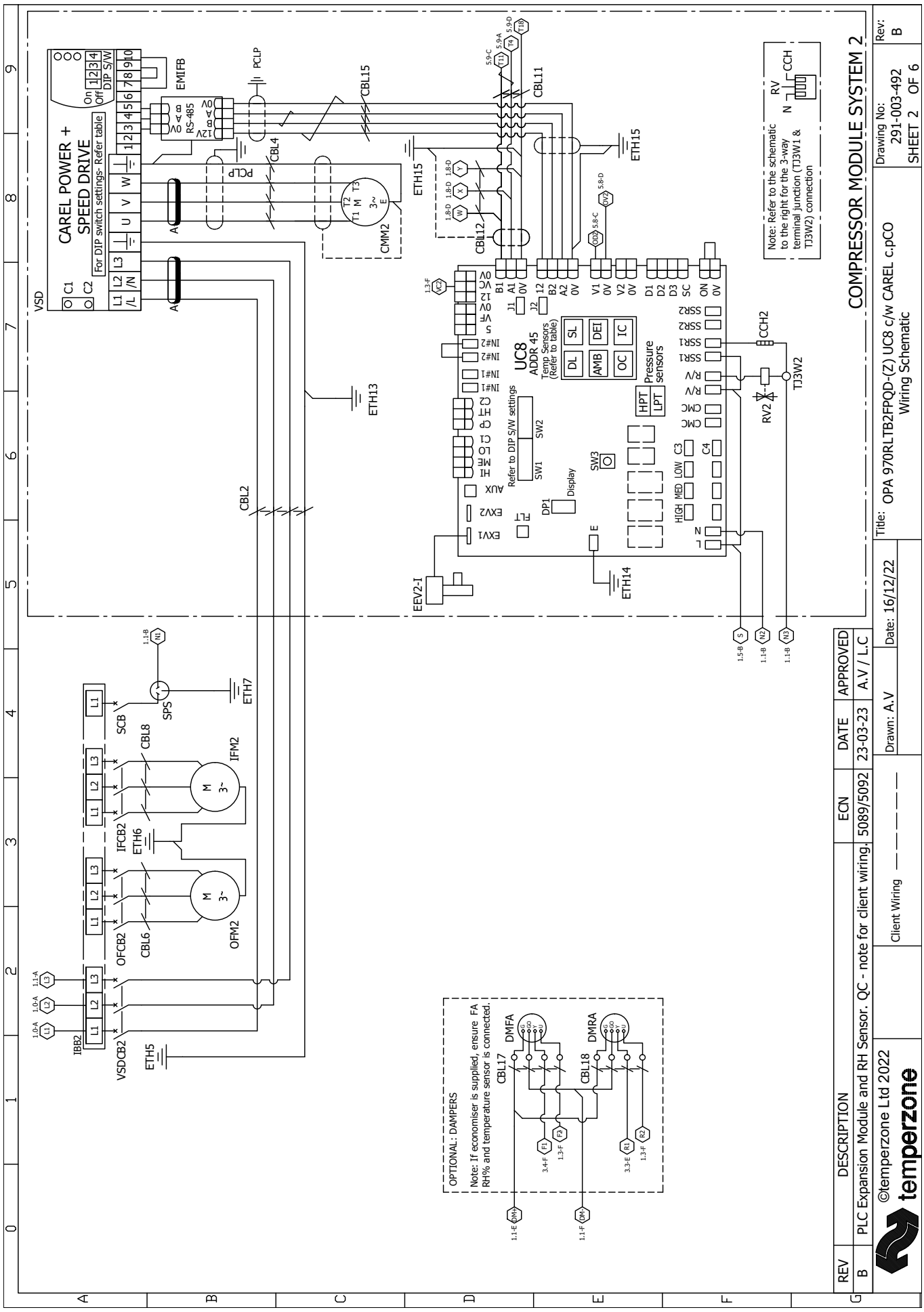
Refer Sheet 4 for client wiring & descriptors




COMPRESSOR MODULE SYSTEM 2
OPA 970RLTB2FPQD-(Z) UC8 c/w CAREL c.pCO
Wiring Schematic
Drawing No: 291-003-492
SHEET 2 OF 6
Rev: B
Date: 16/12/22
Drawn: A.V
APPROVED
A.V / L.C
DATE
23-03-23
ECN
5089/5092
DESCRIPTION
PLC Expansion Module and RH Sensor. QC - note for client wiring.
Client Wiring
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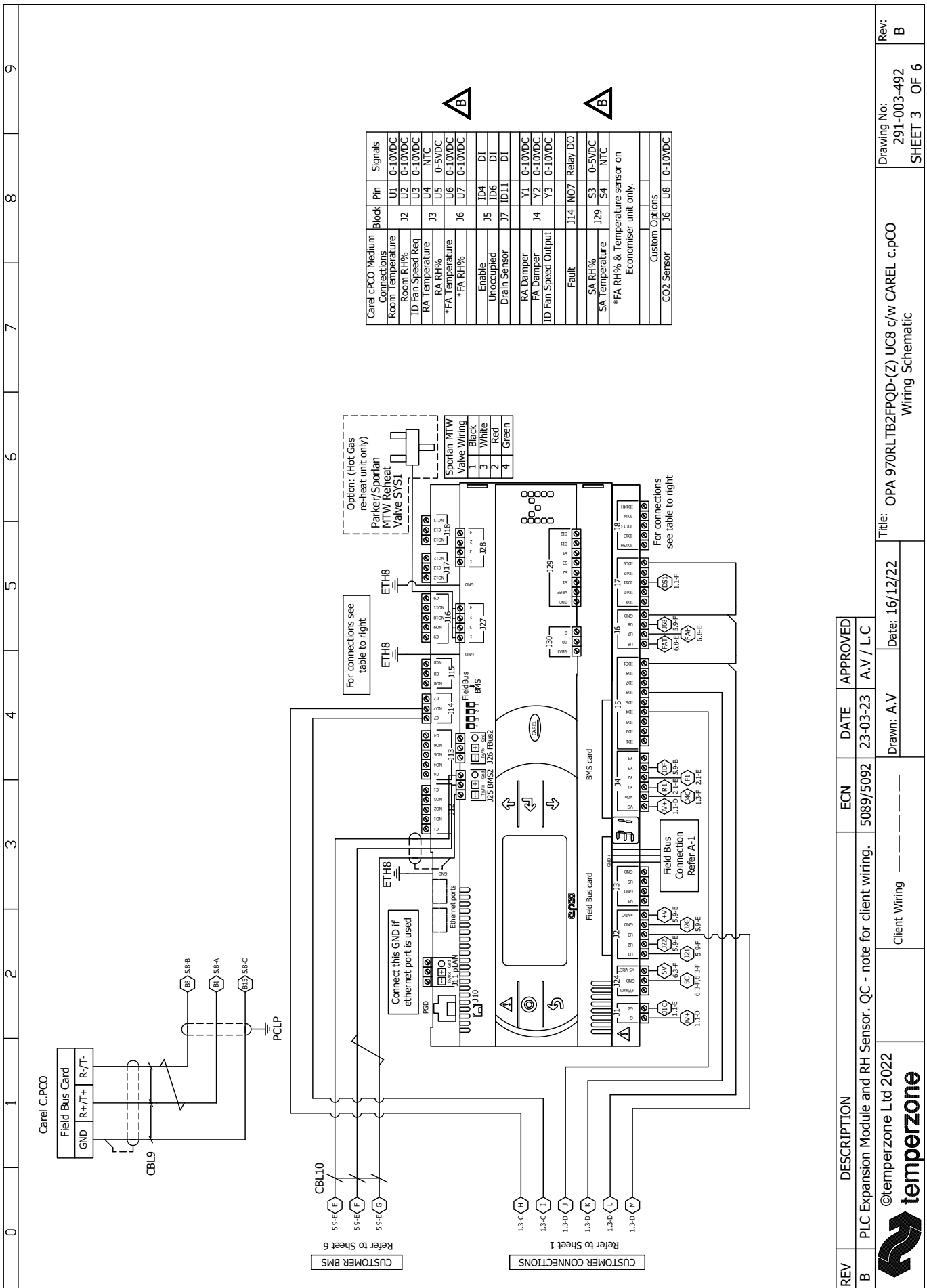
VSD
CAREL POWER + SPEED DRIVE
For DIP switch settings- Refer table
EMIFB
PCLP
CBL4
CBL15
CBL11
CBL12
CMM2
ETH15
ETH13
ETH14
ETH7
ETH6
ETH5
UC8
ADDR 45
Temp Sensors (Refer to table)
Pressure sensors
Refer to DIP S/W settings
SW1
SW2
SW3
Display
DP1
CBL2
CBL8
CBL6
IFM2
OFM2
IFCB2
OFCB2
VSDCB2
IBB2
SCB
SPS
EEV2-I
CCH2
TJ3W2
RV2
CCH
RV
Note: Refer to the schematic to the right for the 3-way terminal junction (TJ3W1 & TJ3W2) connection
OPTIONAL: DAMPERS
Note: If economiser is supplied, ensure FA RH% and temperature sensor is connected.
DMFA
DMRA
CBL17
CBL18


Carel cPCO Medium Connections
Block
Pin
Signals
Room Temperature
J2
U1
0-10VDC
Room RH%
U2
0-10VDC
ID Fan Speed Req
U3
0-10VDC
RA Temperature
J3
U4
NTC
RA RH%
U5
0-5VDC
*FA Temperature
J6
U6
0-10VDC
*FA RH%
U7
0-10VDC
Enable
J5
ID4
DI
Unoccupied
ID6
DI
Drain Sensor
ID11
DI
RA Damper
J4
Y1
0-10VDC
FA Damper
Y2
0-10VDC
ID Fan Speed Output
Y3
0-10VDC
Fault
J14
NO7
Relay DO
SA RH%
J29
S3
0-5VDC
SA Temperature
S4
NTC
*FA RH% & Temperature sensor on Economiser unit only.
Custom Options
CO2 Sensor
J6
U8
0-10VDC
Option: (Hot Gas re-heat unit only)
Parker/Sporlan MTW Reheat Valve SYS1
Sporlan MTW Valve Wiring
1 Black
3 White
2 Red
4 Green
For connections see table to right
ETH8
Carel C.PCO
Field Bus Card
GND
R+/T+
R-/T-
CBL9
PCLP
CBL10
Connect this GND if ethernet port is used
Ethernet ports
Field Bus Connection Refer A-1
Field Bus card
BMS card
CUSTOMER BMS
Refer to Sheet 6
CUSTOMER CONNECTIONS
Refer to Sheet 1
REV
DESCRIPTION
ECN
DATE
APPROVED
B
PLC Expansion Module and RH Sensor. QC - note for client wiring.
5089/5092
23-03-23
A.V / L.C
Drawn: A.V
Date: 16/12/22
Title: OPA 970RLTB2FPQD-(Z) UC8 c/w CAREL c.pCO
Wiring Schematic
Drawing No: 291-003-492
SHEET 3 OF 6
Rev: B
Client Wiring
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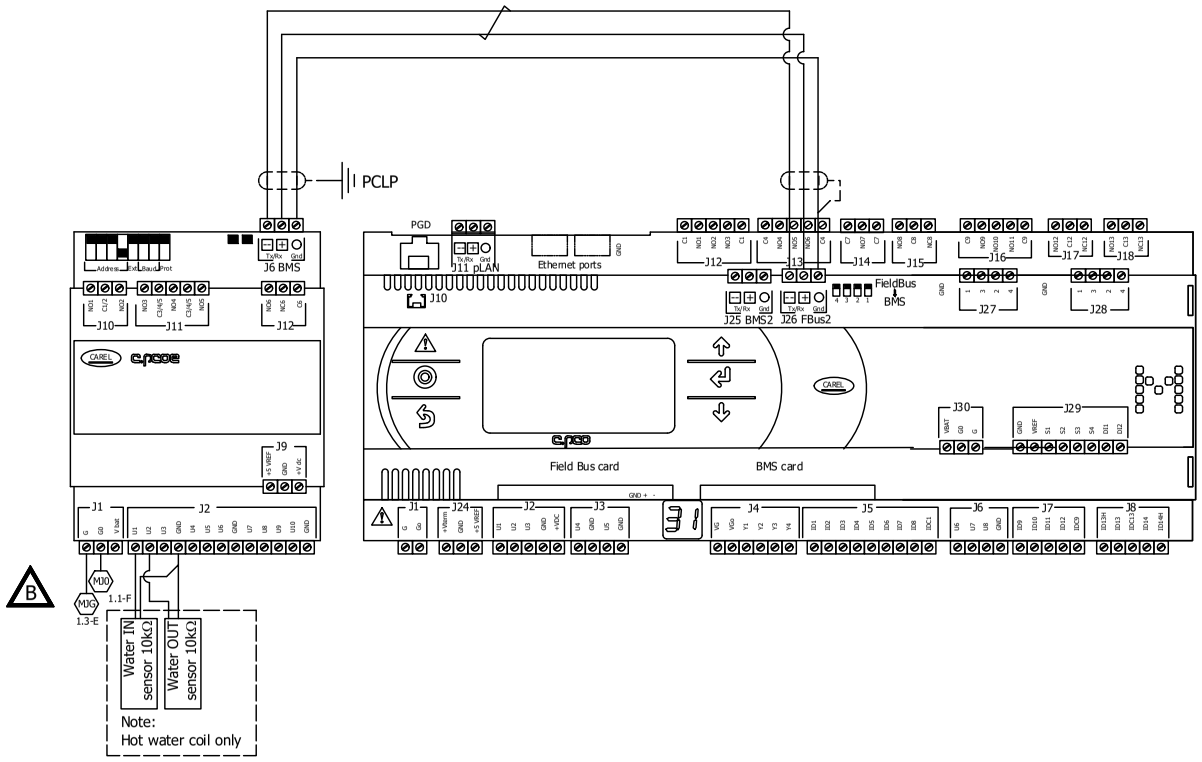


| Ebox | Expansion Module |
|---|---|
| 240-002-580 | x |
| 240-002-772 | ✓ |

| Field Configured Options | | | |
|---|---|---|---|
| Carel Expansion Module Connections | Block | Pin | Signals |
| Water In Sensor | J2 | U1 | NTC |
| Water Out Sensor | | U2 | NTC |
| Hot Water Valve | | U9 | 0-10VDC |

| REV | DESCRIPTION | ECN | DATE | APPROVED |
|---|---|---|---|---|
| B | PLC Expansion Module and RH Sensor. QC - note for client wiring. | 5089/5092 | 23-03-23 | A.V / L.C |


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Client Wiring

Drawn: A.V

Date: 16/12/22

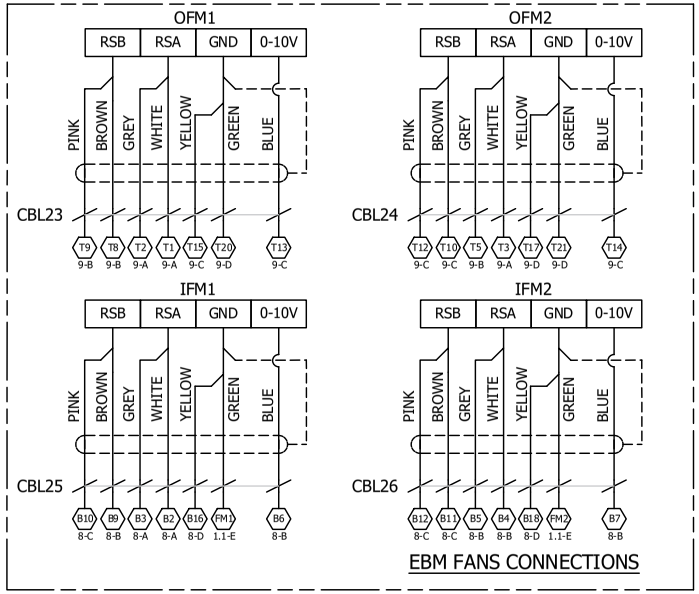
Title: OPA 970RLTB2FPQD-(Z) UC8 c/w CAREL c.pCO Wiring Schematic

Drawing No: 291-003-492

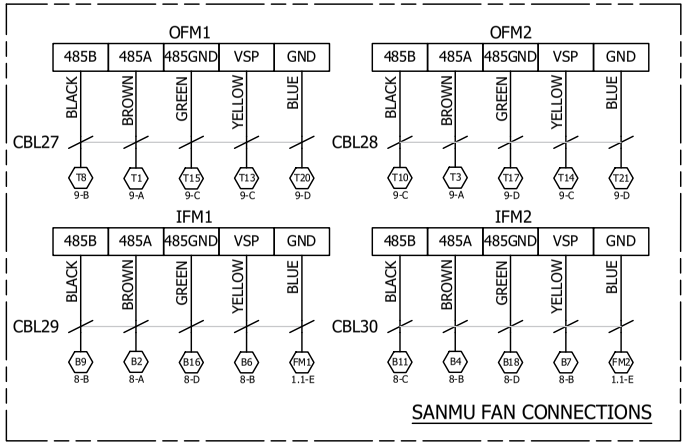
SHEET 4 OF 6

Rev: B

NOTE: THE FOLLOWING FANS CONNECTIONS APPLY, DEPENDING ON THE MAKE OF FANS INSTALLED IN THE UNIT.

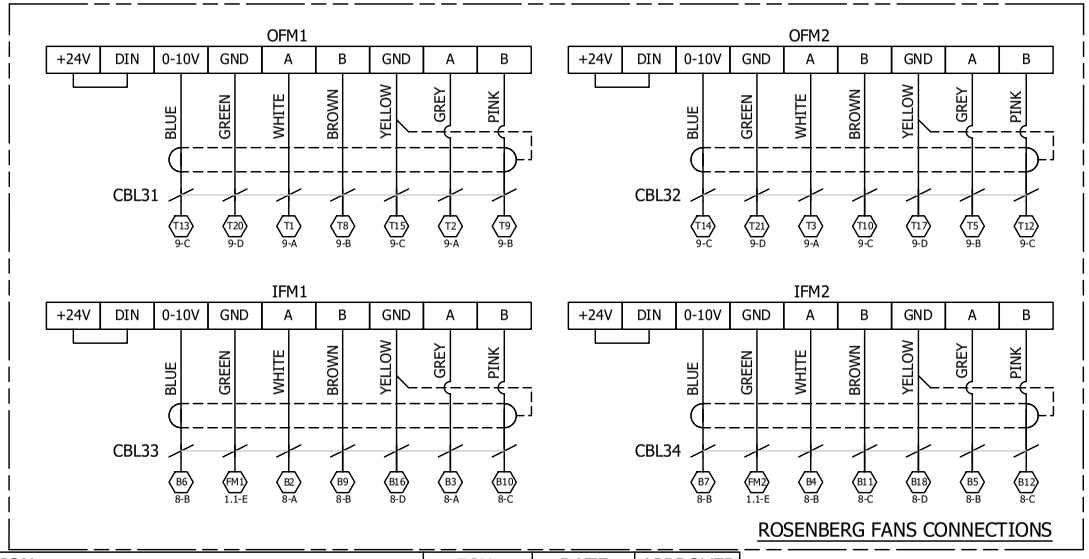



EBM FANS CONNECTIONS

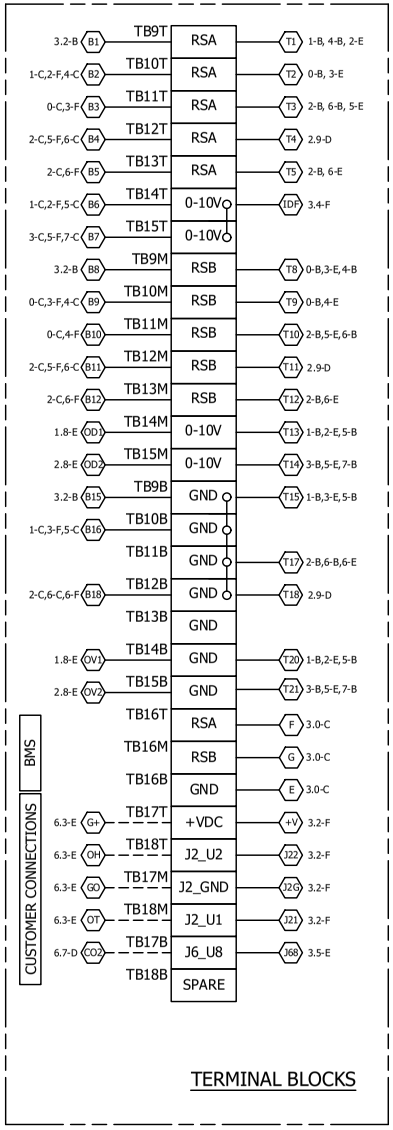



SANMU FAN CONNECTIONS

Notes:
1)Customer connections continued from Sheet 1.
2)For Sanmu fans, insert links between terminals TB9T to TB12T and between TB9M to TB12M.
3)Cut off spare wires at Ebox. Seal with heat shrink. Ensure spare wires are cut at different lengths to avoid shorting together.
4)All outdoor fan cable shall be protected with Cobraflex conduit.




ROSENBERG FANS CONNECTIONS




TERMINAL BLOCKS

| REV | DESCRIPTION | ECN | DATE | APPROVED |
|---|---|---|---|---|
| B | PLC Expansion Module and RH Sensor. QC - note for client wiring. | 5089/5092 | 23-03-23 | A.V / L.C |



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Client Wiring

Drawn: A.V

Date: 16/12/22

Title: OPA 970RLTB2FPQD-(Z) UC8 c/w CAREL c.pCO Wiring Schematic

Drawing No: 291-003-492

SHEET 5 OF 6

Rev: B

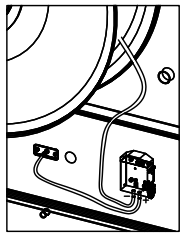
| | |
|---|---|
| 24VCB | 24 Volt Circuit Breaker |
| CBL | Cable Marker |
| CCB | Control Circuit Breaker |
| CCH | Crankcase Heater |
| CMM | Compressor Motor |
| DMF | Damper Motor Fresh Air |
| DMR | Damper Motor Return Air |
| EEV | Electronic Expansion Valve |
| EMIFB | Electromagnetic Interference Filter Board |
| ETH | Earth |
| IBB | Insulated Bus Bar |
| IFCB | Indoor Fan Circuit Breaker |
| IFM | Indoor Fan Motor |
| MTB | Main Terminal Block |
| OFCB | Outdoor Fan Circuit Breaker |
| OFM | Outdoor Fan Motor |
| PCLP | P Clip |
| RV | Reversing Valve |
| SCB | Socket Circuit Breaker |
| SPS | Single Phase Socket |
| TB | Terminal Block |
| TJ3W | Terminal Junction 3 Way |
| TR | Transformer |
| UC8 | Unit Controller 8 |
| VSD | Variable Speed Drive |
| VSDCB | Variable Speed Drive Circuit Breaker |

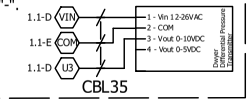
| Ferrites | | | |
|---|---|---|---|
| | Part Number | Frequency Type | Number of Turns |
| A | 012-001-074 | High | 1 |

Dwyer Differential Pressure Transmitter 616KD-13-V-TC Wiring and Tubes
Connections (0-10VDC output)

Inlet ring pressure tap location:
*EBM fan - RHS of fan as shown in diagram on the right
*Rosenberg fan - Bottom of fan
*Sanmu fan - LHS of fan

Tubes Connections:
Connect static pressure tip to "+".
Connect inlet ring nipple to "-".

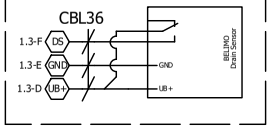




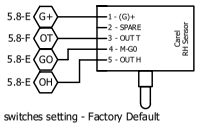

| Sensor(S) / Transducers (T) to UC8 | | | |
|---|---|---|---|
| | Name | Type | Colour |
| DL | Discharge | S | Grey |
| SL | Suction | S | White |
| AMB | Ambient | S | Black |
| DEI | Deice | S | Blue |
| LPT | Suction Pressure | T | Grey |
| HPT | High Pressure | T | Grey |

| Sensor to Carel c.PCO | | |
|---|---|---|
| | Name | Type |
| *Room | Room Air | RH% & Temp |
| RA | Return Air | RH% & Temp |
| SA | Supply Air | RH% & Temp |
| **FA | Fresh Air | RH% & Temp |
| *Room sensor supplied loose. | | |
| **FA sensor on Economiser unit only. | | |

Belimo Drain Sensor EXT-TN-1071375
Wiring NO output

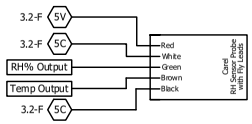



Room Sensor - Carel RH/Temp Sensor
DPPC112000 (Supplied Loose)
Refer to Sheet 4 for connections.




DIP switches setting - Factory Default

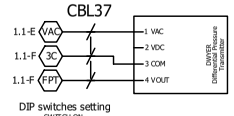
RA & SA Sensors - Carel RH/Temp Sensor
DPRC13A000 Wiring (0-5VDC & NTC output)
Refer to Sheet 3 for connections to Carel controller.




| Unit with Reheat | | |
|---|---|---|
| * 2 x EEV on System 1 | | |
| * 1 x EEV on System 2 | | |
| * 1 x reheat coil | | |
| * 1x Sporlan / Parker modulating valves | | |
| * Carel c.pCO Medium version with built-in EVD | | |
| * 1 x Carel Field Bus Card | | |
| | Compressor | UC8 DIP SWITCHES |
| | | ON |
| ALL SYSTEMS | INVERTER | 1, 4, 6, 7, 10, 14 |

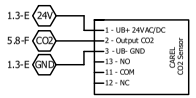
| Unit with No Reheat | | |
|---|---|---|
| * 1 x EEV per system | | |
| * Carel c.pCO Medium version with built-in EVD | | |
| * 1 x Carel Field Bus Card | | |
| | Compressor | UC8 DIP SWITCHES |
| | | ON |
| ALL SYSTEMS | INVERTER | 1, 4, 6, 7, 10, 14 |

Dwyer Filter Differential Pressure Transmitter MSX-W12-PA
Wiring 0-10VDC output




DIP switches setting
SWITCH ON
1 2 3 4 5 6 7 8

OPTIONAL:
Carel CO2 Sensor DPWQ402000
Wiring 0-10VDC output
Refer to Sheet 4 for connections to Carel controller.



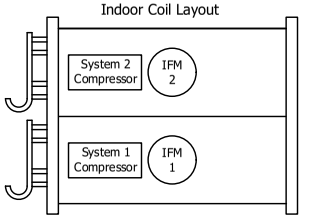

DIP switches setting -
Factory Default

| VSD DIP switch settings | |
|---|---|
| DIP switch | ↑ On/Off ↓ |
| 1,4 | On |
| 2,3 | Off |

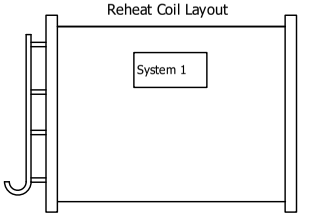
| Modbus Devices Address | |
|---|---|
| UC8 | 44, 45 |
| VSD | 10 |
| IFM | 21, 22 |
| OFM | 31, 32 |

| Important Notes: |
|---|
| 24 Hour power required (on L1) for control circuit and crankcase heaters |
| Portable RCD shall be used with single phase socket. |

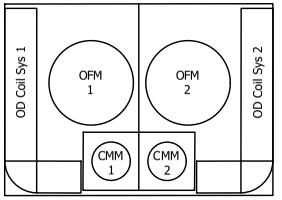
Indoor Coil Layout




Reheat Coil Layout



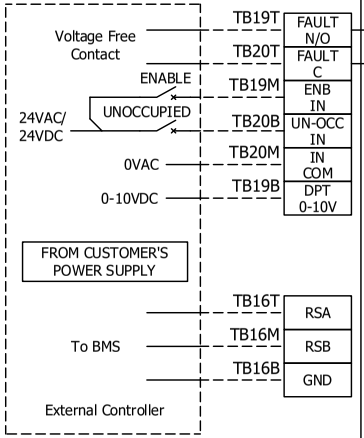

Overall System Layout

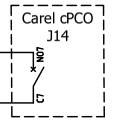



Client Wiring

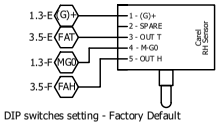
Notes:
1)Remove 24V from TB19M and 24C from TB20M if low level control used.
2)Disconnect Differential Pressure Transmitter connection (wire U3) from TB19B if external fan 0-10V control used.

B



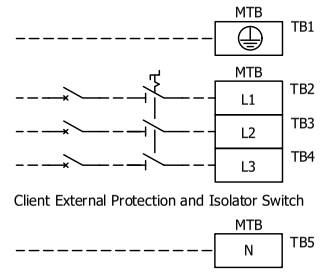




FA Sensor - Carel RH/Temp Sensor
DPPC112000. Refer to Sheet 3 for connections.




DIP switches setting - Factory Default

Client Wiring




| REV | DESCRIPTION | ECN | DATE | APPROVED |
|---|---|---|---|---|
| B | PLC Expansion Module and RH Sensor. QC - note for client wiring. | 5089/5092 | 23-03-23 | A.V / L.C |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Client Wiring

Drawn: A.V | Date: 16/12/22

Title: OPA 970RLTB2FPQD-(Z) UC8 c/w CAREL c.PCO Wiring Schematic

Drawing No: 291-003-492 SHEET 6 OF 6

Rev: B





Refer 'Installation & Maintenance' pamphlet for more information.