OXYGEN8

VENTUM

Installation Manual

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1.0 GENERAL INFORMATION

This manual includes important instructions for safe connection of the Energy Recovery Ventilator (ERV). Before connecting the unit, please read carefully and follow the instructions.

The manufacturer reserves the right to make changes, including changes in the technical documentation, without previous notification. Please keep this manual for future reference. Consider this manual a permanent part of the product.

This manual will show the manufacturers' recommended installation method. Please note that local codes and regulations may override these recommendations. The installation must follow local codes and standards.

The National Electric Code (NEC), the National Fire Protection Agency (NFPA), and the Canadian Electrical Code (CEC) must be followed. Installation of this product must be performed by a qualified and accredited professional in conformance with local and national codes, standards and licensing requirements.

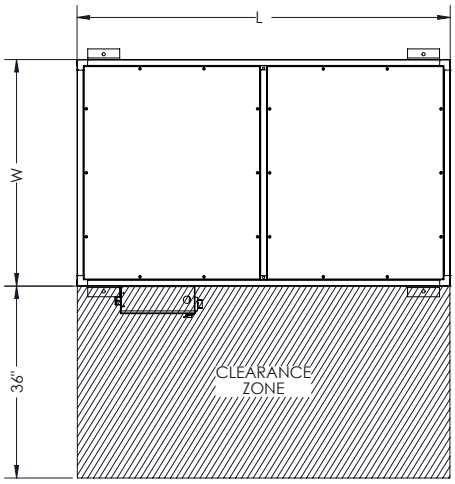
Caution: This sign indicates apotentially hazardous situation, which may result in minor or moderate injury if not avoided. It may also alert against unsafe practices.

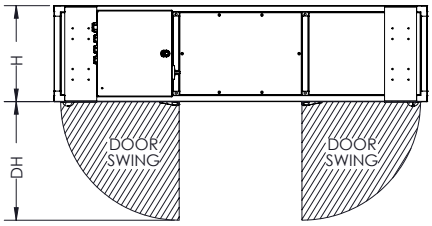
Warning: This sign indicates a situation that may result in equipment or property damage accidents.

Danger: This sign indicates a potentially hazardous situation, which could result in death or serious injury if not avoided.

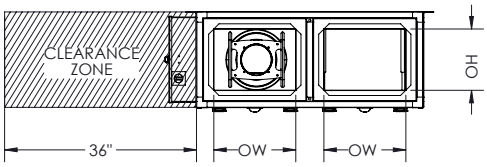
2.0 UNIT SPECIFICATIONS

2.1 Dimensions





FRONT VIEW



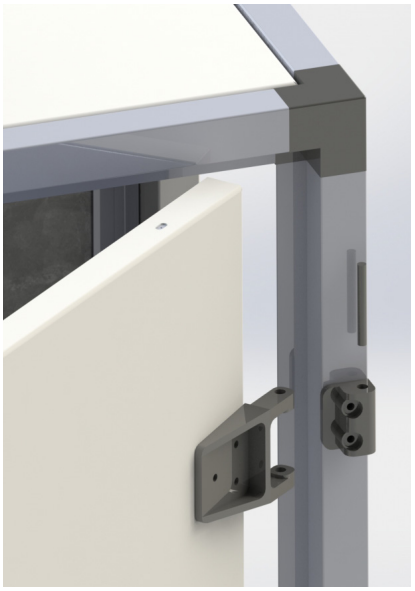
RIGHT VIEW

SIZE	L	W	H	DH	OH	OW	RDC-OW	EXT-OW
DESCRIPTION	**LENGTH**	**WIDTH**	**HEIGHT**	**DOOR HEIGHT**	**OPENING HEIGHT**	**OPENING WIDTH**	**"REDUCED OPENING WIDTH (OPPOSITE SIDE OF COOLING COIL)"**	**“EXTENDED OPENING WIDTH (COUPLED COOLING COIL)”**
H05	70	42.5	18	22.25	11.5	15.375	8.125	22.5
H10	70	62.5	18	22.25	11.5	25.375	21.125	29.5
H15	78	62.5	21	24.25	14.5	25.375	20.125	30.5
H20	78	77.5	21	24.25	14.5	32.8125	26.125	39.5
H25	102	62.5	32	30.25	25.5	25.3125	21.125	29.5
H30	102	77.5	32	30.25	25.5	32.9375	27.125	38.5

* All dimensions are in inches
* If a unit has a baserail, add 4 inches to Y (OVERALL HEIGHT)

2.2 Access Requirements

Unit with doors open



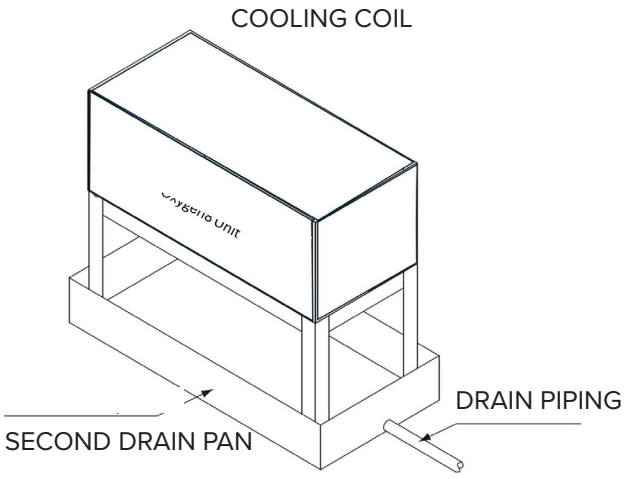
Door with removed hinge pin

Top of Unit

The National Electrical Code (NEC) stipulates that there must be a minimum of 36 inches of clearance from an electrical connection. The installing contractor must ensure there is at least 36 inches of clearance perpendicular to the top of the electrical box.

2.3 Dehumidification Cooling Coil Condensate Protection

When installing a cooling and reheat coil in unconditioned spaces, if high humidity levels are anticipated, it is recommended to add a layer of insulation to the exterior of the unit body. Use glass wool or polyethylene foam with a thickness of at least 2 inches, ensuring it fits within the installation space without blocking or inhibiting necessary access to the unit or airflow. During cooling operation, condensation may form on the outside of the product cabinet. If reinforcing the insulation is not feasible in a humid installation environment, it is recommended to provide and install a second drain pan below the coil modules (supplied and installed by others).



3.0 INSTALLATION

3.1 Unwrapping the Product

When removing the shrink wrap, be cautious with knives and sharp tools to prevent scratching the paint. The HMI, temperature + humidity sensor, external duct pressure sensor and all other optional field components will be found in the electrical box or fan compartment. They are secured there for transport and to easily find them on the job site. Pallets are two-way entry; therefore, fork extenders or 8-foot forks must be used when moving a palletized unit.

Units are palletized and protected by a skeletal crate of heat-treated wood. These crates are constructed using nails; therefore, to unpack the unit, carefully use a crowbar or reciprocating saw to detach each panel. Additional bracing used to prevent the unit from sliding on the pallet must also be removed.

Once external packaging is removed, carefully remove the stretch wrap and cardboard covering the unit. It is better to use scissors rather than a knife to avoid scratching the unit.

External Pipes are protected by wood boxes that are secured with Poly Strapping and must also be removed. If a unit has a baserail, it will be screwed down directly to the pallet.

Packaged Unit

External Pipes Protected by Wood Boxes

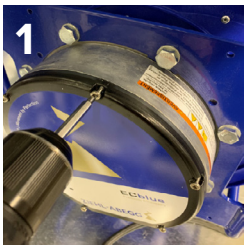
3.2 Lifting Requirements

Units can be lifted by mounting angles. Lifting directly from the frame is not recommended.

3.3 Assembly

On the C-Series cabinets, by special request only for a premium, removing the fan section from the core section is possible for ease of installation and maneuverability in tight locations. Use the following steps to disassemble the fan section from the core section:

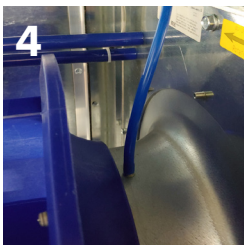
1. Remove the cover from the fan.



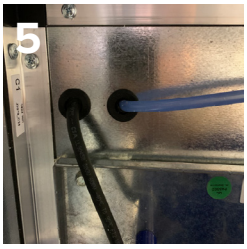
2. Undo the screw terminals that are holding the power wires and the communication wires. See back of manual for electrical drawings.

3. Loosen the cable glands and pull the wires out of the motor.

4. Pull the pressure tube from the nozzle port on the fan bell mouth.



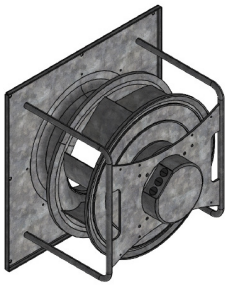
5. Push the pressure tube and all cables back into the core section, through the rubber grommets that are on the fan wall.

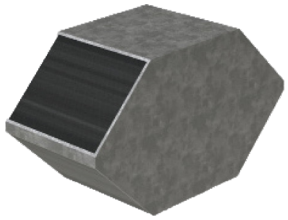


6. Repeat steps 1-5 for the other fan.

3.4 Weights

For special indoor unit orders requiring the fan cabinet to be split from the core cabinet, some sample weights are as follows. For these and other model sizes, weights will be provided with the submittal.



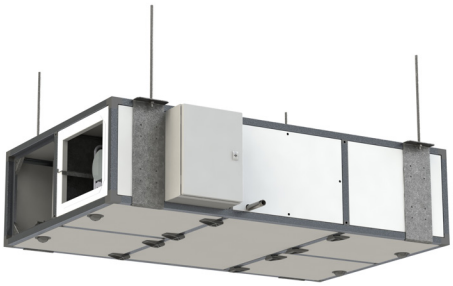


MODEL	**FAN (A)** LBS.	**CORE (B)** LBS.	**TOTAL WEIGHT** LBS.
H05	27	13	450
H10	28.7	13	620
H15	37.5	22	720
H20	37.5	22	820
H25	48.5	64	1130
H30	48.5	64	1300

3.5 Installation

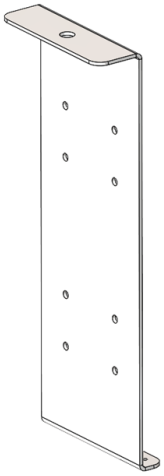
3.5.1 Ceiling Mount

Ventum is available exclusively for ceiling mount/horizontal applications with inner and outer brackets only. The hanging brackets are supplied loose with the necessary hardware to install them. They are not shipped assembled due to the variability of installation access on job sites.Each hanging bracket is composed of two pieces: an inner component and an outer component. The units are designed to have four sets of brackets to support the unit.



Ceiling Mounted Unit

Warning: The unit must be installted with both the inner and outer bracket. Each unit must also have all four brackets installed to meet these guidelines



Outer Bracket

Inner Bracket

Note: Depending on the ducted opening location selected during the design phase, the location of the brackets will vary. Please consult your submittal drawings for specific locations.

Assembly of Hanging Brackets

1. Locate the position of the brackets on the outside of the unit.

2. Mark the 8 hole locations and drill to allow for the ¼" bolt.

3. Assemble the hanging bracket by aligning the 8 holes of the outer bracket through the unit and with the inner bracket.

4. Install the 8 bolts.

5. Install 4 tek-screws in the flange portion of the inner bracket and secure it to the top casing of the unit.

6. Install 4 tek-screws in the lower flange of the outer bracket to secure it to the bottom frame of the unit.

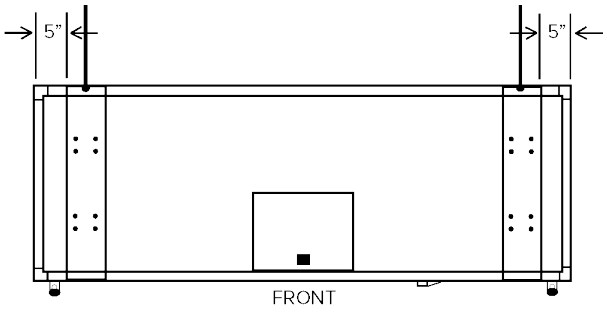
7. Repeat steps 1 through 6 for the remainder of the brackets.

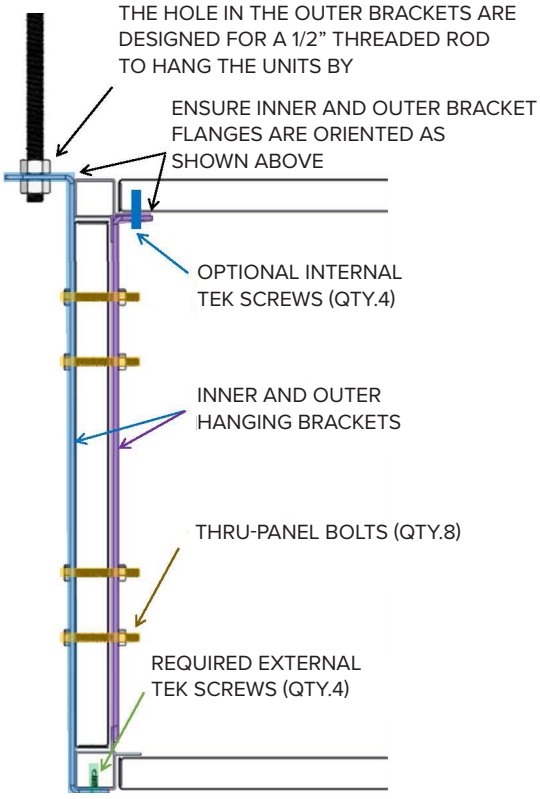
8. The hole in the outer brackets are designed for a ½" threaded rod to hang the units by.

Caution: Do not over tighten and crush the panel.

Note: 32 x ¼" bolts, 32 x ¼" lock nut, 32 x ¼" washers and 64 x ¼" washers have been provided with the unit.

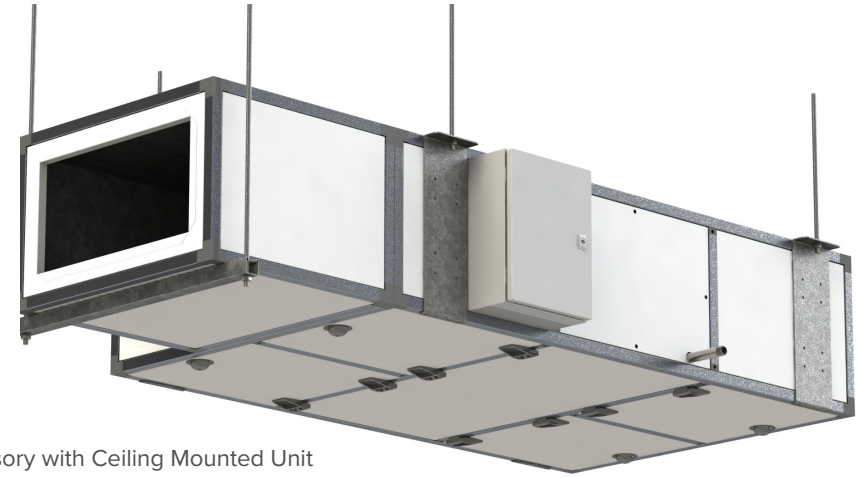
Note: The inner component should be oriented so that its flange is pointing to the ceiling, and the outer bracket has the single hole pointing to the ceiling.



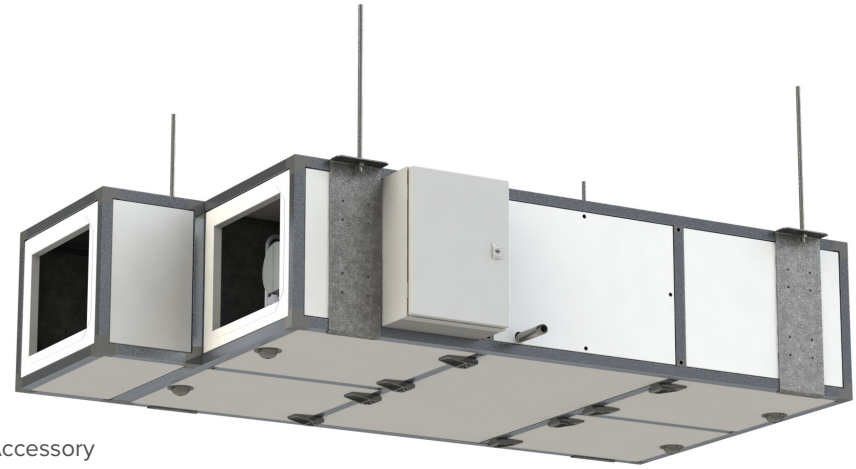


3.6 Installation of Accessories

3.6.1 Coupled Accessories

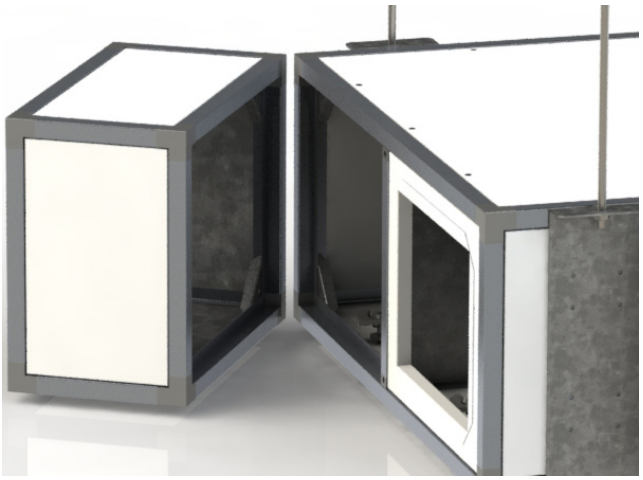


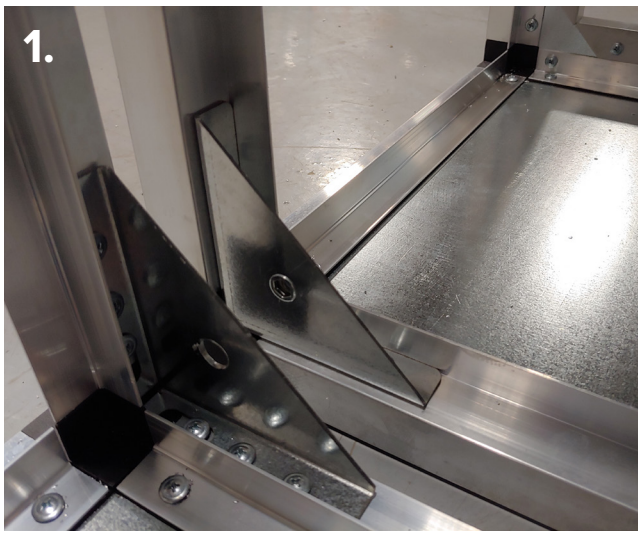
Coupled Accessory with Ceiling Mounted Unit

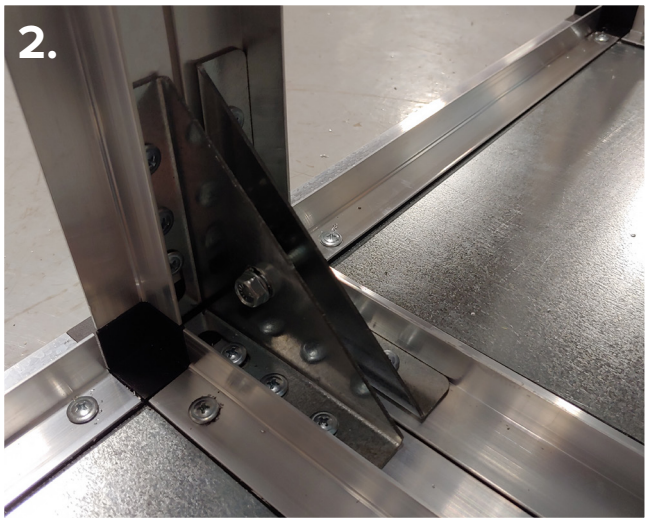


Mounted Coupled Accessory

Corner brackets come pre-installed with each Ventum unit. Accessories should be independently supported with Unistrut on the end farthest from the unit. Base mounted accessories that are connect to a duct connection in the lower position of the unit will come with matching base rails. Accessories that are to be connected to a duct connection in the upper position will need to be supported externally.

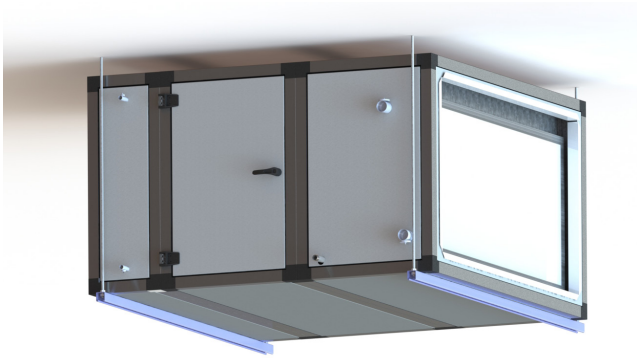






3.6.2 Decoupled Accessories

Ceiling hung decoupled accessories will not come with hanging brackets and can be sup-ported in the ceiling with threaded rod or equivalent.



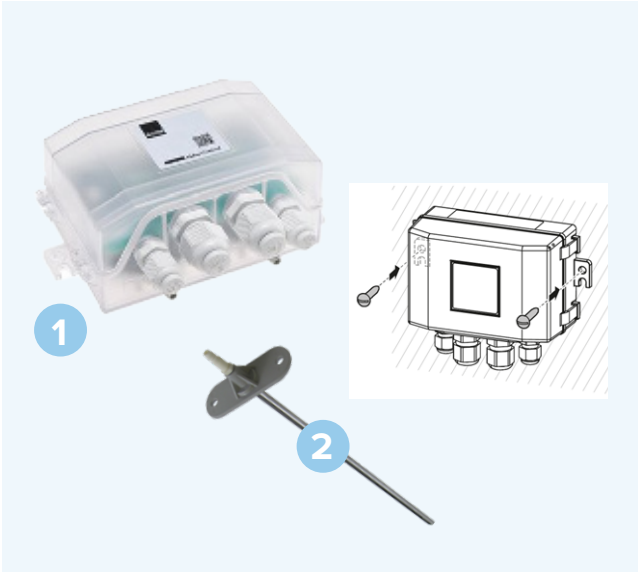
3.7 External Sensors

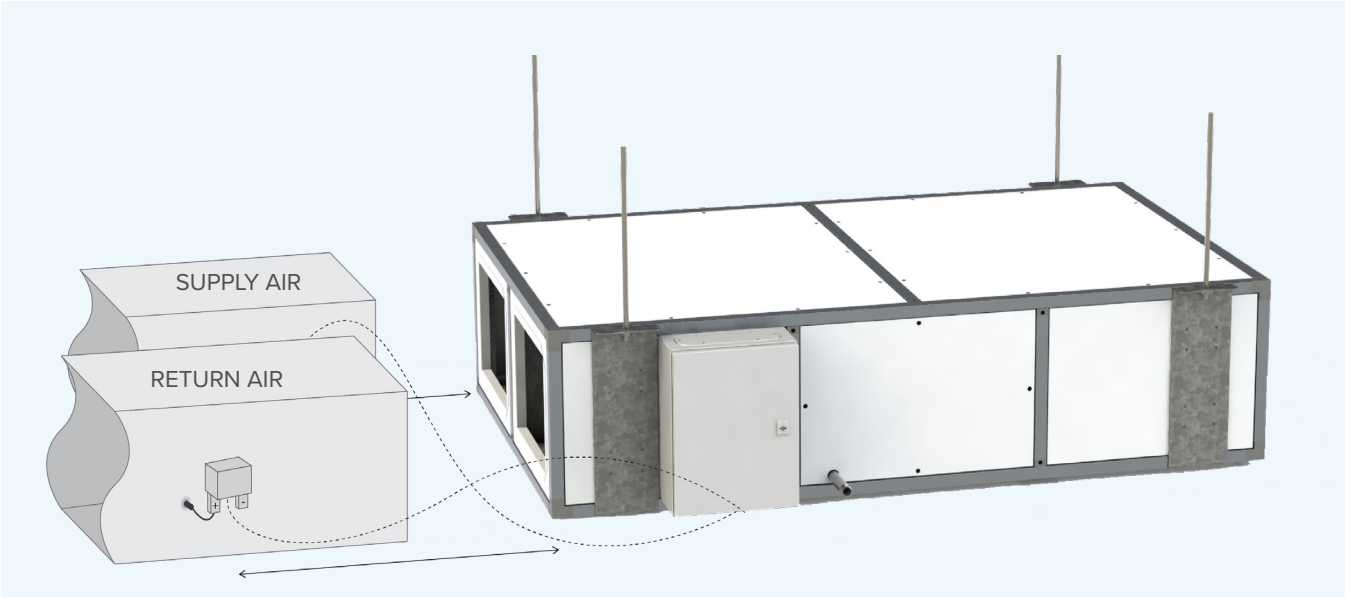
3.7.1 Constant Pressure Regulation

For applications including, but not limited to, DOAS integration VRV using constant pressure regulation mode, duct pressure sensing is required. The following is provided loose with the Oxygen8 unit:

Provided by Oxygen8:

- Huba Differential Pressure Sensor
- Pressure Nipple
- 5ft of Tubing
- 30ft of Modbus Cable





Typical Installation

1. Select an area for the probe 5 to 8 duct diameters from any elbows, obstructions, or significant changes in the duct area.

2. Drill an 5/16” hole and insert the probe.

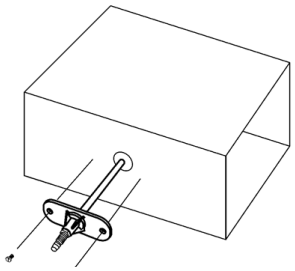
3. Determine the duct’s flow direction and install based on the unit’s flow arrow imprint.

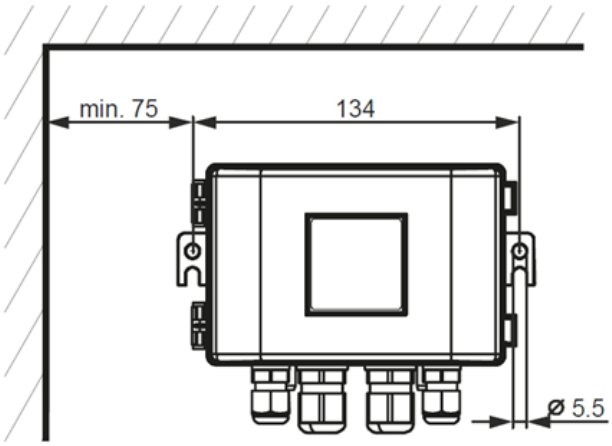
4. Install the unit horizontally to assure accurate velocity readings.

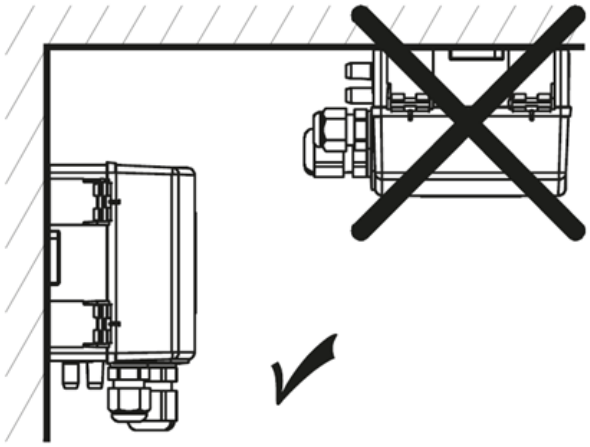
5. Attach using two self-tapping screws inserted in the 3/16″ mounting holes. The FPP/SPP Series have 1/4″ OD and a barbed fitting for use with 3/8″ OD tubing.

6. The pressure tubes must be as short as possible and must be secured in position to prevent vibration. To obtain the best possible results, pressure must be measured where there is least risk of turbulence, i.e. in the center of the ventilation duct. If there is a risk of condensation forming in connection tubes, locate in such a way that condensate fluids cannot flow back into the pressure transmitter.

Caution: During installation check that there are no sharp bends in the tubing at any connection. Bends and creases may leak over time as the tubing ages.







Note: Always mount vertically with pressure connections facing downwards, drain of possible condensed water (factory calibration). For the measurement of relative pressure, the indication ‘connected to ambient atmosphere’ is shown.

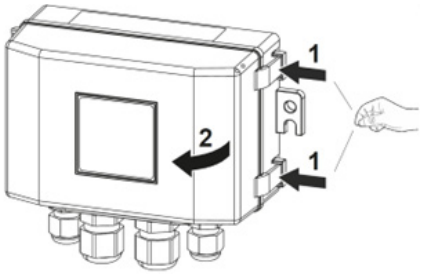
Wiring and Pressure Tubing

Huba Pressure Sensor features quick release fasteners and a detached cover.

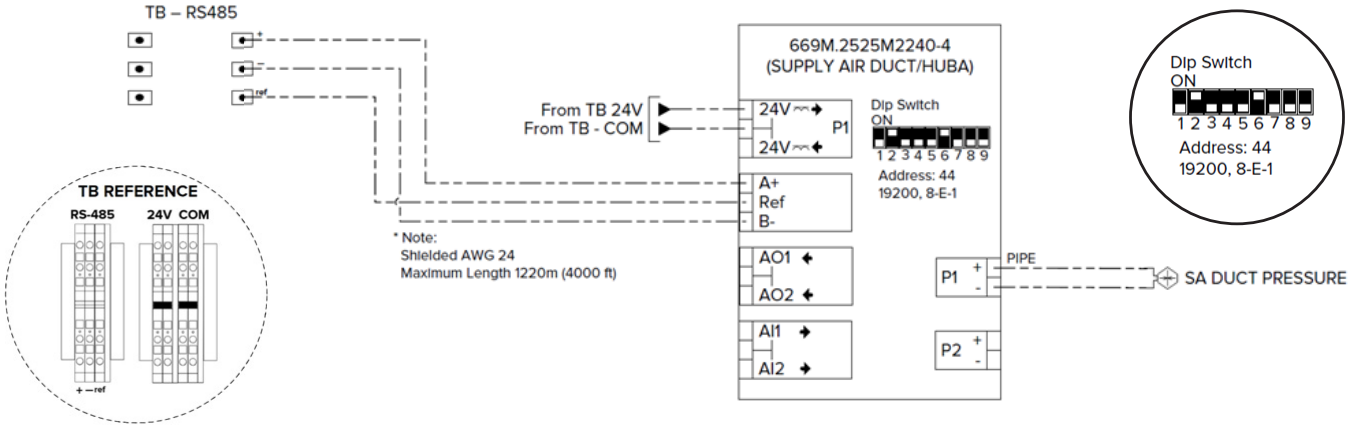
To Open:

1. Lift the quick release fasteners

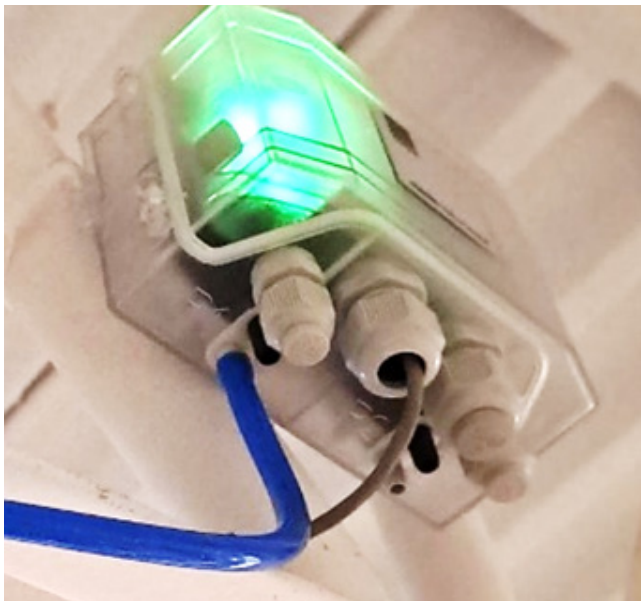
2. Swing open the detached cover

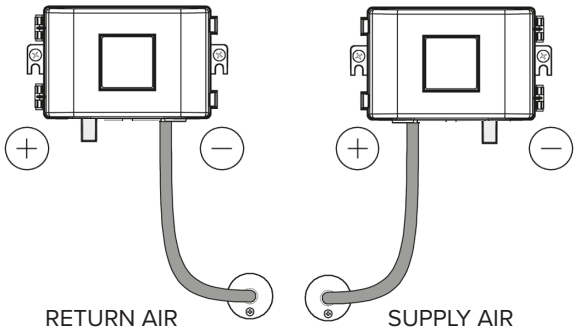


Note: Ensure the dip switch configuration from the factory matches what is shown below:

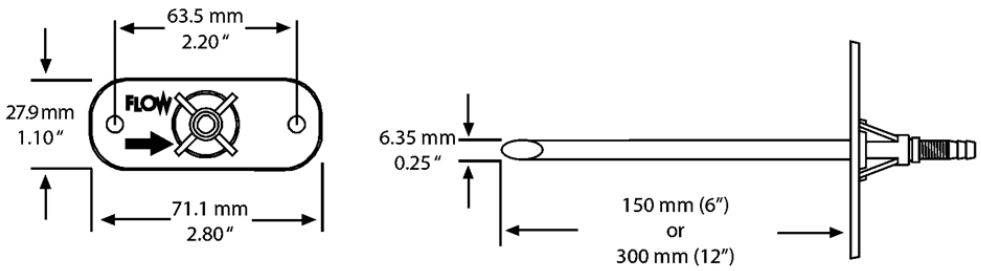


Tubing (“PIPE”) is coiled and provided loose with the unit.





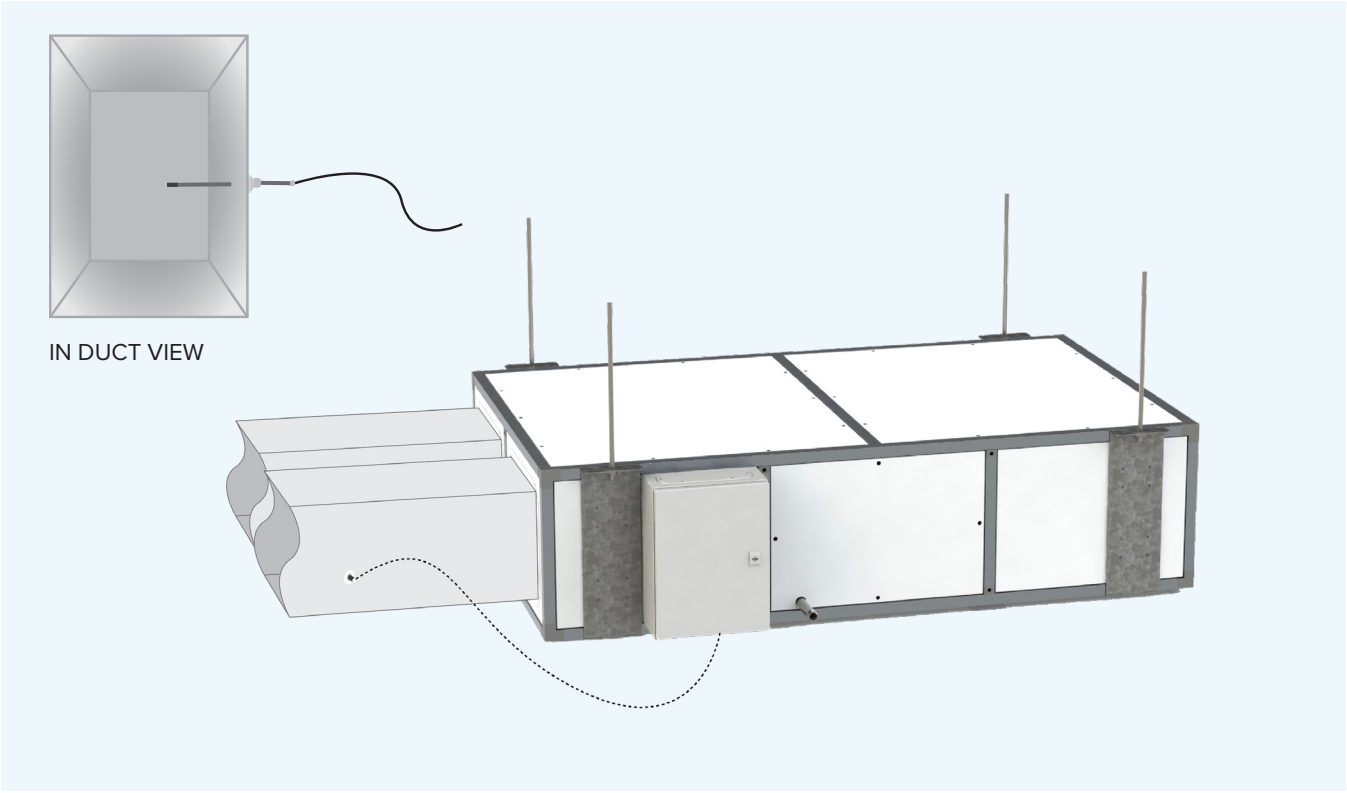
Note: Ensure you connect the tubing to the correct port of the pressure sensor for your application. Top left (most commonly) is for supply-air ducts.



Bracket Material:

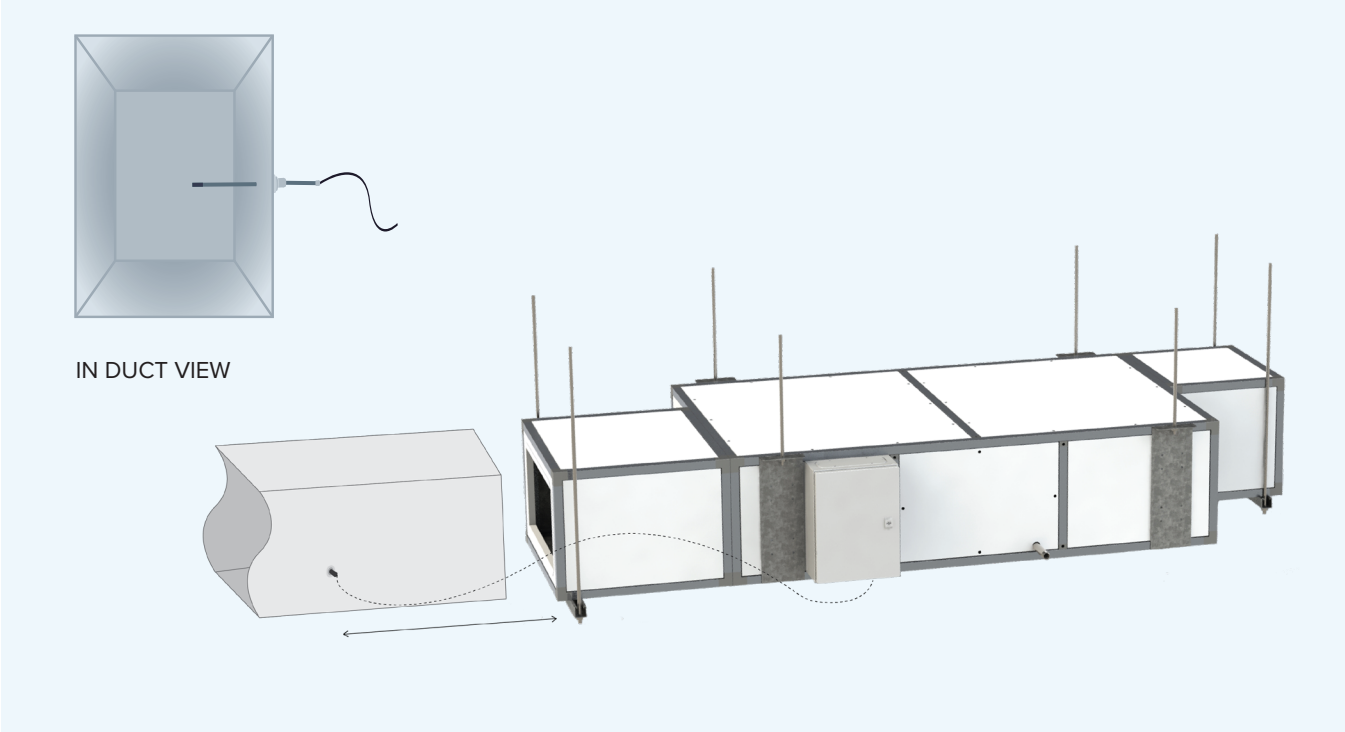
ABS - UL94-5VB. Angled probe tip should be centrally located in the duct. If the probe is not sized correctly, please contact the Oxygen8 Applications team.

3.7.2 CO_2/VOC Sensor



QPM2102/MO sensors are installed in the ventilation duct using the accompanying bracket, which must be attached to a firm, level surface by means of two screws. The 18-30 V DC supply voltage (24 V DC nominal voltage) is provided via the Modbus RTU (RS-485) connection. Communications cable may be extended to as much as 50 m without any negative effects on measuring accuracy. The surrounding EMC environment must, however, be taken into account and must be capable of being defined as low. The sensor should be installed in such a way that the air flow in the duct can pass unhindered through the measuring hole at the end of the sensor, which should be aligned parallel to the air flow. Although the QPM2102/MO is not affected by the position in which it is installed, it should not be installed in an upright position with the cable downwards as this may cause moisture to accumulate in the sensor. Refer to Oxygen8's Distech Controls Manual and project field wiring diagram for more details.

3.7.3 Combination Temperature+Humidity Sensor

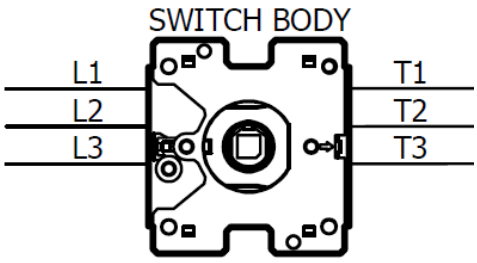


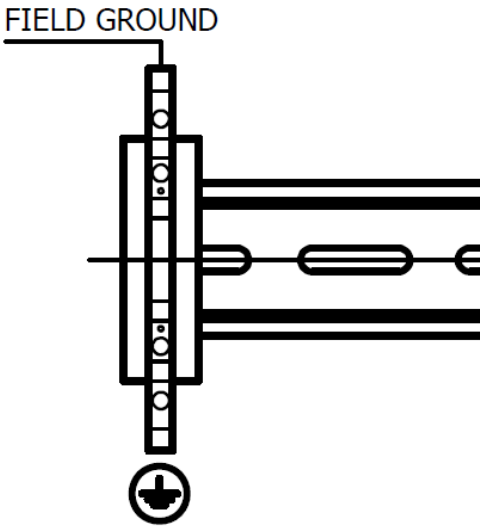
Temperature + Humidity sensors (Siemens QFM2150/MO) are also used when only temperature sensing is required. Temperature + Humidity sensors are installed in the ventilation duct using the accompanying bracket, which must be attached to a firm, level surface by means of two screws. The supply voltage is provided via the Modbus connection. The sensor has a pre-fitted cable, which is equipped with a standard RJ12 connector. The cable may be extended up to 50 m using a Category 3 extension cable. The sensor is adjustable and must be mounted according to manufacturer instructions and the probe must be aligned parallel to the air flow in the center of the duct.

4.0 ELECTRICAL HOOKUPS

Warning: Hazardous voltage. Disconnect all electrical power, including remote disconnects and discharge all motor start/ run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be accidentally re-engaged

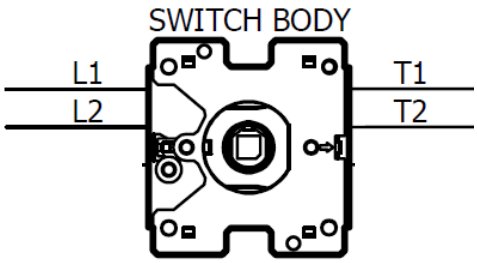
3 phase, 4 wire, 208V, 460V -10% - +15%, 60Hz Recommended fuse diagram





Note: Larger units are complete with a grounding lug that is used in place of the ground terminal shown above.

1 phase, 3 wire, 240V -10% - +15%, 60Hz Recommended fuse diagram



4.1 Electrical Information

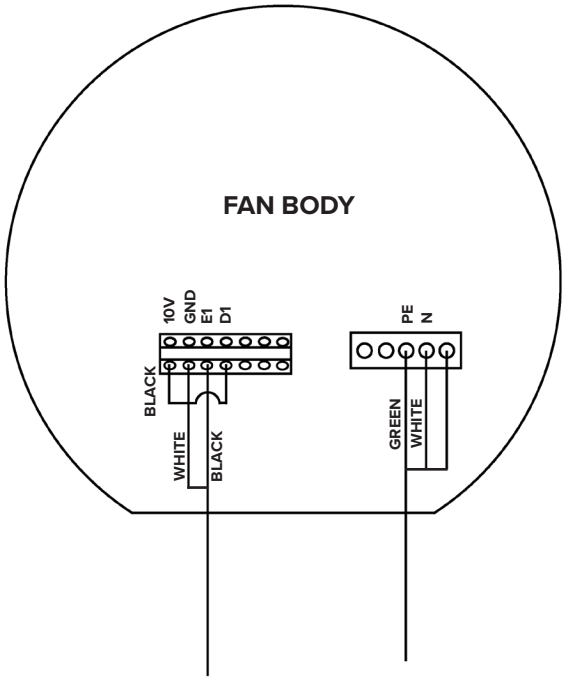
SIZE	AIR-FLOW	NOM. V	PHASES	MOTOR (KW)	SA FAN QTY	SA FAN FLA	FLA	MCA	MOP (A)	SCCR (KA)
H05	600	208/240	1	0.50	1	2.50	5.29	5.91	15A	5
H10	1000	208/240	1	0.78	1	3.90	8.09	9.06	15A	5
H15	1350	208	3	2.00	1	6.00	12.33	13.83	15A	5
H15	1350	460	3	2.50	1	4.00	8.14	9.14	15A	5
H20	1800	208	3	2.00	1	6.00	12.33	13.83	15A	5
H20	1800	460	3	2.50	1	4.00	8.14	9.14	15A	5
H25	2250	208	3	2.70	1	8.60	17.53	19.68	25A	5
H25	2250	460	3	3.70	1	5.80	11.74	13.19	15A	5
H30	3000	208	3	2.70	1	8.60	17.53	19.68	25A	5
H30	3000	460	3	3.70	1	5.80	11.74	13.19	15A	5

*Standard SCCR without modifying disconnect switch; additional fusing to increase SCCR may be requested
MCA Minimum Circuit Ampacity
MOP Maximum Over Current Protective Device/Recommended Fuse Size Data is relevant for all units except single-point power units with 1 or 2 electric heaters; in this case, please refer to the project specific submittal.

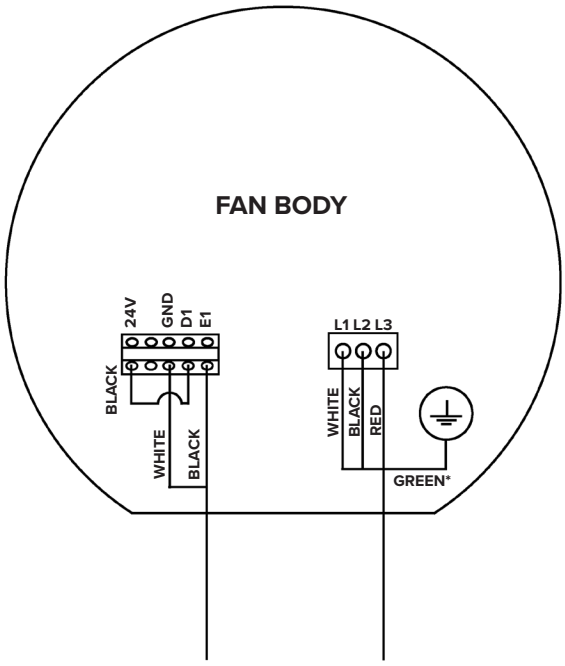
24V TRANSFORMER RATINGS		
FAN POWER [V/PH]	**FUSE SIZE**	**FLA**
208/1	3/4	0.29
240/1	3/4	0.29
208/3	3/4	0.33
460/3	3/10	0.14

The table above summarizes the low voltage transformer protection and current based on unit voltage and phases.

4.2 Fan Connection - Single Phase



4.3 Fan Connection - Three Phase



4.4 Electrical Control Box Connection Guides

1. **Verification of Unit Compatibility**
   Prior to installation, ensure that the information on the unit's nameplate matches the power supply specifications. In cases where single-point power wiring connections are specified, the power source for the external control box shall originate from the electrical heater. Make all necessary connection terminations to the primary terminal block. Detailed wiring diagrams, specific to the unit, can be found in this manual, illustrating both factory and field wiring configurations.

2. **Overcurrent and Short Circuit Protection**
   All units require the provision of field-supplied electrical overcurrent and short circuit protection. Ensure that the selected protective device does not exceed the Maximum Overcurrent Protection (MOP) specified on the unit's nameplate. Local electrical codes may also mandate the presence of a disconnect switch within visible range of the unit. However, it is advisable not to install field-supplied overcurrent protection or disconnect switches on the unit itself.

3. **External Control Panel**
   In cases where an external control box is utilized, properly route the conduit away from potential hazards, sharp edges, or occupied areas, and ensure it is securely fastened at intervals not exceeding 3 feet unless otherwise specified by local codes and standards. Use the appropriate hardware for the conduit diameter and appropriate fasteners for anchoring into the wall material.

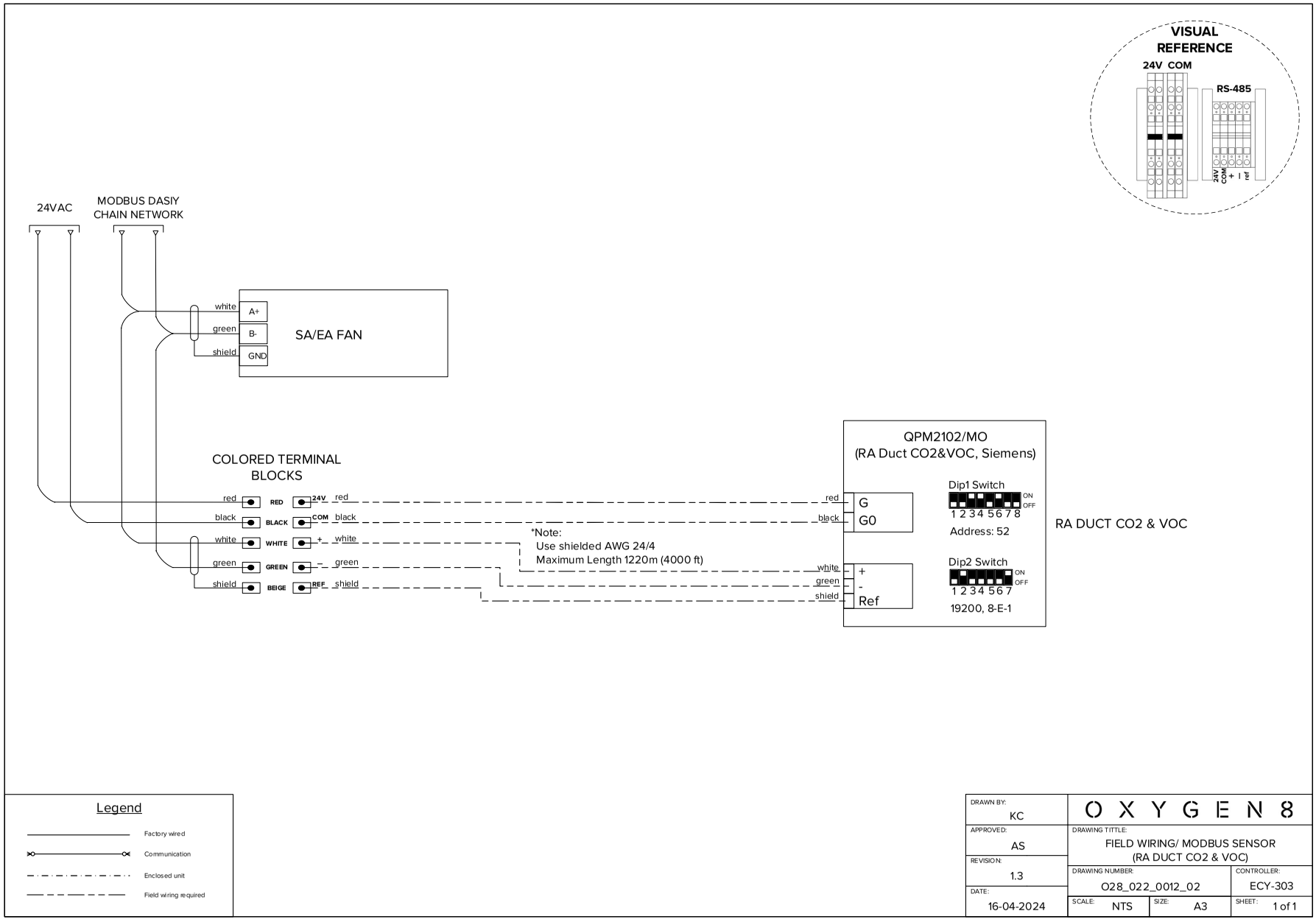
4. **Compliance with Electrical Codes**
   It is imperative to adhere to the access clearance, mounting height, and other installation requirements stipulated by the National Electrical Code (NEC) and any applicable local codes and standards for safety and ease of maintenance.

5. **Flex Conduit**
   The unit is equipped with the necessary length of flexible conduit for connecting the external control box to the unit. It is crucial not to modify or extend this conduit.

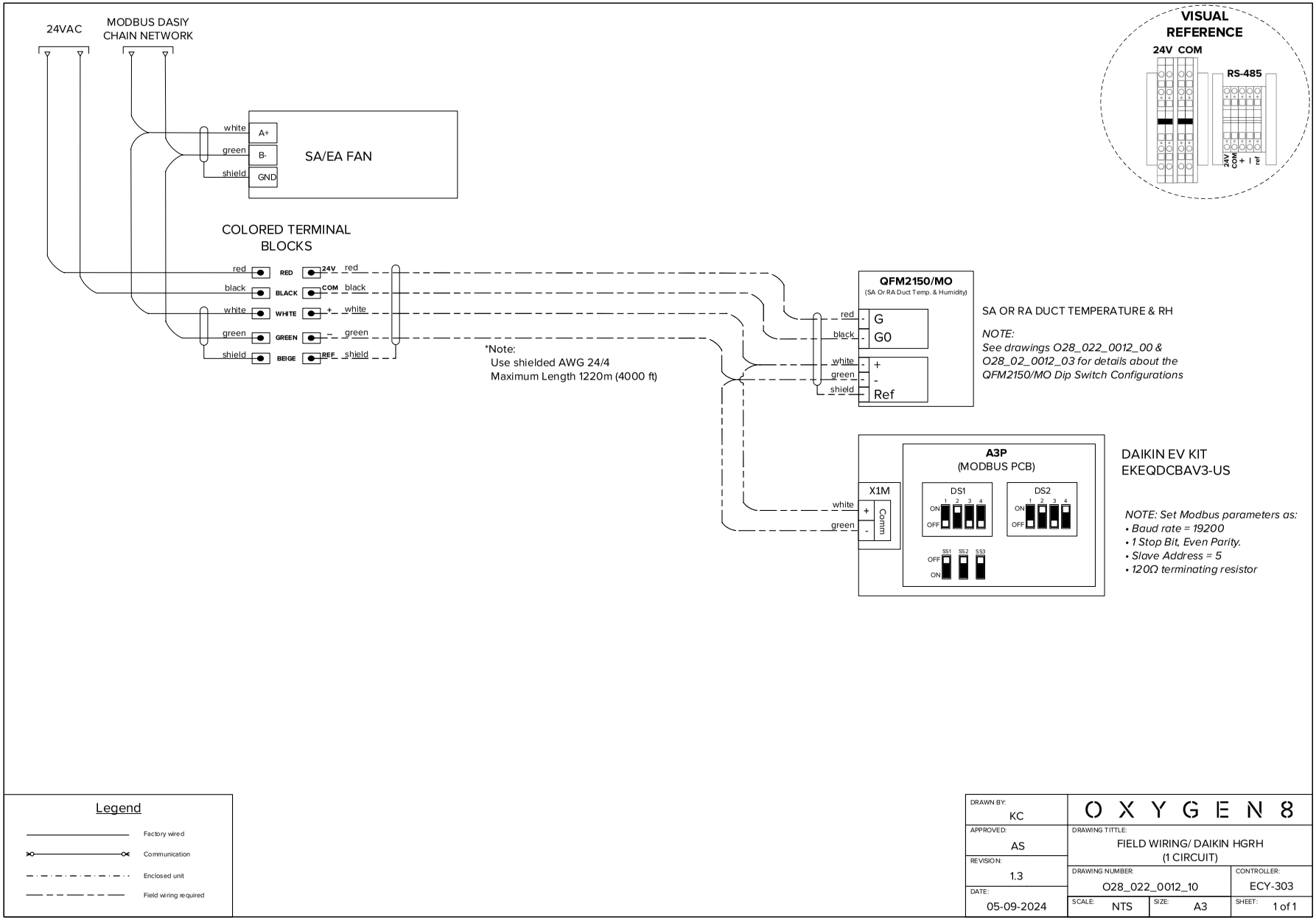
Note: Flex conduit provided is not plentum rated.

5.0 WIRING DIAGRAMS

5.1 CO2 & VOC Sensor



5.2 Daikin HGRH (1 Circuit)

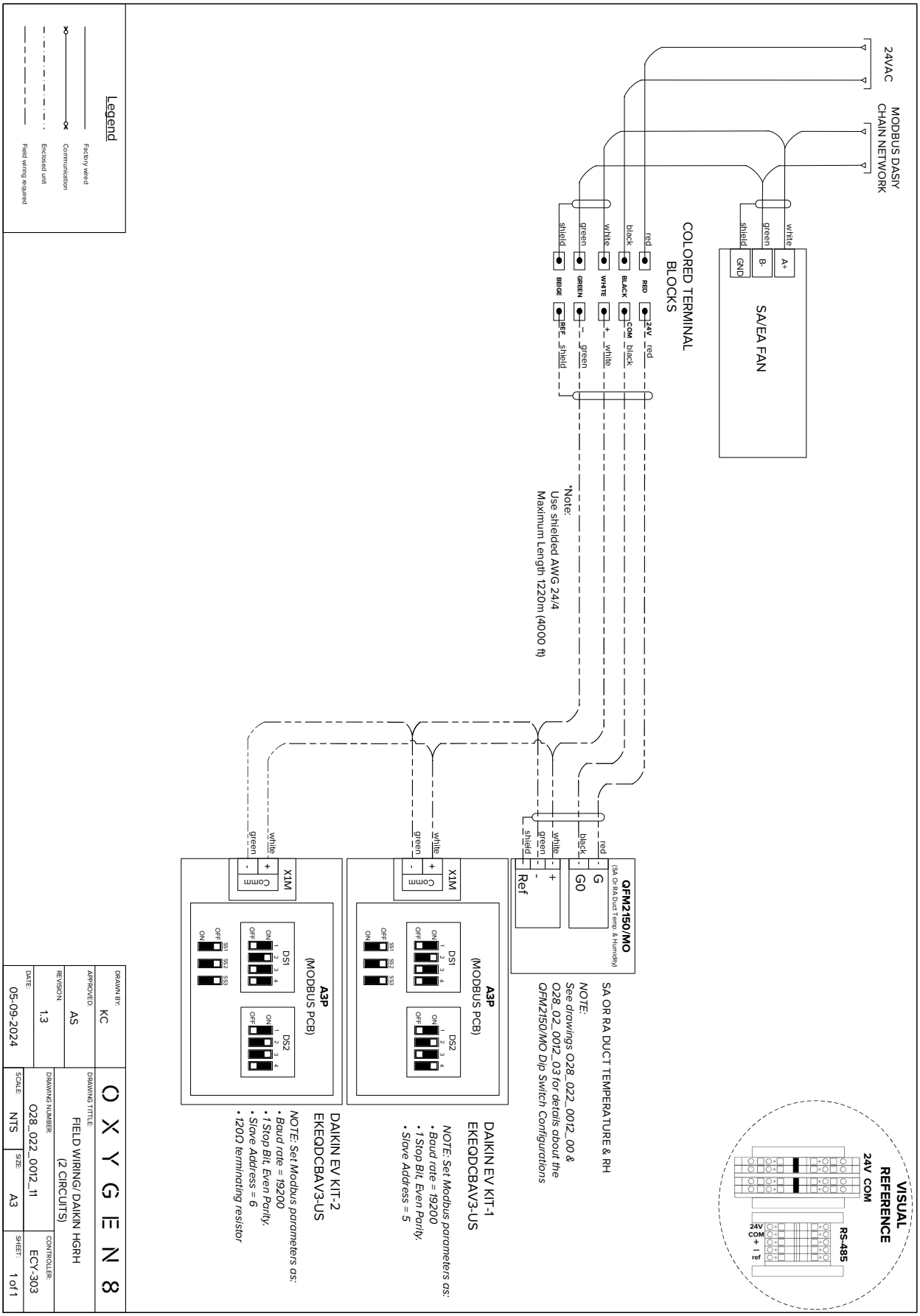


Legend

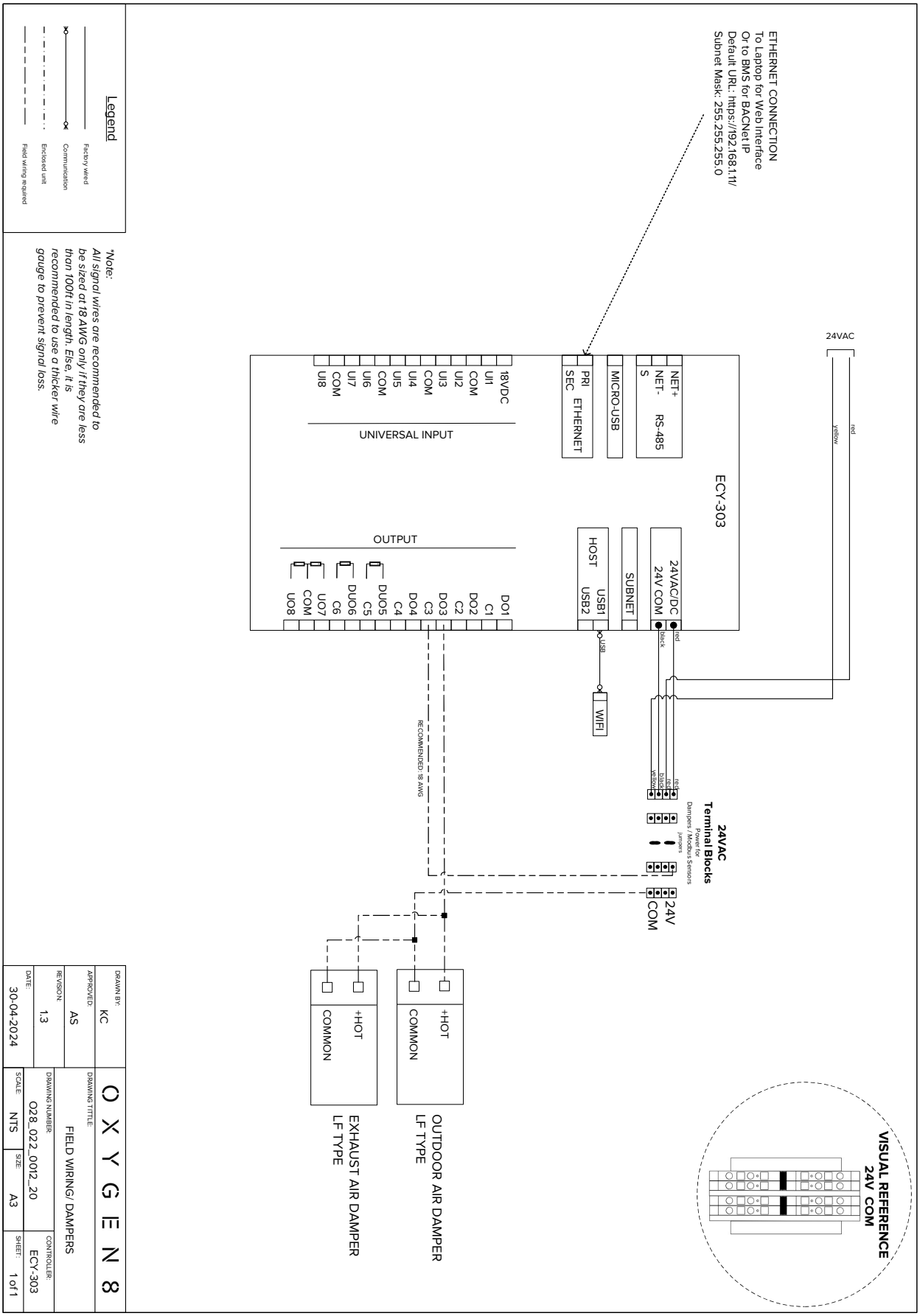
- Factory wired
- Communication
- Enclosed unit
- Field wiring required

DRAWN BY: KC	OXYGEN8
APPROVED: AS	DRAWING TITTLE: FIELD WIRING/ DAIKIN HGRH (1 CIRCUIT)
REVISION: 1.3	DRAWING NUMBER: O28_022_0012_10 / CONTROLLER: ECY-303
DATE: 05-09-2024	SCALE: NTS / SIZE: A3 / SHEET: 1 of 1

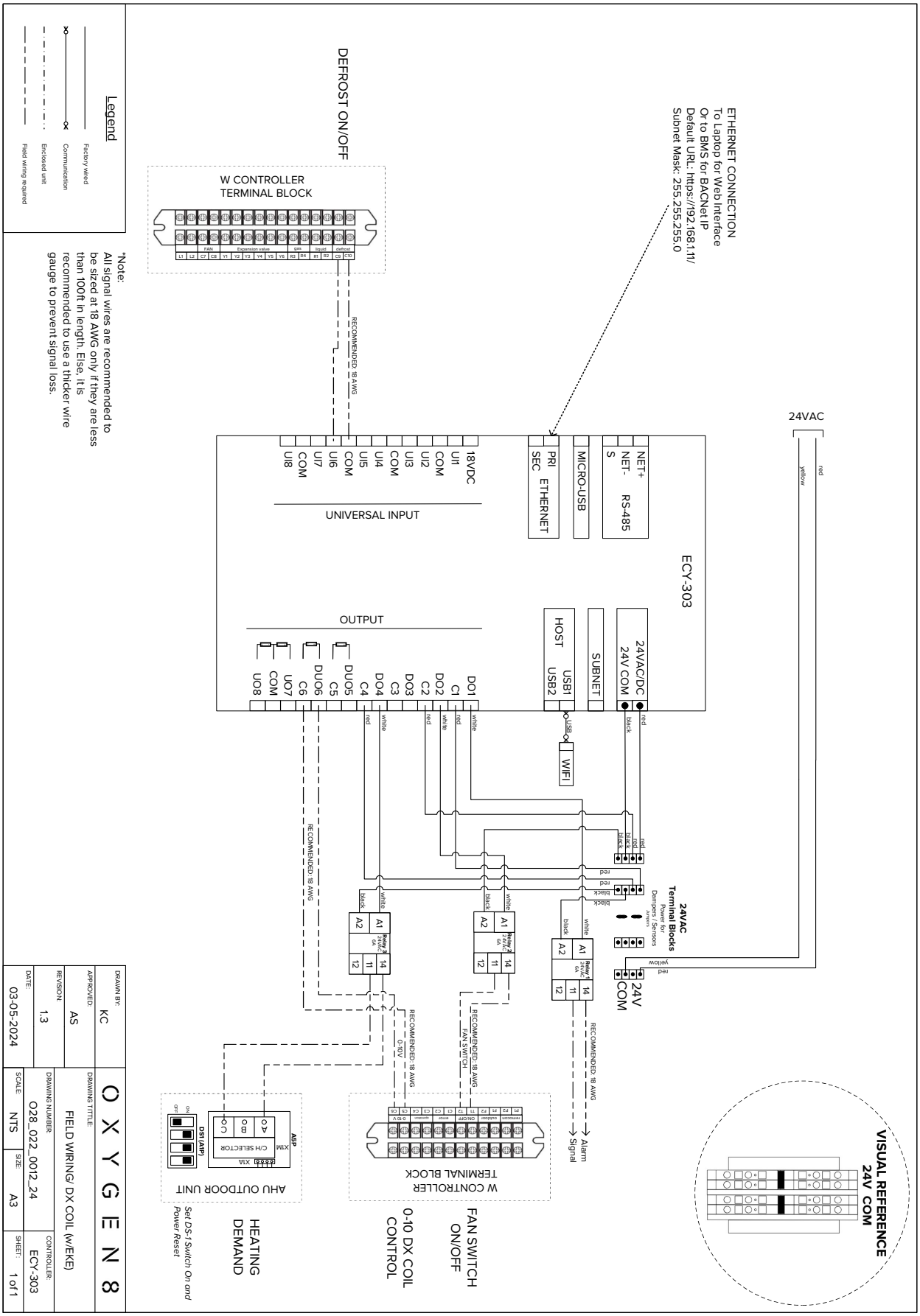
5.3 Daikin HGRH (2 Circuits)



5.4 Dampers


ETHERNET CONNECTION
To Laptop for Web Interface
Or to BMS for BACNet IP
Default URL: https://192.168.1.11/
Subnet Mask: 255.255.255.0
24VAC
red
yellow
ECY-303
NET+
NET-
S
RS-485
PRI
SEC
ETHERNET
MICRO-USB
24VAC/DC
24V COM
SUBNET
HOST
USB1
USB2
WIFI
USB
UNIVERSAL INPUT
I8VDC
UI1
COM
UI2
UI3
COM
UI4
UI5
COM
UI6
UI7
COM
UI8
OUTPUT
DO1
C1
DO2
C2
DO3
C3
DO4
C4
DUO5
C5
DUO6
C6
UO7
COM
UO8
RECOMMENDED 18 AWG
24VAC
Terminal Blocks
Power for
Dampers / Modbus Sensors
Jumpers
24V
COM
VISUAL REFERENCE
24V COM
+HOT
COMMON
OUTDOOR AIR DAMPER
LF TYPE
+HOT
COMMON
EXHAUST AIR DAMPER
LF TYPE
Legend
Factory wired
Communication
Enclosed unit
Field wiring required
*Note:
All signal wires are recommended to be sized at 18 AWG only if they are less than 100ft in length. Else, it is recommended to use a thicker wire gauge to prevent signal loss.
DRAWN BY: KC
APPROVED: AS
REVISION: 1.3
DATE: 30-04-2024
OXYGEN8
DRAWING TITTLE: FIELD WIRING/ DAMPERS
DRAWING NUMBER: 028_022_0012_20
CONTROLLER: ECY-303
SCALE: NTS
SIZE: A3
SHEET: 1 of 1

5.5 DX Coil (w/EKE)



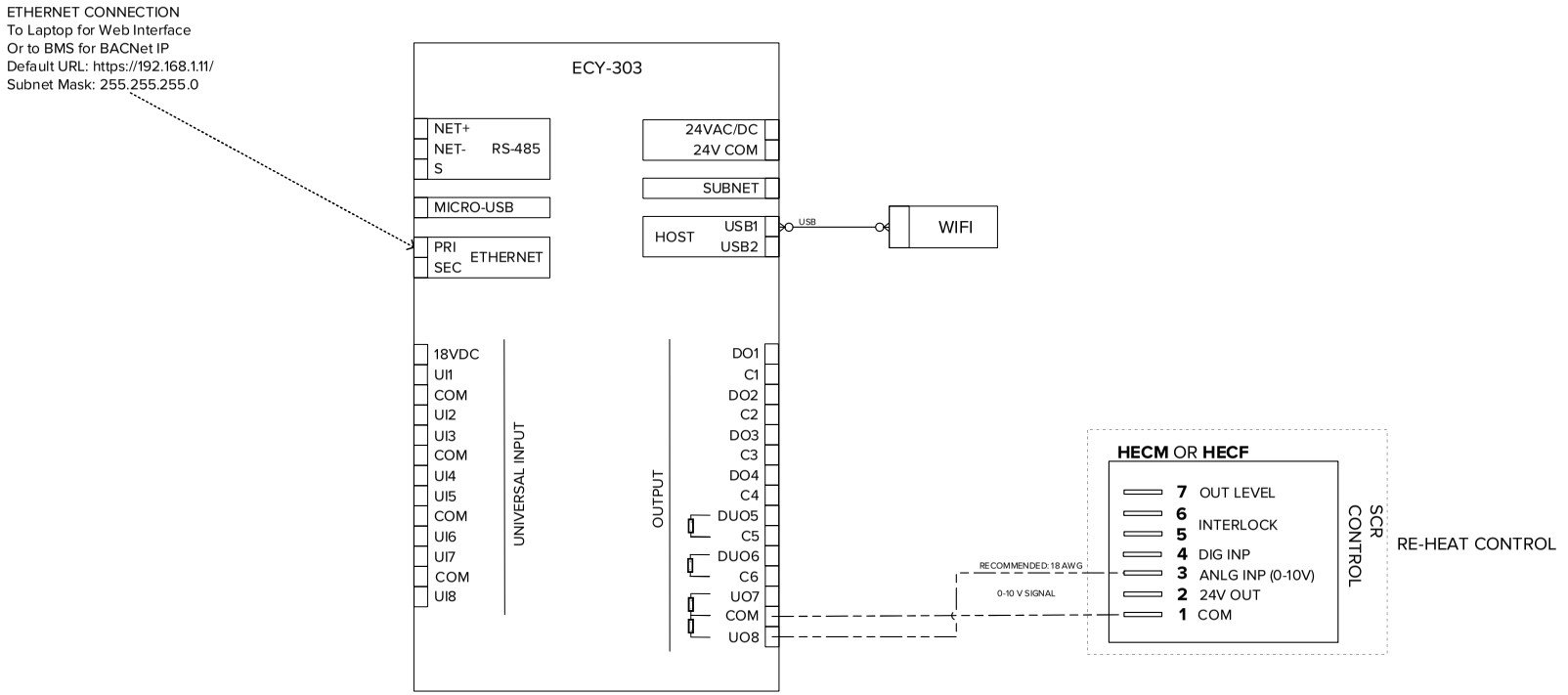
Legend

- Factory wired
- Communication
- Enclosed unit
- Field wiring required

*Note:
All signal wires are recommended to be sized at 18 AWG only if they are less than 100ft in length. Else, it is recommended to use a thicker wire gauge to prevent signal loss.

DRAWN BY: KC	OXYGEN8		
APPROVED: AS	DRAWING TITTLE: FIELD WIRING/ DX COIL (w/EKE)		
REVISION: 1.3	DRAWING NUMBER: 028_022_0012_24	CONTROLLER: ECY-303	
DATE: 03-05-2024	SCALE: NTS	SIZE: A3	SHEET: 1 of 1

5.6 Electric Post-Heat



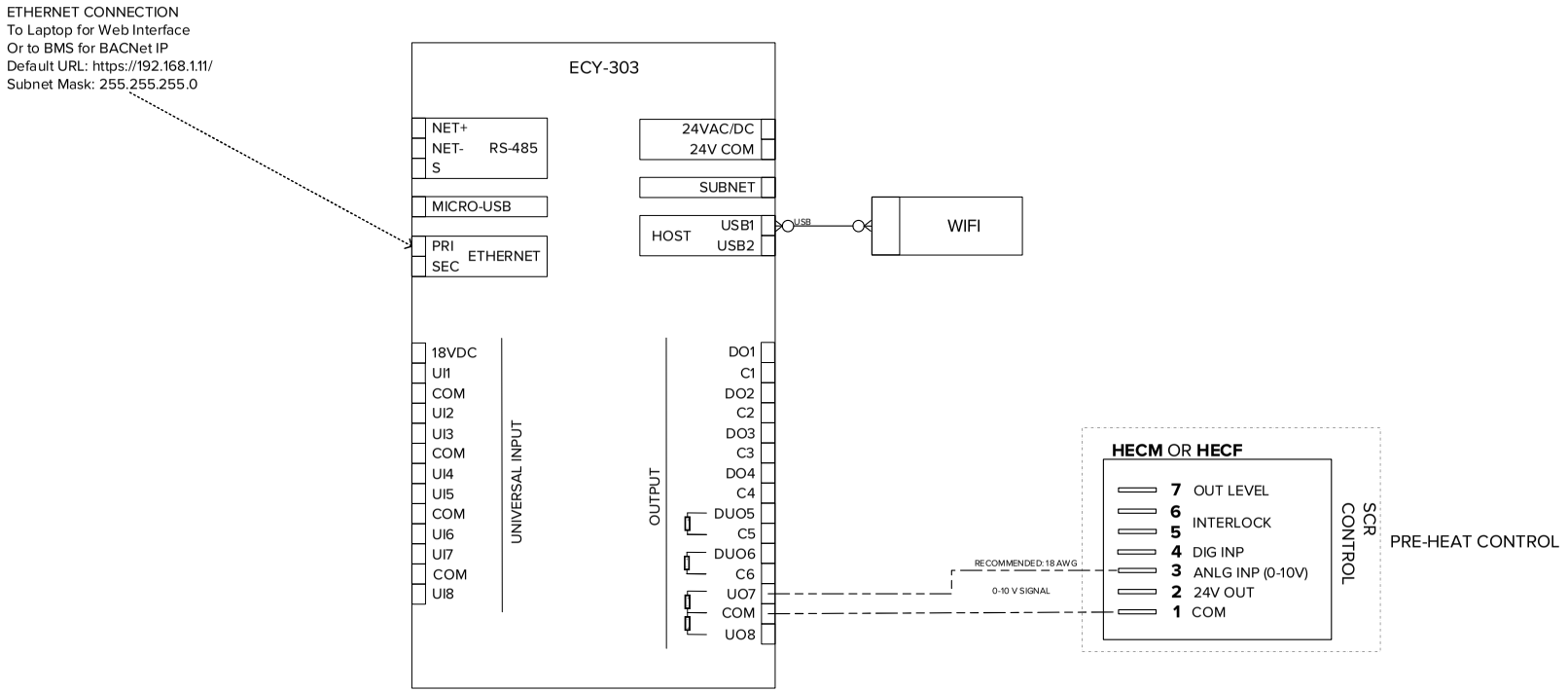
Legend

- Factory wired
- Communication
- Enclosed unit
- Field wiring required

*Note:
All signal wires are recommended to be sized at 18 AWG only if they are less than 100ft in length. Else, it is recommended to use a thicker wire gauge to prevent signal loss.

DRAWN BY: KC	OXYGEN8
APPROVED: AS	DRAWING TITTLE: FIELD WIRING/ ELECTRIC POST-HEAT
REVISION: 1.3	DRAWING NUMBER: O28_022_0012_22 / CONTROLLER: ECY-303
DATE: 09-05-2024	SCALE: NTS / SIZE: A3 / SHEET: 1 of 1

5.7 Electric Pre-Heat



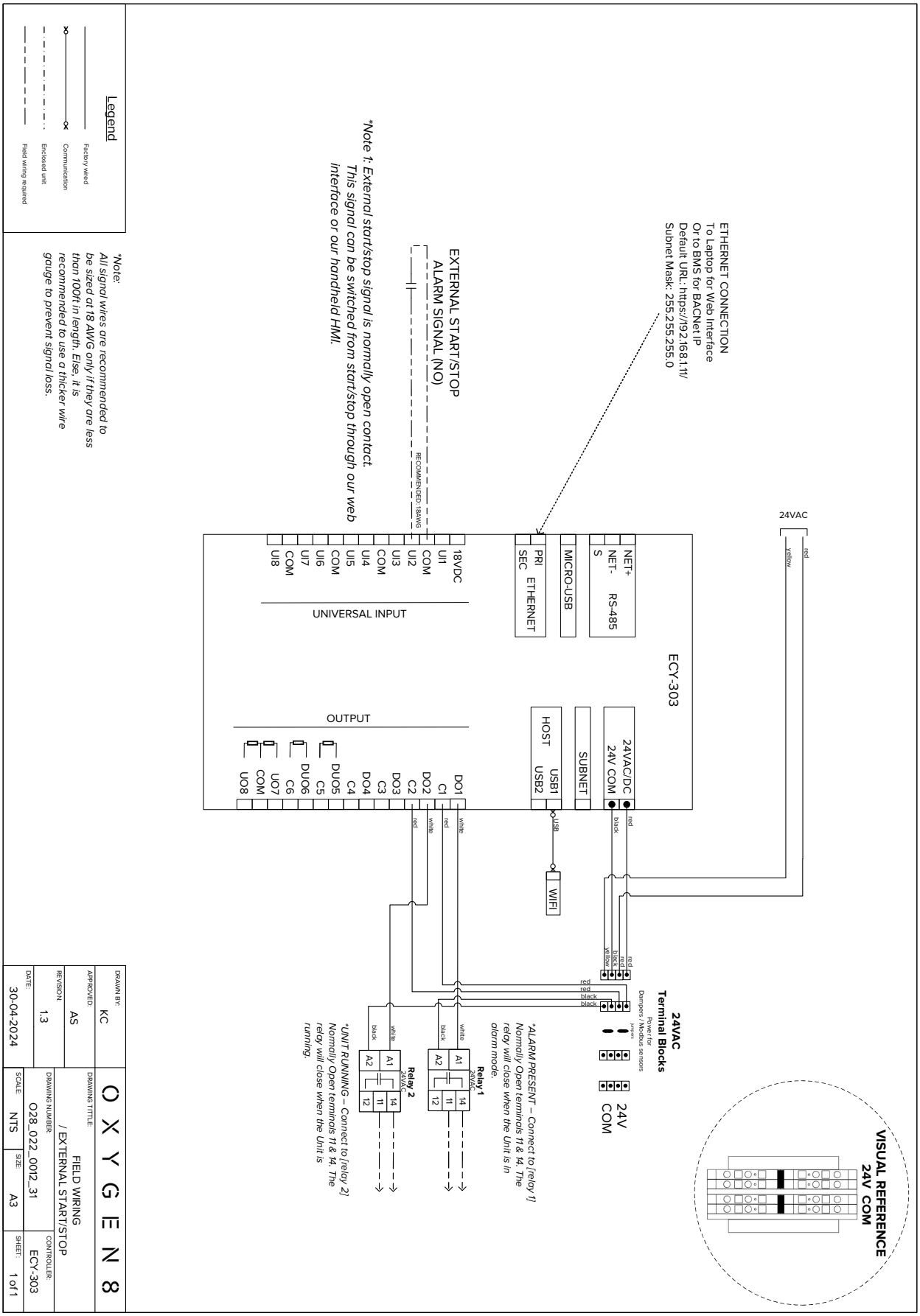
Legend

- Factory wired
- Communication
- Enclosed unit
- Field wiring required

*Note:
All signal wires are recommended to be sized at 18 AWG only if they are less than 100ft in length. Else, it is recommended to use a thicker wire gauge to prevent signal loss.

DRAWN BY: KC	OXYGEN8
APPROVED: AS	DRAWING TITTLE: FIELD WIRING/ ELECTRIC PRE-HEAT
REVISION: 1.3	DRAWING NUMBER: O28_022_0012_21 / CONTROLLER: ECY-303
DATE: 26-04-2024	SCALE: NTS / SIZE: A3 / SHEET: 1 of 1

5.8 External Start/Stop



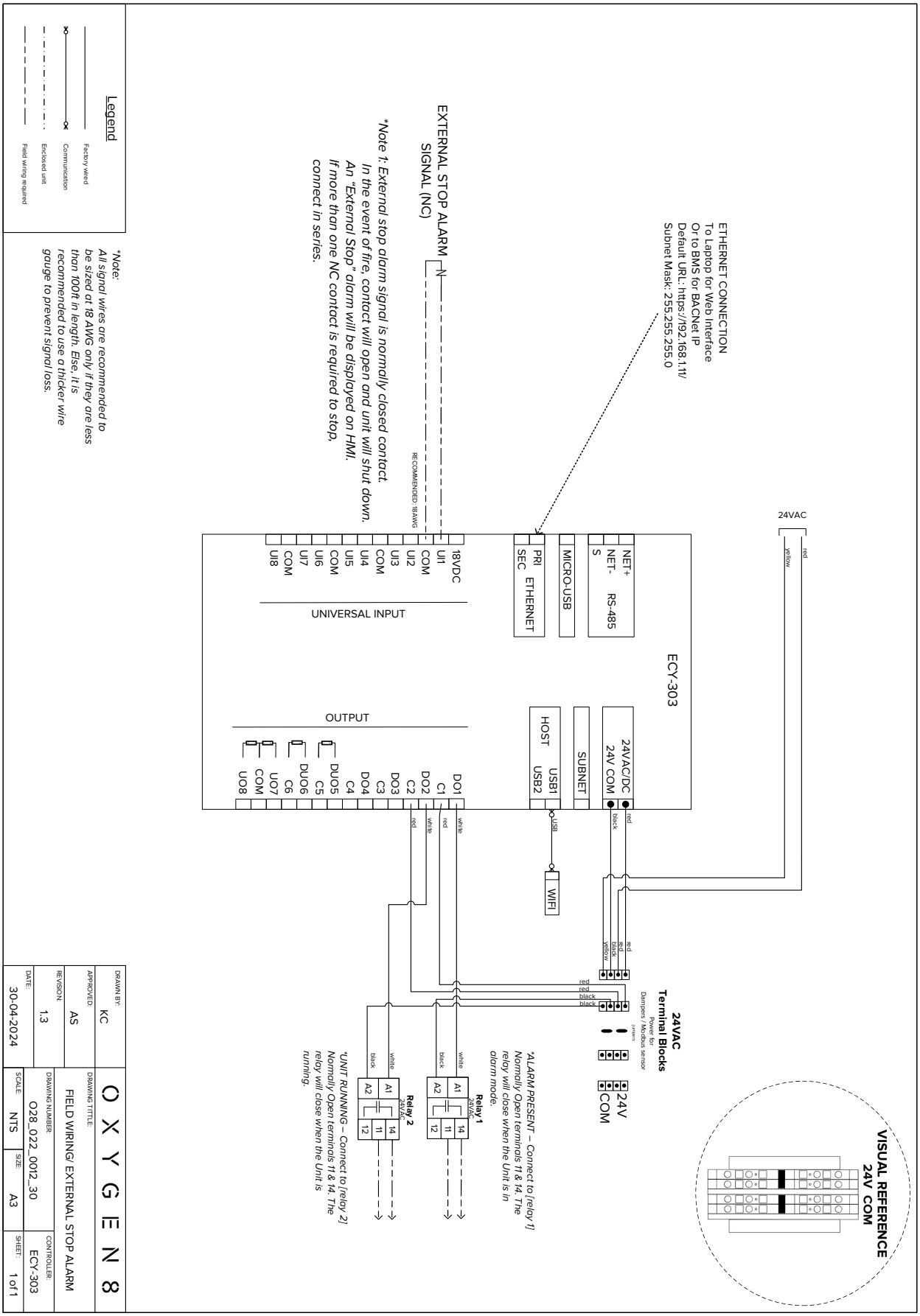
Legend

- Factory wired
- Communication
- Enclosed unit
- Field wiring required

*Note:
All signal wires are recommended to be sized at 18 AWG only if they are less than 100ft in length. Else, it is recommended to use a thicker wire gauge to prevent signal loss.

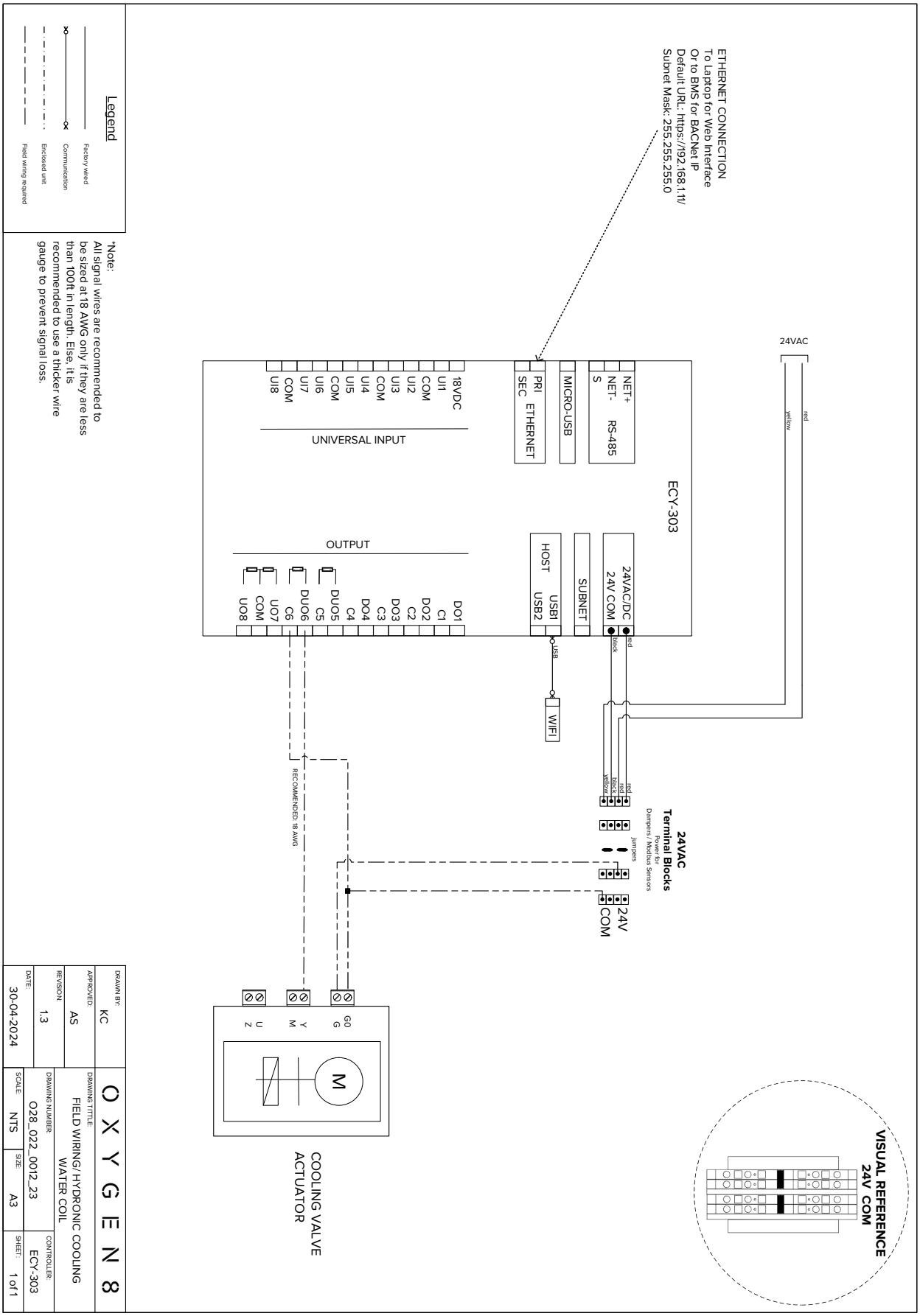
DRAWN BY: KC			OXYGEN 8
APPROVED: AS	DRAWING TITTLE: FIELD WIRING / EXTERNAL START/STOP		
REVISION: 1.3	DRAWING NUMBER: O28_022_0012_31	CONTROLLER: ECY-303	
DATE: 30-04-2024	SCALE: NTS	SIZE: A3	SHEET: 1 of 1

5.9 External Stop Alarm

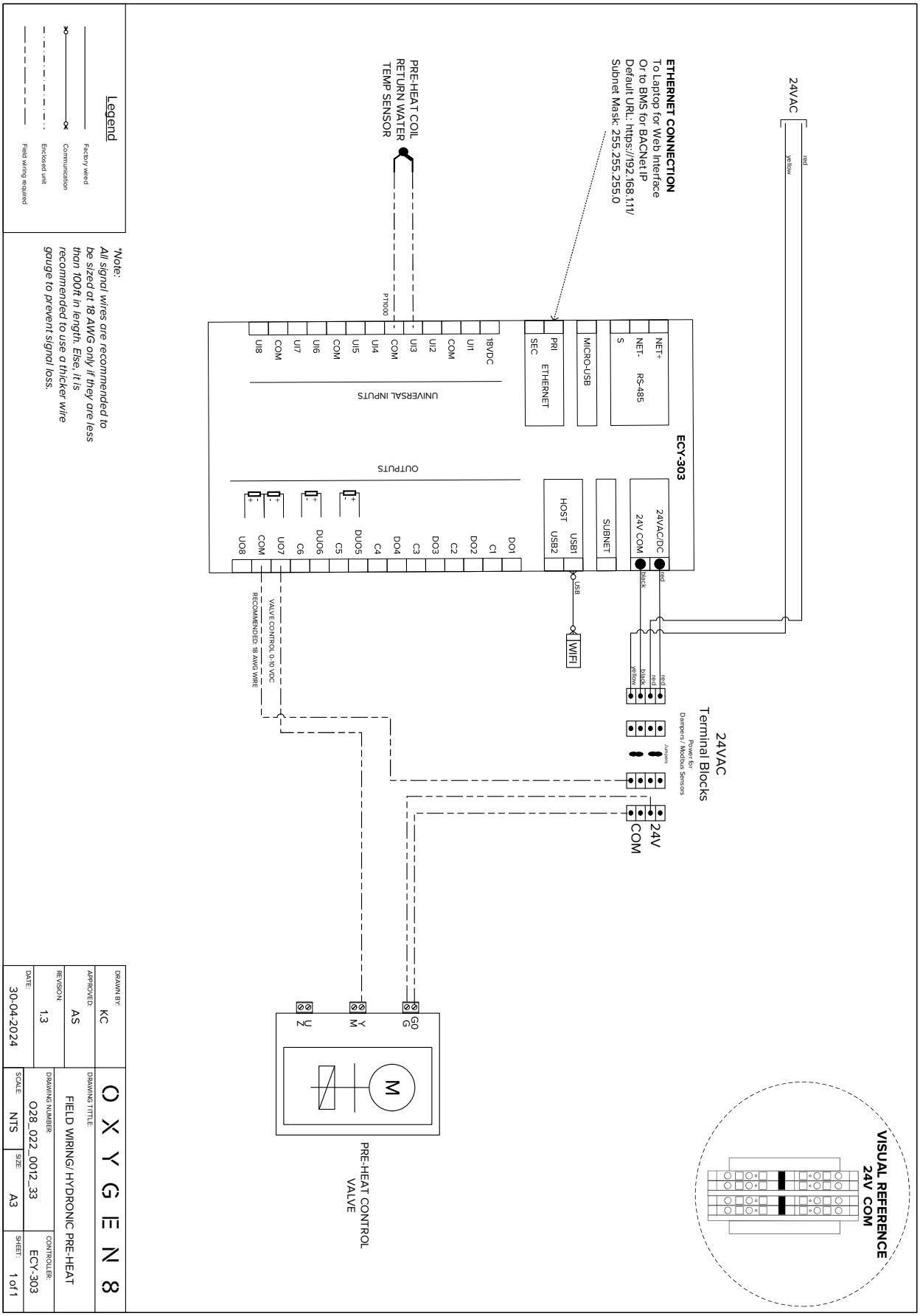


DRAWN BY: KC	OXYGEN 8		
APPROVED: AS	DRAWING TITTLE: FIELD WIRING/ EXTERNAL STOP ALARM		
REVISION: 1.3	DRAWING NUMBER: 028_022_0012_30	CONTROLLER: ECY-303	
DATE: 30-04-2024	SCALE: NTS	SIZE: A3	SHEET: 1 of 1

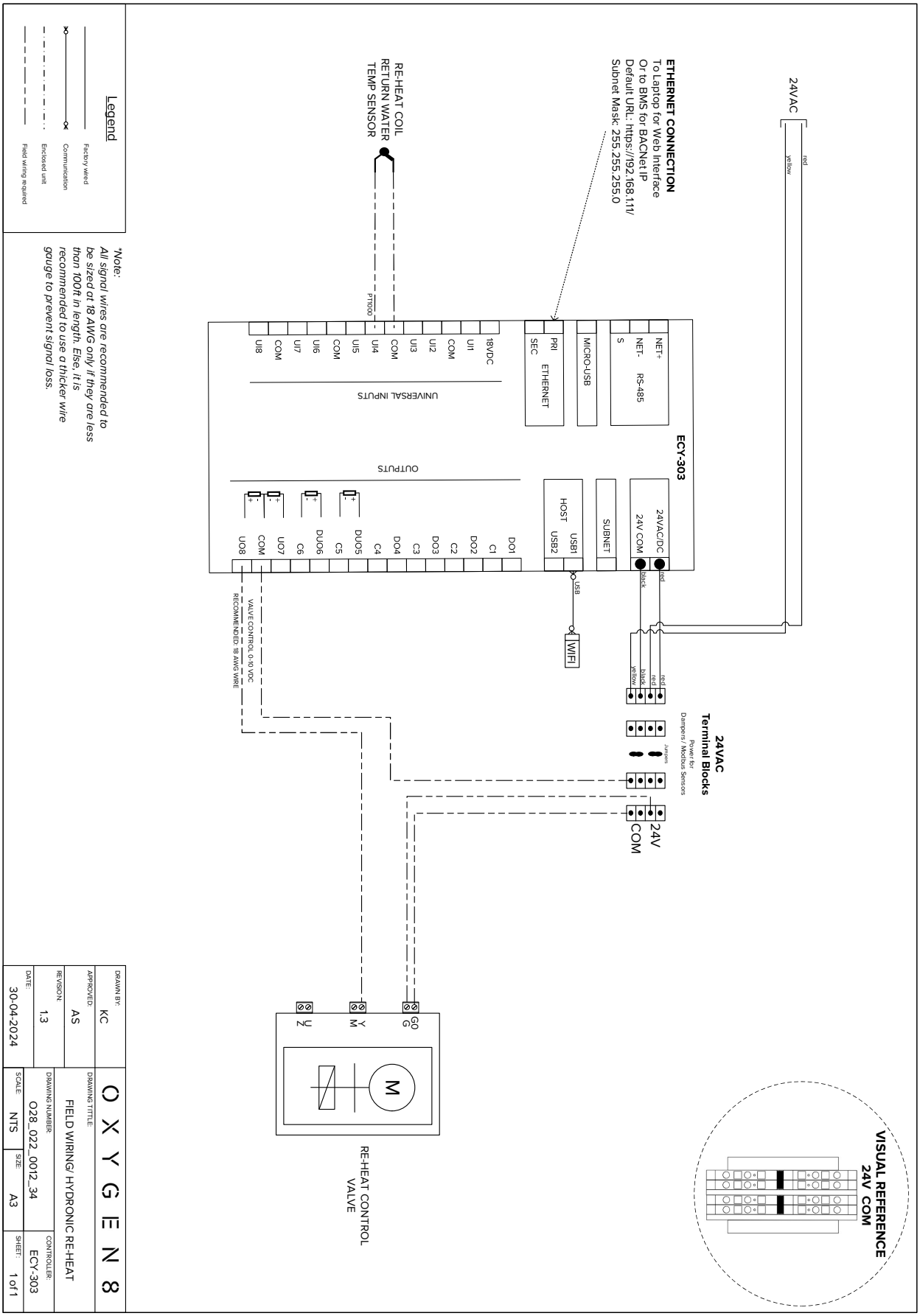
5.10 Hydronic Cooling Water Coil



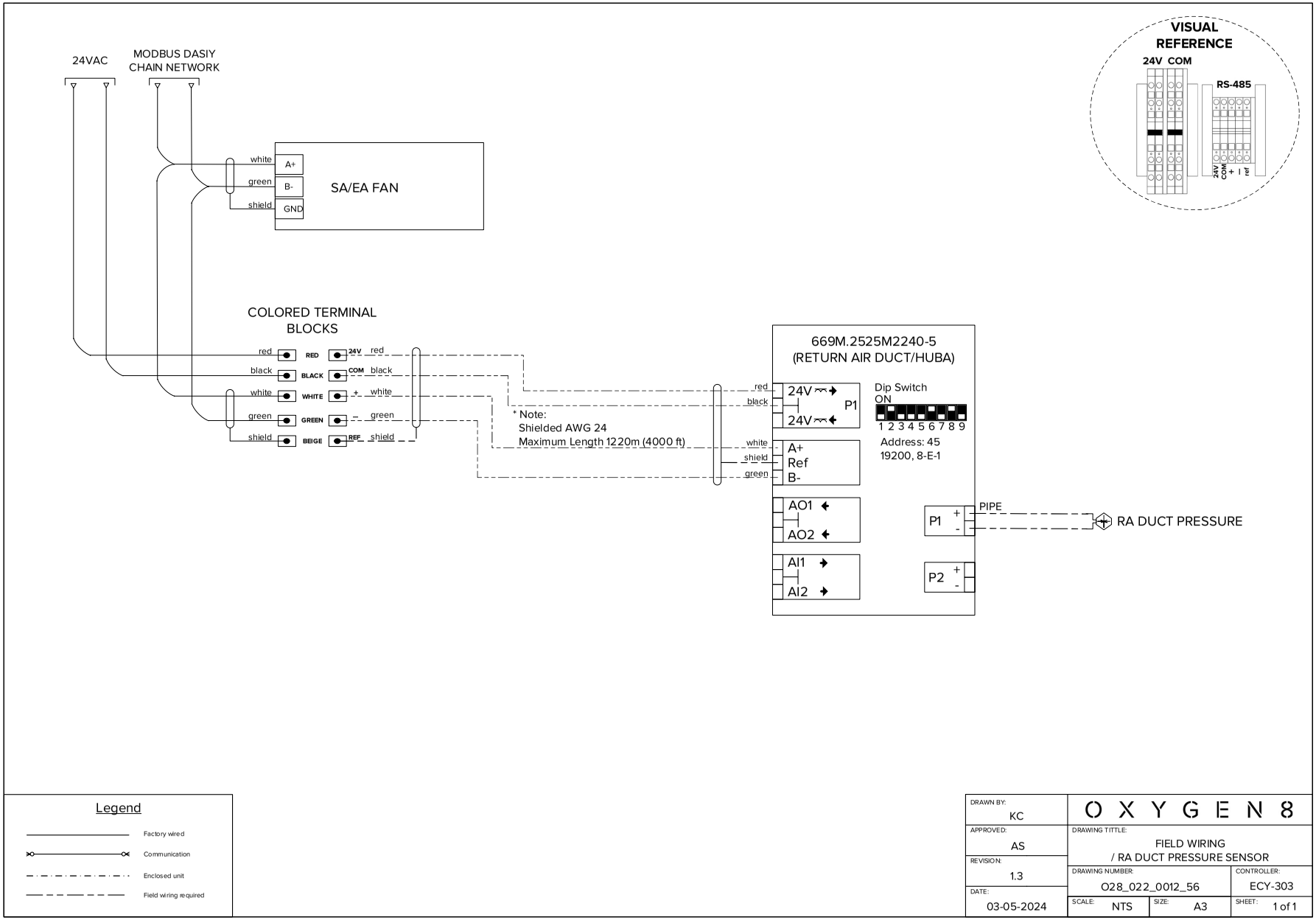
5.11 Hydronic Pre-Heat



5.12 Hydronic Re-Heat



5.13 RA Duct Pressure Sensor

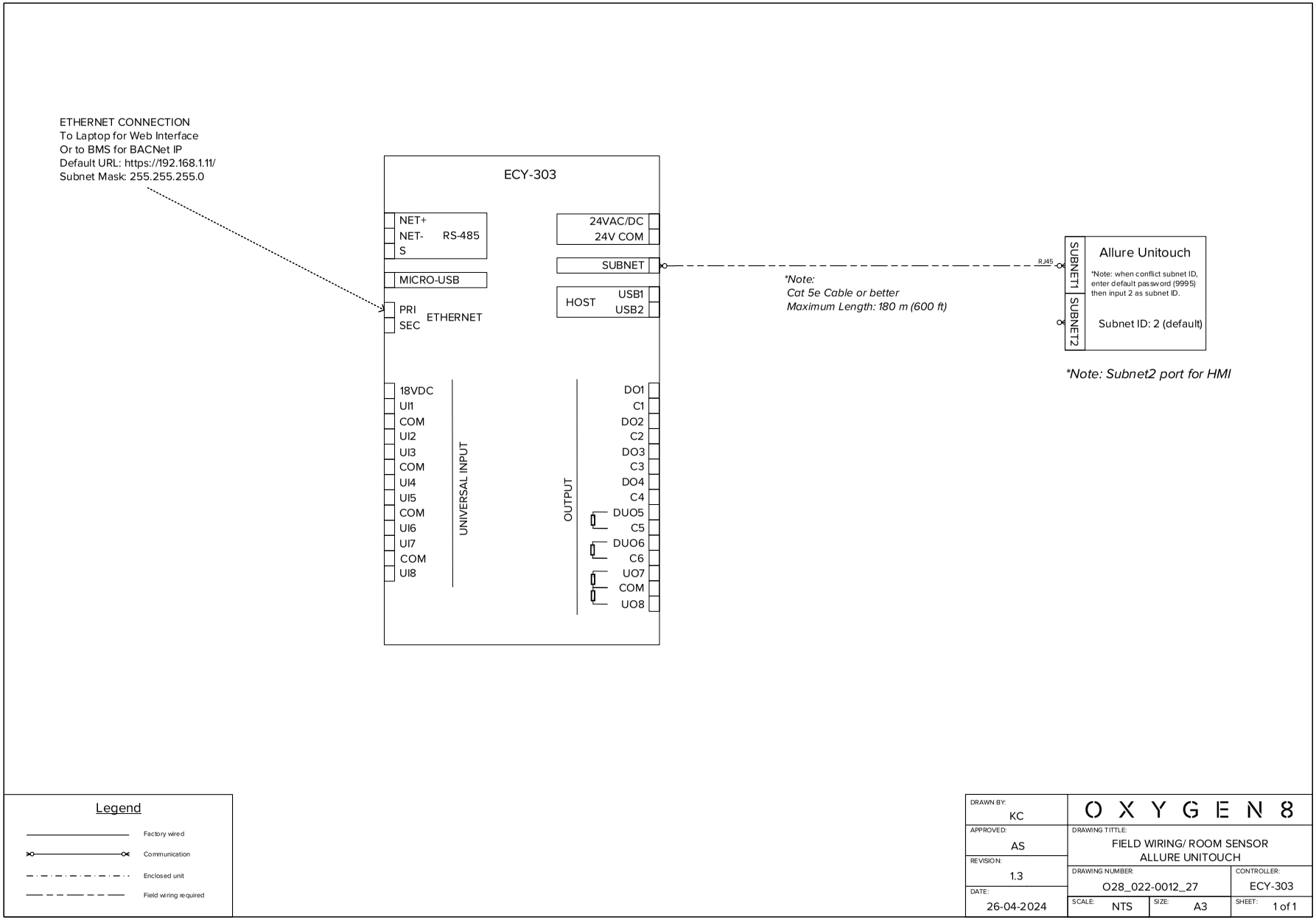


Legend

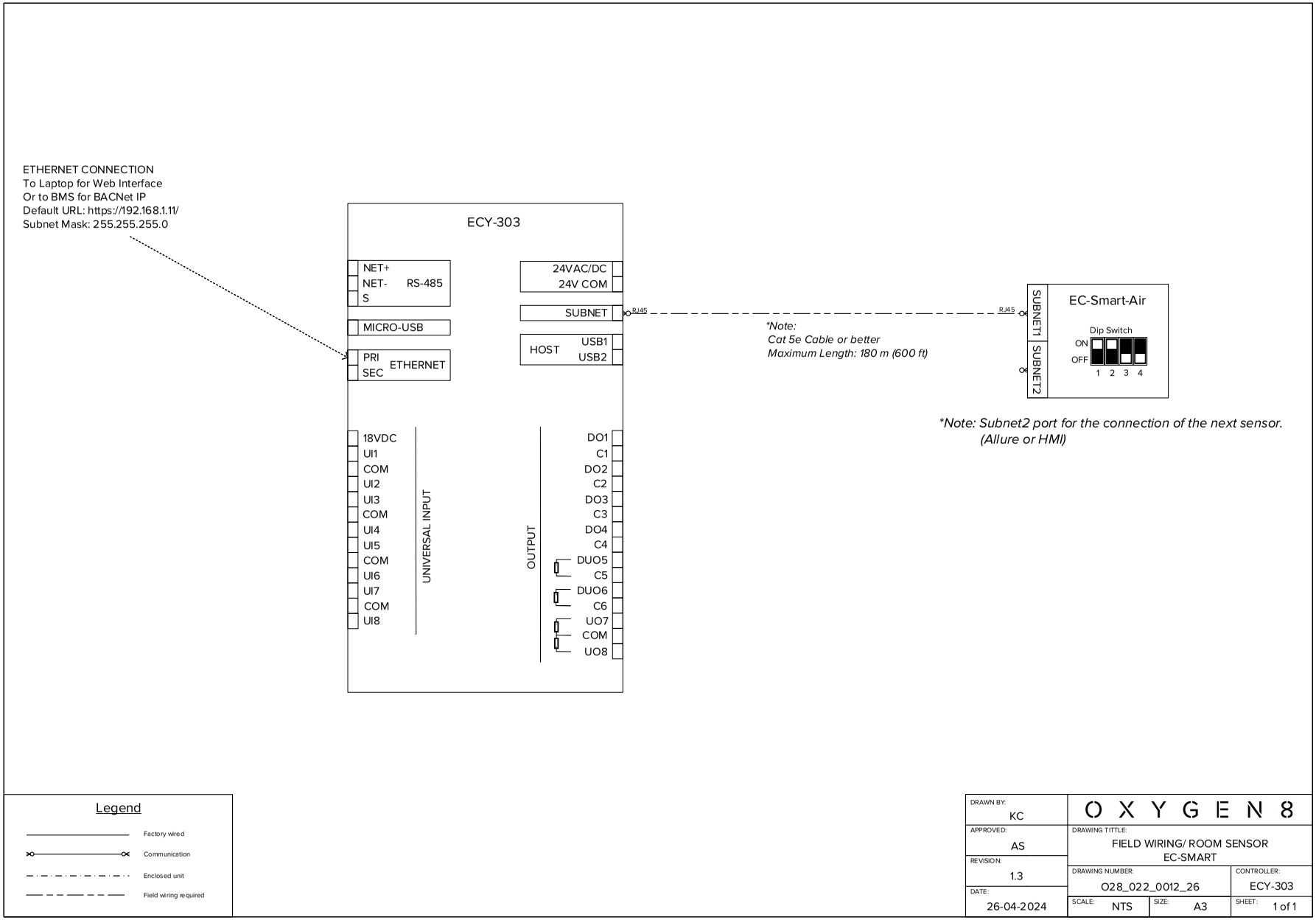
- Factory wired
- Communication
- Enclosed unit
- Field wiring required

DRAWN BY: KC	OXYGEN8
APPROVED: AS	DRAWING TITTLE: FIELD WIRING / RA DUCT PRESSURE SENSOR
REVISION: 1.3	DRAWING NUMBER: 028_022_0012_56 / CONTROLLER: ECY-303
DATE: 03-05-2024	SCALE: NTS / SIZE: A3 / SHEET: 1 of 1

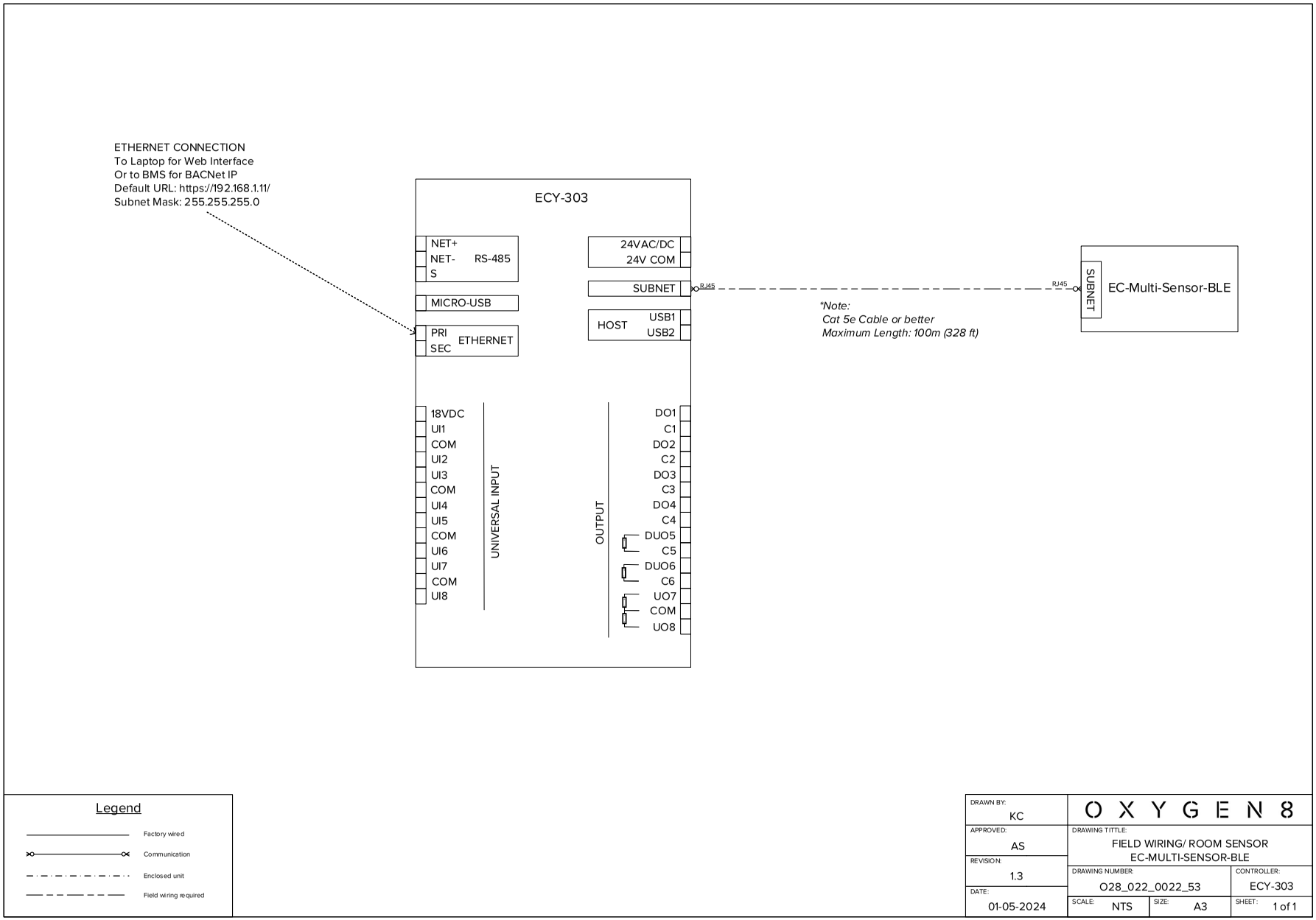
5.14 Room Sensor Allure Unitouch



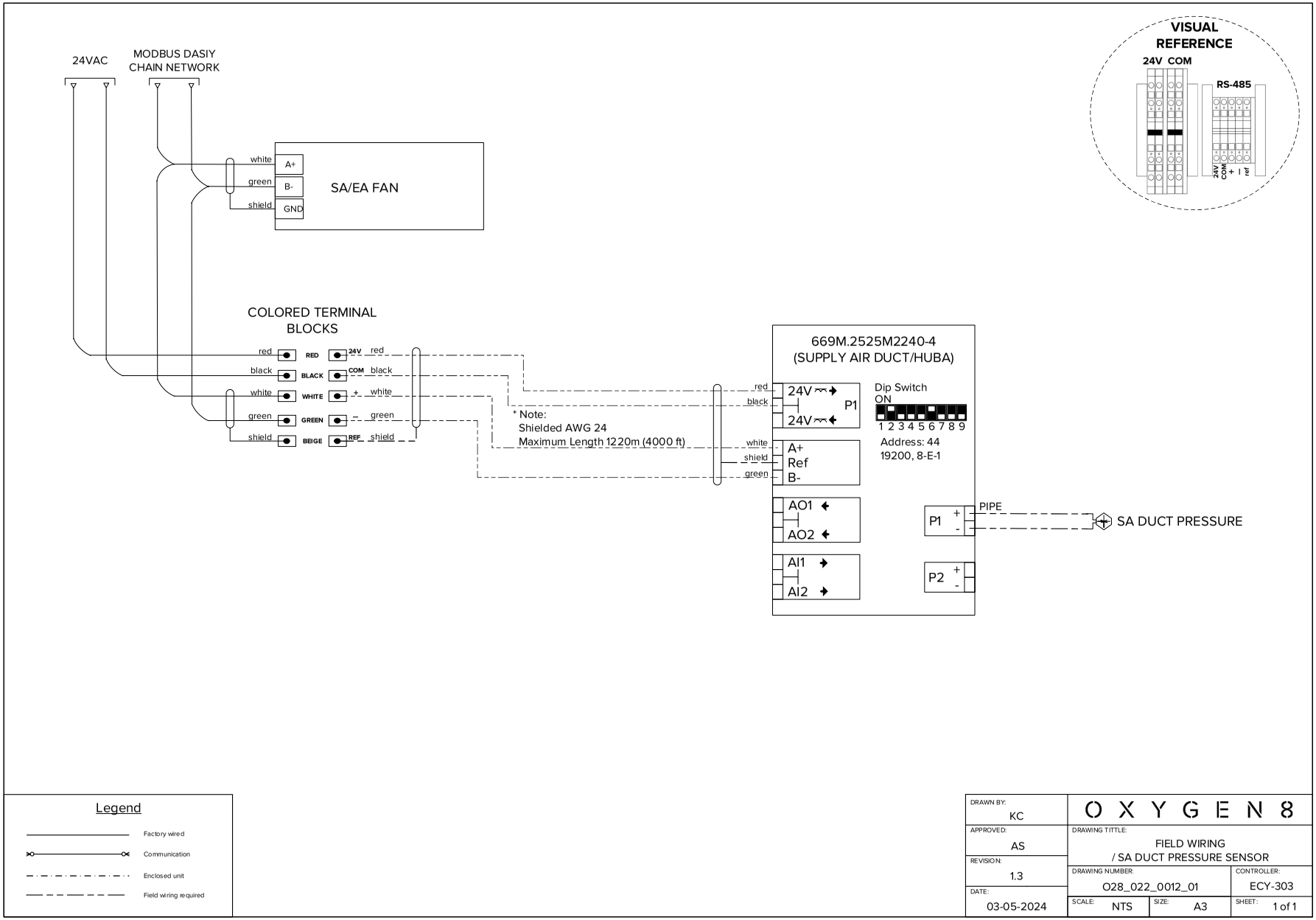
5.15 Room Sensor EC-SMART



5.16 Room Sensor EC-MULTI-SENSOR-BLE



5.17 SA Duct Pressure Sensor



Legend

- Factory wired
- Communication
- Enclosed unit
- Field wiring required

DRAWN BY: KC	OXYGEN8		
APPROVED: AS	DRAWING TITTLE: FIELD WIRING / SA DUCT PRESSURE SENSOR		
REVISION: 1.3	DRAWING NUMBER: O28_022_0012_01		CONTROLLER: ECY-303
DATE: 03-05-2024	SCALE: NTS	SIZE: A3	SHEET: 1 of 1

5.18 RA & SA Duct Temperature & RH