

Developer-Provided Requirements for District Energy Connection

To facilitate the fabrication and installation of the Energy Transfer Station (ETS) and Distribution Piping System (DPS), the developer shall coordinate and must complete the items listed below prior to connection and commissioning:

1. Complete a District Energy (DE) Compatibility Review with Corix using the building permit design information.
2. Concrete coring for:
 - I. DPS supply and return piping
 - II. Two (2) 50-mm communication conduits
 - III. Additional interior piping and communication conduit penetrations through interior walls

The above shall be completed by the building general contractor in accordance with the drawings provided by the building mechanical consultant. Final location and size of DPS core holes to be confirmed with Corix prior to installation.

3. After installation of DPS and communication conduits, Corix will grout the penetration. The building general contractor is to perform and complete the sealing and waterproofing of all foundation penetrations. Timing to be coordinated with Corix.
4. Valves and pull boxes are normally installed immediately after the penetration inside the building. Access to these valves and pull boxes must be maintained at all times without confined space constraints.
5. Pre-determined ETS location with a minimum access opening dimension of 2032 mm (80") high x 1800 mm (71") wide to the mechanical room for installation and placement of ETS equipment.
 - I. The maximum dimensions to allow for an ETS are 4110 mm L x 1750 mm W x 2000 mm H.
 - II. A minimum 1.0 m of clearance is required on all sides of the ETS when it is placed in its final location. A minimum 1.0 m of clearance is required in front of the ETS control panel and all other electrical panels located on the ETS, as required by code.
 - III. A minimum 610mm (24") of clearance is required on the top of the ETS skid, for total headroom of 2610mm.
 - IV. The floor slope at the pre-determined ETS location will be coordinated with Corix to ensure that the ETS can be properly installed. If Corix deems the floor slope to be too high, the developer will provide a housekeeping pad such that the ETS skid may be installed on a level surface. The housekeeping pad will be designed and constructed so that the minimum height clearance above the ETS is maintained per 5.III. The housekeeping pad shall not obstruct the entry into, placement of, and installation of the ETS skid in the ETS location.
6. One dedicated 20-mm (¾") EMT conduit (c/w pull string and #18 AWG TP Stranded 600V cable) from the mechanical room to a serviceable location (approved by Corix) on the north-facing outside wall for the Outside Air Temperature (OAT) sensor. Architect and/or mechanical consultant to determine the appropriate routing of the conduit, and to provide the required instructions to the appropriate building contractor who will install the junction box (if applicable), conduit, wiring and surrounding finishes. The OAT sensor is supplied and installed by Corix. See *Outside Air Temperature Sensor Installation Requirements* below.

7. Current sensors (on/off) for each building pump that provides flow through the ETS, installed between the pump motor and the starter. The building general contractor shall also supply and install the associated conduit and wiring between the sensor and the ETS control panel. A VFD contact can be used rather than an available motor lead where applicable. See *Electrical Field Wiring Scope of Work* below.
8. One dedicated 15 A, 120 V, 60 Hz, single-phase electrical service (c/w wall-mounted lockable switch) connected to the ETS control junction box (installed by Corix) mounted on the ETS skid. The lockable disconnect is not to be mounted on the ETS. Corix will require a copy of the Building Permit and electrical-related permits/inspections associated with the ETS installation.
9. One 19mm (¾") water service connection inside of mechanical room (hose bib) for use by Corix for initial filling of the ETS and operational system make-up on ETS when required.
10. A floor drain located within 1.0 m (not underneath) of the ETS location, within the mechanical room.
11. Mechanical room shall be ventilated as required by Code and heated during the winter to a minimum of 15°C and cooled during the summer to a maximum of 35°C.
12. All connections to the ETS for Domestic Hot Water shall be made using dielectric gaskets and bolts.
13. Bypasses are to be installed immediately before all building piping connections to the ETS to accommodate flushing and chemical cleaning of building piping. Flushing and chemical cleaning is not permitted through the ETS and must be completed prior to commissioning the ETS with the ETS valves remaining closed.
14. Certification under seal from the building engineer in letter format confirming the building system has been designed, constructed, and installed in full compliance with the specifications approved and agreed to in the final Thermal Energy Delivery Parameters schedule. Flushing and cleaning reports must accompany the letter.
15. Building space heating and domestic hot water systems must be ready to take receive district heating in order for Corix to commission ETS.

Outside Air Temperature Sensor – Installation Requirements

Corix will supply and install the Outside Air Temperature (OAT) sensor. Prior to installation, Corix requires the building contractor to provide a connection point suitable for the sensor to be installed, as well as the conduit, wire and pull string from that point to the Corix Energy Transfer Station (ETS). The connection point for the OAT sensor must be:

1. On an exterior North-facing wall in a serviceable location (accessible by foot or by step ladder)
2. Located in a location with good airflow and not in direct sunlight for the majority of the day
3. At a height of 6' above finished grade
4. The location must be clear of:
 - a. Foliage
 - b. Exhaust from vents, equipment and vehicles
 - c. Sources of heat, by minimum clearance of 1 meter (no sources of heat shall be placed directly below the OAT)
 - d. not in landscape irrigation zones

Selecting a location that does not meet these criteria may have a negative impact on the heating performance of the building.

The building contractor-installed conduit will connect to an existing junction box on the ETS frame by the control panel. The building contractor will provide sufficient slack wire and pull string in the junction box for Corix to make the final connection inside the control panel.

The conduit provided shall be dedicated for the OAT sensor wire alone. Conduit shall be 20mm (3/4") EMT, with watertight (NEMA 4) connections at both ends, and reduced to 1/2" conduit at the exterior OAT sensor connection point. The conduit provided must be sufficient, by Code, to overcome resistance by distance for wire pulls.

The wire shall be #18 AWG twisted pair (#16 AWG if run lengths over 100m), stranded 600V cable.

The OAT sensor can be mounted directly to a 1/2" protruding conduit (extend from the interior pull box at North wall) or a 4" round junction box mounted flush with the building exterior. All finishes around the OAT sensor and connection are to be completed by the building contractor and are not to interfere with the sensor's performance.

The sensor, conduit and wire must be installed prior to commissioning the ETS and building hot water systems.

Figure 1: OAT Sensor Weather Tight (EU) Enclosure

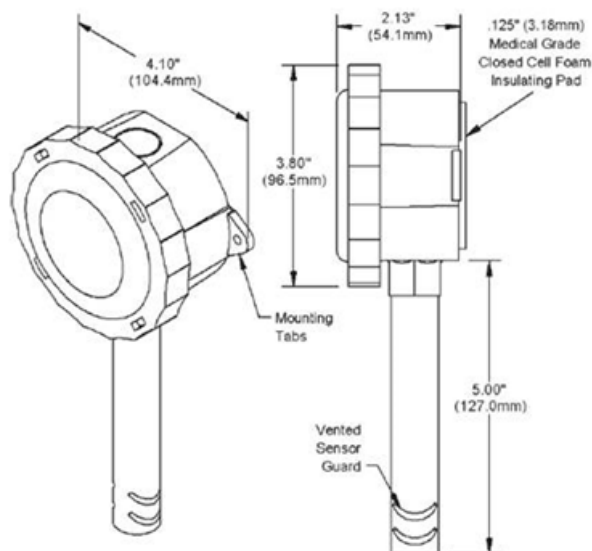
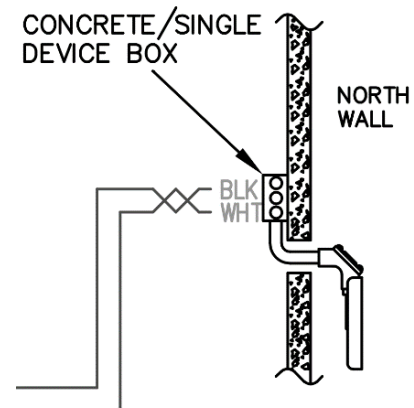


Figure 2: OAT Sensor Mounting Diagram



ELECTRICAL FIELD WIRING SCOPE OF WORK:

ETS FIELD WIRING REQUIREMENTS BY BUILDING ELECTRICAL CONTRACTOR.

PROVIDE CONDUIT RACEWAY AND WIRING FROM THE CORIX ETS STATION FIELD TERMINAL BLOCK.

- ① OUTDOOR TEMPERATURE SENSOR – CONDUIT FROM TERMINAL BLOCK TO A RECESSED SINGLE GANG BOX LOCATED ON THE NORTH SIDE OF THE BUILDING TO SUIT EXTERIOR FINISH C/W #18 AWG TP STRANDED CABLE, 600V CABLE.
- ② HOT WATER PUMP #1 VSD STATUS – CONDUIT FROM TERMINAL BLOCK TO VSD DRIVE LOW VOLTAGE SECTION C/W #18 AWG TP STRANDED CABLE, 600V CABLE.
- ③ HOT WATER PUMP #2 VSD STATUS – CONDUIT FROM TERMINAL BLOCK TO VSD DRIVE LOW VOLTAGE SECTION C/W #18 AWG TP STRANDED CABLE, 600V CABLE.
- ④ DHW PUMP #1 STATUS – CONDUIT FROM TERMINAL BLOCK TO PUMP STARTER C/W #18 AWG TP STRANDED CABLE, 600V CABLE.
- ⑤ DHW PUMP #2 STATUS – CONDUIT FROM TERMINAL BLOCK TO PUMP STARTER C/W #18 AWG TP STRANDED CABLE, 600V CABLE.

NOTE: OUTDOOR TEMPERATURE SENSOR TO BE PROVIDED AND INSTALLED BY CORIX

PUMP STATUS MUST BE PROVIDED FOR ALL PUMPS THAT DELIVER FLOW THROUGH THE ETS, REGARDLESS OF THE NUMBER SHOWN IN THE EXAMPLE DIAGRAM BELOW

