GridPoint - EMS Installation

1. Scope

The EMS shall control/monitor the following:
1. Total electrical load (Main Load)
2. Additional Loads – HVAC
3. Control all HVAC units
4. Control all interior and exterior lights and signs
5. Monitor Rear Entrance Motion

Note: The EMS Controller must be installed and communicating with the GridPoint server before moving forward with any other part of the installation.

2. Controller (See EM1.0)

EC2000 Controller (Mounting in Electrical Room) with Transformer Power

A. Location/Mounting : (1) EC2000 Controller shall be mounted in the electrical room area near the MM1204–EX at an appropriate eye level.

B. Power Requirements : The 24 VAC power source for the controller must be obtained from a provided dedicated 120 to 24 VAC transformer, obtained from 15–20 amp single pole breaker.

C. Communication : LAN communication shall be obtained via the client's network/switch gear. RS– 485 connections to peripheral devices shall be obtained using the communication terminal block with cat5e cable.

D. Labeling : Labeled per power source and site name on the front cover.

3. Sub–metering (See EM 1.0)

All current transformer wiring shall be routed through an existing trough or raceway where feasible. If no trough/raceway is available, then the wiring shall be run through conduit to the sub–metering panel. Splicing shall take place inside junction boxes/troughs and not inside breaker panels.

MM1204–EX Metering Module

A. Location/Mounting : (1) MM1204–EX shall be mounted within the electrical area at an appropriate eye level using correct wall anchors.

B. Power Requirements : 120V Power (15–30A single pole breaker) and site metering voltage (15– 30A 3–pole breaker) must be pulled to the module. If metering voltage is 120/208V, power and neutral may be jumped.

C. Current Transformer Connections : Connect the supplied current transformers to the TB1/TB2 terminals. These terminals are polarity sensitive. Use wire meeting the 6 twists per foot ratio for extension wire (i.e. Cat5e).

D. Communication : RS–485 connections shall be obtained using the TB1 (orange punch–down) terminals using Cat5e cable.

E. Labeling : Labeled per metering and power source on the front door.

Current Transformer Schedule

CT INPUT / CT SIZE / PHASE / LOAD DESCRIPTION
1 / 600A / A / Main Load
2 / 600A / B / Main Load
3 / 600A / C / Main Load
4 / 50A / A / AC 1
5 / 50A / A / AC 2
6 / 50A / A / AC 3
7–12 / 50A / A / Additional RTUs as needed

4. HUB's/Peripherals/Power Supplies

A. Location/Mounting : (2) Installer provided NEMA–1 enclosures shall be installed to house the peripherals and power supplies provided. The NEMA–1 enclosures shall be used to separate the HV/LV wires to the transformers/power supplies and peripherals. 300–600 volt rated wire is required when extending LV output to the EMS.

B. Connections : Cat5e cable will be used to connect each set of peripherals.

C. Communication : RS–485 connections to the EMS controller shall be run to the HUB.

D. Labeling : Each wire cable must be identified / labeled per peripherals connected.

5. HVAC Controls (See EM 1.0)

The HVAC units shall be added to the GridPoint system one at a time, confirming proper operation before moving on to the next unit.

TS101 Wired (Thermostat in the Zone - TSTAT and Supply Combination) and RTU Power

A. Location/Mounting: (3) TS101 thermostats shall be placed in an appropriate position as to monitor the associated zone.

B. Power/Communications: The 24 VAC power source for the TS101 thermostats shall be obtained from the existing 24 VAC transformer within the HVAC unit via HVAC control cabling. RS–485 connections for the TS101 thermostats shall be made using the daisy chain method back to the HUB using cat5e cable.

C. Connections: The installer shall re–use existing thermostat cable and store the old thermostats in a box to leave with the manager on site.

a. (3) Supply duct sensors shall be installed as close to the plenum roof penetration of the supply duct as practical and routed back to their respective thermostat T2+/– terminal using 18–24 AWG STP cable.

D. Labeling: The thermostats shall be labeled to accurately describe the zone controlled.

Note: For each additional RTU the following parts are needed: 1 TS101, 1 temperature probe, 1 50A CT.

6. Lighting Controls and Motion Sensors (See EM 1.1) Photo Diode Sensor with Water–Tight Enclosure Kit 002

A. Location/Mounting: A photo diode sensor shall be mounted in the included watertight enclosure kit on the northern most side of the building. Follow all included directions for the kit installation. Any exterior wall penetration shall be sealed properly with weather–tight caulk/silicon.

B. Connections: The photo diode leads must be extended using 18–24 AWG shielded twisted pair cable and routed back to the LCP 2.0 IOM6I60 I1+/– terminals. Terminals are polarity sensitive.

LCP 2.0(Load Control Panel)

A. Location/Mounting: (1) LCP 2.0 shall be mounted near the MM1204–EX.

B. Power Requirements: The 120 VAC power source for the LCP 2.0 must be obtained from a dedicated 15–20 amp single pole breaker. High voltage knockouts for the LCP 2.0 are located on the side/bottom of the cabinet enclosure and must remain below the grounding bar within the LCP 2.0. Low voltage knockouts for the LCP 2.0 are located on the top of the cabinet enclosure.

C. Connections: The LCP 2.0 shall control the following: All interior and exterior lights except for the manager lights, which is independently controlled via switch. (the below load descriptions may change per site)

Lighting Schedule:
Contactor 1 – Work/Stock Room Lights
Contactor 2 – Sales Lights
Contactor 3 – Signs (Building and Pole)
Contactor 4 – Exterior Lighting
Contactor 5 – Spare
Contactor 6 – Spare

a. Line and Load wiring shall be routed from the electrical panel containing the circuits to be controlled back to the LCP 2.0. Since the LCP 2.0 does not require neutral wires, line and load wiring must enter and exit the LCP through the same conduit. Line side wiring = left side and load side wiring = right side of the contactors. Do not breach conduit wiring capacity and install additional conduit if needed to contain line and load pairs.

D. Communication: RS–485 connections shall be obtained using the A+/B– terminals on the top din rail of the LCP 2.0 using Cat5e cable.

E. Labeling: The LCP 2.0 shall be labeled on the front cabinet per power source. The LCP 2.0 panel schedule inside the door shall be completed showing contactor use with a description of the zone controlled.

Motion Sensors

A. Mount motion sensor by rear building entrance as shown on the Power Plan 2/E–1 of the construction plans. Mount sensor directly on ceiling facing down. Avoid placement near moving items (i.e. hanging banners). Placement should provide best coverage of employees entering the store and working late.

a. Power the motion sensor from the dedicated 24VDC power supply in the power box via homerun using plenum rated wire. See EM 1.1.

b. Wire the motion sensor alarm signals using 18–24 AWG Shielded Twisted Pair cable back to the IOM6I60 module as shown in EM 1.1.

c. Label the motion sensor wire rear entrance.

7. Inventory

EC2000 x 1
MM–1204EX x 1
600A Current Transformer x 3
*50A Current Transformer x 3
LCP 2.0 x 1
Water Resistant Photo–Cell 002 x 1
Motion Sensor x 2
*TS101 x 3
*Temperature Probe x 3
HVAC Supply temperature (model used is the Aprilaire 8052 probe temperature sensor) x 3
24VAC Transformer x 1
24VDC Power Supply x 1
1.2 K Ohm Resistor x 2
HUB x 1

Note: *For each additional RTU the following parts are needed: 1 TS101, 1 temperature probe, 1 50A CT.

Installation/Commissioning Prerequisites

I. Class 1 Wiring

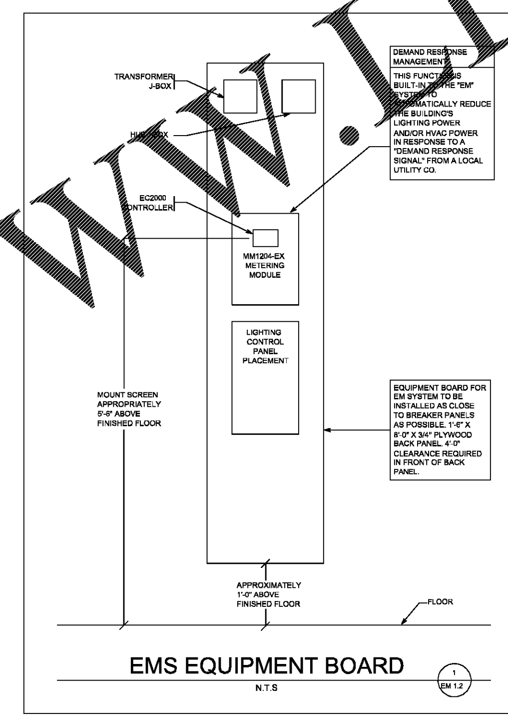
It is the installer's responsibility to make sure all class 1 wiring is properly installed using EMT/Rigid conduit. Flexible conduit is only acceptable within electrical rooms and or above customer visibility per GridPoint standards.

II. Class 2 Wiring

It is the installer's responsibility to make sure all class 2 wiring is properly installed. Any class 2 wiring that pertains to the GridPoint system must be contained within EMT/Rigid conduit and out of customer view. Class 2 wiring can run freely while secured to the building structure above ceiling grids. For electrical rooms with open ceilings, class 2 wiring must be contained within EMT/Rigid conduit within 10 feet from the finished floor. Class 2 wiring above 10 feet can be secured to the building structure using appropriate anchors. The patch cable from the LAN jack to the EMC is the only exception.

LOCAL LIGHTING CONTROL

MANAGER OFFICE, RESTROOMS, SECURITY, AND EXIT/EMERGENCY.



EMS EQUIPMENT BOARD (1 / EM 1.2)

N.T.S

THERMOSTAT LABELING

LABEL EACH THERMOSTAT PER O'REILLY TERMINOLOGY WITH EXACTLY THE SAME UNIQUE IDENTIFYING "CODE" AS SHOWN ON THE "HVAC PLAN" ON SHEET M1 (FOR EXAMPLE: RTU-1, RTU-2, ETC. OR FURN-1, FURN-2, ETC.).

T-STAT/SENSOR MOUNTING

- MOUNT SHOWROOM'S T-STATS AND SENSORS AT 7"-3" ABOVE FINISHED FLOOR
- MOUNT HARD PARTS T-STATS AND SENSORS AT 5"-6" ABOVE FINISHED FLOOR.

Abby L Thurman

Digitally signed by Abby L Thurman
DN: c=US, o=Unaffiliated, ou=A01410D0000016DD53378000003578, cn=Abby L Thurman
Date: 2020.04.21 10:26:46 -05'00'

ABBY L. THURMAN
FL Lic #86329
Firm Lic #27905
04/10/2020

SHEETS BEARING THIS SEAL ARE AUTHENTICATED, RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS OR INSTRUMENTS ARE DISCLAIMED.

O'REILLY PREFERRED ONE LINE DIAGRAM

5305 VALLEY PARK DRIVE SUITE # 2 - ROANOKE, VA 24019

GRIDPOINT CONTACT

PLEASE CONTACT GRIDPOINT INSTALLATION MANAGEMENT @ 866-800-8906 FOR INSTALLATION CONTACT BASED ON THE STORE LOCATION.
EMAIL: SUPPORT@GRIDPOINT.COM

PRINTS ARE FOR: [X] DESIGN [ ] REVIEW [ ] PERMIT [X] BIDDING [ ] CONSTRUCTION

REVISIONS

DESCRIPTION:	DATE:	BY:
REV 5 - Motion Sensor 24VDC	05/23/2019	DC
REV 6 - CHANGED CONTROLLER TO EC2000	03/12/2020	DC

CONFIDENTIAL AND PROPRIETARY

SHEET TITLE: O'REILLY PREFERRED SCOPE OF WORK

FILE NAME: O'REILLY PREFERRED ONE LINE DIAGRAM

DATE: 03/12/2020 DRAWN BY: DAVID COLWELL

SHEET NO: EM 1.2

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GRIDPOINT EMS

DRAWN BY: LHT CHECKED BY: ALT/BLC
DATE: 04/01/2020
REVISION:
PROJECT NUMBER: OF7
SHEET NUMBER EM1.2

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