

**Scope of Work**

O'Reilly Auto Parts - EC1000 Rollout 2018  
EMS Installation

**1. Scope**  
GridPoint has been requested to provide a quote for installation for an Energy Management System (EMS) for O'Reilly Auto Parts.

The EMS shall control/monitor the following:

- Total electrical load (Main Load)
- Additional Loads - HVAC
- Control all HVAC units - Total of 3
- Control all interior and exterior lights and signs
- Monitor Site 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 EM 1.0)**  
**EC1000 Controller (Mounting on MM1204-EX Door) with Transformer Power**

- Location/Mounting:** (1) EC1000 Controller shall be mounted on the door of the MM1204-EX at an appropriate eye level.
- 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.
- Communication:** LAN communication shall be obtained via the client's network/switch gear. RS-485 connections to peripheral devices shall be obtained using the J14 terminal block using Cat5e cable.
- 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**

- Location/Mounting:** (1) MM1204-EX shall be mounted within the electrical area at an appropriate eye level using correct wall anchors.
- 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.
- 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).
- Communication:** RS-485 connections shall be obtained using the TB1 (orange punch-down) terminals using Cat5e cable.
- Labeling:** Labeled per metering and power source on the front door.

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PROPRIETARY TO GRIDPOINT  
05/14/2018  
REVISION 3

**Scope of Work**

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**Motion Sensors**

- Mount motion sensor by rear building entrance as shown on the Lighting Plan E1 of the construction plans. Mount sensor directly on ceiling facing down. Avoid placement near moving items (e.g. hanging banners). Placement should provide best coverage of employees entering the store and working lane.
  - Power: each motion sensor from the dedicated 24VAC transformer in the power box via homerun using plenum rated wire. See EM 1.1.
  - Wire each motion sensor alarm signals using 18-24 AWG Shielded Twisted Pair cable back to the IO61660 module as shown in EM 1.1.
  - Label each motion sensor wire per closest entrance.

**2. Inventory**

Equipment	Quantity	Notes
EC1000	1	Controller
MM1204EX	1	Metering module
600A Current Transformer	3	Main Load
30A Current Transformer	3	HVAC Loads
LCP 2.0	1	Input Module
Water Resistant Photo-Cell 302	1	Photo Cell
Motion Sensor	1	Motion Detector
TS101	3	HVAC Control - w/no touchscreen
Temperature Probes	3	HVAC Supply temperature (model used is the Aprilaire 8032 probe temperature sensor)
24VAC Transformer	2	EC1000 and Motion Sensor power (PM120/24V-50/50HZ-00)
HUB	1	Communications

**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 where customer visit per GridPoint standards.

**ii. Class 2 Wiring**  
It is the installer's responsibility to make sure all class 2 wiring is properly installed. All 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 grid. 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 port to the controller is the only exception.

**Current Transformer Schedule**

CT Input	CT Size	Phase	Panel/Circuit	Description/Load
1	600	A	Main Feeders	Main Load
2	600	B	Main Feeders	Main Load
3	600	C	Main Feeders	Main Load
4	50	A	Field Verify	AC 1
5	50	A	Field Verify	AC 2
6	50	A	Field Verify	AC 3
7-12	N/A	N/A	N/A	Spare

**2. 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.

- Connections:** Cat5e cable will be used to connect each set of peripherals.
- Communication:** RS-485 connections to the EMS controller shall be run to the HUB.
- Labeling:** Each wire cable must be identified / labeled per peripherals connected.

**3. 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**

- Location/Mounting:** (3) TS101 thermostats shall be placed in an appropriate position as to monitor the associated zone.
- 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.
- Connections:** The installer shall re-use existing thermostat cable and store the old thermostats in a box to leave with the manager on site.
  - (3) Supply duct sensors shall be located 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.
- Labeling:** The thermostats shall be labeled to accurately describe the zone controlled.

**4. Lighting Controls and Motion Sensors (See EM 1.1)**

- Photo Diode Sensor with Water-Tight Enclosure Kit002**
  - 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.
  - Connections:** The photo diode leads must be extended using 18-24 AWG shielded twisted pair cable and routed back to the LCP 2.0 IO61660 I1+/- terminals. Terminals are polarity sensitive.

**LCP 2.0 (Load Control Panel)**

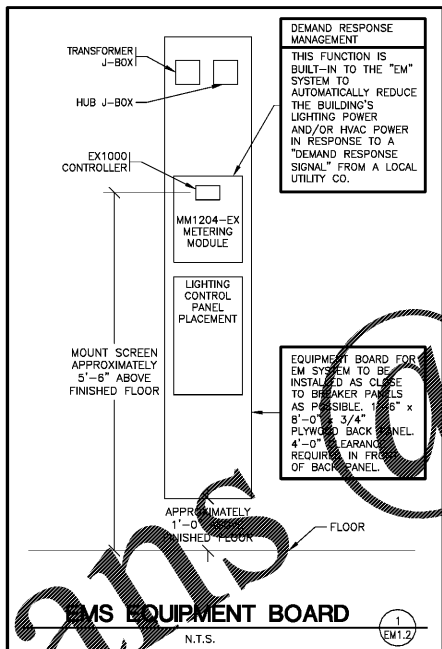
- Location/Mounting:** (1) LCP 2.0 shall be mounted near the MM1204-EX.
- Power Requirements:** The 120 VAC power source for the LCP 2.0 must be obtained from a dedicated 15-20 amp single pole breaker. High voltage knockouts for the LCP 2.0 are located on the side/bottom of the cabinet enclosure and 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.
- 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)

Contactor	Terminal	Circuit	Load Description
1	R7 / R8	Field Verify	Work/Stock Room Lights
	R5 / R6	Field Verify	
	R3 / R4	Field Verify	
2	R1 / R2	Field Verify	Sales Lights
	R7 / R8	Field Verify	
	R5 / R6	Field Verify	
3	R3 / R4	Field Verify	Signs (Building and Pole)
	R1 / R2	Field Verify	
	R7 / R8	Field Verify	
4	R5 / R6	Field Verify	Exterior Lighting
	R3 / R4	Field Verify	
	R1 / R2	Field Verify	
5	R5 / R6	Field Verify	Spare
	R3 / R4	Field Verify	
	R1 / R2	Field Verify	
6	R5 / R6	Field Verify	Spare
	R3 / R4	Field Verify	
	R1 / R2	Field Verify	

- 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 wiring.
- Communication:** RS-485 connections shall be obtained using the A+/B- terminals on the din rail of the LCP 2.0 using Cat5e cable.
- Labeling:** The LCP 2.0 shall be labeled on the front cabinet per power source. The LCP 2.0 schedule inside the door shall be completed showing contactor # with a description of the zone controlled.

**LOCAL LIGHTING CONTROL**

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



**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/CO2 SENSOR MOUNTING**  
• MOUNT SHOWROOM'S T-STATS AND SENSORS AT 7'-3" ABOVE FINISHED FLOOR.  
• MOUNT HARDWARE T-STATS AND SENSORS AT 5'-6" ABOVE FINISHED FLOOR.

O'REILLY PREFERRED SCOPE OF WORK

GRIDPOINT CONTACT  
5305 VALLEY PARK DRIVE SUITE # 2 - ROANOKE, VA - 24060

**GRIDPOINT CONTACT**  
PLEASE CONTACT GRIDPOINT INSTALLATION MANAGEMENT @ 866-800-8908 FOR INSTALLATION CONTACT BASED ON THE STORE LOCATION. EMAIL: SUPPORT@GRIDPOINT.COM

PRINTS ARE FOR:

DESIGN	REVIEW	PERMIT	BIDDING	CONSTRUCTION
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

REVISIONS	DESCRIPTION	DATE	BY

SHEET TITLE:  
O'REILLY PREFERRED SCOPE OF WORK

FILE NAME:  
O'REILLY PREFERRED ONE LINE DIAGRAM

DATE: 05/14/2018 DRAWN BY: DAVID COLWELL

SHEET NO:

EM 1.2

SHEET CHANGED IN ITS ENTIRETY.

DESIGN BY OTHERS FOR REFERENCE ONLY

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GRIDPOINT EMS

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COMM # 4219  
DATE: 08-17-18  
REVISION DATE: 10-08-18

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Order Plans

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