

I. GENERAL CONTRACTOR'S RESPONSIBILITIES:

- a. Read Cylon Retail Solutions (CRS) / Dollar Tree (DT) Documentation Package.
- b. Review all DT drawings.
- c. Confirm CRS Survey Form is completed and EMAILED to CRS National Account Team at Surveys@Cylon.com or FAXED to (855) 224-0879.
- d. Schedule remote EMS commissioning **24 hours prior** to the requested commissioning date.
- e. Contact Cylon Retail Solutions Inc. at (888) 211-6789 and submit survey for scheduling remote EMS commissioning.

II. ELECTRICAL RESPONSIBILITIES:

















Power to all EMS equipment and devices must be OFF while terminations are made.






- a. Provide all labor and installation material, as required, for a complete and operational EMS for this DT store location.
- b. Receive and store all CRS material in a dry and secure place until the EMS installation is completed.
- c. The EMS equipment will be supplied by CRS and installed by an approved CRS contractor.
- d. Review the entire set of plans, perform a job site survey and inventory the CRS equipment to ensure the proper equipment has been ordered and received for a complete and operational CRS EMS.
- e. If any material is missing or additional equipment is required, immediately call CRS at (888) 211-6789 to request an order.
- f. Approved Contractor shall verify number of controlled lighting circuits against the design, report discrepancies, which cannot be resolved in the field, to the CRS National Account Support Team at (888) 211-6789 and wait for resolution instructions.
- g. Coordinate the EMS installation with the Mechanical Contractor to avoid any interference that may delay progress during construction.
- h. Perform all work in accordance with all National, State and Local Codes for this project.
- i. All EMS cables are to be installed per National and Local Codes. It is the Electrical Contractor's responsibility to determine if National and Local Codes permit Class 2 cables to be installed exposed within the building structure or if a full conduit system is required.
- j. EMT connectors and bushings are to be installed at the top of every conduit sleeve and threaded connector to protect EMS cables from abrasions.
- k. All cables are to be clearly and distinctly labeled within one foot of both ends.
- l. Furnish and install all required conduit, boxes, wire ways, fittings, straps, hangers and wiring for a complete and operational EMS as required.
- m. Furnish and install a dedicated 120 VAC circuit with breaker lock for the EMS Panel.
 - i. Label breaker: DO NOT TURN OFF / EMS
 - ii. Confirm wiring is completed as per this documentation package before applying power. Improper wiring will cause damage to equipment.
- n. Mount the EMS Panel adjacent to the electrical panels.
- o. Install an Ethernet cable run from the eSC RJ-45 jack located in the EMS Panel to the network switch specified by the DT networking team.
- p. Install and terminate the CRS BACnet communication trunk in a daisy chain fashion from the EMS Panel to each of the Thermostat Controls and all other BACnet devices. (see this documentation package for requirements)
- q. When applicable, mount the Auxiliary I/O Panel adjacent to the EMS Panel and ensure both panels are connected to the same Earth Ground.
- r. When applicable, ensure the Auxiliary I/O panel is connected in series with the other BACnet devices on the BACnet communications trunk.
- s. Mount and terminate the Outdoor Sensor Assembly (OSA) on the HVAC unit that resides closest to the EMS Panel. When installing, make sure OSA enclosure is:
 - i. Mounted on a 1" rigid riser with an 'LB' secured to the back of the OSA. (Refer to DT detail as shown on EM-4)
 - ii. Mounted 3 feet above the roof top unit
 - iii. Mounted facing north, away from the combustion heat blower and condenser fan
 - iv. Weather-proofed
 - v. Mounted with the white PVC sensor pointed downward
 - vi. Positioned to allow the Outdoor Light Sensor exposure to full ambient daylight but is not shadowed or exposed to any artificial illumination
- t. When applicable, mount and terminate the CO2 Sensor as per the location specified by the DT drawings and this documentation package.
- u. Mount and terminate the Override Button assembly as per the location specified by the DT drawings and this documentation package.
- v. Mount and terminate the Indoor Ambient Light Sensor(s) as per the location specified by the DT drawings and the Special Instructions in this documentation package.
- w. Install and wire coil and load sides of lighting contactors for designated lighting loads as required by DT and this documentation package
- x. Furnish and install a 3-pole, 20 amp breaker/disconnect at the Main Distribution Panel (MDP) for each Phase Loss Power Monitor.
- y. Terminate wiring as specified in this documentation package.
 - i. Label each breaker/disconnect: DO NOT TURN OFF / PHASE FAILURE
 - ii. Confirm wiring is completed as per this documentation package before applying power. Improper wiring will cause damage to equipment.
- z. Verify Input Jumpers are correctly set. For this install:
 - i. Input jumpers 1 - 4, 6 and 8 should be configured as Thermistor Inputs
 -  T
 - ii. Input jumpers 5 and 7 should be configured as Voltage Inputs
 -  V
- aa. Install and terminate the CRS Modbus communication trunk from the eSC Controller to the Electrical Meter. (Refer to OEM instructions and this documentation package for requirements)
- bb. Permanently mount and terminate the Electrical Meter in close proximity to the main utility power feed.
- cc. Permanently mount the 3 Current Sensors, one each, around the 3 phases of the main utility feed.
- dd. Terminate the 3 Current Sensors to the Energy Meter, correctly maintaining Electrical Phase and Meter Input relationships.
- ee. Using the OEM Instructions, configure the EMS Energy Meter for:
 - i. Proper Current Transformer (CT) Ratio - Current Sensor Primary (Ct) = 400 or 800 Amp
 - ii. Nominal Line to Line Voltage - Typically = 480 Vac (Based on Utility Service)
 - iii. Baud Rate = 19200
 - iv. Address = 1
 - v. Voltage Input Mode = True 3 Phase
 - vi. CT Auto Rotation = Auto Rotate
- ff. Provide a technician, on site, for an approximate 2-hour remote telephone checkout with CRS.
- gg. Coordinate with the Mechanical Contractor to verify HVAC control during the CRS remote telephone checkout.
- hh. Upon completion of the installation and prior to scheduling the Remote Commissioning Checkout, the Electrical Contractor will:
 - i. Fill in the forms below and fax them to CRS at (855) 224-0879
 - ii. Confirm the Mechanical Contractor will be present during the CRS Remote Commissioning Checkout.
 - iii. Contact CRS to schedule a remote checkout at (888) 211-6789





III. MECHANICAL RESPONSIBILITIES:


Power to all EMS equipment and devices must be OFF while terminations are made.

- a. Provide labor and installation material, as required, for a complete and operational EMS for this DT store location.
- b. Verify number and type of HVAC units against the design, report discrepancies, which cannot be resolved in the field, to the CRS National Account Support Team at (888) 211-6789 and wait for resolution instructions.
- c. Perform all work in accordance with all National, State and Local Codes for this project.
- d. Mount and terminate the SimpleSTAT module(s) as per the location(s) specified by the DT drawings and this documentation package.
- e. Utilizing 18/6 cable, connect the SimpleSTAT module and HVAC unit.
 - i. Terminate W, G, Y1, Y2, W1 and W2 on the HVAC unit for control of fan, cooling and heating.
 - ii. Terminate the communications cables to the SimpleSTAT(s) as shown in this documentation package.
- f. Set address on the SimpleSTAT module, as shown in the SimpleSTAT installation instructions. When communications to the EMS is in a failed state, the SimpleSTAT will operate 24/7 as a stand-alone STAT using the following temperature setpoints.
 - i. Default Cooling Setpoint = 72.0 °F
 - ii. Default Heating Setpoint = 68.0 °F
- g. Mount and terminate the Remote Space Temperature Sensor(s) as per the location(s) specified by the DT drawings and the Special Instructions in this documentation package.
 - i. In close proximity to the zone return air grille and away from supply air drafts.
 - ii. Install and secure the Remote Temperature Sensor wire to the Thermostat Controller.
- h. Mount the remote Supply Duct Temperature sensor of each HVAC unit.
 - i. The remote Supply Duct Temperature Sensor should be mounted in the main Supply Air Duct on the interior side of the HVAC unit's building penetration.
 - ii. Utilizing 18/2 wire, terminate the supply duct temperature sensor wire to the Thermostat module as shown in this documentation package.
- i. Provide Electrical Contractor with roof plan layout, showing location of HVAC Units on the roof.
- j. Provide a technician, on site, for an approximate 2-hour remote telephone checkout with CRS.
- k. Coordinate with the Electrical Contractor to verify proper HVAC control during the CRS Remote Commissioning Checkout.

| DEVICE LEGEND | |
|---|---|
| SYMBOL | DESCRIPTION |
|  | HVAC UNIT CONTROLLER (SIMPLESTAT) |
|  | HVAC UNIT CONTROLLER (TRC) |
|  | DUCT TEMPERATURE SENSOR |
|  | SPACE TEMPERATURE SENSOR |
|  | OUTDOOR LIGHT SENSOR |
|  | OUTDOOR TEMPERATURE & RELATIVE HUMIDITY SENSORS |
|  | REMOTE TEMPERATURE SENSOR |
|  | INDOOR CO2 SENSOR |
|  | INDOOR RELATIVE HUMIDITY SENSOR |
|  | INDOOR LIGHT SENSOR |
|  | O/H DOOR SENSOR |
|  | MAN DOOR SENSOR |
|  | SECURITY INTERFACE DEVICE |
|  | eBUILDING SYSTEM CONTROLLER |
|  | REMOTE OVERRIDE SWITCH |
|  | OCCUPANCY SENSOR |

| CABLE LEGEND | | | | |
|---|-------|---------------------|------------|-------------|
| KEY | SIZE | TYPE | MFG. | MFG. PART # |
|  | 18/2 | SHIELDED PLENUM | WINDY CITY | # 002320-S |
|  | 18/4 | SHIELDED PLENUM | WINDY CITY | # 002340-S |
|  | 18/8 | NON SHIELDED PLENUM | WINDY CITY | # 002392-S |
|  | 18/10 | NON SHIELDED PLENUM | WINDY CITY | # 002393-S |
|  | 24/8 | CAT5 E PLENUM | WINDY CITY | # 5556140-S |

| WIRING LEGEND | |
|---|--------------------|
|  | FIELD WIRING |
|  | POSITIVE |
|  | NEGATIVE |
|  | OPTIONAL COMPONENT |



**25 Sundial Ave - Suite 310 W
Manchester, NH 03103**

**DOLLAR TREE
DRAWING NOTES
(FOR REFERENCE ONLY)**

| | | |
|---------------------------------|----------------|------------|
| REVISION: 7 | DATE: 07/10/18 | ECN#: 2306 |
| UPDATE TO CURRENT CYLON ADDRESS | | |
| REVISION: 8 | DATE: 09/27/18 | ECN#: 2339 |
| ADD METER | | |
| REVISION: | DATE: | ECN#: |
| REVISION: | DATE: | ECN#: |
| DRAWN: WPC | ENGINEER: CGP | |
| PART #: 94-339 | OPTION: P | |

ENERGY MANAGEMENT PLAN

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