

Executive Controller (EC) Service Manual



NOTE! To perform any of the operations outlined in this manual, a person must meet both of the following qualifications:

- Be a licensed electrician or a licensed HVAC technician.
 - Have experience in troubleshooting building automation and HVAC controls.
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Warning! Some service and maintenance checks in this manual require that the unit's power be turned on. Multiple voltages at the rooftop unit present an electrical shock hazard that can cause injury or death. Before attempting to service Novar Controls equipment, turn off power to the rooftop unit at the disconnect switches. When performing the service checks that require power, turn on the power as necessary but be aware that the electrical shock hazard exists. No one should perform the operations outlined in this manual unless he or she meets the qualifications specified above and is trained and experienced in working with the following voltages:

- 24-VDC
 - 24-VAC
 - 110-VAC
 - 208-VAC
 - 277-VAC
 - 480-VAC
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Introduction

The Executive Controller (EC) functions as both a system network manager and intelligent local controller in Novar Controls Corporation's Logic One® Building Management System by combining the capabilities of an Executive Processor and an Input/Output Module. The EC can be configured to meet complex control requirements, regardless of facility size and/or special monitoring and data collection requirements.

This document describes the EC, provides instructions for replacing the electronics assembly and for taking a milliamp reading, and provides troubleshooting guidelines for:

- Network Communications Loss
- Telephone Communications Loss
- Analog Light Sensor Faults
- Outdoor Temperature Sensor Faults
- Phase Loss Faults
- Outputs
- Digital Inputs
- Pulse Meter Faults

WARNING! Before performing any of the operations outlined in this document, review the Note and the Warning that appear on the inside of the cover of this manual.

Description

The EC is mounted on a baseplate and powered by a 24-VAC, Class 2, transformer connected to a 120-VAC source. A second 120-VAC circuit powers the transformer for the outputs. The output terminal strip is rated 24-VAC, 2 amps, pilot duty. The outputs are controlled by low voltage triacs.

The Hand/Off/Auto (HOA) switches are used for override for each output.

The remote override terminal strip allows remote, timed, or override capabilities that are software-defined and driven. The remote override panel uses a momentary dry contact.

A 22-gauge (minimum), 2-wire, shielded cable must be used for module network communications. Cable length should not exceed 5000 feet.

The Class 2 input terminal strip is the termination point for 4–20 milliamp current loop (analog) or contact closure (digital) inputs. All digital inputs must be dry contact.

The EC draws 1.2 amp current. Terminals 75 and 76 (shown in Figure 1) are used for the 24-VAC power connection. Terminals 39, 40, and 41 (see Figure 1) are used for the Module Network Communications connections.

NOTE! The EC is a Class 2 low-voltage device. Do not connect 120 VAC to any terminal. Do not connect AC voltage to Module Network Class 2 communication terminals. Do not connect DC voltage to module output Class 2 terminals (the triacs will not work).

The charts following Figure 1 can be used to troubleshoot communications loss.

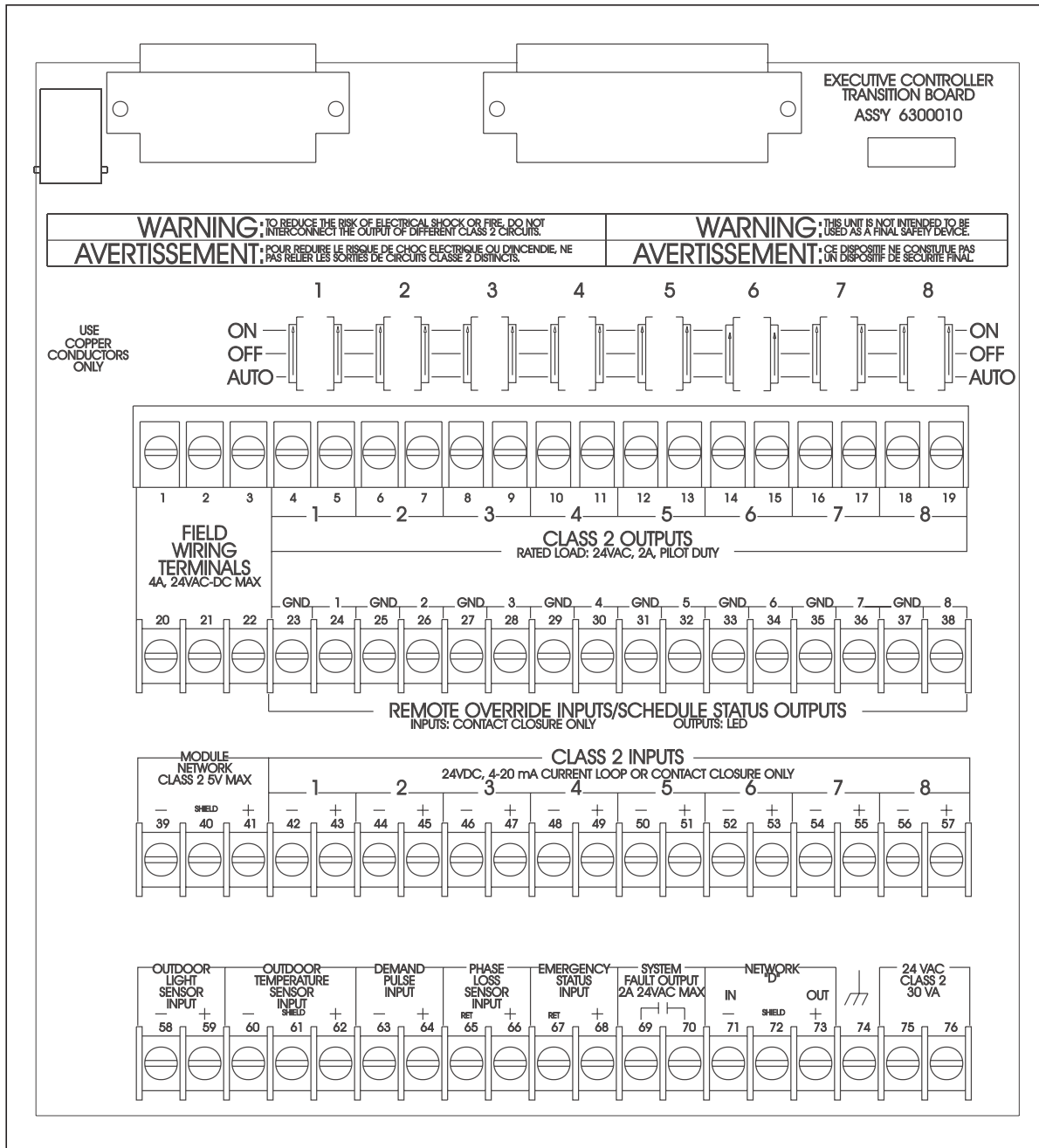
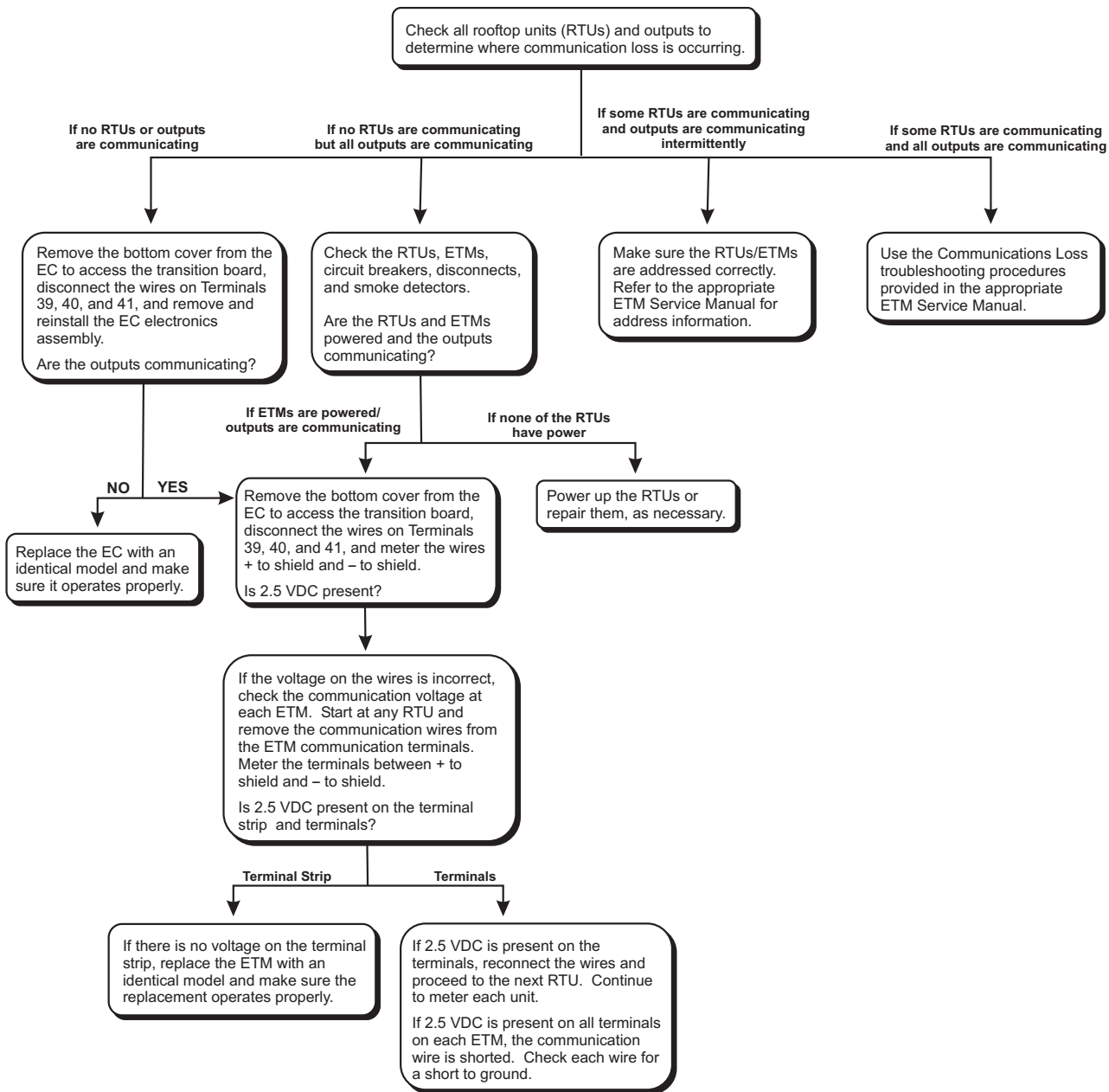
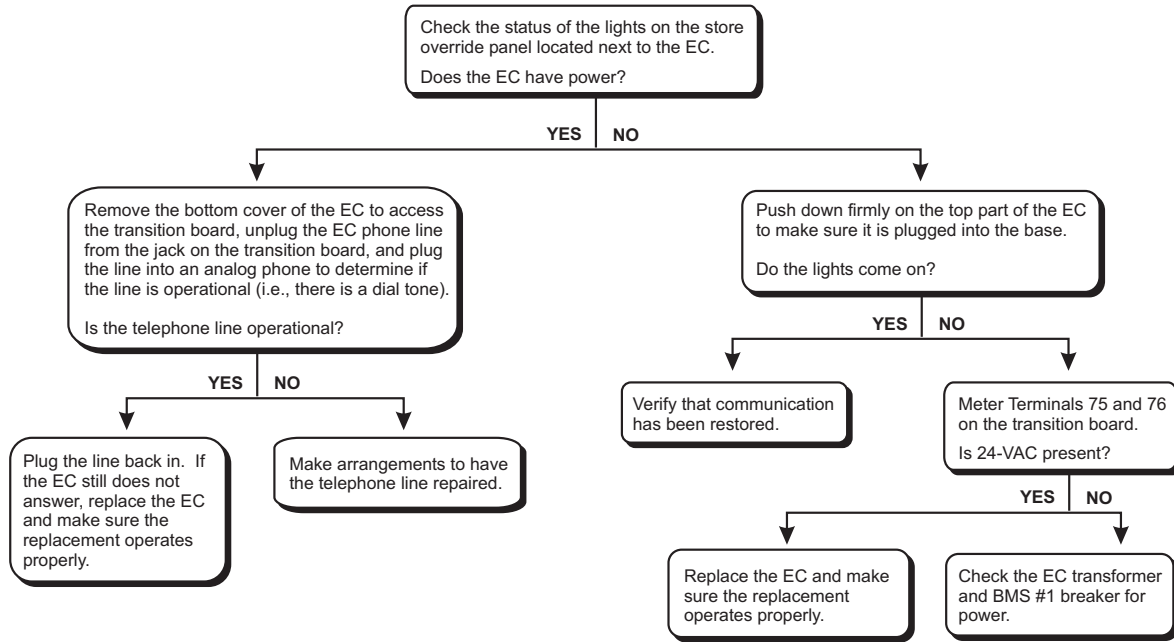


Figure 1. Executive Controller transition board

Network Communications Loss Troubleshooting Chart



Telephone Communications Loss Troubleshooting Chart



Replacing the EC Electronics Assembly

If the troubleshooting procedures provided in this document indicate that the EC should be replaced, the following procedure should be used.

Step	Procedure
1	Remove the bottom cover from the EC: <ul style="list-style-type: none"> ■ Loosen the two Allen screws at the bottom of the EC (Figure 2). ■ Pull the bottom of the cover away from the EC and down.
2	Move the #1 HOA toggle switch to the center position (on).
3	Loosen the two retaining Allen screws at the bottom of the electronics assembly (Figure 2).
4	Push the assembly straight up off the base.
5	Install the battery jumper in the back of the replacement EC, gently sliding the jumper down over the jumper pins.
6	Slide the replacement electronics assembly down from the top of the baseplate assembly, over the mounting posts, guiding the DB25 and DB37 connectors over their connectors on the transition board.
7	Tighten the two retaining Allen screws to secure the assembly.
8	Perform a program download and verify that the equipment is operating properly.
9	Set the #1 HOA toggle switch to the AUTO position.
10	Return the EC's bottom cover and tighten the screws to secure it.

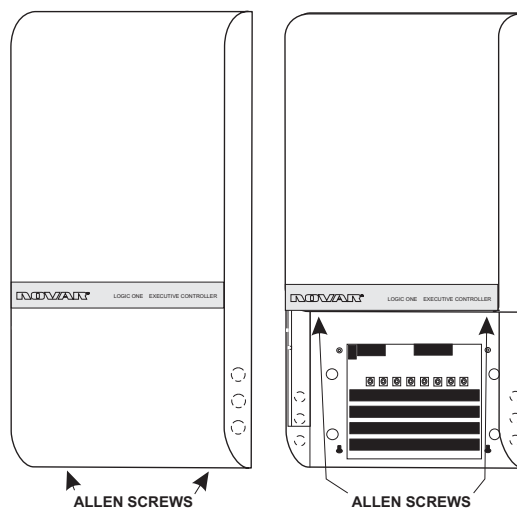


Figure 2. Location of Allen screws on the EC

The appropriate Novar Controls account representative or Novar Technology Center (NTC) should be contacted for instructions for returning defective parts.

Analog Light Sensor

The Analog Light Sensor (ALS-300; Figure 3) is mounted on the Outdoor Sensor Assembly on the roof, three feet above the roof, facing north.

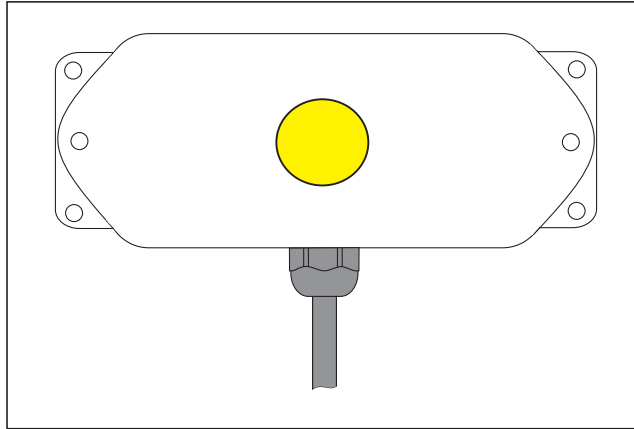


Figure 3. Analog Light Sensor

It uses a shielded, two-wire cable to:

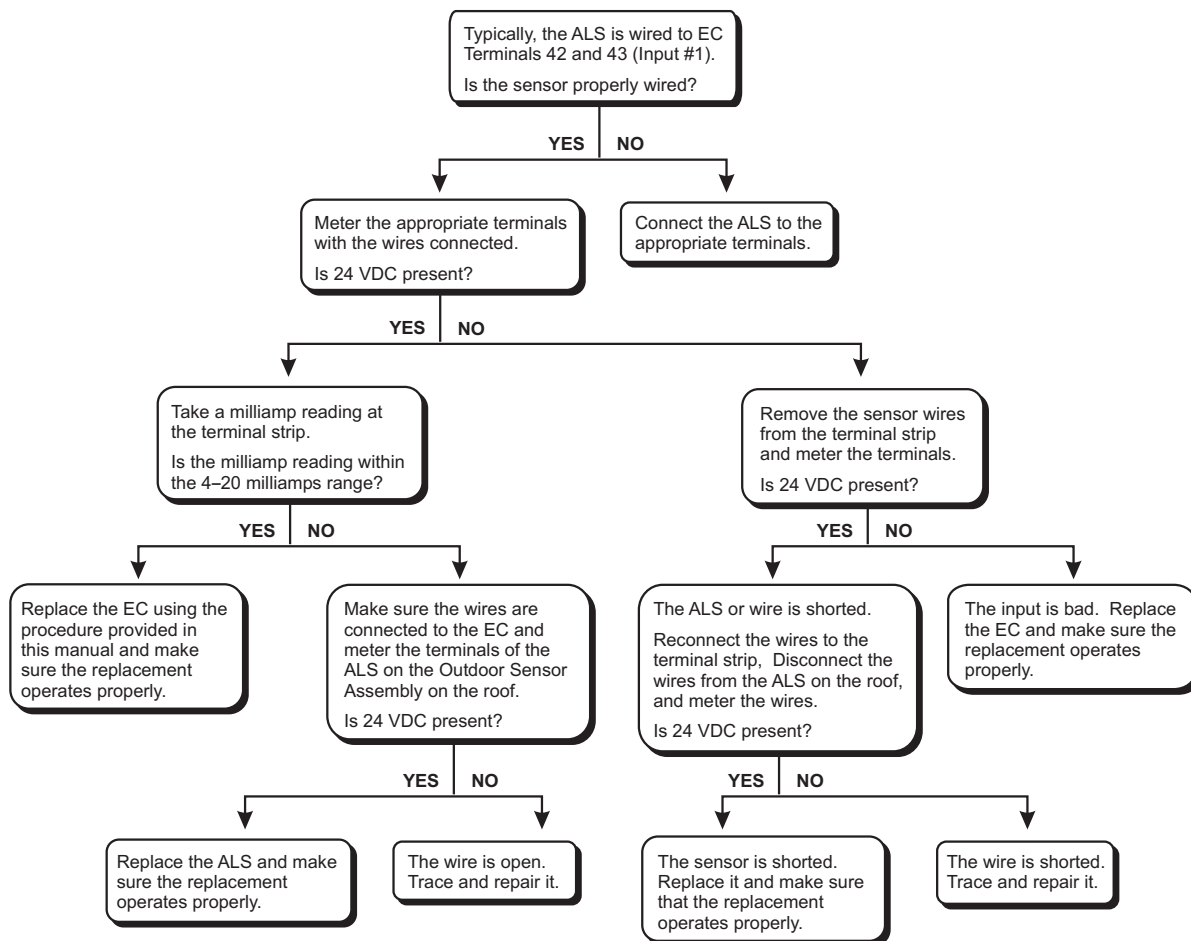
- Receive 24-VDC power from the Executive Controller or an Input/Output Module (IOM).
- Send a 4- to 20-milliamp signal proportional to the light level back to the input terminal strip.

NOTE! When the sensor is wired, polarity must be observed.

The EC translates that signal into a 0–300 footcandle reading. The sensor is permanently calibrated at the factory.

The following chart can be used to troubleshoot ALS faults.

Analog Light Sensor Faults Troubleshooting Chart



Outdoor Temperature Sensor

The Outdoor Temperature Sensor (OTS; Figure 4) is mounted on the Outdoor Sensor Assembly on the roof, three feet above the roof, facing north.

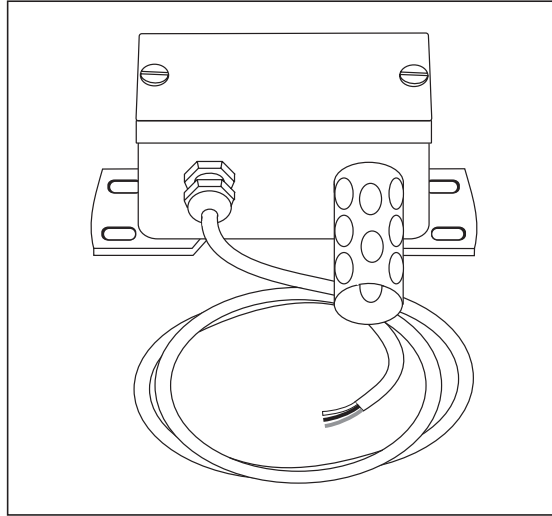


Figure 4. Outdoor Temperature Sensor

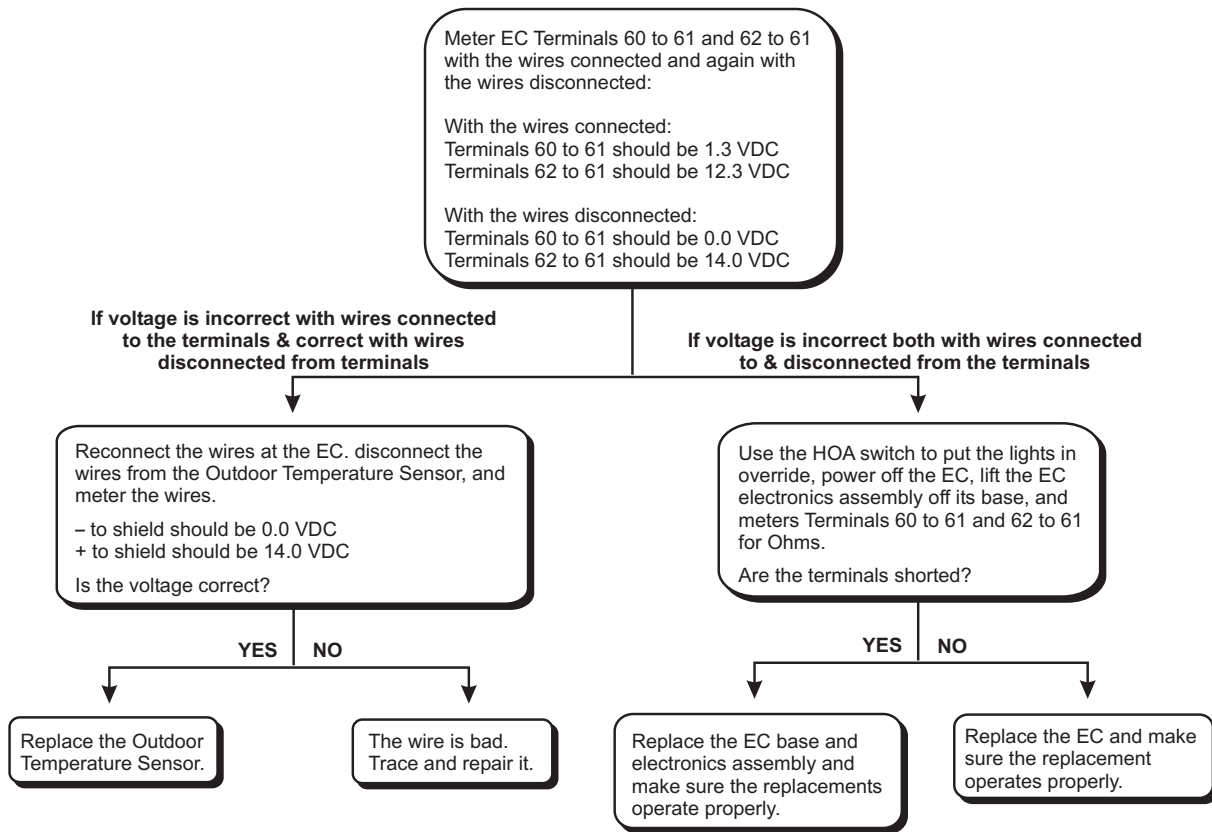
The sensor, which should be connected to EC Terminals 60–62, uses a shielded, two-wire cable to:

- Receive 14 VDC power from the EC.
- Send signals.

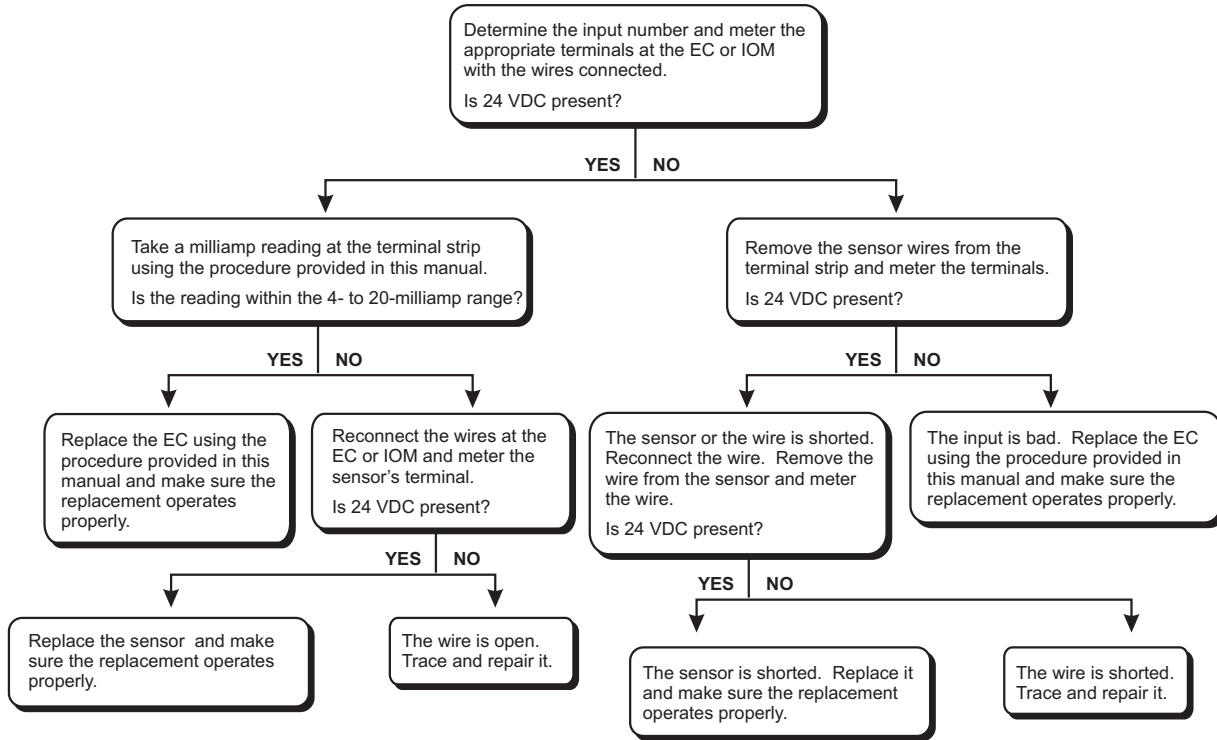
NOTE! Polarity must be observed when the sensor is wired.

The sensor is permanently calibrated at the factory.

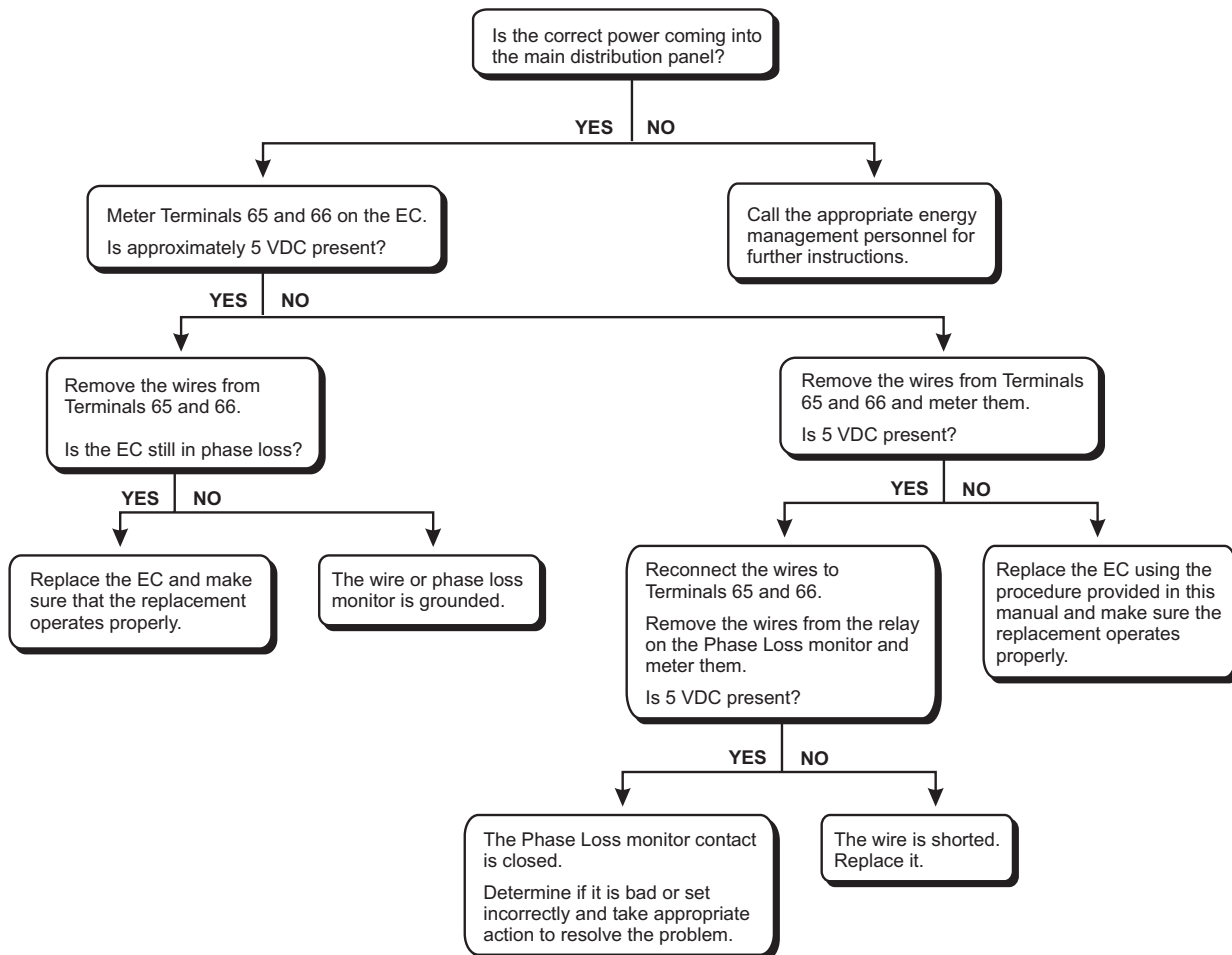
Outdoor Temperature Sensor Faults Troubleshooting Chart



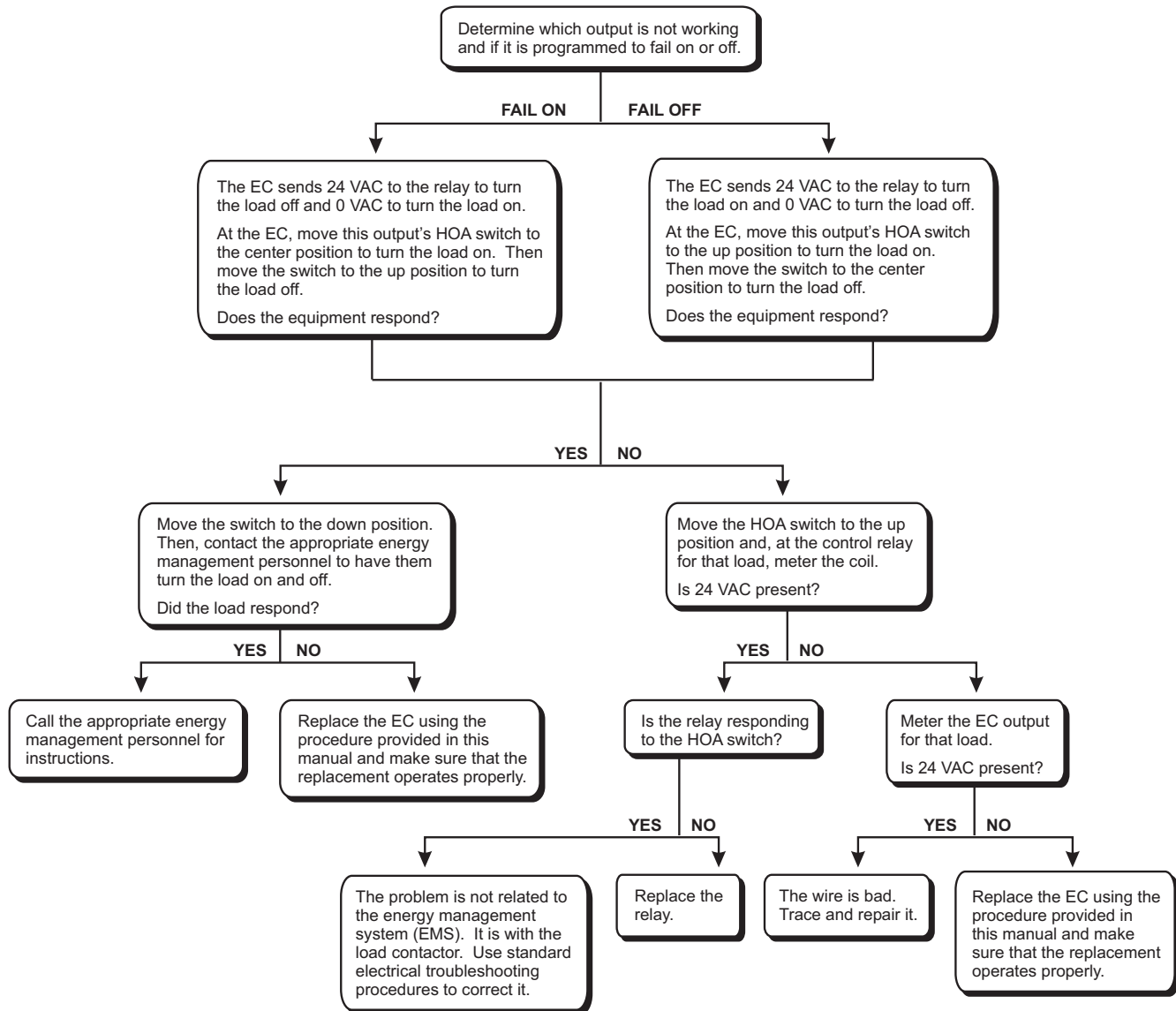
Analog Sensor Faults Troubleshooting Chart



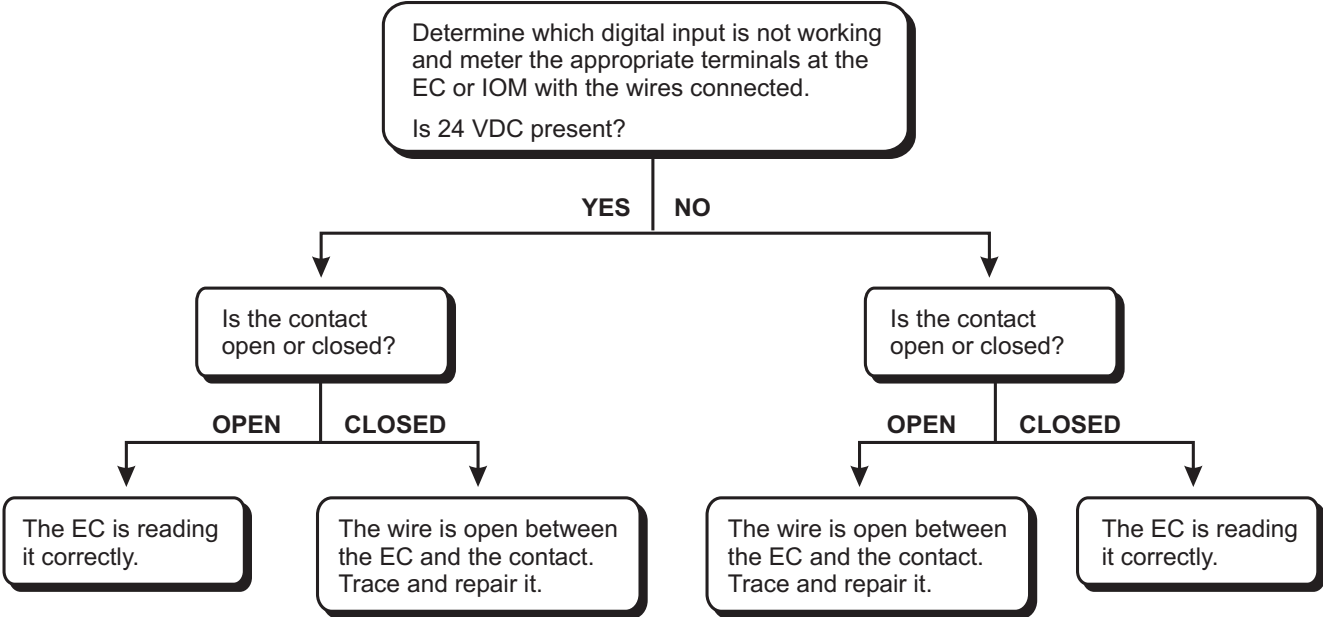
Phase Loss Faults Troubleshooting Chart



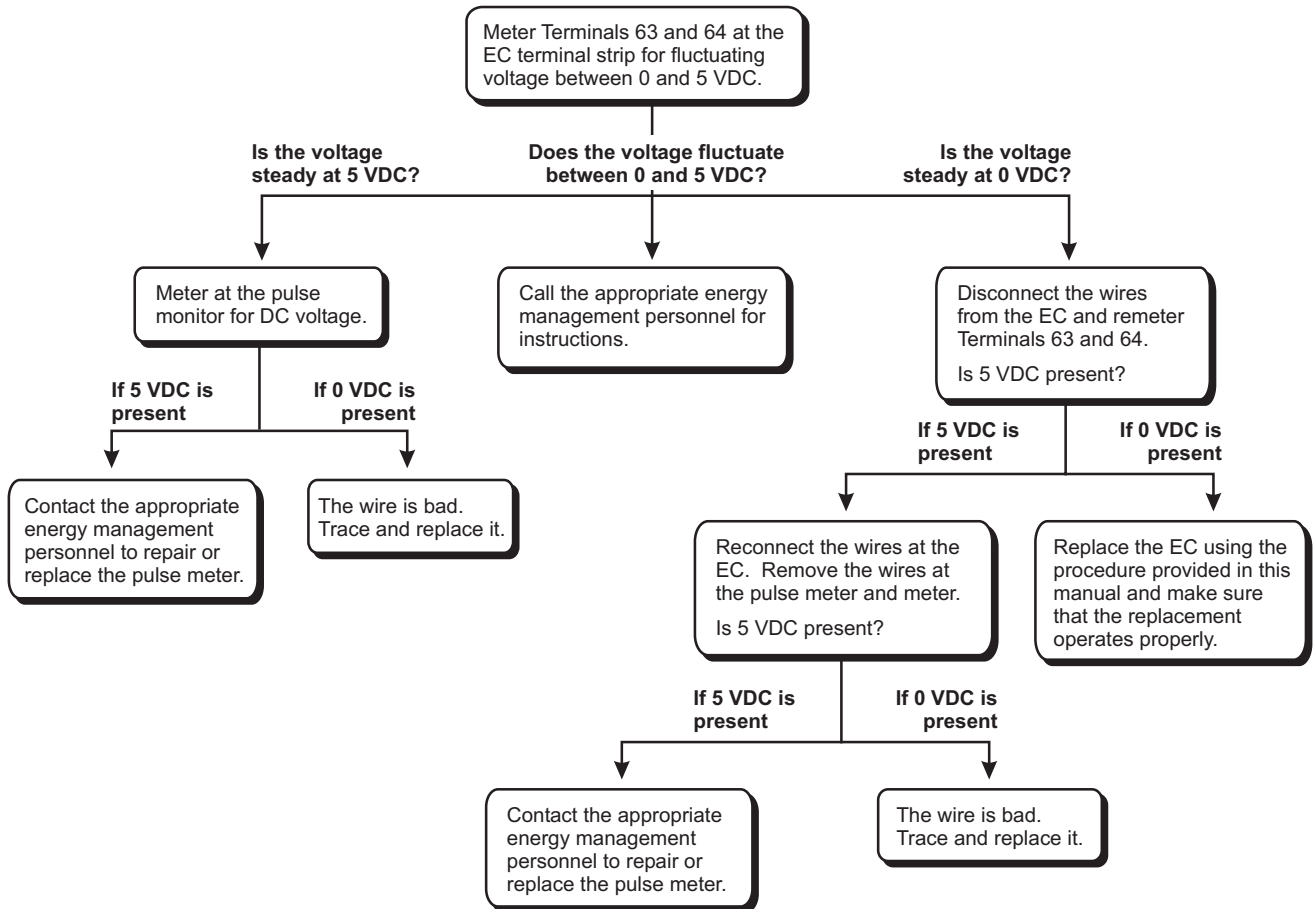
Outputs Troubleshooting Chart



Digital Inputs Troubleshooting Chart



Pulse Meter Faults Troubleshooting Chart



Taking a Milliamp Reading at a Sensor

The following procedure should be used when it is necessary to take a milliamp reading at a sensor.

Step	Procedure
1	Remove the positive wire from the sensor terminal strip.
2	Move the meter leads to the amp socket of the meter and set the meter to an amp range that will accommodate a 4- to 20-milliamp DC reading.
3	Place the meter in series with the sensor (Figure 5) and read the milliamps.

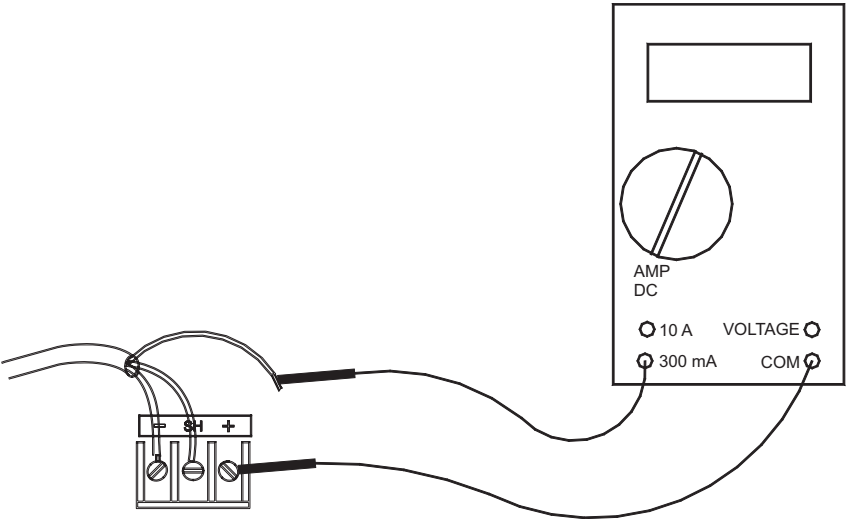


Figure 5. Taking a milliamp reading at a sensor

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