-METASYS®

Output Relay Latched Function Module

Order No. 636-051

Introduction

Description

The Output Relay Latched (ORL) Function Module is an interface between the DCM and field devices. This function module provides on/off control of field devices. The ORL features:

- magnetic latching Form C relay and interface logic to enable the DCM to control this relay
- Hand/Off/Auto (HOA) switch for manual control.
- Feedback indication of the HOA switch setting to the DCM

The ORL Function Module plugs into any one of the bottom ten slots associated with the DCM. Figure 1 shows typical function module locations in the NCU. A five slot panel is pictured.

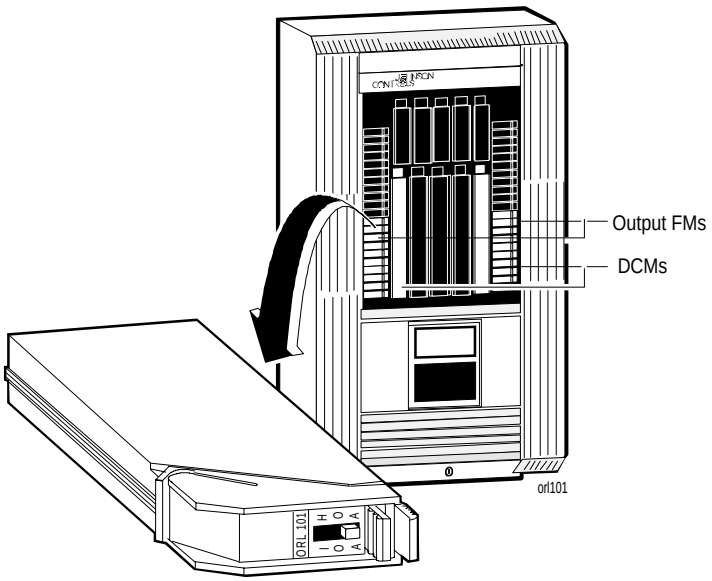

Figure 1: ORL Function Module Locations

Application

The ORL Function Module is typically used for:

- control of a motor that requires a 2-wire control circuit
- wherever 2-wire control is needed, and where last command should be maintained on loss of power at the DCM

Capabilities

Table 1: ORL Function Capabilities

Capability	Description	Purpose
Input from DCM	DCM inputs a digital command.	Allows DCM to provide automatic control of outputs.
Hand/Off/Auto (HOA) Status Switch	Switch selects one of: - Auto—DCM/relay control of outputs. - Hand—Opens the Common N.C. circuit and closes the Common N.O. circuit. - Off—Opens the Common N.O. circuit and closes the Common N.C. circuit. Note: Hand/Off positions mechanically force a contact transfer.	Allows for manual override of DCM control for special situations. Allows for local/manual control, even if the DCM is not present.
Power on Reset	At low power or after power up, relay remains in last command state.	Provides controlled restart.
Output to Field	Module provides Form C contact control.	Provides contact closure control of field devices.

Theory of Operation

Figure 2 is a functional diagram of the ORL Function Module.

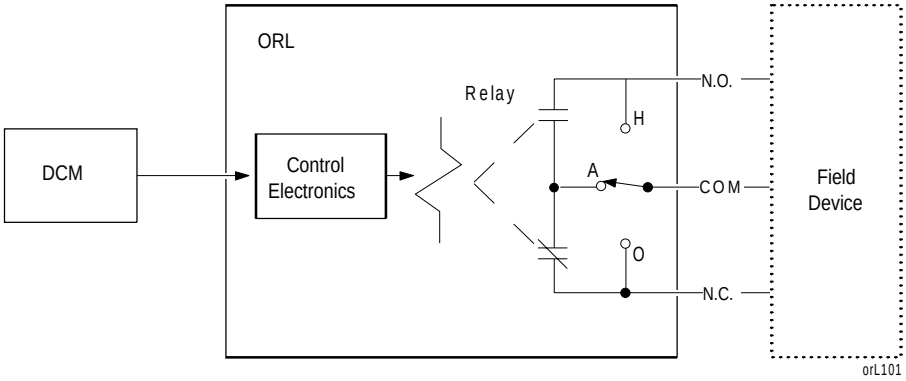

Figure 2: ORL Function Diagram

Under DCM control, the process is:

- The DCM provides control signals to latch and unlatch a relay in the ORL.
- When the relay is energized, its pair of contacts change state.
- A manually controlled HOA switch can disable the DCM control of the ORL outputs, and mechanically produce either an energized (H) or de-energized (O) condition. This control is mechanical, and works even if the NCU or NEU is not powered up. The relay maintains the last command state if loss of power occurs. The status of this switch is reported back to the DCM.

Specifications

Table 2: ORL Function Module Specifications

Category	Specifications For Configurations
Product Code Number	FM-ORL101
Output Range	Two states (contact open/closed with respect to Common) on each of two leads
Output Limits	1 amp
Output Protection	Common output fused at 3 amps with a slow blow, non-field replaceable fuse
Relay Type	Form C relay having a Normally Open (N.O.) and Normally Closed (N.C.) contact with a common connection between them. Contacts are "break-before make" type.
Relay Contact Rating	120 VAC, at 1 amp maximum, pilot duty
Relay Insulation Resistance	1,000 M ohms (min) from contacts to coil
Relay Dielectric Strength	2,000 VAC, 50/60 Hz, (for 1 minute) from contacts to coil 1,000 VAC, 50/60 Hz, (for 1 minute) between N.O. and N.C. contacts
Relay Service Life	Mechanical: 10,000,000 operations. Electrical: 300,000 operations for inductive load at 120 VAC, at 1 amp with a power factor of 0.4
Response Time	Maximum: 100 msec.
Default Condition	At low power or after power up, relay remains in last command state.
Source Power	Power is from the PWR in the NCU/NEU.
Operating Environmental Requirements	32 to 122°F (0 to 50°C) 10 to 90% noncondensing RH 86°F (30°C) maximum dew point
Storage/Shipping Environmental Requirements	-40 to 158°F (-40 to 70°C) 5 to 95% noncondensing RH 86°F (30°C) maximum dew point
Size	0.85 in. H x 2.6 in. W x 7.0 in. L (2.2 cm H x 6.6 cm W x 17.8 cm L)
Weight	0.5 lb (0.22 kg)
Agency Compliance	FCC Part 15 Subpart J—Class A, UL 916, CSA C22.2 No. 205
Agency Listings	UL Listed and CSA Certified as part of Metasys®

Installation Procedures

General Information

When installing and connecting function modules:

- follow NEC and local codes
- observe maximums as specified in the specification table and in these installation guidelines

Motor Starter

Figure 3 diagrams the wiring for motor starter applications using the ORL Function Module.

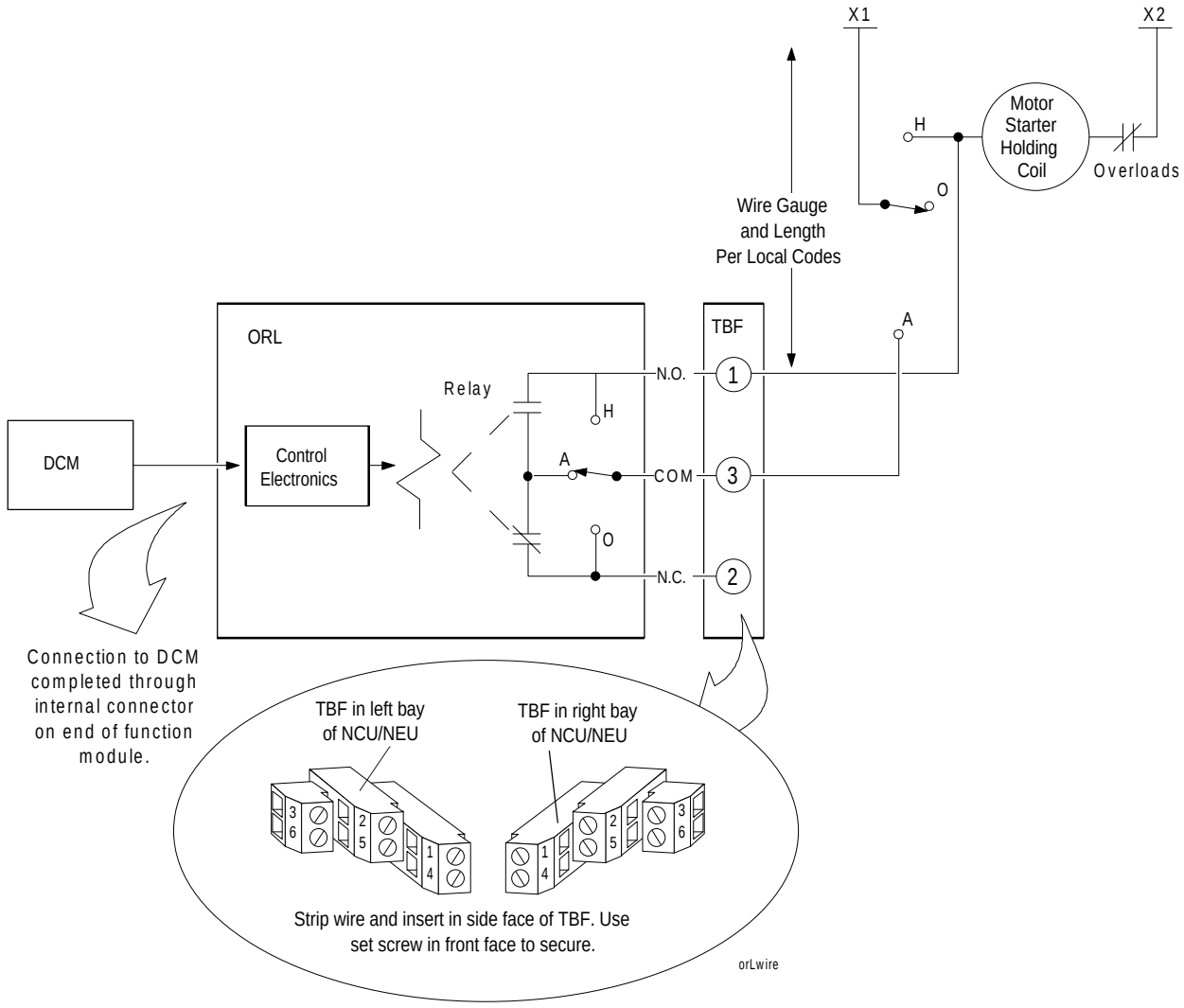

Figure 3: Wiring for Motor Starter Applications

Physical Installation

Assumptions

The following procedure for the physical installation of the ORL Function Module assumes:

- Panel (NCU or NEU) is installed.
- Connections to field devices are complete.
- You have engineering drawings defining details for the installation.
- You are familiar with Metasys Network terminology, and the location and operation of power switches.

Procedure

For each ORL Function Module in the network, perform the following steps.

1. Set the HOA switch to Off.
2. Refer to the engineering drawings, and identify the proper panel and slot number location for this module.
3. Open latch.
4. Insert the module in the appropriate slot.
5. Close the latch, locking the function module in place.

Commissioning Procedures

Physical Verification

Assumptions

The following procedure for the physical verification of the ORL Function Module assumes:

- Physical installation at the NCU/NEU panel is complete.
- Power is available at the panel power supply and at the field device.

Procedure

For each ORL Function Module in the network, perform the following steps.

1. Power up the appropriate DCM power supply.
2. Set the HOA switch to Hand. Verify that the device is activated and/or that the appropriate device is deactivated as defined in the engineering drawings.
3. Set the HOA switch to Off. Verify that the device is activated and/or that the appropriate device is deactivated as defined in the engineering drawings.

Software Verification

Assumptions

The following procedure for the software verification of the ORL Function Module assumes:

- Physical installation at the NCU/NEU panel is complete, including NCM, DCM, FM, etc.
- The operating software for the network has been downloaded to the NCM controlling the panel.
- An Operator Workstation is available.

Procedure

For each ORL Function Module in the network, perform the following steps.

1. Select the System summary that includes this ORL object.
2. Set HOA switch on the ORL to Auto.
3. Adjust the software override command and verify that the object's Value attribute (as seen in the summary) matches the actual value for the field device.

Troubleshooting Procedures

Troubleshooting Chart

Use the diagram in Figure 4 (next page) as a troubleshooting guide. It applies for failures between point objects and field devices connected through an ORL Function Module.

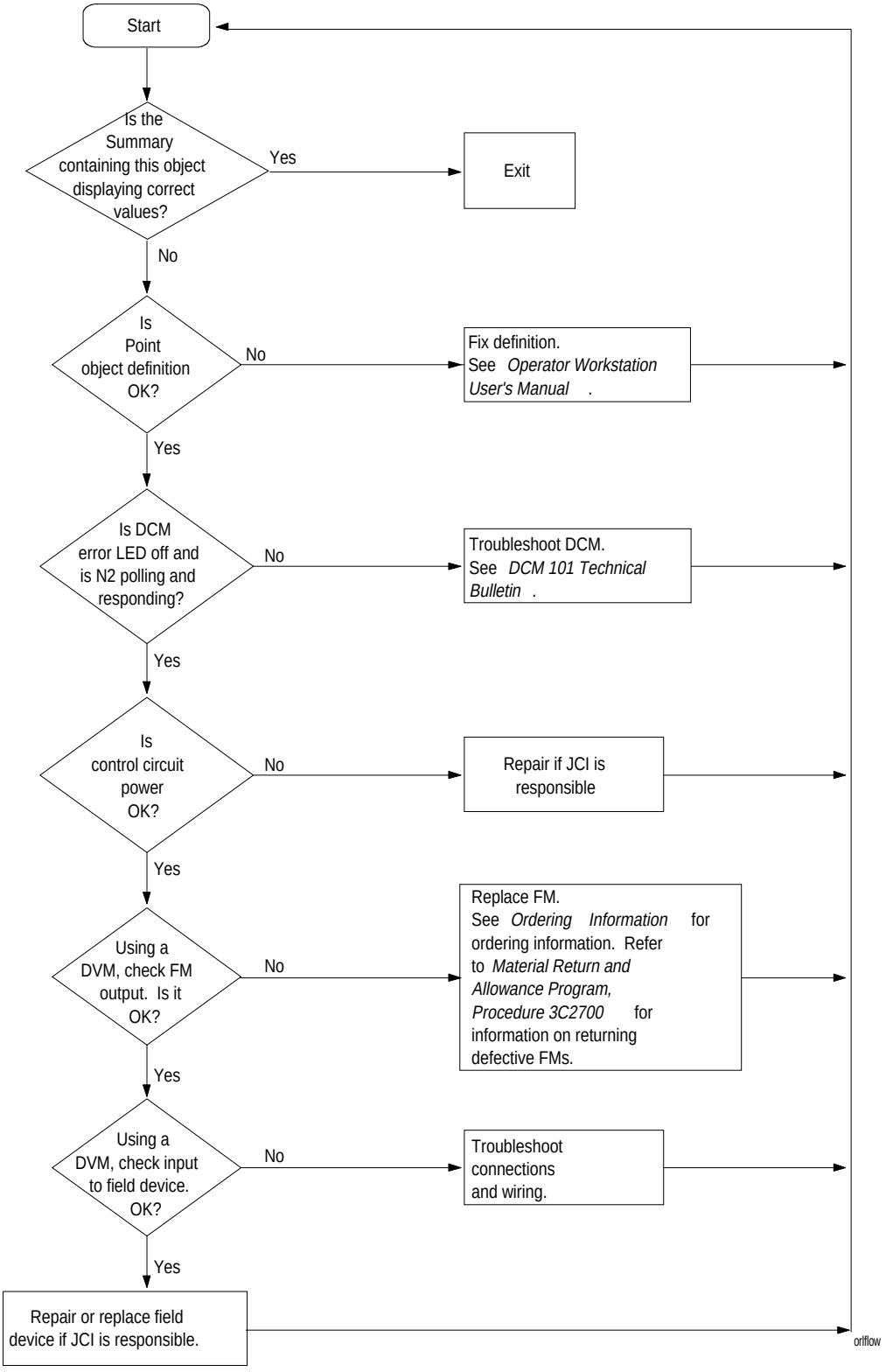

Figure 4: ORL Troubleshooting

Ordering Information

Table 3: Ordering Information

Description	Product Code Number
ORL Function Module	FM-ORL101-0

Notes

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