-METASYS®

Output Triac Electrical Function Module

Order No. 636-057

Introduction

Definition

The Output Triac Electrical (OTE) Function Module is an interface between the DCM and field devices. This function module provides increment/decrement control or pulsed control of one of two outputs. The OTE Function Module features:

- three wire increment/decrement control of externally sourced 24 VAC signals
- Auto/Manual (A-M) switch to enable/disable DCM control
- two momentary pushbutton switches (+ and -) for manual intervention
- feedback indication of the Auto/Manual switch setting to the DCM

The OTE 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.

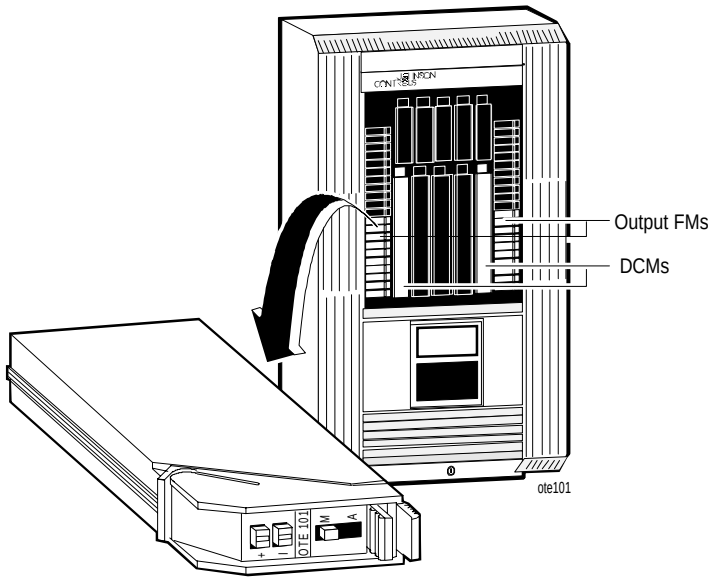

Figure 1: OTE Function Module Locations

Application

The OTE Function Module is typically used to control 24 VAC motor driven devices such as the VA-8050 and M25.

Capabilities

Table 1: OTE Function Module Capabilities

Capability	Description	Purpose
Input from DCM	DCM inputs a digital command.	Allows DCM to provide automatic control of outputs.
Auto/Manual Toggle Switch, and Two Momentary Pushbutton Switches	Switch selects one of: - Auto—DCM/Triac control of outputs. - Manual—DCM/Triac control disabled. Pushbutton switches increment/decrement output in both Auto and Manual modes.	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, outputs are open circuit.	Provides controlled restart.
Output to Field	Module outputs 3-wire increase/decrease control signal using external 24 VAC output signals.	Provides incremental control signals for motor driven actuators.

Theory of Operation

Figure 2 is a function diagram of the Function Module.

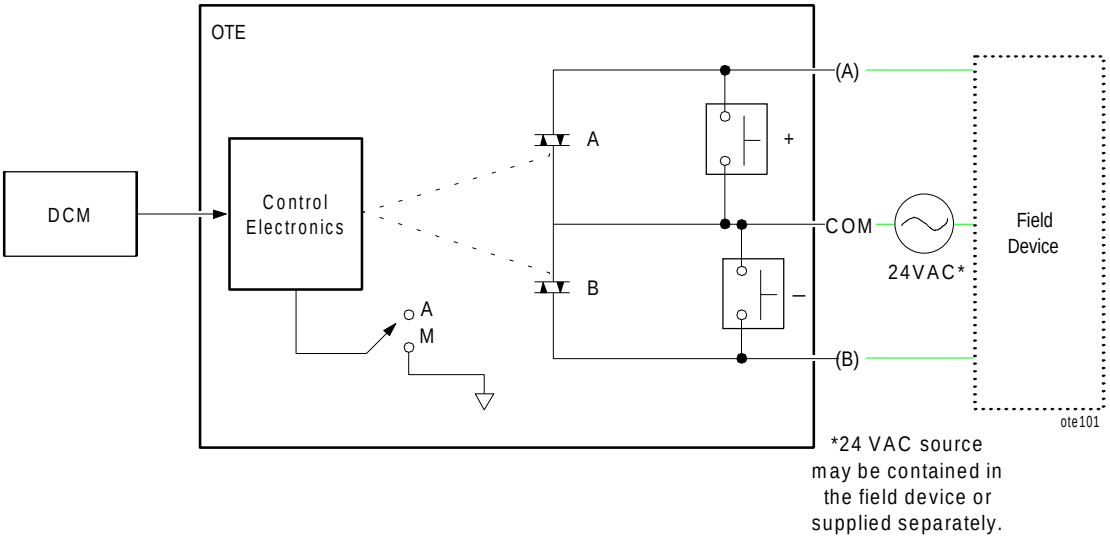

Figure 2: OTE Function Diagram

Under DCM control, the process is:

- The DCM provides control signals to the OTE.
- The control electronics drive two independent Triacs according to the control signals from the DCM.
- When energized, each Triac controls externally sourced 24 VAC at up to 2 amps.

Manual controls are:

- an Auto/Manual switch (A-M) that can disable the DCM control of the OTE Triacs. The status of this switch is reported back to the DCM at all times.
- a momentary pushbutton (+) that closes the same circuit as Triac A
- a momentary pushbutton (-) that closes the same circuit as Triac B

The two pushbuttons operate with the Auto/Manual switch in either position.

Specifications

Table 2: OTE Function Module Specifications

Category	Specifications For Configurations
Product Code Number	FM-OTE101
Output Range	Two states (ON/OFF with respect to Common) on each of two leads
Output Limits	Maximum output current: 2 amps Maximum surge output current: 20 amps for one power cycle, non-repetitive Minimum load current: 70 mA Output voltage drop: 1.6 V
Output Protection	TRIAC outputs fused at 2.5 amp with slow blow, non-field replaceable fuses
Leakage (OFF state)	5 mA
Response Time	Within one-half of the external 24 VAC supply's cycle period (Zero crossing detection ensures that Triac turns on at or near zero voltage, and turns off at or near zero current.)
Source Power	Power is from the PWR in the NCU/NEU. Load requires external Class 2, 24 VAC supply.
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

Lighting Control

Figure 3 diagrams the wiring for 24 VAC lighting control applications using the OTE Function Module.

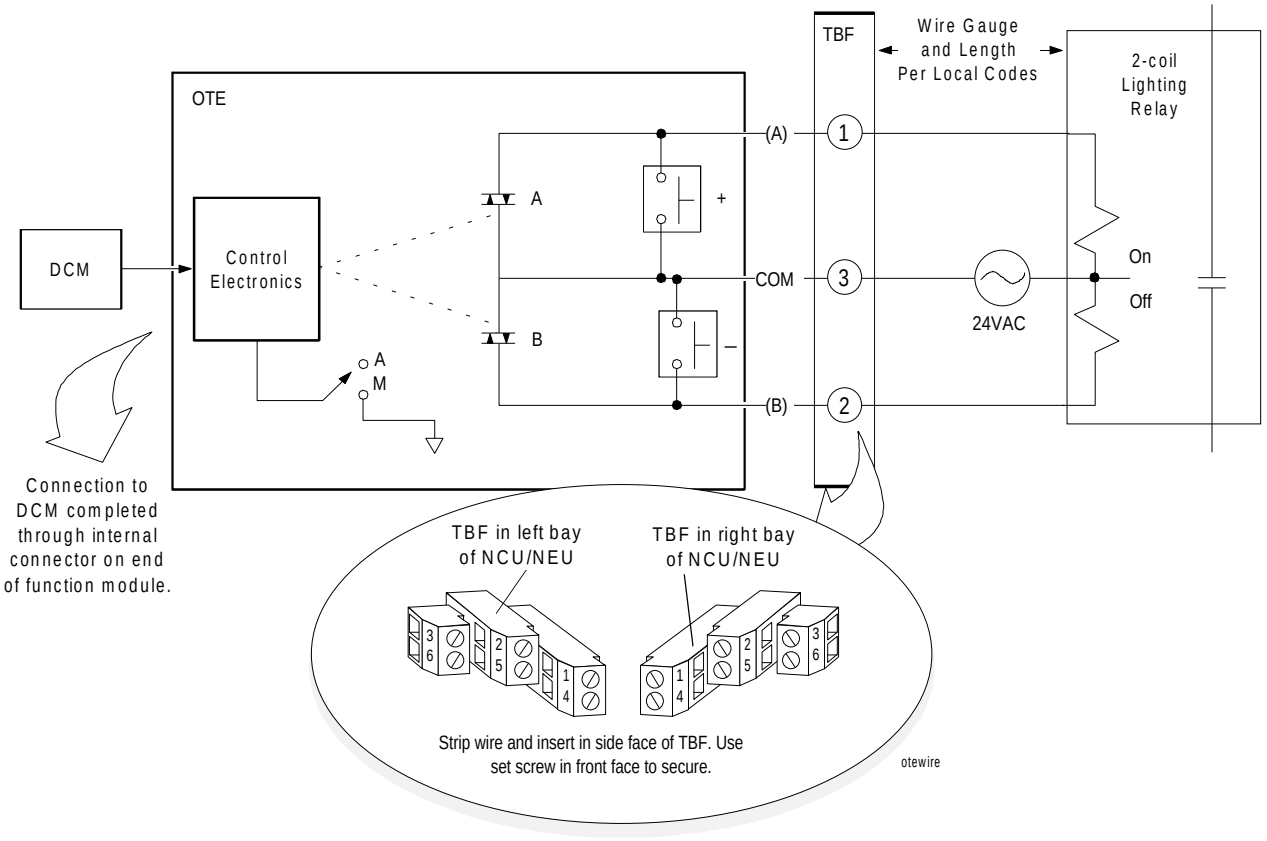

Figure 3: Wiring for Lighting Relay Application

Incremental Control

Figure 4 diagrams the wiring for typical incremental control applications using the OTE Function Module. In this example, the field device is a VA-8050 valve.

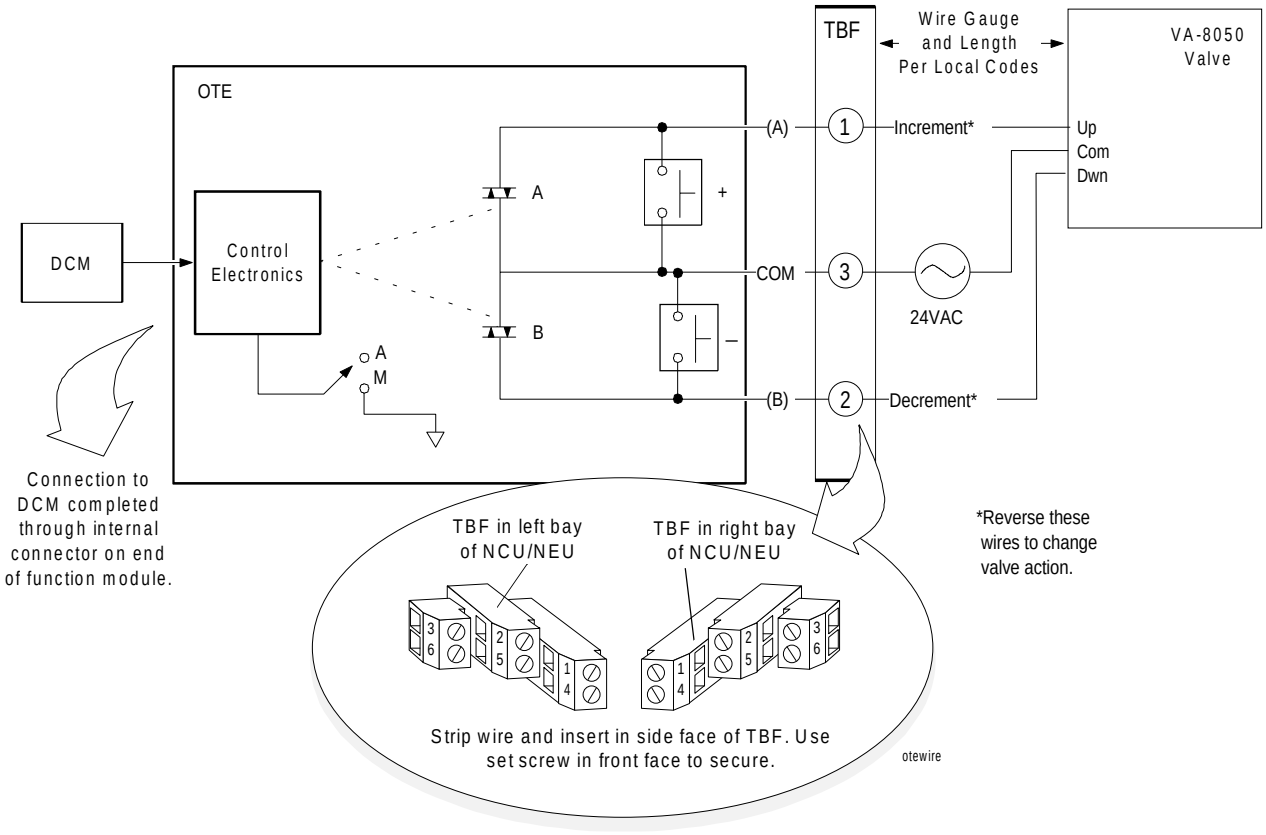

Figure 4: Wiring for Typical Application

Physical Installation

Assumptions

The following procedure for the physical installation of the Output Triac Electrical (OTE) 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 OTE Function Module in the network, perform the following steps.

1. Set the Auto/Manual switch to manual.
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 latch, locking function module in place.

Commissioning Procedures

Physical Verification

Assumptions

The following procedure for the physical verification of the OTE 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 OTE Function Module in the network, perform the following steps.

1. Power up the appropriate DCM power supply.
2. Press switch (+) on the OTE. Verify that appropriate field device increments in the appropriate direction as defined in the engineering drawings.
3. Press switch (-) on the OTE. Verify that the field device increments in the opposite direction.

Software Verification

Assumptions

The following procedure for the software verification of the OTE 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 OTE Function Module in the network, perform the following steps.

1. Select the System summary that includes this OTE object.
2. Set Auto/Manual switch on the OTE 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 5 (next page) as a troubleshooting guide. It applies for failures between point objects and field devices connected through an OTE Function Module.

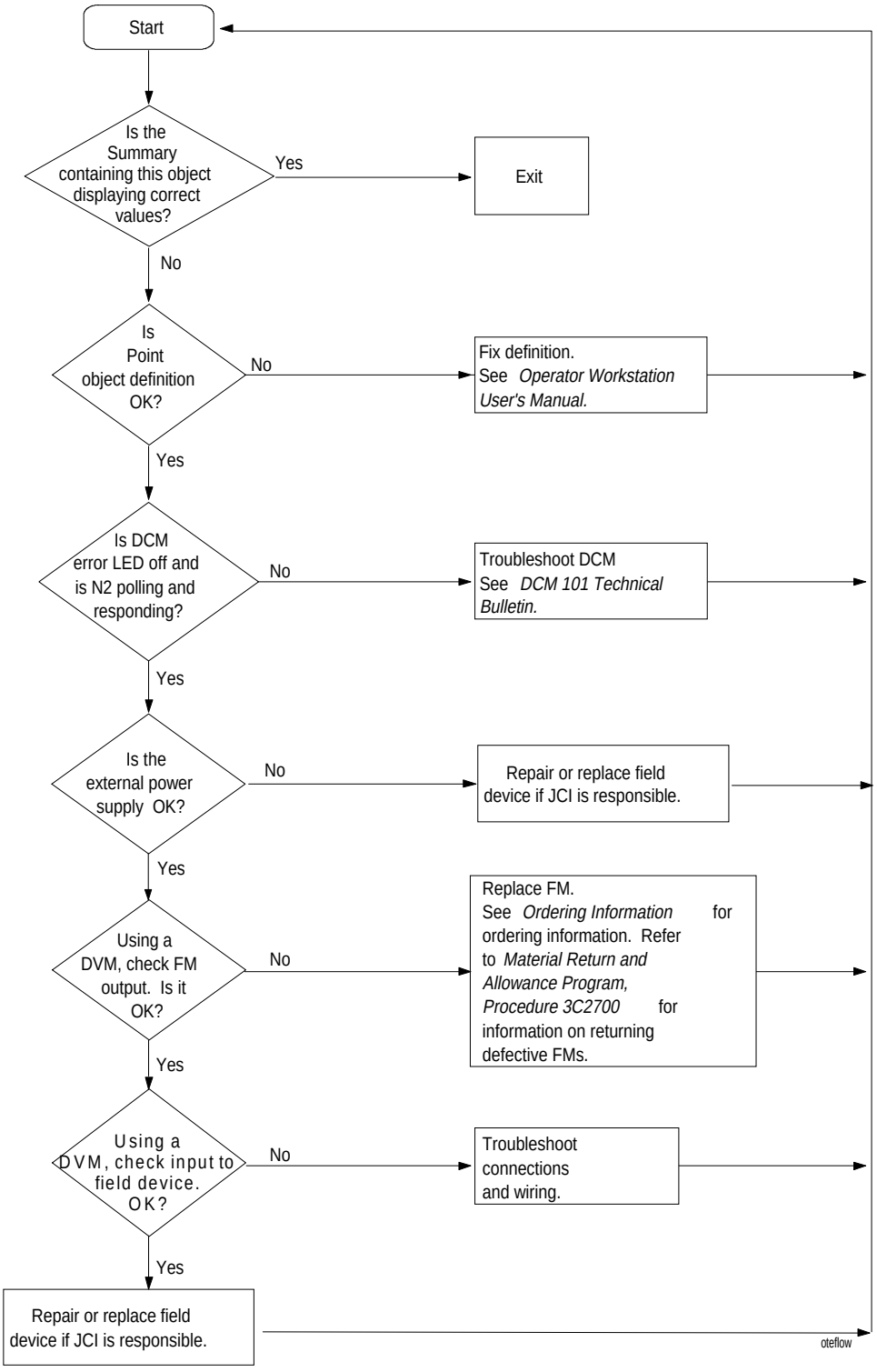

Figure 5: OTE Troubleshooting

Ordering Information

Table 3: Ordering Information

Description	Product Code Number
OTE Function Module	FM-OTE101-0

Notes

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