GNT100-C N4 Actuator

Instruction Manual

TERRACENE INTERNATIONAL LTD.

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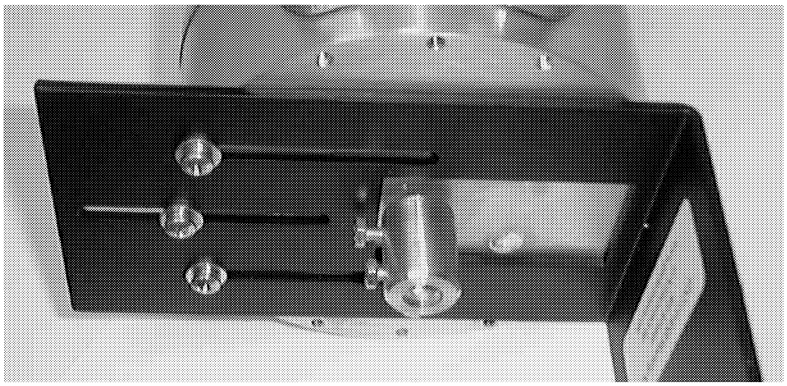
Introduction

The GNT 100-C is a direct mount Actuator with 100 in-lbs of torque. It can be used in applications requiring position control of valves or dampers.
Before installing this actuator:

- Make sure that you understand the information in this manual.
- Obey all the safety instructions.
- If you do not understand any part of this manual, do not continue. Contact GN Electronics.

Note: This manual has been written for the technicians who will install and troubleshoot this product. They should to have adequate knowledge and experience with this kind of equipment.



Note: The actuator bracket can be attached to the actuator in one of four different orientations depending on the mounting requirements of the installation

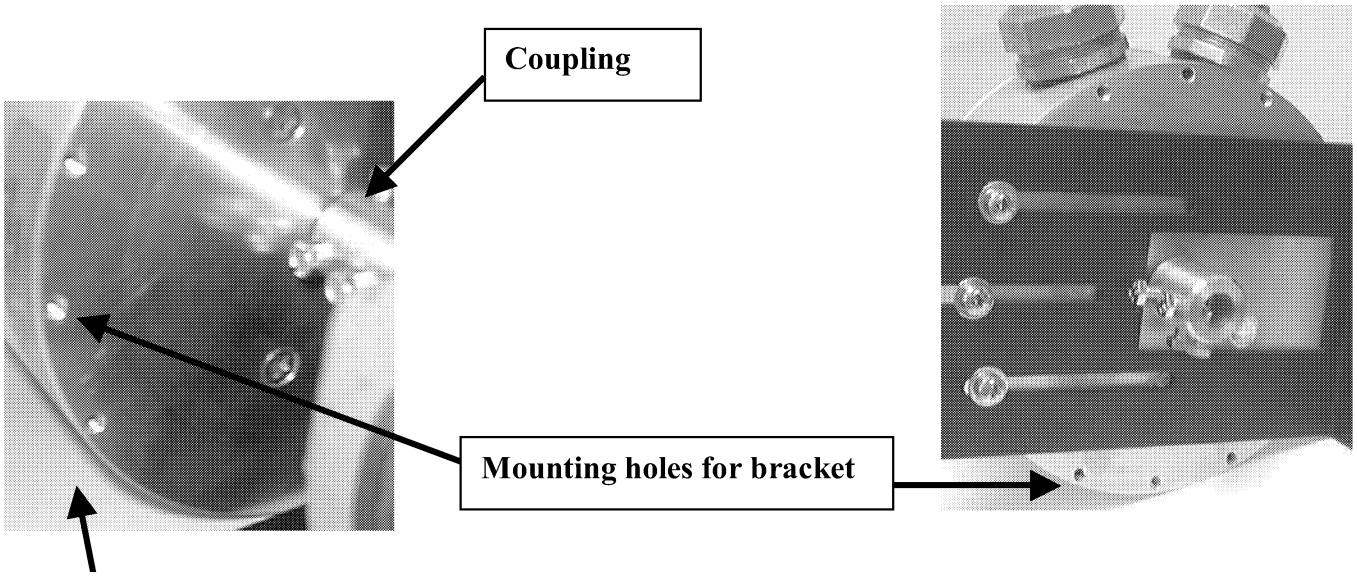
Caution:
Installation and maintenance must conform to the National Electrical Code and all other national and local codes and authorities having jurisdiction. A qualified, licensed technician must install the actuator.

Installation

• When mounting the actuator, be certain that the actuator's drive shaft is precisely aligned with the coupled shaft. Otherwise the shaft will experience lateral forces and stress the actuator
• The weight of wire conduit must be properly supported.

Warning
Local regulations may require guards and/or warnings when connecting the actuator to a component with linkage that could cause finger pinching.

1. Provide temporary power to the actuator and drive it to the minimum position
2. Install the coupling to the actuator shaft.
3. Verify that the rotation direction of the butterfly valve and actuator shaft match while the butterfly valve is in its minimum position.
4. Slide the actuator and coupling assembly onto the butterfly valve shaft and attach carefully, taking precaution not to move the butterfly valve from its minimum position setting.
5. Attach the mounting to the actuator using one set of three mounting holes.(Depending on desired orientation with respect to the valve train)
6. Confirm the position and tightness of all connections.
7. Make all electrical connections and apply power.
8. Verify that the stroke motion is smooth over its entire range.

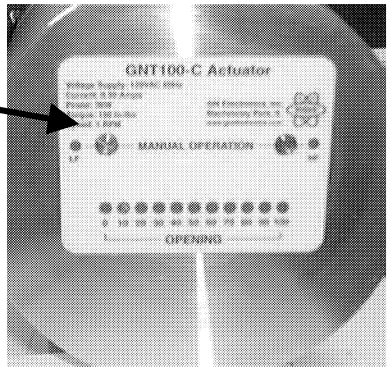


Electrical Wiring

- Knowledgeable and qualified technicians must only perform all installation, wiring, or service activities.
- All system wiring should be run in accordance with the National Electrical Code and all local code requirements.
- Always remove all power to the system before wiring.

Warning: Risk of electric shock. Removal of the cover allows access to conductors carrying hazardous voltages.

Remove the two screws and lift the actuator cover to access the wiring terminal strip and Control Board



Position Indicating LEDs

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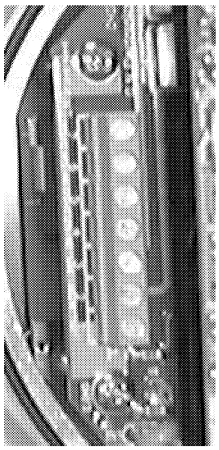
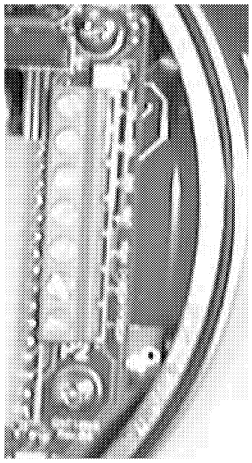
Wiring Connections

The wiring connections are made on the terminal strips located under the actuator cover.

Left Terminal Strip	
7--HFS-C	High Fire position Switch (COM)
6--HFS-NO	High Fire position Switch (NO)
5--LFS-C)	Low Fire position Switch (COM
4--LFS-NO	Low Fire position Switch (NO)
3--LINE	120VAC/ 60Hz
2--NEUTR	Neutral
1--Ground	Earth Ground
Right Terminal Strip	
7--TX(+)	RS 485 Communication
6--TX(-)	RS 485 Communication
5--GND	Logic Ground
4--LFEN	Connect to GND drives actuator to Low Fire (regardless of mode)
3--HFEN	Connect to GND drives actuator to High Fire (regardless of mode)
2--4to20(-)	Input signal Com
1--4to20(+)	Input signal (+)

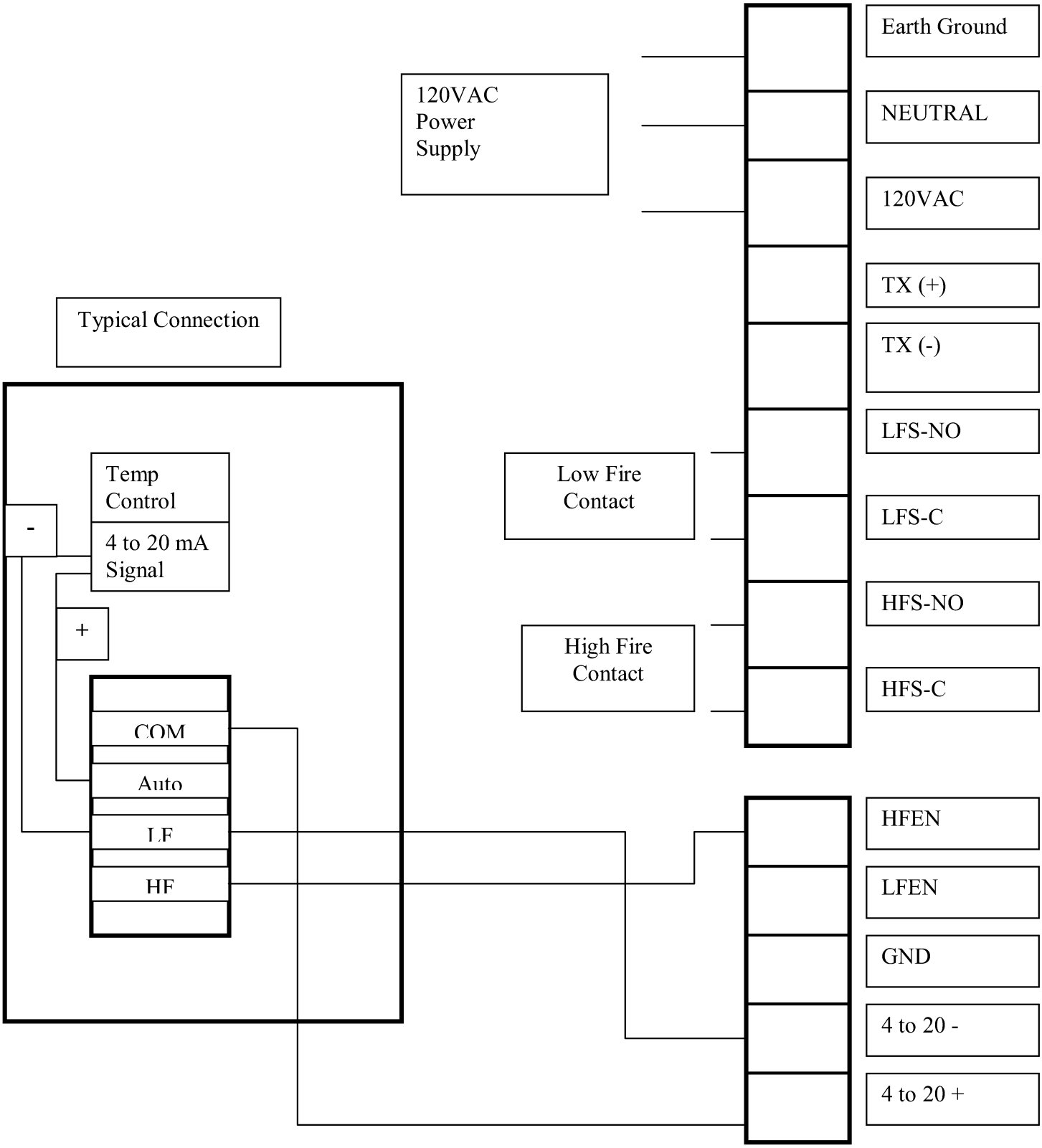




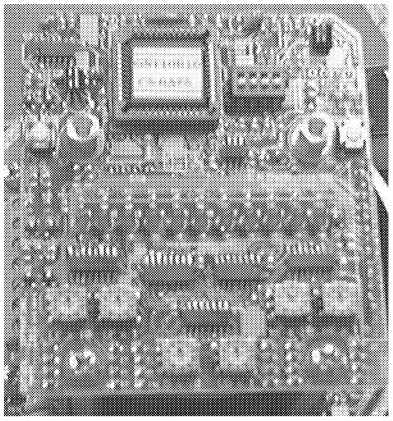
Note: Direction of rotation as viewed from Shaft End of the Actuator

Final inspection:

1. Confirm the alignment and tightness of all mechanical connections.
2. Inspect the terminal wiring for stray wire strands that might cause a short circuit. Check that the wires are properly inserted into the terminals and are not loose. Reinstall the terminal cover.
3. Apply power and verify that the stroke motion is smooth over its entire range.


Earth Ground
NEUTRAL
120VAC
TX (+)
TX (-)
LFS-NO
LFS-C
HFS-NO
HFS-C
120VAC Power Supply
Low Fire Contact
High Fire Contact
Typical Connection
Temp Control
4 to 20 mA Signal
-
+
COM
Auto
LF
HF
HFEN
LFEN
GND
4 to 20 -
4 to 20 +

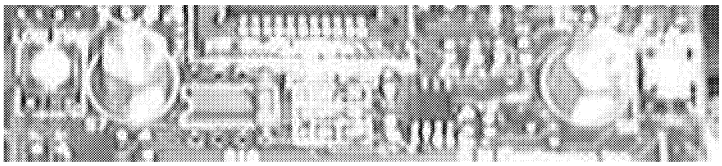
Actuator Control Board (Under top cover)



Actuator Operation and Functions

HF Pushbutton

LF Pushbutton



Manual Mode

Enter Manual Mode:
There are two pushbuttons on the logic board under the actuator cover (Labeled **LF** and **HF**)
Press both of these simultaneously for 5 seconds to enter "**Manual**" Mode.
Manual mode is indicated by the flashing position LEDs

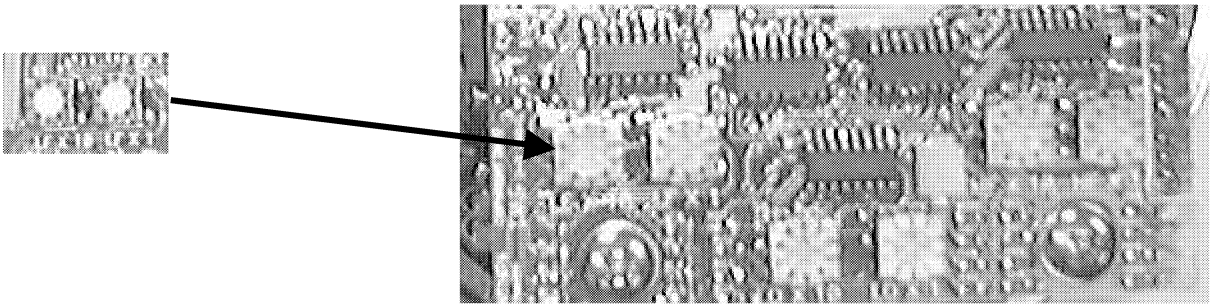
To enter the manual mode permanently there is an internal dipswitch that has to be set

In Manual mode:
Press the LF pushbutton to drive the actuator to the Low Fire position. The flashing LEDs on the cover will indicate actuator shaft position
While in Manual mode the LED indicators will blink Press the HF pushbutton to drive the actuator to the High Fire position.

Enter Automatic Mode: The Actuator will enters the automatic mode on power up of the actuator and 60 sec (1 minute) after the last manual pushbutton action. The automatic mode can also be re-entered by pressing the LF and HF pushbuttons simultaneously again

There are also internal inputs to drive it to high fire (HFEN) for purge and low fire (LFEN) for light off. When either of these inputs are connected to GND the actuator will be driven in the corresponding direction.
The high fire and low fire switches are set by internal dials for the degree position where they are to actuate.

Setting the Low, High Fire and Start Positions

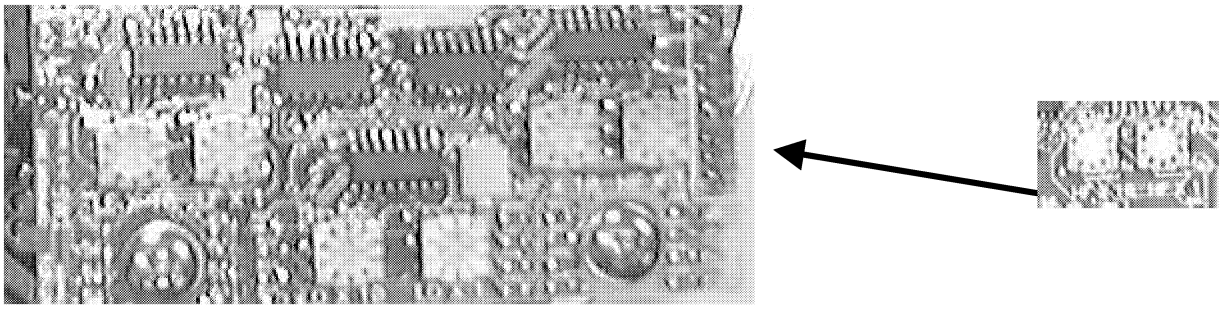


Low Fire Switch Setting (Max range 0° to 40°)

Locate the two rotary switches on the microcomputer board (S1 & S2). These are labeled **LF X 10** and **LF X 1**.

Using a small instrument type screwdriver, turn the switch settings t the desired low fire value. The **LF X 10** switch sets the 10s position and the **LF X 1** Switch sets the ones position.
Example: For a low fire position setting of 37 the **LF X 10** switch would be set to "3" and the **LF X 1** switch would be set to "7".

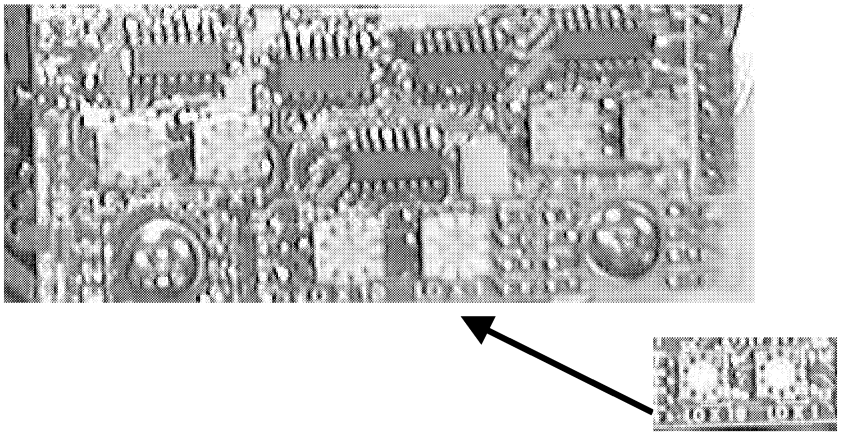
Note: The actual low fire switch actuation point will be 5° greater than the value set with the rotary switches
Note: If the value set for the low fire position is greater than 40°, the value of low fire will default to 40°



High Fire Switch Setting (Max range 50° to 90°)

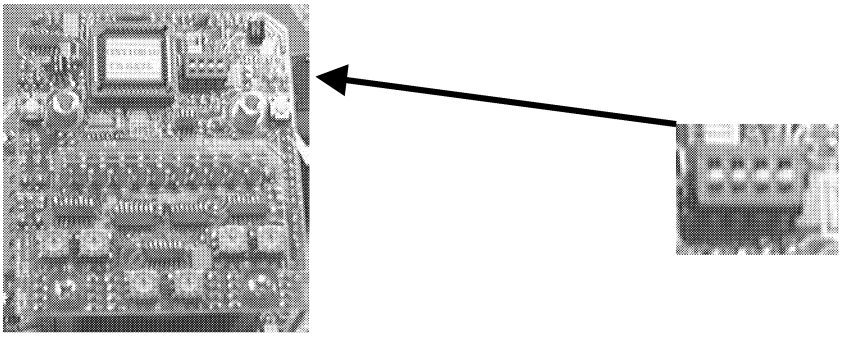
Locate the two rotary switches on the microcomputer board (S2 & S3). These are labeled **HF X 10** and **HF X 1**.
Using a small instrument type screwdriver, turn the switch settings t the desired low fire value. The **HF X 10** switch sets the 10s position and the **HF X 1** Switch sets the ones position.
Example: For a high fire position setting of 86 the **HF X 10** switch would be set to "8" and the **HF X 1** switch would be set to "6".

Note: The actual high fire switch actuation point will be 5° less than the value set with the rotary switches.
Note: If the value set for the high fire position is less than 50°, the value of high fire will default to 50°
The 4 to 20 signal span will adjust to be from LF to HF positions



Start Position Switch Setting (Max range LF° to 90°)

Locate the two rotary switches on the microcomputer board (S5 & S6). These are labeled **LO X 10** and **LO X 1**.
Using a small instrument type screwdriver, turn the switch settings t the desired low fire value. The **LO X 10** switch sets the 10s position and the **LO X 1** Switch sets the ones position.
Example: For a start position setting of 36 the **LO X 10** switch would be set to "3" and the **LO X 1** switch would be set to "6".



Internal DIP switches

The Dipswitch set is located under the actuator cover next to the microcomputer.

DIP Switch	On (Up)	Off (Down)
1	Manual Mode pushbuttons always active (4 to 20 mA input deactivated)	Feature is not activated
2	Clockwise to High Fire	Counter-Clockwise to High Fire
3	Manual Mode pushbuttons always active (4 to 20 mA input activated too)	Feature is not activated
4	For Future Use	

Note: Dip switch number 1 supercedes DIP Switch number 3. If both switches are turned on then the **Manual Mode pushbuttons are always active and the analog 4 to 20 mA input is deactivated.**

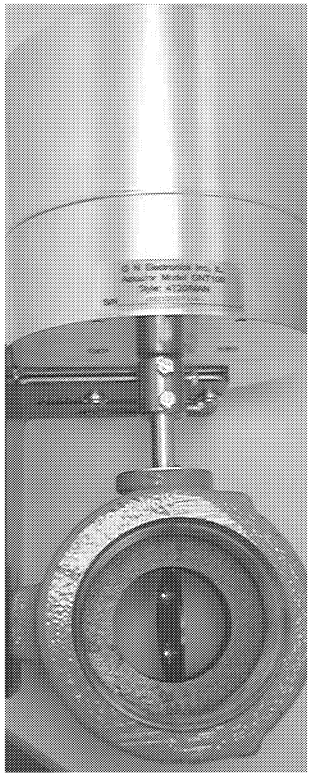
Specifications

Power Supply • 120VAC (+10%, -15%), 50/60 Hz
Power consumption: 30 Watts
Maximum Operating Temperature • +60°C (140°F) @ 25% Duty Cycle
Minimum Operating Temperature • -20°C (0°F)
Humidity • 5 to 95% RH non-condensing
NEMA 4 Construction
Inputs, 120VAC 60Hz CW, 120VAC 60Hz CCW, optional 4 to 20mA input
Shaft Rotation • 0 to 90°
Speed • 15 seconds for 90° @ 60Hz
Torque • 100 in-lbs
3/8" liquid tight conduit
Terminal Connections • (22 to 14 AWG)
Switch contact current rating: 8A
Shipping Weight • 2.2 kgs. (5.0 lbs.)

Dimensions

Overall: 5inches L X 4 inches W X 4 ½ inches H

Shaft Detail
8mm (0.258") Diameter
15mm (0.59") Long



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The GMT100 actuator is warranted for one (1) year from the date of delivery.
GN Electronics standards terms and conditions apply.
Defective units should be returned to G N Electronics. Units should be well packed in a suitable container encased in appropriate stuffing.

All products should **be shipped prepaid to:**
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