## Final Control Elements

VALVE POSITIONER
(for LonWorks; built-in SSR)

Functions & Features
• LonWorks compatible
• Used for 24 - 200 V AC electric actuator position control
• Position feedback via potentiometer (100 Ω - 10 kΩ unadjusted)
• Direct motor driving with built-in SSR (with zero-cross circuit)
• Restart control timer built-in to prevent motor overheating due to frequent on/off switching

Typical Applications
• Retrofitting existing equipment for LonWorks compatibility


```
        50
       (1.97)
                    80
                   (3.15)
        136
       (5.35)
            mm (inch)
```
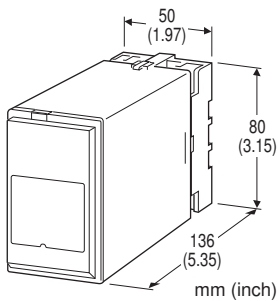
MODEL: MEXL–11[1]–[2][3]

ORDERING INFORMATION
• **Code number**: MEXL-11[1]-[2][3]
Specify a code from below for each [1] through [3].
(e.g. MEXL-111-G/Q)
• Specify the specification for option code /Q (e.g. /C01/S01)

FEEDBACK RESISTANCE
1: Potentiometer

CONTROL OUTPUT
1: SSRs incorporated

[1] BREAK
0: None
1: With

[2] POWER INPUT
AC Power
A: 24 V AC
B: 100 V AC

C: 110 V AC
G: 200 V AC
H: 220 V AC

[3] OPTIONS
Other Options
blank: none
/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)
COATING (For the detail, refer to M-System's web site.)
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating
TERMINAL SCREW MATERIAL
/S01: Stainless steel

EXTERNAL INTERFACE FILE
MEXL external interface file MEXL.XIF downloadable at M-System's web site.

GENERAL SPECIFICATIONS
Construction: Plug-in
Connection: M3.5 screw terminals
Screw terminal: Chromated steel (standard) or stainless steel
Housing material: Flame-resistant resin (black)
Full-closed position adjustment range: 0 - 25 % (front)
Full-open position adjustment range: 75 - 100 % (front)
Deadband adjustment: 0.1 – 8.0 % (front adj.; refer to the table below)
Isolation: LonWorks to feedback potentiometer to control output to power to ground
RUN LED:
Blinking at 0.5 Hz in normal operating conditions
Blinking at 2 Hz when lock protection timer is operating
Blinking at 5 Hz for 3 seconds during Wink
Manual operation switch: Manual full-close or full-open position command

Deadband adjustment

Deadband adj. SW	Deadband (%)
0	0.1
1	0.3
2	0.5
3	0.7
4	1.0
5	1.5
6	2.0
7	3.0
8	5.0
9	8.0

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LonWorks COMMUNICATION

Neuron chip: TMPN3120
Transceiver: FTT-10A (78 kbps, free topology)
Service pin: Node structure, for installation
Reset switch: Neuron chip reset
Service LED: ON when no valid application code is held or when malfunctioning
Blinking at 0.5 Hz when network address information is not configured

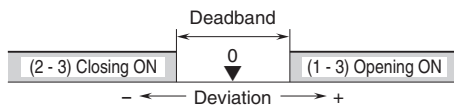## INPUT SPECIFICATIONS

• **Feedback potentiometer**: 100 Ω – 10 kΩ
Minimum span: 50 % of totalresistance
Excitation: 3.3 V DC

OUTPUT SPECIFICATIONS

■ **Control Output**: SSR (zero-crossing); 20 - 240 V AC0.1 - 1 A

 Output operation: Terminal no. in (   ).

Deadband

| (2 - 3) Closing ON | 0 | (1 - 3) Opening ON |

− ←— Deviation —→ +

INSTALLATION

Power input
•**AC**: Operational voltage range: rating ±10 %,
50/60 ±2 Hz, approx. 3 VA
Operating temperature: -5 to +60°C (23 to 140°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Mounting: Surface or DIN rail
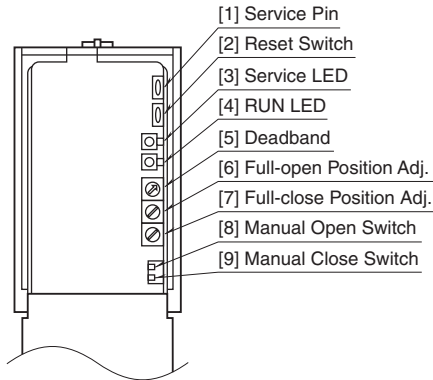**Weight**: 300 g (0.66 lb)

PERFORMANCE

Insulation resistance: ≥ 100 MΩ with 500 V DC
Dielectric strength: 2000 V AC @ 1 minute (LonWorks or feedback potentiometer to control output to power to ground)
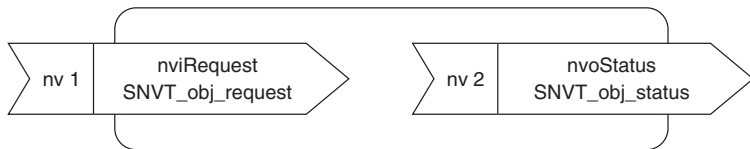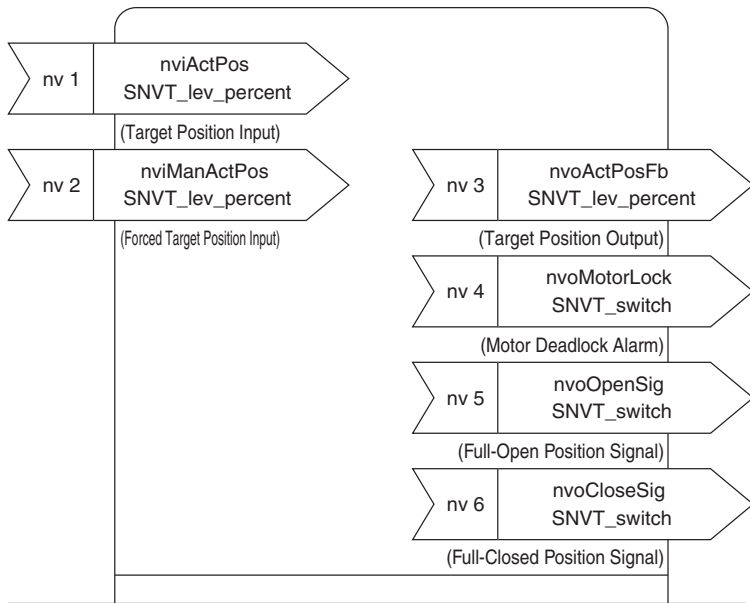500 V AC @1 minute (LonWorks to feedback potentiometer)

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MODEL: MEXL

EXTERNAL VIEW

[1] Service Pin
[2] Reset Switch
[3] Service LED
[4] RUN LED
[5] Deadband
[6] Full-open Position Adj.
[7] Full-close Position Adj.
[8] Manual Open Switch
[9] Manual Close Switch

NETWORK VARIABLES

Refer to the instruction manual for details.

Node Object #0

nv 1	nviRequest SNVT_obj_request

nv 2	nvoStatus SNVT_obj_status

Application Object #1

nv 1	nviActPos SNVT_lev_percent

(Target Position Input)

nv 2	nviManActPos SNVT_lev_percent

(Forced Target Position Input)

nv 3	nvoActPosFb SNVT_lev_percent

(Target Position Output)

nv 4	nvoMotorLock SNVT_switch

(Motor Deadlock Alarm)

nv 5	nvoOpenSig SNVT_switch

(Full-Open Position Signal)

nv 6	nvoCloseSig SNVT_switch

(Full-Closed Position Signal)

Configuration Parameter

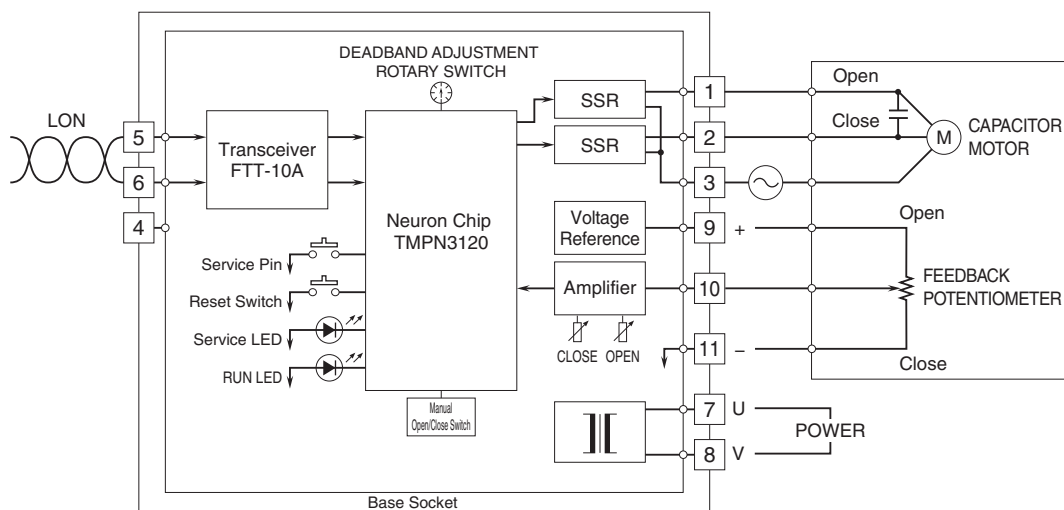| nciDelayTime	SNVT_time_sec	(Send Start Delay Time)
nciSndHrtBt	SNVT_time_sec	(Send Time Interval)
nciActPosSndDiff	SNVT_lev_percent	(Target position change triggering send)
nciErrDetectTime	SNVT_time_sec	(Motor Deadlock Detection Time)
nciOpenSigPos	SNVT_lev_percent	(Full-open Signal Threshold)
nciCloseSigPos	SNVT_lev_percent	(Full-closed Signal Threshold)
nciRestartTime	SNVT_time_sec	(Restart Limiting Timer)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

CLAMP (top & bottom)

20 (.79)

DIN RAIL 35mm wide

7.8 (.31)

2–4.5 (.18) dia. MTG HOLE 25 (.98) deep

11–M3.5 SCREW

80 (3.15)

50 (1.97)

107 (4.21)

136 (5.35)

[3.3 (.13)]

80 (3.15)

40 (1.57)

50 (1.97)
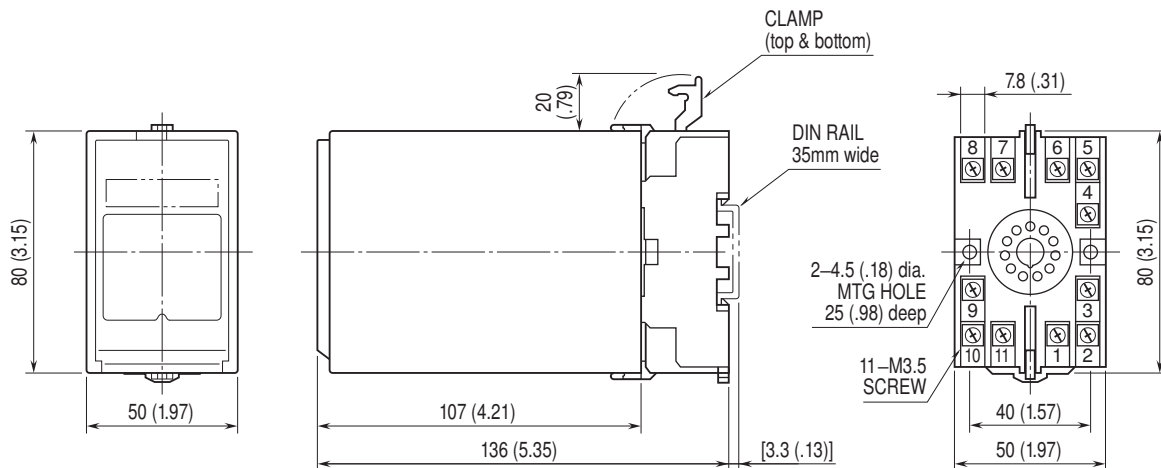
• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

DEADBAND ADJUSTMENT ROTARY SWITCH

LON

Transceiver FTT-10A

Neuron Chip TMPN3120

Service Pin

Reset Switch

Service LED

RUN LED

Manual Open/Close Switch

SSR

SSR

Voltage Reference

Amplifier

CLOSE OPEN

Base Socket

Open

Close

CAPACITOR MOTOR

Open

FEEDBACK POTENTIOMETER

Close

POWER

Note: Note that when limit switches inserted in motor wiring, the making/breaking may cause stress on the SSRs.

EXPLANATIONS OF TERMS

•SSR (Solid State Relay)

Composed only of semiconductor parts, SSR is free from arc discharge or chattering which is typical with electromagnetic relays. It features excellent characteristics against vibration, physical impact or other environmental conditions.

•Zero-Cross Function

SSR with zero-cross function turns on when AC power voltage is near zero, creating delay of switching when input is provided in the middle of an wave cycle, thus limiting transient switching noise voltage and rush current.

⚠ Specifications are subject to change without notice.