Plug-in Signal Conditioners *MX-UNIT*

STRAIN GAUGE TRANSMITTER
(front configurable)

MODEL **MXLCF**

MODEL & SUFFIX CODE SELECTION

MXLCF–❑❑–❑

MODEL

STRAIN GAUGE

S1 : 0.0 – 1.0mV/V
S2 : 0.0 – 3.0mV/V
S3 : 0.0 – 10.0mV/V
S4 : 0.0 – 30.0mV/V

OUTPUT

Current
Z1 : Range 0 – 20mA DC
Voltage
V1 : Range -1 – +1V DC
V2 : Range -10 – +10V DC

POWER INPUT

AC Power
M2 : 100 – 240V AC

DC Power
R : 24V DC
P : 110V DC

ORDERING INFORMATION

Specify code number. (e.g. MXLCF-S1V1-M2)

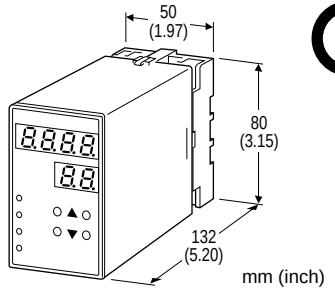
GENERAL SPECIFICATIONS

Construction: Plug-in
Connection: M3.5 screw terminals
Housing material: Flame-resistant resin (black)
Isolation: Strain gauge input or excitation or contact input to output to power
Overrange output: Approx. -15 – +115%
Excitation adjustment: 0.1 – 12.0V (front)
Zero adjustment: 0 – 100% (front)
Gain adjustment: 0 – 9.99 (front)
Tare adjustment: -999.9 – 999.9% (front or by external contact)

■**DISPLAY**

LED: 8 mm (.31") 7 segment, red
Number of display digits: 4 digits for DATA display; 2 digits for ITEM display
Scaling: -9999 – 9999 (decimal point position selectable)
PV indication: Input signal in engineering units
Overrange indication: Flashing LEDs
Power saving mode: Displays turn off if the keys are untouched for a preset time period
LEDs: Red lights turn on with negative polarity and/or with contact input.

ISOLATION



Functions & Features

- Provides a DC output signal proportional to a bridge type strain gauge utilized in load cells and pressure transducers
- Compatibility with strain gauges of various bridge resistances and output ratings
- Supplies required excitation voltage; 0.1 – 12.0V adjustable; ≥85Ω, ≤120mA
- Wide-range adjustments: 0 – 100% for zero and gain
- Response time ≤10 msec.
- Isolation up to 2000V AC
- Loop test output

Typical Applications

- Weighing system for tanks, hoppers and silos
- Weighing system using cranes
- Pressure sensor utilizing strain gauges
- Float level meter utilizing strain gauges

INPUT & OUTPUT

■**STRAIN GAUGE INPUT**

•**Strain Gauge**

Rated output from strain gauge:
0.0 – 1.0mV/V
(-9.99 – +9.99mV, span 1.0 – 9.99mV)
0.0 – 3.0mV/V
(-30.0 – +30.0mV, span 3.0 – 30.0mV)
0.0 – 10.0mV/V
(-99.9 – +99.9mV, span 10.0 – 99.9mV)
0.0 – 30.0mV/V
(-300.0 – +300.0mV, span 30.0 – 300.0mV)
Consult factory for use with a compression/tension load cells.

•**Excitation**: 0.1 – 12.0V adjustable (0.1V increments)
Maximum current: 120mA
Load resistance: 85Ω minimum

■**CONTACT INPUT**: TTL level (5V-CMOS level), open collector or dry contact (saturation voltage ≤1V, sink surrent 0.5mA)

■**OUTPUT**

•**DC Current**: 0 – 20mA DC (selectable range)
Operational range: 0 – 24mA DC
Load resistance: 600Ω maximum

•**DC Voltage**
Code V1: -1 – +1V DC (selectable range)
Operational range: -1.15 – +1.15V DC
Load resistance: 1000Ω minimum
Code V2: -10 – +10V DC (selectable range)
Operational range: -11.5 – +11.5V DC
Load resistance: 10kΩ minimum

INSTALLATION

Power input
AC: Operational voltage range 85 – 264V; 47 – 66 Hz, approx. 16VA
DC: Operational voltage range for R: 24V ±10%, P: 85 – 150V; ripple 10% p-p max.; approx. 7W
Operating temperature: -5 to +55°C (23 to 131°F)
Operating humidity: 30 to 90% RH (non-condensing)
Mounting: Surface or DIN rail
Dimensions: W50×H80×D132 mm (1.97"×3.15"×5.20") See General Spec. Sheet Figure A-1.
Weight: 450 g (0.99 lbs)
Terminal assignment: See General Spec. Sheet Figure B-1.

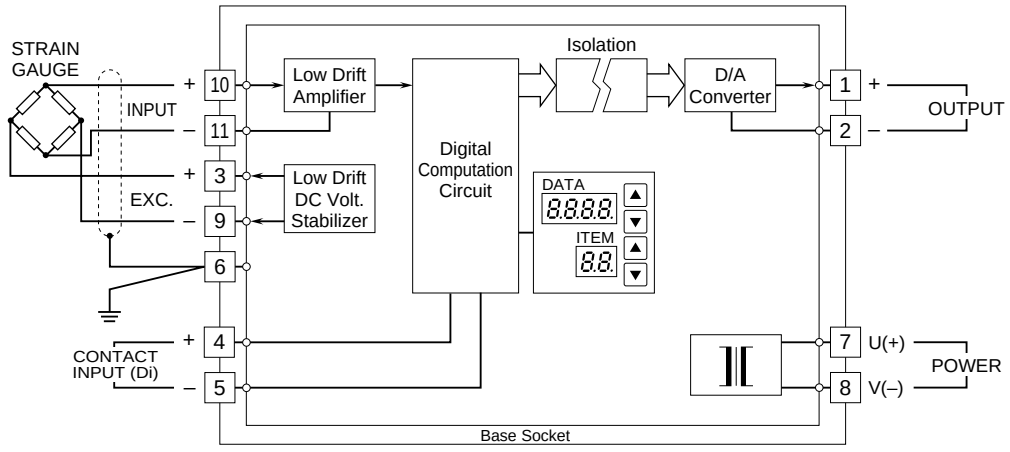
PERFORMANCE in percentage of span

Accuracy: Input + output (with ITEM 17 set to 5)
Input: ±0.1%
Output: ±0.1%
Display accuracy: Input accuracy ±1 digit (with 0.0 – 100.0 scaling)
Temp. coefficient: ±0.015%/°C (±0.008%/°F) of max. span
Response time (0 – 90%)
(ITEM 17 setting) 0: approx. 5 milliseconds
1: approx. 10 milliseconds
2: approx. 15 milliseconds
3: approx. 20 milliseconds
4: approx. 40 milliseconds
5: approx. 70 milliseconds
Excitation: Set value ±250mV
Line voltage effect: ±0.1% over voltage range
Insulation resistance: ≥100MΩ with 500V DC
Dielectric strength: 2000V AC @1 minute (strain gauge input or excitation or contact input to output to power to ground)

STANDARDS & APPROVALS

CE conformity: EMC Directive (89/336/EEC)
EMI EN61000-6-4
EMS EN61000-6-2
Low Voltage Directive (73/23/EEC)
Installation category II
Pollution degree 2
Max. operating voltage 300V
Strain gauge input or excitation or contact input to output to power – Basic insulation

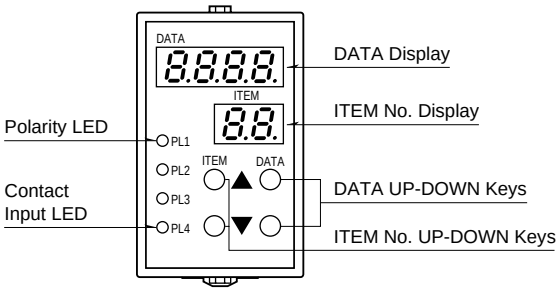
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications subject to change without notice.

FRONT PANEL CONFIGURATION & PROGRAMMING

■PROGRAMMING PROCEDURE



1. Press ITEM UP or DOWN key until ITEM display indicates “01”.
2. Press DATA UP or DOWN key and choose “2” on DATA display.
   1 : Data indication only.
   2 : All parameters are modifiable.
3. Press ITEM UP or DOWN key until ITEM display shows the ITEM No. you need to change.
4. Press DATA UP or DOWN key and choose a DATA No. or value you need on DATA display.
5. Repeat above 3 and 4. (Entered data is stored 1 sec. after the operation has been complete.)
6. Press ITEM UP or DOWN key until ITEM display indicates “01”.
7. Press DATA UP or DOWN key and choose “1” on the display.
8. Press ITEM UP or DOWN key until ITEM display indicates “P”. DATA display shows process input. You can now check data setting by choosing ITEM No.

Note : DO NOT press UP and DOWN keys simultaneously.

ITEM	MDF. CODE	DATA	CONTENTS	DEFAULT
P	N/A	-9999 – 9999	Input display in engineering unit (as set in ITEM 14/15)	—
01		1, 2	Modification code 1 : Data indication only. 2 : All parameters are modifiable.	1
02	N/A	0 – 99	Status indication (“0” is normally indicated.) 0 : Normal 1 : Memory error 10 : PV overrange (out of -9999 to 9999) 20 : Input overrange (out of -15 to +115%)	0
03	N/A	0, 1, 2, 3	Input range code 0 : S1 (0.0 – 1.0mV/V) 1 : S2 (0.0 – 3.0mV/V) 2 : S3 (0.0 – 10.0mV/V) 3 : S4 (0.0 – 30.0mV/V)	User specified
04	N/A	0, 1, 2	Output range code 0 : V1 (-1 – +1V) 1 : V2 (-10 – +10V) 2 : Z1 (0 – 20mA)	User specified
05	2	0.1 – 12.0	Excitation voltage (V)	1.0
06	2	0010 – 9999 0.010 – 3.000 0.010 – 9.999 0.10 – 30.0	Sensor sensitivity S1 : 0.0 – 1.0mV/V S2 : 0.0 – 3.0mV/V S3 : 0.0 – 10.0mV/V S4 : 0.0 – 30.0mV/V Used when adjusting the sensor sensitivity by its rating value. Set ITEM 07 before 06.	1.0mV/V 3.0mV/V 10.0mV/V 30.0mV/V
07	2	-9.999 – 9.999 -30.00 – 30.00 -99.99 – 99.99 -300.0 – 300.0	0% input voltage S1 : -9.999 – 9.999mV S2 : -30.00 – 30.00mV S3 : -99.99 – 99.99mV S4 : -300.0 – 300.0mV Sensor's zero adjustment. Approximate offset voltage.	0.00mV 0.00mV 0.00mV 0.0mV
08	2	-9.999 – 9.999 -30.00 – 30.00 -99.99 – 99.99 -300.0 – 300.0	100% input voltage S1 : -9.999 – 9.999mV S2 : -30.00 – 30.00mV S3 : -99.99 – 99.99mV S4 : -300.0 – 300.0mV Used when adjusting the sensor sensitivity with an actual load. Set ITEM 07 before 08.	
09	2	10.0 – 100.0	Load ratio (%) Used when adjusting the sensor sensitivity with an actual load.	100.0
10	2	-999.9 – 999.9	Tare adjustment (%)	0.0
11/L	N/A	-15.0 – 115.0	Input indicated in % with ITEM 01 DATA 1 (of the range set in ITEM 06/07/08) Loop test output with ITEM 01 DATA 2 (‘L’ is indicated as ITEM No.) (Use DATA UP/DOWN key to set the output signal.)	—
12	2	-99.99 – 99.99	Zero adjustment (%) (fine adj. of the value set in ITEM 06/07/08)	0.00
13	2	0.000 – 9.999	Gain adjustment (fine adj. of the value set in ITEM 06/07/08)	1.000
14	2	-9999 – 9999	Display range scaling 0% *1	0
15	2	-9999 – 9999	Display range scaling 100% *1	100

ITEM	MDF. CODE	DATA	CONTENTS		DEFAULT
16	2	0, 1, 2, 3	Decimal point position	0 : _ _ _ _ 1 : _ _ _ . _ 2 : _ _ . _ _ 3 : _ . _ _ _	1
17	2	0, 1, 2, 3, 4, 5	Moving average 0: No 1: 4 samples 2: 8 samples 3: 16 samples 4: 32 samples 5: 64 samples		1
18	2	0, 1, 2, 3	Contact input function	0 : Tare adjustment 1 : Peak hold 2 : Valley hold 3 : Sample hold	0
20	2	0, 1 – 60	Power-saving mode	0 : Continuous display 1 – 60 : Time before display turned off (minutes)	10
21	2	-1.00 – 1.00	Output code V1	0% output voltage (V) *2	-1.00
22	2	-1.00 – 1.00		100% output voltage (V) *2	1.00
21	2	-10.0 – 10.0	Output code V2	0% output voltage (V) *2	-10.0
22	2	-10.0 – 10.0		100% output voltage (V) *2	10.0
21	2	0.0 – 20.0	Output code Z1	0% output current (mA) *2	4.0
22	2	0.0 – 20.0		100% output current (mA) *2	20.0
23	N/A	–	ROM version		–

*1: Of the range set in ITEM 06/07/08. ITEM 14 < ITEM 15. *2: ITEM 21 < ITEM 22.