Super-mini Signal Conditioners *Mini-M Series*

THERMOCOUPLE TRANSMITTER
(PC programmable)

MODEL **M2XT**

MODEL & SUFFIX CODE SELECTION

M2XT–❑❑–❑❑

MODEL

INPUT THERMOCOUPLE*1

1 : (PR)	**8** : S
2 : K (CA)	**9** : C (WRe 5-26)
3 : E (CRC)	**N** : N
4 : J (IC)	**U** : U
5 : T (CC)	**L** : L
6 : B (RH)	**P** : Platinel II
7 : R	**0** : Specify

OUTPUT*2

Current

Z1 : Range 0 – 20mA DC

Voltage

V1 : Range -2.5 – +2.5V DC

V2 : Range -10 – +10V DC

POWER INPUT

AC Power	**DC Power**
M2 : 100 – 240V AC	**R** : 24V DC
	P : 110V DC

STANDARDS & APPROVALS

/N : Without CE or UL

/CE: CE marking

/UL : UL approval (CE marking)

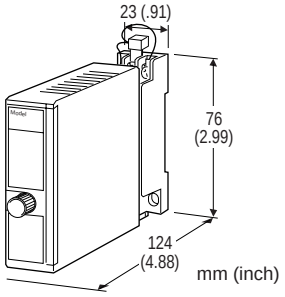
*1: Configurator software is used to change input type and temperature range.

*2: Configurator software is used to change output over the described range of the selected suffix code. For changing out of this range, set the Output Range Selectors inside the unit before software adjustment.

ORDERING INFORMATION

Specify code number and variables. Default setting (table to the right) will be used if not otherwise specified. K thermocouple setting will be used if the input code is not specified.

- **Code number** (e.g. M2XT-2Z1-M2/CE)
- **Temperature range** (e.g. 0 – 800°C)
- **Output range** (e.g. 4 – 20mA DC)



Functions & Features

• Accepting direct input from a thermocouple and providing a standard process signal • PC programmable • High accuracy • Wide ambient temperature range • User's temperature table can be used • CE marking • UL approval

Typical Applications

• High-accuracy cold junction compensation benefits narrow span measurements • 0.1μA burnout sensing enables long distance transmission with minimum offset drifts • Electric furnace (isolation ensured even when 200V AC power for heater leaks through furnace wall) • No burnout type can connect to a single T/C in parallel with a recorder • Ideal for quick spare part

INPUT CODE	DEFAULT	
1	PR	0 – 1600°C
2	K	0 – 1000°C
3	E	0 – 500°C
4	J	0 – 500°C
5	T	0 – 300°C
6	B	0 – 1800°C
7	R	0 – 1600°C
8	S	0 – 1600°C
9	C (WRe 5-26)	0 – 2000°C
N	N	0 – 1000°C
U	U	0 – 300°C
L	L	0 – 500°C
P	Platinel II	0 – 1200°C

OUTPUT CODE	DEFAULT
Z1	4 – 20mA DC
V1	0 – 1V DC
V2	1 – 5V DC

RELATED PRODUCTS

- **JX configurator connection kit** (model: JXCON)

GENERAL SPECIFICATIONS

Construction: plug-in
Connection: M3 screw terminals (torque 0.8 N·m)
Housing material: flame-resistant resin (black)
Isolation: input to output to power
Overrange output: approx. -15 – +115%
(Negative current output is not provided.)
Manual zero/span adjustments: See Front View.
Programming: downloaded from PC; T/C type, temp. range, output range, zero and span, simulating output, etc.
Burnout protection: upscale standard; downscale or no burnout optional by programming (Set to "no burnout" when the M2XT is connected with another instrument in parallel.)
Linearization: standard
Cold junction compensation: CJC sensor attached to the input terminals
Status indicator LED: flashing patterns indicate different operating status of the transmitter.
Configurator connection: 2.5 dia. miniature jack; RS-232C level

INPUT & OUTPUT

■INPUT: thermocouples
Zero suppression/elevation: available
Input resistance: 1MΩ minimum
Burnout sensing: 45nA ±10%
Temperature range

T/C	USABLE RANGE	
	°C	°F
(PR)	0 to 1760	32 to 3200
K (CA)*	-270 to +1370	-454 to +2498
E (CRC)*	-270 to +1000	-454 to +1832
J (IC)	-210 to +1200	-346 to +2192
T (CC)*	-270 to +400	-454 to +752
B (RH)*	0 to 1820	32 to 3308
R	-50 to +1760	-58 to +3200
S	-50 to +1760	-58 to +3200
C (WRe 5-26)	0 to 2315	32 to 4199
N*	-270 to +1300	-454 to +2372
U	-200 to +400	-328 to +752
L	-200 to +900	-328 to +1652
P (Platinel II)	0 to 1395	32 to 2543

*For temperatures ranges near lower limit of the usable range, the transmitter may not satisfy the described accuracy.

■OUTPUT
•DC Current: 0 – 20mA DC
Operational range: 0 – 24mA DC
Minimum span: 1mA
Zero suppression: available
Load resistance: output drive 15V maximum
(e.g. 4 – 20mA: 750Ω [15V/20mA])

•DC Voltage: -2.5 – +2.5V DC for V1;
-10 – +10V DC for V2
Operational range: -3 – +3V DC for V1;
-11.5 – +11.5V DC for V2
Minimum span: 250mV for V1; 1V for V2
Zero suppression/elevation: available
Load resistance: output drive 1mA maximum
(e.g. 1 – 5V: 5000Ω [5V/1mA])

INSTALLATION

Power input
AC: operational voltage range 85 – 264V (90 – 264V for UL);
47 – 66 Hz, approx. 2.3VA
DC: operational voltage range for R: 24V ±10% or P: 85 – 150V (110V ±10% for UL);
approx. 0.9W (ripple 10% p-p max.)
Operating temperature: -30 to +60°C (-22 to +140°F)
Operating humidity: 30 to 90% RH (non-condensing)
Mounting: surface or DIN rail
Dimensions: W23×H81×D124 mm (0.91"×3.19"×4.88")
See General Spec. Sheet Figure A-2.
Weight: 120 g (0.26 lbs)
Terminal assignment: See General Spec. Sheet Figure B-4.

PERFORMANCE

Accuracy: input accuracy + output accuracy

Input accuracy*: (% of input range)

	(PR)	: ≤ ±0.04 (%)
K	(CA)	: ≤ ±0.01
E	(CRC)	: ≤ ±0.01
J	(IC)	: ≤ ±0.02
T	(CC)	: ≤ ±0.03
B	(RH)	: ≤ ±0.06
R		: ≤ ±0.04
S		: ≤ ±0.04
C	(WRe 5-26)	: ≤ ±0.02
N		: ≤ ±0.02
U		: ≤ ±0.02
L		: ≤ ±0.02
P	(Platinel II)	: ≤ ±0.02

(e.g. K, 0 – 800°C: 0.02% [usable span 1640°C/800°C×0.01])

Output accuracy*: ≤ ±0.01% of output range

*Inversely proportional to the span

Cold junction compensation error: ±0.2°C or ±0.4°F maximum (at 20°C ±10°C or 68°F ±18°F)

Temp. coefficient: ±0.015%/°C (±0.008%/°F) at -5 to +55°C (23 to 131°F) of I/O range (input ±0.002%/°C, output ±0.013%/°C)

Response time: ≤0.9 seconds (0 – 90%)

Burnout response: ≤10 seconds

Line voltage effect: ±0.1% over voltage range

Insulation resistance: ≥100MΩ with 500V DC

Dielectric strength: 2000V AC @1 minute (input to output to power to ground)

STANDARDS & APPROVALS

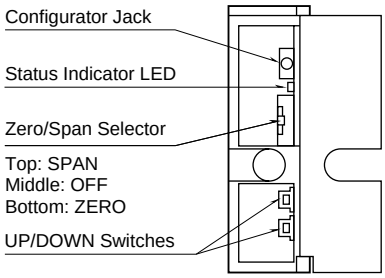
CE conformity: EMC Directive (89/336/EEC)
- EMI EN61000-6-4
- EMS EN61000-6-2

Low Voltage Directive (73/23/EEC)
- Installation category II
- Pollution degree 2
- Max. operating voltage 300V
- Input or output to power – Reinforced insulation
- Input to output – Basic insulation

Approval: UL/C-UL nonincendive Class I, Division 2, Groups A, B, C, and D hazardous locations (UL 1604, CAN/CSA-C22.2 No.213); UL/C-UL general safety requirements (UL 3111-1, CAN/CSA-C22.2 No.1010-1)

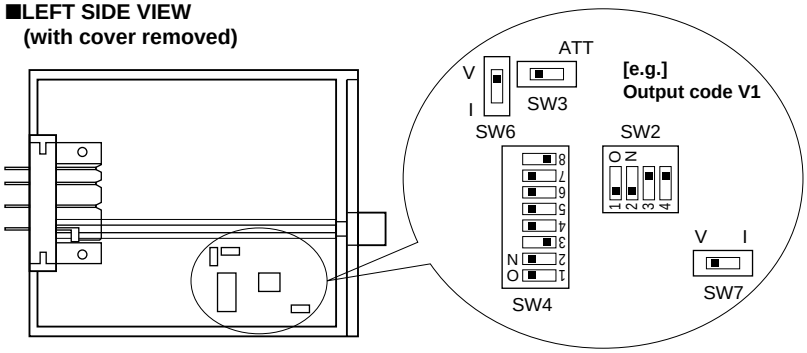
FRONT & SIDE VIEWS

■FRONT VIEW (with cover open)



The front cover cannot be turned open by 180 deg. when there is no extra space between units.

■LEFT SIDE VIEW (with cover removed)



Output Range Selectors

Manual zero/span adjustments: ±5% (set to 0% and 100% respectively at factory)

Zero/span selector

ZERO: UP/DOWN switches usable for zero adjustment.

OFF: UP/DOWN switches unavailable.

SPAN: UP/DOWN switches usable for span adjustment.

UP/DOWN switches

UP: Pressing UP increases adjusted values.

DOWN: Pressing DOWN decreases adjusted values.

(Press both switches at once for resetting zero/span adjustments.)

Input range selector: fixed to Bottom position

Output range selectors

	SW2				SW3
	1	2	3	4	
V1	OFF	OFF	ON	ON	Not ATT
V2	OFF	OFF	ON	ON	Not ATT
Z1	ON	ON	OFF	OFF	Not ATT

	SW4							
	1	2	3	4	5	6	7	8
V1	ON	ON	OFF	ON	ON	*	ON	OFF
V2	ON	OFF	ON	OFF	ON	*	ON	OFF
Z1	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

	SW6		SW7	
	V	I	V	I
V1	ON	OFF	ON	OFF
V2	ON	OFF	ON	OFF
Z1	OFF	ON	OFF	ON

*Don't care.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

