

Super-mini Signal Conditioners with Display Mini-M M2E Series

SELF-SYNCH TRANSMITTER

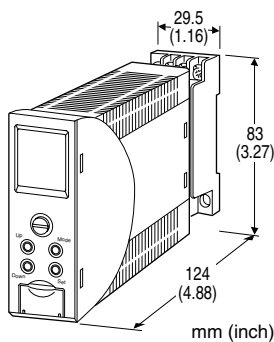
(PC programmable)

Functions & Features

- Converts position signals from a self-synchronizing motor into a DC signal proportional to the rotating shaft position
- Linearization
- 0 % and 100 % output range can be easily selected with the front buttons
- Field selectable output range
- OEL display with good visibility

Typical Applications

- Position indicator using self-synch
- Tank gauge
- Sounding level meter



MODEL: M2EXS-[1][2]

ORDERING INFORMATION

- Code number: M2EXS-[1][2]
- Specify a code from below for each [1] and [2].
(e.g. M2EXS-K3/Q)
- Specify the specification for option code /Q
(e.g./C01/S01/SET)

INPUT

Self-synch signal

OUTPUT - Field-selectable

◆ DC Output

- Current output: 0 - 20 mA DC
- Voltage output: -5 - +5 V DC
- Voltage output: -10 - +10 V DC

[1] POWER INPUT

AC Power

K3: 100 - 120V AC

(Operational voltage range 85 - 132 V, 47 - 66 Hz)

L3: 200 - 240V AC

(Operational voltage range 170 - 264 V, 47 - 66 Hz)

[2] 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

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet
(No. ESU-5137)

RELATED PRODUCTS

- M2E configurator software (model: M2ECFG)

Downloadable at M-System's web site.

A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual (EM-5147) for the M2E configurator for applicable cable types.

GENERAL SPECIFICATIONS

Construction: Plug-in

Connection: M3 screw terminals (torque 0.8 N·m)

Screw terminal: Chromated steel (standard) or stainless steel

Housing material: Flame-resistant resin (gray)

Isolation: Input to output to power

Overrange output: Approx. -5 to +105 % (Not available for current output not greater than 0 mA)

Output zero fine adj. range: -5 to +5% (front button)

Output span fine adj. range: 95 to 105% (front button)

Output setting: DIP Switch on side panel (refer to the instruction manual)

Configuration: Program with front buttons or Via PC.

Programmable features include:

- Angle offset
- linearization
- Zero and span adjustments

(Refer to the operating manual (EM-5137-B) for detail)

Configurator connection: 2.5 dia. miniature jack;

RS-232-C level

DISPLAY

Display functions: Displays and sets measured range, engineering unit

Effective visual area: Approx. 15.6 × 20.8 mm (0.61" × 0.82")

Number of pixels: 68 × 95 (horizontal × vertical)

Character color: Yellow

Display life: Approx. 60000 hours
(Expected time for the Display brightness to be reduced to 50 % when the Display is used continuously with brightness setting 2 in 25 °C)

Display type: OEL display

Display digit: Negative 5 digits, positive 6 digits (-99999 to 999999)

Decimal point position: Selectable

INPUT SPECIFICATIONS

Measurement range: 0 - 359.99°

Minimum span: 60°

Input resistance: 1 MΩ min.

Rated input voltage: 90 V AC

OUTPUT SPECIFICATIONS

■ DC Current

Output range: 0 - 20 mA DC

Conformance range: 0 - 21mA DC

Minimum span: 1 mA

Offset: Lower range can be any specific value within the output range provided that the minimum span is maintained.

Load resistance: Output drive 15 V max.
(Not available to output less than 0 mA, output range may not be extended to -5 %)

■ DC Voltage

Output range: -5 - +5 V DC, -10 - +10 V DC

Conformance range: -5.5 - +5.5 V DC, -11 - +11 V DC

Minimum span: 250 mV, 1 V

Offset: Lower range can be any specific value within the output range provided that the minimum span is maintained.

Load resistance: Output drive 1 mA max.

INSTALLATION

Power Consumption

•AC:

≤ 5 VA for 100 - 120 V

≤ 7 VA for 200 - 240 V

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 10 to 85 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: Approx. 200 g (0.44 lb)

PERFORMANCE

Accuracy: Input accuracy + output accuracy
See CALCULATION EXAMPLES OF OVERALL ACURACY.
Inversely proportional to the span.

• Input accuracy

±0.2 % of span or ±0.5°, whichever is greater.

Display accuracy:

Input display: Input accuracy ±1 digit

Output display: Input accuracy + output accuracy ±1 digit

• Output accuracy: ±0.04 % of max. output range

Temp. coefficient: ±0.015 %/°C (±0.008 %/°F) of max. span

Input resolution: 6000 - 36000

Output resolution: Max. 16 bits

Response time: ≤ 0.5 sec. (0 - 90 %)

Line voltage effect: ±0.1 % over voltage range

Insulation resistance: ≥ 100 MΩ with 500 V DC

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

CALCULATION EXAMPLES OF OVERALL ACCURACY

[Example] Input span 60°, output 4 - 20 mA

• Input accuracy = input (60°) X input accuracy (0.2 %) = 0.12°

0.12° < 0.5° thus

Input accuracy = (0.5°) ÷ 60° X 100 = 0.83 %

• Output accuracy = output range span (20 mA) ÷ output span setting (16 mA) X 0.04 % = 0.05 %

Overall accuracy = 0.83 + 0.05 = ±0.88 %

STANDARDS & APPROVALS

EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Installation Category II

Pollution Degree 2

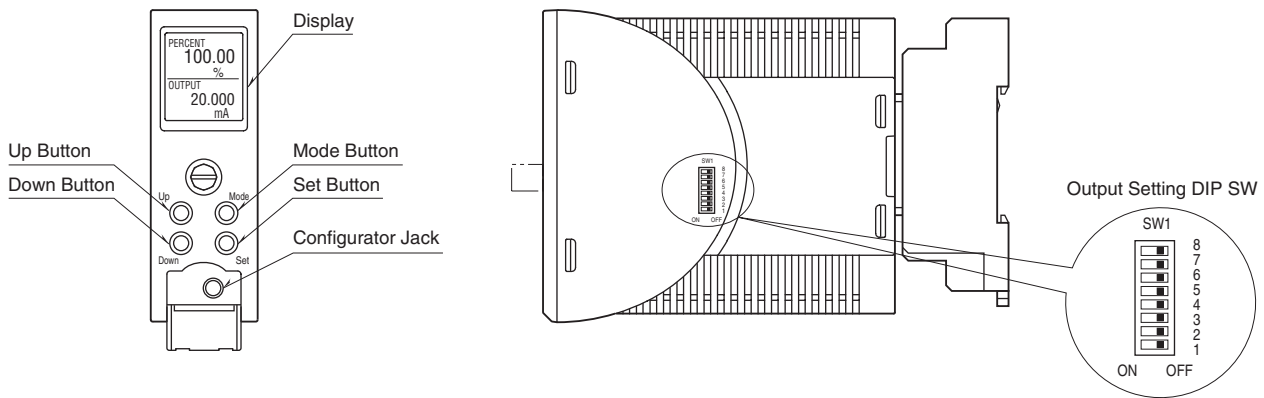
Input or output to power: Reinforced insulation (300 V)

Input to output: Basic insulation (300 V)

RoHS Directive

EN 50581

EXTERNAL VIEW



COMPONENT	FUNCTION
Display	Indicates present values, setting values and abnormal information. Two types of present values at upper and lower are displayed by setting.
Mode Button	Used to shift from measuring mode to each setting mode. Destination to shift is changed by the time pressing and holding the button. Used to return from each setting mode to measuring mode. (press and hold for 2 sec. or more)
Set Button	Used to change setting value of setting parameter. When at setting changeable state, used to enter (save) the setting value. Used to move on through digits of setting value for input/output scaling at setting changeable state,
Up Button	Used to shift through setting parameter, and to increase or select setting value.
Down Button	Used to shift through setting parameter, and to decrease or select setting value.
Configurator Jack	Used to configure with M2E configurator software (model: M2ECFG). At the same time, set the lockout setting of the unit to 'lock'.

Refer to the operating manual (EM-5137-B) for detailed procedures.

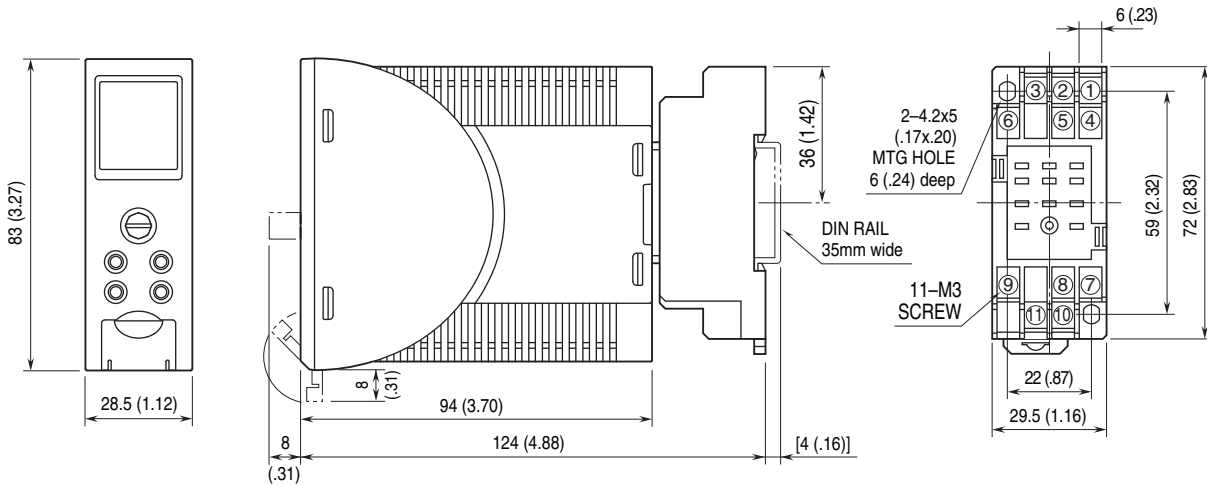
PARAMETER LIST

It is available to configure or confirm settings shown below by using front button. Configuring or confirming with PC is available when using M2E configurator software (model: M2ECFG).

MODE	ITEM	SETTING PARAMETER	RANGE	UNIT	INITIAL VALUE
Basic setting	01	Lockout setting	Lock / Unlock	—	Lock
	06	Angle offset	—	Deg.	0.00
	07	Angle span	60.00 - 359.99	Deg.	270.00
	10	Rotating direction	CW/CCW	—	CW
	14	0 % input scaling	-99999 – 999999	—	0.00
	15	100 % input scaling	-99999 – 999999	—	100.00
	16	Input decimal point	No decimal point The number of decimal places : 1 – 5	—	2 places of decimals
	17	Output range	0 – 20mA -5 – +5V -10 – +10V	—	0 – 20mA
	18	0 % output setting	0.000 – 19.000	mA	4.000
			-5.000 – 4.750 -10.000 – 9.000	V V	
	19	100 % output setting	1.000 – 20.000	mA	20.000
			-4.750 – 5.000 -9.000 – 10.000	V V	
	20	0 % output scaling	-99999 – 999999	—	0.00
	21	100 % output scaling	-99999 – 999999	—	100.00
22	Output decimal point	No decimal point The number of decimal places : 1 – 5	—	2 places of decimals	
23	Overrange output < 0%	-5.00 – 0.00	%	-5.00	
24	Overrange output > 100%	100.00 – 105.00	%	105.00	
26	Loop test	-5.00 – 105.00	%	Cancel	
Option	60	Unit (INP Scaling)	Choose from 68 types *	—	%
	61	Unit (OUT Scaling)	Choose from 68 types *	—	%
	67	Filter time constant	0 – 30	sec.	0
	71	Output Zero fine adjust	-5.000 – 5.000	%	0.000
	72	Output Span fine adjust	95.000 – 105.000	%	100.000
	01	Lockout setting	Lock / Unlock	—	Lock
Advanced	90	Display setting	Upper: choose from 5 types *	—	Upper: INPUT
			Lower: choose from 6 types *	—	Lower: PERCENT
	91	Brightness	1 (darkest) – 4 (brightest)	—	4
	92	Display timeout	0 (always on), 1 – 60	min.	10
	93	Reset all settings	OFF / RESET	—	OFF
	94	Version indication	—	—	—
Linearization	01	Lockout setting	Lock / Unlock	—	Lock
	100	User's table linearization	Disable / Enable	—	Disable
	101	Number of points	2 – 32	—	2
	102 – 165	Table	-5.00 – 105.00	%	X001 -5.00 Y001 -5.00 X002 105.00 Y002 105.00
	01	Lockout setting	Lock / Unlock	—	Lock

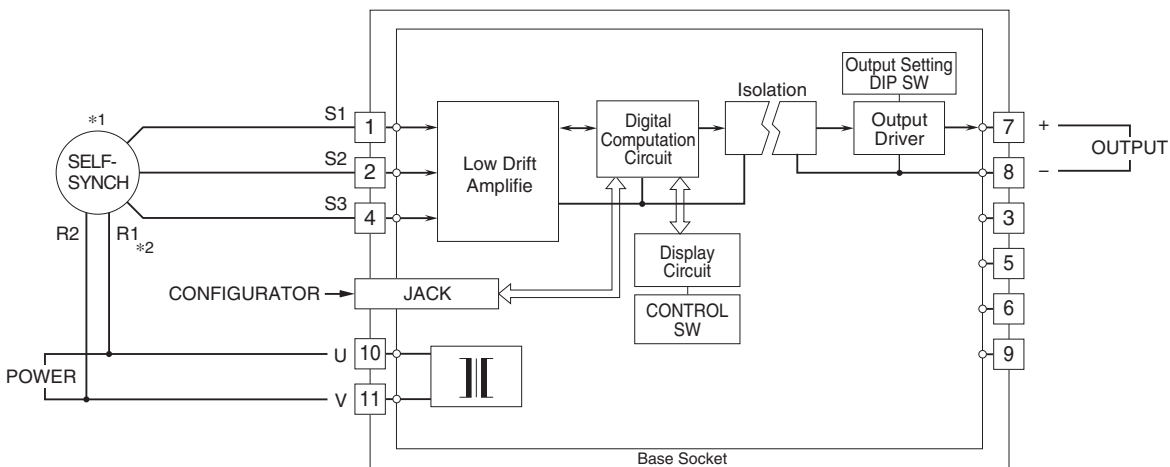
* For detailed types, refer to the operating manual (EM-5137-B).

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



*1. The output increases when the self-synch rotates clockwise. For changing the operation to counterclockwise and increase, set the ITEM 10 'Rotating direction' to CCW.

*2. The power input of the unit has polarity. Be sure that the connection for R1 and R2 of the self-synch. When the connection is reversed, the signal conditioner output will be shifted by 180°.



Specifications are subject to change without notice.