

## Multi-output Super-mini Signal Conditioners with Display M1E-1 Series

### DC ALARM

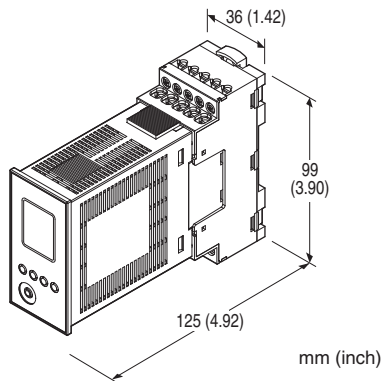
(PC programmable, quad or octad alarm trip)

#### Functions & Features

- Provides relay outputs at preset DC input levels
- Octad or quad trip
- Front LCD display indicating values in scaled engineering unit range is used to program the module
- Adjustable deadband (hysteresis)
- ON delay time selectable
- Hi/Lo trip and energized/de-energized coil independently selectable for each setpoint
- Settable with front buttons
- Enclosed relays
- Relays can be powered by 200 V AC and 100 V DC
- High-density mounting on DIN rail

#### Typical Applications

- Annunciator
- Various alarm applications



Note: The figure shows the combination of the unit and the base.

### MODEL: M1EAXV-1-[1]-R[2]

#### ORDERING INFORMATION

- Code number: M1EAXV-1-[1]-R[2]
- Specify a code from below for each of [1] and [2].  
(e.g. M1EAXV-1-A-R/Q)
- Specify the specification for option code /Q  
(e.g. /C01/SET)

#### NO. OF CHANNELS

1: 1 channel

#### INPUT - Field-selectable

- ◆ DC Input
  - Current input: 0 - 50 mA DC
  - Voltage input: -1000 - +1000 mV DC
  - Voltage input: -10 - +10 V DC

#### [1] OUTPUT

- A: 8 points; N.O. or make contact
- B: 8 points; N.C. or break contact
- C: 4 points; SPDT or transfer contact

#### POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V  $\pm$ 10 %, ripple 10 %p-p max.)

#### [2] OPTIONS

blank: none

/Q: With options (specify the specification)

#### SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet  
(No. ESU-6031)

#### RELATED PRODUCTS

- Installation base (model: M1E-BS2)
  - M1EA configurator software (model: M1EACFG)
- Downloadable at our 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-5994) for the M1EA configurator for applicable cable types.

#### GENERAL SPECIFICATIONS

Construction: Plug-in

Connection

- Connected to base with connector
- Base

M2.6 screw terminals (torque: 0.5 N·m)

Applicable solderless terminal size (M3)

Screw terminal: Nickel-plated steel

Housing material: Flame-resistant resin (black)

Isolation:

- Output code A, B: Input to L1 or L2 alarm output to L3 or

L4 alarm output to L5 or L6 alarm output to L7 or L8 alarm output to power

- Output code C: Input to L1 alarm output to L2 alarm output to L3 alarm output to L4 alarm output to power

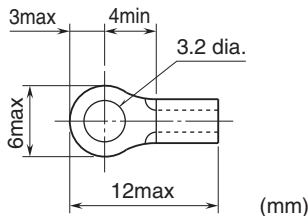
**Configuration:** Program with front buttons or Via PC.

**Programmable features include:** Refer to the parameter list.

**Configurator connection:** 2.5 dia. miniature jack;

RS-232-C level

■ Recommended solderless terminal size - M3 (unit: mm)



## DISPLAY

**Display functions:** Displays and sets measured range, engineering unit

**Display size:** Approx. 15.6 × 20.8 mm (0.61" × 0.82")

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

**Character color:** Yellow (reversing display of the current value and the alarm setting value when alarm is tripped)

**Display life:** Approx. 50000 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

### ■ DC Current

**Input resistance:** Incorporated (28 Ω)

**Input range:** 0 - 50 mA DC

**Minimum span:** 2 mA

The measurement available for -5 - +105% of input setting range.

### ■ DC Voltage

#### • Narrow Spans (mV)

**Input range:** -1000 - +1000 mV DC

**Minimum span:** 100 mV

#### • Wide Spans (V)

**Input range:** -10 - +10 V DC

**Minimum span:** 1 V

**Input resistance:** 1 MΩ minimum

The measurement available for -5 - +105% of input setting range.

## OUTPUT SPECIFICATIONS

**Relay rating:** 100 V AC @ 0.5 A (cos φ = 1)

120 V AC @ 0.5 A (cos φ = 1)

240 V AC @ 0.5 A (cos φ = 1)

30 V DC @ 1 A (resistive load)

**Maximum switching voltage:** 250 V AC or 125 V DC

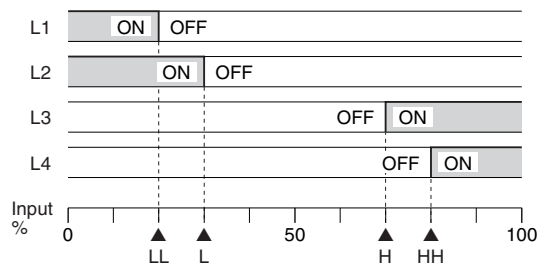
**Maximum switching power:** 120 VA or 30 W

**Minimum load:** 5 V DC @ 1 mA

**Mechanical life:** 5 × 10<sup>7</sup> cycles

### Alarm Trip Operation

- Example Quad N.O. contacts (LL, L, H, HH)



Trip operation in power failure

Output code A: All relays turn OFF.

Output code B: All relays turn ON.

Output code C: Terminals 13 - 15, 16 - 18, 6 - 12, 1 - 7 turn ON.

## INSTALLATION

### Power consumption

• DC: ≤ 6 W

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

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

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

**Mounting:** Surface or DIN rail

**Weight:** 150 g (0.33 lb) except base

## PERFORMANCE in percentage of FS input

**Accuracy (display accuracy, setting accuracy):**

± (0.1% of FS + 1 digit)

See CALCULATION EXAMPLES OF OVERALL ACCURACY.

**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F)

**Response time (Filter time constant: 0 sec.):** ≤ 0.5 sec. (0 - 100 % at 90 % setpoint)

**Line voltage effect:** ±0.1 % over voltage range

**Insulation resistance:** ≥ 100 MΩ with 500 V DC

**Dielectric strength:**

- Output code A, B: 1500 V AC @ 1 minute (Input to L1 or L2 alarm output to L3 or L4 alarm output to L5 or L6 alarm output to L7 or L8 alarm output to power to ground)

- Output code C: 1500 V AC @ 1 minute (Input to L1 alarm output to L2 alarm output to L3 alarm output to L4 alarm output to power to ground)

## **CALCULATION EXAMPLES OF OVERALL ACCURACY**

[Example] Input Range -10 - +10 V, Input Setting -5 - +5 V

- Accuracy = Input Range Span (20 V) ÷ Input Span Setting (10 V) × 0.1 % = ±0.2 % + 1 digit

## **STANDARDS & APPROVALS**

### **EU conformity:**

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Measurement Category II (output)

Pollution Degree 2

- Output code A, B

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

Input to output: Basic insulation (300 V)

L1 or L2 alarm output to L3 or L4 alarm output to L5 or L6

alarm output to L7 or L8 alarm output: Basic insulation (300 V)

- Output code C

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

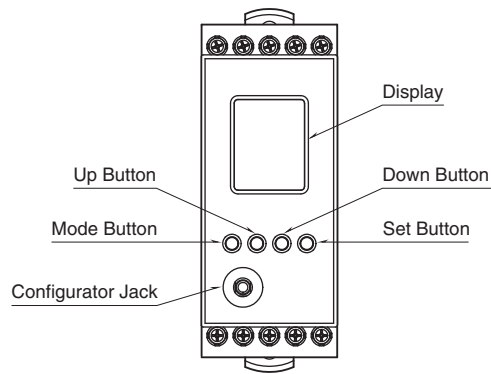
Input to output: Basic insulation (300 V)

L1 alarm output to L2 alarm output to L3 alarm output to L4

alarm output: Basic insulation (300 V)

RoHS Directive

## EXTERNAL VIEW

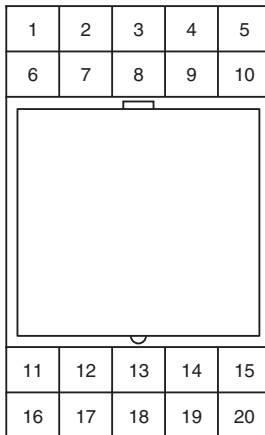


### ■ COMPONENT FUNCTION

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. The destination changes depending on how long the button is held down. Used to return from each setting mode to measuring mode (press and hold for 2 sec. or more).
Up button	Used to shift through setting parameters and to increase or select setting value.
Down button	Used to shift through setting parameter and to decrease or select setting value.
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 through the digits of setting value at setting changeable state. Used to release latching alarm in measuring mode (press and hold for 2 sec. or more).
Configurator Jack	Used to configure with M1EA configurator software (model: M1EACFG). At the same time, set the lockout setting of the unit to 'lock'.

Refer to the operating manual (EM-6031-B) for detailed procedures.

## TERMINAL ASSIGNMENTS



### • OUTPUT CODE: A, B

No.	FUNCTION	No.	FUNCTION
1	COM4 (L7, L8)	11	L5 Alarm output
2	L7 Alarm output	12	L6 Alarm output
3	Input voltage +	13	COM1 (L1, L2)
4	Input current +	14	L1 Alarm output
5	Input –	15	L2 Alarm output
6	COM3 (L5, L6)	16	COM2 (L3, L4)
7	L8 Alarm output	17	L3 Alarm output
8	No connection	18	L4 Alarm output
9	No connection	19	Power +
10	No connection	20	Power –

### • OUTPUT CODE: C

No.	FUNCTION	No.	FUNCTION
1	COM4 (L4)	11	NO (L3)
2	NO (L4)	12	NC (L3)
3	Input voltage +	13	COM1 (L1)
4	Input current +	14	NO (L1)
5	Input –	15	NC (L1)
6	COM3 (L3)	16	COM2 (L2)
7	NC (L4)	17	NO (L2)
8	No connection	18	NC (L2)
9	No connection	19	Power +
10	No connection	20	Power –

\* Base does not come with the unit. Please order separately.

## PARAMETER LIST

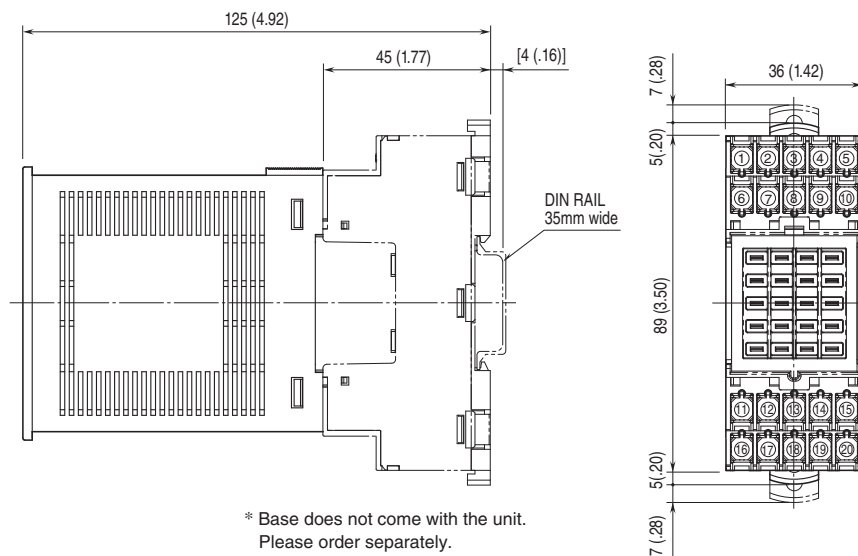
The following parameters can be set or checked, by the front button operation, or from the PC by using M1EA configuration software (model: M1EACFG).

MODE	ITEM	SETTING PARAMETER	RANGE	UNIT	INITIAL VALUE	
Input setting	01	Lockout setting	Lock / Unlock	—	Lock	
	11	Input range	0 – 50 mA -1000 – +1000 mV -10 – +10 V	—	0 – 50 mA	
	12	0 % input setting	0.00 – 48.00 -1000.0 – 900.0 -10.000 – 9.000	mA mV V	4.00	
	13	100 % input setting	2.00 – 50.00 -900.0 – 1000.0 -9.000 – 10.000	mA mV V	20.00	
	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	Unit (INP Scaling)	Choose from 68 types*	—	%	
	79	Filter time constant	0 – 30	sec.	0	
	80	Input Zero fine adjust	-5.000 – 5.000	%	0.000	
	81	Input Span fine adjust	95.000 – 105.000	%	100.000	
	Alarm setting	30	L1 alarm enable	Disable / Enable	—	Enable
		31	L1 alarm setpoint	-99999 – 999999*	—	10.00
32		L1 trip action	High / Low	—	Low	
33		L1 deadband	0 – 999999*	—	0.01	
34		L1 coil at alarm	Energized / De-energized	—	Energized	
40		L2 alarm enable	Disable / Enable	—	Enable	
41		L2 alarm setpoint	-99999 – 999999*	—	30.00 (4 points alarm) 20.00 (8 points alarm)	
42		L2 trip action	High / Low	—	Low	
43		L2 deadband	0 – 999999*	—	0.01	
44		L2 coil at alarm	Energized / De-energized	—	Energized	
50		L3 alarm enable	Disable / Enable	—	Enable	
51		L3 alarm setpoint	-99999 – 999999*	—	70.00 (4 points alarm) 30.00 (8 points alarm)	
52		L3 trip action	High / Low	—	High (4 points alarm) Low (8 points alarm)	
53		L3 deadband	0 – 999999*	—	0.01	
54		L3 coil at alarm	Energized / De-energized	—	Energized	
60		L4 alarm enable	Disable / Enable	—	Enable	
61		L4 alarm setpoint	-99999 – 999999*	—	90.00 (4 points alarm) 40.00 (8 points alarm)	
62	L4 trip action	High / Low	—	High (4 points alarm) Low (8 points alarm)		
63	L4 deadband	0 – 999999*	—	0.01		
64	L4 coil at alarm	Energized / De-energized	—	Energized		

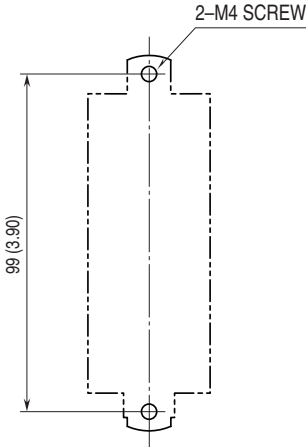
MODE	ITEM	SETTING PARAMETER	RANGE	UNIT	INITIAL VALUE
Alarm setting	130	L5 alarm enable	Disable / Enable	—	Enable
	131	L5 alarm setpoint	-99999 – 999999*	—	60.00
	132	L5 trip action	High / Low	—	High
	133	L5 deadband	0 – 999999*	—	0.01
	134	L5 coil at alarm	Energized / De-energized	—	Energized
	140	L6 alarm enable	Disable / Enable	—	Enable
	141	L6 alarm setpoint	-99999 – 999999*	—	70.00
	142	L6 trip action	High / Low	—	High
	143	L6 deadband	0 – 999999*	—	0.01
	144	L6 coil at alarm	Energized / De-energized	—	Energized
	150	L7 alarm enable	Disable / Enable	—	Enable
	151	L7 alarm setpoint	-99999 – 999999*	—	80.00
	152	L7 trip action	High / Low	—	High
	153	L7 deadband	0 – 999999*	—	0.01
	154	L7 coil at alarm	Energized / De-energized	—	Energized
	160	L8 alarm enable	Disable / Enable	—	Enable
	161	L8 alarm setpoint	-99999 – 999999*	—	90.00
	162	L8 trip action	High / Low	—	High
	163	L8 deadband	0 – 999999*	—	0.01
	164	L8 coil at alarm	Energized / De-energized	—	Energized
	70	Alarm ON-delay time	0 – 999	sec.	0
	71	Power ON-delay time	0 – 999	sec.	5
	72	Latching alarm	Disable / Enable	—	Disable
	89	Alarm test	—	—	Cancel
01	Lockout setting	Lock / Unlock	—	Lock	
Advanced	201	Display setting	Upper: choose from 4 types* Lower: choose from 5 types*	—	Upper: INPUT (Scaling) Lower: ALARM
	203	Brightness	1 (darkest) – 4 (brightest)	—	4
	204	Display timeout	0 (always on), 1 – 60	min.	10
	205	Reset all settings	OFF / RESET	—	OFF
	206	Version indication	—	—	—
	01	Lockout setting	Lock / Unlock	—	Lock

\* For details, refer to the operating manual (EM-6031-B).

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



**MOUNTING REQUIREMENTS** unit: mm [inch]

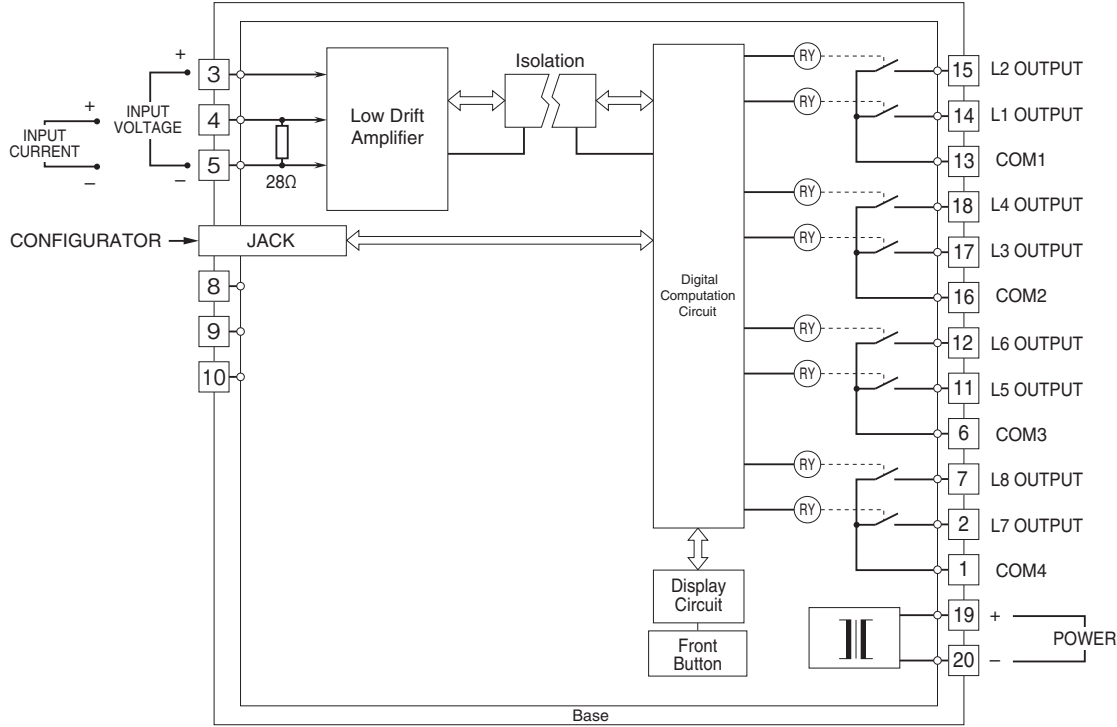


\* Mounting requirements for base.

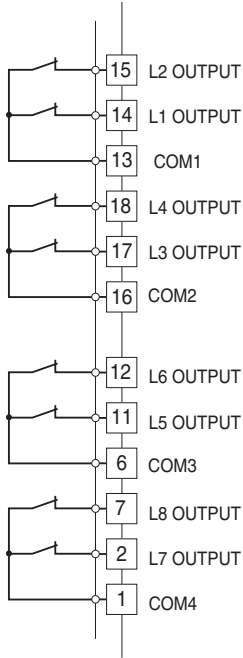


**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**

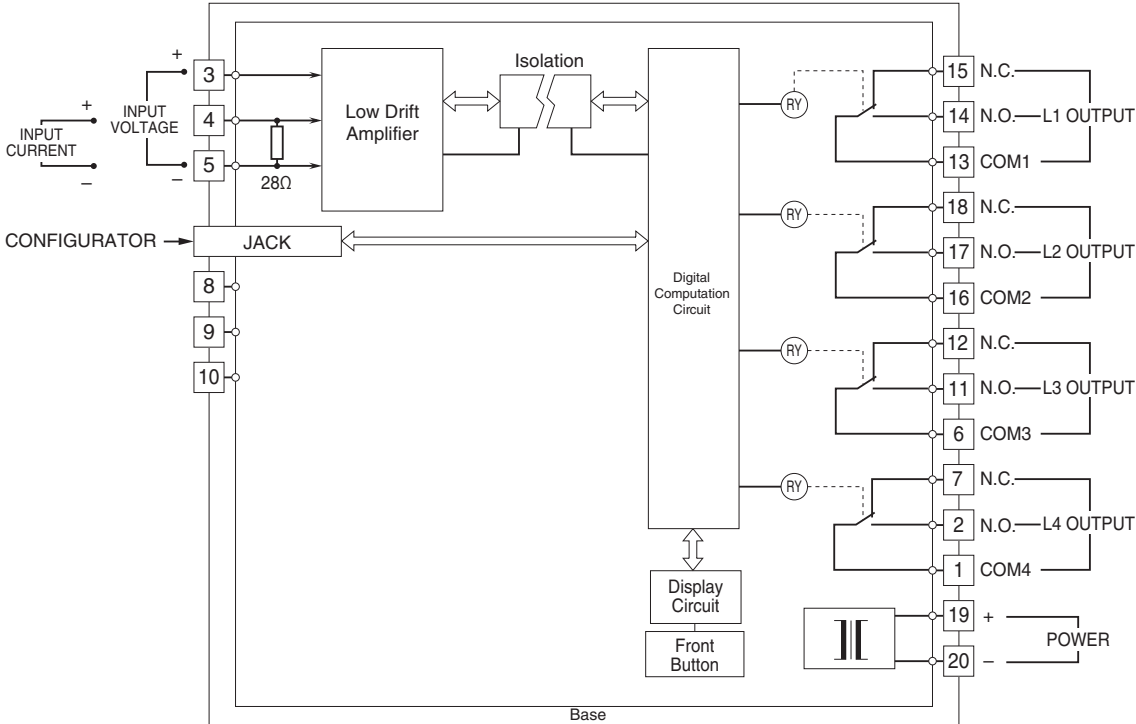
■ OUTPUT CODE A: N.O. RELAY



■ OUTPUT CODE B: N.C. RELAY

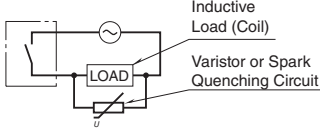


■ OUTPUT CODE C: SPDT RELAY

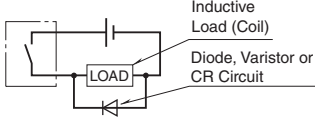


• Relay Protection

• AC Powered



• DC Powered



Specifications are subject to change without notice.