Plug-in Signal Conditioners *K-UNIT*

DC/TEMPERATURE INPUT LIMIT ALARM
(digital adjustments)

MODEL **KS2V/KS2TR**

MODEL & SUFFIX CODE SELECTION

■DC INPUT TYPE

KS2V–61–❑

MODEL
INPUT
6 : 1 – 5V DC
Use a resistor module for a current input.
OUTPUT
1 : Relay; SPDT or transfer contact
POWER INPUT

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

■TEMPERATURE INPUT

KS2TR–1–❑

MODEL
TEMPERATURE SENSOR
JPt 100, Pt 100, K, E, J, T, B, R, S, PL2, WRe 5-26, N
OUTPUT
1 : Relay; SPDT or transfer contact
POWER INPUT

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

ORDERING INFORMATION

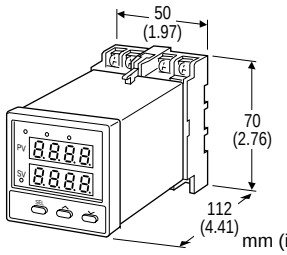
Specify code number and variables.
•**Code number** (e.g. KS2V-61-R)

RELATED PRODUCTS

•**Resistor module** (model: REM)
500Ω for 2 – 10mA DC
250Ω for 4 – 20mA DC
100Ω for 10 – 50mA DC

GENERAL SPECIFICATIONS

Construction: panel mounted, plug-in
Connection: M3.5 screw terminals
Housing material: PC-ABS resin (black)
Isolation: input to SET1 to SET2 to power (basic insulation)
Read rate: 0.5 seconds
Input error display: over-range
Programming: front key
Setpoint adjustment (ST1, ST2): -5 to +105%; programmable independently for each setpoint
Hysteresis (HYS1, HYS2): 0 – 102%; programmable independently for each setpoint



Functions & Features
• Providing relay contact closures at preset DC or temperature input levels • Dual (Hi/Lo) trip • Front digital displays • Programmable with front keys
Typical Applications
• Various alarm applications

Temperature sensor types (P-n2): JPt 100, Pt 100, K, E, J, T, B, R, S, WRe 5-26, N
Scaling (P-SL, P-SU): -1999 to 9999
Alarm mode (P-A1, P-A2): programmable independently for each setpoint; See Table below.

Param. Code (P-A1) (P-A2)	Alarm Modes			
	Trip Operation	Set Value	Latching Hold*	Relay & LED Behavior in Tripped Conditions
0	No alarm	–	–	–
1	High	Absolute value	Without	LED ON Coil energized
2	Low	Absolute value	Without	LED ON Coil energized
3	High	Absolute value	With	LED ON Coil energized
4	Low	Absolute value	With	LED ON Coil energized
5	High	Absolute value	Without	LED ON Coil de-energized
6	Low	Absolute value	Without	LED ON Coil de-energized
7	High	Absolute value	With	LED ON Coil de-energized
8	Low	Absolute value	With	LED ON Coil de-energized

*Without latching hold function, the unit is tripped upon starting operation (e.g. at 25°C) when the unit is set to Low alarm (e.g. 100°C).
With the function, the unit is NOT tripped until the temperature goes once above and then below the setpoint (100°C).

Burnout protection (bUm): upscale or downscale
Alarm relay switching delay time (P-d1, P-d2): 1 to 10 sec.; programmable independently for each setpoint
Time constant for the input filter (P-dF): 5.0 to 900.0 seconds (0 – 63%)
Cold junction compensation (RCJ): ON or OFF; for thermocouple input only
Power ON delay (P-d0): 0 to 20 seconds
Front LEDs: red lights turn on in tripped conditions.

INPUT & OUTPUT

■**DC INPUT**: 1 – 5V DC
Input resistance: 400kΩ minimum
Display accuracy: ±0.5% FS ±1 digit
Allowable signal source resistance: 1kΩ maximum

■**TEMPERATURE INPUT**
•**Thermocouple**
Thermocouple type and temperature range

T/C type	Usable Range in °C	Usable Range in °F
J	0 to 400	32 to 752
J	0 to 800	32 to 1472
K	0 to 400	32 to 752
K	0 to 800	32 to 1472
K	0 to 1200	32 to 2192
R	0 to 1600	32 to 2912
B	0 to 1800	32 to 3272
S	0 to 1600	32 to 2912
T	-199 to 200	-328 to 392
T	-150 to 400	-238 to 752
E	0 to 800	32 to 1472
E	-199 to 800	-328 to 1472
N	0 to 1300	32 to 2372
PL2	0 to 1300	32 to 2372
WRe5-26	0 to 2300	32 to 4172

Input resistance: 1MΩ minimum
Display accuracy: ±0.5% FS ±1 digit ±3°C
±1% FS ±1 digit ±3°C for T, E (≤-100°C)
±5% FS ±1 digit ±3°C for B (0 – 500°C)
±1% FS ±1 digit ±3°C for R (0 – 400°C)
Cold junction compensation accuracy: ±3°C at 23°C (±1.8°F at 73.4°F)
Bunrout sensing: approx. 0.3μA
Burnout response: approx. 10 seconds
Allowable signal source resistance: 100Ω maximum

•**RTD**
RTD type and temperature range:
Pt 100 (-150 to +850°C or -238 to +1562°F)
JPt 100 (-150 to +600°C or -238 to +1112°F)
Display accuracy: ±0.5% FS ±1 digit
Sensing current: approx. 0.3mA
Maximum leadwire resistance: 20Ω per wire

■**OUTPUT**
•**Relay Contact**: SPDT relays
220V AC @3A (cosø=1)
30V DC @3A (resistive load)
electrical life (@1A) 8×10^5 cycles (rate 30/min.)
Caution: N.O. and N.C. contacts could be conductive at the same time. DO NOT connect both contacts at the same time.
Maximum switching voltage: 220V AC or 30V DC
Maximum switching power: 660VA or 55W
Minimum load: 10V DC @1mA
Mechanical life: 2×10^7 cycles with no loads
For maximum relay life with inductive loads, external protection is recommended.

INSTALLATION

Power input
AC: operational voltage range 85 – 264V; 47 – 66 Hz, max. 15VA
DC: operational voltage range 24V ±10%; ripple 10% p-p max., approx. 3W
Operating temperature: -10 to +50°C (14 to 122°F)
Operating humidity: 30 to 90% RH (non-condensing)
Mounting: panel flush mounting with attached mounting bracket, or DIN rail
Dimensions: W48×H48×D112 mm (1.89"×1.89"×4.41")
Weight: 200 g (0.44 lbs)

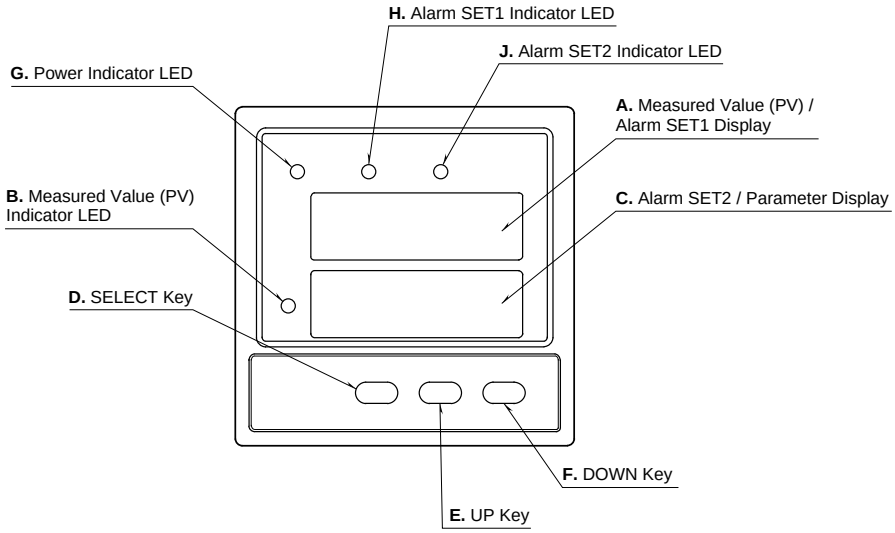
PERFORMANCE

Setpoint accuracy: display accuracy ±0.1% FS
Trip point repeatability: included in the setpoint accuracy
Line voltage effect: included in the setpoint accuracy
Insulation resistance: ≥50MΩ with 500V DC (input to SET1 to SET2 to power)
Dielectric strength: 1500V AC @1 minute (input to SET1 or SET2 to power)
500V AC @1 minute (SET1 to SET2)

STANDARDS & APPROVALS

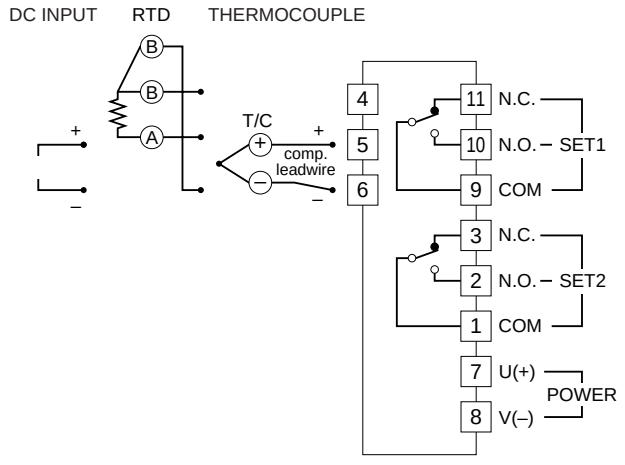
CE conformity: EMC Directive (89/336/EEC)
EMI EN55022:1994 Class A
EMS EN61000-6-1
Low Voltage Directive (73/23/EEC)
EN61010-1
Installation category II
Pollution degree 2
Max. operating voltage 300V
Input to output to power – Basic insulation
Approval: UL/C-UL (UL 873, CAN/CSA-C22.2 No.24)

FRONT PANEL CONFIGURATION



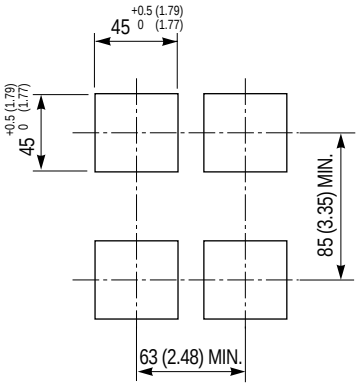
Ref.	Component Name	Function
A	Measured Value (PV) / Alarm SET1 Display	Displaying either of Measured Value (PV) or Alarm Setpoint Value (SET1)
B	Measured Value (PV) Indicator LED	Light turns on when the PV Display (**A**) displays Alarm Setpoint Value (SET1).
C	Alarm SET2 / Parameter Display	Displaying either of Alarm Setpoint Value (SET2) or parameter type code.
D	SELECT Key	Used for confirming current setpoints and switching between parameter blocks.
E	UP Key	Pressing the key increases display values. They change continuously when it is kept pressed.
F	DOWN Key	Pressing the key decreases display values. They change continuously when it is kept pressed.
G	Power Indicator LED	Light turns on while the power is turned on.
H	Alarm SET1 Indicator LED	Light turns on when the Alarm SET1 is in tripped conditions.
J	Alarm SET2 Indicator LED	Light turns on when the Alarm SET2 is in tripped conditions.

CONNECTION DIAGRAM

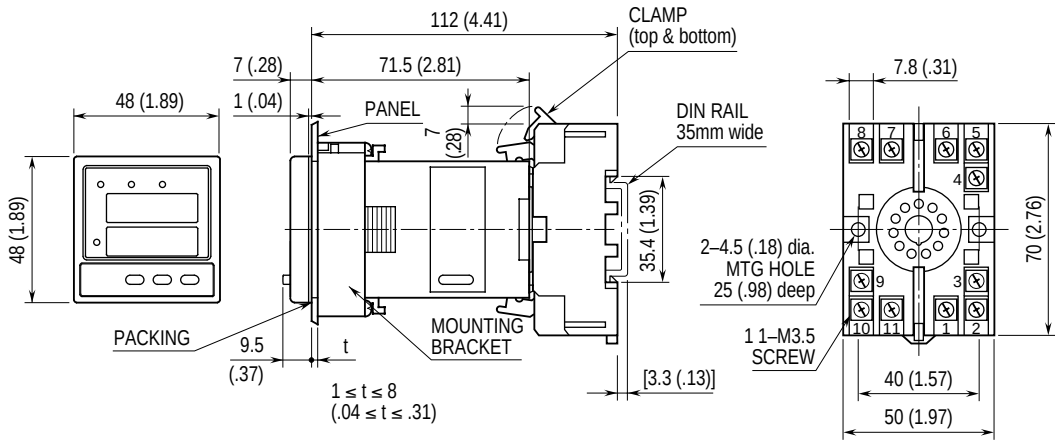


MOUNTING REQUIREMENTS mm (inch)

■PANEL CUTOUT



EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENT mm (inch)



PARAMETERS

Param. Block	Name	Default setting		Unit	Programmable range	Explanations of function
		KS2V	KS2TR			
1*1	ST1	100.0	1200	Engineering unit*4	-5 to +105 % FS	Alarm setpoint value SET1
	ST2	0.0	0	Engineering unit*4	-5 to +105 % FS	Alarm setpoint value SET2
	PTn	1	1	N/A	1, 2, 3	Display pattern
2*2	HYS1	1.0	1	Deviative engineering unit*4	0 to 102 % FS	Hysteresis for SET1
	HYS2	1.0	1	Deviative engineering unit*4	0 to 102 % FS	Hysteresis for SET2
	P-n2	16	3	N/A	0 to 16	Input type
	P-SL	0.0	0	Engineering unit*4	-1999 to 9999	Scaling, lower range
	P-SU	100.0	1200	Engineering unit*4	-1999 to 9999	Scaling, upper range
	P-dP	1	0	N/A	0, 1 or 0, 1, 2*5	Decimal point position
	P-A1	1	1	N/A	0 to 8	Alarm mode for SET1
	P-A2	2	2	N/A	0 to 8	Alarm mode for SET2
	bUm	H	H	N/A	H, L	Burnout protection (upscale or downscale)
	P-F	°C	°C	N/A	°C, °F	Temperature unit
	P-d1	1	1	Seconds	1 to 10	Switching delay timer for SET1
	P-d2	1	1	Seconds	1 to 10	Switching delay timer for SET2
3*3	P-dF	5.0	5.0	Seconds	5.0 to 900.0*6	Time constant for the input filter
	RCJ	ON	ON	N/A	ON, OFF	Cold junction compensation
	ADJ0	0.0	0	Deviative engineering unit*4	-50 to +50 % FS	User's ZERO adjustment
	ADJS	0.0	0	Deviative engineering unit*4	-50 to +50 % FS	User's SPAN adjustment
	P-d0	0	0	Seconds	0 to 20	Power ON delay time

*1. Pressing SEL key for 3 seconds turn the unit into setting mode for Parameter block 1.
*2. Pressing SEL key for 7 seconds turn the unit into setting mode for Parameter block 2.
*3. Pressing SEL key for 9 seconds turn the unit into setting mode for Parameter block 3.
*4. Parameters set with "Engineering unit" or "Deviative engineering unit" shift according to changes in P-SL or P-SU setting.
*5. 0 or 1 for temperature sensor; 0, 1, 2 for voltage signal. (1 for one-place decimal, 2 for two-place decimal)
*6. Be sure to set at the minimum of 5.0 or a larger value though the unit accepts one smaller than 5.0.

■HOW TO SET PARAMETERS

1) Current display
2) Press SEL key for a few to several seconds to turn the unit into setting mode.
3) Press DOWN key to search for the parameter you need to change.
4) Press SEL key once and the parameter item on the display will be replaced with the current setting.
5) Press UP / DOWN keys until the setting is changed to the desired value.
6) Press SEL key once to register the new value.
7) Press SEL key for 3 seconds to return the unit into the display mode (1).