



## REX-AD410



### General Description

The REX-AD410 Digital Indicator is a high performance indicator with a large, bright LED display measuring 20mm. This full feature indicator has universal inputs that include thermocouples, RTD's, voltage, and current inputs. Other optional features include up to 6 programmable alarms with relay outputs, analog retransmission, contact inputs, and digital communications.

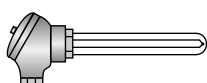
When used with the input selector SP-400/SP-4, the REX-AD410 can display up to 16 inputs. The REX-AD410B option allows for the controller to act as a high or low limit device. The REX-AD410 matches the physical appearance of the D series of controllers (REX-D100/D400/D900).

### Features

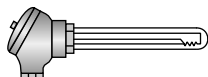
- ☆ Universal inputs
- ☆ Bright, easy-to-read LED Display
- ☆ Limit control functions (REX-AD410B)
- ☆ Peak and bottom hold function
- ☆ Up to 6 alarms
- ☆ Digital communications

#### Universal Inputs

Input type can be configured among 12 types of thermocouples, two types of RTDs and eight types of voltage/current inputs.



K, J, R, S, B, E, N, T, U, L  
W5Re/W26Re, PLII

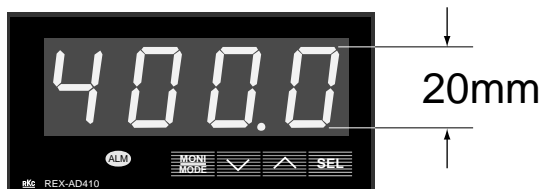


Pt100, JPt100

0 to 10mV DC, 0 to 100mV DC, 0 to 1V DC, 0 to 5V DC  
1 to 5V DC, 0 to 10V DC, 0 to 20mA DC, 4 to 20mA DC

#### Bright, Easy-To-Read LED Display

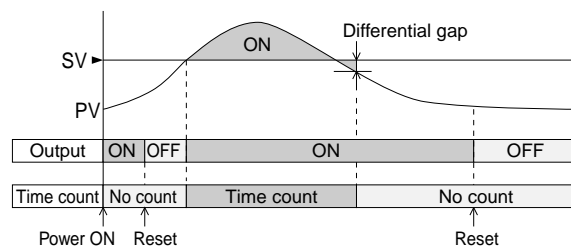
The REX-AD410 has a very clear and easy-to-read large LED display (20mm high).



#### Limit Controller

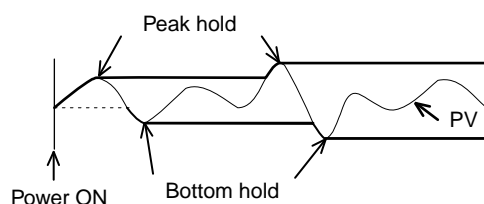
The REX-AD410B is a limit controller with up to 4 alarm outputs. When the temperature goes above the set value (high limit) or below the set value (low limit), the REX-AD410B will interrupt or remove the power from the process.

Example : For a high alarm.



#### Peak and Bottom Hold

The REX-AD410 memorizes the maximum and minimum measured value. Optional contact input function enables you to remotely reset the values.



## Specifications

### Input

#### Input (Universal input)

- a) Thermocouple : K, J, R, S, B, E, T, N (JIS/IEC), PLII (NBS) W5Re/W26Re (ASTM), U, L (DIN)
- Influence of external resistance : Approx.0.4 $\mu$ V/ $\Omega$
  - Input break action : Up-scale
- b) RTD : Pt100 (JIS/IEC), JPt100 (JIS)
- Influence of lead resistance : Approx. less than 10 $\Omega$
  - Input break action : Up-scale
- c) DC low voltage input : 0 to 10mV, 0 to 100mV, 0 to 1V
- Input break action : Up-scale
- d) DC high voltage input : 0 to 5V, 1 to 5V, 0 to 10V
- Input break action : Down-scale
- e) DC current input : 0 to 20mA, 4 to 20mA
- For DC current input, connect a 250  $\Omega$  resistor to the input terminals.
  - Input break action : Down-scale

#### Sampling Time

0.5 sec

#### PV Bias

- Temperature input : -1999(-199.9) to 9999 (999.9) $^{\circ}$ C [ $^{\circ}$ F]  
 DC voltage, DC current : -1999 to 9999  
 (A decimal point is same as PV)

### Performance

#### Measuring Accuracy

- $\pm$  (0.3% of span + 1 digit)  
 Cold junction temperature error  
 Within  $\pm 1.5^{\circ}$ C (between 0 and 50 $^{\circ}$ C [32 and 122 $^{\circ}$ F])
- Accuracy is not guaranteed between 0 and 400 $^{\circ}$ C (0 and 752 $^{\circ}$ F) for type B input.
  - Accuracy is not guaranteed between 0 and 32 $^{\circ}$ F for type N, PLII and W5Re/W26Re input.

#### Insulation Resistance

- More than 20M $\Omega$  (500V DC) between measured terminals and ground  
 More than 20M $\Omega$  (500V DC) between power terminals and ground

#### Dielectric Strength

- 1000V AC for one minute between measured terminals and ground  
 1500V AC for one minute between power terminals and ground

### Hold

- Peak Hold** : Highest measured value is held  
**Bottom Hold** : Lowest measured value is held

- The held values can be reset manually or by external contact signal after the confirmation by the operator.
- Data is not backed up when the instrument power supply is off.
- In case of a limit controller, the highest or lowest measured value above or below the limit is displayed.

### Alarms

(Optional)

#### Alarm

- a) Number of alarms : Up to 6 points  
 (Up to 4 points in case of limit controller)
- b) Alarm action : Process (high, low), Deviation (high, low, band and range)
- Deviation alarm is available only for the limit controller.
- c) Alarm delay timer : 0 to 600 sec
- d) Alarm differential gap : 0.0 to 10.0 $^{\circ}$ C ( $^{\circ}$ F), 0 to 10 $^{\circ}$ C ( $^{\circ}$ F) or 0.0 to 10.0% of span
- Energized/de-energized alarm (selectable)

#### Alarm Output

Relay contact output, 250V AC 0.5A (resistive load), Form A contact

### Options

#### External contact input

- a) Number of input : 2 points (DI1 and DI2)  
 b) Type : DI1 : (1) Hold reset, (2) Output reset, (3) Time count reset
- (2) and (3) are available only for the limit controller.
- DI2 : Alarm interlock reset

#### Analog Output

- a) Number of output : 1 point  
 b) Output signal : 0 to 10mV, 0 to 100mV, 0 to 5V, 0 to 10V, 1 to 5V DC  
 (Allowable load resistance : More than 1k $\Omega$ )  
 0 to 20mA, 4 to 20mA DC  
 (Allowable load resistance : Less than 600 $\Omega$ )
- c) Output type : PV (Programmable)
- Analog output is not available when LED drive power supply for SP-4/SP-400 is specified.

#### LED Drive Power Supply for SP-4/SP-400

- Output : 12V DC  $\pm 10\%$ , and 20mA DC
- Number of SP-4 units that can be multi-dropped : Up to 2 with the transfer type and 1 without the transfer type.
  - This option is not available when the limit controller or the analog output is specified.

#### Communications

- a) Communication method : RS-485 (2-wire), RS-422A (4-wire)  
 b) Communication speed : 1200, 2400, 4800, 9600, 19200 BPS  
 c) Bit format  
 Start bit : 1  
 Data bit : 7 or 8  
 Parity bit : Even, odd or without parity  
 Stop bit : 1 or 2  
 d) Communication code : ASCII(JIS) 7-bit code  
 e) Maximum connection : 31 ( Address can be set from 0 to 99.)

### Limit Control Functions (REX-AD410B)

- a) Integrated time measuring :  
 0 hr 0 min to 99 hr. 59 min/ 0 min 0 sec to 99 min to 59 sec  
  - If the integrated time exceeds 99 hours 59 minutes (99 minutes 59 seconds), the display of " - - - " will blink.
- b) Action : Counts up the time during the measured value goes below the set value (when high limit control), or goes below the set value (when low limit control).
- The integrated time can be reset by either key operation or the digital input.
  - Data is not backed up when the instrument power supply is off.
- c) Number of output : 1 point  
 d) Output action : High or low limit (Factory set value : High limit)  
 e) Setting range : The same as input range  
 f) Differential gap : 0.0 to 10.0 $^{\circ}$ C ( $^{\circ}$ F) , 0 to 10 $^{\circ}$ C ( $^{\circ}$ F) or 0.0 to 10.0% of span
- g) Output : Relay contact output, 250V AC 0.5A (resistive load), Form A contact

### General Specifications

#### Supply Voltage

- a) 90 to 264V AC (Including supply voltage variation)  
 [Rating : 100 to 240V AC] (50/60Hz common)
- b) 21.6 to 26.4V AC (Including supply voltage variation)  
 [Rating : 24V AC] (50/60Hz common)
- c) 21.6 to 26.4V DC (Ripple rate 10% p-p or less)  
 [Rating : 24V DC]

#### Power Consumption

- Less than 10.5VA (100 to 240V AC)  
 Less than 7.0VA (24V AC)  
 Less than 200mA (24V DC)

#### Power Failure Effect

A power failure of 20msec or less will not affect the control action.

#### Operating Environments : 0 to 50 $^{\circ}$ C [32 to 122 $^{\circ}$ F] , 45 to 85% RH

#### Memory Backup : Backed up by EEPROM.

#### Data Retaining Period : Approx 10 years (depends on storage and operating conditions.)

#### Net Weight : Approx. 300g

#### External Dimensions (W x H x D) 96 x 48 x 100mm

## Model and Suffix Code

Specifications	Model and Suffix Code					
Model	AD410	□ - □ * □ - □ - □ - □ / CE				
Type	Indicator Limit controller	A				
Supply voltage	24V DC / AC 100 to 240V AC	B	3			
Contact output <sup>1</sup>	Not supplied Specify 1 to 6 (4: Limit controller)		4			
Contact input	Not supplied Two contact inputs			N		
Analog output / LED power supply	Not supplied Power supply for SP-400/500 LED (Only AD410A) See Analog Output Code Table			□		
Digital communications <sup>2</sup>	Not supplied RS-422A (4-wire system) RS-485 (2-wire system)				N	
Safety standard	CE Mark, UL Recognized and USA Certified				4	5
						/ CE

<sup>1</sup> When a limit controller is specified, up to 4 outputs can be specified.

<sup>2</sup> When DI's are specified, RS-422A is not available.

### Range and Input Table

#### Thermocouple

Input	Range	Input	Range
K	-199.9 - 999.9°C	B <sup>1</sup>	0 - 1820°C
	-200 - 1372°C		0 - 3308°F
	-199.9 - 999.9°F	E	-200 - 1000°C
	-330 - 2500°F		-330 - 1832°F
J	-199.9 - 999.9°C	N <sup>2</sup>	0 - 1300°C
	-200 - 1200°C		0 - 2372°F
	-199.9 - 999.9°F	PLII <sup>2</sup>	0 - 1390°C
	-330 - 2192°F		0 - 2534°F
T	-199.9 - 400.0°C	W5Re <sup>2</sup>	0 - 2300°C
	-199.9 - 752.0°F	W26Re	0 - 4208°F
R	0 - 1769°C	U	0 - 600°C
	0 - 3216°F		0 - 1100°F
S	0 - 1769°C	L	0 - 900°C
	0 - 3216°F		0 - 1600°F

#### RTD

Input	Range
JPt100	-199.9 - 510.0°C
	-199.9 - 950.0°F
Pt100	-199.9 - 660.0°C
	-199.9 - 999.9°F

#### Voltage/Current

Input	Range
0 - 10mV	Scale range and decimal point are programmable in the range of -1999 to 9999.
0 - 100mV	
0 - 1V	
0 - 5V	
1 - 5V	
0 - 10V	
0 - 20mA	
4 - 20mA	

Note : For DC current input, connect a 250Ω resistor to the input terminals.

<sup>1</sup> Accuracy is not guaranteed between 0 and 400°C (0 and 752°F) for type B.

<sup>2</sup> Accuracy is not guaranteed between 0 and 32°F for type N, PLII and W5Re/W26/Re.

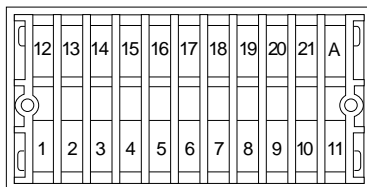
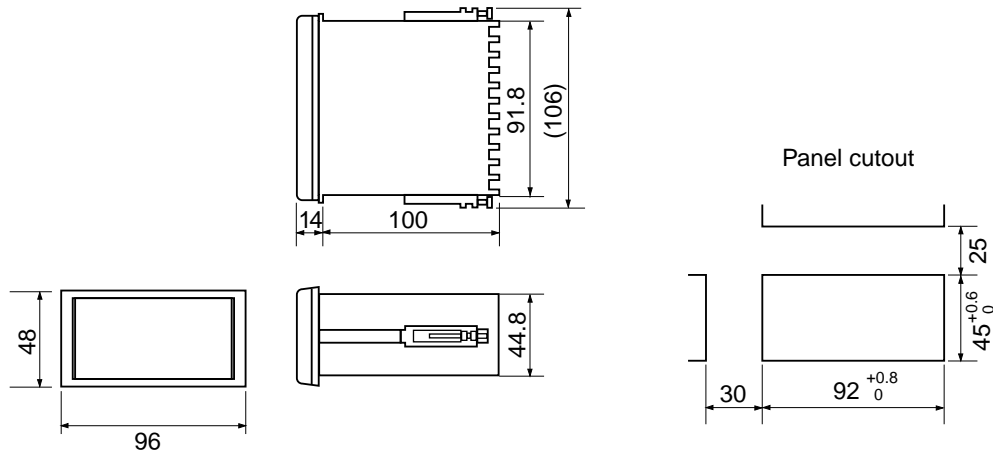
### Analog Output Code Table

1	0 - 10mV DC	2	0 - 100mV DC	3	0 - 1V DC	4	0 - 5V DC	5	0 - 10V DC
6	1 - 5V DC	7	0 - 20mA DC	8	4 - 20mA DC				

# Panel Mounting Type Indicator REX-AD410

## External Dimensions and Rear Terminals

Unit : mm



12	13	14	15	16	17	18	19	20	21	A
RS-422A						Analog output		Alarm output		
SG	T(A)	T(B)	R(A)	R(B)		AO + L -		NO NO ALM5 ALM6		
RS-485			Contact input		Power supply for LED		Relay contact output			
SG	T/R(A)	T/R(B)	DI1	DI2	LED + L -		Alarm output (Limit controller)			
Communications			COM(-) HOLD RESET				NO NO ALM3 ALM4 Relay contact output			
			INTERLOCK RESET							

1	2	3	4	5	6	7	8	9	10	11
AC		Alarm output			Alarm output			TC		
100 -240V		NO NO ALM1 ALM2			NO NO ALM3 ALM4			+		
AC		Relay contact output			Relay contact output			RTD		
24V		Limit controller output			Alarm output (Limit controller)			A B B		
DC		Relay contact output			Relay contact output			DC		
+ 24V -		NO NC C			NO NO ALM1 ALM2			+ L -		
Power supply		Relay contact output			Relay contact output			Measured input		