PID CONTROLLER

NEX206

Display for %Output

1 or 2 Universal Inputs

Single / Dual PID Loop

Panel Mount / Flameproof

Full-featured

IP65, IP66

PID CONTROLLER

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SPECIFICATIONS

All specifications at ambient of 25 °C, unless specified otherwise

INPUTS	
No of inputs	2 (Input1, Input2)
Input group 1	
Thermocouple	B, E, J, K, N, R, S, T
RTD	Pt100
Voltage	0~50 mV, 0~10 V
Current	4~20 mA
Input group 2	
Thermocouple	B, C, D, E, G, J, K, N, R, S, T, L, U, PLII
RTD	Pt100, Cu53, JPT100
Current	0~20 mA, 4~20 mA, 4~20 mA with Square root
Voltage	-10~20 mV, 0~50 mV, 0~200 mV, 0~2 V, 0~5 V, 0~10V
Sampling time	50 ms / 200 ms programmable
Transmitter supply (VTX)	22 V nominal, 30 mA max
Range limits	See Table 1
Accuracy	Thermocouple : ±0.25% of FS ±1°C
	Pt100 : ±0.05% of FS ±0.5°C
	Linear inputs : ±0.1% FS or less
Cold junction compensation	Automatic/User programmable
Sensor break protection	User programmable
OUTPUTS	
No. of relays	Flameproof : Upto 4, Panel mount : upto 7
Relay contact type	NO-C-NC, NO-C
Relay contact rating	7A/230 VAC
	5A/230 VAC
SSR drive	12V DC drive signal for external SSR
No. of analog outputs	0 / 1 / 2
Current output	4~20 mA / 0~20 mA / 20~4 mA / 20~0 mA isolated from input
Maximum load for current output	500 ohms
Voltage output	0~10V / user specified
Load for voltage output	>10 Kohms
INDICATION	
Upper	4 digit, 7-segment 0.8” (20.32 mm), red LED display
Middle	4 digit, 7-segment 0.52” (13.20 mm), green LED display
Lower	4 digit, 7-segment 0.39” (9.90 mm), red LED display

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SPECIFICATIONS

All specifications at ambient of 25 °C, unless specified otherwise

COMMUNICATION	
Port	RS485
Protocol	MODBUS RTU
Slave ID	User programmable (1~247)
Baud rate	User programmable (2.4K, 4.8K, 7.2K, 9.6K, 19.2K, 38.4K, 57.6K)
POWER SUPPLY	
Supply voltage	a. 85~265V AC, 50/60hz
	b. 18~30V DC
AUTO/MANUAL OPERATION	
Display	4 digit, 7-segment 0.39” (9.90 mm), red LED display
Range	-3.0% to 103%
Function	Output power is increased/decreased by UP/DOWN keys in manual mode
Auto / Manual transfer	Bumpless
ISOLATION	
Mutual isolation between input, supply, relays, analog output, digital input, RS485	1500 VAC RMS, 50hz / 1minute
ENCLOSURE	
Non-Flameproof	
Housing material	ABS plastic, grade : UL94V-0
Dimensions (in mm)	96(W) x 96(H) x 60(D)
Protection	Front IP66 (IEC) / NEMA 4X
Mounting	Panel
Terminals	M3 screw, suitable upto 2 mm^2 wire
Flameproof	
Enclosure	Certified flameproof for gas groups I, IIA & IIB
Material	Aluminium alloy
Dimensions (in mm)	352(H) x 190(W) x 170(D)
Protection	IP65
Keyboard	4 Pushbuttons
Mounting	Wall mount
Mounting accessories	Included
Cable entries*	5 x 1/2" NPT
* Cable glands to be ordered separately	
TEMPERATURE, HUMIDITY	
Ambient operating temperature	-10 to 50 °C
Ambient operating humidity	Below 90% RH, non-condensing

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PROGRAMMABLE PARAMETERS

Mode	Indicator/On-off Controller/PID Controller
User key / Digital input	Programmable function such as start, stop, run, hold profile, autotune, etc
Setpoint lock	ON, OFF
Power on delay	0~999 seconds
Soft start function	Timer / setpoint / % output
Time out for run mode	None / 10 seconds / 1 min / 9 min
Input type	TC/RTD/Linear input
High/Low scales of input	Full range (See Table 1)
Setpoint	Full range (See Table 1)
Resolution	User selectable
	0.001, 0.01, 0.1 or 1 for linear input
	0.1 or 1 for temperature
Unit	°C, °F, EU
Digital filter	None / low / high
CJC	Auto / off / -10 to 60°C
PID groups	1-4
Control type	Heat/Cool/Heat+Cool
Band (P)	0.1~999.9, 0~100% of span
Integral time (I)	Off, 1~6000 seconds
Derivative time (D)	Off, 1~6000 seconds
Cycle time	1~1000 second

Manual reset	-99 to 99 °C
High/low limits of power	-3~103%
Dead band for heat+cool	-50~50%
Cool coefficient heat+cool	0~100%
Cool Compressor delay	0~999 min
Alarm logic	a. Fullscale high alarm
	b. Full scale low alarm
	c. Deviation high alarm
	d. Deviation low alarm
	e. Inband alarm
	f. Outband alarm
	g. Heat
	h. Cool
Alarm delay	0~999 second/minute
Alarm acknowledge	Reset alarm through user key / digital input
Relay action	Reverse / direct
Single ramp/soak	Ramp: 0~999.9 °C / min or hour
	Soak time : 0~999 minutes
16 Segment profile	a) Setpoints - Full range (see table 1)
	b) Ramp/soak rate : 1~999 min/hour
	c) Other functions : Profile repeat/resume, hold band, etc.

Major parameters are listed here.

TABLE 1

Input group 1

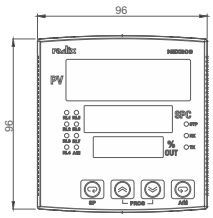
SENSOR / INPUT	RANGE LIMITS (°C / EU)	
	LOW SCALE	HIGH SCALE
Pt - 6% Rh / Pt - 30% Rh (B)	400	1800
Chromel / Constantan (E)	-200	850
Iron / Constantan (J)	-200	760
Chromel / Alumel (K)	-200	1370
Nicrosil / Nisil (N)	-200	1300
Pt / Pt - 13% Rh (R)	0	1700
Pt / Pt - 10% Rh (S)	0	1700
Copper / Constantan (T)	-200	400
Pt100, 3-wire	-200	850
Linear (0~50 mV, 4~20 mA, 0~10 V)	-1999	9999

Additional Inputs for Input group 2

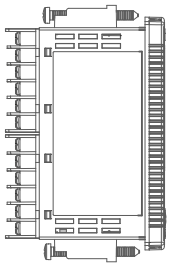
SENSOR / INPUT	RANGE LIMITS (°C / EU)	
	LOW SCALE	HIGH SCALE
Tungsten - 5% Rh / Tungsten - 26% Rh (C)	0	2300
Tungsten - 3% Rh / Tungsten - 25% Rh (D)	0	2000
Tungsten / Tungsten - 26% Rh (G)	0	2310
Iron / Constantan (L)	-200	900
Copper / Constantan (U)	-200	600
Platinum - 40% Rh / Platinum - 20% Rh (2040)	0	1880
JPT100	-200	600
Cu53	0	150
Linear (-10~20mV, 0~50 mV, 0~200 mV, 0~2 V, 0~5 V, 0~10V)	-1999	9999
Linear (4~20 mA) with square root	0	9999

DIMENSIONS mm

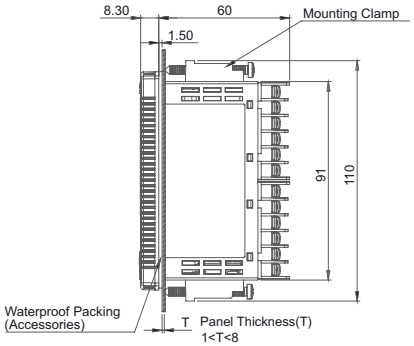
Fig 1 : **PANEL MOUNT**



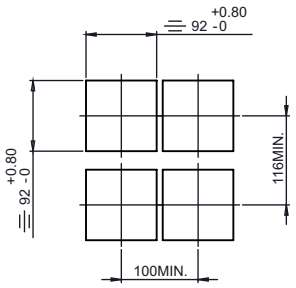
Front View



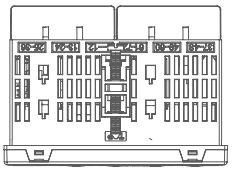
Left Side View



Right Side View

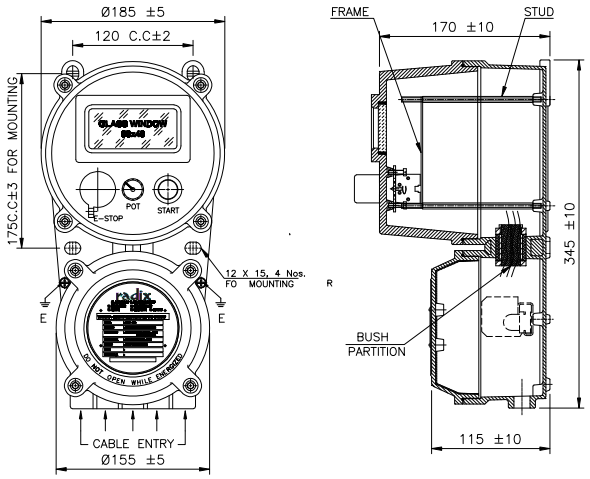


Panel Cutout



Top View

Fig 2 : **SURFACE MOUNT FLAMEPROOF**



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CONNECTION DIAGRAM

Fig 3 : **PANEL MOUNT**

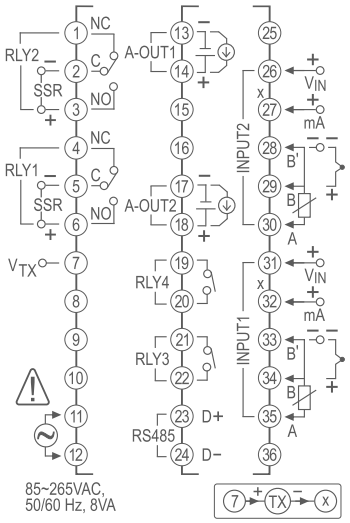
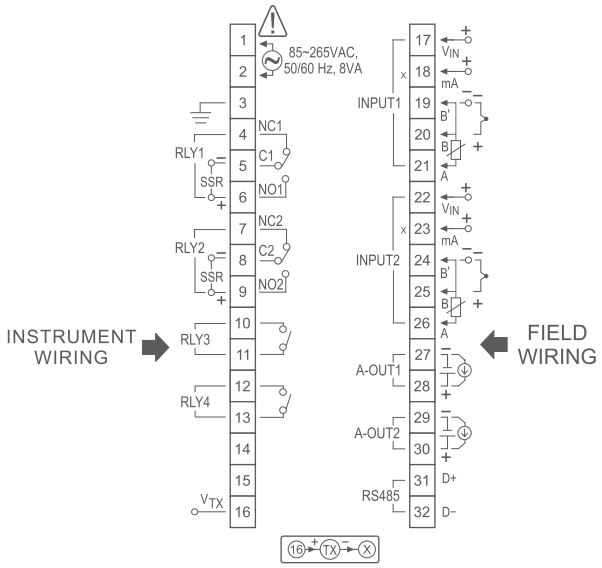


Fig 4 : **SURFACE MOUNT FLAMEPROOF**



FEATURES SUMMARY

- Versions
  - PID - Single loop (Includes Onoff Controller and Indicator modes)
  - PID - Dual loop
  - Heat+cool
  - PID - Single loop, 16-segment profile
  - VMD
- PID Control with Fuzzy Logic
- 1 or 2 universal inputs
- Sampling time 50ms/200ms programmable
- Control outputs - User programmable between relays / analog output
- Isolated 2 x 0/4~20 mA or 0-10 V DC for control / retransmission output
- Isolated RS485/MODBUS RTU
- Autotuning function
- Auto/manual control
- Calibration & configuration through PC utility
- User friendly keyboard interface with password protection
- User key with assignable function
- Other functions
  - ▫ Single ramp/soak ▫ Soft start ▫ Bumpless transfer
  - ▫ Anti reset windup ▫ Four PID groups selectable
  - ▫ Remote setpoint input function ▫ Heater break alarm (CT input)
  - ▫ Standby function ▫ Parameter Mask

PID CONTROLLER

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ORDERING INFORMATION

PANEL MOUNT

CODE	SPECIFICATIONS	1	2	3	4	5	6
2824							
1	**Version**						
	PID - Single loop	A					
	PID - Dual loop - **Note1**	B					
	PID - Heat + Cool	C					
	PID - Single loop, 16-segment profile	D					
2	**Number of inputs (For Group2 - Contact Factory)**						
	1 x Universal input (Group1)		1				
	2 x Universal input (Group1) - **Note1**		2				
	1 x Universal input (Group1) + 1 x Current transformer input (with relay)		3				
	1 x Universal input (Group1) + 3 x Digital Input		4				
	1 x Universal input (Group1) + 6 x Digital Input		5				
	2 x Universal input (Group1) + 6 x Digital Input		6				
3	**Relay outputs - Note2**						
	None			N			
	2 Relays - (NO1-C1-NC1, NO2-C2-NC2)			2			
	4 Relays - (NO1-C1-NC1, NO2-C2-NC2, NO3-C3, NO4-C4) **Note2**			4			
	6 Relays - **Note3**			6			
	7 Relays			7			
	4 Relays - (NO1-C1-NC1, NO2-C2-NC2, NO3-C3-NC3, NO4-C4-NC4)			8			
4	**Analog outputs**						
	None				N		
	1 x 4~20 mA				A		
	1 x 0~10V				B		
	2 x 4~20 mA				C		
	2 x 0~10V				D		
	1 x 4~20 mA + 1 x 0~10V				E		
5	**RS485**						
	None					N	
	RS485 / MODBUS RTU					A	
6	**Power supply**						
	85~265 VAC						1
	20VDC - 55VDC						2

Note1 : For dual loop PID or remote setpoint input, 2 x universal input has to be selected
Note2 : Relay outputs : Contact sales for SSR drive outputs.
Note3 : Relay 5-6 : Contact sales for NO-C-NC contacts

See Preferred Order Codes list. For order codes outside this list, larger MOQ will apply. Contact sales.

Order Code Format : CODE-1-2-3-4-5-6
XXXX-X-X-X-X-X-X

Example

NEX206, Dual loop PID, Two universal input, 4 Relays, SMPS
2824-B-2-4-N-N-1

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ORDERING INFORMATION

FLAMEPROOF

CODE	SPECIFICATION	1	2	3	4	5	6
2945							
1	**Version**						
	PID - Single loop	A					
	PID - Dual loop - **Note1**	B					
	PID - Heat + Cool	C					
	PID - Single loop, 16-segment profile	D					
2	**Number of inputs (For Group2 - Contact Factory)**						
	1 x Universal input (Group1)		1				
	2 x Universal input (Group1) - **Note1**		2				
	1 x Universal input (Group1) + 1 x Current transformer input (with relay)		3				
	1 x Universal input (Group1) + 3 x Digital Input		4				
	1 x Universal input (Group1) + 6 x Digital Input		5				
	2 x Universal input (Group1) + 6 x Digital Input		6				
3	**Relay outputs - Note2**						
	None			N			
	2 Relays - (NO1-C1-NC1, NO2-C2-NC2)			2			
	4 Relays - (NO1-C1-NC1, NO2-C2-NC2, NO3-C3, NO4-C4) **Note 2**			4			
	4 Relays - (NO1-C1-NC1, NO2-C2-NC2, NO3-C3-NC3, NO4-C4-NC4) **Note 2**			5			
4	**Analog outputs**						
	None				N		
	1 x 4~20 mA				A		
	1 x 0~10V				B		
	2 x 4~20 mA				C		
	2 x 0~10V				D		
	1 x 4~20 mA + 1 x 0~10V				E		
5	**RS485**						
	None					N	
	RS485 / MODBUS RTU					A	
6	**Power supply**						
	85~265 VAC						1
	20VDC - 55VDC						2

Note1 : For dual loop PID or remote setpoint input , 2 x universal input has to be selected
Note2 : Relay outputs : Contact sales for SSR drive outputs

See Preferred Order Codes list. For order codes outside this list, larger MOQ will apply. Contact sales.

Order Code Format : CODE-1-2-3-4-5-6
XXXX-X-X-X-X-X-X

Example

NEX206, Dual loop PID, Two universal input, 2 Relays, SMPS
2945-B-2-2-N-N-1

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PREFERRED ORDER CODES

Sr. No.	Order Code	Version	Brief Specification	Power Supply
1	2824 A12AN1	PID - Single loop	2 Relays + Iout	SMPS
2	2824 A12CN1	PID - Single loop	2 Relays + 2 Iout	SMPS
3	2824 A22AA1	PID - Single loop	2 Inputs+2 Relay+Iout+Modbus	SMPS
4	2824 A14AN1	PID - Single loop	4 Relays + Iout	SMPS
5	2945 A12AN1	PID - Single loop	2 Relays + Iout	SMPS
6	2945 A12CN1	PID - Single loop	2 Relays + 2 Iout	SMPS
7	2945 A22AA1	PID - Single loop	2 Inputs+2 Relay+Iout+Modbus	SMPS
8	2945 A14AN1	PID - Single loop	4 Relays + Iout	SMPS

ENQUIRIES

Instruments : sales@radix.co.in • + 91 9324934061
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Gauges : gauges@radix.co.in • + 91 8591305907
Automation : automation@radix.co.in • + 91 9320997925
Level : level@radix.co.in • + 91 8591305907
Flow : flow@radix.co.in • + 91 8591305907

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