1/16 DIN Size Universal Single Loop Process Controller

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neuro 202

Universal Input with 24VDC @ 30mA Excitation Voltage
Single Loop Uni-Directional/Bi-Directional Control
Universal Control Output as Relay / SSR / mA or V
Alarms, Retransmission & RS485 Serial Outputs
16 Segment Ramp/Soak Profile or Auxiliary Setpoint Input

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Salient Features

- 2 Rows of 4 Digits, 0.36" Bright Green, 7 Segment LED Display
- Universal Inputs (Thermocouples, RTD Pt100, DC mA/mV/V)
- 24VDC @ 30mA Excitation Voltage (5 / 12 VDC on Request)
- Built-in Lead Resistance Compensation for RTD Input & CJC for Thermocouple Inputs
- Programmable Range / Resolution for DC mA/mV/V Inputs
- Programmable Input Signal Conditioning (Digital Filter & Zero Offset)
- Self Tune PID (with Auto/Manual Bumpless Transfer), On-Off, and Pulsed On-Off Control
- Uni-Directional / Bi-Directional Control
- Universal Main Control Output (Relay / SSR / mA or V)
- Built-in 16 Segment Ramp / Soak Profile or Auxiliary Setpoint Input
- Optional Alarms & PV/SP Retransmission Outputs
- RS485 MODBUS RTU Serial Communication Port as Standard
- Universal Supply Voltage : 85~264 VAC, 50/60 Hz
- DIN Standard Dimensions (mm) : 48(H) X 48(W) X 94(D)
- Flame-proof Enclosure (Gas Group IIA & IIB) Available

General Information

Product Type	1 / 16 DIN Size Universal Single Loop Process Controller

Ordering Code

N202- □ - □ - □ - □ - □

Output 1 **1** : Relay / SSR / mA **2** : Relay / SSR / V
Output 2 **0** : None **1** : Relay **2** : SSR **3** : mA **4** : V
Output 3 **0** : None **1** : Relay **2** : SSR **3** : mA **4** : V
Excitation Voltage **0** : 5VDC **1** : 12VDC **2** : 24VDC (Default)
Version **0** : Ramp/Soak Profile (Default) **1** : Auxiliary SP

Example Code : N202-1-1-3-2-0
Ouput 1 : Relay/SSR/mA, Output 2 : Relay, Output 3 : mA
Excitation Voltage : 24VDC
Version : Ramp/Soak Profile

Quantity	1 Unit
Accessories	(Optional) USB to RS485 Converter
Similar Modules	neuro 202L Plus

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Operator Interface

Display	2 Rows of 4 Digits, 0.36” Bright Green, 7 Segment LED
Status Indicators	8 Red LEDs
Keys	4 Tactile Switches PAGE, DOWN, UP, ENTER / ACK

PV Input

Sensor/Signal (User Configurable)	**Thermocouple** : J, K, T, R, S, B, N **RTD** : Pt100, 3 wire **DC mA** : 0 - 20 mA, 4 - 20 mA **DC mV** : 0 - 80 mV **DC Volts** : 0 - 1.25 V, 0 - 5 V, 0 - 10 V, 1 - 5 V
Accuracy	**Thermocouples** : ± 0.2% of reading for J, K, T (Excluding CJC) ± 0.4% of reading for R, S, B, N (Excluding CJC) CJC : ± 1.5 °C (Specified over 18 to 37 °C) **RTD Pt100** : ± 0.2% of reading. Lead Resistance Compensation : Max. 5Ω per Lead for 3-wire RTD **DC mA / mV / V** : ± 0.1% of reading
Display Resolution	**Thermocouples** : 1°C Fixed **RTD Pt100** : 0.1 / 1°C (Selectable) **DC mA / mV / V** : 0.001 / 0.01 / 0.1 / 1 Counts (Selectable)
Range	Refer Table 1 for Thermocouples & RTD Inputs Adjustable from -1999 to 9999 Counts for DC mA/mV/V
Zero Offset	User Adjustable over Full Range
ADC	16 Bit (± 32,768 Counts), Sigma-Delta (ΣΔ)
Sampling Time	200mS (5 Sample per Second)
Input Resistance	> 8 MΩ for Thermocouples, RTD Pt100 & mV Inputs > 47 KΩ for Voltage Input 249 Ω Precision Shunt for mA Input
Common Mode Rejection	> 100dB at 50/60 Hz
Input Protection	ESD : 8KV EFT : 2KV Surge : 1KV
Input Conditioning	First Order Analog R-C Low-Pass Filter & Settable Digital Low-Pass Filter

Excitation Voltage

Ratings	Standard : 24 VDC @ 30 mA Optional : 5 / 12 VDC @ 30 mA Note : For transmitters with current (0/4-20 mA) output, the Excitation Voltage can power only one transmitter.

Alarms

Numbers	2, Independent	
Programmable Parameters	**Type** : Process Low, Process High, Deviation, Window **Hysteresis** : 1 to 3000 Unit Counts	**Logic** : Normal, Reverse **Inhibit** : No, Yes
Outputs (Optional)	Relay Change-over Contacts or SSR Drive (Factory Settable) (Output-2 and/or Output-3)	

Retransmission

Parameter Type	Process Value (PV) or Setpoint (SP)
Parameter Value	User Settable via 'Retrans Low' & 'Retrans High' Parameters
Output Signal (Output-3)	DC Volts (0-5/10 V) or DC Current (0/4-20 mA)

Control

Type	Selectable : Self Tune PID, ON-OFF, Pulsed ON-OFF
Mode	Selectable : Uni-Directional (Heat-only or Cool-only), Bi-Directional (Heat + Cool)
Control Parameters	• ON-OFF : Hysteresis • Self Tune PID : Proportional Band, Integral Time, Derivative Time, Cycle Time, Relative Cool Gain, Power Low, Power High, Overshoot Inhibit • Pulsed ON-OFF : Hysteresis, Pulse Period, Pulse-ON Time
Manual Control	Bump-less Transfer between Auto PID and Manual Control through front panel Key

Ramp/Soak Setpoint Profile

Segments	16, Free Forming Ramp or Soak
Hold Back Band	Common for entire Profile or Independent for each Segment
Repeat Cycles	1 to 9999
Power-fail Recovery	User Programmable for Resumption or Abortion of Profile

Auxiliary Setpoint

No. of Auxiliary Setpoint	1
Switching	Switching between Main & Auxiliary Setpoint through rear panel Digital Input

Digital Input

Type	Potential-free Contact Closure (Push button, etc.)

Function

Version	Function
Ramp / Soak Profile	Remote Start of Profile. Open to Close Contacts : Profile Start Command.
Auxiliary Setpoint	Switching between Main & Auxiliary Setpoint. Contacts Closed : Auxiliary Setpoint Active. Contacts Open : Main Setpoint Active.

Electrical Specifications for Outputs (Refer Table 2)

Relay	Contact Type : Potential-free Change-over Contacts Contact Rating : 5A Resistive @ 250 VAC Contact Life : > 5,00,000 Operations at Rated Voltage / Current
SSR Drive	12 VDC @ 30 mA
DC Current / Voltage	Current : 0-20mA, 4-20mA (into 500 Ohm Maximum) Voltage : 0-5V, 0-10V (into 1KOhm Minimum)

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Serial Communication

Port	RS485, 2-wire, Half Duplex, Start-Stop Synchronized
Protocol	MODBUS RTU
ID	Settable : 1 to 127
Baud Rate	Settable : 4800, 9600, 19200
Parity	Settable : None, Even, Odd
Max. Units per Loop	31
Max. Distance	1200 Meters

Power Supply

Type	Switch Mode (SMPS)
Line Voltage	85~264 VAC, 50/60Hz
Consumption	5 VA Max

Physical

Mounting	Plug-in with Panel Mounting Clamps
Overall Dimensions	48(H) X 48(W) X 94(D), mm
Panel Cutout	45(H) X 45(W), mm
Terminals	Screw Type, Pluggable
Weight	200 gm, Appx.

Environmental

Operating Ambient	0 to 55°C & 5 to 90%RH Non-condensing
Storage Temperature	-10 to +70°C
Atmospheres	Not Suitable for use in Corrosive or Explosive Atmospheres. The Panel in which the Instrument is Mounted must be free of Electrically Conductive Pollution.

Back Panel Terminations

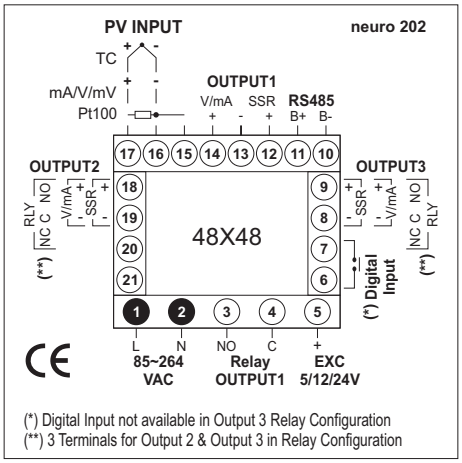


Table 1 : Thermocouple & RTD Input Ranges	
Input Type	**Range (Min. to Max.)**
2 / 3-wire, RTD Pt100	-199.9 to +850.0 °C / -328.0 to +1562.0 °F
Type J Thermocouple (Fe-K)	0.0 to +960.0°C / +32.0 to +1760.0°F
Type K Thermocouple (Cr-Al)	-200.0 to +1376.0°C / -328.0 to +2508.0°F
Type T Thermocouple (Cu-Con)	-200.0 to +387.0°C / -328.0 to +728.0°F
Type R Thermocouple (Pt / Pt-Rh13%)	0.0 to +1771.0°C / +32.0 to +3219.0°F
Type S Thermocouple (Pt / Pt-Rh10%)	0.0 to +1768.0°C / +32.0 to +3214.0°F
Type B Thermocouple (Pt-Rh6% / Pt-Rh30%)	0.0 to +1826.0°C / +32.0 to +3318.0°F
Type N Thermocouple (NiCrSi / NiSi)	0.0 to +1314.0°C / +32.0 to +2397.0°F

Table 2 : Output Option Selection & Function Assignments		
	Available Options (Specify while Ordering)	**Function Assignments (User Selectable)**
Output-1 (OP-1)	☐ Relay, SSR & 0/4-20 mA ☐ Relay, SSR & 0-5/10 V	✓ Main Control Output
Output-2 (OP-2)	☐ Relay, SSR ☐ 0-5/10 V ☐ 0/4-20 mA	✓ Cool Control Output ✓ Alarm-1 Output ✓ End of Profile Output
Output-3 (OP-3)	☐ Relay, SSR ☐ 0-5/10 V ☐ 0/4-20 mA	✓ Alarm-2 Output ✓ End of Profile Output ✓ Retransmission Output

Process Precision Instruments (An ISO 9001 : 2008 Company)

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