neuro 202

Enhanced
Universal Single Loop Process Controller

PPI
The Perfection Experts

Enhanced Version of neuro 102

What is New

- 8 LEDs for Status Indications
- 24VDC Excitation Voltage (5VDC or 12VDC on Request)
- Front Panel Alarm Acknowledge key
- No Jumper Settings for Input / Output Configuration
- RS485 Serial Port (MODBUS RTU) as Standard
- Plug-in Terminals for Easy Installation
- Reduced Enclosure Depth (94 mm with Terminals)

Features

- Universal Input (Thermocouples, RTD Pt100, DC Linear mA/mV/V)
- Programmable Range / Resolution for DC Linear Inputs
- Programmable Input Signal Conditioning (Digital Filter & Zero Offset)
- Self Tune PID or On-Off Control
- Auto / Manual Control with Bumpless Transfer
- Uni-Directional / Bi-Directional Control
- Jumper-less Universal Control Output : Relay / SSR / mA (Volts)
- In-built 16 Segment Ramp/Soak Profile or Auxiliary Setpoint Input
- Optional Alarms / Retransmission Outputs
- Universal Supply Voltage : 85~264 VAC, 50/60 Hz
- DIN Standard Dimensions (mm) : 48(H) X 48(W) X 94(D)

Specifications

Display	
Digital Readouts	2 Rows of 4 digits, 0.36” Bright Green LED, 7 Segment
Status Indicators	8 Red LEDs
Keys	
Type	4 Tactile Push-button Switches
Functions	PAGE, DOWN, UP, ENTER / ACK
Sensor / Signal Input	
Type (Jumper-less User Programmable)	Thermocouple : J, K, T, R, S, B, N RTD Pt100, 3 wire DC Linear : 0-20 mA, 4-20 mA 0-80 mV 0-1.25 V, 0-5 V, 0-10 V, 1-5 V

Accuracy	**Thermocouples** Measurement : ± 0.25% of reading ± 1 LSD Cold Junction : ± 2.5°C (Specified over 18 to 37°C Ambient) **RTD Pt100** ± 0.25% of reading ± 1 LSD **DC mA / mV / V** ± 0.20% of reading ± 1 LSD
Display Range	Refer Table 1 for Thermocouples & RTD Inputs Adjustable from -1999 to 9999 Counts for DC Linear mA/mV/V
Display Resolution	Thermocouples : 1°C Fixed RTD Pt100 : 0.1 / 1°C (Settable) DC Linear Volts / Current : 0.001 / 0.01 / 0.1 / 1 Counts (Settable)
Zero Offset	User Adjustable over Full Range
ADC	16 Bit (±32,768 Counts), Sigma-Delta (ΣΔ)
Sampling Time	200mS (5 Samples per Second)
Input Resistance	> 8 MΩ for Pt100 / Thermocouple > 47 KΩ for Voltage Input 249 Ω Precision Shunt for mA Input
Common Mode Rejection	> 100dB at 50/60 Hz
Signal Conditioning	First Order Analog R-C Low-Pass Filter with Settable Digital Low-Pass Filter
Input Protection	ESD : 8KV EFT : 2KV Surge : 1KV
Excitation Voltage	
Ratings	5 V @ 30 mA (Standard) 12 V @ 30 mA (Optional) 24 V @ 30 mA (Optional) Note : For current output transmitters (0/4-20 mA), the Excitation Voltage can power only one input.
Alarms	
Numbers	2, Independent
Programmable Parameters	Type : Process Low, Process High, Deviation, Window Logic : Normal, Reverse Hysteresis : 1 to 3000 Unit Counts Inhibit : No, Yes
Outputs (Optional)	Relay Change-over Contacts or SSR Drive (Factory Settable) (Output-2 or Output-3)
Retransmission	
Parameter Type	Process Value (PV) **or** Setpoint (SP)
Parameter Value	User Settable through 'Range Low' & 'Range High' Parameters
Output Signal	DC Current (0/4-20 mA) **or** DC Volts (0-5/10 V)

Control	
Type	ON-OFF **or** Pulsed ON-OFF **or** Self Tune PID
Mode	Heat only, Cool only, 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
Setpoint Profile	
Segments	Free Farmable 16 Ramp / Soak
Hold Back Band	Separate Ramp Band and Soak Band
Power-fail Recovery	Servo Start
Auxiliary Setpoint	
No. of Auxiliary Setpoints	1
Switching	Switching between Main & Auxiliary Setpoint through Rear Panel Digital Input
Outputs **(Refer Table 2 : Output Option Selection & Function Assignments)**	
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 Linear	Current : 0-20mA, 4-20mA (into 500 Ohm Maximum) Voltage : 0-5V, 0-10V (into 1KOhm Minimum)
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. Distance	1200 Metres
Power Supply	
Type	Switch Mode (SMPS)
Line Voltage	85~264VAC, 50/60Hz
Consumption	7VA 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, Plug-in Male / Female
Weight	200 gm, max

Environmental	
Operating Ambient	0~55°C & 5~90%RH Non-condensing
Storage Temperature	-10 to +70 °C
EMC Standards	EN50081-2 & EN 50082-2 Generic Stds for Industrial Environment
Safety Standards	Meets EN61010, Installation Catagory II
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

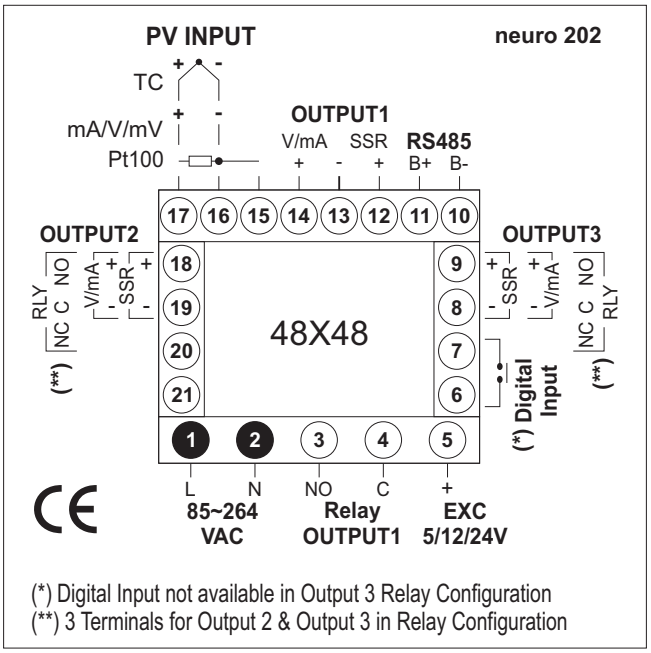

Table 1 : Temperature Ranges for Thermocouples & RTD	
Input Type	**Range (Min. to Max.)**
Type J Thermocouple (Fe-K)	0 to +960°C / +32 to +1760°F
Type K Thermocouple (Cr-Al)	-200 to +1376°C / -328 to +2508°F
Type T Thermocouple (Cu-Con)	-200 to +385°C / -328 to +725°F
Type R Thermocouple (Pt/Pt-Rh13%)	0 to +1770°C / +32 to +3218°F
Type S Thermocouple (Pt/Pt-Rh10%)	0 to +1765°C / +32 to +3209°F
Type B Thermocouple	0 to +1825°C / +32 to +3092°F
Type N Thermocouple	0 to +1300°C / +32 to +2372°F
3-wire, RTD Pt100	-199 to +600°C / -328 to +1112°F **or** -199.9 to 600.0°C / -199.9 to 999.9°F

Table 2 : Output Option Selection & Function Assignments		
	Available Options (Specify while Ordering)	**Function Assignments (User Programable)**
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

Ordering Code

Model			Output-1			Output-2			Output-3			Excitation			Built-in Feature	
N202	neuro 202	-	G1	RLY, SSR & 0/4-20 mA (Std)	-	0	None (Std)	-	0	None (Std)	-	5	5V @ 30mA	-	P	Ramp/Soak Profile (Std)
			G2	RLY, SSR & 0-5/10V		1	Relay		1	Relay		12	12V @ 30mA		A	Auxiliary Setpoint
						2	SSR		2	SSR		24	24V @ 30mA (Std)			
						3	0/4-20 mA		3	0/4-20 mA						
						4	0-5/10V		4	0-5/10V						

Std : Supplied as Standard

Example Code **N202 - G1 - 2 - 3 - 24-P**

Output-1 RLY, SSR & 0/4-20 mA, Output-2 SSR, Output-3 0/4-20 mA, 24VDC Excitation, Ramp/Soak Profile

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