

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
- 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**

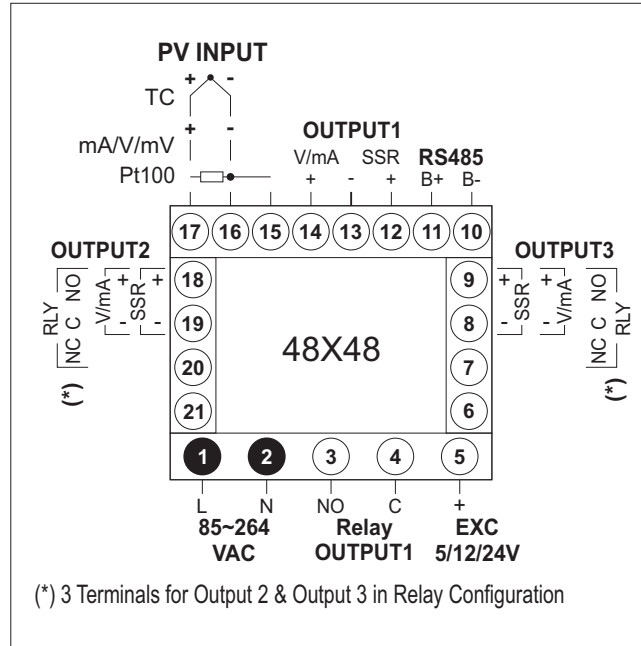
Display	
Digital Readouts	2 Rows of 4 digits, 0.36" Bright Green LED, 7 Segment
Status Indicators	8 Red LEDs
Keys	
Type	4 Tactile Push-button Switches
Functions	PAGE, DOWN, UP, ENTER / ACK
Sensor / Signal Input	
Type (Jumper-less User Programmable)	Thermocouple : J, K, T, R, S, B, N RTD Pt100, 3 wire 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	<b>Thermocouples</b> Measurement : $\pm 0.25\%$ of reading $\pm 1$ LSD Cold Junction : $\pm 2.5^{\circ}\text{C}$ (Specified over 18 to $37^{\circ}\text{C}$ Ambient) <b>RTD Pt100</b> $\pm 0.25\%$ of reading $\pm 1$ LSD <b>DC mA / mV / V</b> $\pm 0.20\%$ of reading $\pm 1$ 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 : $1^{\circ}\text{C}$ Fixed RTD Pt100 : $0.1 / 1^{\circ}\text{C}$ (Settable) DC Linear Volts / Current : $0.001 / 0.01 / 0.1 / 1$ Counts (Settable)
Zero Offset	User Adjustable over Full Range
ADC	16 Bit ( $\pm 32,768$ Counts), Sigma-Delta ( $\Sigma\Delta$ )
Sampling Time	200mS (5 Samples per Second)
Input Resistance	$> 8 \text{ M}\Omega$ for Pt100 / Thermocouple $> 47 \text{ K}\Omega$ for Voltage Input $249 \Omega$ Precision Shunt for mA Input
Common Mode Rejection	$> 100\text{dB}$ 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
<b>Excitation Voltage</b>	
Ratings	5V @ 30 mA (Standard) 12V @ 30 mA (Optional) 24V @ 30 mA (Optional)  Note : For current output transmitters (0/4-20 mA), the Excitation Voltage can power only one input.
<b>Alarms</b>	
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)
<b>Retransmission</b>	
Parameter Type	Process Value (PV) <b>or</b> Setpoint (SP)
Parameter Value	User Settable through 'Range Low' & 'Range High' Parameters
Output Signal	DC Current (0/4-20 mA) <b>or</b> DC Volts (0-5/10 V)

<b>Control</b>	
Type	ON-OFF <b>or</b> Pulsed ON-OFF <b>or</b> Self Tune PID
Mode	Heat only, Cool only, Heat & Cool
Control Parameters	<ul style="list-style-type: none"> <li>• ON-OFF : Hysteresis</li> <li>• Self Tune PID : Proportional Band, Integral Time, Derivative Time, Cycle Time, Relative Cool Gain, Power Low, Power High, Overshoot Inhibit</li> <li>• Pulsed ON-OFF : Hysteresis, Pulse Period, Pulse-ON Time</li> </ul>
Manual Control	Bump-less Transfer between Auto PID and Manual Control through front panel Key
<b>Setpoint Profile</b>	
Segments	Free Farmable 16 Ramp / Soak
Hold Back Band	Separate Ramp Band and Soak Band
Power-fail Recovery	Servo Start
<b>Outputs</b> (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)
<b>Serial Communication</b>	
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
<b>Power Supply</b>	
Type	Switch Mode (SMPS)
Line Voltage	85~264VAC, 50/60Hz
Consumption	7VA Max
<b>Physical</b>	
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 Programmable)
Output-1 (OP-1)	<input type="checkbox"/> Relay, SSR & 0/4-20 mA <input type="checkbox"/> Relay, SSR & 0-5/10 V	✓ Main Control Output
Output-2 (OP-2)	<input type="checkbox"/> Relay, SSR <input type="checkbox"/> 0-5/10 V <input type="checkbox"/> 0/4-20 mA	✓ Cool Control Output ✓ Alarm-1 Output ✓ End of Profile Output
Output-3 (OP-3)	<input type="checkbox"/> Relay, SSR <input type="checkbox"/> 0-5/10 V <input type="checkbox"/> 0/4-20 mA	✓ Alarm-2 Output ✓ End of Profile Output ✓ Retransmission Output

## Ordering Code

Model		Output-1		Output-2		Output-3		Excitation	
N202	neuro 202	G1	RLY, SSR & 0/4-20 mA (Std)	0	None (Std)	0	None (Std)	5	5V @ 30mA
		G2	RLY, SSR & 0-5/10V	1	Relay	1	Relay	12	12V @ 30mA
				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**

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