

1771 N-Series Analog I/O Modules

Inputs — Type — Resolution	Outputs	Catalog Number	RTP Choice 1771-	Backplane Current Load
2 — Current only — 4-20 mA (0.34 μ A/bit) (module supplies loop power)	2 — Current — 0-25 mA (3.20 μ A/bit)	1771-NB4S	RT44	1.4A
2 — mV/TC — $\pm$ 100mV (3.3 μ V/bit) B, R, S, Thermocouple (0.3°C/bit, 0.6°F/bit) E, J, K, T Thermocouple (0.1°C/bit, 0.2°F/bit)	2 — Current — 0-25 mA (3.20 μ A/bit)	1771-NB4T	RT41	1.0A
6 — RTD — 1-650 Ω (0.01 Ω /bit) 100 Ω Platinum, Eur (385) (0.03°C/bit, 0.06°F/bit) 100 Ω Platinum, U.S. (3916) (0.03°C/bit, 0.06°F/bit) 120 Ω Nickel 10 Ω Copper	2 — Current — 0-25 mA (3.20 μ A/bit)	1771-NBRC	RTP4	1.7A
6 — Current only — 4-20 mA (0.34 μ A/bit) (module supplies loop power)	2 — Current — 0-25 mA (3.20 μ A/bit)	1771-NBSC	RTP4	2.6A
6 — mV/TC — $\pm$ 100mV (3.3 μ V/bit) B, R, S, Thermocouple (0.3°C/bit, 0.6°F/bit) E, J, K, T Thermocouple (0.1°C/bit, 0.2°F/bit)	2 — Current — 0-25 mA (3.20 μ A/bit)	1771-NBTC	RTP1	1.5A
6 — Voltage/Current — $\pm$ 10V dc (0.34mV/bit) $\pm$ 20 mA (1.3 μ A/bit)	2 — Voltage — $\pm$ 10V dc (1.32mV/bit)	1771-NBV1	RTP4 Voltage in, RTP3 Current in	1.6A
6 — Voltage/Current — $\pm$ 5V dc (0.17mV/bit) $\pm$ 20 mA (0.67 μ A/bit)	2 — Current — 0-25 mA (3.20 μ A/bit)	1771-NBVC	RTP4 Voltage in, RTP3 Current in	1.7A
8 — Current only — 4-20 mA (0.34 μ A/bit) (module supplies loop power)	0	1771-NIS	RTP4	2.4A
8 — Voltage/Current — $\pm$ 5V dc (0.17mV/bit) $\pm$ 20 mA (0.67 μ A/bit)	0	1771-NIV	RTP4 Voltage in, RTP3 Current in	1.2A
8 — Voltage/Current — $\pm$ 10V dc (0.34mV/bit) $\pm$ 20 mA (1.3 μ A/bit)	0	1771-NIV1	RTP4 Voltage in, RTP3 Current in	1.2A
4 — Voltage/Current — $\pm$ 5V dc (0.17mV/bit) $\pm$ 20 mA (0.67 μ A/bit) 4 — RTD — 1-650 Ω (0.01 Ω /bit) 100 Ω Platinum, Eur (385) (0.03°C/bit, 0.06°F/bit) 100 Ω Platinum, U.S. (3916) (0.03°C/bit, 0.06°F/bit) 120 Ω Nickel 10 Ω Copper	0	1771-NIVR	RTP4 — To use a voltage channel for current application, you must install a 250 Ω resistor at the RTP.	1.2A
4 — Volt/Current — $\pm$ 5V dc (0.17mV/bit) $\pm$ 20 mA (0.67 μ A/bit) 4 — mV/TC — $\pm$ 100mV (3.3 μ V/bit) B, R, S, Thermocouple (0.3°C/bit, 0.6°F/bit) E, J, K, T Thermocouple (0.1°C/bit, 0.2°F/bit)	0	1771-NIVT	RTP1 — To use a voltage channel for current application, you must install a 250 Ω resistor at the RTP.	1.1A
0	8 — Current — 0-25 mA (3.20 μ A/bit)	1771-NOC	RTP4 unfused RTP3 fused	2.8A @ 20 mA 3.2A @ 25 mA
0	8 — Voltage — $\pm$ 10V dc (1.32mV/bit)	1771-NOV	RTP4 unfused RTP3 fused	2.0A
8 — RTD — 1-650 Ω (0.01 Ω /bit) 100 Ω Platinum, Eur (385) (0.03°C/bit, 0.06°F/bit) 100 Ω Platinum, U.S. (3916) (0.03°C/bit, 0.06°F/bit) 120 Ω Nickel 10 Ω Copper	0	1771-NR	RTP4	1.2A
8 — mV/TC — $\pm$ 100mV (3.3 μ V/bit) B, R, S, Thermocouple (0.3°C/bit, 0.6°F/bit) E, J, K, T Thermocouple (0.1°C/bit, 0.2°F/bit)	0	1771-NT1	RTP1	1.0A
8 — mV/TC — -5/+55mV (0.95 μ V/bit) B, R, S, Thermocouple (0.03°C/bit, 0.06°F/bit) E, J, K, T Thermocouple (0.1°C/bit, 0.2°F/bit) C Thermocouple (0.07°C/bit, 0.1°F/bit) N Thermocouple (0.03°C/bit, 0.5°F/bit)	0	1771-NT2	RTP1	1.0A

- All input channels have scaling, high/low alarms with dead band, rate alarm, and digital filtering
- Each 4-channel module requires **one** cable assembly for connection to its RTP
- Each 8-channel module requires **two** cable assemblies for connection to its RTP
- The available cable assemblies are: 1771-NC6 (6 ft) and 1771-NC15 (15 ft)
- Each modules has a channel update period of 25ms per module

- For each module, the data format is BCD or natural binary
- All output channels have scaling, user-defined last state, high/low clamp limits, and rate-of-change alarm
- For each module the step response @ 99.9% is 125ms
- Each module occupies one slot

For more information, see the *High-Resolution Isolated Analog Module Product Data*, pub. no. [1771-2.193](#).

1771 Process Control I/O Modules

Temperature Control Module

(Cat. No. 1771-TCM)



The temperature control module is an intelligent I/O module that can accommodate 8 heat/cool PID loops for barrel temperature control or other injection molding temperature control applications. The module has 8 analog inputs, each of which functions as the controlled variable (C) input for a PID loop. The PID algorithm is performed on the module for each of the loops. The manipulated variable (M) output of each loop is sent from the module to the PLC processor's data table as both a numeric value and as a time-proportioned output (TPO) signal. Your ladder logic can send either the M numeric value to an analog output module, or the TPO signal to a digital output module to close the loop. For very fast cut-off, your ladder logic can use the TPO signal single-transferred to the input image.

With the 1771-TCM module, we provide configuration software that consists of easy-to-use faceplates.

Features

- 8 PID loops
- auto-tuning of PID loops (optimized for tuning barrel temperature control loops)
- a thermocouple input ($\pm 100\text{mV}$) for each PID loop
- 16-bit analog-to-digital converter resolution (0.1°)
- writes a heat and cool M value (for each PID loop) to the data table as a numeric value and as the duty cycle of a TPO bit
- single-transfers the TPO signals to the input image for applications requiring very fast cut-off
- temperature values in $^\circ\text{C}$ or $^\circ\text{F}$
- self-calibration (external reference required)
- software configuration
- user-selectable high and low alarms with dead band for hysteresis
- self-diagnostics
- input open-circuit detection

Specifications



Number of PID loops	8 individually isolated
I/O chassis location	any single I/O module slot
A/D resolution	16 bits or 15 bits plus sign bit
Input filtering	6-pole low-pass hardware filter
Calibration interval	• 6 months for first interval • 1 year for subsequent intervals
Isolation voltage	Designed to withstand 1000V dc continuous between input channels and between input and backplane connections. Modules are 100% tested at 1200V dc for 1 second between input channels and backplane connections.
Backplane current load	1.1A (1.5A surge at power turn on)
Environmental conditions:	
• Operating temperature	• 0 to 60°C (32 to 140°F)
• Rate of change	• Ambient changes greater than 0.5°C/minute may temporarily degrade performance during periods of change.
• Storage temperature	• -40 to 85°C (-40 to 185°F)
• Relative humidity	• 5 to 95% (without condensation)
Connecting cable(s)	1771-NC6 = 1.8m (6 ft) 1771-NC15 = 4.6m (15 ft)
RTP choice	1771-RTP1
Weight	0.8 kg (1.8 lb)

For selection chart, see page 3-38.

Typical Configuration

