CP1W-GCTS2 – Data Sheet

Low-Cost, 2-Point Thermocouple Option Module for CP1L, CP1L-E, CP1H and CJ2M-CPU3x PLCs

The CP1W-GCTS2 is a low cost 2 point thermocouple module designed to work with the CP1L, CP1L-E, CP1H and CJ2M-CPU3x PLCs with an available option board slot. It can be used to monitor temperature and control temperature when used with the PID or PIDAT instructions.

Key Features and Benefits

- **Superior Performance –** PID with 2 degrees of freedom preventing overshoot at start-up and fast response
- **Easy Auto-Tuning –** PID values are easily calculated using Auto-Tuning and can be executed at anytime
- **J or K Thermocouple** – Supports either J or K type Thermocouples and it can be different for each channel
- **Deg. F or Deg. C Scaling** – Can be set up to read in either Fahrenheit or Celsius
- **0.1 Deg Resolution** - Each input supports either 0.1 or 1 Degree resolution
- **Binary or BCD Format** – Temperature can be displayed in Binary or BCD format
- **Isolated Inputs** – Each input is isolated with Photo-couplers
- **Simple Setup** – A single register is needed to setup J/K, Resolution, Deg F/C
- **Sensor Offset** – Offsets can easily be entered for calibration

Applications
Baking, roasting, frying, fermentation, cooling, heating, drying, sterilizing, molding, sealing

Industries
Food & Beverage, Packaging Industry, Plastic Extrusion Equipment, Oven & Furnaces, Plastic Blow Molding Equipment, Plastic Injection Molding Equipment

2-PID Advanced Control

Omron uses 2-PID (PID with 2 degrees of freedom) control which is an important advance on standard PID control. 2-PID control uses a powerful algorithm that enables the temperature to be tuned for optimum disturbance response without any compromise on the speed of reaction to changes in set point. The algorithm takes advantage of fuzzy logic processing to identify the type of response required then adjust settings accordingly.

With an input response as short as 200ms, the controller can deliver a control response within 0.5 second, fast enough to handle high-speed packaging equipment such as pouch form-fill-seal machines. This means faster start up production times and much more stable control during production leading to better quality products.
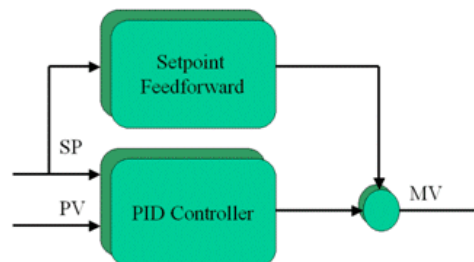
2 Degree of freedom PID Control
Alpha tuning parameter
0.0 No feedforward
1.0 Minimum SP overshoot
0.65 default parameter
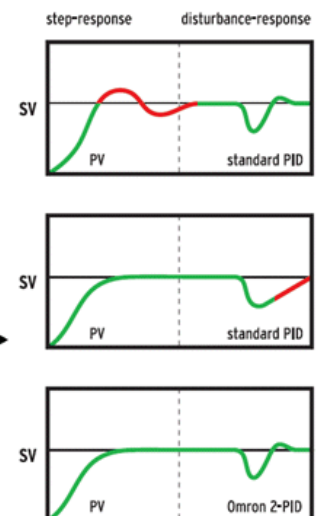
Temperature Range

Type	Degree Units	Resolution	Minimum	Maximum
K	Celsius	1.0	-250	+1350
		0.1	0	+500.0
	Fahrenheit	1.0	-400	+2450
		0.1	0	+900.0
J	Celsius	1.0	-200	+1000
		0.1	0	+400.0
	Fahrenheit	1.0	-300	+1800
		0.1	0	+750.0

Data

CP1L/CP1H Option Slot	Thermocouple	Temperature Value	Setup Address Beginning
1	Thermocouple 1	CIO500	D1250
	Thermocouple 2	CIO510	D1260
2	Thermocouple 1	CIO520	D1270
	Thermocouple 2	CIO530	D1280

Specifications

Current consumption:
- 50 mA max. at 5 VDC

Isolation:
- Photo-couplers for all inputs, Galvanic isolation up to 6 KVPK for 1 min., 5 KVRMS Reinforced insulation

Accuracy:
- ±1 Deg C for 0 – 400 Deg C, ±2 Deg C over the entire temperature range

Conversion Time:
- Conversion time is 200 ms for both channels

Applicable PLCs

The CP1W-GCTS2 is compatible with CP1L, CP1L-E, CP1H and CJ2M-CPU3x PLCs with an available option slot. It will not work with the CP1E PLCs. Please verify the maximum current consumption of the PLC system is not exceeded.

Additional Literature can be obtained from www.omron247.com.

W450 - CP1H Operation Manual
W451 - CP1L / CP1H Programming Manual
W516 - CP1L-E Operation Manual
W472 - CJ2 Hardware Manual
W473 - CJ2 Software Manual