Isolated Thermocouple Input Modules

Model Number		Q68TD-G-H01	Q68TD-G-H02
Stocked Item		S	S
Certification		UL • cUL • CE	
Number of Analog Inputs		8 channels + cold junction compensation channels / 1 module	
Analog Output	Temp. Conversion Value	16-bit signed binary (-2700 to 18200)	
	Scaling Value	16-bit signed binary	
Thermocouple Compliance Standards		JIS C1602-1995, IEC 60584-1 (1995), IEC60584-2 (1982)	
Conversion Speed (*1)		320ms/8 channels	640ms/8 channels
Output Monitor	Resolution	12 bit	
	Reference Accuracy	±0.2% (To be accuracy, a warm-up (power distribution) period of 30 minutes is required)	
	Temp. Coefficient (*2)	±160ppm / °C (0.016% / °C)	
Output Short-Circuit Protection		Available	
I/O Device Points Occupied		16 points	
Isolation Specifications		See below	
Connected Terminal		18 point terminal block	
Connector Type		A6CON4 (Dedicated cable and terminal block available; FA-CBL05Q68TDG and FA-LTB40TDG (non-stock))	
Internal Current Consumption (5VDC)		0.49A	0.65A
Weight (kg)		0.18	0.22
Base Unit Slots Occupied		1	

Isolated Part	Isolation Method	Dielectric Strength	Insulation Resistance
Between Thermocouple Input Channel and Programmable Controller Power Supply	Transfer Isolation	500VACrms for 1min	500VDC 10MΩ or more
Between Thermocouple Input Channels	Transfer Isolation	1000VACrms for 1min	
Between Cold Junction Compensation Channel and Programmable Controller Power Supply	No Isolation	-	-

Notes:
1. The conversion speed indicates the maximum time from when the input temperature changes until the measured temperature value of buffer memory is batch-updated.
2. Calculate the accuracy in the following method. (Accuracy) = (conversion accuracy) + (temperature characteristic) (operating ambient temperature variation) + (cold junction temperature compensation accuracy) An operating ambient temperature variation indicates a deviation of the operating ambient temperature from the 25 ±5°C range. Example: When using the thermocouple B (refer to User Manual) with the operating ambient temperature of 35°C and the measured temperature of 1000°C, the accuracy is as follows. (2.5°C)+(0.4) (35 -30 °C)+(1°C)= ±5.5°C

High Resolution Isolated Input Thermocouple Module

Thermocouple input modules are a specialized version of the more general-purpose analog input modules. These modules are designed to accept the specialized voltage signals generated by a wide variety of standard thermocouples. This allows the temperatures monitored by thermocouple sensors to be converted into digital values for use in CPU programs.

Model Number		Q64TDV-GH
Stocked Item		S
Certification		CE
Number of Channels		4 channels
Output	Temperature Conversion Value	16-bit, signed binary (-2700 to 18200: Value to the first decimal place x 10 times)
	Micro Voltage Conversion Value	16-bit, signed binary (-25000 to 25000)
	Scaling Value	16-bit, signed binary
Standard With Which Thermocouple Conforms		JIS C1602-1995
Usable Thermocouples		B, R, S, K, T, E, J, N
Cold Junction Temperature Compensation Accuracy		±1.0 °C
Micro Voltage Input Range		-100mV to +100mV (input resistance 2MΩ or more)
Micro Voltage Input Accuracy		±0.2mV (at 25°C ambient) ±0.8 mV (0-55°C ambient)
Resolution	Thermocouple Input	B: 0.7°C • R,S: 0.8°C • K,T: 0.3°C • E: 0.2°C • J: 0.1°C • N: 0.4°C
	Micro Voltage Input	4µV
Sampling Period		20ms/channel (*1)
Conversion Speed		Sampling period x 3 (*2)
Number of Analog Input Points		4 channels + Pt100 connection channel/module
Wire Break Detection		Yes (Each channel independent)
I/O Device Points Occupied		16 points
Connection Terminals		18-point terminal block
Applicable Crimping Terminals		R1.25-3 R1.25-3 (A solderless terminals with sleeves cannot be used)
Internal Current Consumption (5VDC)		0.50 A
Weight (kg)		0.25
Base Unit Slots Occupied		1

Notes:
1. A period until a thermocouple input value/micro voltage input value is converted into a temperature measurement micro/value voltage conversion value.
2. A period until a thermocouple input value/micro voltage input value is converted into a temperature measurement value/micro voltage conversion value and the resultant value is stored into the buffer memory. The conversion speed is a delay time that occurs during sampling processing. It is independent of averaging processing. Example: When two channels are enabled for conversion (Conversion speed) = (sampling period) x 3 = (20ms x 2 channels) x 3 = 120 ms.

RTD Input Module

RTD input modules offer an alternative to thermocouple input modules. These work with platinum resistance temperature device (RTD) sensors. Note that RTD sensors are typically a narrower temperature range than that offered by thermocouples.

Model Number		Q64RD
Stocked Item		S
Certification		UL • cUL • CE
Number of Channels		4 channels
Output	Temperature Conversion Value	16-bit, signed binary data (-2000 to 8500: Value to the first decimal place x10 times); 32-bit, signed binary data (-200000 to 8500000: Value to the third decimal place x1000 times)
	Scaling Value	16-bit, signed binary
Usable Platinum Temperature-Measuring Resistors		Pt100 (JIS C1604-1997, IEC 751 1983), JPt100 (JIS C1604-1981)
Measured Temp. Range	Pt100	-200 to 850°C
	JPt100	-180 to 600°C
Range Changing	Pt100	-20 to 120°C / -200 to 850°C
	JPt100	-20 to 120°C / -180 to 600°C
Accuracy (*1)	Ambient Temperature 0 to 55°C	±0.25% (accuracy relative to full-scale value)
	Ambient Temperature 25 ± 5°C	±0.08% (accuracy relative to full-scale value)
Resolution		0.025°C
Conversion Speed		40ms/channel (*2)
Number of Analog Input Points		4 channels/module
Temperature Detecting Output Current		1mA
Wire Break Detection		Yes (each channel individually) (*3)
I/O Device Points Occupied		16 points
Connection Terminals		18-point terminal block
Applicable Crimping Terminals		1.25-3 R1.25-3 (Sleeved crimping terminals are not usable)
Internal Current Consumption (5VDC) (A)		0.60
Weight (kg)		0.17
Base Unit Slots Occupied		1

Notes:

1. The selection ranges and accuracies have the following relationships.

Ambient Temperature	Pt100 and JPt100 : -20 to 120°C	Pt100 : -200 to 850°C	JPt100 : -180 to 600°C
0 to 55°C	± 0.3°C	± 2.125°C	± 1.5°C
25 ± 5°C	± 0.096°C	± 0.68°C	± 0.48°C

2. The conversion speed is a period from when a temperature is input and converted into a corresponding digital value until the value is stored into the buffer memory. When two or more channels are used, the conversion speed is "40ms x number of conversion enabled channels".
3. At wire break detection, the temperature conversion value right before wire break occurrence is held.

Isolated RTD Input Modules

Model Number		Q64RD-G
Stocked Item		S
Certification		UL • cUL • CE
Number of Channels		4 channels
Output	Temperature Conversion Value	16-bit, signed binary data (-2000 to 8500: Value to the first decimal place x10 times); 32-bit, signed binary data (-200000 to 8500000: Value to the third decimal place x1000 times)
	Scaling Value	16-bit, signed binary
Usable Platinum Temperature-Measuring Resistors		Pt100 (JIS C1604-1997,IEC 751 1983), JPt100(JIS C1604-1981), Ni100Ω (DIN43760 1987)
Measured Temp. Range	Pt100	-200 to 850°C
	JPt100	-180 to 600°C
Range Changing	Pt100	-20 to 120°C /0 to -200°C / -200 to 850°C
	JPt100	-20 to 120°C /0 to -200°C / -180 to 600°C
Accuracy (*1) (Accuracy Relative to Maximum Value of Selection Range)	Pt100/JPt100 (-20 to 120 °C)	±70ppm/°C (±0.0070%/°C)
	Pt100/JPt100 (0 to 200°C)	±65ppm/°C (±0.0065%/°C)
	Pt100/JPt100 (-200 to 850°C)	±50ppm/°C (±0.0050%/ °C)
	Pt100/JPt100 (-60 to 180°C)	±70ppm/ °C (±0.0070%/ °C)
Resolution		0.025°C
Conversion Speed		40ms/channel (*2)
Number of Analog Input Points		4 channels/module
Isolation		See table below
Temperature Detecting Output Current		1mA
Wire Break Detection		Yes (each channel individually) (*3)
I/O Device Points Occupied		16 points
Connection Terminals		18-point terminal block
Applicable Crimping Terminals		1.25-3 R1.25-3 (Sleeved crimping terminals are not usable)
Internal Current Consumption (5VDC) (A)		0.62
Weight (kg)		0.20
Base Unit Slots Occupied		1

Specific Isolated Area	Isolation Method	Dielectric Withstand Voltage	Isolation Resistance
Between Temperature-Measuring Resistor Input and Programmable Controller Power Supply	Photocoupler Isolation	1780VrmsAC/ 3 cycles (Altitude 2000m)	10MΩ or more using 500VDC isolation resistance tester
Between Temperature-Measuring Resistor Input Channels	Transformer Isolation		

Notes:

1. The selection ranges and accuracies have the following relationships.

Ambient Temperature	Pt100 and JPt100 : -20 to 120°C	Pt100 : -200 to 850°C	JPt100 : -180 to 600°C
0 to 55°C	± 0.3°C	± 2.125°C	± 1.5°C
25 ± 5°C	± 0.096°C	± 0.68°C	± 0.48°C

2. The conversion speed is a period from when a temperature is input and converted into a corresponding digital value until the value is stored into the buffer memory.
   When two or more channels are used, the conversion speed is “40ms x number of conversion enabled channels”.
3. For output in the case of disconnection detection, select any of “Value immediately before disconnection”, “Up scale (maximum value of measured temperature range + 5% of measured temperature range)”, “Down scale (minimum value of measured temperature range – 5% of measured temperature range)” or “Given value”. Refer to User Manual.

Isolated RTD Input Modules

Model Number		Q68RD3-G
Stocked Item		S
Certification		UL • cUL • CE
Number of Channels		8 channels
Output	Temp. Conversion Value	16-bit, signed binary data (-2000 to 8500)
	Scaling Value	16-bit, signed binary
Usable Platinum Temperature-Measuring Resistors		Pt100 (JIS C1604-1997,IEC 751 1983), JPt100 (JIS C1604-1981), Ni100 (DIN43760 1987)
Measured Temperature Range (*1)	Pt100	-200 to 850°C
	JPt100	-180 to 600°C
	Ni100	-60 to 180°C
Conversion Accuracy (*1, *2)	Pt100 (-200 to 850°C)	±0.8°C (Ambient temperature: 25± 5°C), ±2.4°C (Ambient temperature: 0 to 55°C)
	Pt100 (-20 to 120°C)	±0.3°C (Ambient temperature: 25± 5°C), ±1.1°C (Ambient temperature: 0 to 55°C)
	Pt100 (0 to 200°C)	±0.4°C (Ambient temperature: 25± 5°C), ±1.2°C (Ambient temperature: 0 to 55°C)
	JPt100 (-180 to 600°C)	±0.8°C (Ambient temperature: 25± 5°C), ±2.4°C (Ambient temperature: 0 to 55°C)
	JPt100 (-20 to 120°C)	±0.3°C (Ambient temperature: 25± 5°C), ±1.1°C (Ambient temperature: 0 to 55°C)
	JPt100 (0 to 200°C)	±0.4°C (Ambient temperature: 25v 5°C),± 1.2°C (Ambient temperature: 0 to 55°C)
	Ni100 (-60 to 180°C)	±0.4°C (Ambient temperature: 25± 5°C), ±1.2°C (Ambient temperature: 0 to 55°C)
Resolution		0.1°C
Conversion Speed		320ms/8 channels (*3)
Number of Analog Input Points		8 channels
Isolation		See table below
Wire Break Detection		Yes (each channel individually) (*4)
I/O Device Points Occupied		16 points
Connection Terminals		40-pin connector
Internal Current Consumption (5VDC) (A)		0.54
Weight (kg)		0.20
Base Unit Slots Occupied		1

Specific Isolated Area	Isolation Method	Dielectric Withstand Voltage	Isolation Resistance
Between RTD Input and Programmable Controller Power Supply	Transformer Isolation	500VACrms for 1min.	500VDC 10MΩ or more
Between RTD Input Channels		1000VACrms for 1min.	

Notes:

1. The selection ranges and accuracies have the following relationships.

Ambient Temperature	Pt100 and JPt100 : -20 to 120°C	Pt100 : -200 to 850°C	JPt100 : -180 to 600°C
0 to 55°C	± 0.300°C	± 1.615°C	± 1.140°C
25 ± 5°C	± 0.090°C	± 0.533°C	± 0.390°C

Ambient Temperature	Pt100 and JPt100 : -0 to 200°C	Pt100 : -60 to 180°C
0 to 55°C	± 0.470°C	± 0.450°C
25 ± 5°C	± 0.145°C	± 0.135°C

2. Accuracy in ambient temperature and wire resistance when the offset/gain setting is set. Accuracy per 1-degree temperature change. Example: Accuracy for the case of changing from 25 to 30°C 0.04% (Reference accuracy) + 0.0070%/°C (Temperature coefficient) x 5°C (Temperature difference) = 0.075%
3. The conversion speed is a period from when a temperature is input and converted into a corresponding digital value until the value is stored into the buffer memory. When two or more channels are used, the conversion speed is "40ms x number of conversion enabled channels".
4. For output in the case of disconnection detection, select any of "Value immediately before disconnection", "Up scale (maximum value of measured temperature range + 5% of measured temperature range)", "Down scale (minimum value of measured temperature range -5% of measured temperature range)" or "Given value". Refer to User's Manual.

Temperature Control Modules

Temperature Controller modules are specialized modules that are intended for closed loop control of temperature in process control applications. They accept either thermocouple or RTD input devices. The modules incorporate programmable PID algorithms to allow the modules to maintain set temperatures independently of the CPU programs. The modules also provide outputs that operate under control of the PID algorithms to maintain control of heaters.

Model Number		Q64TCTTN	Q64TCRTN	Q64TCTTBWN	Q64TCRTBWN
Stocked Item		S	-	-	-
Certification		UL • cUL • CE	UL • cUL • CE	UL • cUL • CE	UL • cUL • CE
Control Output		Transistor output			
Number of Temperature Input Points		4 channels/module			
Usable Thermocouples/Platinum Temperature-Measuring Resistors		R, K, J, T, S, B, E, N, U, L, PLII, W5Re/W26Re	Pt100, JPt100	R, K, J, T, S, B, E, N, U, L, PLII, W5Re/W26Re	Pt100, JPt100
Accuracy	Ambient Temp. 25°C ± 5°C	Input range width x (±0.3%)			
	Ambient Temp. 0°C to 55°C	Input range width x (±0.7%)			
Cold Junction Temperature Accuracy Compensation	Ambient Temp. 0°C to 55°C	Within ±1.0°C	-	Within ±1.0°C	-
	Ambient Temp. -100°C to -150°C	Within ±2.0°C	-	Within ±2.0°C	-
	Ambient Temp. -150°C to -200°C	Within ±3.0°C	-	Within ±3.0°C	-
Sampling Period		0.5s/4 channels (constant independently of the number of channels used)			
Control Output Period		1 to 100s			
Input Impedance		1MΩ			
Input Filter		0 to 100s (0: Input filter off)			
Sensor Compensation Value Setting		-50.00 to 50.00%			
Operation at Sensor Input Disconnection		Upscale processing			
Temperature Control System		PID ON/OFF pulse or 2-position control			
PID Constant Range	PID Constant Setting	Setting can be made by auto tuning			
	Proportional Band (P)	0.0 to 1000.0% (0: 2-position control)			
	Integral Time (I)	0 to 3600s			
	Derivative Time (D)	0 to 3600s (set 0 for PI control)			
Dead Band Setting Range		0.1 to 10.0%			
Transistor Output	Output Signal	ON/OFF pulse			
	Rated Load Voltage	10 to 30VDC			
	Max. Load Current	0.1A/point, 0.4A/common			
	Max. Inrush Current	0.4A 10ms			
	Leakage Current at OFF	0.1mA or less			
	Max. Voltage Drop at ON	1.0VDC (TYP) 0.1A 2.5VDC (MAX) 0.1A			
	Response Time	OFF-ON : 2ms or less, ON-OFF : 2ms or less			
Heater Disconnection Detection Specs.	Current Sensor (*1)	-		The following current sensors of URD, Ltd.: CTL-12-S36-8 (0.0 to 100.0A, CTL-6-P-H (0.00 to 20.00A)	
	Input Accuracy	-		Input range width (±1.0%)	
	Number of Alert Delays	-		3 to 255	
Number of Occupied I/O Points		16 points/slot (I/O assignment: 16 intelligent points)		32 points/2 slots (Default I/O assignment: 16 free points + 16 intelligent points)	
Connection Terminal		18-point terminal block		Two 18-point terminal blocks	
Applicable Crimping Terminal		R1.25-3, 1.25-YS3, RAV1.25-3, V1.25-YS3A			
Internal Current Consumption (A)		0.29		0.33	
Weight (kg)		0.20		0.30	
Base Unit Slots Occupied		1			

Note 1: Use only URD's current sensors. In North America contact URD via www.urdamerica.com