

# PID Temperature Controller Series PR 69

- Universal Input
- Configurable Output combination
- Configurable: Band, Deviation, Sensor break & Loop break alarms
- Single/Dual acting PID controllers with 5 Control modes
- Auto-tuning PID with provision for Soft-Start
- 6 Segment Ramp & Soak profile with Power Failure resumption modes
- Rapid Set Point change feature
- RS 485 Communication
- Bumpless Auto-Manual transfer
- IP 20 (for Terminal & Enclosure)  
IP 40 (for for Front Panel only)



## Ordering Information

### Dual Acting PID Controller

Cat. No.	Description
151A13B1*	2 Relays (SPST 8A & 5A, 240 VAC / 28 VDC), SSR driving output (12 VDC, 24mA)
151B13B1*	1 Relay (SPST 5A, 240 VAC / 28 VDC), Analog output (0-10V, 4-20mA), SSR driving output (12 VDC, 24mA)
151C13B1*	2 Relays (SPST 5A each, 240V AC/28V DC), Analog output (0-10V, 4-20mA)
151D13B1*	3 Relays (SPST One 8A & Two 5A, 240V AC / 28V DC)

\*Note: With RS485 Modbus Communication

# PID Temperature Controller

## Series PR 69



Cat. No.	151A13B1	151B13B1	151C13B1	151D13B1
<b>Parameters</b>				
Supply Voltage ( $\phi$ )	110 - 240 VAC			
Supply Variation	-20% to +10%(of $\phi$ )			
Frequency	50/60 Hz			
Control Action	ON/OFF (Symmetric / Asymmetric), PID (Single / Dual Acting)			
Tuning Method	Auto Tuning / Manual Tuning			
Temperature sensors / Inputs	Thermocouple: J, K, E, S, B, R; RTD: PT100 - 3 wire compensation; Analog Signal DC: (0-50 mV, 0-60 mV, 12-60 mV)			
Measurement Range	Sensor J: 0 to 700°C/32 to 1292°F, Sensor K: 0 to 1300°C/32 to 2372°F, Sensor E: 0 to 600°C/32 to 1112°F, Sensor R: 0 to 1750°C/32 to 3182°F, Sensor S: 0 to 1750°C/32 to 3182°F, Sensor B: 250 to 1820°C/482 to 3308°F, Sensor PT100 3 wire: - 200 to 700°C/-328 to 1292°F			
Measurement Accuracy	+/-0.5% of full scale of PT100, +/-1% of full scale for TC & mV signals			
Resolution	0.1°C for RTD, J,E & 1° for S,B,K & 0.001°C for mV signals			
Configurable Set Points	4			
Display	Dual row 7 segment display with LED indications, 4-digit process value, 4 digit set value			
Keypad	4-Keys:  - Exit / Configurable Key,  - Down,  - Up,  - Enter / Select			
Output 1	Relay: SPST 8A @ 240 VAC / 28 VDC	Analog: 0 - 10V DC / 4 - 20 mA Configurable Retransmission Output		Relay: SPST 8A @ 240 VAC / 28 VDC
Output 2	Relay: SPST 5A @ 240 VAC / 28 VDC			
Output 3	SSR: 12 VDC, 24 mA Short Circuit Protection		Relay: SPST 5A @ 240 VAC / 28 VDC	
Analog Output Update Rate	N A	150ms to 5s		N A
Alarm Types	Absolute (High/Low/Band), Deviation (High/Low/Band), Sensor Break, Loop Break,			
Soft Start Feature	Yes			
Ramp Soak Feature	6 Segment Ramp Soak Profile			
RS 485 Communication	RS 485 Communication			
Transmission Speed & Type	300 to 19200 BPS (Half Duplex)			
Transmission Protocol	Modbus RTU			
Operating Temperature	0°C to +50°C			
Storage Temperature	-20°C to +60°C			
Humidity (Non Condensing)	80% (Rh)			
Enclosure	Flame Retardant UL94V0			
Dimensions (W x H x D) (in mm)	48 x 48 x 91.5			
Weight (unpacked)	130 g			
Mounting	Flush			
Certification				
Degree of Protection	IP 20 Terminal & Enclosure, IP 40 (For Front Panel only)			

### EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

### Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

# PID Temperature Controller Series PR 69 & PR 43



## Ordering Information

### Single Acting PID Controller Advanced PID Series PR 69

Cat. No.	Description
151A12B	2 Relays (SPST 8A & 5A, 240 VAC / 28 VDC), SSR driving output (12 VDC, 24mA)
151B12B	1 Relay (SPST 5A, 240 VAC / 28 VDC), Analog output (0-10V, 4-20mA), SSR driving output (12 VDC, 24mA)
151C12B	2 Relays (SPST 5A each, 240V AC/28V DC), Analog output (0-10V, 4-20mA)
151D12B	3 Relays (SPST One 8A & Two 5A, 240V AC / 28V DC)

### Economical PID Series PR 43

Cat. No.	Description
151G12B	1 NO Relay (SPST 5A, 240 VAC / 28VDC)
151H12B	SSR driving output (12 VDC, 24mA)

# PID Temperature Controller

## Series PR 69 & PR 43



Cat. No.	151A12B	151B12B	151C12B	151D12B
<b>Parameters</b>				
Supply Voltage (φ)	110 - 240 VAC			
Supply Variation	-20% to +10% (of φ)			
Frequency	50/60 Hz			
Control Action	ON/OFF (Symmetric / Asymmetric), PID (Single Acting)			
Tuning Method	Auto Tuning / Manual Tuning			
Temperature sensors / Inputs	Thermocouple: J, K, E, S, B, R; RTD: PT100 - 3 wire compensation; Analog Signal DC: (0-50 mV, 0-60 mV, 12-60 mV)			
Measurement Range	Sensor J: 0 to 700°C/32 to 1292°F, Sensor K: 0 to 1300°C/32 to 2372°F, Sensor E: 0 to 600°C/32 to 1112°F, Sensor R: 0 to 1750°C/32 to 3182°F, Sensor S: 0 to 1750°C/32 to 3182°F, Sensor B: 250 to 1820°C/482 to 3308°F, Sensor PT100 3 wire: - 200 to 700°C/-328 to 1292°F			
Measurement Accuracy	± 0.5% of full scale of PT100, ± 1% of full scale for TC & mV signals			
Resolution	0.1°C for RTD, J,E & 1° for S,B,K & 0.001°C for mV signals			
Configurable Set Points	2			
Display	Dual row 7 segment display with LED indications, 4-digit process value, 4 digit set value			
Keypad	4-Keys: (Exit / Configurable Key), (Down), (Up), (Enter / Select)			
Output 1	Relay: SPST 8A @ 240 VAC / 28 VDC	Analog: 0 - 10V DC / 4 - 20 mA Configurable Retransmission Output	Relay: SPST 8A @ 240 VAC / 28 VDC	
Output 2	Relay: SPST 5A @ 240 VAC / 28 VDC			
Output 3	SSR: 12 VDC, 24 mA Short Circuit Protection		Relay: SPST 5A @ 240 VAC / 28 VDC	
Analog Output Update Rate	N A	150ms to 5s		N A
Alarm Types	Absolute (High/Low/Band), Deviation (High/Low/Band), Sensor Break, Loop Break,			
Soft Start Feature	Yes			
Ramp Soak Feature	No			
Operating Temperature	0°C to +50°C			
Storage Temperature	-20°C to +60°C			
Humidity (Non Condensing)	80% (Rh)			
Enclosure	Flame Retardant UL94V0			
Dimensions (W x H x D) (in mm)	48 x 48 x 91.5			
Weight (unpacked)	130 g			
Mounting	Flush			
Certification				
Degree of Protection	IP 20 Terminal & Enclosure, IP 40 (For Front Panel only)			

### EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

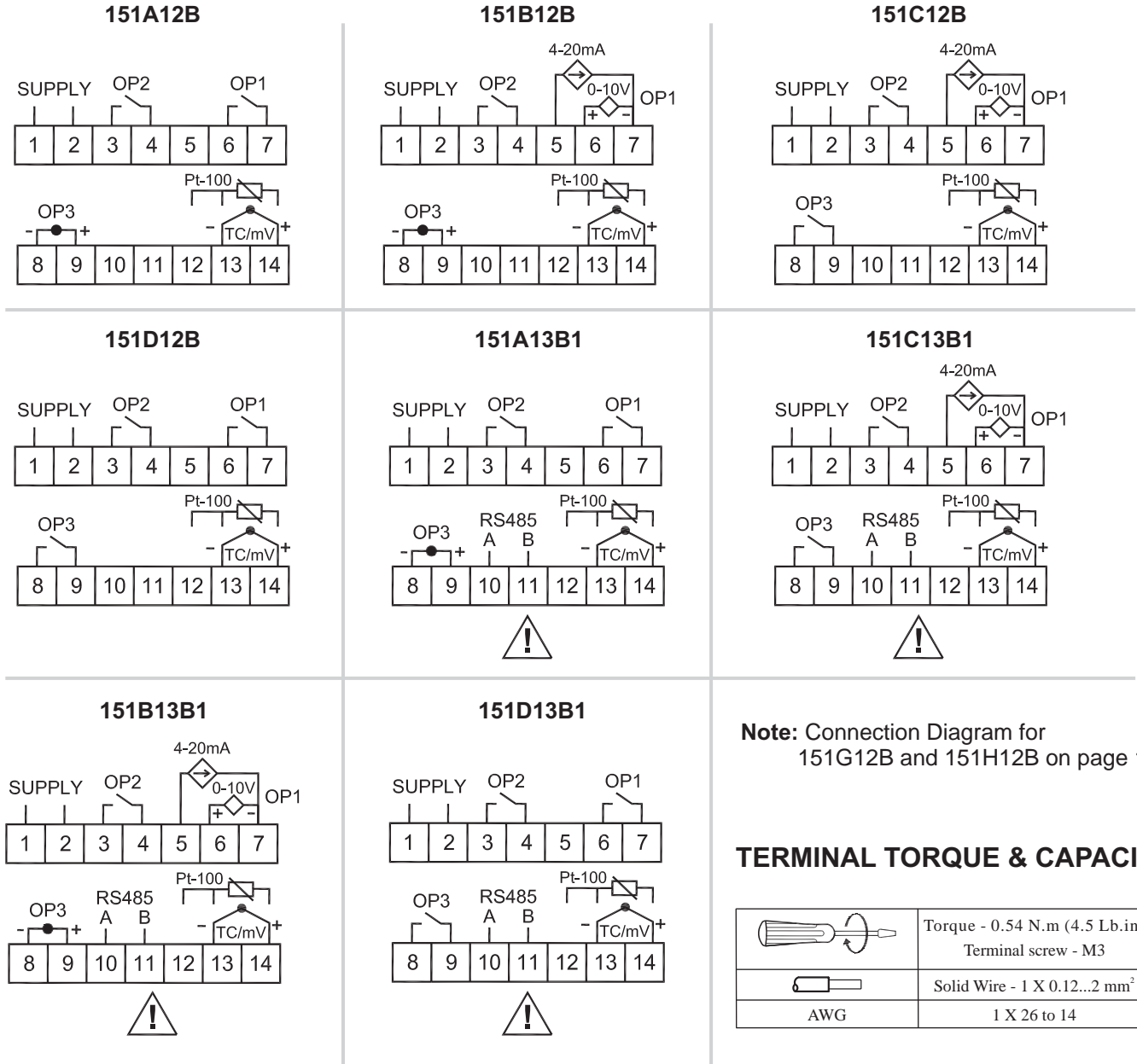
### Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

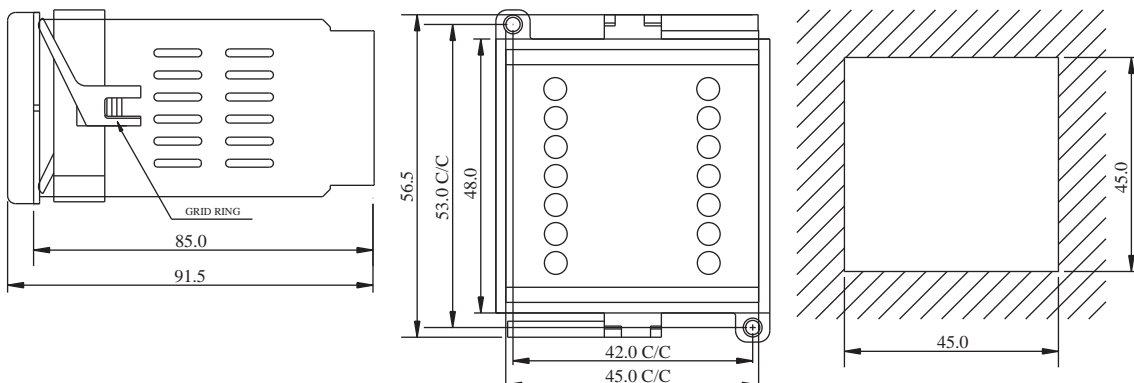
# PID Temperature Controller Series PR 69



## CONNECTION DIAGRAM



## MOUNTING DIMENSION (mm)



# ON-OFF Temperature Controller Series PR 43

- Highly Accurate Performance.
- Luxurious Single 3-digit LED Display.
- Wide supply range:110-240VAC (Un),-20 to +10% of Un.
- Front keypad with 4 keys.
- Thermocouple (J & K)/RTD 3-wire (Pt-100) sensor inputs.
- Control Modes: Proportional,  
ON-OFF Asymmetric, ON-OFF Symmetric.
- °C & °F temperature unit selectable
- Control Output: Relay & SSR Drive (Individual products)



## Ordering Information

### Single Acting PID Controller

Cat. No.	Description
151G11B	Series PR 43, Relay Output (SPST 5A, 240 VAC / 30 VDC)
151H11B	Series PR 43, SSR driving output (12 VDC, 30 mA)

# ON-OFF Temperature Controller Series PR 43



Cat. No.	151G11B	151H11B	
<b>Parameters</b>			
Supply Voltage (φ)	110 - 240 VAC		
Supply Variation	-20% to +10% (of φ)		
Frequency	50/60 Hz		
Control Action	ON/OFF (Symmetric / Asymmetric) & Proportional		
Power Consumption	6 VA @ 265 VAC		
Temperature sensors / Inputs	Thermocouple: J, K ; RTD: PT100 - 3 wire compensation;		
Measurement Range	Sensor J: -5°C to 750°C / 23°F to 999°F, Sensor K: -20°C to 850°C / -4°F to 999°F, Sensor PT100 3 wire: - 100°C to 650°C / -148°F to 999°F		
Measurement Accuracy	± 0.5% of full scale		
Resolution	1°C Fixed		
Configurable Set Points	1		
Display	7 segment, 3 digit LED display		
Keypad	4-Keys:  - ESC,  - Down,  - Up,  - Enter / Select		
Output 1	Relay: (1 NO) SPST 5A @ 240 VAC / 30 VDC	SSR: 12 VDC, 30 mA	
<b>LED Indications:</b>			
	OP1 (Red LED)	Continuous ON	Relay output ON
	°F (Red LED)	Continuous ON	Display °F value
	°C (Red LED)	Continuous OFF	Display °C value
<b>Error Indications</b>			
	SBR	SENSOR OPEN/BREAK ERROR	
	OVR	OVER RANGE ERROR	
	UNR	UNDER RANGE ERROR	
Operating Temperature	0°C to +50°C		
Storage Temperature	-10°C to +60°C		
Humidity (Non Condensing)	80% (Rh)		
Enclosure	Flame Retardant UL 94 - V0		
Dimensions (W x H x D) (in mm)	48 x 48 x 91.5		
Weight (unpacked)	120 g		
Mounting	Flush		
Certification	Compliant		
Degree of Protection	IP 20 Terminal & Enclosure, IP 40 (For Front Panel only)		

## EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

## Environmental

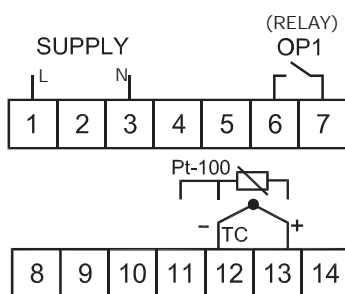
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

# ON-OFF Temperature Controller Series PR 43

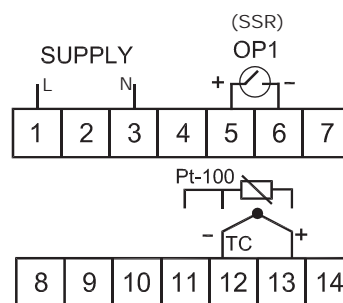


## CONNECTION DIAGRAM

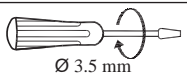

151G11B / 151G12B



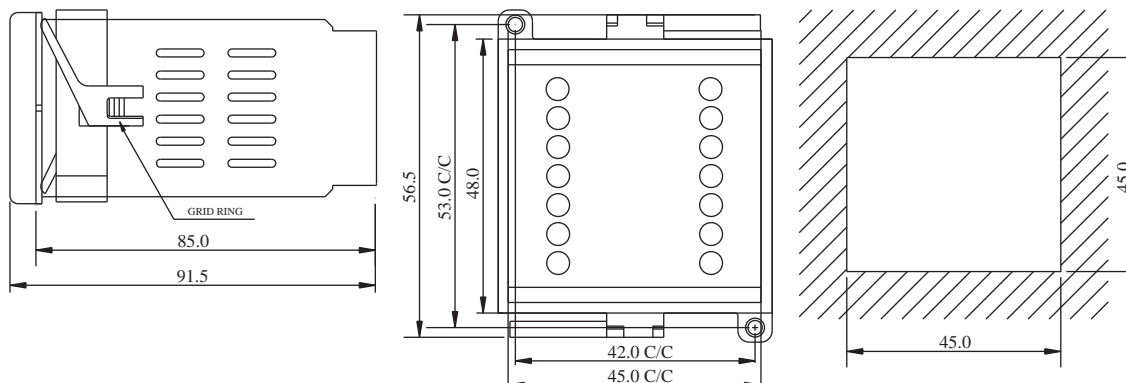
151H11B / 151H12B



## TERMINAL TORQUE & CAPACITY

 Ø 3.5 mm	Torque - 0.54 N.m (4.5 Lb.in) Terminal screw - M3
	Solid Wire - 1 X 0.12...2 mm <sup>2</sup>
AWG	1 X 26 to 14

## MOUNTING DIMENSION (mm)





# Temperature Control Relay

- Wide ambient Temperature monitoring & controlling range with inbuilt temperature sensor.
- Protection Relay against variations of the ambient temperature set point (StH & StL)
- 3 digit LCD display for Real time Temperature Indication.
- User adjustable offset (-10°C to +10°C)
- LED indication for Relay Trip.




## Ordering Information

Cat. No.	Description
41A111AR	110 - 240 VAC, Temperature Control Relay (TCR - 111) Double SP
41A111BR	110 - 240 VAC, Temperature Control Relay (TCR - 112) Single SP

# Temperature Control Relay



Cat. No.	41A111AR	41A111BR
<b>Parameters</b>		
Series nos.	TCR - 111	TCR - 112
Number of set points	Double SP	Single SP
Supply Voltage (±)	110 - 240 VAC, -20% to +10%	
Frequency	47Hz - 63Hz	
Power Consumption (Max.)	3 VA	
<b>Device Characteristics</b>		
Sensor	Digital IC Sensor	
Temperature Unit	°C	
Display Resolution	0.1°C	
Accuracy	± 3°C Max	
Output Control Mode	Relay ON/OFF	
Hysteresis	2°C (Fixed)	
Temperature measurement and Controlling Range	-10°C to 55°C	-5°C to 55°C
Set Point Range	Low Level (StL) High Level (StH)	Internally Fixed to 5°C
	-10°C to (StH-4°C) (StL + 4°C) to +55°C	0°C to +55°C
Offset	-10°C to 10°C	
Minimum difference between StH & StL (for double SP only)	4°C	
LED Indication	ON - Relay ON condition (Red Color)	
Display Type	Positive Image, Reflective, TN	
Contact Ratings	Terminal 15 - Pole, Terminal 16 NC, Terminal 18-NO, 5A @ 250V AC / 30 V DC (Res)	
Operating Temperature	- 10° C to +55° C	
Storage Temperature	- 20° C to +65° C	
Dimension (W x H x D) (in mm)	18 X 85 X 82	
Weight (unpacked)	70 g	
Mounting	DIN rail	
Certification		
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure	

## EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

## Environmental

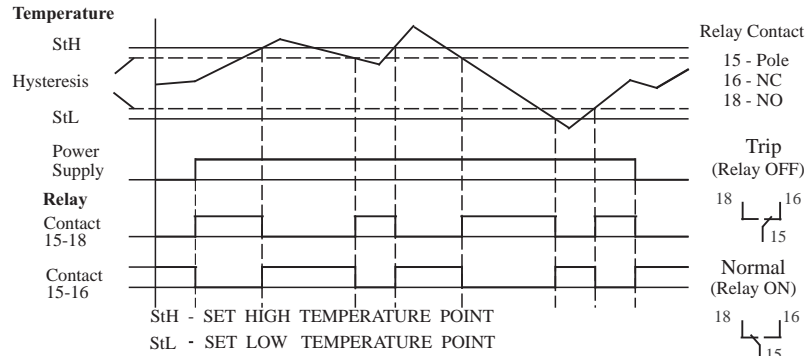
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

# Temperature Control Relay

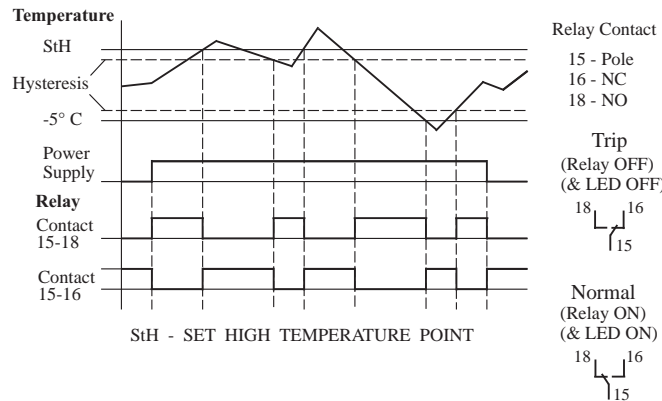


## FUNCTION DIAGRAM

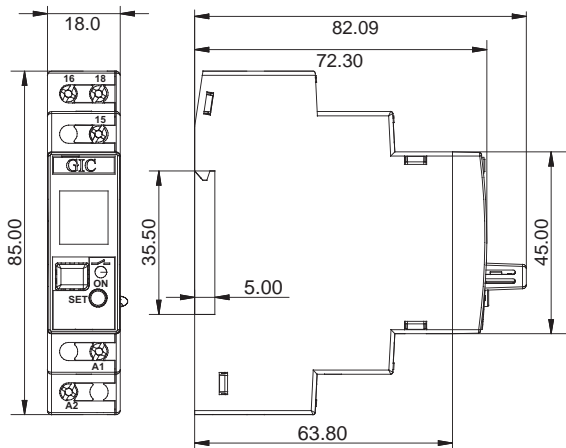
### Double SP - 41A111AR:



### Single SP - 41A111BR:

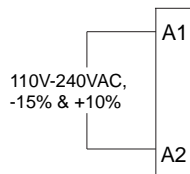


## MOUNTING DIMENSIONS (mm)

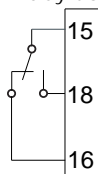


## CONNECTION DIAGRAM

### SUPPLY CONNECTION

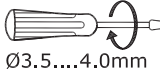



### SPDT Relay CONNECTION



NO-5A & NC-3A@  
250VAC/30VDC RESISTIVE

## TERMINAL TORQUE & CAPACITY

 Ø3.5...4.0mm	0.6 N.m (6 Lb.in) Terminal screw - M3
	1 x 0.5...4 mm <sup>2</sup> Stranded Wire
AWG	1 x 22 to 10