

DC1000 Series General Purpose UNIVERSAL DIGITAL CONTROLLERS

PRODUCT SPECIFICATION SHEET

OVERVIEW

The DC1000 family of microprocessor based controllers combine a high degree of functionality, reliability at a very low price.

Available in 4 different formats :
1/16th DIN, 1/8th DIN, 3/16th DIN,
1/4DIN.

The controllers are ideal for regulating temperature in a variety of applications, including :

- Dryers.
- Semiconductor packaging / testing.
- Plastic processing.
- Packaging machinery.
- Painting and coating.
- Climatic chambers.

The DC1000 family provides basic control requirements, plus advanced features such as motor position control, phase angle power control and Setpoint programming.

FEATURES

Easy to configure

Two different configuration levels provide easy access to parameters. A 4-digit security code prevents unauthorized changes. Parameters can also be hidden to the user to prevent mis-configuration of the unit.

Various Control algorithms

The DC1000 series of controllers provide several different algorithms:

- PID or ON/OFF control.
- Heat/Cool algorithms with 2 different PID sets.
- Motor position control without slidewire feedback.
- Single phase control, with or without zero crossover control.
- Three phase control, with or without zero crossover control.



DC1010 (1/16th DIN)



DC1020 (1/8th DIN)



DC1030 (3/16th DIN)



DC1040 (1/4 DIN)

Dual display and Bargraph

Two large 4 digits displays and one 10 LED bargraph display PV, SP and configuration parameters. Up to 8 LEDs display the status of the different Outputs (Control, Alarm, ...) and also provides indication of the Auto/Manual and Programmer states.

Setpoint Programming

Two programs are available, with a maximum of 8 segments.

The 2 programs can be linked together to form a single 16 segment program.

Extended Alarm capability

Three different alarm outputs are available per instrument, 17 alarm modes are configurable.

Communications

RS232 or RS485 ASCII protocol is optionally available. Up to 30 DC1000 Controllers can be connected to a single host computer. The host computer can change the SP, monitor the PV, the output or change the configuration of the unit.

Autotuning capability.

Remote Setpoint capability.

Manual / Automatic modes.

Universal Power supply

Operates on any voltage from 85Vac to 265Vac at 50/60Hz.

Large operating range

These instruments can operate from -20°C to +65°C.

SPECIFICATIONS

Technical data

PV Input	Type of Input	TC (K, J, R, S, B, E, N, T, W, PL II, U, L) RTD (Pt100, JPt100, JPt50) Linear (4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V)
	Input Sampling Time	500 ms
	Input Resolution	14 bit (each)
	PV/SP Indication	4-digit, 7 segment display
Indication	Constant Value Storage System	Non-volatile memory (E ² PROM)
	Indication Accuracy	0.5%FS
Control Mode	Proportional Band (P)	0~200% (On/Off action at P=0)
	Integral Time (I)	0~3600 sec (PD action at I=0)
	Derivative Time (D)	0~900 sec (PI action at D=0)
	Cycle Time	0~150 sec (4~20mA 0, SSR 1, Relay 10)
	Dead Band Time	0~1000 sec (dead time compensation)
Output	Relay Output	Contact, SPDT, 3A/240VAC
	Voltage Output	Voltage Pulse, 20VDC/20mA
	Linear Output	4~20mA, 0~5V, 0~10V, 1~5V, 2~10V
	Motor Control Output	Servo motor valve control (open loop circuit)
	Others	1φ SSR, 3φ SSR, 1φ SCR, 3φ SCR
Alarm	Channel	3 channels (optional)
	Mode	17 alarm modes available
	Timer	Flicker alarm, continued alarm, on delay timer alarm
Aux. Output	Output Signal	SP, PV, MV
	Type of Output	4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V
2 nd Input(RSP)	Type of Input	4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V
	Sampling Time	500 ms
Program	Pattern/Segment	2 pattern/ 8 segment (each)
	Availability	Pattern link & repeat, program/segment end alarm
Communication	Type of Communication	RS-232, RS-485 ASCII COMM
General Specifications	Rated Power Supply Voltage & Frequency	AC 85 ~ 265V, 50/60Hz
	Power Consumption	4VA
	Ambient Temperature	-25°C ~ 65°C
	Ambient Humidity	50 ~ 85% RH (non condensing)

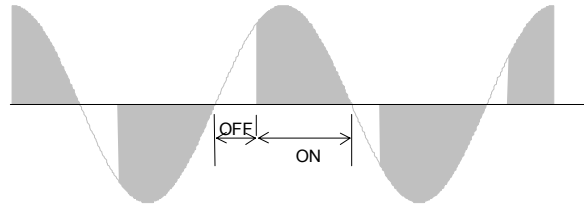
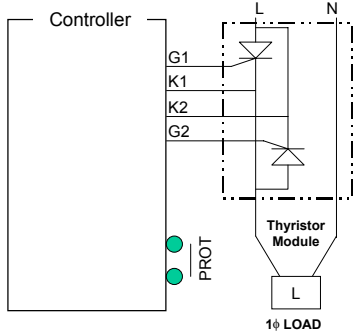
TC & RTD Types & ranges

TC	K	0.0~200.0, 400.0, 600.0, 800.0, 1000, 1200 °C
	J	0.0~200.0, 400.0, 600.0, 800.0, 1000, 1200 °C
	R	0.0~1600, 1769 °C
	S	0.0~1600, 1769 °C
	B	0.0~1820 °C
	E	0.0~800, 1000 °C
	N	0.0~1200, 1300 °C
	T	-199.9~400.0, 200.0 °C, 0.0~350.0 °C
	W	0.0~2000, 2320 °C
	PL II	0.0~1300, 1390 °C
	U	-199.9~600.0, 200.0 °C, 0.0~400.0 °C
	L	0.0~400.0, 800.0 °C
RTD	Pt100	-199.9~600.0, 400.0, 200.0 °C, 0.0~200.0, 400.0, 600.0 °C
	JPt100	-199.9~600.0, 400.0, 200.0 °C, 0.0~200.0, 400.0, 600.0 °C
	JPt50	-199.9~600.0, 400.0, 200.0 °C, 0.0~200.0, 400.0, 600.0 °C

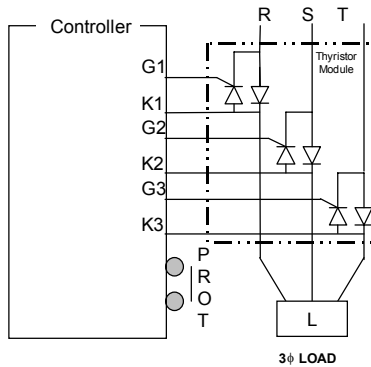
Control Algorithms

- PID or ON/OFF control.
- Heat/Cool algorithms with 2 different PID sets.
- Phase angle control

- Single Phase



- Three Phase



In Phase angle control, power is regulated by modulating the delay point at which the SCR is turned on within each half cycle.

Single Phase Control :

Output is changed every half-cycle in response to output signals from the Temperature Controller.

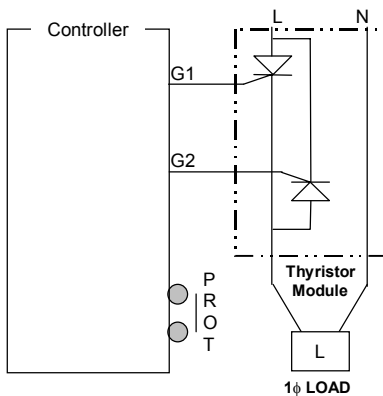
Three Phase Control :

The outputs are changed every 120degree in response to output signals from the Temperature Controller.

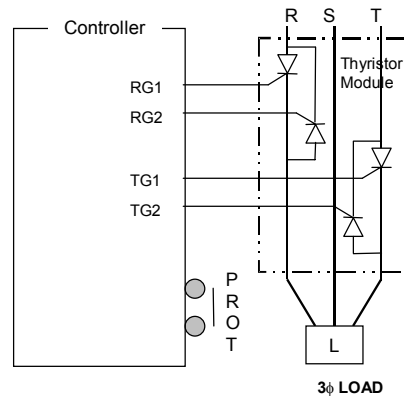
Using this form of control, high-precision temperature control is possible.

- Zero-crossover control

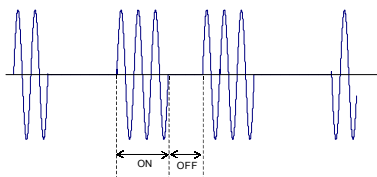
- Single Phase



- Three Phase

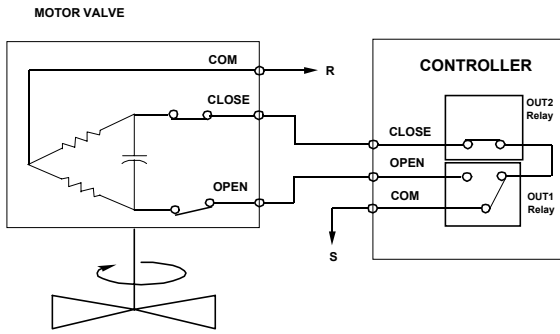


This kind of control allows the current to flow several times per second.



The term Zero-Crossover means that the SCR's are turned on only when the instantaneous value of the sinusoidal wave is zero. Power is then applied for a several continuous half-cycles and then removed for several half-cycles to achieve the desired load power.

- **Motor position control without slidewire Feedback.**



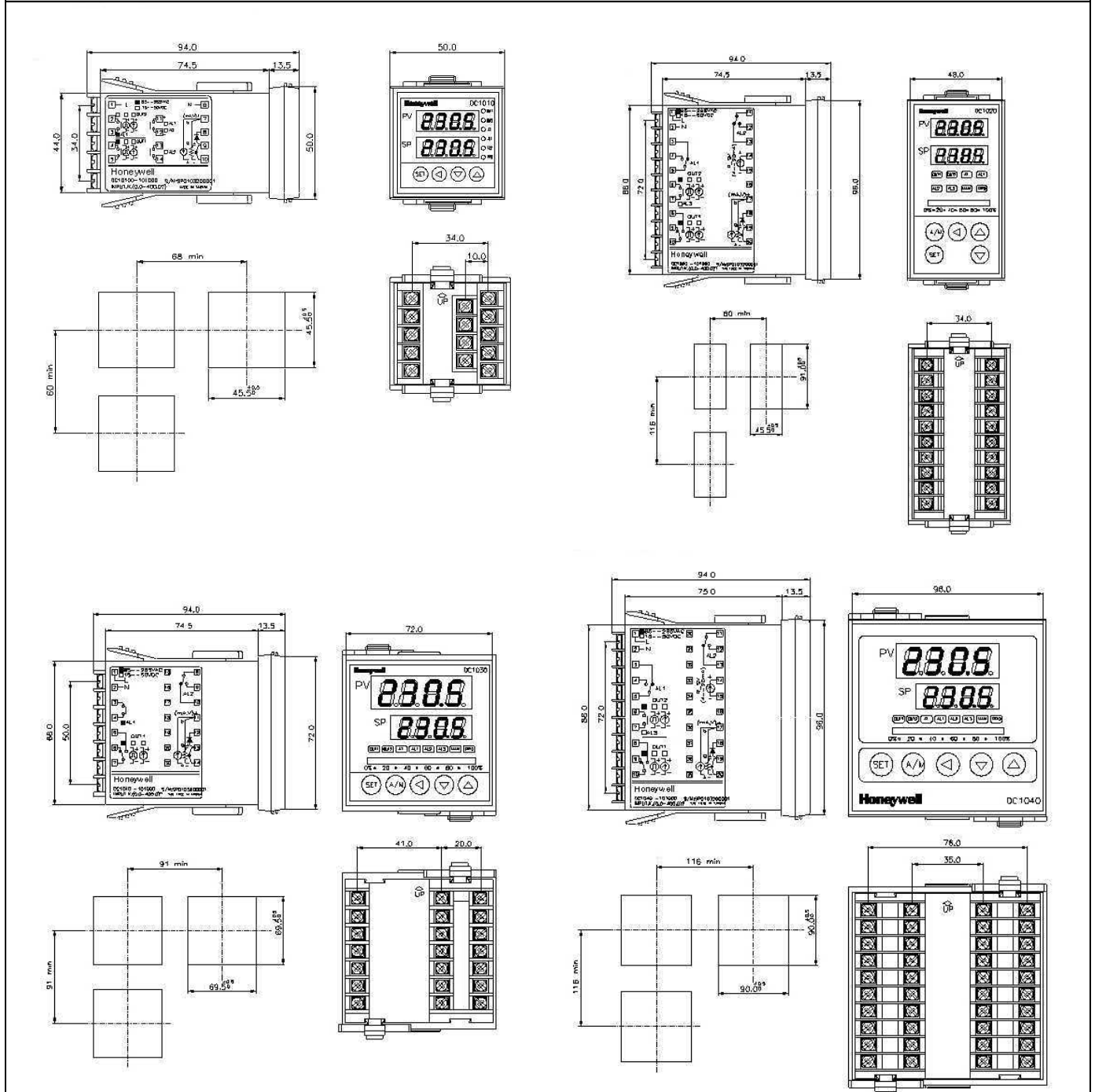
Motor position is achieved by using time proportional control without the need for slidewire feedback from the motor shaft.

Slidewires wear over a period of time, which can result in poor or intermittent control.

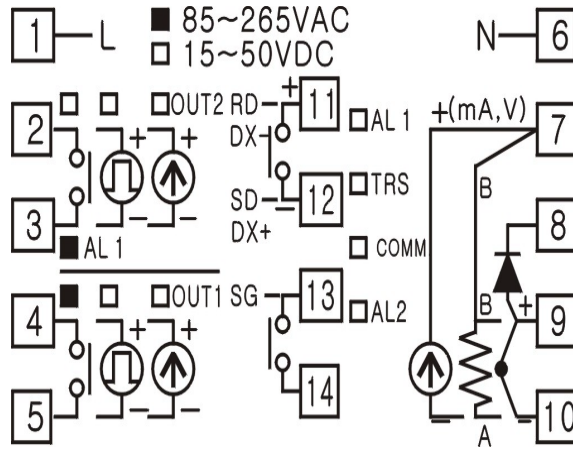
This type of control reduces maintenance requirements and removes the need for the controller to be calibrated to the motor feedback potentiometer.

Only 3 wires are required to be connected to the motor.

EXTERNAL DIMENSIONS, PANEL CUTOUT



SAMPLE WIRING DIAGRAM (for the DC1010)

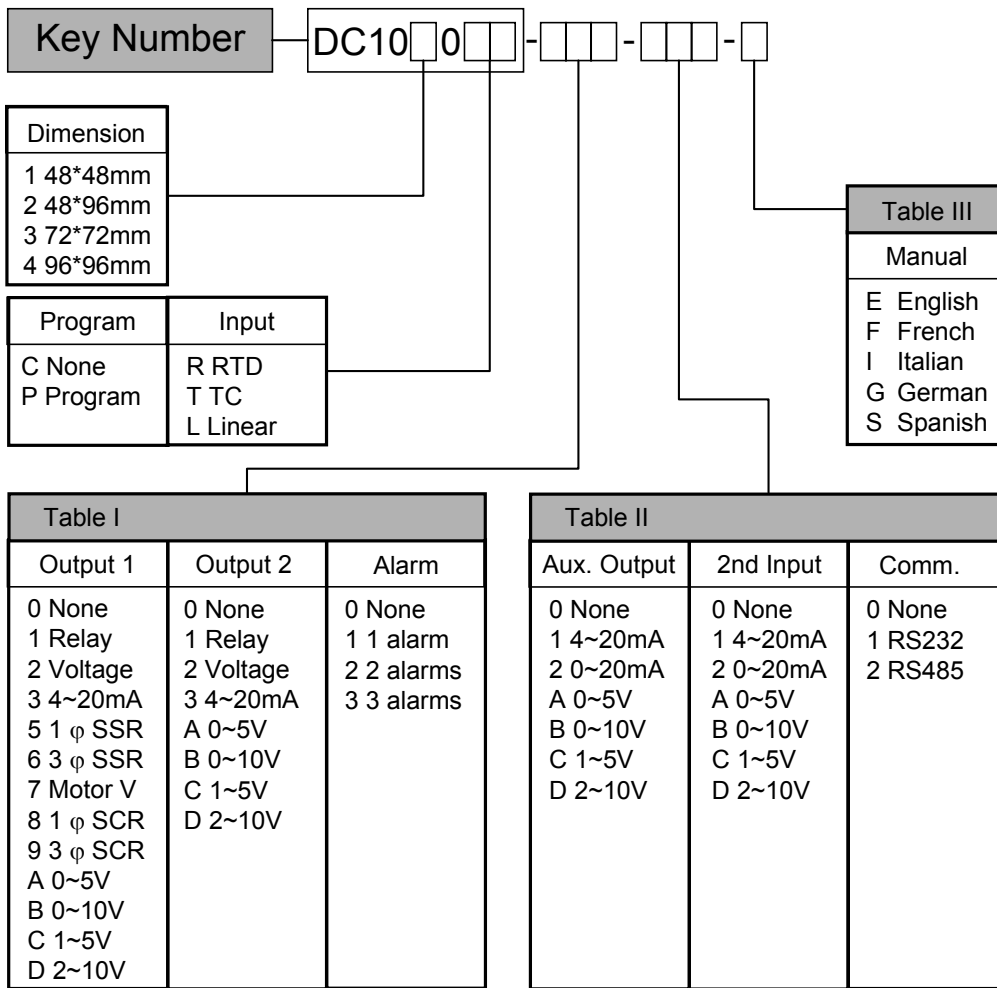


SAMPLE WIRING DIAGRAMS (for the DC1040)

DC1040 <input type="checkbox"/> - 101 - 000 - <input type="checkbox"/>	Motor Position Control DC1040 <input type="checkbox"/> - 702 - 000 - <input type="checkbox"/>	Single Phase Control DC1040 <input type="checkbox"/> - 502 - 000 - <input type="checkbox"/>

MODEL SELECTION GUIDE

- Select the desired Key Number.
- Make One selection each from Tables I through III.



Distributor :



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