

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

HONEYWELL

DC1010CR-101000-E

DIGITAL TEMPERATURE CONTROLLER

Used with the applicable Honeywell DC1000 Series configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Honeywell DC1010/DC1020/DC1030/DC1040 specification 30-10-10-06-EN

DC1010/DC1020/DC1030/DC1040

DIGITAL CONTROLLERS

Specification

Overview

The DC1000 Series are microprocessor-based controllers designed with a high degree of functionality and reliability at a competitive price. The controllers are available in different formats: 48x48 (1/16 DIN), 48x96 (1/8 DIN), 72x72 (3/16 DIN), 96x96 (1/4 DIN). This controller series is ideal for the control of temperature, humidity, pressure, flow etc. in a variety of applications including:

- Plastic Processing
- Package Machinery
- Painting and coating
- Semiconductor packaging / Testing
- Dryers

Features

• Easy to Configure

Different configuration levels provide easy access to parameters.

• Various Control Algorithm

Several different algorithms are available as follows:

- PID or ON/OFF Control
- Heat/Cool Control with 2 PID sets
- Motor Position Control
(without slidewire feedback)

• Auto-Tuning Capability

Advanced auto-tuning function calculates the optimized PID values for your specific control system.



• Dual Display and Bar graph

Two large 4 digits display PV, SP and configuration parameters. One 10 LED bar-graph displays the control output (MV), and up to 8 LEDs display the status of the different outputs (Control, Alarm, ...) and also provide 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 and perform as a single 16 segment program.

• Extended Alarm Capability

Up to three different alarm outputs are available per instrument and 17 kinds of event modes can be assigned to each of alarm output.

• Communications

RS232 or RS485 (with ASC II & Modbus RTU Protocol) is optionally available with a maximum communication speed of 38400 bps.

• IP65 Front Face Protection

IP65 rated front face permits use in applications where it may be subjected to moisture, dust conditions.

• Remote Setpoint Capability

The setpoint can be defined from a remote PLC or other controller.

• Manual & Automatic Modes

The control mode can be switched between Automatic and manual by clicking A/M key. (The A/M key is available with DC1020, DC1030 and DC1040)

• Global Approvals – CE & cUL

All models are CE certified as a standard, and UL approved version for all models are available optionally.

• Parameter Lock

A 4-digit security code prevents any unauthorized changes of parameters or configurations. Parameters can be hidden to user to prevent any mis-configuration of the unit.

Specifications					
General					
Rated power supply voltage		100 to 240V AC 50/60Hz, 8VA max. 15 to 50V DC, 10VA max.			
Insulation Resistance		Over 10M Ω under DC500V megger between input terminal and case(ground). Over 10M Ω under DC500V megger between output terminal and case(ground).			
Withstand voltage		1000V AC 50/60Hz for 1min across input terminal and case(ground) 1500V AC 50/60Hz for 1min across output terminal and case(ground)			
Standard Conditions	Ambient Temp.	23 $\pm$ 2 $^{\circ}$ C			
	Ambient Humi.	60 $\pm$ 5% RH			
	Rated Power Supply	110V AC			
	Power Frequency	50 $\pm$ 1Hz or 60 $\pm$ 1HZ			
Operating Conditions	Ambient Temp.	0 to 50 $^{\circ}$ C			
	Ambient Humi.	20 to 90%RH (non-condensing)			
	Rated Power Supply	100 to 240V AC 20 to 50V DC			
	Allowable Power Supply	85 to 264V AC 15 to 55VDC			
	Power Frequency	50 $\pm$ 2Hz or 60 $\pm$ 2Hz			
	Vibration Resistance	10m/s ² (approx. 1G), 10 to 55Hz for 10min each X, Y, Z directions			
Transportation and storage conditions	Ambient Temp.	-20 to +65 $^{\circ}$ C			
	Ambient Humi.	10 to +95% RH (non-condensing)			
	Vibration Resistance	20m/s ² (Approx. 2G), 10 to 55Hz for 2 hours each in X, Y, Z directions			
Exterior		Case and front panel : plastic			
Mounting		Panel-mount			
Model		DC1010	DC1020	DC1030	DC1040
Exterior Size (unit: $\frac{mm}{inch}$) : W X H X D		50 X 50 X 97 (1.97X1.97X 3.82)	50 X 96 X 97 (1.97X3.78X3.82)	74 X 74 X 97 (2.91X2.91X3.82)	96 X 96 X 97 (3.78X3.78X3.82)
Panel Cutout (unit: $\frac{mm}{inch}$) : W X H		44.5 X 44.5 (1.75 X 1.75)	44.5 X 90.5 (1.75 X 3.56)	68.5 X 68.5 (2.97 X 2.97)	90.5 X 90.5 (3.56 X 3.56)
Global Approvals		CE, cUL			

Interval = 20.5mm (0.807 in)

Specifications		
Input/Output		
Analog Input 1	Number of Point	1 point (TC, RTD or Linear)
	Type	TC: K, J, R, S, B, E, T, N, W, U, PLII, L RTD : DPt100, JPt100, JPt50 Linear : 4~20mA / 1~5V / 2~10V * Note 1 0~20mA / 0~5V / 0~10V * Note 1
	Range	Refer to Table 1-1. * Temperature unit : °C, °F (switchable)
	Sampling cycle	250 ms
	Indication Accuracy	± 0.2% FS ± 1 digit (for details Table1-1)
	Cold junction accuracy	±1.0°C (under standard conditions)
	Input bias (offset)	LSPL ~ USPL
	Digital Filter	0 - 200 sec (0: filter off)
	Decimal Point	0000, 000.0, 00.00, 0.000
Analog Input 2	Type	0~20mA / 0~5V / 0~10V 4~20mA / 1~5V / 2~10V
	Sampling Cycle	250ms
CT Input	Type	Measure AC current of single phase SC-80T : 0.0~80.0A
	Sampling Cycle	500msec
	Indication Accuracy	1% FS
	Resolution	0.1A ac
	Weight	12g
	Dielectric strength	2500Vac, for 1 min between terminal and case

NOTE 1. When OUT1 is ON and CT input value is less than HBA set value for 5 seconds, AL1 is activated.
Otherwise, AL1 is not activated.

Specification						
Model			DC1010	DC1020	DC1030	DC1040
Input/Output						
Analog Output 1	Relay		SPST	SPDT	SPST	SPDT
			3A, 220Vac, Resistive Load(100,000 time electrical life)			
	Voltage Pulse		PWM(SSR drive), ON: 20 Vdc, OFF: 0 V (max. load current 20mA)			
			Open Time Terminal Voltage: 20 Vdc or less Time Proportional Cycle Time: 0-150 sec			
Linear			DC Current (mA) : 0~20mA, 4~20mA (load resistance 500Ω)			
			DC Voltage (V) : 0~5V, 0~10V, 1~5V, 2~10V (max. load current 20mA)			
			Accuracy ± 5% of Span			
			Update Cycle 500m sec			
Analog Output 2 (* Note 1)	Relay		SPST	SPST	SPST	SPST
			3A, 220Vac, Resistive Load(100,000 time electrical life)			
	Voltage pulse		PWM(SSR drive), ON: 20 Vdc, OFF: 0 V (max. load current 20mA)			
			Open Time Terminal Voltage: 20 Vdc or less Time Proportional Cycle Time: 0-150 sec			
Linear			DC Current (mA) : 0~20mA, 4~20mA (load resistance 500Ω)			
			DC Voltage (V) : 0~5V, 0~10V, 1~5V, 2~10V (max. load current 20mA)			
			Accuracy ± 5% of Span			
			Update Cycle 500m sec			
Output Direction (OUD)			HEAT(Direct)/COOL(Reverse) (Selectable)			
Control Mode			Auto/Manual operation is switchable. *Manual output : Bumpless in normal mode OUTL in abnormal mode			
Transmission Output	Object		SP, PV			
	No. of point		1 point			
	Type		4-20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V			
	Accuracy		+/- 0.2% of span			
	Update Cycle		500 ms			
Digital Output	Relay	AL1	SPST	SPDT	SPST	SPDT
		AL2	SPST	SPDT	SPST	SPDT
		AL3	-	SPST	SPST	SPST
			3A, 220Vac, Resistive Load(100,000 time electrical life)			

* For Heat/Cool Control Output only.

Model Interpretation

Instructions

- Select the desired Key Number. The arrow to the right marks the selections available.
- Make one selection each from Tables I through III using the column below the proper arrow.
- A dot (•) denotes unrestricted availability. A letter denotes restricted availability.

Key Numbers

DC10____ - I - II - III

KEY NUMBER

Description		Selection	Availability			
Size	48 x 48 mm (DIN) 1/16)	DC101__	↓			
	48 x 96 mm (DIN 1/8)	DC102__		↓		
	72 x 72 mm	DC103__			↓	
	96 x 96 (DIN 1/4)	DC104__				↓
Power & Approvals	90-240 Vac Power / CE	DC10_0__	•	•	•	•
	15-50 Vdc Power / CE	DC10_1__	b	b	b	b
	90-240 Vac Power / IP 65 / CE	DC10_2__	•	•	•	•
	15-50 Vac Power / IP65 / CE	DC10_3__	b	b	b	b
	90-240 Vac Power / IP65 / CE / UL Agency Approval	DC10_4__	•	•	•	•
	15-50 Vdc Power / IP65 / CE / UL Agency Approval	DC10_5__	b	b	b	b
Program	None	DC10__C__	•	•	•	•
	Program (2 patterns, 8 segments per 1 pattern)	DC10__P__	•	•	•	•
Input	RTD	DC10__R__	•	•	•	•
	TC	DC10__T__	•	•	•	•
	Linear	DC10__L__	•	•	•	•

TABLE I

Control Output 1	None	0__	•	•	•	•
	Relay, Contact, SPDT, 3A / 240 VAC	1__	•	•	•	•
	Volt, Voltage Pulse, 20VDC / 20 mA	2__	•	•	•	•
	mA Current, 4-20mA	3__	•	•	•	•
	Three Position Step Motor Control	7__		c	d	c
	0-5 V	A__	•	•	•	•
	0-10 V	B__	•	•	•	•
	1-5 V	C__	•	•	•	•
	2-10 V	D__	•	•	•	•
Control Output 2 (Heat/Cool)	None	_0_	•	•	•	•
	Relay, Contact, SPDT, 3A / 240VAC	_1_	•	•	•	•
	Volt, Voltage Pulse, 20VDC / 20mA	_2_	•	•	•	•
	mA Current, 4-20mA	_3_	•	•	•	•
	0-5V	_A_	•	•	•	•
	0-10V	_B_	•	•	•	•
	1-5V	_C_	•	•	•	•
	2-10V	_D_	•	•	•	•
Alarm Event & Heat Break Alarm	1 Alarm Relay	--1	e	•	i	•
	2 Alarm Relays	--2	f	g	j	•
	3 Alarm Relays	--3		h		k
	HBA	--A	e'	p	i'	•
	HBA + 1 Alarm Relay	--B		g'	j'	•
	HBA + 2 Alarm Relay	--C				k'

Table II

Transmitter		None	0 _ _	•	•	•	•
		4-20 mA	1 _ _	•	•	•	•
		0-20 mA	2 _ _	•	•	•	•
		0-5 V	A _ _	•	•	•	•
		0-10 V	B _ _	•	•	•	•
		1-5 V	C _ _	•	•	•	•
		2-10 V	D _ _	•	•	•	•
Remote SP		None	_ 0 _	•	•	•	•
		4-20 mA	_ 1 _		I	I	I
		0-20 mA	_ 2 _		I	I	I
		0-5 V	_ A _		I	I	I
		0-10 V	_ B _		I	I	I
		1-5 V	_ C _		I	I	I
		2-10 V	_ D _		I	I	I
Communication		None	_ _ 0	•	•	•	•
		RS-232	_ _ 1	m	n	•	•
		RS-485	_ _ 2	m	n	•	•
		RS-232 (Modbus RTU)	_ _ A	m	n	•	•
		RS-485 (Modbus RTU)	_ _ B	m	n	•	•

TABLE III

Manual	English	E	•	•	•	•
	Chinese	C				
	French	F				
	Korean	K	•	•	•	•

RESTRICTIONS / NOTES

Restriction Letter	Available Only With		Not Available With	
	Table	Selection	Table	Selection
b			II	X _ _
c	I	_ 0 1, _ 0 2		
d	I & II	DC10_ _ _ _ - _ 0 1 - _ 0 _ _		
e, e'			I & II	DC10_ _ _ _ - _ X _ - _ 1 - _
e'			I	_ X _
f			I & II	DC10_ _ _ _ - _ X _ - X _ _ - _
g, g'			I & II	DC10_ _ _ _ - _ X _ - X _ _ - _
g'			II	X _ X
g'			II	_ X _
g'			II	_ _ X
h	I & II	DC10_ _ _ _ - _ 0 _ - 0 _ 0 _ _		
i, i'			I & II	DC10_ _ _ _ - _ X _ - _ X _ - _
i'			II	_ _ X
j, j'	I & II	DC10_ _ _ _ - _ 0 _ - _ 0 _ - _		
j'			II	_ _ X
k, k'	I & II	DC10_ _ _ _ - _ 0 _ - _ 0 _ - _		
k'			II	_ X _
l				DC10_ _ _ P
m			II	X _ _
n			II	_ X _
p			II	_ X _
			II	_ _ X

* X : Option Selected

0 : Option Not Selected