UDC100
Universal Digital Controller

Specification

Overview

The UDC100 Universal Digital Controller is a microprocessor-based 1/4 DIN low cost temperature controller. It combines the highest operating simplicity with the benefits of digital technology. Its large dial allows easy parameter set-up. This microprocessor-based device provides a high degree of flexibility, repeatability, accuracy and temperature stability. Its simple ON-OFF/PID control algorithm with alarm and timer option capability make the UDC100 ideal for such applications as food processing (e.g. bakery ovens), small industrial furnaces and ceramics kilns. The UDC120 version has 2-loop control for excellent space integration and cost saving capabilities.

Features

High functionality at low cost
The UDC100 offers the benefits of microprocessor technology at a very competitive price.

Easy to use
Thanks to analog-feel ergonomics the UDC100 is very simple to use. The interface has been selected to provide the most intuitive way to set-up parameters. The UDC100 is the ideal replacement for the well-known and popular AL/CL analog controller family.

Custom built for OEMs
The UDC100 has been designed to meet OEM requirements. Product overlay, labels, input ranges and firmware can be "tailored" to your particular specification. The integrated solution of the timer and 2-loop model is a perfect example of how the UDC100 is adaptable to meet specific market segment needs.

High level of integration
Several functions have been integrated to provide cost and space savings as well as to reduce wiring and set-up time. The UDC110T offers control and duration of the process thanks to its integral timer function. The UDC120 integrates 2 loops in one DIN format to provide a high level of integration.

Features, continued

Rugged design for optimum repeatability and reliability
The unit's digital technology gives it extremely good stability in case of ambient temperature variation. This drift-free capability allows process control in the most severe industrial environments. All functional parts are mounted on a rugged chassis for easy replacement without disturbing field wiring. A rugged 10 Amp output relay is provided as standard for direct control application.

Universal isolated input
Input 1 can be configured for any input type and is isolated from relay output. In the dual loop model, input 2 type is identical to input 1 and is not isolated from input 1.

Dual loop model
This model offers two independent loops with two separate 3- or 4-digit displays. Control parameters and setpoints are independent of each loop. The possibility exists of one single SP for both loops.

Single or dual displays
According to the version, the displays will have 3 or 4 digits. The UDC100 basic model has one display. Models

Features, continued

UDC110 and UDC120 provide dual displays for PV and SP reading or PV1 and PV2.

Moisture-resistant front panel
The front panel has IP54 front face protection against dust and water (hosedown).

PC configuration editor
Current parameters such as setpoints, alarm value and duration are configurable from the instrument's front face. All other parameters can be easily modified via a PC configurator package. Specific configuration can be saved, uploaded or downloaded for maintenance management.

Timer
The UDC110T provides a configurable time period from 0 to 9 hours. The timer is initiated by a key on the front face. An electromechanical relay and a front face LED are activated at the end of the timeout period. The relay is latched and requires manual acknowledgement from the operator.

Alarm selection
One alarm is available with a remote electromechanical relay action. The alarm type can be set on PV high or low, Deviation high or low, Band.

Specifications

Technical data		
Input	Accuracy	0.5 % of span ± 1 LSD
	Tº Stability	0.01 % of span per ºC for T/C, mA and mV input 0.04 % per ºC for RTD input 0.05 % per ºC for cold junction
	Sampling Rate	Four samples per second (two samples per second for 2 loops Model)
	Input Filter	Digital filter configurable via PC software. 0.0 (OFF), from 0.1 s to 120.0 seconds.
	Input Resolution	13 bits; always four times better than display resolution
	Input Isolation	Universal input isolated (type test at 3250 Vdc) from all outputs and from power supply with exception of SSR driver and second input
	Burnout current	1.5 µA
	Input Signal Failure	• *For thermocouple,* detected by any lead break within 2 seconds, upscale burnout • *For RTD,* detected by any lead break within 2 seconds, upscale burnout • *For DC linear:* 0-50 mV detected within 2 seconds, upscale burnout
Stray rejection	Common Mode	> 120 dB at 50/60 Hz giving negligible effect at up to 264 Vac 50/60 Hz
	Serial Mode	> 60 dB at 100 % of Span (at 50/60 Hz)
Control	Output type	*Type available:* Output 1: Electromechanical relay or SSR drive (open collector) Output 2: Electromechanical relay or SSR drive (UDC120 only) (open collector) *Electromechanical relay:* SPDT contact Resistive load: 10 A at 120 V or 240 V Life time: > 600000 operations at 230 Vac / 5 amps *SSR drive capability*: SSR > 11 Vdc into 500 ohms minimum *Isolation:* not isolated from input and other SSR output
	Output algorithm	*Configurable via PC software only:* ON/OFF with hysteresis: 0.0 % to 100.0 % *Configurable via PC software or via front face:* Proportional bands: 0.1% to 999.9 % Reset: Off or from 1 second to 5999 seconds Rate: From 0 seconds to 5999 seconds Two independent PID available for two loops model. Cycle times: Up to two independent cycle times available for two loops model Cycle times selection: From 0.1 seconds to 256.0 seconds
Timer (Models 110T)	Duration	From 1 min to 9 hr 00 min
	Output Type	1 relay (SPDT) 10 A resistive load (115/230 Vac)
	Triggering cause	End of preset time
Alarm (Model 110A)	Number of Alarms	1 Alarm setpoint
	Output type	1 relay (SPDT) 10 A resistive load (115/230 Vac)
	Alarm type	PV High or Low, Deviation High or Low, Band

Technical data (continued)

Physical	Dimension	*Depth:* 55 mm (2.16 in) *Front Face:* 96 mm x 96 mm (3.78 in x 3.78 in)
	Weight	400 grams maximum
	Cut out	92 mm x 92 mm (3.62 in x 3.62 in) Plug in with panel mounting lock
	Terminals	Screw type (combination head)
	Panel thickness	3 mm (0.118 in) maximum
Front Panel	Sealing	IP54
Parameters Set-up	Dial button	For Process, Alarm SP and Timer duration Parameter set-up speed proportional to the angle speed.
Power	Type	115/230 Vac 50/60 Hz 24/48 Vac 50/60 Hz
	Consumption	5 Watts
Environmental	EMI Susceptibility	Designed to meet EN50082-1: 1992 and EN50082-2: 1995
	EMI Emissions	Designed to meet EN50081-1: 1992 and EN50081-2: 1994
	Safety	Designed to comply with EN61010-1: 1993
Approval	Europe	*CE Mark:* Conformity with 72/23/EEC Low voltage directive Conformity with 89/336/EEC EMC directive
	United States / Canada	Designed to meet UL and CSA certified C22.2 N1010-1 / 95 standard (certified) (for altitude < 2000 m).

Input Actuations

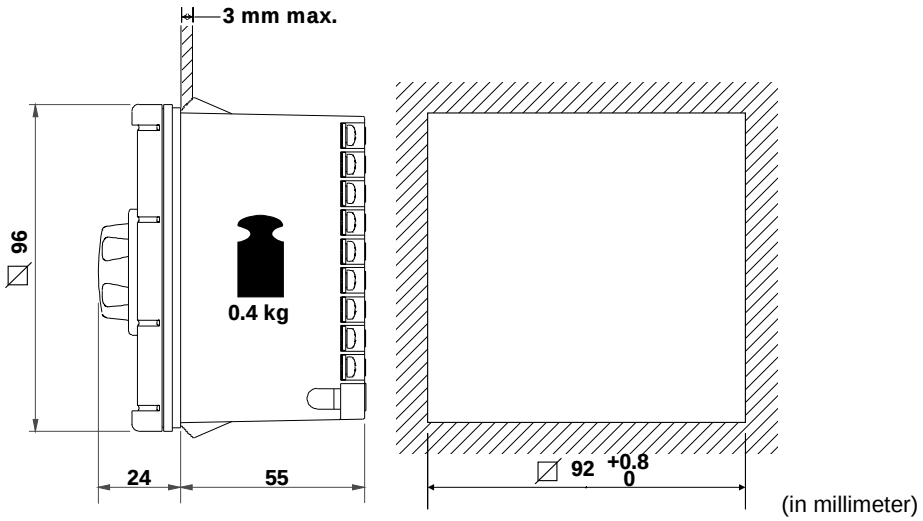
Thermocouple types	**Ranges**	
	°F	**°C**
J	32-572; 32-752; 32-999	0-300; 0-400; 0-537; 0-870
K	32-999; 32-2372	0-537; 0-999; 0-1300
L	32-932	0-500
S	32-2912	0-1600
R	32-2912	0-1600
T	32-752	0-400
RTD: (3 wires connection) PT100 (IEC) α = 0.00385	–40-140 32-212 32-392 32-752	–40-60 0-100 0-200 0-400
DC linear:	10-50 mV 4-20 mA*	0-50 mV 0-20 mA*

* with 2.5 ohms resistance

Operating Conditions

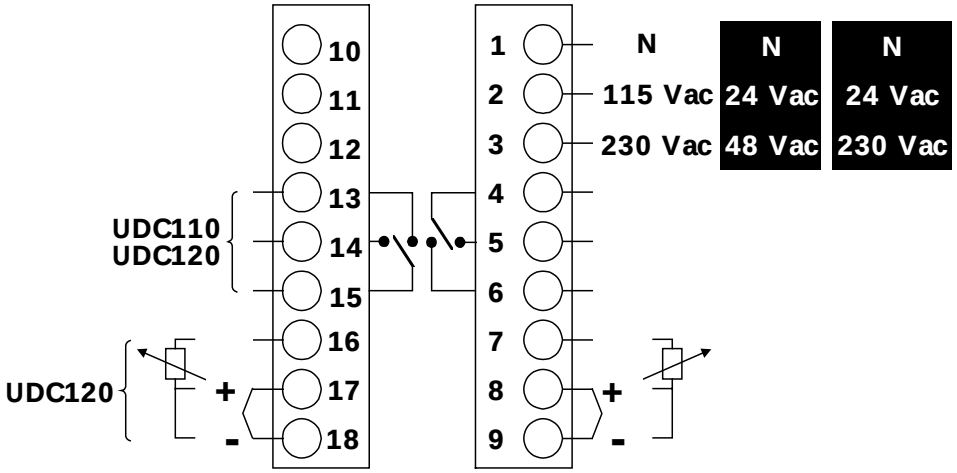
	Reference Conditions	**Operative Limits**	**Transportation and Storage**
Ambient temperature	23 °C ± 2 °C (73 °F ± 4 °F)	0 °C to 60 °C (32 °F to 140 °F)	–20 °C to 80 °C (–4 °F to 176 °F)
Relative Humidity	60-70 %	20-95 % non -condensing	
Voltage	230 Vac ± 1 % 115 Vac ± 1 %	264/200 Vac 55/42 Vac 132/100 Vac 27.5/21 Vac	
Frequency	50/60 Hz ± 1 %	47-63 Hz	
Source resistance	< 5 ohms for thermocouple	1000 ohms max for thermocouple	
Lead resistance for RTD	< 0.1 ohm/lead (PT100)	50 ohms per lead	

External Dimensions, Panel Cutout



(in millimeter)

Wiring Diagram



For more information, contact Honeywell sales at (800) 343-0228. *Specifications are subject to change without notice.*

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Model Selection Guide

Instructions

- Select the desired key number. The arrow to the right marks the selection available.
- Make one selection each from Table I thru III using the column below the proper arrow.
- A dot (•)denotes unrestricted availability.

Key Number	I	II	III	IV	V	VI	VII
DC1 _ _	- _	- _ _	- _ _ _	- _ _	- _ _	- _	_ _ _ _

KEY NUMBER		Selection	Availability				
	Description						
1/4 DIN Controller	Single loop controller single display	DC10N	↓				
	Single loop controller dual display	DC10D		↓			
	Single loop dual display + 1 alarm	DC11A			↓		
	Single loop dual display + timer	DC11T				↓	
	Dual loop dual display	DC12N					↓
TABLE I							
Control Ouput Type	Electromechanical relay SPDT 10 amps	R	•	•	•	•	•
	SSR driver 12Vdc	S	•	•	•	•	•
TABLE II							
Power Supply and Frequency	115/230 Vac	0 _	•	•	•	•	•
	24/48 Vac	1 _	•	•	•	•	•
	24/230 Vac	2 _	•	•	•	•	•
	50 Hz	_ 0	•	•	•	•	•
	60 Hz	_ 1	•	•	•	•	•
TABLE III							
Input Type (Note 1)	T/C J : 0-300° C	JC1	•	•	•	•	•
	T/C J : 0-400° C	JC2	•	•	•	•	•
	T/C J : 0-537° C	JC3	•	•	•	•	•
	T/C J : 0-870° C	JC4	•	•	•	•	•
	T/C K : 0-537° C	KC1	•	•	•	•	•
	T/C K : 0-999° C	KC2	•	•	•	•	•
	T/C K : 0-1300° C (4 digit display)	KC3	•	•	•	•	•
	T/C T : 0-400° C	TC1	•	•	•	•	•
	T/C L : 0-500° C	LC1	•	•	•	•	•
	T/C S : 0-1600° C (4 digit display)	SC1	•	•	•	•	•
	T/C R : 0-1600° C (4 digit display)	RC1	•	•	•	•	•
	T/C N : 0-1300° C (4 digit display)	NC1	•	•	•	•	•
	PT100 : 0-100° C	PC1	•	•	•	•	•
	PT100 : 0-200° C	PC2	•	•	•	•	•
	PT100 : 0-400° C	PC3	•	•	•	•	•
	PT100 : -40-60° C (Note 4)	PC4	•	•	•	•	•
	PT100 : 0-600° C	PC6	•	•	•	•	•

TABLE III (continued)

			DC_ _ _ Selection	Availability 10N ↓	10D ↓	11A ↓	11T ↓	12N ↓
Input Type	T/C J : 32-572° F		JF1	•	•	•	•	•
	T/C J : 32-752° F		JF2	•	•	•	•	•
	T/C J : 32-999° F		JF3	•	•	•	•	•
	T/C K : 32-999° F		KF1	•	•	•	•	•
	T/C K : 32-2372° F (4 digit display)		KF2	•	•	•	•	•
	T/C T : 32-752° F		TF1	•	•	•	•	•
	T/C L : 32-932° F		LF1	•	•	•	•	•
	T/C S : 32-2912° F (4 digit display)		SF1	•	•	•	•	•
	T/C R : 32-2912° F (4 digit display)		RF1	•	•	•	•	•
	T/C N : 32-2912° F (4 digit display)		NF1	•	•	•	•	•
	PT100 : 32-212° F		PF1	•	•	•	•	•
	PT100 : 32-392° F		PF2	•	•	•	•	•
	PT100 : 32-752° F		PF3	•	•	•	•	•
	PT100: -40-140° F	**(Note 4)**	PF4	•	•	•	•	•
	PT100 : 32-1112° F (4 digit display)		PF6	•	•	•	•	•
	Linear 10-50 mV / 4-20 mA	**(Note 2)**	LN1	•	•	•	•	•
	Linear 0-50mV / 0-20 mA	**(Note 2)**	LN2	•	•	•	•	•

TABLE IV

Alarm Type	None		0 0	•	•		•	•
	PV High		P H			•		
	PV Low		P L			•		
	Dev High		D H			•		
	Dev Low		D L			•		
	Band		B A			•		

TABLE V

Custom Configuration	None		0 0	•	•	•	•	•
	PID Algorithm (4 digit display)	**(Note 3)**	0 1	•	•	•	•	•
	Special: Consult Factory		X X	•	•	•	•	•

TABLE VI

No Selection	None		0	•	•	•	•	•

TABLE VII

Custom Model	None		0 0 0 0	•	•	•	•	•
	Completed Configuration Sheet Required		X X X X	•	•	•	•	•

Note 1: Standard is 3 digit display except as noted. 3 digit display units cannot be field configured to 4 digit display inputs.
Note 2: High & low limit range default values are 100 & 0 respectively. Contact Ft. Washington Marketing if other values needed
Note 3: PID setting can be accessed via front panel. Without this option, all UDC100 controllers are 'on/off' controllers
Note 4: Input accuracy of 0.5% span is only guaranteed by factory selection (field configuration gives 1% accuracy)

Accessories

Configurator	UDC100 PC Configuration Package : Part # 46191310-501