

322-4843

Honeywell

UDC100 UNIVERSAL DIGITAL CONTROLLER

EN01-6034 02/99

PRODUCT SPECIFICATION SHEET

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 ALJCL 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.

SPECIFICATIONS

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 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.

Technical data (continued)

| | | |
|-------------------|------------------------|---|
| Physical | Dimension | Depth : 55 mm (2.16 inches) Front Face : 96x96mm (3.78 x 3.78 inches) |
| | Weight | 400 grams max. |
| | Cut out | 92 x 92 mm/3.62 x 3.62 inches Plug in with panel mounting lock |
| | Terminals | Screw type (combination head) |
| | Panel thickness | 3 mm (0.118 inch) max. |
| 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 Actuators

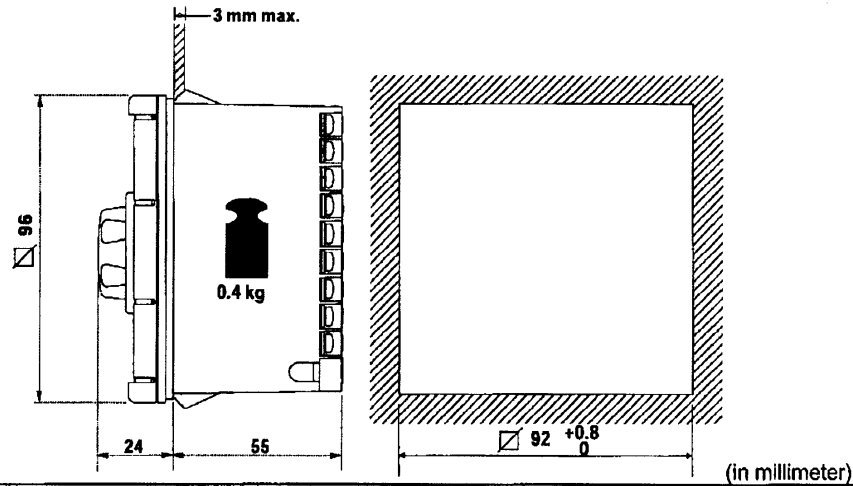
| | Ranges | |
|--------------------------------|--------------------------------|---------------------------------------|
| | °F | °C |
| Thermocouple types | | |
| J | 32 - 572 ; 32 - 752 ; 32 - 999 | 0 - 300 ; 0 - 400 ; 0 - 537 ; 0 - 870 |
| K | 32 - 999 ; 32 - 2372 | 0 - 537 ; 0 - 999 ; 0 - 1300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

* with 2.5 ohms resistance

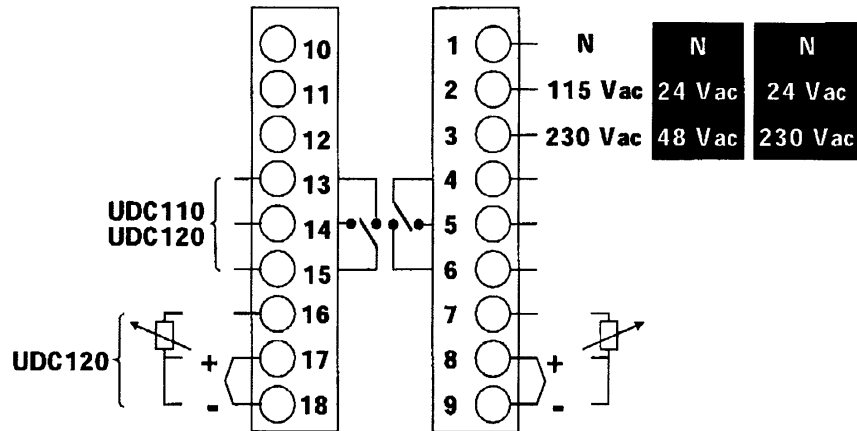
Operating Conditions

| | 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 % | 264/200Vac 55/42Vac 132/100Vac 27.5/21Vac | |
| 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



WIRING DIAGRAM



Distributor :

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Industrial Automation and Control
Honeywell Inc.

<http://europe.iac.honeywell.com>

U.S.A. : Honeywell Industrial Automation and Control, 16404 North Black Canyon Hwy., Phoenix, AZ 85023

Canada : The Honeywell Centre, 155 Gordon Baker Rd., North York, Ontario M2H 3N7

Latin America : Honeywell Inc., 480 Sawgrass Corporate Parkway, Suite 200, Sunrise, Florida 33325

Japan : Industrial Operations Tokyo, 4-28-1 Nishi-Rokugo Ohtu-ku, Tokyo 144, Japan,

Asia : Honeywell Asia Pacific Inc., Room 3213-3225, Sun Hung Kai Centre, No. 30 Harbour Road, Wanchai, Hong Kong

Pacific Division : Honeywell Pty Ltd., 5 Thomas Holt Drive, North Ryde NSW Australia 2113

Northern Europe and Southern Africa : Honeywell Ltd., Honeywell House, Arlington Business Park, Bracknell, RG 12 1 EB, U.K.

Central Europe : Honeywell A.G., Kaiserleistraße 39, 63067 Offenbach, Germany

Western and Southern Europe : Honeywell S.A., Bourgetlann 1, 1140 Brussels, Belgium

Eastern Europe : Honeywell Praha, s.r.o., Budejovicka 1, 140 00 Prague 4, Czech Republic

Middle East : Honeywell Middle East Ltd., Khalifa Street, Sheikh Faisal Building, Abu Dhabi, U.A.E

UDC100 ¼ DIN OEM Controller

Low Cost Alternative to Control your Machine Process



YEAR 2000 READY

The UDC 100 line of ¼ DIN Universal Digital Controllers combines the highest operating simplicity with the ultimate in low cost of ownership for OEM customers. Their simple control algorithm and analogue-feel ergonomics make them ideal for applications such as food processing (e.g. bakery ovens), small industrial furnaces and ceramics kilns. The UDC 110 and UDC 120 versions provide extra functionality such as integral timer, alarms and 2-loop control, increasing their range of applications and further reducing total cost.

Family Features:

Quality at Low Cost

All design, technology and manufacturing choices have been driven by our goal to reduce the cost to our OEM customers to the lowest possible level, with absolutely no sacrifice in quality, reliability and functionality. The UDC 100 line is also designed to be easy to customise.

Analogue-feel Ergonomics

A dial-based human interface conceals the power of the high-performance microprocessor control with the most intuitive operation. Precise fingertip control is the ultimate in user friendliness. Parameter values can either be pre-loaded in out factory or through a PC.

Simple Control in an Integrated Unit

Based on a microprocessor solution, the UDC 100 provides a simple ON-OFF or PID control algorithm with all the benefits of digital technology. It offers supreme regulatory control at low cost. The UDC 100 is quick and easy to integrate, leading to space and cost savings.

Specific Features:

UDC 100

- One highly visible 3-digit red display
- Only 55mm deep to meet most machine construction requirements
- IP54/NEMA 3 front face rating
- OEM site or factory PC-configurable for range and control

UDC 110

- Dual 3 digit red/green display
- Displays for PV and SP
- UDC110T: Integral timer function with set/start/stop keys and dedicated relay actuation
- UDC110A: One alarm relay output version with 5 different alarm types

UDC 120

- Dual 3-digit red display
- Dual loop controller with 2 independent:
 - Displays for PVs
 - Control algorithms
 - Relay outputs
- Possibility to have one single SP for both loops.



Condensed Specifications

| | |
|-----------------------|--|
| Accuracy | ±0.5% span ±1 LSD |
| Sampling Rate | 4 times per seconds (2times per sec. for 2-loops model) |
| Front Face Protection | IP54/NEMA 3 |
| Operating Temperature | 0°C to 60°C (32°F to 140°F) |
| Relative Humidity | 20-95% non-condensing |
| Power Supply | 115/230 Vac 50/60Hz 24/48 VAC 50/60 Hz |
| Analogue Input | <ul style="list-style-type: none"> • 1 or 2 low level inputs • Types: Thermocouple: J, K, T, L, S, R RTD: PT100 Linear: mV, mA |
| Control Capability | ON-OFF PID (option with 4 digit display) Time proportioning: relat SSR driver |

Product Dimensions

| | |
|--------------|--------------------------------|
| Front Face | 96 x 96mm (3.78 x 3.78 inches) |
| Depth | 55mm (2.16 inches) |
| Panel Cutout | 92 x 92mm (3.62 x 3.62 inches) |

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Industrial Measurement and Control

<http://europe.iac.honeywell.com>

Northern Europe and Southern Africa: Honeywell Ltd., Arlington Business Park, Bracknell, RG21 1EB, UK - Tel:[44] 1344 656000

Central Europe: Honeywell A.G., Kaiserleistrße 39, 63067 Offenbach, Germany - Tel: [49] 69-8064-0

Western and Southern Europe: Honeywell S.A., Avenue de Schiphol 3, 1140 Brussels, Belgium - Tel: [32-2] 728 2611

Eastern Europe: Honeywell s.r.o., Budejivicka 1, 140 21 Prague 4, Czech Republic - Tel: [420-2] 6112-2777

Middle East: Honeywell Middle East Ltd., Khalifa Street, Sheikh Faisal Building, Abu Dhabi, U.A.E. - Tel: [9712] 322530

Asia: Honeywell Asia Pacific Inc., Room 3213-3225, Sun Hung Kai Centre, 30 Harbour Rd., Wanchai, Hong Kong - Tel: [852] 23319133

Japan: Industrial Operations Tokyo, 4-28-1 Nishi-Rokugo Othu-ku, Tokyo 144, Japan - Tel: [81] 3-3486-2051

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Technical data

| | | |
|------------------------|----------------------|--|
| Input | Accuracy | 0.5% of span \pm 1 LSD |
| | T° Stability | 0.01% of span per °C for T/C, mA and mV input 0.04% per °C for RTD input 0.05% per °C 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 μ A |
| Stray rejection | 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 : 0-50mV detected within 2 seconds, upscale burnout |
| | 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 | <i>Type available :</i> Output 1 : Electromechanical relay or SSR drive (open collector) Output 2: Electromechanical relay or SSR drive (UDC120 only) (open collector) <i>Electromechanical relay :</i> SPDT contact Resistive load : 10A at 120 V or 240 V Life time : > 600000 operations at 230 Vac / 5 amps <i>SSR drive capability :</i> SSR > 11Vdc into 500 ohms min. 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 to 5999 secondes Rate : From 0 to 5999 secondes Two independant PID available for two loops model. Cycle times : Up to two independant cycle times available for two loops model Cycle times selection : From 0.1 to 256.0 seconds |
| Timer (Models 110T) | Duration | From 1 min to 9h00mn |
| | Output Type | 1 relay (SPDT) 10 A resistive load (115/230 Vac) |
| | Triggering cause | End of preset time |
| Alarm (Model 110A) | N° of Alarms | 1 Alarm setpoint |
| | Output type | 1 relay (SPDT) 10 A resistive load (115/230 Vac) |
| | Alarm type | PV High or Low, Dev High or Low, Band |