

UDC3000 Versa-Pro Universal Digital Controller

Specification

Overview

The UDC3000 Universal Digital Controller is Honeywell's general purpose microprocessor-based, stand alone digital controller. It combines the highest degree of functionality and operating simplicity offered in a 1/4 DIN size. The bright dual displays with multi-language prompts make the operator interface easy to read, understand, and operate.

Programmed sequences of displays assure quick and accurate entry of all configurable parameters. Simple keystrokes let you select input and range configuration, set the operating parameters that meet your process control needs now, and change them later to meet new ones.

Features

Dual Displays - Vacuum fluorescent alphanumeric displays and indicators with dedicated PV display.

Deviation Bargraph - "On Control" indication or up to $\pm 10\%$ deviation display.

Easy Configuration - Multi-language prompts, in programmed sequence, provide guidance during configuration. Individual, reliable tactile keys provide positive operator feedback. There are no internal jumpers to set.

Universal Isolated Input - Input 1 accepts 10 thermocouple types, RTDs, Radiamatic RHs, mA, mV or voltage inputs through keyboard configuration. It is isolated from Input 2 and all other circuits. (See Table 1.)

Thermocouple Failsafe - Configurable upscale or downscale burnout and failsafe output level.

Decimal Point Location - Configurable for none, one, or two places.

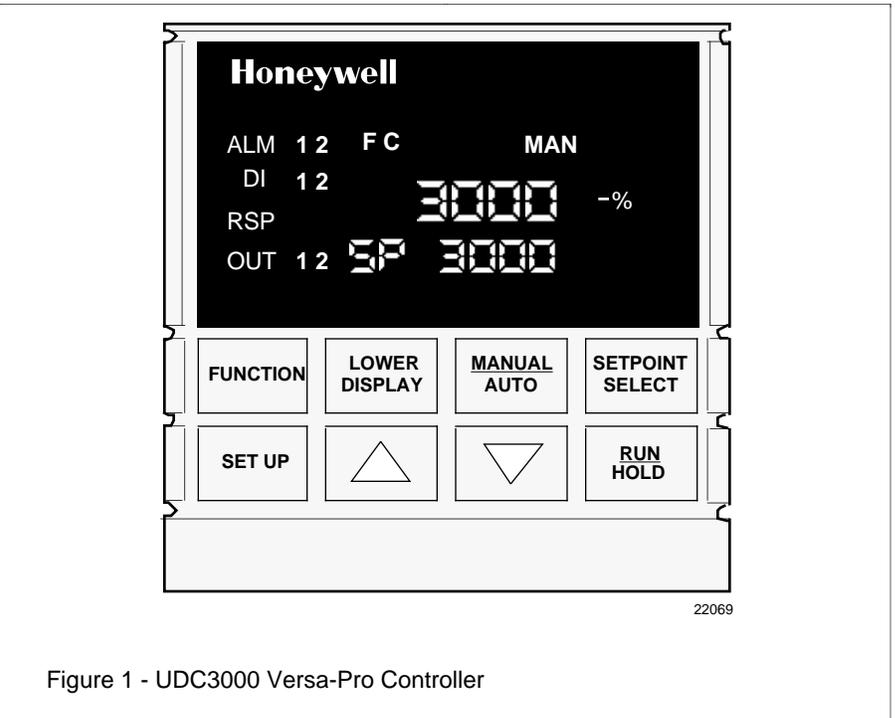


Figure 1 - UDC3000 Versa-Pro Controller

Accutune II™ - Provides a new, truly plug and play tuning algorithm, which will, at the touch of a button or through a digital input, accurately identify and tune any process including those with deadtime and integrating processes. This speeds-up and simplifies startup plus allows retuning at any setpoint. Also included is the original Accutune SP Adaptive tuning that can automatically retune whenever a SP step change is implemented.

Fuzzy Logic - This new feature uses fuzzy logic to suppress process variable overshoot due to SP changes or externally induced process disturbance. It operates independently from Accutune tuning. It does not change the PID constants, but temporarily modifies the internal controller response to suppress overshoot. This allows more aggressive tuning to co-exist with smooth PV response. It can be enabled or disabled depending on the application or the control criteria.

Manual/Automatic Modes - Bumpless, balanceless transfer between control modes.

Two Local Setpoints - Can be configured to provide two local setpoints, keyboard or optional remote switch selectable.

Universal Switching Power - Operates on any line voltage from 90 to 264 Vac 50/60 Hz without jumpers. 24V ac/dc instrument power available as an option.

Limit Control - provides a latching relay which is activated whenever the PV goes above or below a preset setpoint value. An alarm indicator will light when the output is activated. Reset is through a key on the front of the controller or an external switch.

Setpoint Rate - Lets you define a ramp rate to be applied to any local setpoint change. A separate upscale or downscale rate is configurable. A single setpoint ramp is also available as an alternative.

Features, continued

CE Mark- Conformity with 73/23/EEC, Low Voltage Directive and 89/336/EEC, the EMC Directive

Moisture Resistant Front Panel - Capable of meeting NEMA 3 and IEC529 IP65 (i.e. hosedown) requirements.

Timer - This standard feature provides a configurable time period of 0 to 99 hours, 59 minutes. Alarm 1 is dedicated to be active at the end of the timeout period. Timer "start" is selectable as either the RUN/HOLD key or Alarm 2. The optional Digital Input can also be configured to start the Timer in addition to either the keyboard or Alarm 2. The Timer status shown in the lower display is selectable as either time remaining or elapsed time.

Two Sets of Tuning Constants - Two sets of PID parameters can be configured for each loop and automatically selected.

Heat/Cool Capability - Provides split range control with independent PID tuning constants - one for heating, one for cooling, plus mixed output forms.

Alarm Selection - None, one, or two relays to activate external equipment when preset high/low setpoints are reached. There is an indicator for each alarm.

Setpoint Ramp - Provides single programmable setpoint ramp of up to 255 minutes duration which is repeatable and activated by the Run/Hold key.

Output Rate Limiter - A maximum output rate may be configured for both the upscale and downscale output directions.

Data Security - Five levels of keyboard security protect tuning, configuration, and calibration data, accessed by a configurable 4-digit code. Nonvolatile EEPROM memory assures data integrity during loss of power.

Quality/Support - The UDC3000 is covered by a 2-year warranty and backed up by a toll-free phone number for technical assistance.

Optional Features (Fig. 4)

Second Input - Isolated high level input available for remote setpoint signal, PV signal via digital inputs, or motor slidewire input. (Table 1)

Auxiliary Output* - This isolated Auxiliary Output can be scaled from 4-20 mA for 0 to 100% for any range. It can be configured to represent Input 1, Input 2, PV, active Setpoint, Local SP1, Deviation, or the Control Output.

Communications* - Provides a link between the UDC3000 and a Honeywell supplied interface device capable of communicating via RS232 (DMCS), or direct communication via the RS422/485 communications option to a host computer.

Approval Body Options - FM approval, CSA certification and UL Recognition are available options. UL Recognition applies to regulatory use only.

2 Digital Inputs - Allows remote dry contact closure to select one of the following for each digital input:

- Manual control mode
- Local setpoint 1
- Local setpoint 2
- Direct controller action
- Reset of Limit Controller
- Hold SP Ramp/Programming
- Select PID set 2
- PV = Input 2
- External program reset
- Disable PID integral action
- To Run - SP Ramp/Program
- To Automatic output value
- Manual mode, failsafe output
- Disable keyboard
- Start Timer
- To Auto/Manual Station
- ToTune

Also allows the following selections to be combined with the above selections:

- Select PID set 2
- Direct controller action
- Local setpoint 2
- Disable adaptive tune

Transmitter Power - Provides up to 30 volts to power a 2 wire transmitter (requires use of alarm 2 open collector output selection or auxiliary output.)

* AuxOut and communications are mutually exclusive (only one may be specified).

Optional Features continued

Auto/Manual Station Plus Backup Control - You can use a single UDC3000 to act as both an Auto/Manual Station PLUS a back-up PID Controller, should the primary loop controller fail. Since the PID control is sometimes implemented in the PLC, this feature provides a very cost-effective way to insure the process does not have to shutdown or remain in manual mode if the PLC should fail. Switching from the Auto/Manual Station to the back-up control mode is accomplished using the Digital Input option.

Setpoint Ramp/Soak Programming - Enables you to program and store 6 Ramp and 6 Soak segments for setpoint programming. Run or Hold of program is keyboard or remote switch selectable.

Physical Description

The controller is housed in a 5.8 inch deep, black metal case with a dark gray elastomer bezel, that can be panel mounted in a 1/4 DIN cutout, (see Figure 5.) The plug-in chassis allows easy access to the controller board and its various option boards. All power, input, and output wiring are connected to screw terminals on the rear panel, (see Fig 6.) Blue and tan elastomer bezels are optionally available.

Inputs

Each analog input is sampled 3 times a second, amplified and then converted to a digital signal which is isolated and passed to the microprocessor. The primary input can be one of various Thermocouple, Radiamatic, or Linear actuators, (see Table 1.) A second input provides a remote setpoint function and accepts a 4 to 20 mA or 1 to 5 Vdc range that can be characterized. All ranges are keyboard selectable. External cold junction compensation is provided. You can select upscale downscale, or failsafe sensor break protection. A configurable digital filter of 0 to 120 seconds for each Input provides input signal smoothing, if required.

Output Types

The following output types are available per the model selection guide:

- Current output
- Electromechanical relays
- Solid state relays
- Open collector output
- Solid state relay (10 amp) externally mounted (optional)
- Auxiliary current output (optional)

Output Algorithms

The UDC3000 is available with one or more of the following output algorithms:

Time Proportional - provides On-Off or Time Proportional (Relay) output.

Current Proportional - supplies proportional direct current output for final control elements which require a 4-20 mA signal.

Position Proportional - positions a reversible motor with a feedback slidewire in proportion to the output of the control algorithm. Requires 2 output relays.

Time Proportional Duplex - depending on which control algorithm you select, this duplex output algorithm can provide On-Off Duplex, Time Proportional Duplex, or 3 Position Step Control. The time proportional duplex output provides independent PID tuning constants and two time proportional outputs; one for heat zone above the 50% output, and one for cool zone below 50% output.

Current Proportional Duplex - similar to current proportional but provides a second set of tuning parameters and a split range current output or a second current output via the Auxiliary output option, for the heat and cool zones.

Output Algorithms, cont

Current/Relay Duplex (Relay = Heat) - a variation of Duplex with Current active for 0 to 50% output (Tuning Set 2) and Relay active 50 to 100% output (Tuning Set 1).

Current/Relay Duplex (Relay = Cool) - a variation of Duplex with Current active for 50 to 100% output and Relay is active for 0 to 50% output.

“Universal” Output Model - Flexibility of the Output Algorithms allows the Current Output Model with 2 Alarms (DC300K-E) to be also configured for time simplex, time duplex, or three position step control plus, of course, the original capability of current simplex and current/time duplex control. A Relay Output Model with Auxiliary Output can also be configured for these output algorithms.

Control Algorithms

Depending on the output algorithms specified, the controller can be configured for the following control algorithms:

- On-Off
 - PID-A
 - PID-B
 - PD with Manual Reset
 - Three Position Step Control
- The Three Position Step Control algorithm allows the control of a valve (or other actuator), with an electric motor driven by two controller output relays; one to move the motor upscale, the other downscale without a feedback slidewire linked to the motor shaft. Accutune does not apply to this algorithm. Features of this algorithm are:
1. The controller can use all three modes of control (PID) instead of PI only.
 2. Three Position Step is an automatic backup mode to Position Proportional Control if the feedback slidewire signal should fail.

Configuration

You decide how the controller is to interact with the process by selecting, through simple keystrokes, the functions you want.

Multi-language prompts guide the operator step-by-step through the configuration process assuring quick and accurate entry of all configurable parameters. There are no internal jumpers, all configuration is via the keyboard. Five languages are available via configuration; English, French, German, Spanish and Italian.

Control Modes

Manual or Automatic control with bumpless, balanceless transfer between modes is a standard feature. In the manual mode, the operator directly controls the controller output level. In the automatic mode, the controller will operate from a local setpoint, or a remote setpoint provided at the second input or via communications.

Alarms

Alarm output terminals are located at the rear terminal panel. One or two electromechanical alarm relays are available to activate external equipment when preset alarm set points are reached. Each of the two alarms can be set to monitor two independent set points. Each alarm setpoint can be either high or low alarm. The alarm type can be selected to be either of the inputs, the Process Variable, Deviation, Output, Shed from communications or to alarm on manual mode. It can also be used as an On or Off event at the beginning or end of a Ramp/Soak segment. The alarm hysteresis is configurable from 0 to 100% of range.

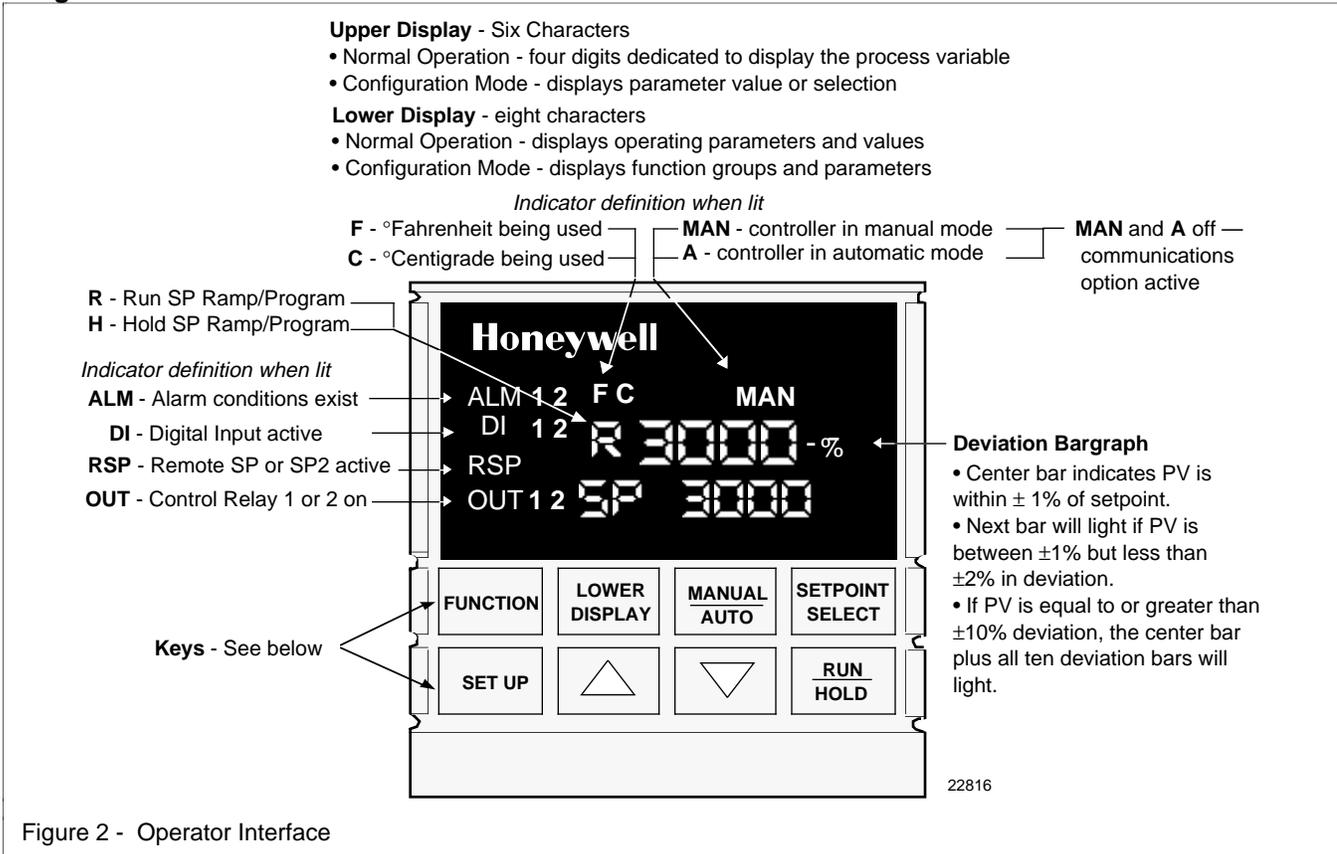


Figure 2 - Operator Interface

Operator Interface (Fig. 2)

Indicators - They provide alarm, control mode, and temperature units indication. There is also indication of when Remote Setpoint is active, the status of the control relays, and whether a setpoint program is in Run or Hold mode.

A 21-segment bargraph displays deviation to $\pm 10\%$ of span and an "On-Control" indicator.

Displays - A 4-digit upper display is dedicated to the process variable during normal operation with alternate 6-character information displayed when in the configure mode.

During normal operation, the lower display shows key-selected operating parameters such as Output, Setpoints, Inputs, Deviation, active Tuning Parameter Set, Timer Status, or minutes remaining in a setpoint ramp (4 digits). It also provides guidance, through prompts, for the operator during controller configuration (8-characters).

SET UP	Sequentially displays Set Up groups and allows Function key to display individual functions.
FUNCTION	Selects functions within each Set Up group.
LOWER DISPLAY	Selects an operating parameter to be shown in the lower display.
MANUAL AUTO	Selects Manual or Automatic control mode. (may be disabled via configuration)
SETPOINT SELECT	Alternately selects Local setpoint 1 and Remote setpoint or between two local setpoints. (may be disabled via configuration)
RUN HOLD	Initiates or holds the single setpoint ramp or Ramp/Soak program. (may be disabled via configuration)
▲	Increases the setpoint, output, or configuration values displayed.
▼	Decreases the setpoint, output, or configuration values displayed.

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Figure 3 - Key Functions

Specifications

Design	
CE Conformity (Europe)	This product is in conformity with the protection requirements of the following European Council Directives: 73/23/EEC , the Low Voltage Directive, and 89/336/EEC , the EMC Directive. Conformity of this product with any other "CE Mark" Directive(s) shall not be assumed.
Product Classification:	Class I: Permanently Connected, Panel Mounted Industrial Control Equipment with protective earthing (grounding). (EN61010-1)
Enclosure Rating:	Panel Mounted Equipment, IP 00, this controller must be panel mounted. Terminals must be enclosed within the panel. Front panel IP 65 (IEC 529).
Installation Category (Overvoltage Category):	Category II: Energy-consuming equipment supplied from the fixed installation. Local level appliances, and Industrial Control Equipment. (EN 61010-1)
Pollution Degree:	Pollution Degree 2: Normally non-conductive pollution with occasional conductivity caused by condensation. (Ref. IEC 664-1)
EMC Classification:	Group 1, Class A, ISM Equipment (EN 55011, emissions), Industrial Equipment (EN 50082-2, immunity)
Method of EMC Assessment:	Technical File (TF)
Declaration of Conformity:	51309303-000.
Accuracy	± 0.20% of span typical (± 1 digit for display) 15 bit resolution typical
Temperature Stability	± 0.01% of Full Scale / °C change
Input Signal Failure Protection	<i>Thermocouple Inputs:</i> Upscale or downscale burnout <i>Burnout Current:</i> 0.13 microamps <i>Failsafe Output Level:</i> Configurable 0-100%
Input Impedance	<i>4-20 Milliampere Input:</i> 250 Ohms <i>0-10 Volt Input:</i> 200K Ohms <i>All Other:</i> 10 Megohms
Stray Rejection	<i>Common Mode</i> AC (50 or 60 Hz): 120 dB (with maximum source impedance of 100 Ohms) or ± 1 LSB ((least significant bit) whichever is greater. <i>Normal Mode</i> AC (50 or 60 Hz): 60 dB (with 100% span peak-to-peak maximum)
Alarm Output	One SPDT electromechanical relay. A second alarm is available using the second control relay. This is not available with Relay Duplex, Position Proportional, or Three Position Step control. Up to four setpoints are independently set as high or low alarm, two for each relay. Setpoint can be on either Input, Process Variable, Deviation, Communication Shed, or Output. A single adjustable hysteresis of 0.0 to 100.0% is provided. The controller can also be set to alarm on shed from communications. The alarm can also be set as an on or off event at the beginning of a setpoint ramp/soak segment. <i>Alarm Relay Contacts Rating</i> <i>Resistive Load:</i> 5 ampere at 120 Vac or 30 Vdc, 2.5A at 240 Vac.

Specifications (continued)

Design (continued)	
Controller Output Types	<p>Current Output (Isolated) Range can be set anywhere between 0 to 21 mA, and as direct or reverse action. <i>Resolution:</i> 11 bits for 0 to 21 mA <i>Accuracy:</i> 0.5% full scale <i>Temperature Stability:</i> 0.1% F.S. / °C <i>Load Resistance:</i> 0 to 1000 ohms</p> <p>Electromechanical Relays (One or Two) SPDT contacts. Both Normally Open and Normally Closed contacts are brought out to the rear terminals. Internally socketed <i>Resistive Load:</i> 5 amps @ 120 Vac, 2.5A at 240 Vac or 30 Vdc <i>Inductive Load:</i> 50 VA @ 120 Vac or 240 Vac <i>Motor:</i> 1/6 H.P.</p> <p>Solid State Relays (One or Two) SPST solid state contacts consisting of a triac N.O. output. Internally socketed <i>Resistive Load:</i> 1.0 amp @ 25 °C and 120 or 240 Vac 0.5 amp @ 55 °C and 120 or 240 Vac <i>Inductive Load:</i> 50 VA @ 120 Vac or 240 Vac</p> <p>Open Collector Outputs (One or Two) <i>Maximum Sink Current:</i> 20 mA <i>Overload Protection:</i> 100 mA Internally powered @ 30 Vdc Opto-isolated from all other circuits except current output, but not from each other. Socketed jumper assembly replaces relay.</p> <p>Solid State Relays (10 amps) One or two externally mounted triac N.O. outputs for use with open collector outputs. <i>Resistive Load:</i> 15 amps @ 25 °C and 120 or 240 Vac 10 amps @ 55 °C and 120 or 240 Vac <i>Inductive Load:</i> 50 VA @ 120 Vac or 240 Vac <i>Motor Rating:</i> 1 HP @ 25 °C 0.75 HP @ 55 °C</p>
Controller Output Algorithms	<p>On-Off or Time Proportional One relay or open collector output. Control action can be set for direct or reverse. <i>Time Proportional Relay Resolution:</i> 3.3 msec</p> <p>On-Off Duplex, Three Position Step Control, or Time Proportional Duplex Two relays or open collector outputs. Control action can be set for direct or reverse. <i>Time Proportional Relay Resolution:</i> 3.3 msec</p> <p>Current Proportional A single 4-20 mA current output signal which can be configured for direct or reverse action.</p> <p>Current Proportional Duplex A single split current output for both heat and cool (4-12 cool, 12-20 heat) or a combination of current proportional output (Heat = 50 to 100% of range) and auxiliary current output (Cool = 0 to 50% of range). Both are 4-20 mA signals which can be set for direct or reverse action.</p> <p>Position Proportional Two SPDT electromechanical or solid state relays operate motor having a 100 ohm to 1000 ohm feedback slidewire.</p> <p>Current/Time Duplex Variation of time proportional duplex for Heat/Cool applications. Time proportional output (heat or cool) is a relay. Current proportional output (Heat or Cool) is a 4-20 mA signal that can be fed into a negative or positive grounded load of 0 to 1000 ohms and is operational over 50% of range or the entire range.</p>
Sampling Rate	Inputs sampled 3 times a second

Specifications (continued)

Design (continued)	
Auxiliary Linear Output (Optional) <i>(Isolated)</i>	21 mA dc maximum into a negative or positive grounded load or non-grounded load of 0 to 1000 ohms. Output range can be set anywhere between 0 to 21 mA, and as direct or reverse action. It can be configured to represent either Input, PV, Setpoint, Deviation, or Control output. The range of the auxiliary output, as a function of the selected variable, can be scaled. This output can be used as a second current output for current duplex outputs. <i>Resolution: 12 bits over 0 to 21 mA</i> <i>Accuracy: 0.2% of full scale</i> <i>Temperature Stability: 0.01% F.S. / °C</i>
Communications Interface (Optional) DMCS	<i>Baud Rate: 19200 baud</i> <i>Length of Link: 4000 ft maximum</i> <i>Link Characteristics: Two wire, multi-drop proprietary protocol, 31 drops maximum</i>
RS422/485	<i>Baud Rate: 300, 600, 1200, 2400, 4800, or 19,200 baud</i> <i>Parity: Odd or Even</i> <i>Length of Link: 4000 ft maximum</i> <i>Link Characteristics: Two wire or four wire, multi-drop RS422 ASCII protocol, 15 drops maximum</i>
Digital Inputs (Optional)	+15 Vdc source for external dry contacts or isolated solid state contacts. The Digital Input option detects the state of external contacts for either of the two inputs. On contact closure the controller will respond according to how each digital input is configured. Opening contact causes return to previous state.
Input Filter	<i>Software: Single pole lowpass section with selectable time constants, off to 120 seconds available on both analog inputs.</i>
Digital Displays	Vacuum fluorescent, alphanumeric. A six-character upper display dedicated to the process variable (4 digits). Alternate information displayed during configuration mode. A eight-character lower display primarily shows key selected operating parameters (4 digits). Also provides guidance during controller configuration.
Indicators	Alarm Relay Status (ALM 1 or 2) Control Mode (A or MAN) Temperature Units (F or C) Remote Set Point or SP2 Active (RSP) Control Relay Status (OUT 1 or 2) Digital Input Status (DI 1 and 2)
Bargraph	21 segment, vertical Deviation bargraph Center bar lit when "on" control Deviation to ± 10% of PV span in 1% increments
Modes of Operation	Manual Automatic with local setpoint Automatic with remote setpoint (2-input units only)
Dimensions	See Figure 5.
Mounting	Panel-mounted, 5.82 inch depth
Wiring Connections	Screw terminals on the rear of the case. (See Figure 6.)
Power Consumption	18 VA maximum
Power Inrush Current	10A Max. for 4 ms (under operating conditions) <div style="border: 1px solid black; padding: 2px; display: inline-block;">CAUTION</div> When applying power to more than one UDC3000, make sure that sufficient power is supplied. Otherwise, the controllers may not start up normally due to voltage drop from the inrush current.
Weight	1.3 kg (3 lbs.)

Specifications (continued)

Environmental and Operating Conditions				
Parameter	Reference	Rated	Operative Limits	Transportation and storage
Ambient Temperature	25 ± 3°C 77 ± 5°F	15 to 55°C 58 to 131°F	0 to 55°C 32 to 131°F	-40 to 66°C -40 to 151°F
Relative Humidity	10 to 55*	10 to 90*	5 to 90*	5 to 95*
Vibration				
Frequency (Hz)	0	0 to 70	0 to 200	0 to 200
Acceleration (g)	0	0.1	0.5	0.5
Mechanical Shock				
Acceleration (g)	0	1	5	20
Duration (ms))	0	30	30	30
Voltage (Vdc)	+24 ± 1	20 to 27	20 to 27	--
Voltage (Vac)				
90 to 264Vac (CSA models rated to 250V max.)	120 ± 1 240 ± 2	90 to 264	90 to 264	-- --
24Vac	24 ± 1	20 to 27	20 to 27	--
Frequency (Hz) (For Vac)	50 ± 0.2 60 ± 0.2	49 to 51 59 to 61	48 to 52 58 to 62	-- --

* The maximum rating only applies up to 40°C (104°F). For higher temperatures, the RH specification is derated to maintain constant moisture content.

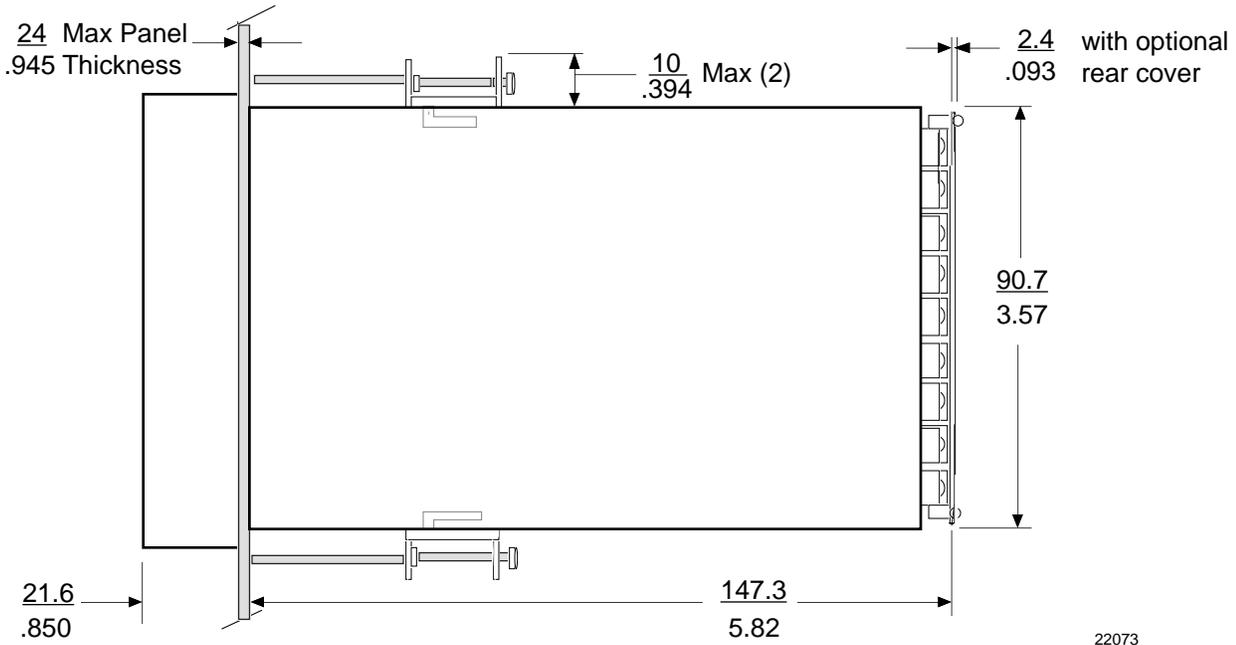
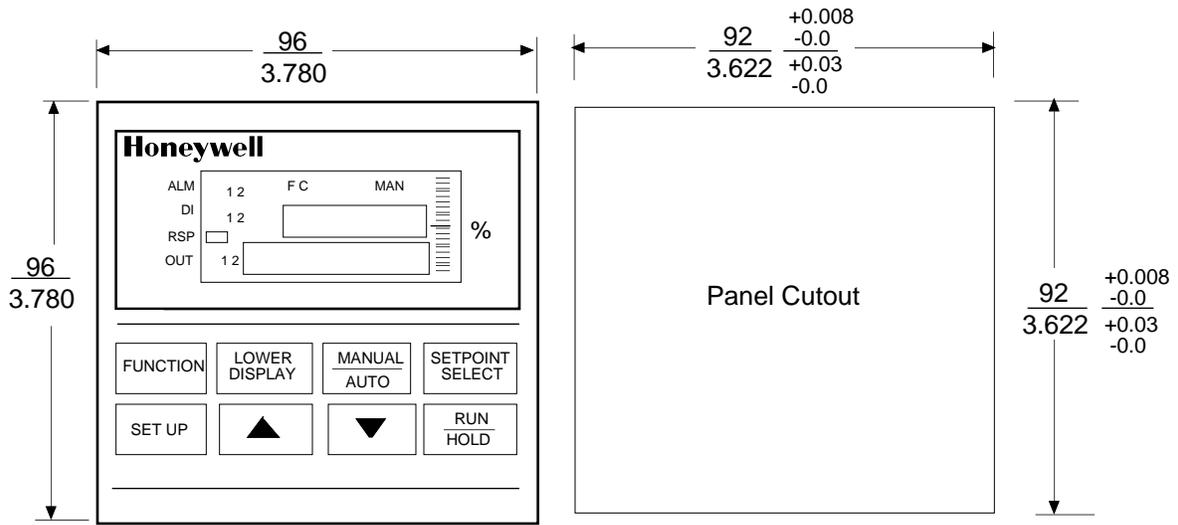
Table 1 - Input Actuators

PV Input	Range	
	°F	°C
Thermocouples		
B*	0 to 3300	-18 to 1815
E*	-454 to 1832	-270 to 1000
E (low)	-200 to 1100	-129 to 593
J	0 to 1600	-18 to 871
J (low)	20 to 770	-7 to 410
K	0 to 2400	-18 to 1316
K (low)	-20 to 1000	-29 to 538
NiNiMoly (NNM)	32 to 2500	0 to 1371
NiNiMoly (NNM low))	32 to 1260	0 to 682
NIC (Nicrosil Nisil)	0 to 2372	-18 to 1300
R	0 to 3100	-18 to 1704
S	0 to 3100	-18 to 1704
T	-300 to 700	-184 to 371
T (low)	-200 to 500	-129 to 260
W5W26	0 to 4200	-18 to 2316
W5W26 (low)	0 to 2240	-18 to 1227
RTD (IEC) ALPHA = 0.00385		
100 Ohms	-300 to 1200	-184 to 649
100 Ohms (low)	0 to 300	-18 to 149
500 Ohms	-300 to 1200	-184 to 649
Radiamatic RH	1400 to 3400	760 to 1871
Linear**		
Milliamps	4 to 20 mA	
Millivolts	0 to 10 mV	
Volts	10 to 50 mV 1 to 5V 0 to 10V	
Optional 2nd Input		
Milliamps	4 to 20 mA	
Volts	1 to 5V	
Slidewire for Position Proportioning	100 to 1000Ω	

* May require Field calibration to achieve rated accuracy below 1000 °F for type B and below -200 °F for type E thermocouple.

** Not available on FM approved Limit models.

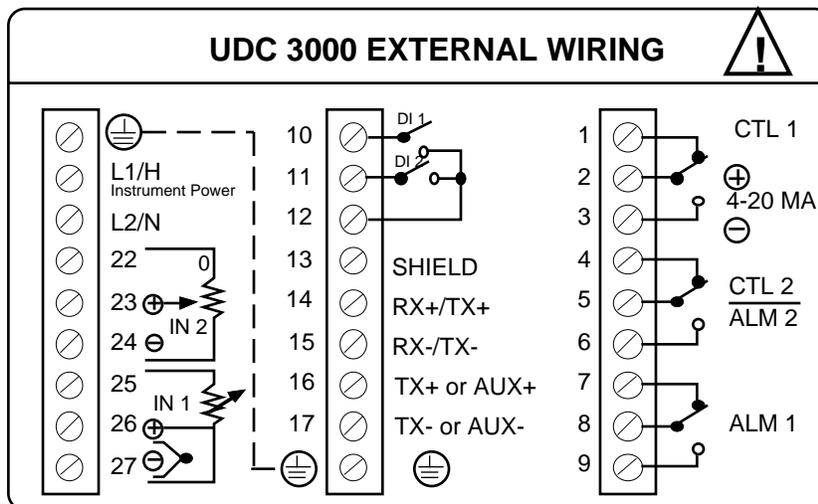
Dimensions



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Figure 5 - UDC3000 Versa-Pro Controller dimensions - not to scale

Wiring Diagram



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NOTE:
The product manual should be consulted for specific details and precautions regarding wiring.

Figure 6 - External Wiring Diagram

Ordering Information

For the complete ordering information, request Model Selection Guide:
51-51-16-32 for UDC3000 Universal Digital Controller or .

Honeywell offers a full line of Sensors, Transmitters, and Final Control Devices for use with the UDC3000 Universal Digital Controller. These devices include:

- Thermocouples, RTDs
- Pressure Transmitters,
- Flow Transmitters,
- Liquid Level Transmitters.
- Valve, Actuators, and Electric Motors.

Specifications are subject to change without notice.

Distributor :

For more information, contact your nearest Honeywell Response Center listed below.

Industrial Automation and Control

Honeywell Inc.

In the U.S.A.: Honeywell Industrial Automation and Control, 16404 North Black Canyon HWY., Phoenix, AZ 85023, (800) 343-0228

In Europe: Honeywell S.A., 80084 Amiens Cedex 2, (33) 22.54.56.56

Honeywell Control System Ltd., Honeywell House, Bracknell, UK-RG 12 1 EB, (44) 1344 826000

In Japan: Yamatake-Honeywell Co. Ltd., Nagai Int'l Bldg., 2 - 12 - 19 Shibuya-Ku, Tokyo 150 Japan, 81-3-3486-2051

In Asia: Honeywell Asia Pacific Inc., Room 3213-3225, Sun Hung kai Centre, No. 30 Harbor Road, Wanchai, Hong Kong, (852) 829-8298

In the Mediterranean: Africa and Middle East Region, Honeywell SpA, Via Vittor Pisani 13, 20124 Milano, Italy (39-2) 67731

Honeywell Pacific Division: Honeywell Pty Ltd., 5 Thomas Holt Drive, North Ryde Sydney, NSW Australia 2113, (61-2) 353 7000

In Canada: The Honeywell centre, 155 Gordon Baker Road., Ontario M2H 3N7, 1-800-461-0013

In Latin America: Honeywell Inc., 14505 Commerce Way, Suite 500, Miami Lakes, Florida 33016-1556, (305) 364-2300