CONTROLLERS AND PROGRAMMERS

Lesman is the authorized stocking representative for Honeywell Sensing and Controls instrumentation for Northern Illinois, Northwest Indiana, Eastern Iowa, and the Pulp and Paper Industries of Wisconsin and Michigan's Upper Peninsula. If you see a Block L on a product model number, it's an item we usually keep in stock! So, it's available to ship to you the same day!

We strive to provide you the best in control solutions. You voted the Honeywell UDCs and the Siemens 353 process automation controller as Control Magazine's Readers' Choice for 2005. We've got them both! (Availability dependent on market and geographic area.)

Prices in this catalog are current at the publication date, and are subject to change without notice.

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Choosing the Right Honeywell 1/4 DIN Digital Controller

	UDC100	UDC2500	UDC3200	UDC3500
Enclosure Rating	NEMA 3	NEMA 4X	NEMA 4X	NEMA 4X
Accuracy (Typical)	0.50%	0.25%	0.20%	0.10%
Analog Inputs				
Standard	1 Low	1 Low	1 Low	1 Low
Optional	—	1 High Level	1 Low	2 Low/4 High
Analog Outputs				
Optional	—	2	2	3
Digital Inputs				
Optional	—	2	2	4
Digital Outputs				
Optional	1	Up to 4	Up to 4	Up to 5
Local Setpoints	1	Up to 3	Up to 3	Up to 3
Setup/Configuration Software	UC100PC UC100PC	Process Instrument Explorer	Process Instrument Explorer	Process Instrument Explorer
Setpoint Programmer				
Optional	—	6 Ramp/6 Soak	6 Ramp/6 Soak	10 Ramp/10 Soak
Math Functions	—	Standard Limited	Optional Advanced	Optional Advanced
Features				
1/4 DIN Cutout/Footprint	Standard	Standard	Standard	Standard
Universal 90–264 VAC Power	Standard	Standard	Standard	Standard
Universal Analog Input	Standard	Standard	Standard	Standard
Thermocouple Health	—	Standard	Standard	Standard
AccuTune III	—	Standard	Standard	Standard
Infrared Comm Port	—	Optional	Standard	Standard
24 VAC/DC Power	Optional	Optional	Optional	Optional
Alarm Relays	Optional	Optional	Optional	Optional
Limit Controller	—	Optional	—	—
Ethernet Communications	—	Optional	Optional	Optional
RS485 Communications	—	Optional	Optional	Optional
Real-Time Clock	—	—	—	Optional
Logic Gates	—	—	—	Optional
Cascade Control	—	—	—	Optional (2 Loops)
8-Segment Characterizer	—	—	—	Optional
Totalizer	—	—	—	Optional
Healthwatch	—	—	—	Optional
Approvals	CE UL CSA	CE UL FM APPROVED Limit Controller	CE UL CSA	CE UL CSA

Honeywell 1/4 DIN Universal Digital Controller UDC100

Features

- No configuration necessary! Works right out of the box
- Single front-panel dial — for fast, easy setpoint adjustment
- LED displays are easy to read from a distance
- Built-in timer function — one unit can control temperature AND cooking time
- NEMA 3/IP54 moisture-resistant front panel
- Optional alarms (PV high or low, deviation high or low, band)

The UDC100 combines the highest operating simplicity with the benefits of digital technology. Its large dial allows easy parameter setup. Simple ON-OFF/PID control algorithm with alarm and timer options make the UDC100 ideal for food processing (e.g., bakery ovens), small industrial furnaces, and ceramic kilns. The UDC120 has dual-loop control for excellent space integration and cost-saving capabilities.

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.

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

The UDC110T provides a configurable time period from 0 to 9 hours. The timer is initiated by a key on the front face. A single SPDT relay and a front face LED are activated at the end of a time-out period. Latched relay requires manual acknowledgment from the operator. One alarm is available with a remote SPDT relay action. Alarm type can be set on PV high or low, deviation high or low, band.

Specifications

Input Accuracy: 0.5% span ± 1 LSD

Temperature 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 per second for DC12N)

Input Filter: Digital filter configurable via PC software. 0.0 (OFF), from 0.1 to 120.0 seconds

Input Isolation: Universal input isolated from all outputs and from power supply, with exception of solid state relay (SSR) driver and second input

Control Output Type: *Output 1:* SPDT relay or SSR drive (open collector). *Output 2:* SPDT relay or SSR drive (UDC120 only) (open collector).

Output Algorithm: *Configurable via PC software only:* ON/OFF with hysteresis: 0.0% to 100.0%. *Configurable via PC software or front face:* Proportional bands: 0.1% to 999.9%. Reset: Off or from 1 to 5999 seconds. Rate: From 0 to 5999 seconds.

Timer (DC110T): *Duration:* 1 min to 9 hr 00 min; *Output type:* 1 relay (SPDT) 10 Amp resistive load (115/230 VAC); *Triggering cause:* End of preset time

Alarm (DC110A): 1 alarm setpoint; *Output:* 1 SPDT relay 10 Amp resistive load (115/230 VAC); *Alarm type:* PV high/low, deviation high/low, band

Environmental Conditions

Front Panel: NEMA 3/IP54 protection from dust and water

Approvals: Meets UL. CSA certified C22.2 N1010-1/95 standard

Search www.lesman.com for
Honeywell UDC100 Go

Input Actuations

Input Type		°C Range	°F
Thermocouples	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
	R, S	32-2912	0-1600
	T	32-752	0-400
3-Wire RTD Pt100Ω (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, 0-50 mV; 4-20 mA*, 0-20 mA*	

* With 2.5Ω resistor

Ordering Instructions

Make a selection from each table. Follow the arrows down to be sure the unit you want is available. A complete catalog number looks like this:

DC1_ _-_ _-_ _-_ _ _-_ _-_ _-0

Model Selection Guide

Description		Catalog Number	Availability	Price
Model	Single Loop Controller, Single Display	DC10N	↓	$205.00
	Single Loop, Dual Display	DC10D	↓	235.00
	Single Loop, Dual Display + 1 Alarm	DC11A	↓	290.00
	Single Loop, Dual Display + Timer	DC11T	↓	300.00
	Dual Loop, Dual Display	DC12N	↓	320.00
Control Output	Electromechanical Relay SPDT, 10 Amp	R	• • • • •	0.00
	Solid State Relay Driver, 12 VDC	S	• • • • •	0.00
Power Supply	115/230 VAC, 50 Hz	00	• • • • •	0.00
	115/230 VAC, 60 Hz	01	• • • • •	0.00
Input Type (Note 1)	Type J Thermocouple: 0° to 300°C	JC1	• • • • •	0.00
	Type J Thermocouple: 0° to 400°C	JC2	• • • • •	0.00
	Type J Thermocouple: 32° to 572° F	JF1	• • • • •	0.00
	Type J Thermocouple: 32° to 752° F	JF2	• • • • •	0.00
	Type J Thermocouple: 32° to 999° F	JF3	• • • • •	0.00
	Type K Thermocouple: 32° to 999° F	KF1	• • • • •	0.00
	Type T Thermocouple: 0° to 400°C	TC1	• • • • •	0.00
	Type T Thermocouple: 32° to 752° F	TF1	• • • • •	0.00
	Type L Thermocouple: 32° to 932° F	LF1	• • • • •	0.00
	T/C K: 32° to 2372° F (4-digit display)	KF2	• • • • •	25.00
	Pt100Ω RTD: 0° to 100°C	PC1	• • • • •	0.00
	Pt100Ω RTD: 32° to 212° F	PF1	• • • • •	0.00
	Linear 10-50 mV/4-20 mA *(Note 2)*	LN1	• • • • •	0.00
	Linear 0-50 mV/0-20 mA *(Note 2)*	LN2	• • • • •	0.00
Alarm Type	None	00	• • • • •	0.00
	Process Value (PV) High	PH	•	0.00
	Process Value (PV) PV Low	PL	•	0.00
	Deviation (Dev) High	DH	•	0.00
	Deviation (Dev) Low	BA	•	0.00
Options	No Custom Configuration	00	• • • • •	0.00
	PID Algorithm (4-digit display) *(Note 3)*	01	• • • • •	55.00
UDC100 PC Configuration Package		46191310-501		209.00

Don't see the input type or range you need? Call us!

Notes

1 Standard is 3-digit display, except as noted. Three-digit display units cannot be field configured to 4-digit display inputs.
2 High and low limit range default values are 100 and 0, respectively. Contact Lesman if other values needed.
3 PID setting can be accessed via front panel. Without this option, all UDC100 controllers are "on/off" controllers.

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UDC1200/1700 MicroPro Universal Digital Controllers

Honeywell

The UDC1200 and UDC1700 are microprocessor-based 1/16 DIN and 1/8 DIN controllers that combine a high degree of functionality and reliability at low cost. They are fully dedicated to monitor and control temperatures, pressures, and levels in a wide range of applications — environmental chambers, furnaces, ovens, packaging machines and other applications in the food and beverage industries.

The large, easy-to-read, dual 4-digit display and tactile keypad make the UDC1200 and 1700 easy to configure and use. Their outstanding flexibility enables you to configure any unit for any application, and change it if required.

These UDC1200/1700 controllers and backward compatible to existing UDC1000/UDC1500 applications and installation

Features

- **Dual display:** Two 4-digit displays with 7 LED segments, each configurable for PV and SP (non-adjustable), PV and SP (adjustable), PV and ramping SP, or PV only.
- **Easy to configure:** Two configuration levels (configuration mode and setup mode) provide easy access to parameters. 4-digit security code prevents unauthorized changes.
- **Moisture-resistant front face:** Meets NEMA3/IP65 protection against dust and water.
- **Universal input:** Accepts 7 different types of thermocouples, RTDs, current and volt linear inputs. All configurable as standard.
- **Universal power supply:** Runs on any line voltage from 90 to 264 VAC at 50/60 Hz. Optional 24/48 VAC/DC also available.
- **New!!! Easy upgrade:** All option boards are jumper-free and detected automatically by the instrument.
- **New!!! Easy output selection:** All the outputs (including the control output) of the instrument can be changed to meet the exact customer's needs.
- **Alarm strategy:** Two soft alarms for PV, deviation high/low/absolute. A special loop alarm is also provided to detect faults in the control loop by continuously analyzing the PV response to the control output. Alarm inhibit is available on power-up and setpoint switching.
- **Manual/Automatic mode:** Manual control (via bumpless transfer) is enabled by pressing the front-face Auto/Man key. The "Set" LED flashes, and output power is shown on the lower display. Output can be adjusted with upper and lower keys.
- **Pre-tuning and self-tuning strategy:** Pre-tuning is used to set up the PID parameters close to optimum values. Subsequently, the self-tuning algorithm then uses these values to optimize tuning parameters.
- **Limit controller:** Packaged in 1/16 DIN, the UDC1200 limit controller is designed to provide a high or low limit safety cutout and optional alarms for use in a wide variety of applications.
- **Up to three outputs:** The UDC1200 and UDC1700 provide up to three outputs for time and current proportioning, duplex mode (heat/cool), PV or SP retransmission, and alarms.
- **Setpoint ramp:** According to a user-defined ramp, the SP ramps the current setpoint to the new targeted setpoint.
- **Dual setpoint:** Both the UDC1200 and 1700 support a dual setpoint option. The current setpoint is selected by a digital input. This option is exclusive with UDC1200 limit model remote alarm reset.
- **Communication:** An optional RS485 communications interface is available on both the UDC1200 and 1700 controllers. It provides a link between up to 32 units and a host computer through ASCII protocol, at up to 19200 baud.
- **Highly secure:** Non-volatile EEPROM memory ensures data integrity during power loss, with retention of more than 100 years. 4-digit security code prevents unauthorized or accidental change.
- **Output algorithms:** *Time proportional:* On/Off or time proportional with electromechanical relay SPDT 2A or SSR driver (open collector); *Current proportional:* Supply directly proportional current or volt signal to the final control elements which require 0-20 or 4-20 mA, or 0-5 or 0-10V; *Time proportional duplex:* Three duplex modules can be selected, either On/Off duplex or time proportional (heat/cool with two proportional bands, two cycle times, and deadband), or 3-position step control; *Current proportional duplex:* In addition to the first current/volt output, provides a second similar output with its own proportional band; *Current/time or time/current duplex:* Variation of traditional time or current duplex mode by mixing current and time proportioning together.
- **Control algorithms:** Four control algorithms can be set through the configuration menu — On/Off, PID, PD+MR, or 3-position step control (for valve positioning without slidewire feedback from the motor shaft).
- **New!!! Two configuration levels:** Setup mode allows modification of current parameters: tuning, alarm values, setpoint limit, ramp enable, auto/manual mode enable, and auto-pretune enable. Configuration mode is for input selection, output 2 and 3 usage, alarm type, communication address and lockout code. Operator mode screens are selectable via configuration software only.
- **Remote setpoint model:** The DC170R model has a second input that accepts either a linear or potentiometer input signal as a remote setpoint. The input signals accepted are field-configurable: 0-5, 1-5, 0-10, or 2-10V, 0-20 or 4-20 mA (factory set), 0-50, 10-50, 0-100 mV, or 0-2000Ω. The controller acts as a "slave", accepting a setpoint value from a master device such as a PLC or a Honeywell DCP family programmer. The DC170R includes a standard digital input, for remote switching between the local setpoint and the remote setpoint value. "Fuzzy" autotune software comes standard, to minimize process variable overshoot when responding to a setpoint change.
- **New!!! PC Software:** The UDC1200 and UDC1700 are supported by PC software that allows you to perform diagnostics or quickly configure your device using configuration wizards.

Specifications

Accuracy: 0.1% span ± 1 least significant digit.

Temperature Stability: 0.01% of span per °C.

Input Types: *Thermocouple:* J, K, T, L, B, R, and S; *RTD:* (3-wires connect) Pt100Ω (IEC), α=0.00385, Fixed decimal; *DC Linear:* 10-50 mV, 4-20 mA, 1-5V, or 2-10 V; Decimal point configurable up to 3 places.

Input Signal Failure: *Failsafe output value:* At detected burnout, depends on configuration. Upscale burnout for T/C and mV input detected by any lead break; RTD burnout detected by any lead break; Current or volt input burnout set by open circuit detection.

Input Impedance: *Volt:* 47 KΩ; *Current:* 4.7 Ω; *All others:* 100 MΩ.

Input Sampling Rate: 4x/sec.

Input Filter: Digital filter configurable from front panel. 0.0 (Off), from 0.5 sec. to 100.0 sec in 0.5 sec increments.

Resolution: Approximately 14 bits, always 4 times better than display resolution.

Isolation: Universal input isolated at 2500V from all outputs except SSR and from power supply.

Stray Rejection (@50/60 Hz): *Common:* >120dB; *Serial:* >500% span.

Approvals: Meets CE mark requirement. UL approved. *DC120L* (limit-control model) is FM approved as a safety device.

Control Output: *Types available:* Output 1/2/3: DC, electromechanical relay, SSR drive (open collector); *DC linear output:* 0-20 or 4-20 mA, 0-5 or 0-10 V; Accuracy: ±0.25% (250Ω for mA, 2KΩ for volt) Resolution: 8 bit in 250 ms (10 bits in 1 sec. typical, >10 bits in 10 sec. Load Impedance: 500Ω max. for current, 500Ω min. for volt; Isolation: Isolated 2500V from all other inputs and outputs; Range selection: Jumper positions and front panel setting; Temperature stability: 0.01%/°C; *Electromechanical relay:* SPDT contact; Resistive load: 2A @ 120 or 240V; Lifetime: >500,000 operations at rated voltage/current; *SSR drive/TTL:* Drive capability: SSR>10VDC into 250Ω/min.; Isolation: Not isolated from input and other SSR output.

Alarm Output: *Maximum number:* 2 soft alarms (SP+1 loop alarm). Alarm inhibit available on power-up and setpoint switching; *Alarm output:* Up to 2 relays or SSR output on OUT2 and 3; *Types:* PV high or low, band, deviation high or low, loop; *Combination alarms:* Logical OR, AND, or hysteresis of alarms available to individual output.

Retransmission: OUT3 Current or volt signal can retransmit PV/SP.

Automatic Tuning Type: Pre-tune and self-tune.

Proportional Bands: 0 (inactive), 0.5% to 999.9% of input span with 0.1% increments. Two proportional bands available for duplex mode.

Reset: Off or from 1 sec to 99 min: 59 sec; Rate: 0 to 99 min: 59 sec.

Manual Reset: 0 to 100% output (single), ±100% output (dual).

ON/OFF Hysteresis: 0.1% to 10.0% of input span.

Auto/Manual Mode: Front-key selectable with bumpless transfer between automatic and manual mode.

Cycle Times: Up to 2 cycle times available for time duplex control.

Selection: 0.5, 1, 2, 4, 8, 16, 32, 64, 128, 256, or 512 seconds.

Setpoint Ramp: From 1 to 9,999 engineering units/hour.

Communication Interface: RS485-ASCII; Speed: 1200, 2400, 4800, 9600, or 19200 baud; Link characteristics: 32 drop max, ASCII protocol, 2 wire.

Operating Conditions

Ambient Temperature: 32° to 131°F.

Relative Humidity: 20-95% non-condensing.

Voltage: 90-264 VAC, 50/60 Hz; *Power Consumption:* 4W

Resistance: *Source (T/C):* 1,000Ω max.; *Lead (RTD):* 50Ω/lead max. balanced.

Environmental: *EMI susceptibility:* Meets EN55101, *EMI emission:* Meets EN55022; *Safety considerations:* Complies with IEC1010-1 as far as applicable. *Front panel:* NEMA 3/IP65.

Mounting: Plug-in with pre-assembled mounting fixture.

Wiring connection: Screw terminals at rear of case (combination head).

Dimensions (HWD): *1200:* 1.89" x 1.89" x 4.33"; *1700:* 3.78" x 1.89" x 3.94"

Ordering Instructions

Make a selection from each table. Follow the arrows down to be sure the unit you want is available. A complete model number looks like this: DC1202-1-0-0-0-1-0-0-0

Model Selection Guide

		Catalog Number	Availability						Price
UDC1200 1/16 DIN Controller		DC120_-	↓	↓	↓	↓	↓		$245.00
UDC1700 1/8 DIN Controller		DC170_-	↓	↓	↓	↓		↓	345.00
Input Type	RTD or Linear mV Input	1-	•						0.00
	Thermocouple Input	2-		•					0.00
	Linear mA Input	3-			•				0.00
	Linear Voltage	4-				•			0.00
	Limit Controller (T/C only)	L-					•		0.00
	Remote Setpoint, Fuzzy Logic Digital Input Set for T/C Input	R-						•	100.00
Output 1	Relay (Control 1)	-1-	•	•	•	•	•	•	0.00
	SSR Driver (Control 1)	-2-	•	•	•	•		•	0.00
	Linear 0-10 Volts	-3-	•	•	•	•		•	30.00
	Linear: 0-20 mA	-4-	•	•	•	•		•	30.00
	Linear 0-5 Volts	-5-	•	•	•	•		•	30.00
	Linear: 4-20 mA (Control 1)	-7-	•	•	•	•		•	30.00
Output 2	None	-0-	•	•	•	•	•	•	0.00
	Relay (Control 2 or ALM 2)	-1-	•	•	•	•	•	•	30.00
	SSR Driver (Control 2 or ALM 2)	-2-	•	•	•	•	•	•	30.00
	Linear: 0-10 Volts	-3-	•	•	•	•	•	•	45.00
	Linear: 0-20 mA	-4-	•	•	•	•	•	•	45.00
	Linear: 0-5 Volts	-5-	•	•	•	•	•	•	45.00
	Linear: 4-20 mA (Control 2 only)	-7-	•	•	•	•	•	•	45.00
Output 3	None	-0-	•	•	•	•	•	•	0.00
	Relay (ALM 1 only)	-1-	•	•	•	•	•	•	30.00
	SSR Driver (ALM 1 only)	-2-	•	•	•	•	•	•	30.00
	Linear: 0 to 10 Volts	-3-	a	a	a	a		•	45.00
	Linear: 0 to 20 mA	-4-	a	a	a	a		•	45.00
	Linear: 0 to 5 Volts	-5-	a	a	a	a		•	45.00
	Linear: 4-20 mA (Retransmit only)	-7-	•	•	•	•	•	•	45.00
	Transmitter Power Supply (24 VDC)	-8-	•	•	•	•	•		65.00
Option 1	None	-0-	•	•	•	•	•	•	0.00
	RS485 ASCII Serial Communication	-1-	•	•	•	•	•	•	75.00
	Digital Input (Remote Alarm Reset)	-2-	•	•	•	•	•		45.00
	RS485 Modbus Communication	-3-	•	•	•	•	•		75.00
	Basic Remote Setpoint	-4-	•	•	•	•			80.00
Option 2	90 to 264 VAC Power Supply	-1000	•	•	•	•	•	•	0.00
	24 to 48 VAC/DC Power Supply	-2000	•	•	•	•	•	•	0.00

Restrictions: (a) Available on DC1700 models only.

NORMALLY AVAILABLE FROM STOCK

These UDC1200s are in stock at Lesman, available today!

- DC1202-1-1-0-0-1-0-0-0 ....$275.00
- DC1202-7-0-0-0-1-0-0-0 ..... 305.00

Looking for a 1/8 DIN digital indicator? See page 40 for the Honeywell UDI1700.

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UDC2500 Universal Digital Controller

Honeywell

Works with RS485 to Ethernet bridge. Call for details.

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The UDC2500 packs new powerful features into a 1/4 DIN single loop controller, while retaining all the simplicity, flexibility, and the industry-standard interface of the UDC2300 it replaces.

New features and options include:

- Up to 2 analog inputs (1 universal and 1 high level)
- Up to 2 analog outputs
- Up to 4 digital outputs
- Up to 2 digital inputs
- NEMA 4X, IP68 front face
- Built-in front-face infrared communications port for configuring with a Pocket PC or laptop computer
- PC-based Process Instrument Explorer configuration tool
- Ethernet communications
- FM-approved limit controller model
- Universal input/output model
- Thermocouple health monitoring
- Accutune III (Fast/Slow, Heat/Cool)

Thermocouple Health... Only Honeywell Has It!

Build Your Own UDC2500 at www.lesman.com

Quick Setup and Diagnostics!

The front-face infrared transceiver provides a non-intrusive wireless connection with the UDC2500, all the while maintaining the controller's NEMA 4X/IP66 integrity.

No need to get access to the back of the controller, no need to find a screwdriver to wire the communication cable! Just aim and upload!

The software also gives you instant information on the UDC's current operating parameters, digital inputs and alarm status — to help identify internal or analog input problems!

Learn more about Process Instrument Explorer on page 15.

Conversion Made Easy!

- Model selection conversion tool at www.lesman.com
  Just enter your old UDC2300 or UDC2000 model number and click CONVERT!
- Direct Retrofit!
  Same size panel cutout and same mounting as UDC2300
- Easy to Configure!
  Same menu and same front-panel keys (or use the new PC configuration tools!
- New Case Design!
  Required for NEMA 4X, UL Approval
- Easy to Wire
  Get the wiring diagrams at www.lesman.com! Easy-to-follow color code.

The 1/4 DIN UDC2500 monitors and controls temperatures and other variables in applications such as furnaces and ovens, environmental chambers, packaging machinery, plastic processing machines.

Its features include: Universal AC power supply, optional RS422/485 Modbus® RTU or Ethernet 10Base-T TCP/IP communication protocols, input/output isolation, and isolated auxiliary current output.

Combine these with Accutune III™ tuning with fuzzy logic overshoot suppression, and the result is true price-to-performance leadership.

Best yet, you can configure the UDC2500 with a Pocket PC, using the front-face infrared comm port, or with a PC and a serial-to-infrared interface. There's no need to get access to the back of the controller to download or upload a brand new configuration!

Other Features

Accutune III™: This feature provides a 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 or integrating processes. Accutune III speeds up and simplifies startup, and allows retuning at any setpoint.

You now have the choice of two tuning options: Fast Tune and Slow Tune. Fast Tune will tune the process so the temperature is reached faster (a slight overshoot will be allowed). Slow Tune will minimize overshoot, but it will take more time for the process temperature to reach the target setpoint. Heat/Cool (Duplex Tune) will automatically tune both the heating and cooling sides of the process.

Fuzzy Logic: Fuzzy logic suppresses process variable overshoot due to setpoint changes or externally induced process disturbances. It operates independently from Accutune III tuning. Fuzzy logic doesn't change the PID constants, but temporarily modifies the internal controller response to suppress overshoot. This allows more aggressive tuning to coexist with smooth PV response. It can be enabled or disabled depending on the application or the control criteria.

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

Auxiliary Output: This isolated 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.

Transmitter Power: This output provides up to 30VDC to power a two-wire transmitter (requires the use of Alarm 2 open collector output or auxiliary output).

Dual Setpoints: A simple push-button selection allows to quickly switchover from primary to alternate setpoint with minimal operator confusion.

Universal Switching Power: Operates on any line voltage from 90 to 264 VAC 50/60 Hz without jumpers. 24 VAC/DC instrument power is available as an option.

Timer: Provides a configurable time period of 0 to 99 hours, 59 minutes, or units of minutes and seconds. It can be started through Alarm 2, the keyboard, or a digital input. The timer output is Alarm 1, which energizes at the end of the Timer period, and can be automatically reset. The Timer period can be changed between each batch. Status is shown on the lower display.

Moisture Protection: The NEMA4X and IP66-rated front face permits use in applications where it may be subjected to moisture, dust, or hose-down conditions.

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

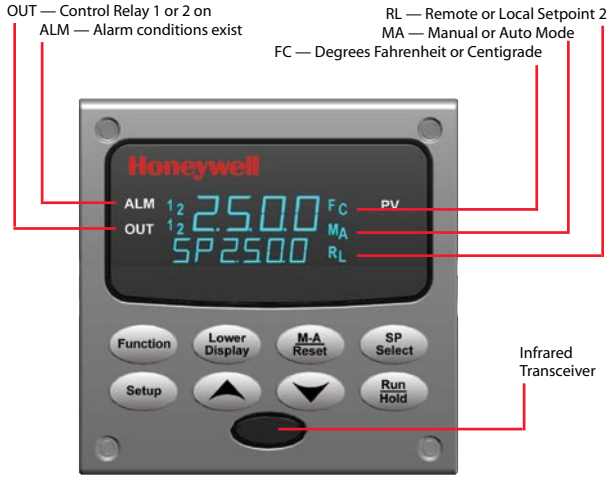
Setpoint Rate: Lets you define a ramp rate to be applied to any local setpoint change. A separate upscale or downscale rate is configurable. A single setpoint ramp is also available as an alternative.

Limit Control Model: Provides a latching relay that is activated whenever the PV goes above or below a preset setpoint value. An indicator will light when the output is activated, and the lower display will show a message. Reset is through a front-face key or an external switch. An FM-approved model is available.

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.

Diagnostic/Failsafe Outputs: Continuous diagnostic routines detect failure modes, trigger a failsafe output value and identify the failure to minimize troubleshooting time.

High Noise Immunity: The controller is designed to provide reliable, error-free performance in industrial environments that often affect highly noise-sensitive digital equipment.



Key Functions

FUNCTION	Selects functions within each configuration group.	SETUP	Scrolls through configuration groups.
LOWER DISPLAY	Returns controller to normal display from Setup mode. Toggles various operating parameters for display.	▲	Increases setpoint or output value. Increases configuration values or changes functions in Configuration mode groups.
M-A RESET	Selects Manual or Auto mode. Resets the latching limit controller relay. In Setup mode, used to restore original value or selection.	▼	Decreases setpoint or output value. Decreases configuration values or changes functions in Configuration mode groups.
SP SELECT	Cycles through configured setpoints when held.	RUN HOLD	Enables Run/Hold of Setpoint Ramp or Program plus Timer start.

Communication

A communications link is provided between the UDC2500 and a host computer or PLC via the RS422/485 Modbus RTU or Ethernet TCP/IP communications option. An infrared communication link is also available allowing a non-intrusive configuration of the instrument.

Want to Know How Your Thermocouples Are Performing?

Thermocouples fail. It's a fact you deal with every day. But when they fail without any warning, you're stuck dealing with a slew of costly problems!

- Your furnace or oven shuts down.
- You run the risk of destroying entire batches.
- You waste energy reheating product after the failed thermocouples are replaced.

You can choose to replace your thermocouples on a scheduled basis, but that's not always the best answer. It's expensive, labor-intensive, and not always necessary.

So, to help make your application run more smoothly, Honeywell has added Thermocouple Health Monitoring as a standard feature in its UDC family of controllers.

You get four different levels of alarm: Good, Failing, Failure Imminent, and Failed (Burnout), so you can replace the temperature sensors before they fail, and save yourself the time, money, and hassle!

Operator Interface

Indicators: Provide alarm, control mode, and temperature unit 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.

Displays: You decide how the controller interacts with the process by selecting, through simple keystrokes, the functions you want.

During normal operation, the upper display is dedicated to the process variable (4-digits) and special annunciator features. During normal operation for the optional dual display model, the 4-digit lower display shows selected operating parameters such as Output, Setpoints, Inputs, Deviation, active Tuning Parameter Set, Timer Status, or minutes remaining in a setpoint ramp. During configuration, both displays provide guidance for the operator through 6-character alphanumeric prompts.

Ethernet Communications

Widely used by manufacturers, the Ethernet connection, which uses Modbus TCP/IP, allows the controller to connect to other Ethernet networks and exchange data with computers or devices on that network for monitoring or managing your process from almost any location.

The Ethernet cable can be connected to a hub (using a straight-through cable) or directly to a PC (using a crossed cable or straight-through cable reconfigured at the UDC2500 terminals)

The controller can be configured via Process Instrument Explorer PC software. PIE lets you configure all the UDC's parameters, and monitors a variety of parameters in the controller. It can also configure the UDC2500 to send an e-mail when an alarm condition has been encountered.

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

UDC2500 Universal Digital Controller

Honeywell

Specifications

Input Accuracy: ± 0.25% full scale, typical (±1 digit for display). Can be field calibrated to ±0.05% full scale, typical 16-bit resolution

Sampling Rate: Inputs sampled six times a second

Temperature Stability: ±0.01% of full scale span per °C change, typical

Input Signal Failure Protection: *Thermocouple inputs:* Upscale, downscale, failsafe, or none; *Thermocouple health:* Good, failing, failure imminent, or failed; *Failsafe output level:* Configurable 0-100% of output range

Input Impedance: *4 to 20 mA input:* 250Ω; *0-10 V input:* 200KΩ; *All other:* 10 megΩ

Maximum Lead Wire Resistance: *Thermocouples:* 100Ω/leg; *100, 200, and 500 RTD:* 100Ω/leg; *100 low RTD:* 10Ω/leg

Stray Rejection: *Common mode:* AC (50 or 60 Hz): Greater of 120 dB (with maximum source impedance of 100Ω) or ±1 LSB (least significant bit); DC: Greater of 120 dB (with maximum source impedance of 100Ω) or a ±1 LSB; DC: (to 1 KHz): Greater of 80 dB (with maximum source of impedance of 100Ω) or ±1 LSB. *Normal mode:* AC (50 or 60 Hz): 60 dB (with 100% span peak-to-peak maximum)

Alarm Outputs: One SPDT electromechanical relay. Second alarm available if the second control relay is not used for control purposes. Up to four setpoints are independently set as high or low alarm, two for each relay. Setpoint can be on any input, PV, deviation, manual mode, failsafe, PV rate, RSP mode, communication shed or output. Adjustable hysteresis 0–100%. Alarm can also be set as an ON or OFF event at the beginning of a setpoint ramp/soak segment. *Alarm relay contacts rating:* 5 Amps resistive at 120 VAC, 240 VAC, or 30 VDC

Controller Output Types: *Electromechanical relays:* 1 or 2 SPDT contacts. Both normally open and normally closed contacts are brought out to the rear terminals. Internally socketed. Resistive load: 5 Amps at 120 or 240 VAC, or 30 VDC; Inductive load: 3 Amps at 130 or 250 VAC, 3.5 Amps at 30 VDC; Motor: 1/6 H.P. *Dual electromechanical relays:* 2 SPST relays. One normally closed contact for each relay brought out to rear terminals. Useful for time duplex or three-position step control. Instruments with this option have a total of 4 relays plus 1 current output. Internally socketed. Resistive load: 2 Amps at 120 or 240 VAC, or 30 VDC; Inductive load: 1 Amp at 130 VAC, 250 VAC, or 30 VDC; Minimum load: 20 mA; *Solid state relays:* One or two externally mounted SPST triac normally open outputs. Internally socketed. Resistive load: 1.0 Amp at 25°C and 120 or 240 VAC, 0.5 Amps at 55°C and 120 or 240 VAC; Inductive load: 50 VA at 120 VAC or 240 VAC; Minimum load: 20 mA. *Open Collector outputs (1 or 2):* Socketed assembly replacing a relay. Opto-isolated from all other circuits except current output, but not from each other, Internally powered at 30 VDC. Maximum sink current: 20mA; Overload protection: 100 mA. *Current output (1 or 2):* Range can be set anywhere between 0 to 21 mA and as direct or reverse action. The second output can be used in Aux Out mode, and configured to represent input, PV, setpoint, deviation, or control output. The second current output is mutually exclusive with the second digital input. Resolution: 12 bits over 0 to 21 mA; Accuracy: 0.05% full scale; Temperature stability: 0.01% full scale/°C; Load resistance: 0 to 1000Ω.

Controller Output Algorithms: *On-off or time proportional:* One relay or open collector output. Control action can be set for direct or reverse. Time proportional relay resolution: 3.3 msec. *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. Time proportional relay duplex resolution: 3.3 msec. *Current proportional:* Single 4 to 20 mA current output signal that can be configured for direct or reverse action. *Current proportional duplex:* Single split current output for heat and cool (4-12 cool, 12-20 heat) or a combination of first current output (heat = 50% to 100% range) and second current output (cool = 0% to 50% range). Both are 4 to 20 mA signals that can be set for direct or reverse action. *Current/time duplex:* Variation of time proportional duplex for heat/cool applications. Time proportional output is a relay. Current proportional output is a 4 to 20 mA signal that can be fed into a negative or positive grounded load of 0 to 1000Ω ohms, operational over 50% range or entire range.

Digital Input (Isolated): 30 VDC source for external dry contacts or isolated solid state contacts. Digital inputs are isolated from line power, earth ground, analog inputs, and all outputs except for second current output. Second digital input is mutually exclusive with the second current output.

Input Filter Software: Single pole low pass section with selectable time constants, off to 120 seconds available on both analog inputs.

Auxiliary Linear Output (Isolated): 21 mA DC maximum into negative or positive grounded or non-grounded load of 0-500Ω. Output range set between 0 and 21 mA, and as direct or reverse action, and configured to represent IN1, IN2, PV, setpoint, LSP1, 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. *Resolution:* 12 bits over 0-21 mA; *Accuracy:* 0.1% of full scale; *Temperature stability:* 0.01% F.S./°C; *Load resistance:* 0 to 500Ω

Communications Interface Option: *RS422/485 Modbus RTU:* 4800, 9600, 19200, or 38400 baud selectable; Floating point or integer data; 4000 ft. max. length; Two-wire, multi-drop Modbus RTU protocol, 15 drops max, up to 31 drops for shorter link length. *Ethernet TCP/IP:* 10Base-T, 330 ft. max. length; Four-wire, single drop, five hops max. *Infrared (IR):* Serial infrared, 3 ft. max. link for IrDA 1.0 compliant devices; 19200 or 38400 baud selectable; floating point or integer data. (***Note:*** PC's standard IR port will not support this option. Serial to Infrared adapter required. See Model Selection Guide.)

Setpoint Programming: Configure 6 ramp and 6 soak segments for use as one program or several small programs. Each ramp segment configured to run in hours and minutes or degrees per minute. Soak segments can have a deviation that guarantees the time for each soak and will not start until the PV is reached.

Digital Displays: Vacuum fluorescent, dual displays. Four-character upper display dedicated to PV. Alternate information displayed during configuration mode. Six-character, alphanumeric lower display shows key-selected operating parameters. Provides guidance during controller configuration.

Indicators: Alarm relay status (ALM 1 or 2), control mode (A or M), temperature units (F or C), remote setpoint or SP2 active (R), control relay status (OUT 1 or 2), Local setpoint 1 active (L)

Modes of Operation: Manual, automatic with local or remote setpoint

Wiring Connections: Screw terminals on the rear of the case

Power Consumption: 15 VA maximum 90 to 264 VAC and 24 VAC/DC

Power Inrush Current: 10A maximum for 4 ms (under operating conditions). *Caution:* When applying power to more than one UDC2500, make sure that sufficient power is supplied.

Design, Environmental and Operating Conditions

Ambient Temperature: 32 to 131°F (0 to 55°C)

Relative Humidity: 5 to 90% RH max rating to 104° F. For higher temperatures, RH specification is derated to maintain constant moisture content.

Vibration: 0 to 200 Hz; 0.6 g; *Mechanical Shock:* 5 g; 30 ms

Voltage: 90 to 264 VAC (CSA models rated to 250V max.); 20 to 27 VAC

Frequency (Hz): 48 to 52 (58 to 62 for VAC)

CE Conformity: Meets protection requirements of 73/23/EEC, the low voltage directive and 89/336/EEC, the EMC directive.

Product Class: *Class I:* Permanently connected, panel mounted industrial control equipment with protective grounding. (EN61010-1)

Installation Category (Overvoltage): *Category II:* Energy-consuming equipment supplied from fixed installation. Local-level appliances and Industrial Control Equipment. (EN 61010-1)

Pollution Degree: 2, Normally nonconductive pollution with occasional conductivity caused by condensation. (Ref. IEC 664-1)

EMC Class: Group 1, Class A, ISM equipment (EN 55011, emissions), Industrial equipment (EN 50082-2, immunity). *EMC assessment:* Technical File (TF).

Declaration of Conformity: 51453655

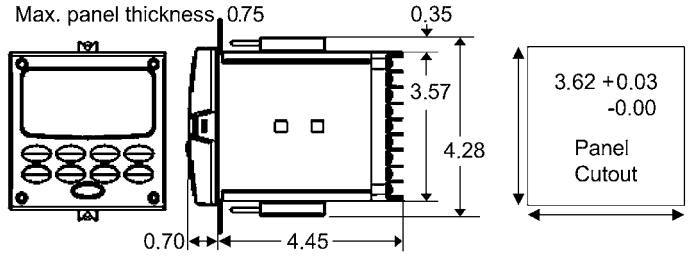
Input Actuations

Input Type	°F Range	°C
Thermocouples		
B	0 to 3300	-18 to 1816
E	-454 to 1832	-270 to 1000
E (low)	-200 to 1100	-129 to 593
J	0 to 1600	-18 to 871
J (med)	20 to 900	-7 to 482
J (low)	20 to 550	-7 to 288
K	0 to 2400	-18 to 1316
K (med)	-20 to 1200	-29 to 649
K (low)	-20 to 750	-29 to 399
NiMo-NiCo (NNM90)	32 to 2500	0 to 1371
NiMo-NiCo (low)	32 to 1260	0 to 682
Nicrosil Nisil (NIC)	0 to 2372	-18 to 1300
NIC (low)	0 to 1472	-18 to 800
R, 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 2315
W5W26 (low)	0 to 2240	-18 to 1227
Radiamatic		
Type RH	0 to 3400	-18 to 1871
Type RI	0 to 9999 max.*	-18 to 9999 max.*
Differential T/C**	-50 to 150	-46 to 66
RTD		
IEC Alpha = 0.00385		
100Ω, 200Ω, 500Ω	-300 to 1200	-184 to 649
100Ω (low)	-300 to 300	-184 to 149
Linear	4-20 or 0-20 mA; 0-10 or 0-100 mV; 0-5, 1-5, or 0-10V	
Linear Input 2	4-20 or 0-20 mA; 0-5, 1-5, or 0-2V	

* User enters the range manually per RI type and application.

** Factory calibrated for a pair of J thermocouples at an ambient temperature mean of 450°F (232°C). Can be field-calibrated for other ambient temperatures or other thermocouple types.

Dimensions



NORMALLY AVAILABLE FROM STOCK

These UDC2500s are in stock at Lesman, available today!

Standard Controllers

DC2500-C0-0000-200-00000-E0-0 ..... $413.00
DC2500-C0-0A00-200-00000-E0-0 ..... 438.00
DC2500-CE-0000-200-00000-E0-0 ..... 474.00
DC2500-CE-0A00-200-00000-E0-0 ..... 499.00
DC2500-E0-0000-200-00000-E0-0 ..... 382.00
DC2500-EE-0000-200-00000-E0-0 ..... 443.00
DC2500-EE-000R-200-00000-E0-0 ..... 468.00
DC2500-EE-0A00-200-00000-E0-0 ..... 468.00

Limit Controllers

DC2500-E0-0L00-200-00000-E0-0 ..... $392.00
DC2500-E0-0L00-200-10000-E0-0 ..... 422.00
DC2500-EE-0L00-200-00000-E0-0 ..... 453.00
DC2500-EE-0L00-200-10000-E0-0 ..... 483.00

In-stock orders placed by 3pm Central Time ship same day!

Ordering Instructions

Make a selection from each table. A complete catalog number looks like this: DC2500-CE-0000-200-00000-E0-0

Model Selection Guide

Description		Catalog Number	Availability ↓	Availability ↓	Price
Digital Controller for Use with 90-264 VAC Power		DC2500			$372.00
Digital Controller for Use with 24 VAC/DC Power		DC2501			428.00
Output 1	None (To be used as Indicator only)	0 _ -	•	•	0.00
	Current Output (4-20/0-20 mA)	C _ -	•	•	31.00
	Electromechanic Relay (5Amp, Form C)	E _ -	•	•	0.00
	Solid State Relay (1 Amp)	A _ -	•	•	0.00
	Open Collector Transistor Output	T _ -	•	•	16.00
	Dual Relays, Heat/Cool (2 Amp, Form A)	R _ -	•	•	51.00
Output 2 + Alarm 1 or Alarms 1+2	No Additional Outputs or Alarms	_ 0 -	•	•	0.00
	One Alarm Relay Only	_ B -	•	•	31.00
	Electromechanical Relay + Alarm 1	_ E -	•	•	61.00
	Solid State Relay + Alarm 1	_ A -	•	•	61.00
	Open Collector + Alarm 1	_ T -	•	•	76.00
Communications	None	0 _ _ _ -	•	•	0.00
	1 Aux Output + 1 or 2 Digital Inputs	1 _ _ _ -	•	•	107.00
	RS485 Modbus + AuxOut/DI	2 _ _ _ -	•	•	158.00
	10Base-T Ethernet (Modbus RTU) plus Aux Output/Digital Inputs	3 _ _ _ -	•	•	173.00
Software Selection	Standard Functions, Single Display	_ 0 _ _ -	•	•	0.00
	Dual Display with Auto/Manual	_ A _ _ -	•	•	25.00
	12-Segment Setpoint Programming plus Dual Display, Auto/Manual	_ B _ _ -	•	•	91.00
	Limit Controller Model	_ L _ _ -	a	a	10.00
Reserved	No Selection (For Future Use)	_ _ 0 _ -	•	•	0.00
Infrared Interface	None	_ _ _ 0 -	•	•	0.00
	IrDA Interface for Use with Pocket PC	_ _ _ R -	•	•	25.00
Input 1	TC, RTD, mV, 0-5/1-5V	1 _ _ -	•	•	0.00
	TC, RTD, mV, 0-5/1-5V, 0-20/4-20mA	2 _ _ -	•	•	0.00
	TC, RTD, mV, 0-5/1-5/0-10V, 0-20/4-20mA	3 _ _ -	•	•	41.00
Input 2	None	_ 00 -	•	•	0.00
	0-5/1-5V, 0-20/4-20mA	_ 10 -	b	b	107.00
Approvals	CE, UL, and CSA (Standard)	0 _ _ _ _ -	•	•	0.00
	CE, UL, CSA, and FM	1 _ _ _ _ -	c	c	30.00
	CE Only	2 _ _ _ _ -	•	•	0.00
Tags	None	_ 0 _ _ -	•	•	0.00
	Stainless Steel ID Tag (3x22 Char)	_ T _ _ -	•	•	30.00
Reserved	Future Options	_ _ 000 -	•	•	0.00
Manual	English Hard Copy (51-52-25-127)	E _ -	•	•	10.00
Certificate	None	_ 0-0	•	•	0.00
	Certificate of Conformance (F3391)	_ C-0	•	•	30.00

Restrictions

a Available only with Output 1 options E_, A_, and T_.
b Not available on limit controller model.
c Available only on limit controller. Not available with Output 1 options C_ or R_.

Accessories

Description	Catalog Number	Price
4-20 mA Input Resistor Assembly (250Ω)	30731996-506	$14.85
0-10V Input Resistor Assembly (100K Pair)	30754465-501	55.55
Process Instrument Explorer Software	L 50001619-001	165.00
Mounting Kit (12 Brackets)	51452763-501	18.70
DIN Adaptor Kit	30755223-003	58.30
Product Information on CD (All Languages)	51453375-501	11.00
Actisys Serial to Infrared Adapter for PCs	ACT-IR220L+	95.00

Free Downloads at www.lesman.com

UDC2500 2-Page Quick-Start Manual, English Product Manuals for Standard and Limit Controller Models

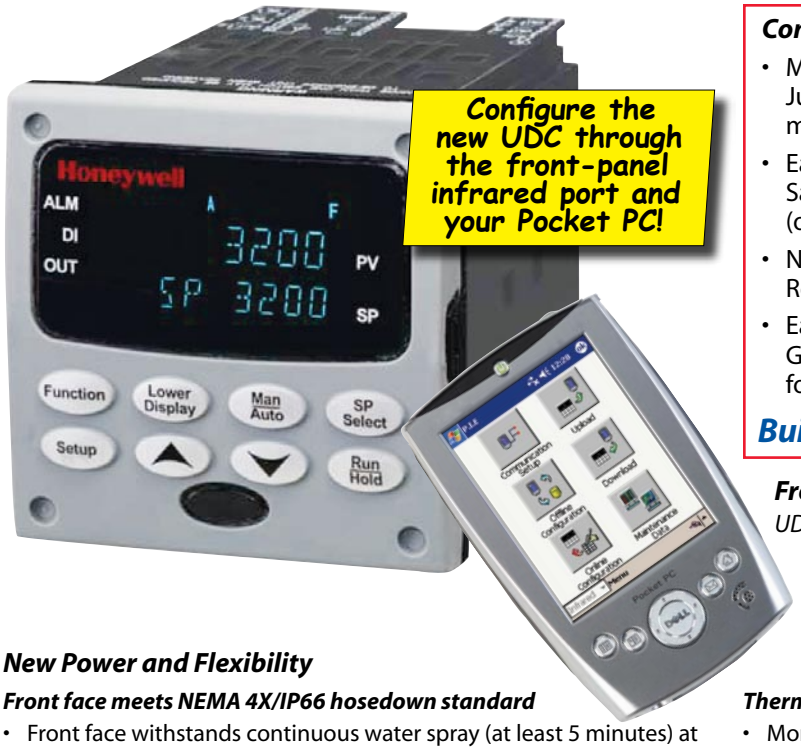
Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

UDC3200 Universal Digital Controller

Honeywell



Configure the new UDC through the front-panel infrared port and your Pocket PC!

Conversion Made Easy!

- Model selection conversion tool at www.lesman.com
  Just enter your old UDC3300 Basic Model or UDC3000 model number and click CONVERT!
- Easy to Configure!
  Same menu and same front-panel keys as older versions (or use the new PC configuration tools!
- New Case Design!
  Required for NEMA 4X, UL Approval
- Easy to Wire
  Get the wiring diagrams at www.lesman.com! Easy-to-follow color code.

Build Your Own UDC3200 at www.lesman.com

Free Downloads at www.lesman.com

UDC3200 2-Page Quick-Start Manual and English Product Manual

Thermocouple Health... Only Honeywell Has It!

New Power and Flexibility

Front face meets NEMA 4X/IP66 hosedown standard

- Front face withstands continuous water spray (at least 5 minutes) at 65 gal/min from a 1" dia. nozzle from a distance of 10 to 12 feet.
- Eliminates the need for costly protective bezels or enclosures in hosedown areas.

Dual display provides easy access to information

- A new 7 character upper display (the UDC3300 has 6 characters) and an 8 character, 14-segment, alphanumeric lower display provide large numerical readout of any input PV, setpoint output or other selected variables.
- Dedicated PV display (upper display) minimizes operator confusion.
- Minimizes operator training by providing clear configuration prompts and control parameter labeling.

Non-intrusive front face infrared port standard on all UDC3200s

- Non-intrusive I/R connection reduces setup time and maintains the NEMA 4X integrity.
- No need to access the back of the UDC to communicate with it.
- Works with Pocket PC and Process Instrument Explorer software, lets you upload or download configurations in seconds

Industry standard Ethernet communication available as an option

- Uses Modbus TCP/IP to connect to other Ethernet networks.
- Lets you monitor your process from almost any location.
- Configure the controller directly from your PC — even configure the controller to send an e-mail when an alarm condition occurs.

RS485 Modbus-compatible communication option

- Provides the capability of daisy chaining up to 31 UDC3200 Controllers on a serial multi-drop link, which connects to a host computer.
- Accurate on-line monitoring of process operation.
- Allows host device to override controller outputs or SP.

PC-base configuration tools make setup simple

- Create/Edit configurations live or off-line via communications port
- Same software works on PC, Laptop and Pocket PC.
- Same software works with UDC2500, UDC3200, UDC3500, UDA2182 analyzer and other future Honeywell products.

Thermocouple health diagnostics prevent costly process shutdowns

- Monitor the condition of your thermocouple, and determine whether it's good, failing or in danger of imminent failure.
- Gives you the advanced notice and warning to replace thermocouples before they fail

Designed for easy field upgrades

- Field upgrade from relay to current output or vise versa. Add a printed wiring board to field upgrade to communications or AuxOut/digital input.
- You can upgrade the software in the field, or return the unit to factory configuration in a single step.

Heater break alarm checks output circuit to ensure operation

- Immediately alerts you to a heater failure.
- Saves operating time by not continuing to run with a failed heater.

Enhanced Accutune III for better accuracy

- Fast Tune will tune the process to reach the temperature faster.
- Slow Tune minimizes overshoot.
- Heat/Cool automatically tunes both the heating and cooling sides of the process.

Adaptive tuning accurately identifies and tunes any process

- Accutune III recognizes both setpoint and load changes.
- PV Adapt monitors and modifies controller tuning "on-line" in the Automatic mode.
- Can be configured as TUNE + PV to operate with on-demand tuning or as SP + PV to operate with setpoint changes only.
- Can tune both heat and cool with one press of the key.
- Speeds up and simplifies startups and allows return to any setpoint.

Two sets of tuning constants reduces time to reach setpoint, saves time and energy

- Two sets of configured PID parameters can be selected automatically based upon the PV or SP value.
- Select via the keyboard or the digital Input option.
- Accutune may be used to calculate both sets of PID constraints.
- Optimize on–spec product at different loads.

Choose from five outputs

- Current Outputs (4-20 or 0-20 ma)
- Electromechanical Relays (5 amps)
- Solid State Relays (1 amp)
- Dual Electromechanical Relays (2 amps)
- Open Collector Outputs

Position proportional control

- Accepts input from Feedback Slidewire, with two relays available to operate motor.
- Actual motor position is displayed on instrument (not a calculated value) and can be used in PID calculation.

Second universal input option lowers installation costs

- Allows a second direct input of T/C, RTD, Radiamatic, linear voltage or current signals. Lets you switch easily between Inputs 1 and 2.
- Provides calculation for differential temperature, average temperature, carbon potential, oxygen control or dewpoint control PVs.
- Improves accuracy by eliminating an additional source of error (temperature transmitter)

Two digital inputs for application flexibility

- 2 optional DIs can be configured for any 25 different actions.
- Provides flexibility required for applications involving multiple discrete logic operations.
- Enables use of more DI functions than available on UDC3000 or UDC5000 to solve application problems.

Feedforward summer and multiplier functions standard

- Provides a standard algorithm for summing or multiplying any analog input directly with the calculated controller PID output
- Cost effective — no need to purchase Math Option.

Math algorithm option makes UDC3200 fit in complex applications

- No confusing function blocks
- One general math equation is provided as part of the Math option.
- Derives a process variable, setpoint or auxiliary output signal.
- Available with weighted average, multiplier/divider, adder/subtractor and input high/low select.
- Saves auxiliary devices.

Setpoint ramp and rate functions — no need to buy an optional setpoint programmer for simple batch processes

- Setpoint Rate prevents an abrupt and harmful changes in the process — improves product quality: Provides a SP Ramp Rate, in engineering units per hour, that defines the speed at which the SP will change when ramping between any 2 local setpoints: Can be applied when switching between local SP1 or SP2. Configure different rates for increasing and decreasing SP changes.
- Setpoint Ramp: Provides a single SP Ramp defined by the time in minutes it takes to reach the final, configurable setpoint value from the starting local SP.

PV hot start eliminates need for operator action after power loss

- Smooths process recovery following power loss or interruption.
- Saves time and energy returning to a SP following power recovery.
- The controller will initialize the local setpoint at the current PV value upon power start up in the event of loss of power when configured for Setpoint Ramp or SP Programming.
- New DI selection provides initialization of the local SP at the current PV value upon a momentary (transition) closure of the Digital Input.

Three local setpoints eliminate the need for separate programmer

- Configure for three local setpoints or two local and one remote.
- SP selection made via front panel keys or an optional digital input.
- Ramp rate applies to all 3 local SP's providing a simple programming function.

Which new UDC is right for you?

Feature	*2500*	*3200*	*3500*
NEMA 4X Enclosure	●	●	●
Universal Output Model	●	●	●
Thermocouple Health Monitor	●	●	●
Enhanced Auto-Tune	●	●	●
Infrared Communication Port	●	●	●
Ethernet Communications	❍	❍	❍
PC-Based Configuration Tool	❍	❍	❍
Setpoint Programming	❍	❍	❍
Carbon, Oxygen, Dewpoint Inputs		❍	❍
Slidewire Inputs		❍	❍
Math Functions		❍	❍
Limit Controller	❍		
Real-Time Clock			❍
Data Storage			❍
5 Logic Gates			❍
Up to 5 Output Relays			❍
4 Digital Inputs			❍
HealthWatch Diagnostics			❍

● Standard ❍ Optional

Output rate limiter cuts energy use at startup or process upset

- Limits the maximum rate of change for controller output.
- Separate rate for both increasing and decreasing output signals in percent per minute
- Eliminates the need for manual intervention.
- Allows more aggressive tuning near setpoint.

Failsafe output protects process and equipment from damage

- Continuous diagnostics used to detect failure modes.
- Forces controller to a pre-determined output value.
- Available as a Digital Input selection.
- Can be configured to latch or lockout the operator.
- Controller output moves to predictable, not random values.
- Provides a method of planned and safe shutdown.

Universal instrument power supply minimizes number of models and configurations needed

- Automatically covers voltage range of 90–264 VAC, 50 or 60 Hz. which conforms to the standard AC voltages found worldwide and covers a majority of the control installations in the target markets.
- A 24 VAC/DC 50 or 60 Hz powered model is also available.
- Ideal for spares with undefined power requirements.
- Eliminates damage due to power supply miswiring on installation.

Transmitter power minimizes space requirements, installation costs, and wiring labor

- Provides 30VDC power for a 4–20 mA two-wire transmitter. Uses open-collector alarm 2 output or optional auxiliary current output.
- Eliminates purchasing an external power supply, saving $50 to $100.
- Minimizes panel space requirements, installation cost and labor.

Security lockout prevents unauthorized changes to configurations

- Permits up to 5 levels of keyboard security. User-selectable 4-digit code maximizes process security.
- Permits the ability to disable operator use of the Auto/Manual key, Setpoint/Select key or Run/Hold key.

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
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Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

UDC3200 Universal Digital Controller

Honeywell

Specifications

Input Accuracy: ± 0.20% full scale, typical (±1 digit for display). Can be field calibrated to ±0.05% full scale, typical 16-bit resolution

Sampling Rate: Inputs sampled six times a second

Temperature Stability: ±0.01% of full scale span per °C change, typical

Input Signal Failure Protection: *Thermocouple inputs:* Upscale, downscale, failsafe, or none; *Thermocouple health:* Good, failing, failure imminent, or failed; *Failsafe output level:* Configurable 0-100% of output range

Input Impedance: *4 to 20 mA:* 250Ω; *0-10 V:* 200KΩ; *All other:* 10 megΩ

Maximum Lead Wire Resistance: *Thermocouples:* 50Ω/leg; *100, 200, and 500 RTD:* 100Ω/leg; *100 low RTD:* 10Ω/leg

Input Filter Software: Single pole low pass section with selectable time constants, off to 120 seconds available on both analog inputs.

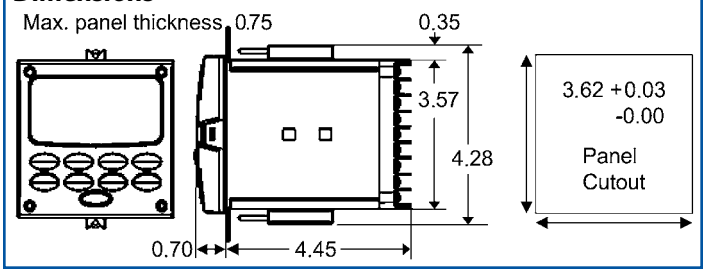
Stray Rejection: *Common mode:* AC (50 or 60 Hz): Greater of 120 dB (with maximum source impedance of 100Ω) or ±1 LSB (least significant bit); DC: Greater of 120 dB (with maximum source impedance of 100Ω) or a ±1 LSB; DC: (to 1 KHz): Greater of 80 dB (with maximum source of impedance of 100Ω) or ±1 LSB. *Normal mode:* AC (50 or 60 Hz): 60 dB (with 100% span peak-to-peak maximum)

Digital Input (Isolated): 30 VDC source for external dry contacts or isolated solid state contacts. Digital inputs are isolated from line power, earth ground, analog inputs, and all outputs except for second current output. Second digital input is mutually exclusive with the second current output.

Alarm Outputs: One SPDT electromechanical relay. Second alarm available if the second control relay is not used for control purposes. Up to four setpoints are independently set as high or low alarm, two for each relay. Setpoint can be on any input, PV, deviation, manual mode, failsafe, PV rate, RSP mode, communication shed or output. Adjustable hysteresis 0–100%. Alarm can also be set as an ON or OFF event at the beginning of a setpoint ramp/soak segment. *Alarm relay contacts rating:* 5 Amps resistive at 120 VAC, 240 VAC, or 30 VDC

Controller Output Types: *Electromechanical relays:* 1 or 2 SPDT contacts. Both normally open and normally closed contacts are brought out to the rear terminals. Resistive load: 5 Amps at 120 or 240 VAC, or 30 VDC; Inductive load: 3 Amps at 130 or 250 VAC, 3.5 Amps at 30 VDC; Motor: 1/6 H.P. *Dual electromechanical relays:* 2 SPST relays. One normally closed contact for each relay brought out to rear terminals. Useful for time duplex, position proportional, or three-position step control. Instruments with this option have a total of 4 relays plus 1 current output. Resistive load: 2 Amps at 120 or 240 VAC, or 30 VDC; Inductive load: 1 Amp at 130 VAC, 250 VAC, or 30 VDC; Minimum load: 20 mA; *Solid state relays:* One or two externally mounted SPST triac normally open outputs. Resistive load: 1.0 Amp at 25°C and 120 or 240 VAC, 0.5 Amps at 55°C and 120 or 240 VAC; Inductive load: 50 VA at 120 VAC or 240 VAC; Minimum load: 20 mA. *Open Collector outputs (1 or 2):* Socketed assembly replacing a relay. Opto-isolated from all other circuits except current output, but not from each other, Internally powered at 30 VDC. Maximum sink current: 20mA; Overload protection: 100 mA. *Current output (1 or 2):* Outputs provide a 21 mA DC max. into a negative or positive grounded load or into a non-grounded load. Current outputs are isolated from each other, line power, earth ground, and all inputs. Can be configured to be 0 to 20 or 4 to 20 mA and direct or reverse acting, without field calibration. Output can represent input, PV, setpoint, deviation, or control output.

Dimensions



Input Actuations

Input Type	°F Range	°C
Thermocouples		
B	0 to 3300	-18 to 1816
E	-454 to 1832	-270 to 1000
E (low)	-200 to 1100	-129 to 593
J	0 to 1600	-18 to 871
J (med)	20 to 900	-7 to 482
J (low)	20 to 550	-7 to 288
K	0 to 2400	-18 to 1316
K (med)	-20 to 1200	-29 to 649
K (low)	-20 to 750	-29 to 399
NiMo-NiCo (NNM90)	32 to 2500	0 to 1371
NiMo-NiCo (low)	32 to 1260	0 to 682
Nicrosil Nisil (NIC)	0 to 2372	-18 to 1300
NIC (low)	0 to 1472	-18 to 800
R, 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 2315
W5W26 (low)	0 to 2240	-18 to 1227
Radiamatic		
Type RH	0 to 3400	-18 to 1871
Type RI	0 to 9999 max.*	-18 to 9999 max.*
Differential T/C**	-50 to 150	-46 to 66
RTD		
IEC Alpha = 0.00385		
100Ω, 200Ω, 500Ω	-300 to 1200	-184 to 649
100Ω (low)	-300 to 300	-184 to 149
Linear	4 to 20mA, 0 to 20mA; 0 to 10mV, 0 to 50mV, or 0 to 100 mV; 0 to 5V, 1 to 5V, or 0 to 10V	
Combinational		
Carbon	0 to 1250 mV	
Oxygen	-30 to 510 mV	
Slidewire	0 to 1000Ω input range	

* User enters the range manually per RI type and application.

** Factory calibrated for two Type J T/Cs at an ambient temp. mean of 450°F (232°C). Can be field-calibrated for other temperatures or T/C types.

Resolution: 14 bits over 0 to 21 mA; Accuracy: 0.05% full scale; Temperature stability: 0.01% full scale/°C; Load resistance: 0 to 1000Ω.

Controller Output Algorithms: *On-off or time proportional:* One relay or open collector output. Control action can be set for direct or reverse. Time proportional relay resolution: 3.3 msec. *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. Time proportional relay duplex resolution: 3.3 msec. *Current proportional:* Single 4 to 20 mA current output signal that can be configured for direct or reverse action. *Current proportional duplex:* Single split current output for heat and cool (4-12 cool, 12-20 heat) or a combination of first current output (heat = 50% to 100% range) and second current output (cool = 0% to 50% range). Both are 4 to 20 mA signals that can be set for direct or reverse action. *Position proportional:* Two SPDT electromechanical or solid state relays (recommended) operate any motor having a 100Ω or 1000Ω feedback slidewire. *Current/time duplex:* Variation of time proportional duplex for heat/cool applications. Time proportional output is a relay. Current proportional output is a 4 to 20 mA signal that can be fed into a negative or positive grounded load of 0 to 1000Ω ohms, operational over 50% range or entire range.

Auxiliary Linear Output (Isolated): 21 mA DC max. into negative or positive grounded or non-grounded load of 0-500Ω. Output range set between 0 and 21 mA, and as direct or reverse action, and configured to represent IN1, IN2, PV, setpoint, LSP1, deviation or control output. *Resolution:* 12 bits over 0-21 mA; *Accuracy:* 0.1% of full scale; *Temperature stability:* 0.01% F.S./°C; *Load resistance:* 0 to 500Ω

Communications Interface Option: *RS422/485 Modbus RTU:* 4800, 9600, 19200, or 38400 baud selectable; Floating point or integer data; 2000 ft. max. with Belden 9271 Twinax cable and 120Ω termination resistors, 4000

NORMALLY AVAILABLE FROM STOCK

These UDC3200s are in stock at Lesman, available today!

Standard Controllers

DC3200-CE-000R-200-00000-E0-0 ..... $641.00
DC3200-CE-100R-210-00000-E0-0 ..... 885.00
DC3200-EE-000R-240-00000-E0-0 ..... 763.00

In-stock orders placed by 3pm Central Time ship same day!

ft. max. with Belden 8227 Twinax cable and 100Ω termination resistors; Two-wire, multi-drop Modbus RTU protocol, 15 drops max, up to 31 drops for shorter link length. *Ethernet TCP/IP:* 10Base-T, 330 ft. max. length; Four-wire, single drop, five hops max. IP address is factory-set to 10.0.0.2. Use switch rather than a hub for maximum UDC Ethernet performance. *Infrared (IR):* Serial infrared, 3 ft. max. link for IrDA 1.0 compliant devices; 19200 or 38400 baud selectable; floating point or integer data. (***Note:*** PC's standard IR port will not support this option. Serial to Infrared adapter required. See Model Selection Guide.)

Setpoint Programming: Configure 6 ramp and 6 soak segments for use as one program or several small programs. Each ramp segment configured to run in hours and minutes or degrees per minute. Soak segments can have a deviation that guarantees the time for each soak and will not start until the PV is reached.

Digital Displays: Vacuum fluorescent, dual displays. Seven-character upper display dedicated to PV. Alternate information displayed during configuration mode. Eight-character, alphanumeric lower display shows operating parameters. Provides guidance during controller configuration.

Indicators: Alarm relay status (ALM 1 or 2), control mode (A or M), temperature units (F or C), active setpoint (■), control relay status (OUT 1 or 2), digital input status (DI 1 or 2)

Modes of Operation: Manual, automatic with local or remote setpoint

Wiring Connections: Screw terminals on the rear of the case

Power Consumption: 20 VA max. (90 to 264 VAC); 15 VA (24 VAC/DC)

Power Inrush Current: 10A maximum for 4 ms (under operating conditions). *Caution:* When applying power to more than one UDC3200, make sure that sufficient power is supplied.

Design, Environmental and Operating Conditions

Ambient Temperature: 32 to 131ºF (0 to 55ºC)

Relative Humidity: 5 to 90% RH max rating to 104º F.

Vibration: 0 to 200 Hz; 0.6 g; *Mechanical Shock:* 5 g; 30 ms

Voltage: 90 to 264 VAC (CSA models rated to 250V max.); 20 to 27 VAC

Frequency (Hz): 48 to 52 (58 to 62 for VAC)

CE Conformity: Meets protection requirements of 73/23/EEC, the low voltage directive and 89/336/EEC, the EMC directive.

Product Class: *Class I:* Permanently connected, panel mounted industrial control equipment with protective grounding. (EN61010-1)

Installation Category: *Cat II:* Energy-consuming equipment supplied from fixed installation. Local-level appliances and industrial control equipmt.

Pollution Degree: 2, Normally nonconductive pollution with occasional conductivity caused by condensation. (Ref. IEC 664-1)

EMC Class: Group 1, Class A, ISM equipment (EN 55011, emissions), Industrial equipment (EN 50082-2, immunity). *EMC assessment:* Technical File (TF).

Declaration of Conformity: 51453655

Approval Body Ratings: UL listed (standard) UL61010C-1, CSA certified (option) CSA1010-1

Ordering Instructions

Make a selection from each table. A complete catalog number looks like this: DC3200-CE-0000-200-00000-E0-0

Model Selection Guide

Description		Catalog Number	Availability ↓	Availability ↓	Price
Digital Controller for Use with 90-264 VAC Power		DC3200			$565.00
Digital Controller for Use with 24 VAC/DC Power		DC3201			590.00
Output 1	Current Output (4-20/0-20 mA)	C _ -	•	•	0.00
	Electromechanic Relay (5Amp, Form C)	E _ -	•	•	0.00
	Solid State Relay (1 Amp)	A _ -	•	•	0.00
	Open Collector Transistor Output	T _ -	•	•	0.00
	Dual Relays, Heat/Cool (2 Amp, Form A)	R _ -	•	•	15.00
Output 2 + Alarm 1 or Alarms 1+2	No Additional Outputs or Alarms	_ 0 -	•	•	0.00
	One Alarm Relay Only	_ B -	•	•	31.00
	Electromechanical Relay + Alarm 1	_ E -	•	•	56.00
	Solid State Relay + Alarm 1	_ A -	•	•	56.00
	Open Collector + Alarm 1	_ T -	•	•	56.00
Communications	None	0 _ _ _ -	•	•	0.00
	1 Aux Output + 1 or 2 Digital Inputs	1 _ _ _ -	•	•	122.00
	RS485 Modbus + AuxOut/DI	2 _ _ _ -	•	•	163.00
	10Base-T Ethernet (Modbus RTU) plus Aux Output/Digital Inputs	3 _ _ _ -	•	•	173.00
Software Selection	Standard Functions, Includes Accutune	_ 0 _ _ -	•	•	0.00
	Math Option	_ A _ _ -	•	•	153.00
	12-Segment Setpoint Programming	_ B _ _ -	•	•	91.00
	Setpoint Programming plus Math	_ C _ _ -	•	•	215.00
Reserved	No Selection (For Future Use)	_ _ 0 _ -	•	•	0.00
Interface	Infrared Interface for Use with Pocket PC	_ _ _ R -	•	•	0.00
Input 1	TC, RTD, mV, 0-5/1-5V	1 _ _ -	•	•	0.00
	TC, RTD, mV, 0-5/1-5V, 0-20/4-20mA	2 _ _ -	•	•	10.00
	TC, RTD, mV, 0-5/1-5/0-10V, 0-20/4-20mA	3 _ _ -	•	•	41.00
	Carbon, Oxygen, or Dewpoint (2 Inputs)	160 -	a	a	215.00
Input 2	None	_ 00 -	•	•	0.00
	TC, RTD, mV, 0-5/1-5V, 0-20/4-20mA	_ 10 -	•	•	122.00
	TC, RTD, mV, 0-5/1-5/0-10V, 0-20/4-20mA	_ 20 -	•	•	158.00
	Slidewire Input for Position Proportional	_ 40 -	b	b	122.00
Approvals	CE (Standard)	0 _ _ _ _ -	•	•	0.00
	CE, UL, and CSA	1 _ _ _ _ -	•	•	30.00
Tags	None	_ 0 _ _ -	•	•	0.00
	Stainless Steel ID Tag (3x22 Char)	_ T _ _ -	•	•	40.00
Reserved	Future Options	_ _ 000 -	•	•	0.00
Manual	English Hard Copy (51-52-25-127)	E _ -	•	•	10.00
Certificate	None	_ 0-0	•	•	0.00
	Certificate of Conformance (F3391)	_ C-0	•	•	30.00

Accessories

Description	Catalog Number	Price
4-20 mA Input Resistor Assembly (250Ω)	30731996-506	$14.85
0-10V Input Resistor Assembly (100K Pair)	30754465-501	55.55
Process Instrument Explorer Software	50001619-001	165.00
Mounting Kit (12 Brackets)	51452763-501	18.70
DIN Adaptor Kit	30755223-003	58.30
Product Information on CD (All Languages)	51453375-501	11.00
Actisys Serial to Infrared Adapter for PCs	ACT-IR220L+	95.00

Restrictions

a Select None from Input 2 options.
b Available only with Output options -EE-, -AA-, and -R_.

Free Downloads at www.lesman.com

UDC3200 2-Page Quick-Start Manual and Product Manual

Learn more about Process Instrument Explorer software on page 15. Works with all UDC2500, 3200, and 3500 models for easy setup and parameter changes.

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Phone: 800-953-7626 • 630-595-8400
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UDC3500 Universal Digital Controller

Honeywell

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"Honeywell UDC3500" Go

Features

- 3 universal analog inputs, 4 digital inputs
- Up to 3 analog outputs, Up to 5 digital outputs
- 0.10% Accuracy
- Math Functions
- Ethernet or RS485 communication options; Front-panel infrared communications standard!
- Cascade or two loops of control
- PC or Pocket PC configuration
- HealthWatch maintenance and diagnostics option and thermocouple health feature
- NEMA4X and IP66 front face protection

T/C Health Monitoring Standard on All New UDCs!

The Industry Standard Gets Even Better!

Infrared Communications: No need to get access to the back of the controller to communicate with the instrument, no need to take your screwdriver to wire a communication cable, no wiring mistake possible! You can now duplicate an instrument's configuration, upload or download a new configuration in a matter of seconds, just by pointing your Pocket PC in the direction of the instrument. The infrared connection provides a non-intrusive wireless connection with the UDC, and maintains NEMA4X and IP66 integrity.

It takes less than 2 seconds to upload an instrument configuration! You can then save the configuration file onto your PC or Pocket PC for review, modification or archiving. This software also gives you important maintenance information on the controller. You get instant information on the current operating parameters, digital inputs and alarm status, identify internal or analog input problems.

Accutune III™: This standard feature provides a 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. Accutune speeds up and simplifies startup, and allows retuning at any setpoint. The algorithm used is an improved version of Accutune II™ found on earlier models of the UDC controllers.

Two possibilities are available for tuning your process: Fast Tune and Slow Tune. Fast Tune will tune the process so that the temperature is reached faster (a slight overshoot will be allowed). Slow Tune will minimize overshoot, but it will take more time for the process temperature to reach the target setpoint. Heat/Cool (Duplex Tune) will automatically tune both the heating and cooling sides of the process.

Fuzzy Logic: This standard feature uses fuzzy logic to suppress process variable overshoot caused by setpoint changes or externally induced process disturbances. It operates independently from Accutune III™ tuning. It does not change the PID constants, but instead temporarily modifies the internal controller response to suppress overshoot. This allows more aggressive tuning to coexist with smooth PV response. It can be enabled or disabled depending on the application or the control criteria.

Diagnostic/Failsafe Outputs: Continuous diagnostic routines detect failure modes, trigger a failsafe output value and identify the failure to minimize troubleshooting time.

Auxiliary Output: Any of the three current outputs can function as an Auxiliary Output, which can be scaled for 0 to 100% for any range. An Auxiliary Output can be configured to represent any analog input, PV, active Setpoint, Local SP1, Remote SP, Deviation, or Control Output. The second current output cannot be used with Ethernet Communications.

Four Sets of Tuning Constants: Four sets of PID parameters can be configured for each loop and can be selected automatically or manually by Keyboard or Digital Input.

Timer: Provides a configurable time period of 0 to 99 hours, 59 minutes or units of minutes and seconds. It can be started through the keyboard, Alarm 2, the Real-Time Clock or by a digital input. The timer output is Alarm 1, which energizes at the end of the timer period, and can be automatically reset. The timer period can be changed between each batch. Status is shown on the lower display.

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.

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

Auto/Manual Station Plus Backup Control: A UDC3500 can act as both an Auto/Manual station PLUS as a backup PID controller, should the primary loop controller fail. Since PID control is sometimes implemented through a PLC, this feature provides a cost-effective way to ensure the process does not have to shut down or remain in manual mode if the PLC fails.

Indicators: Provide alarm, control mode and temperature unit indication. There are also indicators for which setpoint is active, the status of the control relays, status of the Digital Inputs, when an Accutune III™ process is being performed and whether a Setpoint Program is in Run, Hold or Guaranteed Soak mode.

Free Downloads at www.lesman.com

UDC3500 2-Page Quick-Start Manual and English Product Manuals

Process Instrument Explorer Configuration Software

No need to get access to the back of the controller, no need to find a screwdriver to wire the communication cable! Just aim and upload!

Compatible with UDC2500, UDC3200, UDC3500 controllers and UDA2182 process analyzer!

Process Instrument Explorer makes configuration and setup a simple task. Point your Pocket PC at your instrument and upload the complete configuration. Make changes easily, right from the palm of your hand, using a menu structure identical to the one accessible from the front-panel buttons. Then, point the Pocket PC at the UDC again, and download the changes you've just made to the field unit, so you can save them on the PC in your plant office.

PIE lets you connect to your controllers over Modbus RTU (using the RS485 port), Modbus TCP through the controller's Ethernet port, or through the front-face infrared port.

For desktop and laptop users who want to use the infrared port, you'll need a serial to infrared connection. The IrDA 1.0-compatible Actisys IR220L+ has been successfully field-tested and is available from Lesman.

Features

- Simple, intuitive software running on a Pocket PC, desktop, or laptop computer
- Save setup time by loading stored configurations to multiple instruments
- Non-intrusive infrared connection safes time and maintains controller's NEMA 4X/IP66 integrity
- Uses the same menu structure as your controller
- Full instrument configuration available
- Store multiple instrument configurations in a Pocket PC
- Transfer stored configurations or maintenance data to a PC
- Runs on Windows XP, Windows NT, or Windows 2000, and Microsoft® Pocket PC 2002 or higher

System Requirements

Hardware connection: Infrared communications (ACT-IR220L+), RS485, or 10Base-T or 10/100Base-T Ethernet.

Operating system: Windows XP, Windows NT, or Windows 2000; Pocket PC 2002 and higher

Data storage: Capacity limited only by the storage capacity of the desktop, laptop, or Pocket PC

Model Selection Guide

Description	Catalog Number	Price
Process Instrument Explorer Software	50001619-001	$165.00
Actisys Serial to Infrared Adapter for PCs	ACT-IR220L+	95.00

Options

HealthWatch: Three timers and three counters track UDC3500 controller functions. Timers can track total operating time, time in manual or automatic mode, time in alarm state, time of digital input activation, time in "sooting" state. Counters can track manual mode counts, alarm trip counts, control relay actuations, digital input actuations, outside PV range limit counts, failsafe mode counts, retune counts, out of soak band counts, and power cycle events.

Selected maintenance and diagnostic data can be accessed from the front panel or via communications. Alarms can be configured to activate when a desired threshold is reached. A security code is required to perform resetting of any of the above listed counter or timer functions.

Ethernet Communications: Widely used by manufacturers, the Ethernet connection, which uses Modbus TCP/IP, allows the controller to connect to other Ethernet networks and exchange data with computers or devices on that network for monitoring or managing your process from almost any location.

Software Configuration: New UDCs can be configured via the Process Instrument Explorer (PIE) PC software. This software lets you configure all of the UDC's parameters, and monitor various parameters. The controller can even be configured to send an Email when an alarm condition has been encountered.

Setpoint Ramp/Soak Programming: Enables you to program and store up to ten Ramp and ten Soak segments for setpoint programming. Run or Hold of program is keyboard or remote digital switch selectable. Each Soak Segment may have a unique Guaranteed Soak Deviation value. Each Ramp and Soak Segment can be configured to use any one of the four PID Sets.

Real-time clock lets you use your UDC3500 as a temperature recorder!

Real Time Clock: A battery-backed clock feature that lets you perform such things as starting a Setpoint Program on a specific date and time, or tracks time and temperature to server as a temp logger.

Transmitter Power: This option provides up to 30 VDC to power a 2-wire transmitter (requires the use of Output #2 open collector output selection or one of the current outputs).

Math Functions: Two pre-configured math algorithms are available for easy implementation. The following selections are available: feedforward summer, feedforward multiplier, weighted average, summer/subtractor, multiplier/divider, input high/low select, 8-segment characterizers, polynomial curve characterizer, and totalizer

Combinational Inputs: Inputs can be combined for use with Relative Humidity, % Oxygen, Carbon Potential, Dewpoint or Math Algorithms. This controller can accept carbon probes from Cambridge, Marathon Monitors, Corning, A.A.A.C, Barber Coleman, MacDhui, Bricesco or Furnace Controls.

Logic Gates: Five Logic Gates configurable as OR, NOR, AND, NAND, XOR, XNOR, or COMPARATOR. Each Gate has two inputs and one output. Logic Gates may be linked together to perform more complex functions.

Alarms: Up to four electromechanical alarm relays are available to activate external equipment when preset alarm setpoints are reached. Each of the four alarms can be set to monitor two independent setpoints, and as either high or low alarm. In addition to the chosen alarm configuration, a diagnostic alarm can monitor current outputs for an open circuit condition. Effectively, the diagnostic alarm can be used as an additional digital input used to trip an alarm relay when a current output circuit opens..

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UDC3500 Universal Digital Controller

Honeywell

Specifications

Input

Up to three universal analog inputs. Can be configured to operate as 2 universal and 2 high level inputs, or as 1 universal and 4 high level inputs.

Accuracy: ± 0.10% full scale typical (±1 digit for display); Field calibrated to ±0.05% full scale typical; 16 bit resolution typical.

Sampling Rate: Inputs sampled six times a second.

Temperature Stability: ±0.01% full scale/°C change.

Analog Input Signal Failure Operation: *Burnout selections:* Upscale, downscale, burnout, or none; *Thermocouple health:* Good, failing, failure imminent, or failed; *Failsafe output level:* Configurable 0-100% output range.

Impedance: *Thermocouples:* 50Ω/leg; *100, 200, 500, or 1000Ω RTD:* 100Ω/leg; *100Ω Low RTD:* 10Ω/leg.

Leadwire Resistance: *4-20, 0-20 mA input:* 250Ω; *0-10, -1–1 Volt input:* 200KΩ; *All other:* 10 megΩ.

Slidewire Input for Position Proportional Control (Input #3 Only): 100 to 1000Ω slidewire types; Herculine 10260 and 11280 slidewire emulation.

Stray Rejection: *Common mode:* AC (50 or 60 Hz): greater of 120 dB or ±1 LSB (least significant bit) with line voltage applied.; DC: Greater of 120 dB or ±1 LSB; DC (to 1 KHz): Greater of 80 dB or ±1 LSB with 50 VAC applied. *Normal mode:* AC (50 or 60 Hz): 60 dB (100% span peak-to-peak max.)

Digital Inputs (Four Optional): +30 VDC source for external dry contacts or isolated solid state contacts. Digital inputs are isolated from line power, earth ground, analog inputs, and all outputs.

Outputs

Up to three current and auxiliary outputs provide a 0–21 mA current output into a negative or positive grounded load or into a non-grounded load. Current outputs are isolated from each other, line power, earth ground, and all inputs. Can be configured via the keyboard to be 0-20 or 4-20 mA without field calibration, and for either direct or reverse action when used as a control output. Any current output not being used as a control output can be used in AuxOut mode. Auxiliary outputs can be configured to represent any analog input, pV, setpoint, deviation, or control output.

The range of an auxiliary output can be scaled per the range of the selected variable, and set anywhere between 0 and 21 mA. *Resolution:* 14 bits over 0–21 mA; *Accuracy:* 0.05 full scale; *Temperature stability:* 0.01% full scale/°C; *Load resistance:* 0-1000Ω.

The first current output is a standard feature on all UDC3500s. The second current output is an option and is mutually exclusive with Ethernet communications. A third current output option is mutually exclusive with the Output 2 options listed here.

Infrared Communications: *Type:* Serial infrared; *Link length:* 3 ft. max. for IrDA 1.0 compliant devices; *Baud rate:* 19200 or 38400 baud selectable.

Output #2 Options

Electromechanical Relays: 1 or 2 N/O or N/C SPDT contacts. Internally socketed; *Resistive:* 5 amps @ 120 VAC, 240 VAC or 24 VDC; *Inductive load:* 3 amps @130 VAC or 250 VAC; *Motor:* 1/6 H.P.

Dual Electromechanical Relays: 2 N/C SPST relays. This option must be used as Loop 1 output for On/Off Duplex, Time Duplex, Three Position Step Control, and Position Proportional Control. Instruments with this option have a total of 5 relays plus 1 or 2 current outputs.; *Resistive load:* 5 amps @ 120 VAC, 240 VAC or 30 VDC; *Inductive load:* 1 amp @130 VAC or 250 VAC.

Solid State Relays: SPST solid state contact, triac N/O output with zero-crossing detection; *Resistive load:* 1.0 Amp @ 25°C and 120 or 240 VAC; 0.5 Amp @ 55°C and 120 or 240 VAC; *Inductive load:* 50 VA @ 120 or 240 VAC.

Open Collector: Transistor drive for powering external relay, isolated from earth ground and all other circuits except for first current output. ***(Note:*** *Applying external power supply to this output will damage the instrument.); Sink current:* 20 mA max.; *Overload protection:* 100 mA.

Solid State Relays (10 Amps): 1 or 2 externally mounted SPST triac N/O outputs for use with open collector outputs. *Resistive:* 15 Amps @ 25°C and 120 or 240 VAC, 10 Amps @ 55°C and 120 or 240 VAC; *Inductive:* 50 VA @ 120 or 240 VAC; *Motor rating:* 1 HP @ 25°C, 0.75 HP @ 55°C.

Controller Output Algorithms

Depending on the control algorithms specified, the controller can be configured for the following algorithms: On/Off, PID-A, PID-B, PD with manual reset; Three position step control (TPSC)

TPSC is a form of motor control that does not require a feedback slidewire linked to the motor shaft. TPSC uses two relays to control an electric motor: one to drive the motor upscale, one to drive the motor downscale. TPSC is an automatic backup mode to Position Proportional control if the feedback slidewire should fail. TPSC requires the Dual Relay output option and is not available on Loop 2.

Time Proportional: Provides On/Off or time proportional (relay) output

Current Proportional: A single 4-20 mA current output signal that can be configured for direct or reverse action.

Position Proportional: Positions a reversible motor with a feedback slidewire in proportion to the output of the control algorithm. Requires dual relay output option and third analog input. Not available on Loop 2.

Current Proportional Duplex: Provides a second set of tuning parameters and a split range current output or a second current output (via an optional current output) for heat/cool zones.

On-Off Duplex, Three Position Step Control, or Time Proportional Duplex: Provides two independent PID tuning sets and two time proportional outputs, one for heat zone above 50% output, and one for cool zone below 50% output. Requires dual relay output option.

Current/Relay Duplex (Relay=Heat): Variation of duplex with current active for 0-50% output and relay active for 50-100% output.

Relay/Current Duplex (Relay=Cool): Variation of duplex with current active for 50-100% output and relay active for 0-50% output.

Auxiliary Linear Output: 21 mA DC max. into a grounded or non-grounded load of ±0-1000Ω; Range can be set between 0 to 21 mA, direct or reverse action. Can be used as a second current output for current duplex outputs. *Resolution:* 12 bits over 0 to 21 mA; *Accuracy:* 0.05% full scale; *Temperature stability:* 0.0075% full scale./°C; *Load resistance:* 0 to 1000Ω.

Options

Three Relay Board: 3 SPDT contacts. Both N/O and N/C contacts are brought out to the rear terminals for each relay. These relays are used for alarm outputs or for the output of the second control loop. They may also be used as outputs for Logic Gate functions. *Resistive load:* 5 amps @ 120 or 240 VAC or 30 VDC; *Inductive load:* 3 amps @ 130 or 250 VAC; *Motor:* 1/6 H.P.

Alarm Outputs: Maximum of 4 alarm relays are available, depending on the type and quantity of outputs used for control. Each alarm may have one or two setpoints, each of which can be independently set as high or low alarm; Setpoints can be any input, PV, deviation, manual mode, failsafe, PV rate, remote SP mode, communication shed, or output. A single adjustable hysteresis of 0.0 to 100.0% is provided. The alarm can also be set as an On or Off event at the beginning of a setpoint program ramp or soak segment. Alarm status is available via any communications port, and is shown on the display annunciators.

RS422/485 Modbus RTU Interface: *Baud Rate:* 4800, 9600, 19200 or 38400 baud selectable; *Data format:* Floating point or integer; *Link length:* 2000 ft. max. with Belden 9271 Twinax cable and 120Ω termination resistors, 4000 ft. max. with Belden 8227 Twinax cable and 100Ω termination resistors; *Link characteristics:* 2-wire, multi-drop Modbus RTU protocol, 15 drops max. or up to 31 drops for shorter link length.

Ethernet TCP/IP Communications Interface: *Type:* 10Base-T; *Link length:* 330 ft. max. using shielded twisted pair Cat5 Ethernet cable; *Link characteristics:* Four-wire plus shield, single drop, 5 hops max; *IP address:* 10.0.0.2 as shipped from the factory; *Recommended network configuration:* Use switch rather than hub to maximize UDC's Ethernet performance; Ethernet communication is mutually exclusive with Current Output #2.

Input Actuations

PV Input		°F	°C
Thermo-couples	B	0–3300	-18–1815
	E	-454–1832	-270–1000
	E (low)	-200–1100	-133–593
	J	0–1600	-18–871
	J (med)	20–900	-7–482
	J (low)	20–550	-7–288
	K	0–2400	-18–1316
	K (med)	-20–1200	-29–649
	K (low)	-20–750	-29–399
	NiMo-NiCo (NNM)	32–2500	0–1371
	NNM (low)	32–1260	0–682
	NIC (Nicrosil Nisil)	0–2372	-18–1300
	NIC (low)	0–1472	-18–800
	Platinell	32–2516	0–1380
	Platinell (low)	32–1382	0–750
	R, S	0–3100	-18–1704
	T	-300–700	-184–371
	T (low)	-200–500	-133–260
	W_5W_{26}	0–4200	-18–2316
	W_5W_{26} (low)	0–2240	-18–1227
Radiamatic	Type RH	0–3400	-18–1871
	Type RI	0–9999 max	-18–9999 max
RTDs (α=0.00385)	100, 200, 500, or 1000Ω	-300–1200	-184–649
	100Ω (low)	0–300	-18–149
Linear	Milliamps	4–20, 0–20 mA	
	Millivolts	0–10, 0–50, 0–100, 0–500, -10–10 mV	
	Volts	0–1, 0–5, 0–10, 1–5, -1–1 V	
Combi-national	Carbon Probe	0–1250 mV	
	Oxygen Probe	-30–510 mV	
Slidewire	Resistive	0–1000Ω	
	Herculine©	10260 and 11280 Slidewire Emulation	

Environmental and Operating Conditions

Ambient Temperature: *Operating:* 32° to 131°F; *Storage:* -40° to 151°F.

Relative Humidity: *Operating:* 5% to 90%; *Storage:* 5% to 95%.

Vibration: *Frequency:* 0 to 200 Hz; *Acceleration:* 5g.

Mechanical Shock: *Acceleration:* 5g; *Duration:* 30 ms.

Line Voltage: *VDC:* 20 to 30; *VAC:* 90 to 264 VAC or 20 to 27 VAC.

Frequency: 48 to 52 Hz; 58 to 62 Hz for VAC.

Power Consumption: 24 VA max (90 to 264 VAC); 18 VA max (24 VAC/DC)

Power Inrush Current: 10A max. for 4 ms under operating conditions, reducing to a max 265 mA (90 to 264 VAC) or 900 mA (24 VAC/DC) after 1 second.

Enclosure Rating: Controller must be panel mounted. Terminals must be enclosed within the panel. *Front bezel:* NEMA 3R and IP54 or NEMA 4X with IP66, UL and CSA approved as Type 4 (when installed with four screws)

Approval Ratings: CE approval standard. Front bezel UL and CSA approved as Type 4 moisture protection when used with 4 screws; UL listed per UL61010C-1 (optional); CSA certified per CSA1010-1 (optional).

EMC Classification: Group 1, Class A, ISM Equipment (EN 55011, emissions), Industrial Equipment (EN 61326, immunity).

This UDC3500 is in stock at Lesman, available today!

DC3500-E0-0000-200-00000-E0-0
$630.00

Notes and Restrictions

1 Heat/Cool, Position Proportional, TPSC, and Relays 1&2
2 Requires Input 2. Select None from Input 2 Choices)
a Available only with Output #2 Option R_, Dual 2-Amp Relays.

Ordering Instructions

Make a selection from each section below. Check the availability column to be make the options you need are available. A finished catalog number looks like this: DC3500-CE-1020-110-00000-E0-0

Model Selection Guide

Description		Catalog Number	Price
Controller for 90-264 VAC Power, Current Out #1		DC3500-	$590.00
Output 2	None	0 _ -	0.00
	Current (4-20/0-20 mA, Current Out #3)	C _ -	20.00
	Electromechanical Relay (5Amp, Form C)	E _ -	20.00
	Solid State 1 Amp, Zero-Crossing Type	A _ -	20.00
	Open Collector Transistor Output	T _ -	20.00
	Dual 2 Amp Relays, Form A *(Note 1)*	R _ -	50.00
Relay Out #3, #4, #5	None	_ 0 -	0.00
	Three E-M Relays (5 Amp Form C)	_ E -	40.00
Commun-ications	None	0 _ _ _ -	0.00
	Current Out #2 + 4 Digital Input	1 _ _ _ -	240.00
	Current Out #2 + 4 DI + Modbus RS485	2 _ _ _ -	285.00
	10-Base T Ethernet (Modbus RTU) + 4 DI	3 _ _ _ -	285.00
Software Selection	Standard Functions (Includes Accutune)	_ 0 _ _ -	0.00
	Math Option	_ A _ _ -	153.00
	Setpoint Programming (SPP)	_ B _ _ -	66.00
	SPP + Math	_ C _ _ -	220.00
	HealthWatch	_ D _ _ -	66.00
	SPP + HealthWatch	_ E _ _ -	112.00
	Math + HealthWatch	_ F _ _ -	205.00
	SPP + Math + HealthWatch	_ G _ _ -	255.00
Loops of Control	Single Loop	_ _ 0 _ -	0.00
	Two Loops + Internal Cascade	_ _ 2 _ -	153.00
Realtime Clock	None	_ _ _ 0 -	0.00
	Realtime Clock	_ _ _ C -	30.00
Input 1	TC, RTD, mV, 0-5/1-5V	1 _ _ -	0.00
	TC, RTD, mV, 0-5/1-5V, 0-20/4-20 mA	2 _ _ -	10.00
	TC, RTD, mV, 0-5/0-10/1-5/1-10V, 0-20/4-20 mA	3 _ _ -	41.00
	Relative Humidity *(Note 2)*	15 _ -	127.00
	Carbon, Oxygen, or Dewpoint *(Note 2)*	16 _ -	220.00
Input 2	TC, RTD, mV, 0-5/1-5V	_ 0 _ -	0.00
	TC, RTD, mV, 0-5/1-5V, 0-20/4-20 mA	_ 1 _ -	127.00
	TC, RTD, mV, 0-5/0-10/1-5/1-10V, 0-20/4-20 mA	_ 2 _ -	163.00
	Two High Level AI	_ 3 _ -	137.00
Input 3	TC, RTD, mV, 0-5/1-5V	_ _ 0 -	0.00
	TC, RTD, mV, 0-5/1-5V, 0-20/4-20 mA	_ _ 1 -	127.00
	TC, RTD, mV, 0-5/0-10/1-5/1-10V, 0-20/4-20 mA	_ _ 2 -	163.00
	Two High Level AI	_ _ 3 -	137.00
	Slidewire Input (Requires Dual Relay Out)	_ _ _ 4 -	127.00
Approvals	CE (Standard)	0 _ _ _ _ -	0.00
	CE, UL, and CSA	1 _ _ _ _ -	30.00
Tags	None	_ 0 _ _ _ -	0.00
	Stainless Steel ID Tag (3 Lines x 22 Char)	_ T _ _ _ -	40.00
Reserved	Future Options	_ _ 000 -	0.00
Manual	Hard Copy English Manual	E _ -0	10.00
Certificate	None	_ 0-0	0.00
	F3391 Certificate of Confirmation	_ C-0	30.00

Accessories

Description	Catalog Number	Price
4-20 mA Input Resistor Assembly (250Ω)	30731996-506	$14.85
0-10V Input Resistor Assembly (100K Pair)	30754465-501	55.55
Process Instrument Explorer Software	50001619-001	165.00
DIN Adaptor Kit	30755223-003	58.30
Actisys Serial to Infrared Adapter for PCs	ACT-IR220L+	95.00

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

Siemens 353 Process Automation Controller

Features

- Easy integration with, or migration to, existing systems
- Multiple loop capabilities for indication, control, logic, or sequencing for comprehensive process control needs
- Scalable hardware provides lower entry costs without limiting future needs
- Front faceplate pushbuttons allow for quick configuration changes in the field — without the need for additional tools
- Front panel PC connection supports local configuration, monitoring, or troubleshooting
- Ethernet networking option for high-speed peer-to-peer communications
- Password protection provides individual security for various plant personnel
- Short case design allows mounting in 12"-deep cabinets
- Coated circuit boards ensure reliable operation and environmental integrity
- Removable real-time clock/configuration board option minimizes maintenance and complexity — a simple board replacement technique stores a complete copy of the control strategy configuration
- Local instrument link (LIL) networking option allows integration with existing systems
- LonWorks® digital fieldbus (continuous and discrete variables) for flexible I/O expansion and reduced wiring costs

Standard Configuration

Nine of the most common control strategies are built into the 353, selectable with a single pushbutton, and can be customized as needed to fit your process

- Single loop controller with tracking setpoint, fixed setpoint, or operator setpoint limits
- Ratio-set controller, operator setpoint limits
- Cascade loop controller or cascade loop controller with operator setpoint limits
- Ethernet-set controller with tracking setpoint
- External setpoint with fixed setpoint
- Dual loop controller

- Smooth plant integration ensured, with hardware designed to support emerging fieldbus technologies for both field and network connectivity
- Graphical configuration program provides a choice of function block or ladder logic configuration

Great for boiler applications and as DCS front-end devices!

Search www.lesman.com for
Siemens 353 Go

The Siemens 353 loop controller can serve as a simple single loop controller or as a multiloop controller with complete control functions including indication, control, logic, or sequencing for a small unit batch or continuous process.

The 353 provides the capabilities of both traditional loop controllers and sequential step controllers. Almost any application including a combination of continuous control (flow, temperature, or pressure) and discrete control (motor start/stop and interlocks) can be configured. The 353 can meet the demand of complex control applications all within a single device, with one configuration and one operator interface.

The weather-resistant faceplate provides a local message display with access to pushbutton configuration for quick in-field changes. It also includes a PC connection for configuration, monitoring, or troubleshooting using the Windows®-based graphical configuration software.

The 353 can be completely configured from its front faceplate or through the Windows® utility. This software provides complete configuration and documentation of the 353's control strategy, including choice of function block or ladder logic configuration. Configurations can be downloaded using the built-in RS232 front port or using network communications via Ethernet, RS485 Modbus, or local instrument link.

Logic Functions

The ability to use both function blocks and ladder logic in the same controller allows you to design your control strategy to meet real-world requirements. Factory-configured options (FCOs) provide quick field setup for a selection of basic control schemes — PID, cascade, or ratio control. A large selection of reusable function blocks allows for simple changes to the FCOs, or for designing a custom control strategy to meet the needs of specific process control applications.

Built-In Communications

The 353 controller's fieldbus and networking options enable it to serve as an integral element in a plant system.

Ethernet (Modbus™ TCP/IP) supports peer-to-peer communication between controllers. Ethernet communication also supports multiple interfaces on the same network and permits redundant operator stations for better plant control. The controller supports RS232/RS485 Modbus protocol for communication with PLCs and HMI software utilities.

LonWorks™ communication permits expansion of controller I/O. This allows for better use of the controller's multiloop and logic capabilities.

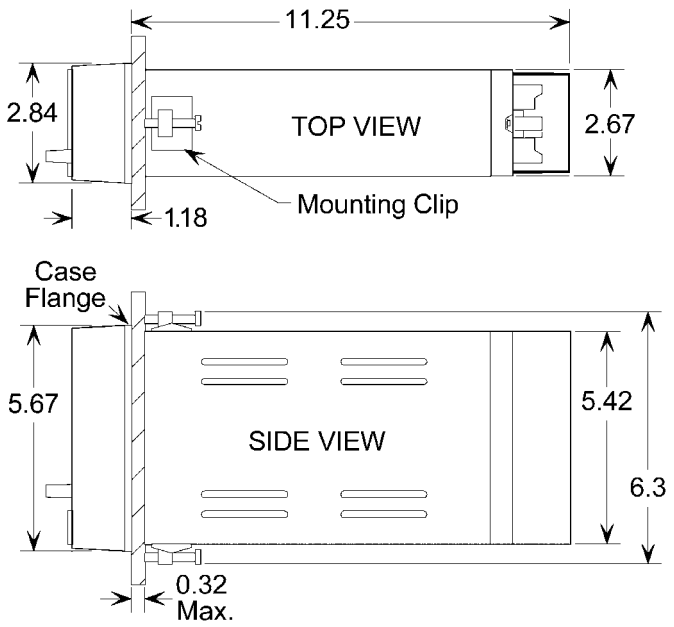
Multiloop Control

Capable of supporting up to 25 control and/or ladder logic loops, the 353 controller has the power to solve complex control problems.

Five unique operator faceplaces are available to support operator interaction. The faceplates support single variable PID control, process variable monitoring, discrete variable indication, sequential step logic control, and motor start/stop control.

Each configured loop can be viewed locally using the front faceplate LOOP button. Loop data is mapped to network communication, and permits each loop to be monitored and controlled from a plant operator station or interface.

Dimensions



Specifications

Universal Analog Input (isolated): *Thermocouple:* J, K, T, E, S, R, B and N; *RTD:* DIN 43760, US (NBS126), JIS C-1604; *Slidewire:* 500-5000; *Ohms:* 0-5000Ω; *Millivolt:* -19.5 to 78 mV DC; *I/O Expander Board:* Qty 2

Universal Digital/Frequency Input (isolated): *Frequency Range:* 0 to 25,000 Hz; *Minimum Operating Frequency:* 0.05 Hz; *ON Voltage:* 4-30 VDC; *OFF Voltage:* 0-1 VDC; *Input Current:* <5 mA @ 30 VDC; *I/O Expander Board:* Qty 2

Analog Inputs (non-isolated): 1-5 VDC, 4-20 mA with included 250 resistor; *MPU Controller Board:* Qty 3; *I/O Expander Board:* Qty 1

Digital Inputs (isolated): 0-1 VDC OFF, 15-30 VDC ON; *MPU Controller Board:* Qty 3; *I/O Expander Board:* Qty 1

Scan Time: Varies with configuration: 20 mSec (minimum)

Analog Outputs (non-isolated): 4-20 mA into 800Ω (max.); *MPU Controller Board:* Qty 2; *I/O Expander Board:* Qty 1

Digital Outputs (non-isolated): Open Collector Transistor (emitter @ station common); *Load Voltage:* 30 VDC (maximum); *Load Current:* 100 mA (maximum); *Off State Leakage Current:* <200 mA @ 30 VDC; *MPU Controller Board:* Qty 2

Relay Outputs (SPDT): *Contact Rating:* 5A @ 120 VAC, 2.5 A Resistive Load @ 230 VAC; *Minimum Current:* 100 mA @ 10 mV DC, 150 mA @ 50 mV AC; *I/O Expander Board:* Qty 2

Optional Boards: Local I/O Expander LonWorks Remote I/O Bus Local Instrument Link Network Real Time Clock/Removable Configuration Board Ethernet Communications

Ambient Temperature: *Operating:* 32 to 122°F (0 to 50°C)

Power Supply: *Standard:* 120/240 VAC (85 to 264 VAC); 47 to 63 Hz; *Optional:* 24 VDC, +20%, -15%; *Power Requirements:* 25 Watts, 40 VA (max.)

2-Wire Transmitter Power: 25 VDC ±3V; 120 mA, short circuit protected

Approvals: (Hazardous Area Approvals Pending) *FM/CSA:* Class I, Div 2, Groups A–D BASEEFA: Ex N IIC CE (Call Lesman for current approvals)

Climate Conditions (IEC654-1): Class B3 Standard Mounting; Class D1 Installed per instructions in Class D1 enclosure

Electrostatic Discharge: IEC 801-2; *RFI Protection:* IEC 801-3; *Electrical Transients:* IEC 801-4

Heat Dissipation: 80 BTU/Hr

Ordering Instructions

Make one selection from each table. A finished catalog number looks like this: 353A4FNN-NNNNNA4. Order accessories as separate line items.

Model Selection Guide

Description		Catalog Number	Price
Siemens 353 Process Automation Controller		353	$1725.00
Power	120/240 VAC (85-264 VAC) 47-63 Hz	A	0.00
	24 VDC +20%, -15%	D	58.00
Case	Standard Case with Ethernet Connector	4	0.00
Display Panel	Operator's Fixed Analog/Digital Display	F	0.00
Local/ Remote I/O	None	NN	0.00
	Local I/O Expander	1N	507.00
Network Communications	None	NN	0.00
	Local Instrument Link	NL	361.00
	Ethernet Communications	NE	518.00
Option Board B2	None	N	0.00
	Real-Time Clock/Configuration Board	T	173.00
Reserved for Future Use		NNA	0.00
Approvals	None	N	0.00
	FM/CSA, CE Compliant	4	0.00
	FM/CSA, CE Compliant, ABS Approved	W	0.00
Accessories			
Graphical Configuration Startup Kit (Software CD, DB9 Adapter and Cable Assembly)		iConfig-VN.NN	1500.00
Range Resistor Kit		16354-30	16.00
Stainless Steel Tag		16353-46	16.00
RS232/RS485 Isolated Converter for Modbus		16139-226	405.00

Siemens' direct drop-in replacement for the Moore 352!

Combine the case mounting and terminal configuration of the Moore 352 single loop controller with the hardware design, firmware, and graphical configuration software of the Siemens 353.

The Local Instrument Link (LIL) network option integrates with existing systems for a convenient upgrade to your current control system.

iConfig graphical configuration software performs supports both function block and ladder logic language. A library of factory-configured options (FCO) mimics existing model 352 FCOs to reduce configuration time on replacement applications.

Model Conversion

Model	Moore 352	Siemens 352P Model
Basic station	352BA21NNF	352PBA21ANNNNAW
Expanded station	352EA21NNF	352PEA21VNNNNAW
Expanded station with LIL	352EA21N2F	352PEA21V1NNNAW

Call for accessories and current pricing.

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

PID Autotune Temperature Controllers

1/32 or 1/16 DIN format: With four-digit single or dual display

5 Alarm Configurations: With latch and sequencing

Ramp/Soak: One segment programmer

Dual Output: Relay or SSD output device options

PID Heat-Cool: With fan or water cooling options

Environmental Rating: CE compliant IP66/NEMA 4 face plate

Sleeve Mounting: Minimizes machine down when servicing

3 Year Warranty: Manufactured to ISO 9002

Search www.lesman.com for
"PID temperature controller" Go

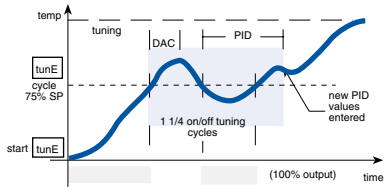
The CAL Model 3300 1/32 DIN and Models 9300 and 9400 1/16 DIN digital temperature controllers follow CAL Controls' familiar tradition of innovative design. With the optional CALComms™ serial communication system and Windows®-based software, you can program these CAL controllers to fit almost any PID control application.

A one-shot autotune algorithm helps automate system start-up and maintain good control over a wide range of process conditions.

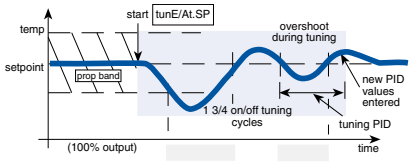
In addition to the normal PID terms (proportional band, integral time, derivative time), the algorithm also tunes derivative approach control (DAC), which minimizes overshoot by tuning warm-up characteristics independent of normal operation.

Ideal cycle time is calculated, ready for manual acceptance if compatible with the external device — contractor, solid state relay or valve. To ensure good control over a wide range of applications, the 3300 includes two versions of the algorithm.

Tune: This tuning method (top) normally achieves the best results. Starting with the load cool, tuning occurs during warm-up, preventing overshoot.



Tune at Setpoint: Setpoint tuning (bottom) is useful for specialized applications such as cool, multizones, and processes below 200° F. During the tuning cycle, some overshoot occurs because the tuning cycle is at setpoint. DAC is not recalculated.



Autotune: Autotune configures both heat and cool channels and also calculates the ideal cycle time settings for manual implementation.

Ramp Soak: Enables the controller to ramp up or down from current temperature to setpoint at a predetermined rate. Before switching off the heat output, the temperature at setpoint is controlled for an adjustable soak period.

Input Actuation Table

Sensor Type		Range		Linearity
T/Cs	B	32 to 3272°F	0 to 1800°C	±2.0°C*
	E	32 to 1112°F	0 to 600°C	±0.5°C
	J, L	32 to 1472°F	0 to 800°C	±0.5°C
	K, N	-58 to 2192°F	-50 to 1200°C	±0.25°C*
	R, S	32 to 2912°F	0 to 1600°C	±2.0°C*
	T	-273 to 482°F	-200 to 250°C	±0.25°C*
RTD	Pt100Ω	-273 to 752°F	-200 to 400°C	±0.25°C*

		0-20 mV	4-20 mV	SP Limits	Linearity
Linear Inputs	Lin1	0 - 100	0 - 100	0 to 400	±0.5%
	Lin2			-25 to 400	
	Lin3	0 - 1000		0 to 3000	
	Lin4		0 - 1000	-250 to 3000	
	Lin5	0 - 2000		0 to 3000	

4 to 20 mA input available with use of 1Ω resistor, see *Accessories*.

Note: Linearity: 5-95% of sensor range. * *Exceptions:* B: 5° (70°-500°C); K/N: 1°>350°C; R/S: 5° <300°C; T: 1° <-25°>150°C RTD/Pt100Ω: 0.5<100°C

FM-Approved Limit Controllers!

Standard CAL3300, 9300, and 9400 models are approved for limit control applications when the output is programmed to latch on alarm, process is shut down on sensor failure, and progamming menu is locked.

330-0-000-000FM	$187.00
930-0-000-000FM	200.00
940-0-000-000FM	209.00

FM APPROVED

Heat/Cool Applications: The 3300 air- or water-cool strategy provides a comprehensive solution to demanding heat-cool applications. Linked heat and cool channels move together under PID control to eliminate offset and provide a consistent deadband. Cool proportional band, relative cool, deadband and cool power limit adjustments. Non-linear cool channel for flash-to-steam systems.

Choice of Outputs: Two output devices are fitted as standard, to be allocated to the main output (Setpoint 1) and the second output (Setpoint 2) during configuration. CAL controllers come with your choice of output options: a 2-Amp electromechanical relay plus solid state relay drive, two electromechanical relays (one 2-Amp, and one 1-Amp), or two solid state relay drives.

Alarms: When the sequence alarm feature is selected, it prevents an alarm signal on power up. The alarm is enabled only when the process temperature reaches setpoint.

When activated, the alarm relay and indicator latch until manually reset, even though the alarm condition may have disappeared.

Improving Control Accuracy

Control accuracy monitor: Monitors control accuracy within 0.1°C/F. The variance maximum and minimum temperatures are displayed and continually updated.

Output percentage power monitor: The duty cycle monitor indicates if the heater to load ratio is compatible with good control.

Error messages and diagnosis: Clear mnemonic messages show fault conditions, and autotune data can be displayed to assist diagnosis of control problems.

Multi-level operator knockouts: Provided by the lock function, (for OEM use only in hidden level four). Prevents unauthorized adjustment of program functions but allows current options to be viewed.

Setpoint lock: Prevents unauthorized setpoint adjustment.

Specifications

Inputs

Thermocouple: IPTS68/DIN 43710; *CJC rejection:* 20:1 (0.05°/°C); *External resistance:* 100Ω maximum

RTD: DIN 43760 (100Ω 0°C/138.5Ω 100°C Pt); *Bulb current:* 0.2 mA max.

Linear Process Inputs: *mV range:* 0-50 mV

Calibration Accuracy: ±0.25% sensor max. ±1°C

Sampling Frequency: Input 10Hz, CJC 2 sec.

Rejection: *Common mode:* Negligible effect up to 140dB, 240V, 50-60Hz; *Series mode:* 60dB, 50-60 Hz

Temperature Coefficient: 150 ppm/°C sensor max.

Outputs

Solid State Relay Driver (SSd): To switch a remote 5 VDC solid state relay, +0/-15% 15 mA non-isolated

Miniature Power Relay: Form A/SPST contacts (AgCdO) 2A/250 resistive

Displays: Main 4 digits high brightness green LED. 0.4" high. *Digital range:* -199 to 9999; *Hi-res mode:* -199.9 to 999.9; *LED output indicators:* Flashing setpoint 1 square, green, setpoint 2 round, red

Keypad: 3 elastomer buttons

Environmental

Safety: Pending UL 873, EN 61010, CSA 22.2 No. 1010.1-92

Maximum Humidity: 80%

EMC: *Emissions:* EN50081-1 FCC rules 15 subpart J, class A; *Immunity:* EN50082-2

Ambient Temperature: 32 to 130°F

Moldings: Flame-retardant polycarbonate

Ordering Instructions

Make one selection from each table. A finished catalog number looks like this: 330-000-000 or 941-100-000.

Model Selection Guide

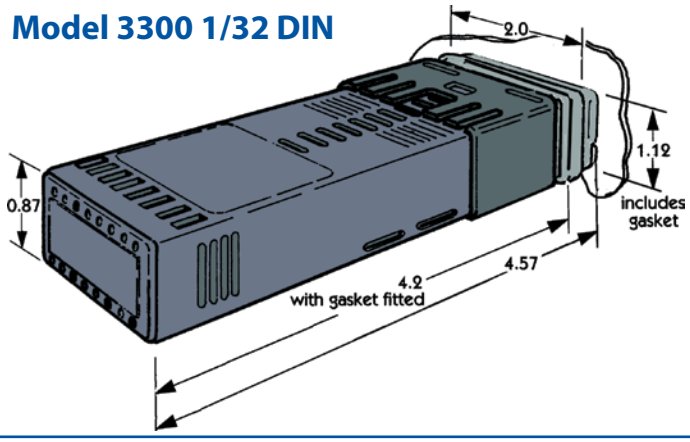
Description		Catalog Number	Price
1/32 DIN Temperature Controller, 1 Display		33_-	$187.00
1/16 DIN Temperature Controller, Single Display		93_-	200.00
1/16 DIN Temperature Controller, Dual Display		94_-	209.00
Output	Standard: 1 Solid State Driver, 1 Relay	0-000-	0.00
	2 Solid State Relay Drivers	2-200-	0.00
	2 Relays: One 2-Amp, One 1-Amp	1-100-	7.00
Power/ Comms	Standard Model (100-240V)	-000	0.00
	Low Voltage 12/24 VDC	-030	0.00
	Standard Voltage with RS232 Option	-200	55.00
	Low Voltage with RS232 Option	-230	55.00
	Standard Voltage with RS485 Option	-400	55.00
	Low Voltage with RS485 Option	-430	55.00
Accessories for All Models			
Communication Module PCB RS232		3C0000200	50.00
CALComms™ Software and Manual		1001GB300	159.00
1Ω Resistor for 4-20 mA Inputs		071.110	1.00
Quench Arc Snubber for Relay Output		L 070.001	3.00
1/4 DIN to 1/16 DIN Panel Adapter		L 904.400	9.00
AC Mini-SIP 12-280 VAC Solid State Relay		AS0241L	14.00
DC Mini-SIP, 0-60 VDC Solid State Relay		DMO063	32.00

NORMALLY AVAILABLE FROM STOCK

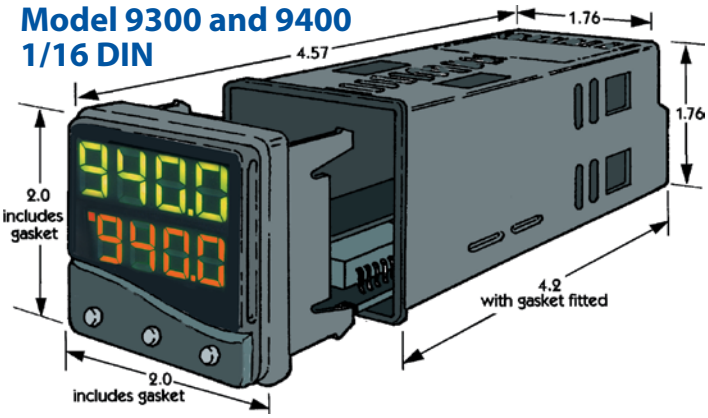
These CAL controllers are in stock at Lesman, available today!

L 330-000-000 ..... $187.00
L 940-000-000 ..... 209.00

Model 3300 1/32 DIN



Model 9300 and 9400 1/16 DIN



Time-Proportioning Temperature Controller for OEM Use

- Single setpoint: Just turn the dial!
- T/C Type J or K, Pt100 RTD inputs
- High stability and control accuracy
- SPST relay output
- DIN rail or panel-mount
- Compact — Front panel less than 2" square!
- 10 amp capacity
- Many more ranges available. Call Lesman.

Model Selection Guide

Description		Catalog Number	Availability			Price
Temperature Controller, 11-Pin Socket Mount		620._ _ _				$153.00
Temperature Controller, Panel Mount		630._ _ _				157.00
Power	115V	1 _ _				0.00
	220V	2 _ _				0.00
Input	Type J Thermocouple	_ J _	↓			0.00
	Type K Thermocouple	_ K _		↓		0.00
	Pt100Ω RTD	_ P _			↓	0.00
Temperature Range	50° to 250°C	_ _ D	•	•	•	0.00
	0° to 200°F	_ _ 1	•			0.00
	0° to 300°F	_ _ 2	•			0.00
	0° to 500°F	_ _ 3	•	•	•	0.00
	0° to 800°F	_ _ 4	•	•		0.00
DIN rail screw socket for 6200 series		081.030				7.00

Add suffix H4 to the end of model number for On/Off control.

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

CAL9500P Low-Cost Programmable Controller

Controller Features

- Full PID control, heat/cool function
- Autotune at 75% or 100% of setpoint
- RS232/485 communication

Programmer Features

- Up to 31 profiles, up to 36 segments
- Unlimited use of event outputs via second third outputs
- Copy, paste, edit, and delete functions for easy program building
- Call another program as a sub-program event
- Up to 999 program loop cycles or continuous loop cycling
- Hold back function ensures next segment does not start until last segment reaches setpoint
- Three power fail recovery systems (hold, continue, and reset)
- Front-panel interrogation of program position
- Memory usage indication during programming

Specifications

Inputs: *Thermocouple types:* B,E,J,K,L,N,R,S,T; *RTDs:* 2-wire and 3-wire Pt100Ω; *Linear:* 0-50mV, 0-20 mA or 4-20mA, 0-5 or 0-10V

Accuracy: ±0.25% sensor maximum ±1°C

Sampling Frequency: Input 10Hz, CJC 2 sec.

Rejection: *Common mode:* Negligible effect up to 140dB, 240V, 50-60 Hz; *Series mode:* 60dB, 50-60 Hz

Temperature Coefficient: 50ppm/°C sensor maximum typical

Outputs: *Solid state relay driver:* SSR 6VDC (nominal), 20 mA non-isolated; *Miniature power relay:* Form A/SPST contacts (AgCdO); *Relays:* 2 Amp/250 VAC resistive load; *Analog output:* 4-20 mA, 500Ω max. ±0.1% full scale typical; 0-5 VDC 10 mA (500Ω min.) ±0.1% full scale typical; 0-10 VDC 10 mA (1 KΩ min.) ±0.1% full scale typical

Displays: 4-digit upper display, high brightness green LED 0.4" high; 4-digit lower display, high brightness orange LED 0.35" high; *Digital range:* -199 to 9999, *High-res range:* -199.9 to 999.9; *LED output indicators:* SP1 square, green; SP2/SP3 round, red

Keypad: Three elastomeric buttons

Programmer Functions: *Segments:* Total of 126 per program; *Programs:* Maximum of 31 programs; *Program memory:* 351 Bytes

Supply Voltage: 100-240 VAC, 50-60 Hz, ±10% max. permitted fluctuation

Power Requirements: 6.0 Watts (nominal)

Environmental Protection: NEMA 4X/IP66 enclosure, flame-retardant polycarbonate moldings, Degree II pollution protection, Categories II and III installation rating

Ambient Temperature: 32° to 130°F (0° to 50°C)

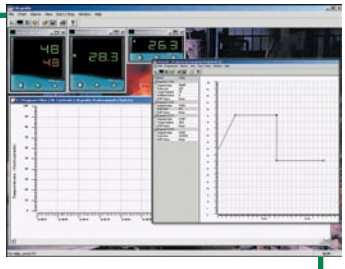
Ordering Instructions

Make one selection from each table. A finished catalog number looks like this: 95-00-1-B-2-00

Model Selection Guide

Description			Catalog Number	Price
1/16 DIN Programmable Controller			95-	$0.00
Output	Type 1	Type 2		
	Solid State Driver	2 Amp Relay	00-	237.00
	2 Amp Relay	2 Amp Relay	11-	247.00
	Solid State Driver	Solid State Driver	22-	231.00
	4-20 mA	2 Amp Relay	B1-	300.00
	4-20 mA	Solid State Driver	B2-	289.00
	0-5V	2 Amp Relay	C1-	300.00
	0-5V	Solid State Driver	C2-	289.00
	0-10V	2 Amp Relay	D1-	300.00
	0-10V	Solid State Driver	D2-	289.00
Output 3		Always 2 Amp Relay	1-	0.00
Input Type		Temperature Sensor	A-	0.00
		4-20 mA	B-	0.00
		0-5V	C-	0.00
		0-10V	D-	0.00
Communications		None	0-	0.00
		RS232	2-	50.00
		RS485	4-	50.00
Faceplate Color		Standard	00	0.00
		Jade Green	0D	0.00
		Blue	0Q	0.00
		Red	0R	0.00
		Yellow	0S	0.00
		Gray	0E	0.00

CAL Controller Software and Connectivity Tools



CALgrafix Standard: Single user license (CALopc server and CALgrafix client) that allows connection to a single RS485 network of up to 128 controllers. Compatible with CAL's 33/93/9400 and 9500p ranges of temperature and process controllers only.

CALgrafix Professional: Single user license (CALopc server and CALgrafix client) for connection to multiple networks of up to 128 controllers. Additional distributed controller networks can be added by purchasing additional CALopc server licenses. Additional Windows® installations of CALgrafix can be added by purchasing CALgrafix Client licenses. Third-party OPC servers will also work with CALgrafix Pro.

CALgrafix Client: For adding CALgrafix Windows software installations to the CALgrafix Professional setup.

CALopc Server: A CALopc server license allows a network of CAL's temperature or process controllers to connect third-party clients or additional networks of controllers.

Description	Catalog Number	Price
CALgrafix Pro	1003GB000	$199.00
CALgrafix Client	1005GB000	99.00
CALopc Server	1004GB000	199.00

CALogix Mini I/O Control System

CALogix can integrate with your Allen Bradley PLC to improve the performance of temperature or other PID loops —for affordable integration of analog I/O in the same control system!

Flexible control options

- Integrate temperature/process loops and programmable logic
- Modbus RTU communications for connection to PLCs, PCs, and HMIs
- Logic can change setpoints, switch outputs, run profiles, and more
- Up to 124 loops on one RS485 network
- Ethernet communication options

System customization

- CALopix operator panels can be configured to meet your application needs
- PC software for configuration, charting, logging, alarms, and monitoring
- CAL OPC server simplifies integrating CALogix with SCADA

Simple to program

- Application files can be saved for system reconfiguration
- Drop-down menus for easy parameter setup
- Simple-to-use function block logic programming
- Click and drag profile creation

New CalView software just released. Visit www.lesman.com!

Easy to install

- DIN-rail mount base unit
- Plug-in terminals and modules

Full specifications available online at www.lesman.com

PID Control

- Inputs: Thermocouples, RTDs and linear signals; Outputs: Relay, solid state, or analog outputs (4-20 mA, 0-5V, 0-10V)
- 31 programmable profiles, 126 segments per module max

Logic Control

- Inputs: 0-5V, 0-10V, or 0-24V user-selectable; Relay
- Function block programming
- Boolean, timer, counter, and comparator functions

CALogix is CAL Controls' response to our customers evolving process control needs as plants move away from isolated discrete components toward integrated systems with centralized control. In many cases, PLCs aren't economical, or have limited PID functionality. As a result, customers are forced to invest in an expensive and time-consuming custom solution. This is the driving force behind the development of CALogix — to meet customers' functionality needs at an affordable cost.

CALogix is a modular system that consists of a DIN-rail mounted base unit and up to four control modules. PID and logic modules can be added to the base unit in any configuration, ensuring the exact requirements of your application can be met. The base unit houses the CPU, power supply, and RS485 communications with Modbus RTU protocol.

The I/O module provides three inputs and three outputs that can be integrated with the PID to provide enhanced control, such as remote setpoint selection, alarm indication, interlocks, or other event inputs or outputs. Inputs are scalable to switch at one of three user-defined voltages up to 24 VDC. Outputs include both relay and solid state options.

CALogix-sw is a software configuration tool, included with the base unit, that allows simple controller programming. A graphical interface gives current process value and setpoint data for each PID module. Structured drop-down menus provide a platform for configuring all controller functions. Logic programming — timers, counters, Boolean and comparator function blocks — can be created to integrate with PID control.

The CALopix range of operator panels can be integrated as user interfaces for CALogix. The panels can be configured to monitor system data, adjust parameters and setpoints, perform control functions, or run selected profiles.

CALogix can be easily integrated within a system that has a central user interface — an operator panel or a PC running an OPC-based SCADA system or your own software.

OPC FOUNDATION

Model Selection Guide

Description				Catalog Number	Price
Order one of each line item from this section.					
CALogix base unit (includes CALogix-sw software)				7C00000400	$314.00
DIN-rail mount power supply (2A, 24 VDC)				7V02A00000	75.00
RS232/485 converter				3C25000K3X	225.00
CALogix programming cable				CAB RJ452M01	35.00
Order up to 4 of any combination PID, logic or blank modules.					
Input Type	OUT 1	OUT 2	OUT 3		
PID Modules	SSD	Relay	Relay	7P2110**A**000	158.00
Select Input Type	Relay	Relay	Relay	7P1110**A**000	158.00
A = Temp Sensor	SSD	SSD	Relay	7P2210**A**000	158.00
B = 4-20 mA	4-20 mA	Relay	Relay	7PB110**A**000	184.00
C = 0-5V	4-20 mA	SSD	Relay	7PB210**A**000	184.00
D = 0-10V	0-5V	Relay	Relay	7PC110**A**000	184.00
	0-5V	SSD	Relay	7PC210**A**000	184.00
(Replace **A** as	0-10V	Relay	Relay	7PD110**A**000	184.00
needed)	0-10V	SSD	Relay	7PD210**A**000	184.00
Logic Modules	SSD	Relay	Relay	7L2110E000	158.00
	Relay	Relay	Relay	7L1110E000	158.00
E = 5/12/24 VDC	SSD	SSD	Relay	7L2210E000	158.00
Blank Module	(One for each empty slot on base)			097004	6.00
Order interface, configuration software, and programming cables as needed.					
Operator Interface	ePAD05 operator panel			7H000B0000	395.00
	eTOP03 LCD monochromatic touchscreen			7H000C0000	595.00
	eTOP11 STN color touchscreen			7H000D0000	1195.00
	CALopix-sw HMI configuration software			1007GB000	125.00
	CALopix programming cable			CAB D1592M01	45.00
	CALogix communications cable			CAB RJ453M02	35.00
	HMI 300B keypad and operator interface			7000-300B	174.00
	HMI 300B configuration software			7000-300SW	75.00
	HMI 300B programming cable			7000-300PC	35.00
	HMI 300B communications cable			7000-300CC	39.00
Accessories	Base link cable (for linking CALogix bases)			CAB RJ459M01	15.00
	CALgrafix software for CALogix with OPC			1008GB000	209.00

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Fax: 262-923-1797

Choosing the Right Digital Controller Programmer

Honeywell

	DCP50	DCP100	DCP300	IPC5000
Number of Programs	Up to 4	Up to 8	Up to 19	Up to 32
Segments per Program	Up to 16	Up to 16	Up to 30	Up to 25
Analog Inputs	1	1	1 or 2	1 or 2
Digital Inputs	0 or 1	0 or 6	4 or 8	12
Input Signal Type	Thermocouple, RTD, Linear			
Input Features	Universal Inputs	Isolation, Universal Inputs	Relative Humidity, Universal Inputs	Universal Inputs
Accuracy	0.25%	0.25%	0.10% to 0.20%	0.1%
Loops of Control	1	1	1 or 2	1 or 2
Control Output	On/Off, Current Proportioning, Time Proportioning, Heat/Cool Duplex	On/Off, Current Proportioning, Time Proportioning, Heat/Cool Duplex, 3 Position Step	On/Off, Current Proportioning, Time Proportioning, Heat/Cool	PID-A, PID-B DUP-A, DUP-B Heat/Cool
Digital Outputs	2	4	5 plus Alarms	12
Auxiliary Outputs	1	1	1 or 2	1 or 2
Alarms	2	2	3 plus Digital Output	Digital Output
Communications	RS485 Modbus	RS485 Modbus or ASCII	None	RS232C, RS485, Ethernet
Size	1/16 DIN	1/4 DIN	1/4 DIN	7.3" x 4.75" Panel Cutout
Special Features	Program Link, Configuration Software, Autotune	Program Link, Real Time Clock Autotune, Timers	Program Link, Autotune	Autotune, Touchscreen, Real Time Clock, Configuration Software

DCP50 Digital Control Programmer

Guaranteed soak, profile recovery and cycling: Guaranteed soak feature allows the profile to sense if the PV is in range of the end of a ramp before starting a soak. Profile recovery feature allows a cold start or warm start. Profile cycling provides a range from no cycling to infinite cycling.

Accurate: Automatic tuning, 0.25% accuracy and temperature stability of 0.01% span/°C ensures process parameters are maintained.

Easy to configure and read: Configuration via the faceplate or port with optional configuration software is easy and uses a straightforward menu. The DCP 50 controller programmer's faceplate features four 10mm bright red digits for clear distance viewing.

Flexible: The DCP50 can operate on any line voltage from 90 to 264 VAC at 50/60 Hz. A 24 to 48 VAC/DC line voltage option is also available, adding more installation flexibility.

Suitable for many applications: The DCP50 controller programmer can be used to control temperature and other process variables in many industries. It's an affordable solution for controlling ovens, kilns, and much more.

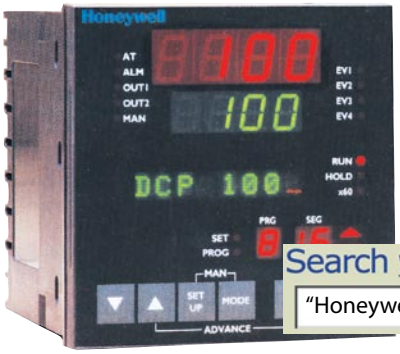
Features

- 1/16 DIN Programmer
- 4 programs, 16 segments each
- Universal inputs
- Choice of output types including solid state Triac
- Heat/Cool control algorithm
- Modbus Communications

Model Selection Guide

Description	Catalog Number	Price
1/16 DIN Controller Programmers with Universal Input (Factory Set as T/C)		
One Relay Output, 90-264 VAC Power	DCP5010001000	$335.00
4-20 mA Linear Output, 90-264 VAC Power	DCP5070001000	365.00
4-20 mA Linear Output, One Relay Output, 90-264 VAC Power	DCP5071001000	395.00
Three Relay Outputs, Digital Input, 90-264 VAC Power	DCP5011121000	445.00
4-20 mA Linear Output, Two Relay Outputs, Digital Input, 90-264 VAC Power	DCP5071121000	475.00

DCP100 Single Channel Digital Controller Programmer



Now with RS485 Modbus RTU Communications! Three-Position Step Control Model Reduces Slidewire Feedback in Valve/ Actuator Control

Search www.lesman.com for
"Honeywell DCP100" Go

Features

- 1/4 DIN case size and short depth save panel space and reduce installation costs
- Universal inputs maximize product flexibility by accepting thermocouples, RTDs, and linear inputs
- ±0.25% accuracy improves process quality, reduces energy use
- 8 programs with up to 16 segments, cascaded to 128 segments — use a lower-cost programmer for most demanding applications
- Guaranteed soaks ensure product quality and reduce scrap
- Communication options allow product networking to maximize process information and improve decision making
- AutoTune reduces start-up time and optimizes performance
- Delayed start minimizes start-up time by allowing the furnace to preheat before the workforce arrives
- Program cycling reduces operator interface by automatically repeating programs
- Real-time clock saves time by allowing program start times at predetermined times on a certain day of the week
- Windows® configuration software cuts programming time
- IP65 front panel rated for use in hosedown areas
- Two-year warranty with toll-free Technical Assistance Center support minimizes downtime with problems and assures product reliability and performance

Model Selection Guide

Description	Catalog Number	Price
Controller Programmer, Three-Position Step Control Firmware (Factory Set: T/C)		
One Relay Output, 90-264 VAC Power	DCP10T100-01000	$663.00
4-20 mA Linear Output, 90-264 VAC Power	DCP10T700-01000	693.00
Three Relay Outputs, RS485 ASCII Communications, 90-264 VAC Power, Four Digital Event Output Relays, Six Dry Contact Digital Inputs	DCP10T111-11110	1009.00
4-20 mA Linear Output, Two Relay Outputs, RS485 ASCII Communications, 90-264 VAC Power, Four Digital Event Output Relays, Six Dry Contact Digital Inputs	DCP10T711-11110	1039.00
4-20 mA Linear Output, One Relay Output, 4-20 mA Output (Retransmit), RS485 ASCII Communications, 90-264 VAC Power, Four Digital Event Output Relays, Six Dry Contact Digital Inputs	DCP10T717-11110	1054.00

DCP300 Dual Channel Digital Controller Programmer

Search www.lesman.com for
Honeywell DCP300 Go

Features

- 19 programs/30 segments per program; Programs can be cycled from 0 to 9999 times.
- Up to 12 digital inputs, 3 events, 5 time events
- Twelve external switch inputs for remote selection of program numbers or operation
- Optional slidewire input for motor position proportioning control provides new application
- Five digital open collector event outputs
- Up to eight frequently changed parameter setups can be registered to the PARA key
- Heat/cool duplex and position proportioning control
- Universal inputs and power supply (90–264 VAC, 50/60 Hz)
- RS485 ASCII communication
- One and two input channels models, including temperature/relative humidity calculation
- Hi/Lo setpoint limits ensure safety, maintain process quality
- Guaranteed soak ensures that soak is completed in the amount of time specified, and will not start until PV is within a configured deviation from setpoint
- Input/output isolation reduces grounding problems
- Two-year warranty and technical assistance support ensure reliable performance and complete technical assistance in case of problems
- Remote control mode (run, hold, reset, fast, advance)
- CE Mark compliant

Model Selection Guide

Description	Catalog Number	Price
Single Channel Digital Controller Programmer		
5 Amp Relay Output, 90-264 VAC Power, 12 Digital Inputs, 3 Events, 5 Time Events	P301-0D0ES-00100	$1062.00
5 Amp Relay Output, 90-264 VAC Power, One Auxiliary Output, 12 Digital Inputs, 3 Events, 5 Time Events	P301-0D0ES-01100	1194.00
4-20 mA Output, 90-264 VAC Power, 4 Digital Inputs, 3 Events	P301-5G0ES-00000	930.00
4-20 mA Output, 90-264 VAC Power, 1 Auxiliary Output	P301-5G0ES-01000	1062.00
4-20 mA Output, 90-264 VAC Power, 12 Digital Inputs, 3 Events, 5 Time Events	P301-5G0ES-00100	1062.00
4-20 mA Output, 90-264 VAC Power, One Auxiliary Output, 12 Digital Inputs, 3 Events, 5 Time Events	P301-5G0ES-01100	1194.00

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
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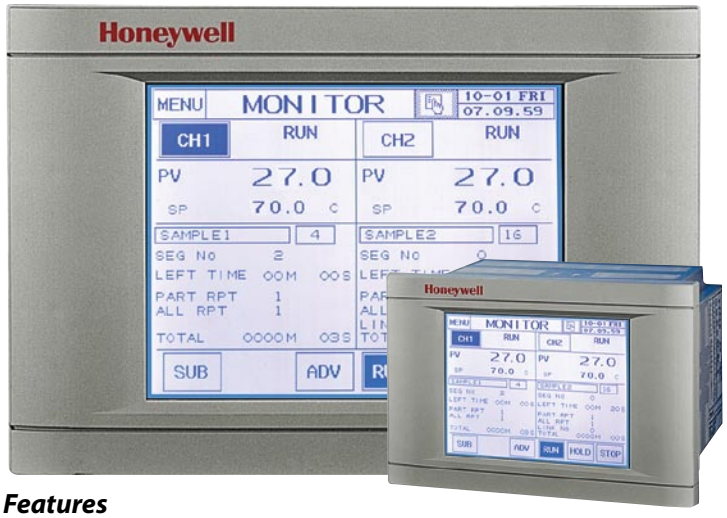
Fax: 262-923-1797

IPC5000 Universal I/O Programmer with Touchscreen



Features

- 5.7″ LCD touchscreen panel — Graphical LCD with touch-screen function keys for easy configuration and operation
- All programming done in simple English language prompts
- Communications — RS232/485 Modbus RTU and Ethernet TCP/IP for communicating with your host computer or PLC
- PC configuration — Software utility included free with each unit provides PC configuration, operation, and real-time process monitoring
- Two universal inputs for thermocouple, RTD, mA, and voltage, up to four analog outputs
- 12 digital inputs and 12 digital outputs — 12 DI can be connected to relay contact or other open collectors, 12 DO can be assigned to mode, alarm, time, and PV events
- Inputs offer 0.1% full scale accuracy
- Asynchronous/synchronous mode — Two independent loop controls that can be performed with different programs or done simultaneously in one program
- 32 programs, 800 segments, 10 links
- Real time clock — IPC5000 provides accurate time, and makes it possible to schedule running operations
- Heat/cool capability — Each control loop provides a split range control with independent PID tuning constants — one for heating, one for cooling, plus mixed output forms
- IP65 front face protection — For applications where the IPC5000 might be subjected to moisture or dusty conditions

With its IP65 front face enclosure, the IPC5000 is great in humid and dusty environments, like retort ovens, furnaces, and industrial ovens.

New jumper-free configuration means there's no need to open the case and expose the electronics to the environment. All configuration and operational changes are done either with the front-face touchscreen menus or with the IPC5000 software.

The IPC5000 provides Modbus communication support on three interfaces: RS232 and RS485 for Modbus RTU, and a network port for Modbus TCP over an ethernet connection.

Modbus RTU allows the IPC5000 to connect to either Honeywell or third-party master devices, can be a citizen on an Modbus RTU network, and can network with up to 31 other slave IPC5000 controllers and devices on a Modbus RTU data link.

The 10Base-T ethernet port gives you the ability to connect your IPC5000 to a third-party HMI or SCADA software. The IPC5000 with ethernet supports up to five concurrent host connections.

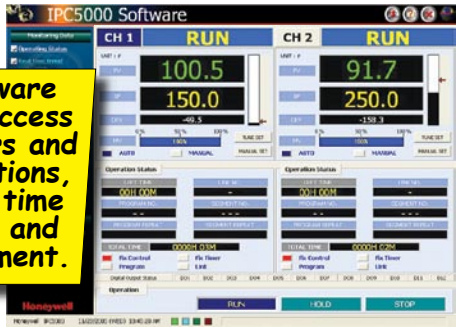
Configuration and Monitoring Software

IPC5000 software — included for free with each unit — runs on a desktop or laptop PC and communicates through RS232C. It supports

- Run/Adv/Hold, and Stop for operation
- Manual/auto and tuning enable and disable.
- Display display of real-time data like PV, SP, program processing, digital output Off/On and more

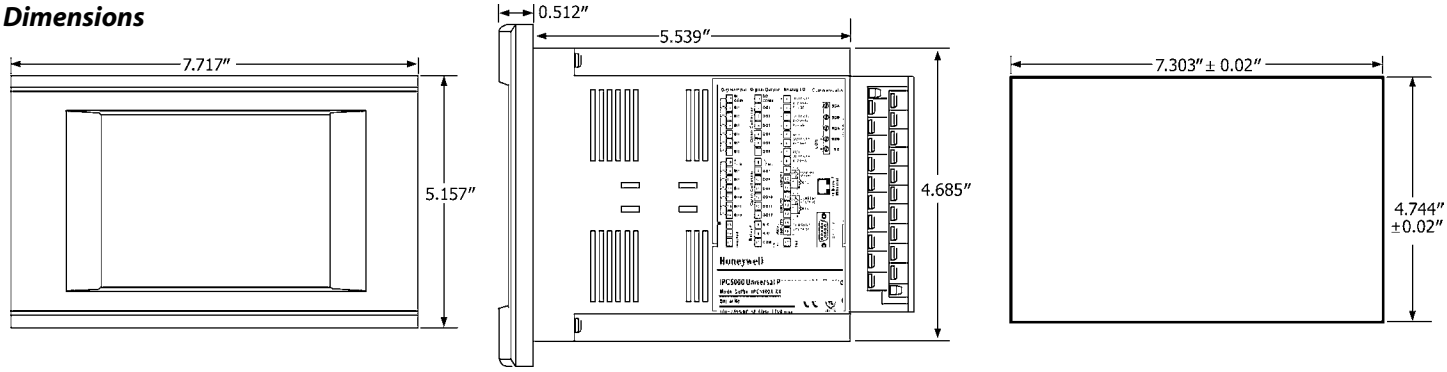
The software shows PV as a graph and can record it as a text file. It records historical data, can display as a graph or digital format, and can print the data using a standard print function. The graph can display 86,400 points, or 24 hours of information (assuming a one-second sampling period).

With IPC5000 software, you can edit programs and events, save and open programs as files, upload and download programs to your IPC5000, and set sub-items (e.g., soak, program length) related to the programs. Menus within the software give you access to all the programmer's configuration data. It also supports changing to controller or programmer mode, scheduled start, and power failure modes.



IPC5000 software provides easy access to all parameters and configuration options, along with real-time data monitoring and program management.

Dimensions



Honeywell

Specifications

Display: Analog touchpanel, 5.7" LCD, blue characters on white background; *Screen Size (WxH):* 4.534" x 3.4"; *Resolution:* 320 x 240 (WxH); *Display Size:* 40 lines x 30 lines (8x8 dots characters); *Backlight:* LED, White

Rated Supply Voltage: 100 to 240V AC 50/60Hz, 37VA max

Operating Conditions: *Ambient Temperature:* 0 to 50°C; *Relative Humidity:* 10 to 90%RH (non-condensing); *Power Voltage:* 85 to 264 VAC; *Frequency:* 50 ± 2Hz or 60 ± 2Hz; *Vibration Resistance:* 0 to 1.96m/s2

Enclosure: Plastic case and IP65-rated front panel, panel mount

Input and Output

Analog Input: 2 points (Universal input): *Sampling rate:* 100 ms; *Indication accuracy:* ±0.1%FS ± 1 digit (Accuracy is variable according to input type or range); *Cold junction accuracy:* ±1.0 °C (under standard conditions)

Analog Output: 4-20 mA DC output for PV 1, SP 1, MV 1, PV 2, SP 2, MV 2, DEV 1/ 2; *Output accuracy:* ±0.1% span; *Update Rate:* 100 ms

Output: *Current:* 4-20mA DC; Accuracy: ±0.1% span ; Update cycle: 100 msec; *Pulse:* Open Time Terminal Voltage: <15V DC (20mA); Time Proportional Cycle: 1-240 sec; *Relay Contact:* NC, NO, and common terminals (SPDT); Contact Rating: 250VAC, 3A or 30VDC, 3A; *Open Collector:* External Supply Voltage: 30 VDC max.; Load Current: 100mA/1ch max

Digital Inputs (External switch input): 12 points for RUN/STOP, HOLD, ADV, Trouble inputs, Channel selection, Program number; *Type:* Relay contact, Open collector (sink current toward 0V); *Sampling cycle:* 100 ms

Digital Output: 12 points open collector event output; *External supply voltage:* 30 VDC max; *Load current:* 100mA/1ch max.

Time Event: *Segment time:* Off, On, On-Delay and Cut-Back

PV Event: Setpoint (SP), Process Variable, (PV) Destination (Target) Value (DV), Manipulated Value (MV); *Operating Condition:* Band/LOW/HIGH; *Range:* Absolute/Deviation: -19999.0 to 20000.0 *Unit:* Differential: 0-1000.0 Unit; *On delay time:* 0-99 sec

Mode Event: Run, Hold, Adv, Wait, Man, Tune, Ready, Fix, Stop, End, TRBL, Down, Up

Alarm Event: *INNER:* Object = PV, SP, DV, MV; Operating point: ABS, DEV, MAX & MIN value; Operating condition: Band/LOW/HIGH; *DIAGNOSIS:* PV input burnout; *FAIL:* Instrument fail (Memory, Power failure)

Auxiliary Analog Input: One 4-20mA, 0-10V or 1-5V; *Sampling Rate:* 200 ms; *Input accuracy:* ±0.3%FS ± 1 digit

Programming and Control

Program: 32 programs max. (No. 0-No. 31); 100 segments/1 program plus total 800 segments; *Program Link:* Maximum 6 patterns; *Link program registration:* Maximum 10 links

Power Failure: Controls right away after recovery if power failure lasts less than 7 seconds. For power failure that lasts longer than 4 seconds: BREAK: Stops program; HOT START: Controls at the state just before power failure; COLD START: Starts again at the beginning of program

Control: *PID:* PID-A / PID-B / DUP-A / DUP-B; *Manipulated Variable Limit:* Low-limit: -5.0 to High-limit%; High-limit: Low-limit to 105.0%; *PID Group Selection:* Segment specified, Automatic zone selectable during program run; *On-off Control Differential:* 0-1000; *Control Direction:* Selection is settable (Direct/Reverse); *HEAT/COOL:* HEAT/COOL Control available for each channel

Automatic Tuning: *Accutune II:* Automatic setting of PID value by limit cycle method. Fuzzy control function

Operation Mode: Auto/Manual operation is switchable Manual Output: i) Bumpless, ii) Preset value: -5.0-105.0%

Communication

Protocols: *RS232:* 9600 or 19200 baud, no parity check; 8-bit, 1 stop bit; *RS485 (Option):* Bit transfer order: LSB first; End of message: Idle line for three or more characters (>1.82 msec). *Ethernet:* Modbus TCP, One 10Base-T (RJ-45 connector) Category 2 or better unshielded twisted pair cable

Input Actuations

Input	Code	°C Range	°F Range	Accuracy
Thermocouples				
B	B	0.0 to 1800.0	0 to 3300	±0.1%FS*
C	C	0.0 to 2300.0	32 to 4172	±0.1%FS
E (CRC)	E	0.0 to 800.0	0 to 1600	±0.1%FS
J (IC)	J	0.0 to 800.0	0 to 1600	±0.1%FS
K (CA)	K1	-200.0 to 200.0	-300.0 to 400.0	±0.1%FS*
	K2	0.0 to 1200.0	0 to 2400	±0.1%FS
	K3	0.0 to 800.0	0 to 1600	±0.1%FS
	K4	0.0 to 400.0	0 to 750	±0.1%FS
N	N	0.0 to 1300.0	32 to 2372	±0.1%FS
R	R	0.0 to 1600.0	0 to 3100	±0.1%FS
S	S	0.0 to 1600.0	0 to 3100	±0.1%FS
T (CC)	T	-200.0 to 300.0	-300 to 700	±0.1%FS*
W	W1	0.0 to 1200.0	32 to 2192	±0.1%FS
	W2	0.0 to 2300.0	32 to 4172	±0.1%FS
RTDs				
Pt100 (JIS/IEC)	Pt1	-200.0 to 500.0	-300.0 to 900.0	±0.1%FS
	Pt2	-200.0 to 200.0	-300.0 to 400.0	±0.1%FS
	Pt3	-100.0 to 150.0	-150.0 to 300.0	±0.1%FS
	Pt4	-50.0 to 200.0	-50.0 to 400.0	±0.1%FS
	Pt5	-40.0 to 60.0	-40.0 to 140.0	±0.2%FS
	Pt6	0.0 to 100.0	0.0 to 200.0	±0.2%FS
	Pt7	0.0 to 300.0	0.0 to 500.0	±0.1%FS
	Pt8	0.0 to 500.0	0.0 to 900.0	±0.1%FS
JPt100 (JIS)	JPt1	-200.0 to 500.0	-300.0 to 900.0	±0.1%FS
	JPt2	-200.0 to 200.0	-300.0 to 400.0	±0.1%FS
	JPt3	-100.0 to 150.0	-150.0 to 300.0	±0.1%FS
	JPt4	-50.0 to 200.0	-50.0 to 400.0	±0.1%FS
	JPt5	-40.0 to 60.0	-40.0 to 140.0	±0.2%FS
	JPt6	0.0 to 100.0	0.0 to 200.0	±0.2%FS
	JPt7	0.0 to 300.0	0.0 to 500.0	±0.1%FS
	JPt8	0.0 to 500.0	0.0 to 900.0	±0.1%FS
DC Input (Voltage and Current)				
0–10V	DCV1	Configurable Range -19999 to 20000 (DP position is configurable)		±0.1%FS
0–5V	DCV2			±0.1%FS
1–5V	DCV3			±0.1%FS
0–20mA	MA1			±0.1%FS
4–20mA	MA2			±0.1%FS

* Accuracy varies at extreme temperatures. See specification for details.

Single loop control model now available!

Ordering Instructions

Make one selection from each table. A finished catalog number looks like this: IPC5000D-_ _-_ _-0

Model Selection Guide

Description		Catalog Number	Price
Single Loop Universal Controller/Programmer		IPC5000S-	$1795.00
Dual Loop Universal Controller/Programmer		IPC5000D-	1995.00
Input	2 Analog Input, 12 Digital Input	- 0 _	0.00
Output	2 Analog Output, 12 Digital Output	- _ 0	0.00
	3 Analog Output, 12 Digital Output	- _ 1	100.00
Communication	RS-232C	- 00-0	0.00
	RS-232C, RS485 (Modbus RTU)	- 10-0	100.00
	RS-232C, Ethernet (Modbus TCP)	-20-0	150.00

Each IPC5000 model ships with free Windows®-based configuration software. IPC5000S available with Output Option _0 only.

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Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

Honeywell HC900 Hybrid Control System for Process Equipment

Advanced Process and Logic Controller!

The HC900's fully integrated operator interface and controller are used for configuration, control, logic, autotuning, and monitoring. The integrated multiple functions reduce your hardware, software, training, and support needs.

- Up to 32 loops of PID control
- Up to 960 analog and digital I/O points with remote I/O
- Discrete logic capabilities
- Allows program changes during continuous processes without defaulting to failsafe values
- Easy setpoint programming, ramp/soaks
- Access PID parameters with no special panel view programming
- Automatic tuning with AccuTune II and fuzzy logic overshoot suppression with no additional software
- Storage for recipes, configurations, and setpoint profiles
- Datalogging for process data and parameter history
- On-the-spot visual feedback of process
- One-button access to auto/manual modes
- CE, UL, CSA, FM Class I, Div 2 Approvals

And It Talks to Your Network!

- Peer-to-peer Ethernet communications: Remote racks talk to each other over Cat5 cable with Modbus/TCP protocol
- Interfaces to popular HMIs (Intellution, Wonderware, RSView), data acquisition systems, or OPC servers
- Supports 5 concurrent host connections, so Control Designer software can configure any controller on your LAN
- E-mail alarms for alerting operator to process upsets

... But It's So Much Simpler Than a PLC!

See why users call it the most powerful, easy-to-implement control system they've ever touched.

- The HC900 uses universal analog inputs — thermocouples, RTDs, 4-20 mA current inputs mix and match on the same card, and are well isolated!
- The operator interface has more than 100 pre-programmed displays. Unlike a PLC interface, the HC900's interface is configured, not programmed. Display functions, like trending historical data in graphical form, are ready right out of the box!
- Inherently process-related functions like auto/manual or alarm acknowledge, are implemented on the OI with a dedicated key — these functions don't have to be programmed either!
- HC900 saves data on a floppy or ZIP disk and displays trends like a recorder. PLCs don't store any historical data.
- Setpoint programming batch processes with ladder logic takes considerable effort. In fact, many furnace and chamber manufacturers still use stand-alone setpoint programmers because of the complexity of setpoint programming on PLCs. HC900 comes with setpoint programming capability: Four setpoint programmers and a scheduler to synchronize them.
- Autotune or adaptive tune functions are standard part of the HC900. They're third party add-ins for PLCs.
- HC900 deals directly in engineering units (°F, °C, PSIG), so you don't have to calculate from A/D values in an input register. You just set the zero and span for your 4-20 mA signals. The HC900 does the rest! No scaling calculations or math errors!
- HC900 has dedicated algorithms for actuator motor drive applications, like three-position step (open feedback) or position proportional (slidewire feedback) control, for specific actuator field wiring.

Truly Redundant and Affordable Loop and Logic Control!

The HC900's redundancy module provides for "no single point for failure" for the controller's CPU, power supply, communications over the network, or to remote I/O racks.

Our customers employ redundancy because it's insurance against unscheduled downtime, it increases system or process availability, and it's a great risk-management tool.

Honeywell's HC900 Hybrid Control System is an advanced loop and logic controller in a modular design, sized to satisfy the control and data management needs of a wide range of process applications.

The HC900 provides superior PID loop control and more robust analog processing than most logic controllers, without compromising logic performance. Logic blocks and analog function blocks can execute in the same scan for time-critical events. They can be fully integrated into a combined analog/logic control strategy for uncompromised performance.

Hybrid Control Designer software simplifies controller and HMI configuration. It provides advanced monitoring functions for debugging, and allows run-mode configuration changes during the process. The software uploads complete graphic controller and user interface configurations over Ethernet, RS232, or modem, and supplies an array of reports for enhanced documentation.

With its new redundant control option, the HC900 creates a cost-effective, secure operational system for under $16,000. HC900 redundancy provides "no single point of failure" for the controller CPU, power supply, communications to the plant network or I/O modules. It also supports optional redundant power supply for I/O.

All user and process interaction is managed by the lead CPU (first to start). Both CPUs receive inputs and execute function blocks. The lead CPU writes outputs and performs all communication functions. It detects the reserve CPU and automatically configures it. A redundant switch module identifies both modules, and supports manual fail-over to make the switch — providing bumpless transfer between controllers.

Visit our website to learn more about HC900 redundancy. Want to see the HC900 in action? Call our office and request a demo!

HC900 redundancy is flexible — you buy only what you need!

- Redundant power supplies
- Redundant CPUs
- Redundant remote rack or networking communications

Redundancy is easy to use!

- Automatic setup of primary/reserve CPU
- No special configuration
- Automatic conversion of existing configurations
- "Bumpless" transfer between redundant controllers
- Maintains form, fit, and function with non-redundant HC900s

Redundancy doesn't make you choose! No trade-offs!

- No changes in system throughput or scan times
- Replicate only the components critical to your application: power, CPU, or networking

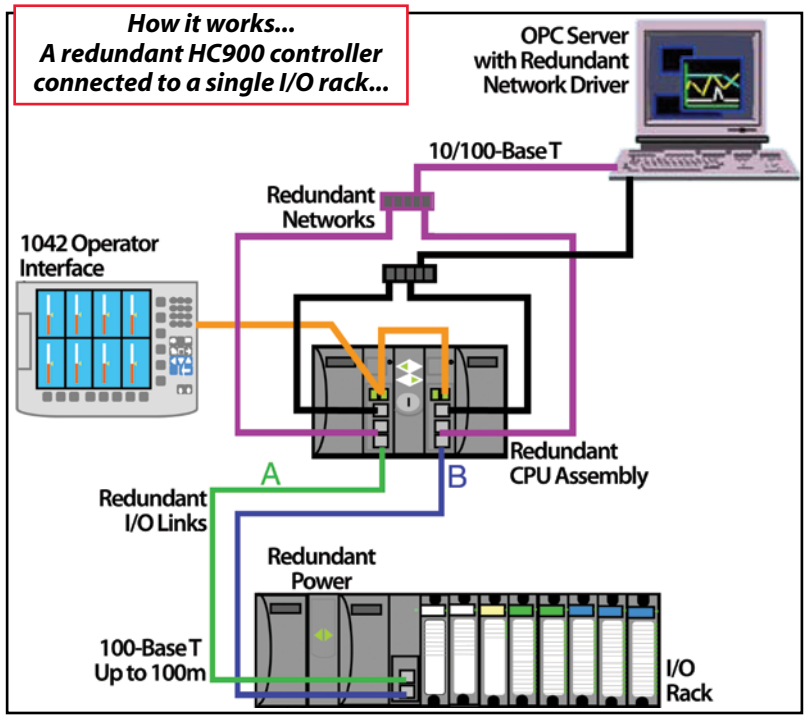
Redundancy is cost-effective!

- Redundant power supplies from $420
- Redundant CPUs and scanners from $8,100
- Redundant network components from $600

Features

- Single-rack design
- Synchronized CPU operation
- Distinct lead/reserve controller status indication
- Secure key-lock mode access
- Integrated redundancy switch module

How it works...
A redundant HC900 controller connected to a single I/O rack...



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Honeywell HC900 Hybrid Control System for Process Equipment

The HC900 provides process, logic, and sequence control functions with data acquisition, modular design, and a graphical configuration tool. The simple Windows®-based Hybrid Control Designer software configures the controller and interface, to help you cut setup time and costs.

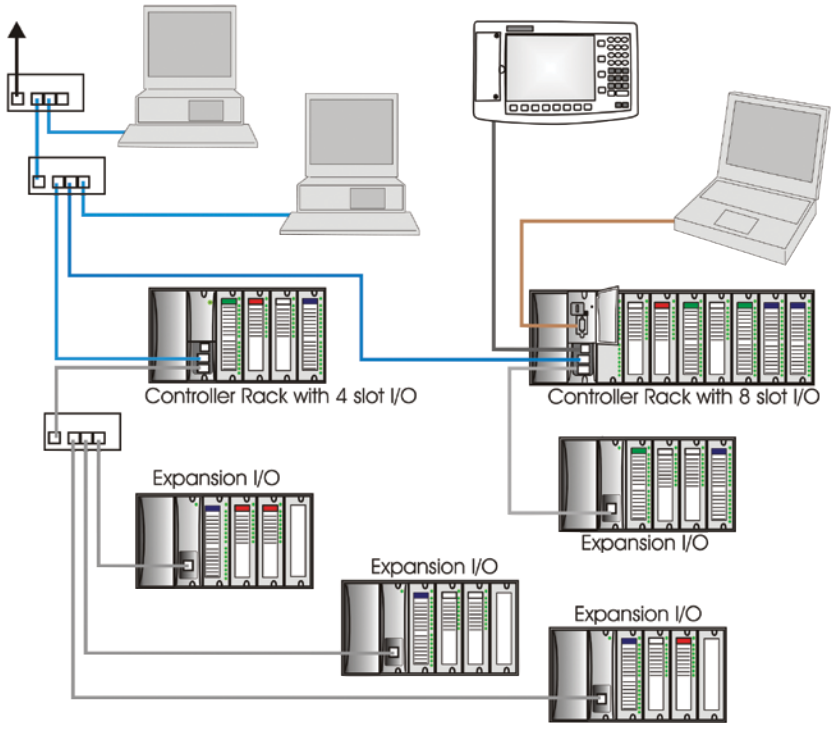
The HC900's expanded function block library consists of more than 100 block types, and has a capacity of 2000 blocks. The high-accuracy universal analog inputs and PID control algorithms with autotuning ensure accurate control. Setpoint programmer functions allow batch thermal processes, recipes, and profiles to be configured easily.

With your choice of 4, 8, or 12 I/O slot racks and high density I/O cards, you'll save cabinet space. And, peer-to-peer Ethernet-connected remote racks allow I/O distribution, to save on wiring costs. No more running wiring from every rack back to a central host computer.

Inputs and Outputs: You can easily remove and insert I/O modules from the card rack without powering down the controller. Each card is hot-swappable and auto-configured on insertion.

- *8-point universal analog input cards:* Inputs can be mixed on a card and can include thermocouples, RTDs, ohms, voltage or millivolt types — all assigned using Hybrid Control Designer software.
- *4-point isolated analog output card:* Supports 0-20 or 4-20 mA
- *16-point digital input cards:* Contact closure type, VDC and VAC
- 8-point AC or 16-point DC digital output cards
- *8-point relay output card:* Four form C and four form A relays

The HC900 can consist of a single rack, or can be networked with other controllers via Ethernet links to work in a broad range of complex applications.



Function Blocks

Each HC900 supports up to 2,000 analog or digital function blocks. A function block algorithm can be used any number of times in a control strategy, unless you assign quantity limits. Block types include:

Control loops	32	Ramps	8
Setpoint programmers	8	Hand/off/auto	16
Setpoint schedulers	2	Device (pump) control	16
Sequencers	4	Push buttons (4 per block)	8
Alternators	6	Selector switches (4-position)	8

Advanced Control and Math Functions: Analog function blocks include totalizers, free-form math, average, mass flow, function generator, periodic timers based on real time, carbon potential, RH, dewpoint, signal selection, and comparison. Logic function blocks include And, Or, XOr, Not, latch, flip-flop, on/off delay and resettable timers, counters, and free-form Boolean logic.

Loop Control: The 32 robust control loops support configurations from simple PID to interactive cascade, ratio, duplex, three-position step for motor positioning or custom control strategies. Autotuning is standard for every loop using Honeywell's AccuTune II algorithm with fuzzy logic for setpoint overshoot suppression.

Sequencers: Each of four sequencers supports up to 16 digital outputs that can be on or off in each of 50 states. Up to 64 sequential steps activate at specific process states, advancing based on time, on event (2 per step), or by manual advance.

Setpoint Programming: Up to 99 profiles — up to 50 segments each. Programmer can have up to 16 event outputs for integration with sequence controls. Guaranteed soak, jog, and looping are provided.

Logic: The Boolean logic instruction set includes 2-, 4-, and 8-input logic blocks with selectable input inversion plus timers, triggers, latches, and other supporting functions.

Recipes: Up to 50 recipes are stored in the controller, up to 50 analog and digital variables for setpoint profile, schedule, or sequencer numbers. You select recipe tag names and descriptors from the operator interface or through a selection block input.

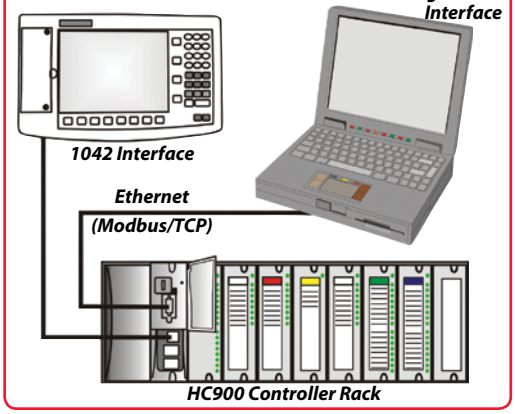
Alarms and Events

Each control loop has two alarm status outputs, each corresponding to alarm setpoints. Specialized blocks are reserved for analog alarms with hysteresis adjustment. An expanded-function analog alarm block also provides selection of alarm type, an on-delay, selective latching, and a disable input to control when the alarm is active.

Each group of 12 alarms can be assigned an acknowledge function that permits external, panel acknowledge through a digital input or a serial communications write to an internal variable.

Active alarm indication on all 1042 operator interface displays show alarm status, and permit group acknowledge of active alarms. An alarm detail display indicates the time and date of last occurrence, and offers 48 characters of text for alarm actions or notes. Alarms can also be stored in an alarm file (from 150 to 1,500 records) on the operator interface diskette or Zip drive media.

HC900 SCADA System



Communications

Ethernet Communications: HC900 controllers communicate with their host PC interfaces over an Ethernet 10Base-T network using the Modbus/TCP protocol. Up to 5 hosts (servers or stand-alones) can be supported concurrently for control supervision and data acquisition.

Ethernet Peer-to-Peer Communications: Data communications between one HC900 controller and up to eight other HC900 controllers is supported over Ethernet via UDP protocol for process interlocks or data sharing — without specialized software. Digital and analog data exchange are supported using function blocks for up to 1,024 parameters between peers.

E-Mail Alarming: HC900 alarms or events can be individually configured to send an e-mail alarm (or event) message to any or all of three e-mail addresses.

Remote I/O Rack Port: A second Ethernet port supports expansion I/O racks. This 10Base-T connection supports a single direct-connected expansion rack, or up to four expansion racks when connected through external Ethernet hubs.

Modbus Master: Either serial port can operate as a Modbus master, reading or writing data to Modbus RTU slave(s).

Operator Interface Port: An RS485 port communicates between the controller and a 1042 operator interface. This port supports a single 1042 operator interface at distances up to 2,000 feet from the controller.

Controller Configuration Access: An RS232 configuration port supports direct PC connection or external modem connection for configuration upload, download, debug, and maintenance. You can load configurations over the TCP/IP network from a host PC. Online monitoring for program debug and edit functions is also supported.

Supervisory Software: Use PlantScape SCADA or Vista for PC-based supervisory control and data acquisition. SpecView32 is the ideal supervisory interface for thermal-based applications, offering historical trending, batch reporting, recipe development involving setpoint programs, and simple graphics configuration. HC900 parameters can be selected from categorized lists for placement on displays.

OPC Server: The KEPware OPC server software program simplifies serial communication to the HC900 controller through Modbus/TCP interfaces. Compatible OPC clients can use the Ethernet connection to the HC900 for remote supervision, data collection, or other functions.

Mini-CD Answers Your HC900 Questions

- **Specifications**
- **HC Designer Software Demo**
- **10 Lesson Study Guide**
- **Link to HC900 Website**

51-52-58-24 ..... **Free!**

Saving Money on Waste Treatment with HC900

Application: Waste treatment processing in an oil recovery processing plant.

Problem: Waste treatment isn't a source of profit for the plant, so though an upgrade of the control system was necessary to meet EPA guidelines, funds were limited.

Solution: After evaluating all the options, the user saw that PLC engineering, programming, and startup were the most time-consuming and complex. The cost of loop controllers was prohibitive. The HC900 was easy to implement and cost-effective.

The customer implemented the HC900 with the operator interface and Specview software for programming and management.

User's Existing Business Results

- ***Rising chemical costs:*** With the rising cost of the chemicals used to treat waste, poor control creates higher plant operating cost, which reduces the profitability of the plant.
- ***Legacy issues:*** Control equipment in place was obsolete, and parts were no longer available.
- ***Prohibitive maintenance costs:*** The cost to maintain the existing system were excessive due to the number of failure points (from the quantity of discrete devices and the age of the equipment.)
- ***User-unfriendliness:*** The existing control panel filled with single-loop controllers, pushbuttons, and warning lights made it difficult to train new operators. With so many discrete devices, proper execution of shutdown and emergency procedure was operator-intensive and highly subject to human error.
- ***Mistakes erode profitability:*** Fines by EPA, cleanup and loss of production because of equipment failure or operator error have a negative impact on plant profitability.
- ***Information:*** Because plant performance was not in a database, access to historical information was non-existent or extremely labor-intensive to retrieve.

Implementation

- Easy "drag and drop" programming allowed the plant engineer to program the complete system locally in less than a day.
- Operator training was completed in less than a day.
- The equipment's small size kept installation cost to a minimum.
- The new system was installed without shutting down the plant.

Business Results After Installation

- Emergency shutdown is programmed into the system and performed automatically. With the old system, operators followed a manual sequence to ensure shutdown in the proper order.
- Advanced algorithms provide tighter control and reduced chemical usage.
- With on-screen data and automated sequencing, the user has increased safety and reduced potential for operator error.
- Routine control system maintenance has been cut drastically! And, hot-swappable cards will reduce maintenance in the future.
- After removing the old system, the remaining space was large enough to build a break area for employees.

Read this and other customer success stories at www.lesman.com/success/css_application.htm

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Fax: 262-923-1797

Honeywell HC900 Hybrid Control System for Process Equipment

Condensed Specifications

Rack Sizes: For local or remote I/O — 4, 8, or 12 I/O slots

Total I/O: 960 I/O total with analog and digital

Remote I/O: Up to 4 remote racks, Ethernet-private 10Base-T connection, 328 feet to first remote rack; Hub required for more, 328 feet from hub to rack

Analog Inputs, Accuracy: Up to 256 universal analog inputs (8/card), ± 0.1% of span, 400 V input to input isolation, A/D per card, 15 bit resolution, apply mV, V, TC type, RTD type, Ohms on per point basis

Analog Outputs: Up to 64 (4/card), isolated outputs, user-specified range from 0 to 20 mA

Digital I/O: *DI 16 Pt/card:* 120/240 VAC, 24 VDC; *Contact input DO 8 and 16 Pt/card:* 120/240 VAC (2A) 8 Pt, 24 VDC (1A, 8A max.) 16 Pt, relay (4A) 8 Pt

Scan Times: 500 ms analog, 27-107 ms logic (logic scan dependent on quantity of function blocks)

PID, On/Off Control Loops: 32, support for cascade, ratio/bias, % carbon, dewpoint, RH

PID Outputs: Current, time-proportioning, dual output (heat/cool), 3-position step (motor position)

Setpoint Programmers: 8 of 50 segments each, 16 event outputs, 99 profiles stored in controller

Setpoint Schedulers: 2x50 segments, 8 ramp/soak output, 8 soak-only output, 16 events, 20 schedules

Sequencers: 4 of 64 steps, up to 50 states of 16 digital outputs each, 1 analog output, 20 sequences stored

Recipes: 50, with 50 variables each (includes SP profile or sequence selection by number)

Communication Ports: Ethernet 10Base-T (Host), Ethernet 10Base-T, RS232, RS485

Ethernet Host Protocol: Modbus/TCP, support for 5 concurrent host connections (TCP/IP)

Peer-to-Peer Communications: Uses Ethernet between controller and up to 8 peers

Operating Temperature, RH: 32° to 140°F, 10 to 90% non-condensing

Approvals: CE (UL, CSA, FM Class 1, Div 2 planned)

Notes

1 Operation manuals and HC900 Hybrid Control Designer software are included with CPU 900C51-0001 and CPU 900C31-001. Order software or CD manual only if you did NOT order one of these two models, or if you need additional copies

2 One 250Ω resistor required for each mA input.

3 Honeywell recommends that all unused I/O slots are covered. Order one cover (900TNF-0001) per unused slot.

4 Requires 24 VDC power supply. Use 51452041-501 or equivalent (24 VDC at 1.3A).

Accessories		
Remote Ethernet Cable, 10 Feet	51451432-010	$37.40
Remote Ethernet Cable, 20 Feet	51451432-020	44.00
Crossover Cable, 20 Feet	51451996-020	44.00
4-Pack 250Ω Resistor (Note 2)	46181080-503	44.00
Industrial Ethernet Hub (Note 4)	51452051-001	632.50
24 VDC Power Supply	51452041-501	191.40

Hot Tip! *For help building your HC900 system, download "How to Specify an HC900 Hybrid Controller System" from www.lesman.com/unleashd/catalog/control/control_hc900.html.*

Model Selection Guide

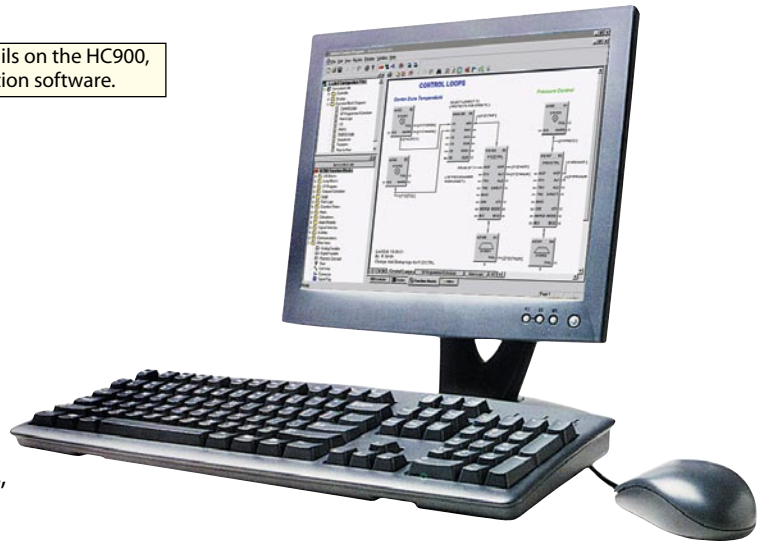
See pages 34 and 35 for operator interfaces!

Description			Catalog Number	Price
32 Loop Controller CPU, CD (Config Software, PDF Manual)			900C51-0142-00	$1640.00
32 Loop Controller CPU (No Software or Manual)			900C52-0142-00	1340.00
8 Loop Controller CPU with CD (Config Software, PDF Manual)			900C31-0142-00	1140.00
8 Loop Controller CPU (No Software or Manual)			900C32-0142-00	840.00
I/O Scanner for Remote Rack			900C53-0142-00	670.00
Controller, Redundant Networking (Software, PDF Manual)			900C71-0142-00	2300.00
Controller, Redundant Networking (No SW or Manual)			900C72-0142-00	2000.00
Controller, Redundant CPU/Networking (SW, PDF Manual)			900C71R-0000-42	4300.00
Controller, Redundant CPU/Networking (No SW or Manual)			900C72R-0000-42	4000.00
Power Supply	120/240 VAC, 60W		900P01-0001	505.00
	120/240 VAC, 48W		L 900P02-0001	290.00
	24 VDC, 60W		900P24-0001	505.00
I/O Board [Channels per Card]	Analog Inputs (128 Points Max)	[8]	L 900A01-0102	650.00
	High Level Analog Inputs (mA or V)	[16]	900A16-0001	900.00
	Analog Outputs (64 Points Max)	[4]	L 900B01-0101	432.00
	Pulse/Frequency/Quadrature Module	[4]	900K01-0001	650.00
	Digital Inputs, Contact	[16]	900G01-0102	330.00
	Digital Inputs, 24 VDC	[16]	900G02-0102	300.00
	Digital Inputs, 24 VDC	[32]	900G32-0001	425.00
	Digital Inputs, 120/240 VAC	[16]	900G03-0102	273.00
	Digital Outputs, Relay	[16]	L 900H01-0102	380.00
	Digital Outputs, 24 VDC	[8]	900H02-0102	340.00
	Digital Outputs, 24 VDC	[32]	900H32-0001	550.00
	Digital Outputs, 120/240 VAC	[8]	900H03-0102	284.00
Terminal Block Type (Select Euro or Barrier Style, Matched to Appropriate I/O Board) (Note 3)				
Euro Style	Low Voltage 36-Terminal for 32 I/O Boards		900TCK-0001	50.00
	Analog Inputs (128 Max)		900TEK-0001	34.00
	Analog Outputs (64 Max)		900TEK-0001	34.00
	Digital Inputs, Contact		900TEK-0001	34.00
	Digital Inputs, 24 VDC		900TEK-0001	34.00
	Digital Inputs, 120/240 VAC		900TER-0001	31.00
	Digital Outputs, Relay		900TER-0001	31.00
	Digital Outputs, 24 VDC		900TEK-0001	34.00
	Digital Outputs, 120/240 VAC		900TER-0001	31.00
Barrier Style	Analog Inputs (128 Max)		L 900TBK-0001	34.00
	Analog Outputs (64 Max)		L 900TBK-0001	34.00
	Digital Inputs, Contact		L 900TBK-0001	34.00
	Digital Inputs, 24 VDC		L 900TBK-0001	34.00
	Digital Inputs, 120/240 VAC		900TBR-0001	31.00
	Digital Outputs, Relay		900TBR-0001	31.00
	Digital Outputs, 24 VDC		L 900TBK-0001	34.00
	Digital Outputs, 120/240 VAC		900TBR-0001	31.00
Rack Type (5 Racks Maximum)	I/O Scanner, 2-Port (1 per I/O Rack)		900C73R-0000-42	1200.00
	4 I/O Slots per Rack		900R04-0001	275.00
	8 I/O Slots per Rack		L 900R08-0101	360.00
	12 I/O Slots per Rack		900R12-0101	415.00
	8 I/O Slots per Rack, Redundant Power		900R08R-0101	675.00
	12 I/O Slots per Rack, Redundant Power		900R12R-0101	720.00
	Redundant CPU Rack		900RR0-0001	500.00
	Redundant Switch Module		900RSM-0001	184.00
	Redundant Power Status Module		900PSM-0001	158.00
Software and Manuals (Note 1)	HC Designer Configuration Software CD		900W01-0042-42	500.00
	HC Utilities Software/Documentation CD		900W02-0042-42	210.00
	HWIOPC Server, Single Networks		900SRV4-0001	600.00
	HWIOPC Server, Redundant/Single Networks		900SRV5-0001	850.00
	Full Documentation Set on CD		900ME1-0042-42	63.00
	Full Documentation, Printed		900ME2-0042-42	115.00
Terminal Board Accessories	I/O Filler Block Terminal Cover (Note 3)		L 900TNF-0001	15.00
	2-Pack Shield Terminal Strip		900TSS-0001	39.00
	10-Pack Two-Position Terminal Board Jumpers		900J02-0001	17.00
	10-Pack Ten-Position Terminal Board Jumpers		900J10-0001	34.00

HC900 Hybrid Control Designer Software

Search www.lesman.com for "Honeywell HC900" Go

Visit www.lesman.com for full details on the HC900, operator interfaces, and configuration software.



Standard Features

- Graphic drag and drop, soft-wire configuration
- Configures controller and operator interface; peer-to-peer data exchange; data storage, recipes, setpoint profiles, schedules, and sequences with online operation; alarms, events, and e-mail warning setup
- Allows function block configuration partitioning using worksheets, up to 400 configuration pages
- Supports configuration edit downloads in Run mode
- Configuration upload includes graphic configuration, interface assignments, and annotations
- Extensive online monitoring tools, including watch windows, multiple block access, and signal trace-back
- Online diagnostic windows for analyzing controller, I/O, network host, and controller peer connections
- Uses Ethernet, RS232 direct, or RS232 modem connection
- Displays power flow indication of digital signals and pins
- Ability to view function block I/O values on per pin, per function block, or per viewable window basis
- Allows uploading, editing, storing, downloading, and printing of *individual* recipe files, setpoint profiles, schedules, and sequences

The HC900 Hybrid Control Designer's user-friendly graphic development environment lets you partition your control strategy into up to 20 worksheets of 20 pages each. You can then organize the configuration according to process function for faster access and improved documentation.

You can select blocks easily from a categorized list, drop them on a selected worksheet page, and soft-wire them to other blocks directly or via tag references. Editing tools such as box copy and paste help make development faster. You can also copy and paste portions of strategies from other configurations.

Online Monitoring Features

Hybrid Control Designer online monitoring tools allow quick analysis of configuration problems.

You can access the multiple function block monitor on a single display from multiple worksheets. Most internal parameters are available for read/write, and block outputs can be forced, including I/O and logic blocks. Major blocks such as PID, setpoint programmer, and sequencers have dialog boxes to allow operation and test. You can also select stored profiles or sequences online.

Watch window lists can be selected to access digital and analog I/O, signal tags, variables (for write actions), and custom display data groups by tab selection. Watch windows also allow write capability.

You can find the signal sources for quick identification of potential errors using signal trace-back for any input to a block. A Find function lets you locate multiple instances of specific tags across all worksheets.

Configuration Edits in Run Mode

You can transfer configuration changes to the active configuration during the Run mode, avoiding initialization. All outputs and status are held during a minimal transfer time, after which processing continues at the start of a scan.

1042 Operator Interface Configuration

Controllers configured for a 1042 interface can provide the necessary display format data with no process interruption. This simplifies maintenance and guarantees compatibility of the controller and interface databases.

Hybrid Control Designer software uses the function block program database to develop operating displays. Just select a display format and apply tags to the format from a drop-down menu. You can choose from a large selection of display templates and assign them to the display access hierarchy of the 1042.

Graphic objects identify the different display types to simplify user selection. In addition to creating displays and defining display access, Hybrid Control Designer lets you set up data archiving schedules, create alarm grouping, establish operator security, and define a number of other operator interface attributes.

Hybrid Control Designer Reports

A variety of report formats support your configuration documentation. Reports can include a summary of the I/O used, function block worksheet selection, function block properties, tag parameters, recipe listings, setpoint profile listings, sequencer listings, setpoint scheduler listings, 1042 operator interface display groups, and controller setup.

Specifications

Configuration: Conducted off-line without controller, supports run-mode editing with controller

Support: Graphic soft-wiring/drag and drop (function blocks); hardware, network, operator displays, peer-to-peer configuration; recipes, profiles, sequences, schedules; diagnostics; calibration

Interface: Ethernet, RS232 direct, RS232 modem

Operating System: Windows® NT, 2000, or ME

PC: Pentium 200 MHz, 64 MB RAM (depends on minimum supported by OS), SVGA resolution min. 1024 x 768 recommended

Model Selection Guide

Description	Catalog Number	Price
HC Designer Configuration Software CD	900W01-0042-42	$500.00

Note: A single license copy of this software is included with controller CPU model numbers 900C51-* and 900C31-*. Order software separately only if you did NOT order these models, or if you need an additional license.

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

Operator Interfaces for HC900

Honeywell

All Three Displays

- Data Archiving to Floppy Disk
  Two Trend Groups, 12 Points Each
  One Point Log, Up to 5000 Records
  Up to 1500 Alarm/Event Records
- Same Horizontal and Vertical Trend Displays
- RS485 Communications
- 24 VDC Power

1042 Display

- 10.4" Active Matrix LCD
- 80 Operator Displays
- Eight Programmable Keys
- Number Pad for Value Input
- 100 MB Zip Drive Option
- 8-Loop Bar Display
- 16-Loop Tabular Display
- NEMA 4X Rated Front Panel

559 Displays

- 5.4" Passive Matrix LCD
- 50 Operator Displays
- Five Programmable Keys
- Increase/Decrease Value Keys (No Numeric Keypad)
- 8-Loop Tabular Display
- Smaller Panel Designs and Tougher Enclosures with UV-Rated Keypads

Model 1042

The 1042 Operator Interface (OI) for the HC900 Hybrid Control System provides a graphic LCD display and a monoplaner keyboard to allow operator access to all controller functions. The interface has a 10.4" active matrix color LCD and is front-panel rated as Type 4X. A 3.5" floppy disk drive (or optional Zip drive) and process data archiving feature allows recording of analog values, alarm actions, and digital events.

Model 559-T12 and 559-T4

The Model 559-T12 and 559-T4 operator interfaces also provide comprehensive process monitoring, data entry, and historical data archiving for the HC900 Hybrid Controller. Both models come with a vibrant $5^1/_2$" color liquid crystal display, full-function 22 key membrane keypad, a 1.44 MB floppy disk drive, and communication interface to the HC900 Controller.

The OI 559-T12 is packaged in a Type 12 enclosure ready to use on your front door. The OI 559-T12 provides front-panel access to the floppy disk drive and can be panel or wall mounted. The OI 559-T4 is packaged in a Type 4X enclosure to withstand wash-down at the front panel. The panel-mounted OI 559-T4 provides rear access to the floppy disk drive to protect the drive and data on its disk during wash-down operations.

The operator interface becomes operational once a valid database is configured in the controller. Modification and customization of the operator interface is performed using HC900 Hybrid Control (HC) Designer software. With the software, data points can be identified (tagged) using eight character names.

Once named, these data points may be accessed by the operator interface using a standard set of display formats, a predefined menu hierarchy and selected security.

Customized display access and the assignment of selected display screens to keyboard buttons may be developed using the HC Designer software. Selected screens such as bargraphs, trends, panel meter and overview displays will only require the user to select the format, select tags from a list to define a data group, then apply to the format. Control loops, SP programmers, and other principal functions are all interactive using their respective screen formats.

A 3.5" floppy disk drive (or optional ZIP drive-Model 1042 only) and process data archiving feature allows recording of analog values, alarm actions and digital events. Data storage parameters are established for the operator interface using the HC Designer software.

Archived data files require Honeywell Software for Data Analysis (SDA) to view and analyze records. Conversion of archived files from a Honeywell compressed data format to other formats, such as Data Interchange Format (DIF) or Comma Separated Variable (CSV) requires SDA software.

The storage device can be used to archive process data, store and transfer controller and operator interface configurations, setpoint programs, and recipes. The OI 559-T12 and OI 559-T4 allow you to do all of this using its 1.44 MB floppy disk drive and standard disk utilities and data storage screens.

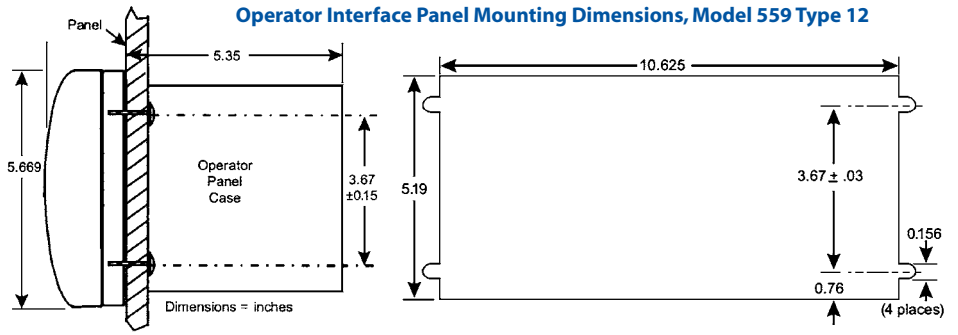
On Model 1042, the floppy or ZIP drive is located at the left front of the panel, accessed via a swing-out door secured by two quarter-turn tool accessible fasteners. A numeric keypad allows direct numeric entry including control loop setpoints. A QWERTY keyboard connector is available via the rear panel.

Screen Access

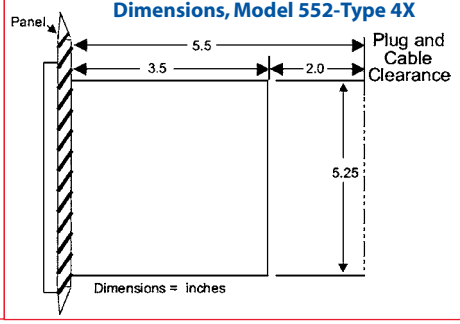
The operator interface has pushbutton type actions in five categories to access display screens. These are:

- **User-defined screen buttons:** Each user-defined screen button supports a sequence of up to ten screens. Screens assigned to these buttons may be Monitor Screens (view data only) or Operate Screens (take actions). The type of screen and the data presented on the screen is defined by the user during configuration.
- **Menu button:** This button provides access to the menu items supported by over 100 displays to set up, tune, manage, diagnose, and maintain the system.

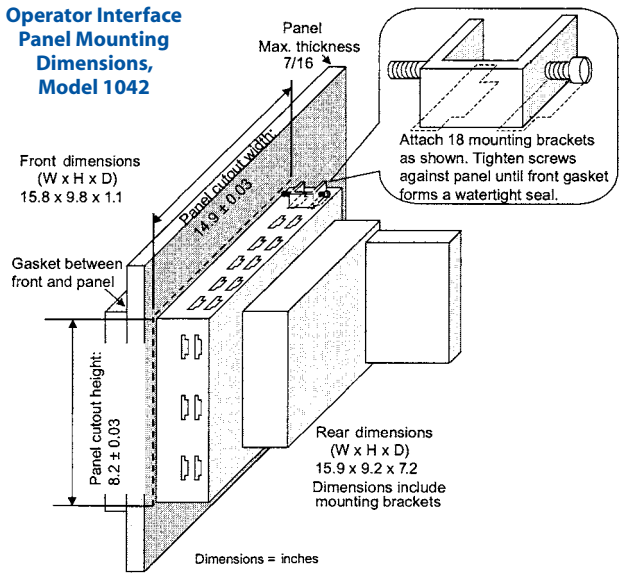
Operator Interface Panel Mounting Dimensions, Model 559 Type 12



Operator Interface Panel Mounting Dimensions, Model 552-Type 4X



Operator Interface Panel Mounting Dimensions, Model 1042



- **Pushbutton Group and Four Selector Group:** These buttons provide input to discrete on-off actions
- **"?" User-defined Help:** This button provides access to up to ten user text screens. These screens may include user notes, operator instructions, or other user-defined information.
- **Alarm view/Acknowledge:** This button is used to access alarm group screens and the acknowledge alarms.

Display Formats

There are 36 display formats for accessing control loops, viewing process data, or for operator entry. Overview screens can be used for viewing data, entering data or changing digital status. Control loop screens, single or multi loop, allow operator interaction. A loop trend collects data at a 1-second data rate for tuning. Other interactive displays are specific to block functions.

SP Programmer, SP Scheduler and Recipe Displays

These screens allow interaction for ramp/soak programs and recipe selection. Profiles and schedules are selectable by name or number. Recipes, which include fixed parameters and can include profile or schedule numbers, are selected by name from standard recipe screens.

Trend Displays

This feature allows real-time trending of up to 24 tagged values assigned to four screens of up to six trend points each, analog or digital. Each trend point has its own color and engineering unit range. The time range may be 0.5 hour to a 24 hour screen. The trend tools include zoom and scrolling back in time to extend the time range from 1.5 to 5 times dependent on the number of points per screen, and cursor panning to view actual digital values at a specific point.

Data Archiving Specifications

	Model 559-T12	Model 559-T4	Model 1042
Media	3.5" 1.44 MB floppy	3.5" 1.44 MB floppy	3.5" 1.44 MB floppy or 100 MB Zip
Data Types	Tagged analog and digital parameters, alarms and events		
Trends	*Number of files:* 1 *Points per Trend:* 12 maximum, analog or digital *Modes:* Off, Batch, Continuous *Rates:* 2, 5, 10, 20, 30, 40, 50 seconds 1, 2, 5, 10, 20, 30 minutes *External Control:* Digital tagged signal - start/stop storage to both trend files		
Point Log	*Number of Files:* 1 *Points per File:* 12 points maximum, analog or digital *Modes:* Off, Batch, Continuous, On Command *Sample Rates:* 1 to 60 minute samples, one minute increments; 1-24 hours, one hour increments; 1 month - same day of each month; *Number of Records:* 2000 per file (up to 12 points per record) *External Control:* Digital tagged signal - start/stop storage on file, Digital tagged signal - on demand sampling		
Alarms	*Number of Files:* 1 *Records per File:* 150 to 1500 maximum, time/date, On and Off *Storage Modes:* Off, Continuous, Batch *External Control:* Digital tagged signal - start/stop storage to file		
Events	*Number of Files:* 1 *Records per File:* 150 to 1500 maximum *Storage Modes:* Off, Continuous, Batch *External Control:* Digital tagged signal - start/stop storage to file		
Circular Files (Roll-Over) File Types: Trends, Point Log, Alarms, Events EN6132			
File Management	File upload (from controller to diskette) and download (from diskette to controller) of: Setpoint Profiles, Setpoint Schedules, Recipes and Controller Configurations		

Model Selection Guide

Description	Catalog Number	Price
559-T12 Operator Interface (Type 12 Enclosure)	559T12-0040-40	$1680.00
559-T4 Operator Interface (Type 4X Enclosure)	559T04-0040-40	1680.00
1042 Operator Interface with Floppy Disk Drive	10420F-0040-40	3108.00
1042 Operator Interface with ZIP Drive	10420Z-0040-40	3318.00
24 VDC Power Supply (Required for All Models)	51452041-501	$191.40
TrendViewer Software (To View Archived Data)	TMPWKS	0.00
TrendManager Software (Recommended)	TMPCON5	300.00
Keyboard for 559-T12	51404493-501	156.20
Keyboard for 559-T04	51451320-501	124.30
Keyboard Connector Kit for 559-T04	51404533-502	80.30
559 Series OI to Controller Terminal Board	51404600-501	127.60
1042 RS485 Communications Cable, 50 Ft	51452101-050	29.70
Zip Drive Replacement/Upgrade Kit	51451948-501	262.90

The 559-T12, 559-T4 and 10420F Operator interfaces include a 1.44M floppy disk drive, support for data archiving and a 50 foot length of RS485 communications cable to connect the OI to the HC900 controller. Each unit ships with one printed copy of the operations manual.

Illinois, Indiana, Iowa, and SW Michigan
Phone: 800-953-7626 • 630-595-8400
Fax: 630-595-2386

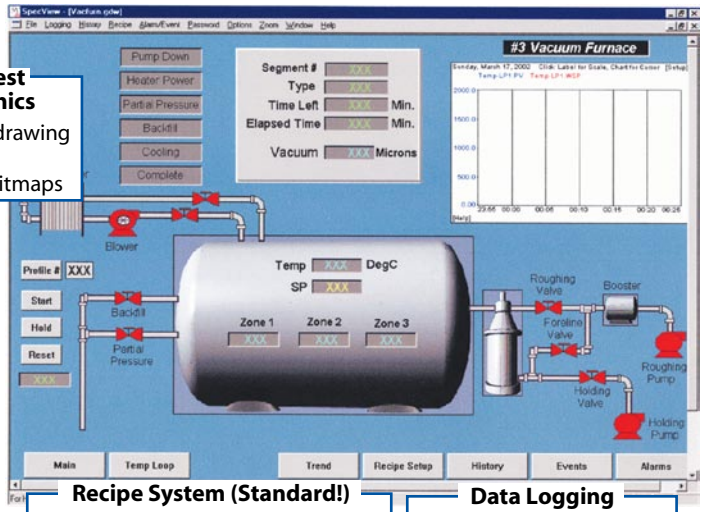
Lesman Instrument Company
www.lesman.com
sales@lesman.com

Wisconsin, and Upper Peninsula Michigan
Phone: 800-837-1700 • 262-923-1790
Fax: 262-923-1797

SpecView® 32 SCADA Software

Features

- Automatically detects connected devices
- Builds a database of instrument parameters
- User-definable report structure
- Alarm monitoring and time stamping
- Strategy controller with batch reports
- Event logging for tracking user operations
- Powerful and flexible password system
- Multi-pen trend charts — scales from 1 minute to 48 hours
- Data logging of any instrument parameter
- Log reports for easy import into Windows® spreadsheets
- Snapshot a screen to full-sized, color printout, including trends
- Dynamic data exchange — link live data from instruments to other programs
- Historical replay of graphical screens from logged data
- Up to nine simultaneous communications ports
- Modbus™ configuration — define your own instrument view
- Central recipe management to load setpoint programs or schedules for UMC800
- Batch log reports, including alarm and event files
- Centralized PC-based data acquisition
- Touchscreen operator interface local to process
- Support for Windows XP, 2000, NT, 98, ME

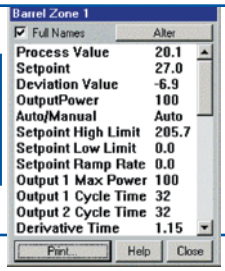


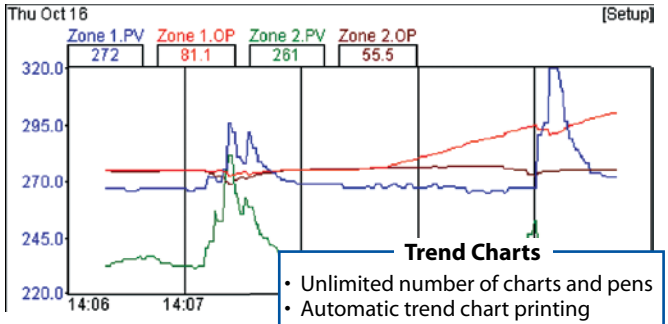
Easiest Graphics
- Use our drawing tools or
- Import bitmaps

Recipe System (Standard!)
- Select just the variables you want
- Snapshot current values
- Recipes for each screen
- Long recipe names
- Add descriptions or instructions

Data Logging
- Automatic — no setup!
- Log any variable
- Outputs .CSV file
- Historical screen replay

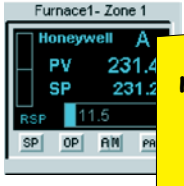
Parameter Access
- Short list option
- Adjust all parameters
- Mnemonic or full name
- Help on parameters





Trend Charts
- Unlimited number of charts and pens
- Automatic trend chart printing
- Rescale and reassign pens

Instrument Views
- Operate like controllers
- Automatically created
- Deviation and output bargraphs



Support for new Honeywell products, including XYR5000 wireless base station and new UDC family

SpecView 32 Supports

- UDC Controller/Programmers
- DR4300/4500 Chart Recorders
- DCP50/100 Controller/Programmers
- IPC5000 Controller/Programmer
- VPR/VRX Recorder/Controllers
- DPR100/180/250/3000 Chart Recorders
- UDI1500 Indicators
- HC900 and UMC800 Hybrid Controller Systems
- Trendview Recorders (v5 and X Series)
- Honeywell S7810M Burner Controls, R7999 Controller

Ordering Instructions

Make a selection from each table. Follow the arrows down to be sure the unit you want is available. A complete catalog number looks like this:

SV32_ - _ - _ - _ - _ - _ - E - 00 - 00

Model Selection Guide

Description		Catalog Number	Availability ↓	Availability ↓	Price
Model	Specview32 Base (No Instrument View Limits)	SV32B			$995.00
	Specview32 Mini (2 Instrument Views)	SV32M			850.00
Number of Ports	Single Port (Ethernet or Serial)	S	•	•	0.00
	Multiport (Requires Additional Hardware)	M	a		395.00
Historical Replay	None	0	•	b	0.00
	Historical Replay	H	•		395.00
Control	None	0	•	•	0.00
	Strategy Controller	S	•	•	395.00
Data Exchange	None	0	•	•	0.00
	Windows Dynamic Data Exchange Protocol	D	•	•	395.00
Interface Drivers	Standard Honeywell Drivers	0	•	•	0.00
	Standard Drivers plus HC900 and UMC800	H	•		395.00
Remote Access	None	00	•	•	0.00
	Concurrent Remote Connection Licenses 1-20 (01...20)	_ _	•	•	500/lic.
Options	No OPC Support	0 _	•	•	0.00
	OPC Client	C _	•	•	395.00
	No ActiveX Support	_ 0	•	•	0.00
	ActiveX Controls Support	_ X	•	•	395.00

Availability

a Multiport option allows up to 40 comm ports to be connected to one PC. One RS232/495 converter is required per serial port. A multiport serial device is also needed. Call for details on two-port and eight-port models.

b Historical replay is included in Specview32 Mini package at no charge. Does not need to be selected here.

Note: Specview32 Base software allows one port, either Ethernet or serial (via RS485). RS485 supports up to 32 units per comm port, though fewer are recommended.