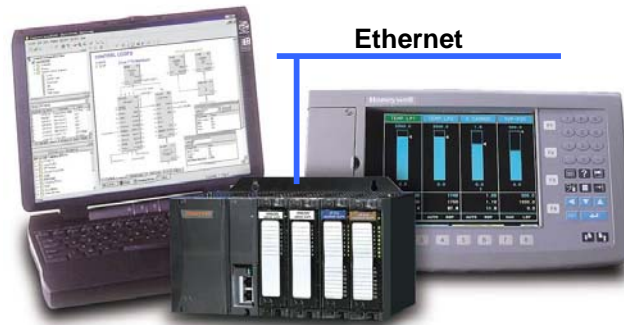


## HC900 Hybrid Control System

*When you need more than just discrete control*



The HC900 is Honeywell's next generation of hybrid control for cost-effectively automating process equipment, either stand-alone or with open Ethernet Modbus/TCP connectivity. Offering a blend of process, logic, and sequence control algorithms combined with data acquisition, a modular design and a graphical configuration tool, the HC900 is easily applied in applications across various industries. This includes control of furnaces, dryers, boilers, sterilizers, autoclaves, reactors, water treatment, utility balance of plant equipment and related data acquisition. The easy-to-use Windows-based Hybrid Control Designer software tool graphically configures the controller and optional local plant floor Operator Interface, saving configuration time and cost. The run-mode configuration edit capability plus monitoring functions minimize process interruption, saving start-up time and allowing continual process improvement while running.

### ***Flexible, Robust Controller***

Whether you have a batch, continuous process, or combined data acquisition application, the HC900 controller supports an extended range of use using a variety of diverse control strategies with 2 model types. The expanded model supports 32 control loops, 960 I/O, a function block library of over 100 block types, large function block capacity of 2000 blocks, and Ethernet peer-to-peer communications. High accuracy, universal analog inputs and PID control algorithms with auto-tuning assure accurate control. This allows you to start up your process in minimum time and keep it under control to reduce defects and improve throughput. Setpoint programmer functions allow batch thermal processes to be easily configured with profiles and recipes. Support logic and 64-step sequencer functions also insure complete loop and logic integration. The compact 4, 8, or 12 I/O slot rack sizes along with a mix of higher density I/O cards preserve cabinet space while remote racks allow I/O distribution to save wiring costs. I/O insertion/removal under power with auto-configuration minimizes downtime for process expansion. Configurable serial Modbus RS232 and RS485 ports allow connection of touchscreen panels, Honeywell controllers / recorders and third party I/O.

### ***Open Ethernet Connectivity***

The HC900 utilizes *Ethernet* 10Mbps TCP/IP communications for high speed LAN connection to host PC's. The open

Modbus/TCP protocol allows interfacing to most popular HMI, data acquisition, or OPC server software. Since the HC900 supports up to 5 concurrent host connections, the Hybrid Control Designer configuration software may be used concurrently for configuration access to any controller on the LAN directly or via the Internet. Peer to peer data exchange for multiple controllers may also occur independently. In addition, with e-mailed alarm capability a message can be sent to three separate locations to alert plant personnel of process upset.

### ***Integrated Operator Interface***

HC900's optional, color LCD, Model 559 (5.5 in.) or 1042 (10.4 in.) Operator Interfaces for plant floor operation offer pre-built displays for process operation, alarming, multi-pen trending, and diagnostics, minimizing engineering cost. Over 36 formats allow you to customize operator display access to PID loops, setpoint programmers, recipe selection lists, pushbutton actions, or to view analog or digital status using front panel function keys. The standard floppy drive or optional ZIP drive (1042 only) provide process data archiving and a convenient method for loading configurations, batch recipes and SP profiles.

### ***One-Stop Configuration Tool***

The Windows-based HC900 Hybrid Control Designer tool does it all, configuring the controller, operator interface, data storage, and peer data exchange while also supporting controller setup and diagnostic access. Its drag and drop method for soft-wiring analog and digital function blocks allows a custom control strategy to be easily created. Multiple worksheets allow process functions to be conveniently partitioned. On-line monitoring features such as watch windows, logic power flow, live data on diagram, signal traceback, forcing, and multiple function block access aid in debug. Run-mode configuration edit download capability avoids costly process shutdown or initialization. Hybrid Control Designer offers fast setup of the optional operator interface due to its integrated database – just select the display format and insert tags in formatted display areas. A library of printouts allows more complete process documentation including worksheet pages, recipes, profiles, display and I/O listing. Use direct Ethernet, an RS-232 port, or modem connection for complete upload or download of the graphic controller and OI configuration including worksheet graphics, annotations, and for on-line monitoring / debug.

## Condensed Specifications

<b>Controller</b>	
Model Types	HC900-C50, full capacity; HC900-C30 (8 loops, 400 function blocks, 1 rack of 192 I/O max.)
Rack Sizes	3 types for local or remote I/O – 4, 8, or 12 I/O slots (C50)
Communication Ports (Ethernet and Serial)	Ethernet 10Base-T (Host), Ethernet 10Base-T (Rem. I/O), RS-232 (for Configuration or Modbus RTU master/slave interface), RS-485 (for OI or Modbus RTU master/slave interface)
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 (without consuming a host connection)
Total I/O	960 I/O total with mix of I/O cards (192 I/O for C30)
Remote I/O	Up to 4 Remote Racks (C50), Ethernet-private 10Base-T connection, 100m (328 ft) to 1 <sup>st</sup> Remote Rack, hub required for > 1 Remote Rack, 100m between hub and rack
Remote Terminal Panels	3 types, 35mm DIN rail mounted. Analog Input RTP – fused transmitter power, selectable shunt resistor; Relay Output RTP – fused per circuit, relay common disconnect per circuit; DI/DO/AO RTP – jumper selectable. Prewired cables – 1.0M(3.28 ft.), 2.5M(8.2ft.), 5M(16.4 ft.).
Analog Inputs, Accuracy	Up to 256 Universal Analog Inputs (8/card), +/- 0.1% of span (+/-0.2% of span for 0-10Vdc & -10 to +10Vdc inputs), 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 (Up to 96 UAI for C30)
Analog Outputs	Up to 64 (4 / card), isolated outputs, user-specified range from 0 – 20 mA
Digital I/O Types	DI 16 Pt / card : 120 / 240VAC, 24Vdc, Contact Input DO 8 and 16 Pt / card: 120 / 240VAC (2A) 8 Pt, 24Vdc (1A, 8A max.) 16 Pt, Relay (4A) 8 Pt
Scan times	500ms normal (analog), 27 - 107 ms fast scan (dependent on quantity of function blocks), 53 ms is minimum C30 fast scan
Function Blocks	2000 (400 for C30), greater than 100 block types
PID, On-Off Control loops	32 (C50), 8 (C30)– support for cascade, ratio / bias, % Carbon, dew point, RH
PID Outputs	Current, time-proportioning, dual output (heat / cool), 3-position step, motor position w/ slidewire feedback (PPO or PAT) for 12-300 sec. motor speed.
Setpoint programmers	8 of 50 segments each, 16 event outputs, 99 profiles stored in controller
Setpoint schedulers	2 of 50 segments, 8 ramp / soak outputs, 8 soak-only outputs, 16 events, 20 schedules stored
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)
Power Supply	90 VAC to 264 VAC, 47 to 63 Hz (2 Types, 28 or 60 W)
Operating Temperature, RH	0 to 60 deg C, 10 to 90% non-condensing
Size	H: 5.4in (137mm), D: 6in (151.7mm), W: 4 slot- 10.5in (266.7mm); 8 slot - 16.5in (419.1mm); 12 slot - 22.5in. (571.5mm). Rear mounting panel is 6.9 in (175.3) H
Ratings	CE, UL, CSA, CUL, FM Class 1, Div 2
<b>Operator Interface</b>	
Display	5.5 in. passive color LCD, 320x240 pixel resolution (Model 559-T12, Type 12 or Model 559-T4, Type 4X) or 10.4 in. active-matrix color LCD, 640x480 resolution (Model 1042)
Communications distance	RS-485, 2-wire with shield, up to 2000 ft (600 m)
Panel Displays	>100 standard displays, up to 50 user displays (559 Models) or 80 user displays (1042) selectable from 36 formats
Disk Drive	1.44 MB floppy drive standard, 100 MB ZIP drive is optional in Model 1042
Disk Drive Functions	Data archiving, configuration loading, setpoint profile, sequence, recipe transfer
Power Supply	24VDC @ 1.0 amp required
Operating Temperature, RH	0 to 50 deg C (559 OI), 0 to 45C (1042 OI), 10 to 90%, non-condensing
Size (Model 559-T4)	W 9.4 in.(240 mm) x H 6.25 in. (159 mm) x D 5.65 in.(152 mm) 5.5 in./148 mm behind panel
Size (Model 1042)	W 15.8 in.(400 mm) x H 9.8 in. (248 mm) x D 8.3 in.(210 mm) 7.2 in./183 mm behind panel
Ratings	559-T12 is Type 12, 559-T4 is Type 4X, 1042 OI is Type 4X
Approvals	CE, UL, CSA, CUL, FM Class 1, Div 2
<b>HC900 Hybrid Control Designer Software</b>	
Configuration	Conducted off-line without controller, supports run-mode editing with controller
Support	Graphic soft-wiring/drag & drop (function blocks); hardware, network, operator displays, peer-to-peer configuration; recipes, profiles, sequences, schedules; diagnostics; calibration; comm.
Interface support	Ethernet, RS-232 directRS-232 modem, RS-485 Modbus, – upload, download, monitoring
Operating Environment	Windows NT, 2000, Me (XP pending)
PC	Pentium 200MHz, 64 MB RAM (depends on minimum supported by environment), SVGA resolution min. 1024x768 recommended

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