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# GE Fanuc Automation

## OCS

### Operator Control Station



*A fully  
integrated  
control  
solution  
for compact  
applications*



# A New Concept in Control

## Discover the Advantages of a Fully Integrated Solution

Combining the power of fully integrated hardware and Windows®-based software, the OCS operator control station provides high performance and unparalleled ease of use in a single, affordable package.



## Application Solutions

The OCS family can provide flexible and affordable control solutions for a broad range of applications requiring standalone or distributed control.

- Small Industrial Machines
- Unit Handling Conveying Systems
- Packaging and Material Handling Equipment
- Improved Process Monitoring for Existing Machinery

## Higher Performance

With an Intel processor, the OCS controller delivers a performance level that is comparable to most mid-sized PLCs without the high cost.

- Ladder Programming & Screen Configuration in One Package
- No Serial Interconnects; Faster Response Times
- 64K Logic & Screen Memory
- 0.7 msec/K Scan Rate

## Ease of Use

With fully integrated hardware and software, the OCS offers easy installation and faster set-up.

- Reduced Wiring and Installation Time
- Faster Set-Up and Programming
- Reduced Panel Space
- Integrated High-Speed Network

## Affordability

The OCS operator control station is affordable compared to conventional systems. And with faster application development and improved process information, it will continue to provide savings over the life of the project.

- Low Installed Cost
- Reduced Development Time
- Faster Implementation
- Modular and Expandable

# Introducing OCS...

GE Fanuc Automation introduces a new concept in integrated control with the affordable new OCS operator control station. This compact system combines a controller, an operator interface, I/O and networking into one seamless solution to help lower control costs while providing unparalleled ease of use.

## Control

With the OCS family, you won't have to sacrifice performance for price. A ladder-based control engine features an Intel® processor with speed comparable to most mid-sized PLCs.

## Operator Interface

The OCS comes with your choice of a large, bright 2x20 LCD with a 16-button keypad or a 4x20 LCD with a full 32-button keypad for added flexibility.

## Input/Output

The modular SmartStack™ I/O system provides scalability and flexible design. Various analog and digital I/O combinations are available. The easy, quick stacking design allows for up to four different I/O boards onto a single control unit.

## Networking

The OCS station has two communications ports—a serial port that supports Modbus RTU Slave or serial CsCAN™ networks, and a high speed CAN network that supports either DeviceNet™ or CsCAN. The CsCAN network provides a single point of connection for programming, monitoring and troubleshooting.



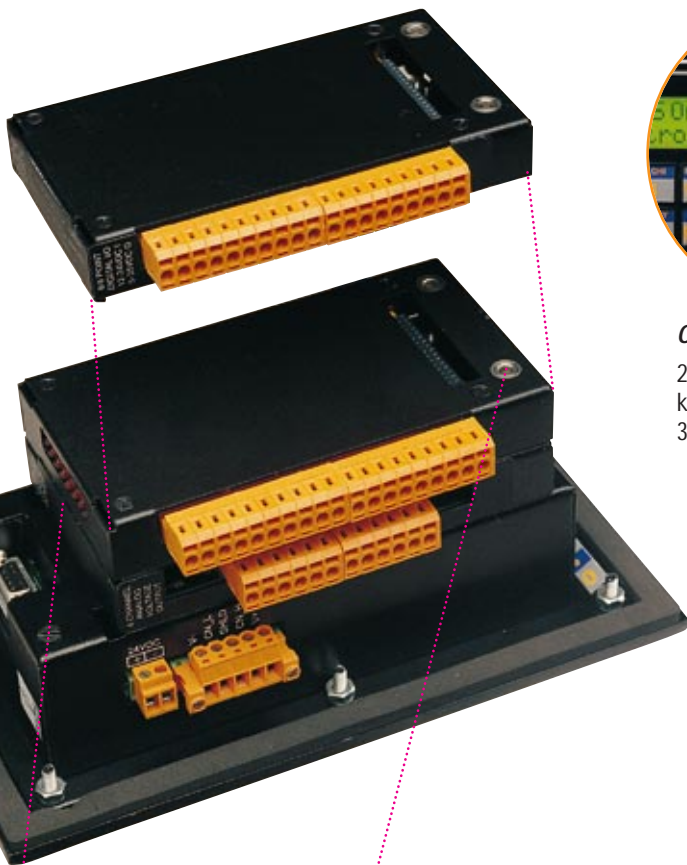
# Powerful Integration & Modular Design

## Fully Integrated

Tightly integrated components eliminate slow serial links and provide better interaction of operator interface and PLC operations. And when used as distributed control, the OCS system improves response times by eliminating the need for time critical control functions to travel the network.

## Stackable I/O

The modular SmartStack I/O expansion system allows the flexibility of using digital, analog and specialty I/O boards. You can choose from various I/O combinations and stack up to four different I/O boards onto a single OCS station.



**Operator Interface**  
2x20 LCD with 16-button keypad or 4x20 LCD with 32-button keypad



**Keypad Options**  
Relegendable function keys for customized solutions



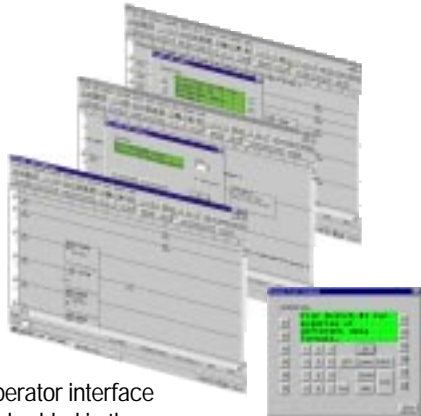
**Modular Construction**  
SmartStack modular I/O stacks up to four deep

**Easy SmartStack Expansion**  
Unique module connectors allow for easy installation and removal



**Communications Port**  
RS-232 port for easy PC and modem connections

# Software Ties It All Together



Operator interface embedded in the ladder logic

Remote monitoring and control of networked units



Complete programming function set

## Cscape™ Programming

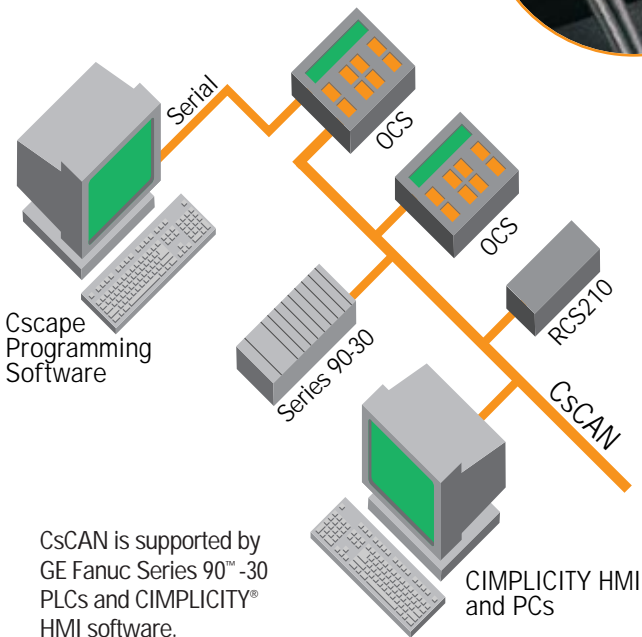
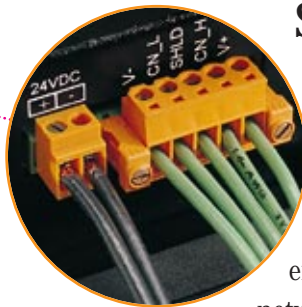
Cscape software combines graphical ladder diagram programming (IEC-1131 compliant) with operator interface messaging to completely integrate the OCS package. Design engineers and end users will enjoy reduced development time with a straightforward approach to programming that integrates logic, messaging and networking into a single solution operating in the Windows® 95, Windows 98 or Windows NT® environments.

- Relay Ladder Logic
- Floating Point Math
- Motion Commands
- Serial Read and Write Commands

## Simple Network Communications

The OCS has two communications ports. A serial port supports Modbus RTU Slave or serial CsCAN networks. A high speed CAN network supports either DeviceNet or CsCAN. The CsCAN network provides a single point of connection for programming, monitoring and troubleshooting. In addition, the CsCAN network supports peer-to-peer, data grams and global data for up to 253 devices, over a distance of 2,000 meters. Baud rates are selectable from 125 kbaud to 1 mbaud.

**Fully Integrated Network**  
Standard CAN-based network connection for flexibility





IC300OCS0XX—Mini OCS



IC300OCS100



IC300OCS200



IC300RCS210



IC693CPU500



IC693CDC200

# Specifications

## Environmental

Operating Temperature	0 - 60 degrees C
Humidity (non condensing)	5 to 95%
NEMA	4/12 faceplate (NEMA4x/12 for Mini OCS)

## Physical Specifications

Mini OCS	4.375 in. (111.0 mm) tall x 7.00 in. (177.8 mm) wide x 2.25 in. (57.2 mm) deep.
IC300OCS100	5.06 in. (128.6 mm) tall x 9.0 in. (228.6 mm) wide x 2.0 in. (50.8 mm) deep. SmartStack adds depth.
IC300OCS200	7.10 in. (180.9 mm) tall x 9.0 in. (228.6 mm) wide x 2.0 in. (50.8 mm) deep. SmartStack adds depth.
IC300RCS210	5.75 in. (146.0 mm) tall x 1.75 in. (44.5 mm) wide x 3.88 in. (98.4 mm) deep. SmartStack adds width.
SmartStack	3.13 in. (79.5 mm) tall x 5.75 (146.1 mm) wide x 0.75 in. (19.1 mm) deep.
Display	Backlit LCD with 4.84 mm wide x 9.22 mm high characters.
Agency approvals	UL pending, C-UL pending and CE Mark pending.
Processor	64K of logic memory and 64K of screen memory, 0.7 msec/K scan rate.
CsCAN	Up to 253 OCS devices at a maximum distance of 2000 meters (with 3 repeaters) and network speed from 125 kbaud to 1 mbaud. Supports Peer-to-Peer, Global Data and Data Grams.

## Mini OCS - Controller, Operator Interface and I/O combined

Part Number without CsCAN or DeviceNet Network	Part Number with built-in CsCAN or DeviceNet Network	Description: Mini OCS has 2x20 LCD Display with 16-key tactile feel keypad. Built-in I/O, no expansion. One RS-232 serial port supporting CsCAN and RTU slave. Network is optional.
IC300OCS031*	IC300OCS061*	8 DC in / 8 DC out pos. logic. Refer to IC300DIQ616 for I/O specs.
IC300OCS032*	IC300OCS062*	8 DC in / 8 DC out neg. logic. Refer to IC300DIQ611 for I/O specs.
IC300OCS033*	IC300OCS063*	8 DC in / 8 DC out pos. logic with HSC and PWM/Pulse Train. Refer to IC300HSC601 for I/O specs.
IC300OCS034*	IC300OCS064*	8 DC in / 8 DC out neg. logic with HSC and PWM/Pulse Train. Refer to IC300HSC600 for I/O specs.
IC300OCS035*	IC300OCS065*	8 DC in / 6 Relay out. Refer to IC300DIQ612 for I/O specs.
IC300OCS036*	IC300OCS066*	8 AC in / 8 AC out. Refer to IC300DIQ624 for I/O specs.
IC300OCS037*	IC300OCS067*	8 AC in / 6 Relay out. Refer to IC300DIQ622 for I/O specs.
IC300OCS041*	IC300OCS071*	16 DC in / 12 DC out pos. logic. Refer to IC300DIQ716 for I/O specs.
IC300OCS042*	IC300OCS072*	16 DC in / 12 DC out neg. logic. Refer to IC300DIQ711 for I/O specs.
IC300OCS052*	IC300OCS082*	8 DC in / 8 DC pos. out; 4 Voltage analog in and 2 Voltage analog out. Refer to IC300MIX901 for I/O specs.
IC300OCS053*	IC300OCS083*	8 DC in / 8 DC pos. out; 4 Current analog in and 2 Current analog out. Refer to IC300MIX902 for I/O specs.

## Control Station Main Units

Product Number	Description
IC300OCS100	OCS with 2x20 LCD Display and 16-key tactile feel keypad. Supports up to 4 SmartStack I/O boards, full ladder instruction set and CsCAN networking.
IC300OCS200	OCS with 4x20 LCD Display and 32-key tactile feel keypad. Supports up to 4 SmartStack I/O boards, full ladder instruction set and CsCAN networking.
IC300RCS210	Remote Control Station (OCS without keypad and display). Supports up to 4 SmartStack I/O boards, full ladder instruction set and CsCAN networking.
IC300OCS996	Starter kit includes IC300OCS035 and IC300OSW232.
IC300OCS997	Starter kit includes carrying case, IC300OCS100, IC300DIQ616, IC300OSW232, simulator with 8 switch inputs and 8 output lights, DC supply and startup guide.
IC693CPU500*	Series 90-30 Cscape CPU supports 1,024 I/O. The processor can be programmed the same as the OCS (Operator Control Stations) products over the built-in network that supports CsCAN or DeviceNet Slave.

\* Available 2nd Quarter 1999

## SmartStack Digital Combo Modules

IC300DIQ611	8 DC Inputs (12/24vdc, pos/neg logic), 8 DC Outputs (5/12/24vdc, 0.5A, neg logic with ESCP)
IC300DIQ616	8 DC Inputs (12/24vdc, pos/neg logic), 8 DC Outputs (5/12/24vdc, 0.5A, pos logic with ESCP)
IC300DIQ612	8 DC Inputs (12/24vdc, pos/neg logic), 6 Relay Outputs (4.0A per point isolated)
IC300DIQ711*	16 DC Inputs (12/24vdc), 12 DC Outputs (5/12/24vdc, 0.5A neg. logic with ESCP). Not compatible with RCS210.
IC300DIQ716*	16 DC Inputs (12/24vdc), 12 DC Outputs (5/12/24vdc, 0.5A pos. logic with ESCP). Not compatible with RCS210.
IC300DIQ624	8 AC Inputs (120vac), 8 AC Outputs (80-250vac, 0.3A)
IC300DIQ622*	8 AC Inputs (120vac), 6 Relay Outputs (4.0A per point)

## SmartStack Digital I/O Modules

IC300DIM210	8 DC Inputs (12/24vdc, pos/neg logic)
IC300DQM201	8 DC Outputs (5/12/24vdc, 0.5A, neg logic)
IC300DQM202	8 Relay Outputs (4.0A per point isolated)

## SmartStack Analog Input Modules

IC300ADC020	2 channel Analog Inputs, Current (0-20mA, 4-20mA), 12 bit
IC300ADC120	4 channel Analog Inputs, Current (0-20mA, 4-20mA), 12 bit
IC300ADC010	2 channel Analog Inputs, Voltage (0-5vdc, +/-5vdc, 0-10vdc, +/-10vdc), 12 bit
IC300ADC110	4 channel Analog Inputs, Voltage (0-5vdc, +/-5vdc, 0-10vdc, +/-10vdc), 12 bit
IC300THM000	2 channel Thermocouple Inputs (J, K, T, E), 18 bit and +/- 25mV, +/- 50mV and +/- 100mV millivolt inputs
IC300THM100	4 channel Thermocouple Inputs (J, K, T, E), 18 bit and +/- 25mV, +/- 50mV and +/- 100mV millivolt inputs
IC300RTD000	2 channel RTD Inputs (Pt-100, Pt-200, Pt-500, Pt-1000), 18 bit
IC300RTD100	4 channel RTD Inputs (Pt-100, Pt-200, Pt-500, Pt-1000), 18 bit

## SmartStack Analog Output Modules

IC300DAC002	2 channel Analog Outputs, Current (4-20mA), 14 bit
IC300DAC102	4 channel Analog Outputs, Current (4-20mA), 14 bit
IC300DAC001	2 channel Analog Outputs, Voltage (+/-10vdc), 14 bit
IC300DAC101	4 channel Analog Outputs, Voltage (+/-10vdc), 14 bit

## SmartStack Mixed Analog Modules

IC300MIX111	2 channel Voltage (+/-10vdc) Inputs, 2 channel Voltage (+/-10vdc) Outputs
IC300MIX122	2 channel Current (4-20mA) Inputs, 2 channel Current (4-20mA) Outputs

## SmartStack Specialty Modules

IC300STP100*	Stepper Indexer: Single Axis, supports Pulse Train output and Quadrature or Up/Down input.
IC300ASC100*	ASCII BASIC: Three ports, 64K program memory.
IC300HSC600	High Speed Counter and PWM/Pulse Train: 8 configurable DC inputs (up to 2 counters max. 10MHz each (Single or A QUAD B)) and 8 DC neg. logic outputs with ESCP configurable (up to 2 PWM/Pulse Train 5 MHz each).
IC300HSC601	High Speed Counter and PWM/Pulse Train: 8 configurable DC inputs (up to 2 counters max. 10MHz each (Single or A QUAD B)) and 8 DC pos. logic outputs with ESCP configurable (up to 2 PWM/Pulse Train 5 MHz each).

## SmartStack Mixed Discrete and Analog Module

IC300MIX901*	8 DC Inputs (12/24vdc), 8 DC Outputs (5/12/24vdc, 0.5A pos. logic with ESCP) and 4 channels Analog Inputs, voltage (0-5vdc, +/-5vdc, 0 - 10vdc, +/- 10vdc), 12 bit; 2 channels Analog Outputs, voltage (+/- 10vdc) (Not compatible with RCS210)
IC300MIX902*	8 DC Inputs (12/24vdc), 8 DC Outputs (5/12/24vdc, 0.5A pos. logic with ESCP) and 4 channels Analog Inputs, current (0-20ma, 4-20ma), 12 bit; 2 channels Analog Outputs, voltage (4-20ma) (Not compatible with RCS210)

## Series 90-30 CsCAN Interface

IC693CDC200	Series 90-30 CsCAN interface module. One CsCAN port and one programming port for network devices.
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## CsCAN PC Interface

IC320CGM500	ISA CsCAN Interface Board
IC320CGM510	OPC Server for CsCAN (requires IC320CGM500)

## Operator Control Station Development Software

IC300OSW232	Cscape programming software (CD ROM), RS-232 programming cable, and complete software/hardware documentation.
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# Color-Touch OCS300

## New Color-Touch OCS300 Series

The OCS300 series adds Color-Touchscreen capability to the OCS product line and introduces a new I/O system that expands the number of I/O by allowing SmartStack I/O to be mounted remotely from the display.

The OCS (Operator Control Station™) combines a logic controller, operator interface, network and I/O in a highly integrated package. The OCS reduces installation cost, development time, and hardware with its simplistic design. The OCS300 adds Color-Touchscreen capability to the OCS product line that already includes a family of text and graphic displays. Its dual-processor design offers high-speed performance for both control and operator interface functionality, unlike competitive units that must sacrifice one or the other. The operator interface featured on the OCS300 series is a quarter VGA (320x240) color LCD display (STN or TFT), with a resistive 5.7" touchscreen with one dedicated and five configurable function buttons. This combination offers the advantages of both a touchscreen and a function key based unit. The OCS300 series is programmed with the Windows® based Cscape programming software. Cscape combines ladder logic programming along with the graphical operator interface development system.



OCS300

Powerful  
Controller

High Performance  
Graphical Display

Single  
Programming  
Software

## New I/O System Offers Expansion and Remote Mounting

The OCS300 series will accommodate up to 20 SmartStack modules through an innovative local I/O expansion system, and there are over 40 SmartStack I/O modules to select from. The SmartStack modules can be safely mounted a short distance from the display using expansion bases and inexpensive dual fiber optic cables. Using the same technology employed by residential audio systems like CD and DVD players, the OCS300's plastic fiber optic cables not only keep the cost of the unit down, but also make it easier for the OEM or end user to obtain additional cables, as they can be found in most consumer hardware and electronics stores. All SmartStack modules can be safely mounted 10 meters from the OCS300 display using this expansion system and dual plastic fiber optic cables. With this new I/O system, the OCS300 can support over 1,000 I/O points.

## Features & Benefits:

- Dual processors, one for logic and one for screen update, result in a high performance package (0.7mS/K logic scan time) - improved performance over conventional systems.
- Five configurable function keys and touchscreen capability
- 320x240 pixel graphics with STN (passive) or TFT (active) 5.7" LCD display.
- Up to 20 SmartStack modules and I/O can be remotely mounted from the display.
- SmartStack I/O is supported through a Toslink Plastic Fiber Optic Connection. Up to 5 Fiber-linked I/O bases are supported. Each base supports up to 4 SmartStack modules.
- I/O may be remotely mounted from the Display/Controller, up to 10m per segment or 30m total.
- Fully compatible with Cscape programming software. Cscape is a 32-bit Windows application which configures all system elements of control, I/O, graphics, and networking.



# Specifications

## Display

Type	320x240 LCD with backlight. TFT and STN models available
Screen dimensions	4.6"W x 3.5"H (117x 88mm)

## Controller

Logic Scan Time	0.7mS/K of Logic
Memory	32K Register 256K Ladder 2M Display
I/O Models Available	40+ SmartStack I/O Modules
Maximum I/O	2048 Digital Inputs 2048 Digital Outputs 512 Analog Inputs 512 Analog Outputs
Instructions	Contacts, Coils, Timers, Counters, Math, PID with Auto-tuning option, Serial Read/Write, Floating Point Math, Motion Commands, Data Conversions, Data Moves, Scaling, Modem Commands, Subroutines, and more

## Graphics Supported

User tools	- Editable Graphics	- Pilot Lights	- Trending	- Data Display
Formats	- Animated Bitmaps	- Bar Graphs	- Symbol Library	
	- Editable Fonts	- Drawing Tools	- Pushbuttons	- Selectors
		- Alarms	- Sliders	
Number of Pages	300 screens (50 data fields per screen)			

## User Keys and Touchscreen

Function Keys	5 (plus System Key)
Touchscreen	Resistive Analog 1024W x 1024H
Life	Greater than 1 million operations

## Communications

Serial Ports	(2) RS-232/RS-485 (RJ-45) (1) RS-232/RS-422 (DB-25)
Network Ports	(1) CAN (DeviceNet slave or CsCAN peer)
Protocols Supported	Serial ports - CsCAN, Modbus Master, Modbus Slave, and ASCII Read and Write, Modem CAN port - CsCAN (up to 253 drops) or DeviceNet Slave (Explicit Messaging, Polled Connection, Polled Snooping)
Communication Option	On-board Ethernet 10BaseT (optional) supports TCP/IP with EGD and SRTIP
Expansion I/O	Toslink Plastic Fiber Pair, 10m per segment, 30m max

## DC Power Source

Primary Power	24VDC (+/-10%), 450mA at 24vdc, Inrush Current 2A for 3mS.
CAN Power Range	12-25VDC @ 75mA maximum
I/O Power	10-30vdc, 1.0A max at 24vdc

## Dimensions

OCS	Outside Dimensions	7.2"W x 5.5"H x 3"D (183x139x76mm)
	Cut Out	6.9"W x 5.16"H (174x131mm)
I/O Base		6.625"W x 4.25"H x 1.5"D (168.3 x 1089 x 381mm) Add 0.8" (20.3mm) per SmartStack module

## Environmental Conditions

Operating Temperature	0 to +50 Degrees C
Humidity	5% to 95% non-condensing
NEMA Rating	12, 4, 4X
Agency Approvals	CE, UL & C-UL; Class I, Div. II

## Part Number

## Description

HE500OCS300*	Color-Touch OCS with STN Display
HE500OCS301*	Color-Touch OCS with STN Display and onboard Ethernet 10BaseT
HE500OCS350*	Color-Touch OCS with TFT Display
HE500OCS351*	Color-Touch OCS with TFT Display and onboard Ethernet 10BaseT
HE800FOX104	Expansion I/O Base. Supports 4 SmartStack I/O Modules
HE800FOX404	Expansion Base/Hub. Supports 4 SmartStack I/O Modules plus 4 additional I/O Bases

\*Two 2.0m cables included with Display. For systems with more than one FOX base, order cables separately.

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Lots of I/O  
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Fieldbus  
Network

Optional  
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Communication



Fox Base with SmartStacks



20 Years of Innovation



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