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Find the *GE Fanuc IC200UDR140-AA* at our website: *Click HERE*

GE FANUC

# GE Fanuc Automation

# VersaMax™ Nano & Micro Controller Solutions




***Powerful controls that are big on performance and small in size***

VersaMax™

*The new generation of control*

www.gefanuc.com

# Introducing VersaMax Nano & Micro Controllers

## VersaMax Nano

The palm-sized VersaMax Nano PLC is highly compact, with an all-in-one construction that saves panel space. Plus it's very easy to apply: snap it onto a DIN rail or mount it on a panel.

## VersaMax Micro

Don't let the size fool you. This Micro PLC is big on features, from up to 28 I/O (expandable to 84 I/O) points to fast cycle times, robust instruction set, and generous memory to allow more flexible programming. And it's all packaged in a sturdy modular design for easy access and long-term durability.



# A Powerful Nano PLC

The VersaMax Nano PLC is ideal for high-volume applications where cost, space, and fast processor speeds are all issues. The low-cost Nano PLC gives you more capabilities in a smaller, less expensive package, so you save in initial costs.

Then you'll save even more in life-cycle costs—from fast, easy installation to long-term reliability.




***VersaMax Nano***

## Features

- 2K words of memory
- 1.2 µ sec. Per Boolean Operation Execution
- 6 inputs and 4 outputs
- Compact—75mm x 80mm x 47mm
- Powerful Instructions
  - PID
  - Floating Point Math
  - Subroutines
  - Serial Read/Write Commands
- Supports up to 2 High Speed counters (10 kHz)
- Three PWM/Pulse Train Outputs (5 kHz)



## Quick Mounting

- Snap onto DIN rail
- Screw into panel



# A Versatile Micro PLC




*28 point VersaMax Micro*

If you need powerful control without the need for high-end systems, then the VersaMax Micro PLC is ideal. We cut the size, but not the functionality to give you a big-featured PLC in a compact package. The all-in-one PLC gives you everything you need to control a wide variety of applications. And you can easily expand the number of I/O to suit your needs.

Dollar for dollar, feature for feature, the VersaMax Micro PLC gives more value, more power, and more flexibility in control applications than traditional controls.

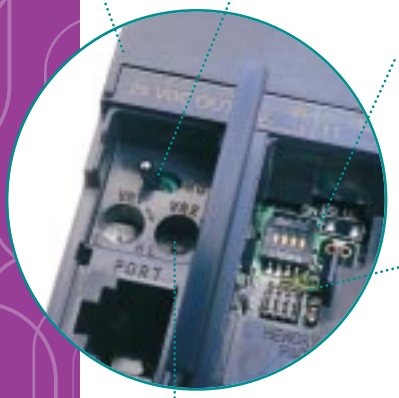
The VersaMax Micro is available in either 14 point or 28 point and both can be expanded to meet your needs.



### Expansion Port

- Up to four Expansion I/O modules can be added
- Expand up to 84 I/O with 28 point micro and 70 I/O using the 14 point micro

### Stop/Run/Memory Protect Switch



### Options

- Battery backup for data, memory and real-time clock

### Powerful Processor

- 9K words of memory
- 1.0 µsec. Per Boolean Operation Execution
- Floating-point math
- Real-time clock
- PID
- Motion capability
- High-speed counters (4)
- Subroutines

### Set Point Adjustment

- Two analog inputs for adjusting set points




*14 point VersaMax Micro*



14 point VersaMax Micro

.1, .5 or 1 meter cable
(total length is 2 meters)



Up to 4 additional
expansion units



28 point VersaMax Micro

# Powerful CPUs and Expansion Units

| Feature | Nano PLCs | | Micro PLCs | | | | | | | | | Expansion Units | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Part # IC200 | NDR001 | NDD101 | UDR001 | UDR002 | UDD104 | UAA003 | UAL006 | UDR005 | UDR010 | UDD110 | UAA007 | UEX011 | UEX012 | UEX014 |
| Total Discrete Points | 10 | 10 | 14* | 14* | 14* | 14* | 23* | 28* | 28* | 28* | 28* | 14 | 14 | 14 |
| DC Power Supply | ✓ | ✓ | | ✓ | ✓ | | | | ✓ | ✓ | | | ✓ | ✓ |
| AC Power Supply | | | ✓ | | | ✓ | ✓ | ✓ | | | ✓ | ✓ | | |
| DC Power for inputs and field devices | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| DC Inputs | 6 | 6 | 8 | 8 | 8 | | 13 | 16 | 16 | 16 | | 8 | 8 | 8 |
| AC Inputs | | | | | | 8 | | | | | 16 | | | |
| Analog Inputs | | | | | | | 2 | | | | | | | |
| Relay Outputs | 4 | | 6 | 6 | | | 9 | 11 | 11 | | | 6 | 6 | |
| DC Outputs | | 4 | | | 6 | | 1 | 1 | 1 | 12 | | | | 6 |
| AC Outputs | | | | | | 6 | | | | | 12 | | | |
| Analog Outputs | | | | | | | 1 | | | | | | | |
| High Speed Counters | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | |
| Pulsed Outputs | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | |
| Serial Ports | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | | | |

*Can be expanded to a total of 4 expansion units.

# Communications Options

The VersaMax Micro and Nano have various communications options to meet your control needs. Each unit has an RS-232 port that can be used for SNP Slave, Modbus RTU Slave or Serial In/Out commands. The second port on the 23 point and 28 point micro is an RS-485 port that supports SNP Slave, SNP Master, Modbus RTU Slave and Serial In/Out commands. Modems can easily be attached to either port. With the Serial I/O commands you can interface to devices such as pagers, intelligent scales, bar code readers and printers.

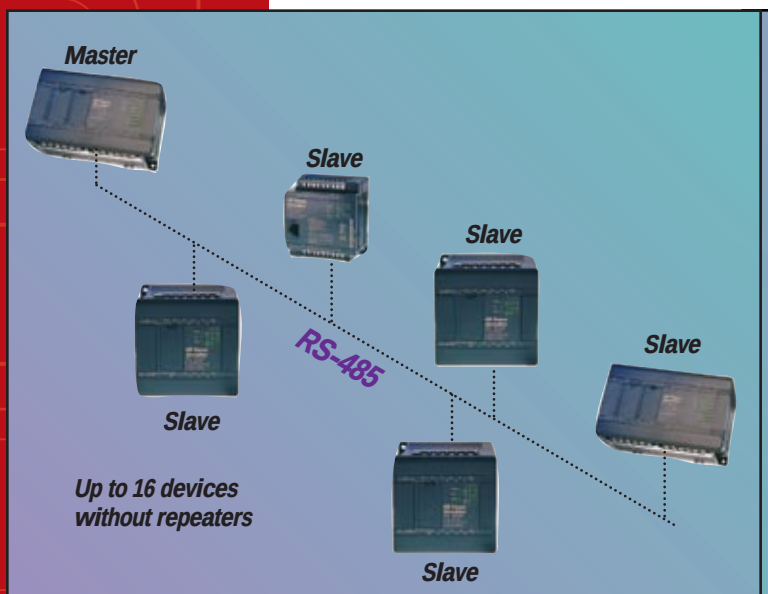
## Serial Port Applications

- Computer
- Printer
- Modem
- Pager
- Bar Code Reader
- Intelligent Scales
- ASCII Devices
- Operator Interfaces
- SCADA
- Master/Slave

## Serial I/O can be used to

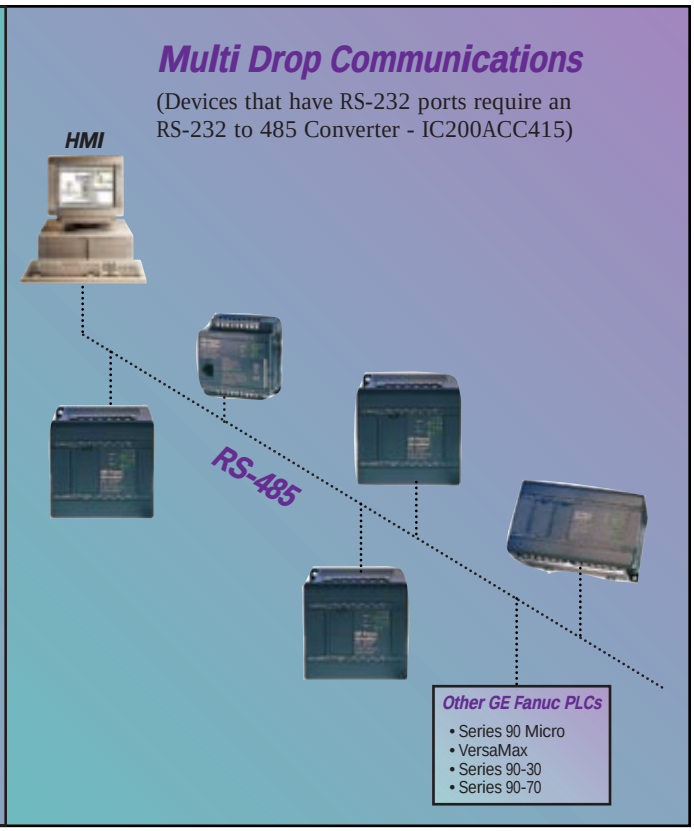
- Initialize either port
- Set up the size of the received data buffer
- Flush the received data buffer
- Read the port status
- Activate/deactivate RTS on the serial port
- Cancel an operation
- Automatically dial a modem and send a specified byte string
- Send up to 250 characters from word memory to a remote device through the specified port
- Read one or more received characters from an internal input buffer




### Master/Slave Communications

(Slaves that have RS-232 ports require an RS-232 to 485 Converter - IC200ACC415)




### Multi Drop Communications

(Devices that have RS-232 ports require an RS-232 to 485 Converter - IC200ACC415)

# Motion Options

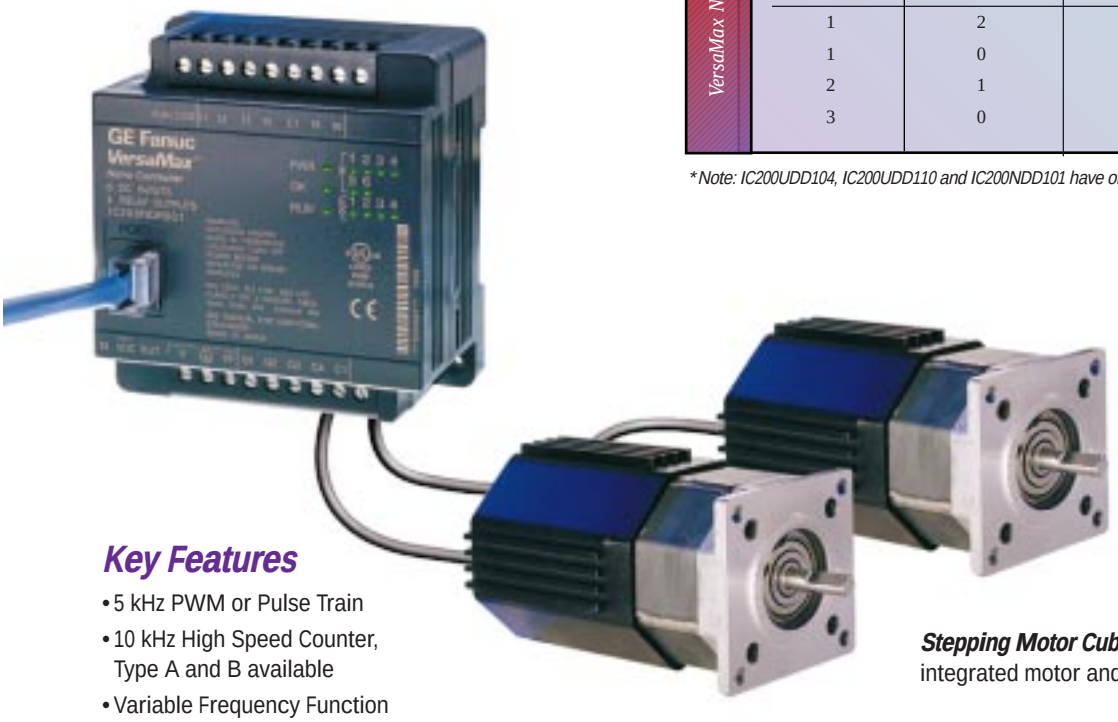
The VersaMax Micro and Nano are ideal for low end motion applications. Both products can be used with either a PWM or a Pulse Train device. There are up to 4 PWM/Pulse Train outputs available. In addition, the VersaMax Micro and Nano come with built-in High Speed counters that can be used in either Type A (Up or Down, Independent Pulse) or Type B (Both Directions, A QUAD B Encoder Inputs) configuration.

GE Fanuc also offers a wide range of Servo and Stepper motors and amplifiers for your motion application. The new Stepping Motor Cube provides a cost effective integrated motor and amplifier solution. The Power Cube motor drive package provides a cost effective solution for OEM stepping motor applications in a rugged and easy to install package. For more information refer to catalog GFW-3025.

| Voltage Specifications | | |
|---|---|---|
| **DC Inputs** | 24 VDC Sink/Source | All DC Input Models |
| **DC Outputs** | 5/12/24 VDC Source | IC200UDR005<br>IC200UDR010<br>IC200UAL006 |
| **DC Outputs** | 12/24 VDC Source | IC200UDD104<br>IC200UDD110<br>IC200NDD101 |

| | Maximum Amount | | |
|---|---|---|---|
| *VersaMax Micro *(see note below)* | **Number of PWM/Pulse** | **Number of Type A Counters** | **Number of Type B Counters** |
| | 1 | 3 | 0 |
| | 1 | 0 | 1 |
| | 2 | 2 | 0 |
| | 3 | 1 | 0 |
| | 4 | 0 | 0 |
| *VersaMax Nano* | **Number of PWM/Pulse** | **Number of Type A Counters** | **Number of Type B Counters** |
| | 1 | 2 | 0 |
| | 1 | 0 | 1 |
| | 2 | 1 | 0 |
| | 3 | 0 | 0 |

*Note: IC200UDD104, IC200UDD110 and IC200NDD101 have only 1 DC output




## Key Features

- 5 kHz PWM or Pulse Train
- 10 kHz High Speed Counter, Type A and B available
- Variable Frequency Function
- Multi-step Ramping

***Stepping Motor Cube —*** integrated motor and amplifier



## Material Handling

- Pick and Place
- Conveying
- Accumulating
- Assembly



## Packaging

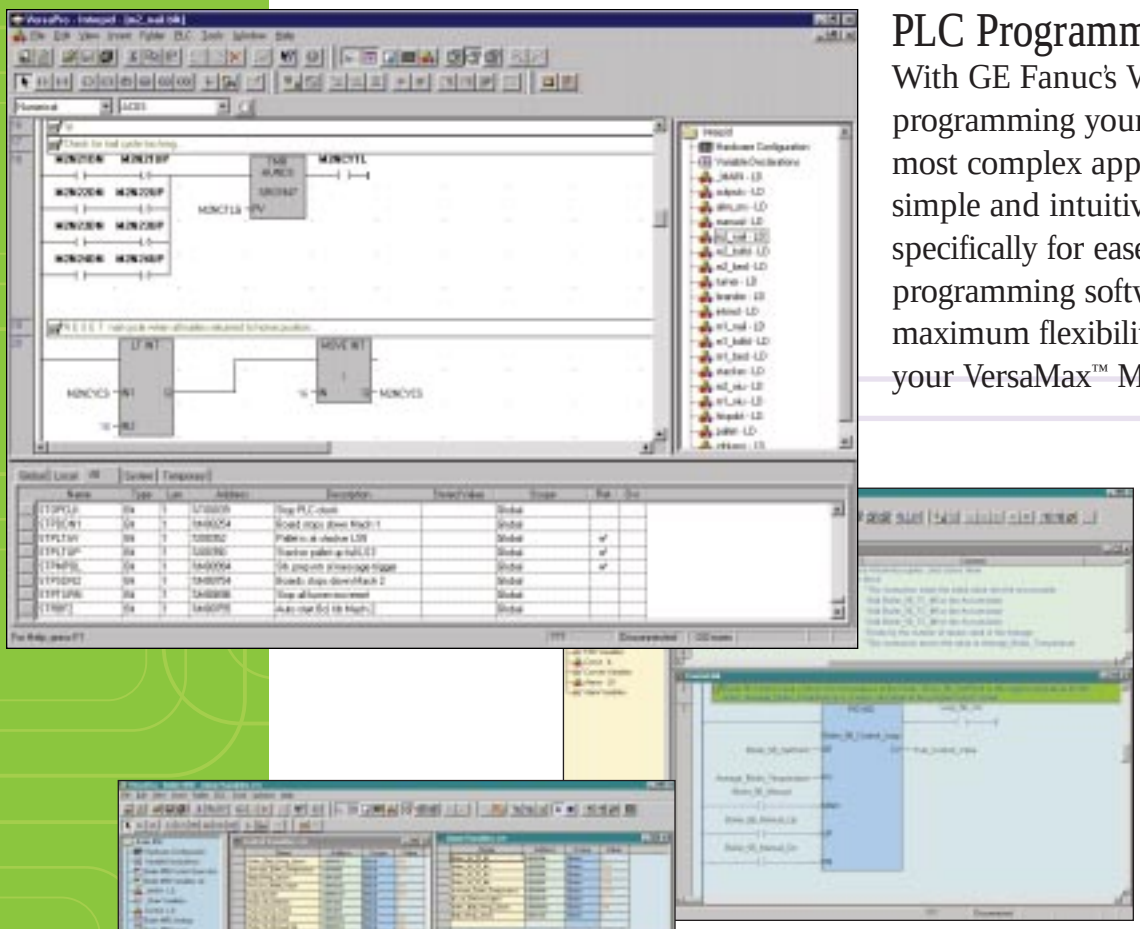
- Wrapping
- Lane diverting
- Milk cartoning
- Dispensing
- Labeling
- Gluing



## Converting

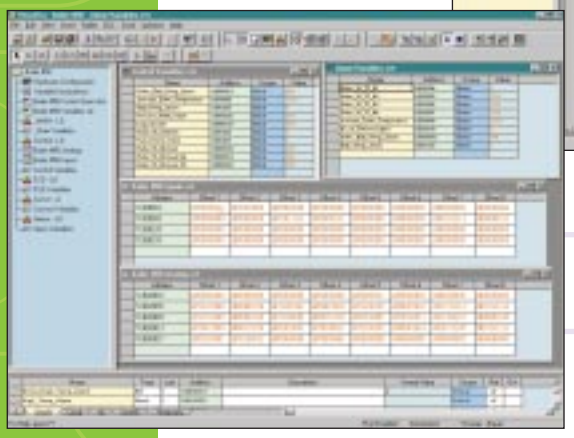
- Fabric winding
- Laminating
- Folding
- Printing press
- Fabric silk screen
- Slitting
- Winding

# VersaPro™ Programming Software



## PLC Programming Made Easy

With GE Fanuc's VersaPro Software, programming your PLC for even the most complex applications is now a simple and intuitive process. Designed specifically for ease-of-use, VersaPro programming software gives you maximum flexibility for programming your VersaMax™ Micro and Nano PLCs.



### *Award-winning VersaPro Allows You to*

- Install and run under Windows® 95, 98 and Windows NT® 4.0
- Import your existing LogicMaster™ programs to get the most from your programming investment
- Mix programming languages within an application using both Relay Ladder Diagram (RLD) and Instruction List (IL)
- Convert a program block from RLD to IL and vice-versa
- Take advantage of PC-based programming to integrate documents created in other programs

### *View Tables*

- Develop and save custom view tables to monitor key information in a format that allows you to troubleshoot quickly and easily
- Build mixed reference tables to monitor several PC references in the same window

### *On-line Monitoring and Control*

- Use the reference tables you create to monitor, maintain and update your variables in real time without any PLC downtime
- View PLC and I/O system fault tables on demand
- Connect to your PLCs using serial communications for direct access

# VersaPro Toolbars are Designed to Save You Time

Everything you need to start VersaPro, configure your PLC, write logic in RLD or IL, store the program to a PLC and monitor the program can be found in a VersaPro toolbar—no pull-down menu is required.

VersaPro provides you the flexibility to use both a graphical Relay Ladder Diagram (RLD) editor and a text based Instruction List (IL) editor as you create your application programs. Some tasks are inherently easier to create, debug and troubleshoot in a graphical format, while other tasks are more easily created or represented in a text based editor.

## Programming

- Use both RLD and IL Language Editors to suit your programming needs
- Import your existing LogicMaster and Control programs to get your PLCs up and running even faster
- Use simple variable programming to quickly create programs that are easy to understand and troubleshoot
- Increase your productivity with powerful grid-based editors that support cut, copy, paste, and drag-and drop functions
- Reduce keystrokes and the chance of errors when entering Logic with intuitive, context-sensitive editors

## Hardware Configuration

- Save time with drag-and-drop graphical configuration tools
- View your hardware mapping with automatically built reference tables

## Relay Ladder Diagram

- Provides an easy to read graphical format for creating Sequential Logic or Interlocking Boolean Logic
- Easily understood by technicians and maintenance personnel
- On-line display of information makes this editor a powerful troubleshooting tool
- A structured programming environment provides the capability to call subroutines written in IL or RLD
- Programs written in RLD can be converted to IL if desired

## Instruction List

- Mathematical calculations, comparison and conversion operations are easily created and represented in the VersaPro IL editor
- Program blocks can be created in other programs like Microsoft® Word or Excel and easily imported into the VersaPro IL editor
- The IL editor allows the programmer to provide documentation on each instruction entered in Logic to improve program readability
- On-line documentation displays the value of every variable to aid in troubleshooting
- Program blocks written in IL can be converted to RLD if desired

## Instruction Set

### Bit Operation Functions

Logic AND, Logical OR
Exclusive OR, Logical Invert (NOT)
Shift Right/Shift Left
Rotate Right/Rotate Left
Bit Test
Bit Set, Bit Clear
Masked Compare
Bit Position
Bit Sequencer

### Control Functions

Do I/O
Call
End
Subroutines
Comment
Master Control Relay
Service Request
PID

### Data Move Functions

Move
Block Move
Block Clear
Shift Register
Communication Request
  Motion Moves
  High Speed Counter
  Serial Read/Write

### Data Type Conversion Functions

Convert to BCD-4
Convert to Signed Integer
Convert to Double Precision Signed Integer
Convert to Real
Convert Real to Word
Truncate Real Number

### Math and Numerical Functions

Add, Subtract, Multiply Divide
Modulo Division
Scaling
Square Root
Trigonometric Functions
Logarithmic/Exponential Functions
Convert Radians/Degrees

### Relation Functions

Equal
Not Equal
Greater Than
Less Than
Greater or Equal
Less or Equal
Range

### Relay Functions

Contacts, Coils
Fault and No Fault Contacts
Alarm Contacts

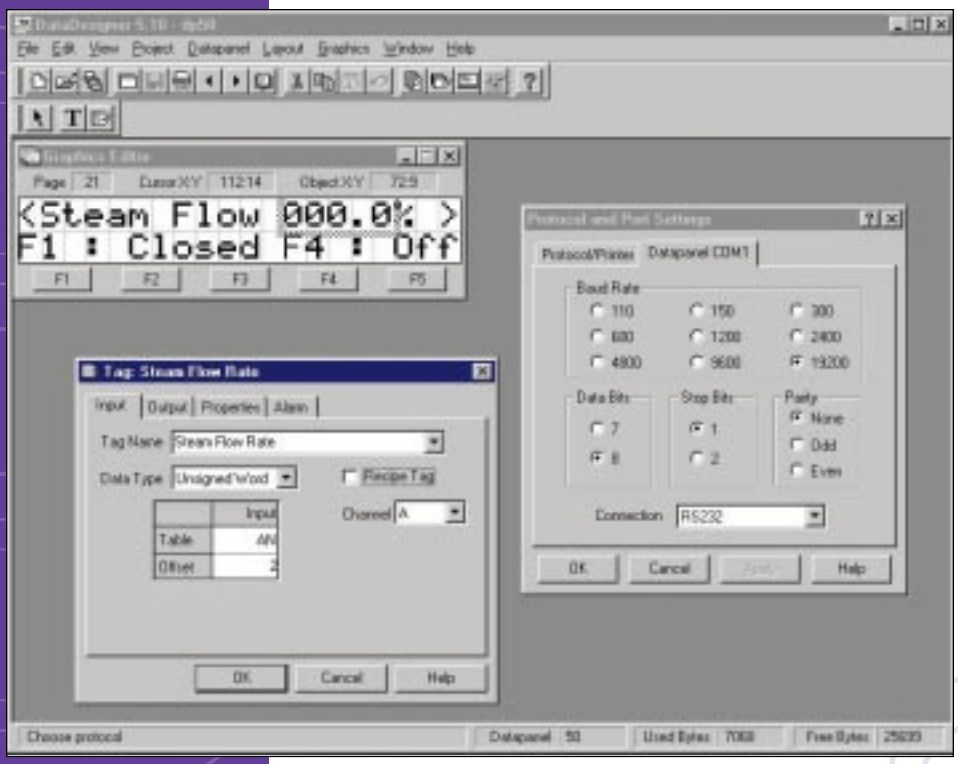
### Table Functions

Array Move
Search

### Timer and Counter Functions

Time-tick Contacts
On Delay Stopwatch Timer
On Delay Timer
Off Delay Timer
Up Counter
Down Counter

# Operator Interface Options




*DataDesigner Software enables you to design your text messages quickly using simple dialog prompts.*

GE Fanuc VersaMax DataPanels are ideal for a broad range of applications ranging from a simpleTimer/ Counter/Register Access to full text message display with numeric keypad. All of the VersaMax DataPanels are preprogrammed to quickly connect to a VersaMax Micro or Nano without user configuration. The VersaMax DataPanels are cost effective solutions.

## Key Features:

- Programmable function/numeric keys
- Up to 200 messages
- Navigation and edit keys
- Programmable LEDs
- Alarm, recipes, and menu support
- VersaMax Micro and Nano ready

## Specifications

| Model | DP20 | DP45 | DP65 | DP85 |
|---|---|---|---|---|
| Part Number | IC200DTX200 | IC200DTX450 | IC200DTX650 | IC200DTX850 |
| Dimensions– Width x Height x Depth (mm) | 108 x 60 x 30 | 110 x 60 x 60 | 96 x 96 x 50 | 182 x 101 x 37 |
| Cut Out–Width x Height (mm) | 92 x 45 | 92 x 45 | 92 x 92 | 158 x 74 |
| Characters Per Line and Number of Lines | 16 x 2 | 16 x 2 | 16 x 4 | 20 x 4 |
| Display Type | LCD Display with LED Backlight | | | |
| Function Keys | 0 | 6 | 8 | 8 |
| Numeric Keypad | No | No | Yes | Yes |
| Operating Temperature | 0-50C | | | |
| Powered by Serial Cable from PLC | Yes | No | No | No |
| Serial Port | RS-232 | | | |
| Power Requirements | 5 V @ 100 ma | 24 V @ 40 ma | 24 V @ 80 ma | 24 V @ 50 ma |
| Agency | UL, Class 1 Div 2, FCC and CE | | | |
| NEMA Rating | NEMA 4 | | | |
| Memory Size (Number of Messages) | N/A | 200 | 200 | 200 |
| Programming Software | DataDesigner Part # IC752DDZ000 | | | |




***DP 20***

Quickly change timer/counter and register values

***Alarm messages and information messages can be sent from the controller to the DP 20 using the Serial Write command.***




***DP 45***

- 6 function keys
- Stores 200 messages
- 2 line display

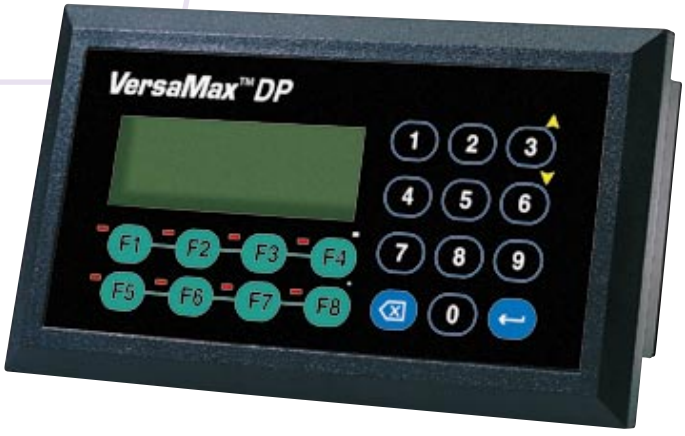


***VersaMax Micro***




***DP 65***

- 8 function keys
- Stores 200 messages
- 4 line display




***DP 85***

- 8 function keys and data entry keypad
- Stores 200 messages
- 4 line display

# Signal Conditioning Options

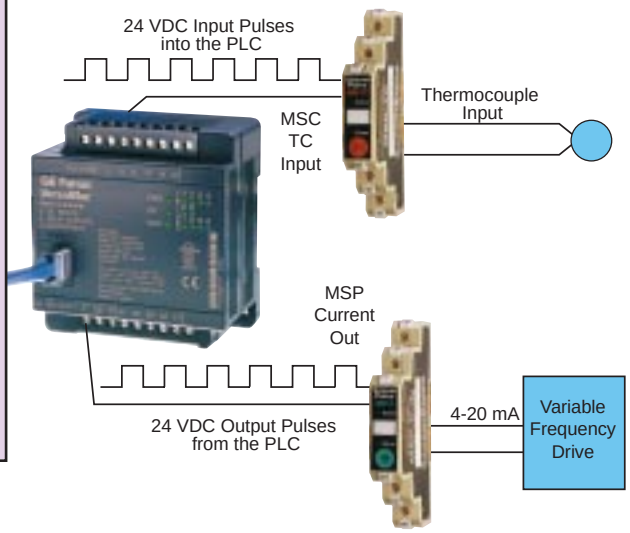
If your application requires additional analog I/O such as current inputs/ outputs, voltage inputs/outputs, RTD, Thermocouple or potentiometer, the line of SensorPulse signal conditioners is the solution. The MSP family of single channel analog I/O modules permits most analog sensors or actuators to be used with the VersaMax Micro and Nano. Each MSP model supports one analog signal type and provides one interface channel with the PLC.

A small ladder logic program is provided to convert the pulse string to and from the MSP and stored in registers for your control program. The MSP modules come from the factory pre-configured and may be reconfigured using SignalFlex™ configuration software.

| Part Number | Description |
|---|---|
| ***Analog Inputs*** | |
| 11-1000-10 | 4 - 20 mA |
| 11-1001-10 | 0 - 20 mA |
| 11-2000-10 | 0 - 10 VDC |
| 11-2001-10 | 0 - 5 VDC |
| ***Thermocouple Input*** | |
| 11-3004-10 | Type J -200 to 760 C (-328 to 1400 F) |
| 11-3005-10 | Type K -200 to 1370 C (-328 to 2498 F) |
| 11-3006-10 | Type N -200 to 1300 C (-328 to 2372 F) |
| 11-3007-10 | Type T -200 to 400 C (-328 to 752 F) |
| 11-3008-10 | Type E -200 to 1000 C (-328 to 1832 F) |
| 11-3009-10 | Type S 0 to 1768 C (32 to 3214 F) |
| ***RTD Input*** | |
| 11-4000-10 | PT100 0,00385 -200 to 850 C (-328 to 1562 F) |
| 11-4002-10 | PT100 0,00385 -50 to 200 C (-58 to 392 F) |
| 11-4003-10 | PT100 0,00392 -200 to 850 C (-328 to 1562 F) |
| 11-4004-10 | NI120 -80 to 200 (-112 to 392 F) |
| ***Analog Out*** | |
| 11-7000-10 | 4 - 20 mA |
| 11-7001.10 | 0 - 20 mA |
| 11-8000-10 | 0 - 10 VDC |
| 11-8001-10 | 0 - 5 VDC |
| ***Power Supply*** | |
| 30-1004-10 | 24 VDC, 170 mA output; 85 – 250 VAC, 50/60 Hz input |
| ***Configuration Tool*** | |
| 12-1000-10 | SignalFlex isolated configuration cable and software |

## *General Specifications:*

- Input power 15 to 32 VDC
- Output voltage from MSP to PLC is 24 VDC
- Input voltage from PLC to MSP is 24 VDC
- Update Speed 0.1 to 0.5 seconds depending on PLC scan rate
- Operating Temperature: -40 to +85ºC
- Mounting: 32 x 35 mm DIN & G rail
- Dimensions: 75 mm H x 12.2 mm W x 60 mm D
- Diagnostics LEDs: Active and Alarm
- Input and Output voltage to PLC is 24 VDC
- Accuracy: +/- 0.05% of Full Scale
- Thermal stability: 0.01% Full Scale/ ºC



# General Specifications

| General Specifications | VersaMax Micro | VersaMax Nano |
|---|---|---|
| ***Controller*** | | |
| Processor | Hitachi Super H Processor Operating at 28.0 MHz | |
| Execution Time (Per Boolean Operation) | 1.0 µsec | 1.2 µsec |
| Program Storage | Flash (Battery Backed RAM on 23 and 28 point Micros with battery option) | |
| User Program Logic Memory | 9K Words | 2K Words |
| Real Time Clock | Yes on 23 and 28 point micro | No |
| Flash Memory | 1 Meg | 512K |
| Physical I/O Maximum | 84 I/O for 28 point with Expansion<br>79 I/O for 23 point with Expansion<br>70 I/O for 14 point with Expansion | 10 I/O no expansion |
| ***I/O and Register Addressing*** | | |
| Discrete Inputs | 512 bits (%I001 to %I512) | |
| Discrete Outputs | 512 bits (%Q001 to %Q512) | |
| Discrete Global References | 1280 bits (%G001 to %G1280) | |
| Discrete Internal Coils (Battery Backed) | 1024 bits (%M001 to %M1024) | |
| Discrete Temporary Coils | 256 bits (%T001 to %T256) | |
| Status Bits | 128 bits (%S001 to %SC0032) | |
| Registers | 2K words (%R001 to %R2048) | 512 words (%R001 to %R512) |
| Analog and High Speed Counter Inputs | 128 Words (%AI001 to %AI0128) | |
| Analog Outputs | 128 Words (%AQ001 to %AQ0128) | |
| System Registers | 16 Words (%SR001 to %SR0016) | |
| Timers/Counters | 682 Maximum | 170 Maximum |
| ***Memory Retention*** (typical at 25° C) | | |
| Temporary Memory Data Retention (SuperCap) | 3 Days for 14 point<br>30 Minutes 28/23 point | Not Available |
| Battery Back-up Option (23 point and 28 point Micro's only) | 2 months Retention | Not Available |
| ***Motion Control*** | | |
| High Speed Counter– Type A and B | 10 kHz (Maximum of 4) | 10 kHz (Maximum of 2) |
| PWM/Pulse Train (DC Outputs only) | 5 kHz (Maximum of 4) | 5 kHz (Maximum of 3) |
| ***Communications*** | | |
| Serial Ports | (1) RS-232 on 14 point<br>(1) RS-232 and (1) RS-485 on 23 and 28 point micro | (1) RS-232 |
| Protocols | SNP, SNP X, and Modbus Slave ( 2 and 4 wire RTU Slave) | |
| Master/Slave | Slave on port 1 and Master/Slave on second port of 23 and 28 point micro | Slave only |
| Modem Compatible | Yes | |
| Multi-drop | Yes. RS-232 to RS-485 converter available for port 1 (IC200ACC415 RS-232 to RS-485 Converter) | |
| Serial Read and Write command support | Yes | |
| Serial port connector type | Port 1—RJ-45 (8 pin)<br>Port 2—DB-15 on 23 and 28 point Micros | |
| ***Hardware Specifications*** | | |
| Run/Stop Switch | Yes | Yes using external switch on input terminal |
| Removable I/O Terminal Strips | Yes | No |
| Mounting | 35mm DIN Rail or Panel Mount | |
| Dimensions (W/H/D) | 14 point and Expansion units— 95mm x 90mm x 76mm<br>23/28 point—150mm x 90mm x 76mm | 75mm x 80mm x 47mm |

# Specifications

## Power Supply and I/0 Specifications

| | |
|---|---|
| ***AC Power Supply*** | ***100 to 240 VAC, 50/60 Hz*** |
| Voltage Range | 85 to 264 VAC |
| Frequency | 50 -5% to 60 +5% Hz |
| Hold-Up | 20 ms at 100 VAC |
| Inrush Currents | 15 A maximum at 100 VAC<br>40 A maximum at 200 VAC |
| Input Current | 0.2 A typical at 100 VAC<br>0.1 A typical at 200 VAC |
| Input Power Supply Rating | 35 VA |
| 24 VDC User Power | 200 ma |
| ***DC Power Supply*** | ***24 VDC*** |
| Voltage Range | 19.2 VDC to 30 VDC |
| Hold up | 10 m sec. |
| Input Power | 8 watts internal + 5 watts out<br>to user 24 VDC out |

| ***24 VDC Inputs*** | ***24 VDC (Pos./Neg.)*** |
|---|---|
| Voltage Range | 0 to 30 volts DC |
| Input Current | 7.5 mA typical |
| Input Resistance | 2.8 Kohms |
| Input Threshold Voltage ON<br>OFF | 15 V minimum<br>5 V maximum |
| Input Threshold Current ON<br>OFF | 4.5 mA maximum<br>1.5 mA minimum |
| Inrush Current | 1.4 A typical at 24 VDC |
| Response Time | 0.5 to 20 ms configurable<br>as regular input |
| ***24 VDC Outputs–Low Current*** | ***24 VDC/12 VDC/5 VDC (Pos.)*** |
| Voltage Range | 24 VDC, +20%, -79% |
| Maximum Pilot Duty Rating | 0.75 A at 24 VDC |
| Maximum Resistive Load Rating | 0.75 A at 24 VDC<br>0.5 A at 12 VDC<br>0.25 A at 5 VDC |
| Output Voltage Drop | 0.3 VDC maximum |
| Response ON<br>OFF | 0.1 ms maximum (24 VDC, 0.2 A)<br>0.1 ms maximum (24 VDC, 0.2 A) |
| OFF State Leakage | 0.1 mA maximum |
| ***24 VDC Outputs–High Current*** | ***24 VDC (Pos.)<br>IC200UDD104/110 Units Only*** |
| Voltage Range | 24 VDC, +10%, -57% |
| Maximum Load | 1 A per point (Q1–Q2) at 100% ON duration<br>0.5A per point (Q3–Q6) at 100% ON duration plus additional for IC200UDD110: 0.5 A per point (Q7–Q10) at 100% ON duration 1.0 A per point (Q11–Q12) at 100% ON duration |
| Maximum Inrush Current | 8 A of 20 ms, 1 pulse (1 A outputs)<br>4 A of 20 ms, 1 pulse (1 A outputs) |
| Output Voltage Drop | 0.3 V maximum |
| Response ON<br>OFF | 0.1 ms maximum (24 VDC, 0.2 A)<br>0.1 ms maximum (24 VDC, 0.2 A) |
| OFF state leakage | 100 mA maximum |

| ***AC Inputs*** | ***120 VAC*** |
|---|---|
| Voltage Range | 85–132 VAC, 50 -5% to 60 +5% Hz |
| Maximum Input Voltage | 132 V rms, 50/60 Hz |
| Input Current | 7 mA rms, (100 VAC, 60 Hz) |
| Voltage ON<br>OFF | Minimum 80 V rms, 4.5 mA rms<br>Maximum 30 V rms, 2 mA rms |
| Response ON<br>OFF | 25 ms maximum<br>30 ms maximum |
| OFF State Leakage | 0.1 mA maximum |
| ***AC Outputs*** | ***120 VAC/240 VAC*** |
| Voltage Range | 100 -15% to 240 +10% VAC, 50 -5% to 60 +5% Hz |
| Maximum Resistive Load Current | 14 point–0.5 A/point (0.6 A max.. on COM 1; 1.2 A max. on COM 2)<br>28 point–0.5 A/point (0.6 A max. on COM 1 and COM 3; 1.2 A max. on COM 2 and COM 4) |
| Maximum Inrush Current | 5 A (1 period)/point<br>10 A (1 period)/common |
| Maximum Voltage Drop When ON | 1.5 V rms |
| Maximum Leak Current when OFF | 1.8 mA rms (115 VAC)<br>3.5 mA rms (230 VAC) |
| Response Time OFF to ON<br>ON to OFF | Maximum 1 ms<br>Maximum 1 ms + 1/2 Cycle Period |
| ***Relay Outputs*** | ***5 to 30 VDC 5 to 250 VAC*** |
| Operating Voltage | 5 to 30 VDC and 5 to 250 VAC |
| Leakage Current | 15 mA |
| Maximum Pilot Duty Rating | 2 amps at 24 VDC and 240 VAC |
| Maximum Resistive Load Rating | 2 amps at 24 VDC and 240 VAC |
| Minimum Load | 1 mA |
| On Response Time | 15 ms maximum |
| Off Response Time | 15 ms maximum |
| Contact Life | Mechanical 20,000,000<br>Electrical 200,000 electrical operations resistive load (2 amp) |

## I/O Specifications

| | |
|---|---|
| ***Analog Inputs*** | |
| Input Ranges | 0 to 10 V (10.24 V max.)<br>0 to 20 mA (20.5 mA max.)<br>4 to 20 mA (20.5 mA max.) |
| Resolution: 0 to 10 V Range<br>0 to 20 mA Range<br>4 to 20 mA Range | 12 bits (1 LSB=2.5 mV)<br>12 bits (1 LSB=5 µA)<br>11+ bits (1 LSB=5 µA) |
| Accuracy | +/- 1% of full scale over full operating temperature range |
| Linearity | +/-3 LSB maximum |
| Common mode voltage | +/- 200 V maximum |
| Current input impedance | 249 ohms |
| Voltage input impedance | 100 K ohms |
| Input Filter Time | 20 ms to reach 1% error for step input |
| ***Analog Outputs*** | |
| Output Ranges | 0 to 10 V (10.24 V max.)<br>0 to 20 mA (20.5 mA max.)<br>4 to 20 mA (20.5 mA max.) |
| Resolution: 0 to 10 V Range<br>0 to 20 mA Range<br>4 to 20 mA Range | 12 bits (1 LSB=2.5 mV)<br>12 bits (1 LSB=5 µA)<br>11+ bits (1 LSB=5 µA) |
| Accuracy | +/- 1% of full scale over full operating temperature range |
| Current: Max Voltage at 20 mA<br>User Load Range<br>Output Load Capacitance<br>Output Load Inductance | 10 VDC<br>10 to 500 OHM<br>2000 pF Maximum<br>1 Henry Maximum |
| Voltage: Output Loading<br>Output Load Inductance | 10K OHM Minimum at 10 VDC<br>1 µ F Maximum |
| ***Analog Input Potentiometer (Micro only)*** | |
| Analog Input Channels | 2 |
| Input Ranges | 0 to 1024 |
| Resolution | 10 bits |
| Input Filter Time | Configurable |

## Environmental and Agency Specifications

| | | |
|---|---|---|
| ***Agency Approvals Overview*** | | |
| Industrial Control Equipment [Safety] | UL508,<br>CSA C22.2 No 142-M1987 | |
| Hazardous Locations [Safety]<br>Class I, Div II, A, B, C, D | UL1604<br>CSA C22.2 No 213-M1987 | |
| European EMC Directive | CE Mark | |
| ***Standards Overview*** | | ***Conditions*** |
| ***Environmental*** | | |
| Vibration | IEC68-2-6, JISC0911 | 2G @ 57-500 Hz, 0.15 mm p-p @ 10-57 Hz |
| Shock | IEC68-2-27, JISC0912 | 15G, 11ms |
| Operating Temperature | | 0° C to 55° C [ambient] |
| Storage Temperature | | -10° C to +75° C |
| Humidity | | 5% to 95%, non-condensing |
| Enclosure Protection | IEC529 | Enclosure per IP54; protection from dust & splashing water |
| ***EMC Emissions*** | | |
| Radiated, Conducted | CISPR11, EN55011<br>47 CFR 15 | Group 1, Class A [applies to CE Marked modules]<br>part 15, subpart J |
| ***EMC Immunity*** | | |
| Electrostatic Discharge | EN 61000-4-2 | 8 KV Air Discharge, 4 KV Contact Discharge |
| Radiated RF<br>ENV 50140, ENV 50204 | EN 61000-4-3 | 10 $V_{rms}$/m, 80 MHz to 1000 MHz, modulated |
| Fast Transient Burst | EN 61000-4-4 | 2 KV: power supplies, 1 KV: I/O, communications |
| Surge Withstand | IEC 1000-4-5<br>IEC 1000-4-12 | Power >50 V, 2 KV (line-to-ground), 1 KV (line-to-line)<br>supply: <50 V, 0.5 KV (line-to-ground), 0.5 KV (line-to-line)<br>Communications port and I/O: 1 KV |
| Conducted RF | EN 61000-4-6 | 10 V, 150 kHz to 80 MHz injection for comm cables >30m |
| ***Isolation*** | | |
| Dielectric Withstand | UL508, UL840, IEC664 | 1.5 KV for modules rated from 51 V to 250 V |
| ***Power Supply*** | | |
| Input Dips, Variations | IEC1000-4-11 | During Operation: Dips to 30% and 100%, Variation for AC ±10%,<br>Variation for DC ±20% |

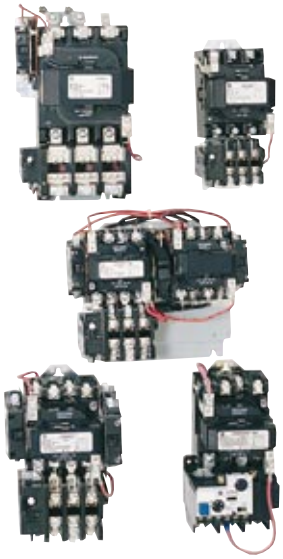
# Panel Control Options

***GE Fanuc PLCs and this complete line put you completely in control.***

## *C-2000™ Contactors & Starters*

IEC contactors and starters, rated from 3 to 1250 amps, come with an array of accessories broad enough to meet every motor control need.





## *300-Line Contactors & Starters*

NEMA contactors and starters through NEMA size 9, are the choice for applications where the environment is demanding and the need for reliability is paramount.



## *ASTAT Solid-State Starters*

Solid state starters, with optional integral bypass and circuit protection, deliver total control of motors from fractional to 1000 hp. Choose open or enclosed versions.



## Electronic Timers & Relays

Electronic timers and relays bring logic, control and protection in a wide variety of forms to panel and machine applications.



## Control Power Transformers

Type IP control power transformers in 50-3000VA are designed for easy terminations, built for durability, and encapsulated for the highest quality electrical performance.



## IEC Manual Motor Starters

IEC manual motor starters, integrated starters and a full line of accessories offer flexible control and full protection in full compliance with NEMA, UL, NEC and IEC requirements.

## C-2000 Push Buttons

22mm push buttons deliver outstanding appearance, thoughtful ergonomics, broad selection, innovative contact blocks, modular versatility, long-term reliability and global applicability.



## CR104P Push Buttons

30mm NEMA push buttons offer the industry's only all-metal NEMA 4X protection, proven over time and appreciated for both their rugged reliability and good looks.

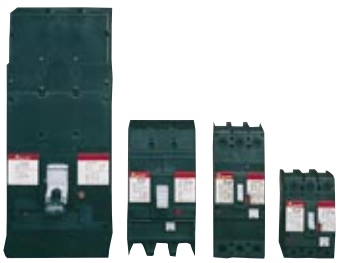






## IEC Switches

All kinds of switches—disconnect switches, rotary cam switches, fusible switches and more—support applications that range from logic level to power distribution system protection.



## Spectra Series™ Molded Case Circuit Breakers

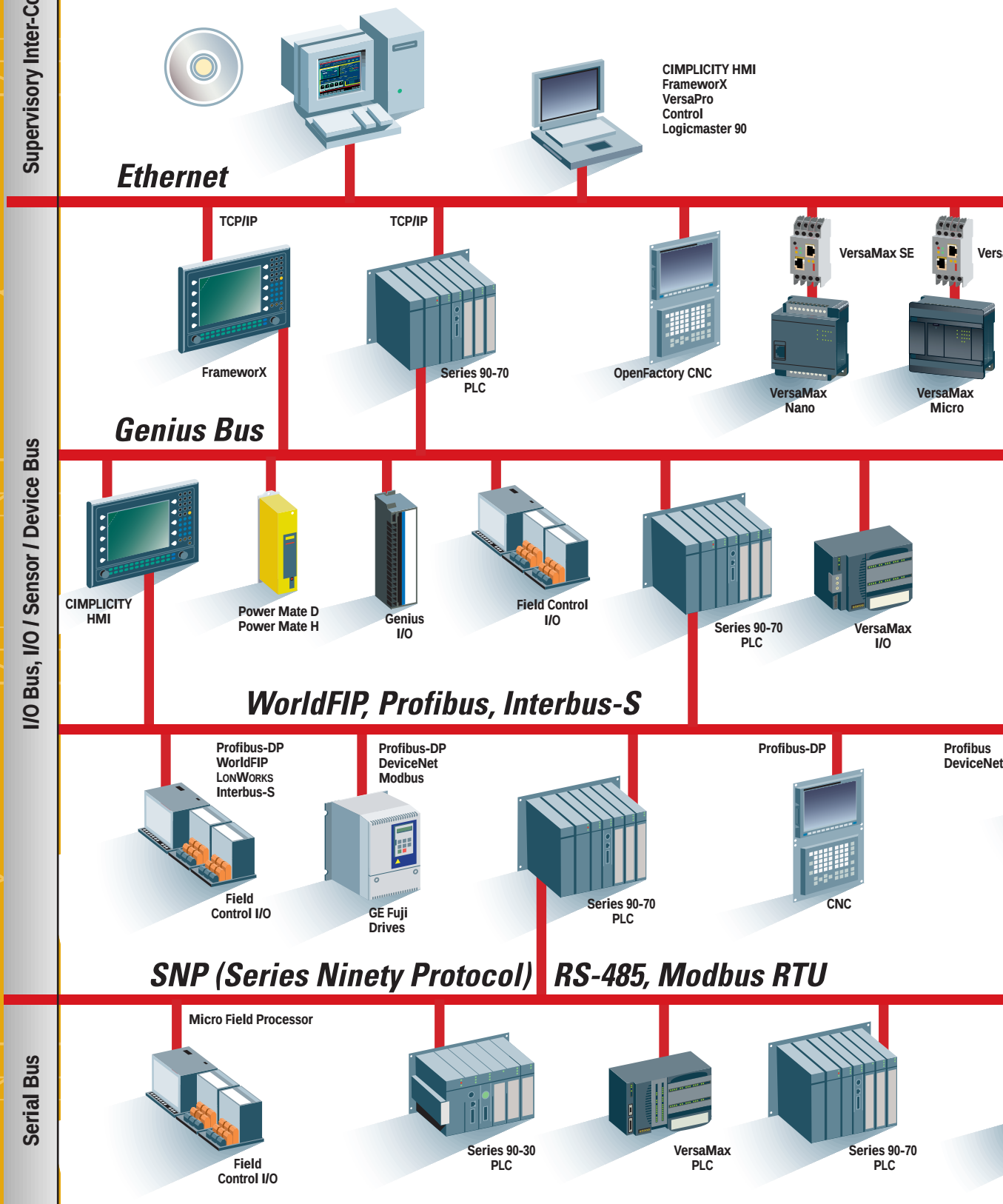
The full range of circuit breakers includes solid state and standard molded case circuit breakers plus a full line of insulated case breakers, air frame ANSI breakers and even miniature DIN rail-mounted supplemental protectors.

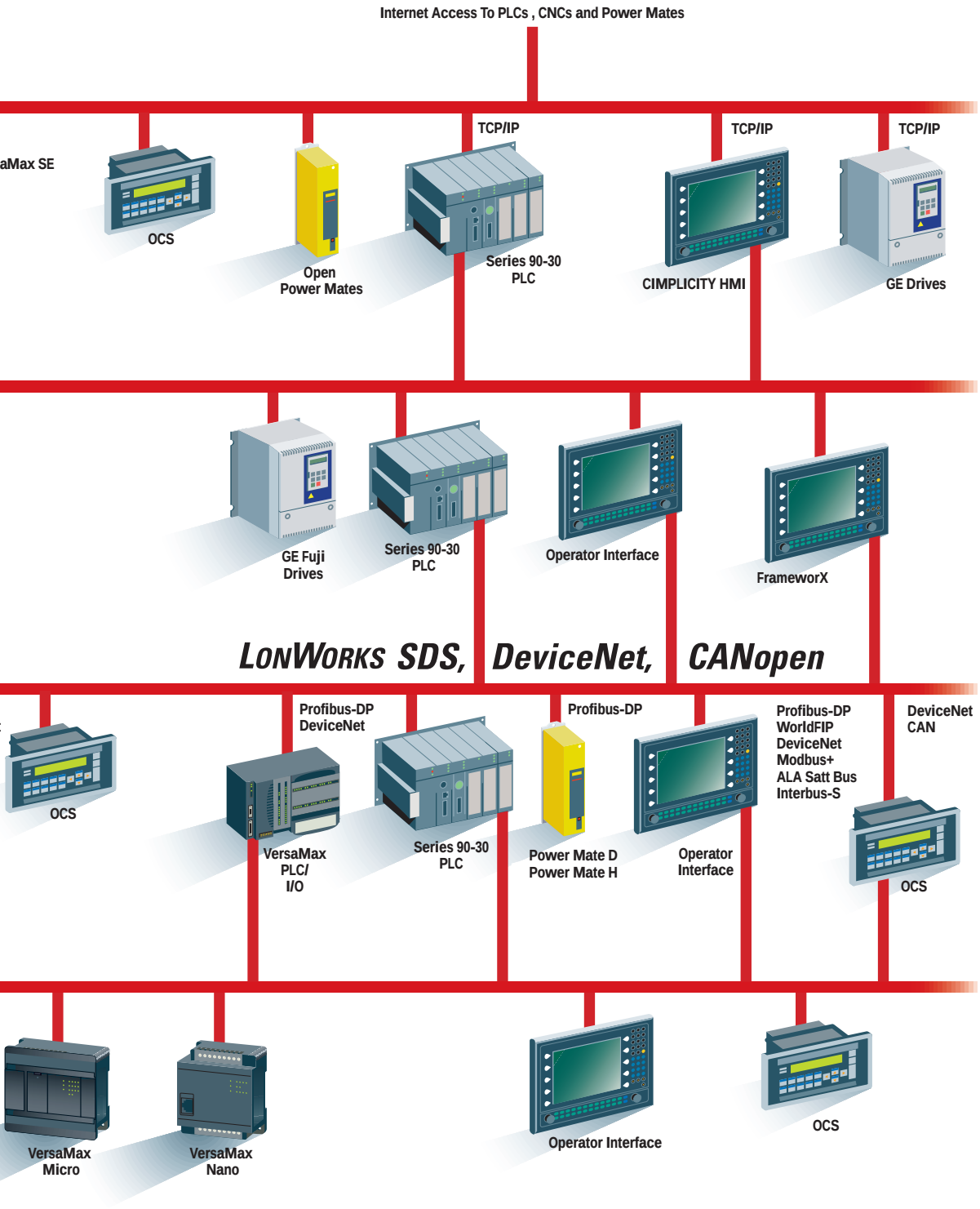


## AF-300 P11 Variable Frequency Drives

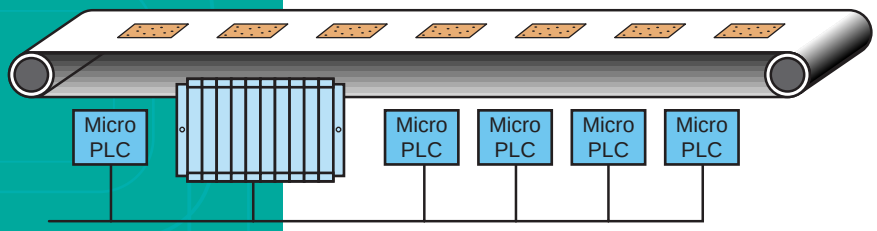
Adjustable frequency drives with exclusive soft-switching technology, intelligent keypads and feature-rich design take it easy on motors and make it easy for you.

# Communications Networks



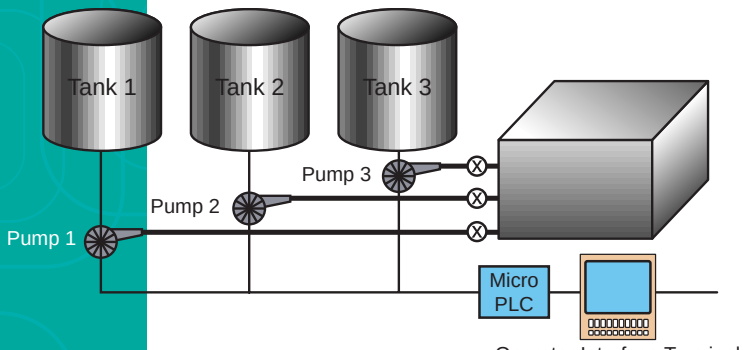

Internet Access To PLCs , CNCs and Power Mates
aMax SE
OCS
Open
Power Mates
TCP/IP
Series 90-30
PLC
TCP/IP
CIMPLICITY HMI
TCP/IP
GE Drives
GE Fuji
Drives
Series 90-30
PLC
Operator Interface
FrameworX
LONWORKS SDS,
DeviceNet,
CANopen
OCS
Profibus-DP
DeviceNet
VersaMax
PLC/
I/O
Series 90-30
PLC
Profibus-DP
Power Mate D
Power Mate H
Operator
Interface
Profibus-DP
WorldFIP
DeviceNet
Modbus+
ALA Satt Bus
Interbus-S
DeviceNet
CAN
OCS
VersaMax
Micro
VersaMax
Nano
Operator Interface
OCS

# Micro/Nano Applications



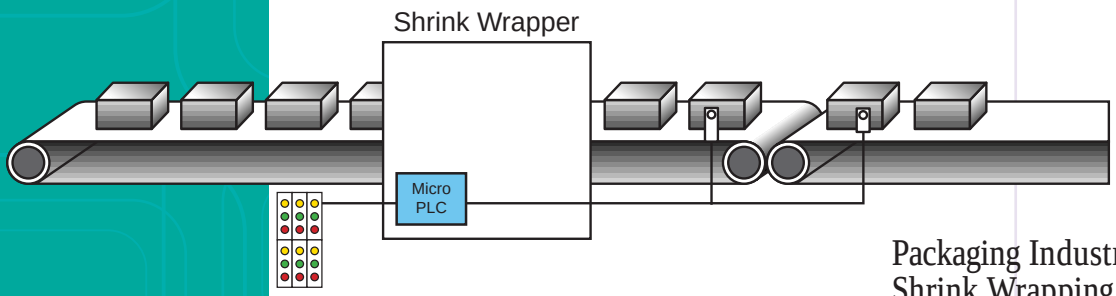

## Bakery Industry—
## Pastry Line Conveyor Control

Ten VersaMax Micro PLCs are distributed along the conveyor belt at each packaging point of a toaster pastry line. The high-speed counting ability of the VersaMax Micro PLC and its local logic allow it to make the necessary on-the-fly decisions for conveyor control, based on the high-speed counting of pastries and the downstream packaging machinery loading. System parameters are transmitted to a Series 90-70 PLC, which monitors the overall performance of the system.




## Chemical Industry—
## Chemical Pumping Station

A 14-point VersaMax Micro PLC is used with an operator interface terminal to replace mechanical timers, counters, and relays that control pumping stations delivering chemicals to the cleaning station. The existing mechanical system was hard-wired and difficult to modify. The new PLC-based system offers flexibility through programming, reduced need for panel space, and ease of wiring.



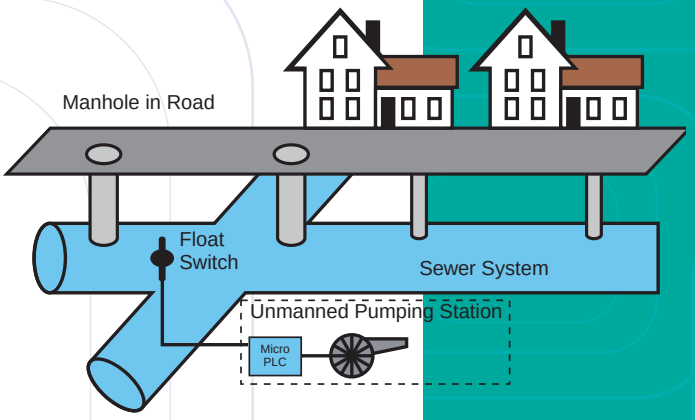

The VersaMax Micro PLC uses input from various sensors to determine the position of product and parameters from the control panel to sequence the wrapping of the products.

## Packaging Industry—
## Shrink Wrapping Machines

A 28-point VersaMax Micro PLC provides cost-effective operating control for a shrink-wrapping machine. The system receives inputs from sensors to determine the position of the product, then wraps the product. The flexibility of the VersaMax Micro PLC allows the parameters for different products to be changed at a control panel without any programming modifications.

## Water and Wastewater Industry—Flood Control Monitoring

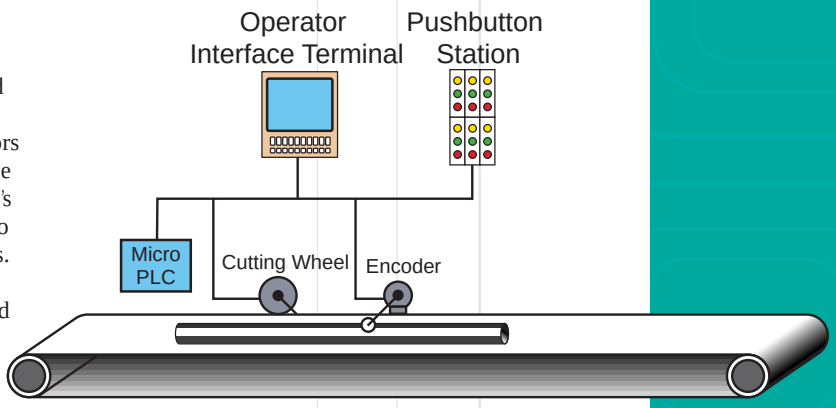
A VersaMax Micro PLC and an operator interface terminal are used for a reliable and cost-effective system for flood-control pumping stations. The VersaMax Micro PLC monitors start and stop cycles, elapsed time, on/off status, and fault conditions. The Micro PLC-based system replaces an older system of hardwired pilot lights, which conveyed only basic information to the operator and were difficult to maintain. Through the operator interface unit, the VersaMax Micro PLC provides ample metering information that helps the maintenance team identify possible problem areas in the sewer line. The Micro PLC provides valuable data about the capabilities of the existing sewer system to handle large amounts of water during heavy storms. The data is then transmitted via a modem to a SCADA System.




VersaMax PLCs use float switches to monitor the level of water in the sewer system. During storms it cycles relief pumps on and off to prevent the backup of water into houses and businesses.

## Construction Equipment Industry—Pipe Measuring System

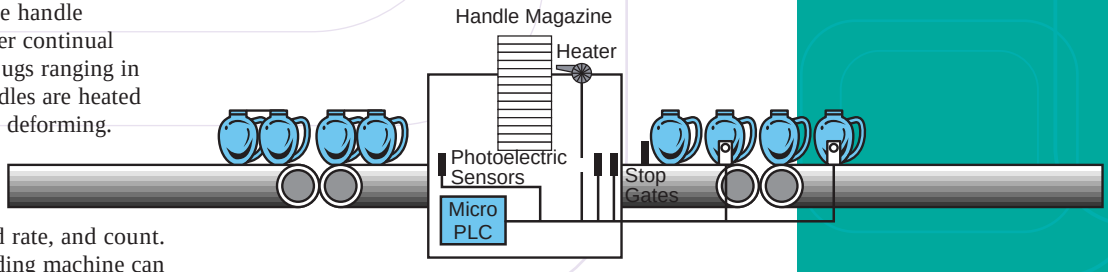
A 14-point VersaMax Micro PLC and an operator interface terminal provide a control system that accurately measures and controls cutting of pipe in 4-foot to 28-foot lengths. Measurement data is received from an encoder. The operator display shows pipe lengths in feet, inches, and fractions of inches. Operators specify pipe length and the control system measures the pipe and cuts it to the specified length. The Micro PLC's four built-in high-speed counters allow it to interface to the quadrature encoder that measures the pipe sections. The VersaMax Micro PLC produces reliable machine operation and improved machine performance, reduced setup time and faster processing of products.




The VersaMax Micro PLC measures the length of the pipe using input from the encoder and displays the length on the operator interface unit.

## Plastics Industry—Injection Molding

The 14-point VersaMax Micro PLC is installed in an injection molding machine that controls the application of plastic handles to milk and juice jugs. It counts and sequences two jugs that are then joined with one plastic handle (for retail customer convenience). Jugs are queued up before being fed through the handle applicator. The Micro PLC accepts either continual or random feeding, and operates with jugs ranging in size from one quart to one gallon. Handles are heated for easy application without melting or deforming. Diagnostics indicate when the supply of handles is low or empty. Additional diagnostics alert personnel to equipment feed jams, feed rate, and count. The manufacturer of the injection molding machine can easily modify the application program to match the machine operation in the customer's environment.




The VersaMax Micro PLC uses inputs from various sensors to control the handle applicator system

# VersaMax Micro and Nano Selection Guide

## Applications Requiring:

### 1 serial port with 6 discrete inputs & 4 outputs or less



*VersaMax Nano*

### Non Expandable:

VersaMax Nano Controller Options:

***(6) 24 VDC Inputs and (4) 24 VDC Outputs, 24 VDC Power Supply: Part # IC200NDD101***

***(6) 24 VDC Inputs and (4) Relay Outputs, 24 VDC Power Supply: Part # IC200NDR001***

See page 13 for more details.

## Applications Requiring:

### 1 serial port with 8 discrete inputs & 6 outputs or less



*VersaMax Micro 14 point*

### Expandable to 70 I/O:

VersaMax Micro Controller Options:

***(8) 24 VDC Inputs and (6) 24 VDC Outputs, 24 VDC Power Supply: Part # IC200UDD104***

***(8) 24 VDC Inputs and (6) Relay Outputs, 24 VDC Power Supply: Part # IC200UDR002***

***(8) 24 VDC Inputs and (6) Relay Outputs, 120/220 VAC Power Supply: Part # IC200UDR001***

***(8) 120 VAC Inputs and (6) 120 VAC Outputs, 120/220 VAC Power Supply: Part # IC200UAA003***

See page 13 for more details.

VersaMax Micro Expansion Options: (Max. of 4 Units)

***(8) 24 VDC Inputs and (6) 24 VDC Outputs, 24 VDC Power Supply: Part # IC200UEX014***

***(8) 24 VDC Inputs and (6) Relay Outputs, 24 VDC Power Supply: Part # IC200UEX012***

***(8) 24 VDC Inputs and (6) Relay Outputs, 120/220 VAC Power Supply: Part # IC200UEX011***



*VersaMax Expansion Unit*

Expansion Cable Options:

(0.1 meter cable is included with expansion base)

***0.5 meter cable: Part # IC200CBL505***

***1.0 meter cable: Part # IC200CBL510***

## *Applications Requiring:*

### *2 serial ports with 16 discrete Inputs, 12 discrete outputs also applications requiring 2 Analog in 1 Analog out*



***VersaMax Micro 28 point***

## *Expandable up to 84 I/O:*

### VersaMax Micro Controller Options:

***(16) 24 VDC Inputs and (12) 24 VDC Outputs, 24 VDC Power Supply: Part # IC200UDD110***

***(16) 24 VDC Inputs, (1) 24 VDC Output and (11) Relay Outputs, 24 VDC Power Supply: Part # IC200UDR010***

***(16) 24 VDC Inputs, (1) 24 VDC Output and (1) Relay Outputs, 120/220 VAC Power Supply: Part # IC200UDR005***

***(16) 120 VAC Inputs and (12) 120 VAC Outputs, 120/220 VAC Power Supply: Part # IC200UAA007***

***(13) 24 VDC Inputs, (1) 24 VDC Output and (9) Relay Outputs, (2) Analog Inputs, (1) Analog Output, 120/220 VAC Power Supply: Part # IC200UAL006***

***Real Time Clock and Long Term Data Retention require battery: Part # IC200ACC403***

See page 13 for more details.

### VersaMax Micro Expansion Options: (Max. of 4 Units)

***(8) 24 VDC Inputs and (6) 24 VDC Outputs, 24 VDC Power Supply: Part # IC200UEX014***

***(8) 24 VDC Inputs and (6) Relay Outputs, 24 VDC Power Supply: Part # IC200UEX012***

***(8) 24 VDC Inputs and (6) Relay Outputs, 120/220 VAC Power Supply: Part # IC200UEX011***



***VersaMax Expansion Unit***

### Expansion Cable Options:

(0.1 meter cable is included with expansion base)

***0.5 meter cable: Part # IC200CBL505***

***1.0 meter cable: Part # IC200CBL510***

## *Programming, Communications and Operator Interface Options:*

### Programming Options: (see page 9 for more details)

***VersaPro Programming Software without RS-232 cable: Part # IC641VPS002***

***VersaPro Programming Software with RS-232 cable (IC200CBL500): Part # IC640VPS002***

### Communications Options: (see page 6 for more details)

***RS-232 to RS-485 Converter: Part # IC200ACC415***

***RS-485 to RS-232 Converter: Part # IC690ACC901***

***RS-485 to RS-485 Isolator: Part # IC690ACC903***

***Programming Cable: Part # IC200CBL500 and comm cable***

### Operator Interface Options: (see page 10 for more details)

***Timer/Counter/Register Access interface with 2 x 16 character display: Part # IC200DTX200***

***2 x 16 character display, stores up to 200 messages and has 6 function keys: Part # IC200DTX450***

***4 x 16 character display, stores up to 200 messages and has 8 function keys: Part # IC200DTX650***

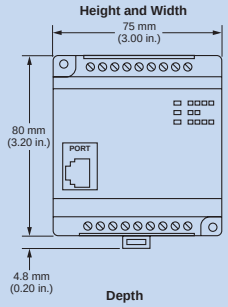
***4 x 20 character display, stores up to 200 messages and has 8 function keys and data keypad: Part # IC200DTX850***

***VersaMax Data Panel programming package with cable: Part # IC752DDZ000***

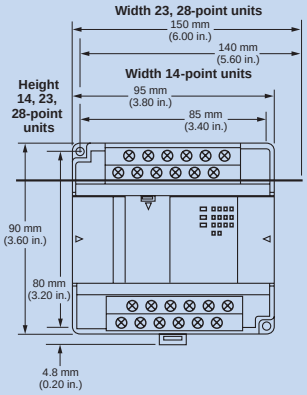
***Communications Cable between VersaMax Micro or Nano and VersaMax DataPanel operator interface: Part # IC200CBL550***

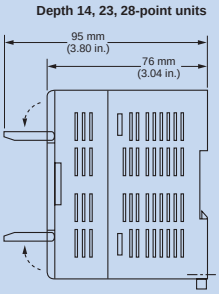
## Panel Mounting Dimensions

### Dimensions of Nano PLCs




### Dimensions of 14, 23, and 28-Point Micro PLCs and 14-Point Expansion Units




# VersaMax Micro and Nano Components

| Part Number | Description |
|---|---|
| **Nano (10 Point) non expandable** | |
| IC200NDD101 | 10 point (6) 24 VDC In, (4) 24 VDC Out, 24 VDC Power Supply |
| IC200NDR001 | 10 point (6) 24 VDC In, (4) Relay Out, 24 VDC Power Supply |
| **VersaMax Micro (14 Point) expandable up to 4 units** | |
| IC200UAA003 | 14 point (8) 120 VAC In, (6) 120 VAC Out, 120/240 VAC Power Supply |
| IC200UDD104 | 14 point (8) 24 VDC In, (6) 24 VDC Out, 2 1.0 A, 4 0.5A, 24 VDC Power Supply |
| IC200UDR001 | 14 point (8) 24 VDC In, (6) Relay Out, 120/240 VAC Power Supply |
| IC200UDR002 | 14 point (8) 24 VDC In, (6) Relay Out, 24 VDC Power Supply |
| **VersaMax Micro (28 Point) expandable up to 4 units** | |
| IC200UDR005 | 28 point; (16) 24 VDC In, (11) Relay Out, (1) 24 VDC Out, 120/240 VAC Power Supply. Battery (IC200ACC403) is required for long term data retention. Battery not included. |
| IC200UDR010 | 28 point; (16) 24 VDC In, (11) Relay Out, (1) 24 VDC Out, 24 VDC Power Supply. Battery (IC200ACC403) is required for long term data retention. Battery not included. |
| IC200UAA007 | 28 point; (16) 120 VAC In, (12) 120 VAC Out, 120/240 VAC Power Supply. Battery (IC200ACC403) is required for long term data retention. Battery not included. |
| IC200UDD110 | 28 point; (16) 24 VDC In, (12) 24 VDC Out 6 1.0 A, 6 0.5A, 24 VDC Power Supply. Battery (IC200ACC403) is required for long term data retention. Battery not included. |
| **VersaMax Micro with Analog expandable up to 4 units** | |
| IC200UAL006 | 23 point; (13) 24 VDC In, (9) Relay Out, (1) 24 VDC Out, (2) Analog In and (1) Analog Out, 120/240 VAC Power Supply. Battery (IC200ACC403) is required for data retention. Battery not included. |
| **VersaMax Micro Expansion Units (.1 meter cable included)** | |
| IC200UEX011 | 14 point (8) 24 VDC In, (6) Relay Out, 120/240 VAC Power Supply |
| IC200UEX012 | 14 point (8) 24 VDC In, (6) Relay Out, 24 VDC Power Supply |
| IC200UEX014 | 14 point (8) 24 VDC In, (6) DC Out, 24 VDC Power Supply |
| **VersaMax Nano and Micro Tool Boxes** | |
| IC200TBX010 | Tool box, 10 point, (IC200NDR001) DC In/Relay Out, DC Power Supply With software, manuals and cables (IC640VPS002) |
| IC200TBX014 | Tool box, 14 point, (IC200UDR001) DC In/Relay Out, AC Power Supply With software, manuals and cables (IC640VPS002) |
| IC200TBX023 | Tool box, 23 point, (IC200UAL006) DC In/Relay Out, 2 analog In, 1 analog out, AC Power Supply With software, manuals and cables (IC640VPS002) |
| IC200TBX028 | Tool box, 28 point, (IC200UDR005) DC In/Relay Out, AC Power Supply With software, manuals and cables (IC640VPS002) |

| Part Number | Description |
|---|---|
| **VersaMax Micro and Nano I/O Expansion/Communication Cables and Converters** | |
| IC200CBL500 | Programming cable (RJ-45 to DB-9 pin) RS-232. 3 Meters. |
| IC690ACC901 | RS-485 to RS-232 Converter |
| IC200ACC415 | RS-232 to RS-485 Converter requires IC200CBL500 or equivalent. |
| IC690ACC903 | RS-485 to RS-485 Isolator |
| IC200CBL501 | I/O Expansion cable, 0.1 meter long (Qty 5) |
| IC200CBL505 | I/O Expansion cable, 0.5 meter long |
| IC200CBL510 | I/O Expansion cable, 1 meter long |
| **VersaMax Micro Accessories** | |
| IC200ACC402 | Removable Terminal Strips, 10 per pack |
| IC200ACC403 | Battery for 23 and 28 point Micro for data retention |
| IC200ACC404 | Spare parts kit. Two terminal strips and four plastic doors and four covers |
| IC200KIT001 | The kit includes VersaPro (IC640VPS002), CAD files, programming cable, manuals and other tools to aid in the conversion process from Series 90 Micro to VersaMax Micro. |
| **VersaPro Programming Software** | |
| IC641VPS002 | VersaPro programming software and documentation for VersaMax Micro and Nano Only. Programming cable not included.CD format |
| IC640VPS002 | VersaPro programming software and documentation for VersaMax Micro and Nano Only. Programming cable (IC200CBL500) included. CD format |
| **VersaMax Data Panel Operator Interfaces** | |
| IC200DTX200 | Operator Interface for changing timer/counter/ register values. 2 x 16 character LCD backlight display and 6operation keys. No stored messaging, PLC stores messages. Requires IC200CBL550 cable or equivalent. Operates on 5 VDC @ 100ma from Micro or Nano. |
| IC200DTX450 | Operator Interface with up to 200 stored messages. 2 x 16 character LCD backlight display and 6 function keys. Requires IC200CBL550 cable or equivalent. Operates on external 24 VDC @ 40ma. |
| IC200DTX650 | Operator Interface with up to 200 stored messages. 4 x 16 character LCD backlight display and 8 function keys. Requires IC200CBL550 cable or equivalent. Operates on external 24 VDC @ 80ma. |
| IC200DTX850 | Operator Interface with up to 200 stored messages. 4 x 20 character LCD backlight display, 8 function keys and numeric keypad. Requires IC200CBL550 cable or equivalent. Operates on external 24 VDC @ 50ma. |
| IC752DDZ000 | VersaMax DataPanel programming package with cable. |
| IC200CBL550 | RS232 communications cable (3 meter) between VersaMax Micro or Nano and VersaMax DataPanel operator interface. |

*Standards: UL Class I Div II, C-UL, CE. Some approvals pending for certain models. Contact GE Fanuc for details.*

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