

# HMI 500 Series Operator Interfaces

## Powerful – Easy to use – Affordable!

### CAL Control's HMI 500 Series Operator Interface

Terminals (OITs) are available with 5.7" touchscreen LCDs for interfacing with CALogix, PLCs, embedded controllers and motion controllers. These industrial interfaces are capable of storing and displaying up to 1990 screens that include graphics and text as well as real-time data from the controller. In addition, areas of the screen can be configured to emulate momentary or multi-state switches when pressed. Now you can replace your pushbuttons, switches, displays, counters and lamps with one easy-to-use OIT!



### Compatible with Your Other Controllers

The HMI500 Series OITs offer direct RS-232 and RS-485 serial communication to the most popular PLCs, embedded controllers and motion controllers. These OITs use the controller's communication protocol to read and write data. They do not require the controller to run any special data communication programs, which greatly reduced the programming time. Supported controllers include:

Allen-Bradley	Koyo
Aromat	Mitsubishi
ASCII	Modbus Network (RS485 2W) Series
Bristol Babcock	Modbus RTU Master
Compumotor (Parker Hannifin)	Modbus RTU Slave
Control Microsystems	Modicon (Schneider Electric)
Delta Products	Motorola
Electric Motor Systems	Omron
Emerson Motion Control	SAF Drives
Entertron Industries	Safronics
GE Fanuc	Siemens
Giddings & Lewis	Sixnet
Hitachi	Telemecanique (Schneider Electric)
Idec	Toshiba
Industrial Control Links	Trio Motion Technology
Industrial Indexing Systems	Waltow Electric
International Parallel Machines	Whedco

### Connect Multiple OITs to a Single Controller



Sometimes one OIT is not enough. That's why the HMI500 Series OITs can be daisy-chained together and connected to a single port on your controller. If you have more than one location that needs access to the system, this feature allows you to easily and inexpensively setup OITs in each location.

## Easy for the Designer

In the past, configuring a graphic OIT could be a time consuming and often frustrating process. Now, with EZware-500 and an HMI500 Series OIT, configuration is quick and easy.

EZware-500 is the Windows-based software used to configure the HMI500 Series OITs. It offers the designer many timesaving and intuitive features, simplifies application design, and reduces development costs.

## Simulation (with or without PLC)

With EZware-500's innovative On-Line Simulation feature, you can test your project directly on your PC.

No more having to download to the OIT to test every change. Now, simply press a key and the PC simulates the OIT so that you can quickly test your project with the PLC.

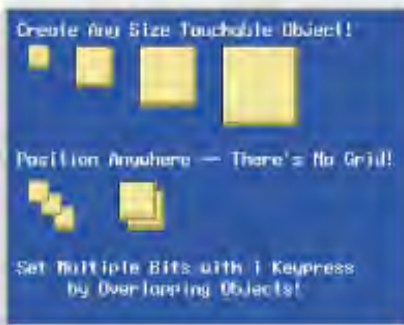


### Competition's Project Design Method

Edit Screen → Download to OIT → Test at OIT → Finish  
(3-5 minutes)

### EZware-500's Project Design Method

Edit Screen → Test at PC → Download to OIT → Finish  
(115.2 Khand)



## Unlimited Touchable Objects

The HMI500 Series OITs use the latest in analog resistive touchscreen technology. The high resolution of these touchscreens allows you to create screens with any number of touchable objects. And best of all, these objects can be any size and can be placed anywhere in the screen.



## Over 500 Predefined Graphics

EZware-500 includes over 500 of the most common symbols used in the industry so that you don't have to waste time creating them. Choose from lamps, switches, pipes, motors, control devices, ISA symbols and more.



## Powerful Graphic Creation Tools

Drawing tools are available to help you easily create new graphics. Once created, these graphics can be stored permanently in libraries for easy retrieval on any project. In addition, existing graphics can be overlaid onto each other allowing you to quickly create more complex graphics.

## Import Preexisting Graphics

You can import BMP format files, with up to 256 colors, into EZware-500 for use in your application. These graphics can be produced using familiar tools such as CorelDraw, AutoCAD, etc.

## Flexible Screen Design

Each screen is composed of a collection of objects. To configure a screen, simply add the objects you want to the screen and set their attributes. It's a simple, straight forward process.

For added flexibility, objects can be layered. For example, layering multiple Set Bit objects allows the operator to control multiple bits with one press. Another possibility is to layer a tank bitmap over a bar graph representing the level of the tank.



## Easy for the Operator

With the HMI500 Series OITs and EZware-500 it is simple to design an interface that is easy for your operators to understand and use.

## Windows Operation

If your operators have ever used a Windows-based program, they will already know how to operate an HMI500 Series OIT. Just like in a Windows-based program, the OIT operator can open a pop-up window by simply pressing a button on the screen. Up to 6 of these pop-up windows can be displayed at any time. In addition, it's easy for the operator to move, overlap or minimize the pop-up windows. Use these pop-up windows to display related information, like data entry keypads or historical trends, that you don't want cluttering the main screens.



## Best Value on the Market

The HMI500 Series OITs are powered by a 200MHz 32-bit RISC microprocessor. These high powered OITs are capable of executing even the most graphic intensive configurations quickly.

Features were not sacrificed to keep these products affordable. With extensive graphic features including trends, graphs, and animation, the HMI500 Series OITs offer more features and yet cost less than other products in their class.

Products being used in industrial control applications need to be able to withstand harsh environments. The HMI500 Series OITs were designed to do just that. They are sealed to NEMA 4/12 standards and meet CE specifications for electric noise immunity in industrial environments.

The HMI500 Series OITs are simply the best value on the market today. With their powerful hardware, extensive feature set and high reliability, they offer the easy-to-use graphic touchscreen option you've been looking for – at a price you can afford!

## Replace Many Components with One OIT!

### Lamps

Graphically represent the current state of bits and registers in your controller (up to 32-states).

### Displays

Display text using eight font sizes and 256 colors.

The EZware-500 configuration software also includes a Font Maker that allows you to create any special characters, font style or font size you want.

### Switches

Set bits and registers in your controller using toggle and multi-state switches. (up to 32-states).



### Counters

### Pushbuttons

## Enhance Your System with Graphics

### Trends

Display system variables over a period of time. The HMI500 Series allows up to 16 channels per screen and offers variable sampling times and a hold feature to pause the sampling. In addition, it's easy to customize the chart where the trends appear.



### Bar Graphs & Meters

Display system variables as bar graphs or meters to enhance operator understanding and improve visibility. Place as many bar graphs or meters as you need on each screen.

### Moving Shapes & Animation

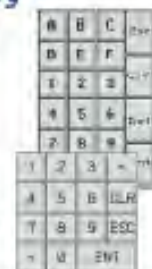


Enhance your screens using animation and moving shapes. Both animation and moving shape

objects are capable of changing shape as they move. Use animation to move an object along a predefined path or use a moving shape to have your controller position an object based on x,y coordinates.

### Data Entry

Add a keypad that fits your application. Choose from many predefined keypads or create your own.



# Specifications & Features

## Display & Touchscreen

- Backlight – CCFL with 15,000 hour minimum life span
- Touch Accuracy – 0.08 inches [2mm]
- Surface Hardness – 4H

## Hardware

- Microprocessor – 200 MHz 32-bit RISC
- Flash Memory – 1MB
- DRAM – 4MB
- Non-volatile Recipe RAM – 1MB
- Real-Time Clock Chip – standard
- Compact Flash Card Slot (HMI 520C only)

## Mechanical

- Material – plastic ABS
- Mounting – panel

## Environment

- Ratings – IP65, NEMA 4
- Operating Temp. - 32 to 113F; 0 to 45C
- Storage Temp. - -4 to 140F; -20 to 65C
- Relative Humidity – 10% to 90% (non-condensing)
- Voltage Resistance – 500VAC (1 minute)
- Isolation Resistance – exceed 50 Mohms at 500VDC
- Vibration Endurance – 20 to 25Hz (x,y,z direction; 2G; 30 minutes)

## Certifications

- Complies with EN50081-2 (1993) & EN50082-2 (1995)

## Power Requirements

- Input Voltage – 24VDC

## Communications

- One RS-232/RS-485 serial port (DE9P) used for OIT configuration and RS-485 controller communications
- One RS-232 serial port (DE9S) used for RS-232 controller communications.
- Baud rates from 9,600 to 115,200
- Point-to-point serial communications for all protocols
- 10 Base T Ethernet (HMI 520C Only)

## Screens & Pop-up Windows

- Up to 1990 user-definable screens (full-size) or pop-up windows (partial-size)
- Up to 6 pop-up windows can overlap
- Pop-up windows can overlap
- Pop-up windows can be minimized to the task bar or moved by the operator
- User-definable startup screen
- User-definable common window for displaying objects that should always be shown.
- Fast selection window for quick access to screens
- Change screens or call pop-up windows using PLC registers or function keys

## Touchable Objects

- Can be any size
- Place any number in a screen or pop-up window
- Locate anywhere in a screen or pop-up window

## Graphic Objects

- Drawing tools for lines, rectangles, circles, arcs and polygons
- 256-colors available
- Overlay existing graphics to create complex graphics
- Create two-state graphics to represent PLC coils
- Create multi-state graphics to represent PLC registers

## Graphic Libraries

- Includes more than 500 of the most common symbols
- Store new graphics in the libraries
- Use the same libraries in multiple projects
- Import preexisting bitmaps (up to 256 colors)

## Text

- Eight font sizes
- Display in 256 colors
- Character set can be modified to include special characters of your creation

## Function Keys

- Display a new or previous screen
- Display or close a pop-up window
- Display a message board
- Edit a PLC register using numbers or ASCII characters

## Bar Graphs

- Display with or without a background shape
- Define the direction – up, down, left, right
- Constant or variable hi/lo alarm limits
- Adjustable color, size, span and zero reference
- Unlimited number of bar graphs per screen

## Meters

- Four formats – up half, full up, full bottom, ¾ full
- Adjustable color, size, span and zero reference
- Unlimited number of meters per screen

## Trends

- Periodically retrieve data from up to 16 PLC registers
- Vary sampling time from 1 to 65,535 seconds
- Hold feature for pausing the sampling
- Single or multiple page display
- Adjustable color and size

## Alarms

- Monitor an unlimited number of PLC registers and coils
- On-screen alarm indicator
- Horizontal scrolling bar scrolls through all active alarms
- Alarm list displays all active alarms

## Events

- Monitor PLC coils or registers for “events”
- Display screens or pop-up windows on an event trigger (the screens can be configured to set PLC coils)
- Acknowledge and “return to normal” capabilities

## PLC Register Control

- Decimal, hex, binary, or floating point representation
- Linear scaling to present analog or digital data in readily understandable terms (i.e. degrees, speed)
- Jogging capability – incremental or time rated
- Use single or multi-state graphics to represent
- Masked format for password protection

## Other Features

- Animated object movement using multi-state graphic objects tied to a PLC register
- On-line simulation mode for quick debugging
- Multiple OITs easily connected to one PLC
- Message board for writing messages
- Backlight screen saver

## Graphic OITs

	HMI520M	HMI520C
<b>Display Size (W x H)</b>	5.7 inches [ 145mm] 4.5 x 3.5 inches [ 114 x 89mm]	
<b>Display Type</b>	4 color – STN	256 color – STN
<b>Display Brightness</b>	150 cd/m2	
<b>Display Contrast</b>	30:1	
<b>Display Resolution</b>	320 x 240 pixels	
<b>Touchscreen</b>	4-wire analog resistive	
<b>Dimensions (W x H x D)</b>	8.0” x 5.9” x 1.9” [204 x 150 x 48 mm]	