

Watlow® Offers the Silver Series Operator Interface Terminal to Give Your System an Easy-to-Use, Reliable, Affordable Interface

The Silver Series is a rugged, touchscreen operator interface terminal (OIT) available in two widescreen models (7 in. and 10 in. diagonal display sizes). It supports a full set of features including serial and Ethernet communications with multiple controllers, universal serial bus (USB), secure digital (SD) card, data logging, flexible password security and multiple language support. The small bezel size and nominal two-inch depth make mounting in tight spots easy.

The Silver Series programming software, EasyBuilder5000, features a large variety of built-in screen objects that makes it easy to use and very powerful. When creating screens, the user can call upon extensive graphics libraries, import custom graphics and add numeric displays, entry fields, analog meters, bar graphs and trend graphs with just a few mouse clicks. Screen objects are highly customizable, and the user can create libraries of their own objects for repeat use. The online simulator and the Ethernet and USB ports make testing and downloading fast. EasyBuilder5000 is part of the EZware-5000 software suite and is available as a FREE download on www.watlow.com and on the CD-ROM listed in the accessories list on page six.

The Silver Series OIT paired with Watlow® controllers is the perfect solution for your industrial process or machine control application.

Features and Benefits

Bright, 65,536 color, 800 by 480 pixels, graphic, touchscreen, thin film transistor (TFT) display

- Maximizes display space in the OIT footprint
- Allows application specific interface design
- Allows viewing from a distance and at an angle
- Highlights important process information with color and animation

Built-in Ethernet, serial, USB and SD Card ports

- Allows options for connecting to controllers
- Provides options for downloading projects
- Expands memory for additional recipe and data log storage
- Supports the use of external keyboard, mouse and printers
- Supports monitoring from a personal computer (PC) using online simulation when connected to controllers via Ethernet

Supports dozens of serial and Ethernet protocols and up to four simultaneously

- Connects to a wide range of industrial controllers and devices
- Integrates a variety of devices to simplify complex operation tasks



Features and Benefits (cont.)

Data logging, display and trending

- Helps operators monitor processes
- Reduces labor and increases accuracy by automating time-stamped data collection
- Stores captured data for future retrieval in multiple files
- Saves time by exporting data to Excel®-compatible comma separated value (CSV) files
- Improves process understanding by allowing live and historical data to be viewed on the OIT

Alarm and event monitoring and recording

- Reduces downtime by helping troubleshoot equipment and processes
- Simplifies troubleshooting by recording time and date-stamped alarm and event history
- Organizes and prioritizes alarms and events in up to 255 categories and 4 priority levels

Recipe management

- Reduces errors by automating process setting changes

Offline/Online simulation

- Speeds up development by making it faster and easier to test projects
- Allows more fine-tuning of interfaces by speeding up iterations

Time or trigger-based data exchange

- Simplifies integration by allowing the OIT to copy data from one controller or OIT to another

Internal, piezoelectric buzzer

- Provides audible alarms and key chirp

Two year warranty

- Provides product support and reliability



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Features and Benefits (cont.)

Screen object password security with programmable hierarchy and multiple users

- Prevents errors and tampering by allowing only authorized users to access restricted items on the screen
- Allows flexible hierarchies by letting the developer assign each screen object to any of six groups and grant each user access to any combination of groups
- Provides password protection for upload, download and access to local setup
- Supports up to twelve users

Screen object invisibility and/or interlock control

- Prevents errors by guiding operators

Powerful, easy-to-use EasyBuilder5000, programming software

- Requires only a small investment in time to create a useful interface
- Provides the ability to learn additional features as needed
- Provides advanced interface features such as animation and pop-up windows
- Reduces development time by providing extensive graphical libraries and facilitating reuse with user-created libraries
- Simplifies development by allowing import of common graphic formats: bitmaps, JPGs and animated GIFs

User-programmable macros with math functions and support for floating point

- Extends functionality
- Automates processes

TrueType fonts with Unicode (international) characters and language switching feature

- Makes screens easy to read by allowing formatting such as bold, italics, underline, scrolling and blinking to direct operator's eyes
- Prevents errors by communicating with users in their native languages
- Reduces development and support by allowing inclusion of up to eight user-selectable languages in a project

NEMA 4, CE, RoHS

- Allows use in harsh industrial environments
- Assures prompt product acceptance

Specifications

Hardware

- Processor Type: 400Mz 32-bit RISC Fanless
- Memory: 128MB Flash, 64MB DRAM
- Ethernet Port: 10/100 Base-T (RJ45)
- Number of Serial Ports: 3
- COM1: RS-232/RS-485, 2-wire or 4-wire
- COM2: RS-232
- COM3: RS-232/RS-485, 2-wire
- USB Host (Type A): 1 each (7 inch), 2 each (10 inch), version 1.1
- USB Client (Type B): 1 each version 2.0
- SD Card Slot: 1 each
- Real Time Clock: Built in

Display

- Type: Color, TFT LCD
- Size: See table below
- Resolution: See table below
- Colors: 65,536 (16-bit) maximum

Touchscreen

- Type: 4-wire analog resistive
- Resolution: Continuous
- Light Transmission: Greater than 80%
- Lifespan: 1,000,000 activations minimum

Environmental

- Storage Temperature: -13° to 158°F (-25° to 70°C)
- Relative Humidity: 10% to 90% (non-condensing)
- Shock (operation): 10 to 25Hz (x, y, z direction, 2g, 30 minutes)
- Ratings: NEMA/IP65
- Agency: CE, RoHS, EMI FCC Class A

Mechanical

- Enclosure: Plastic molded
- Dimensions: See table below
- Panel Cutout: See table below

Power Input

- Voltage and current: See table below
- Use Class 2 power supply for applications that do not otherwise provide the isolation required by applicable electrical codes.

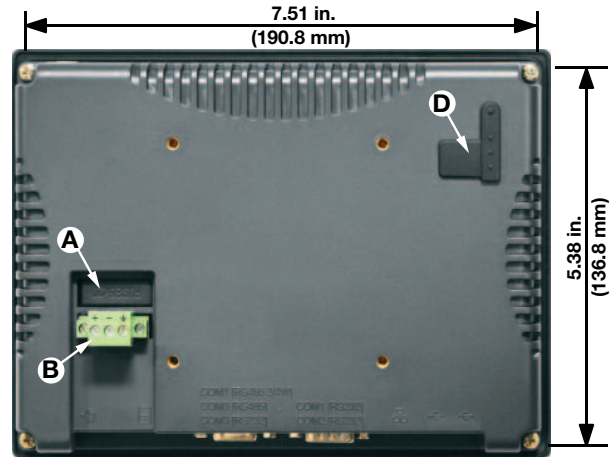
Model Number	TS00-0070-0000	TS00-0100-0000
Diagonal Screen Size	7.0 in.	10.2 in.
Resolution (Pixels)	800 x 480	800 x 480
Brightness	300 cd/m ²	300 cd/m ²
Contrast Ratio	500:1	300:1
Viewing Angles	Top: 40°, Bottom, Right, Left: 60°	Top: 55°, Bottom, Right, Left: 65°
Backlight Longevity	30,000 hours	50,000 hours
Screen Size (W x H)	6.1 x 3.4 in. (154 x 87 mm)	8.75 x 5.25 in. (222 x 133 mm)
Cutout (W x H)	7.55 x 5.43 in. (192 x 138 mm)	10.20 x 7.91 in. (259 x 201 mm)
Overall (W x H x D)	7.88 x 5.76 x 1.67 in. (200 x 146 x 42 mm)	10.67 x 8.38 x 1.92 in. (270.9 x 212.9 x 50mm)
Weight	1.8 lbs. (0.85 kg)	3.4 lbs. (1.6 kg)
Power: Voltage	24VDC	24VDC
Power: Current	250mA max.	440mA max.
Operating Temperature	14° to 113°F (-10° to 45°C)	32° to 113°F (0° to 45°C)
Mounting	Panel / VESA 75 compatible	Panel / VESA 75 compatible

Dimension and Connection Diagrams

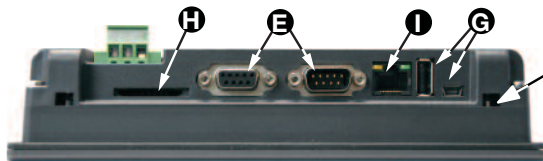
Model TS00-0070-0000



Front View



Rear View

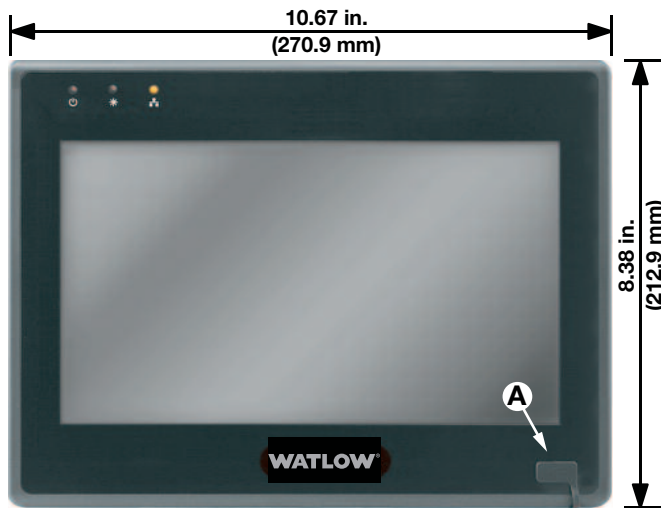


Bottom View

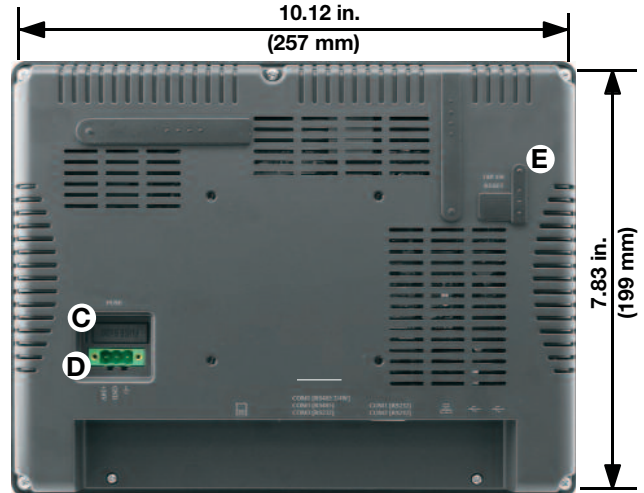
Panel-mounting clamp slots, 4 places

- A Fuse
- B Power connector
- D Switches and reset button
- E COM1: RS-232/RS-485, 2-or 4-wire
COM2: RS-232
COM3: RS-232/RS-485, 2-wire
- G USB 1.1 host port, 2.0 client port
- H SD card slot
- I Ethernet port

Model TS00-0100-0000



Front View



Rear View



Bottom View

Panel-mounting clamp slots, 5 places

- A Front accessible USB host port
- C Fuse
- D Power connector
- E Switches and reset button
- I SD card slot
- J COM1 RS-485, COM3 RS-485,
COM3 RS-232
- K COM1 RS-232, COM2 RS-232
- L Ethernet port
- M USB host port
- N USB client port



Integrate multiple devices to simplify operation of complex systems



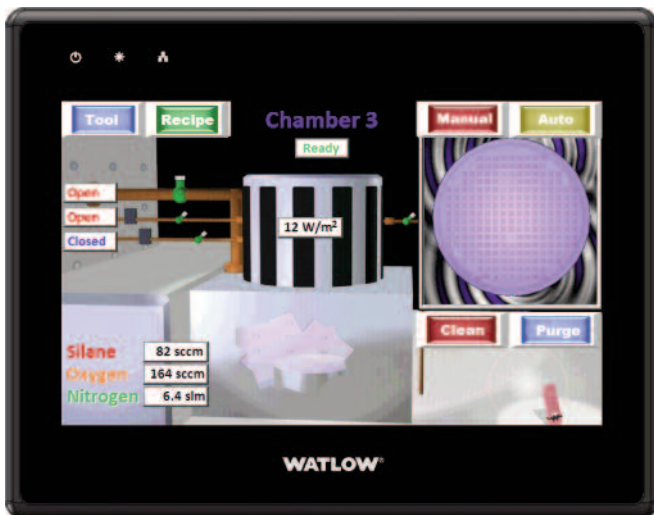
Include the types of displays users understand such as gauges, sliders and bar graphs to make screens intuitive



Log and graph process data for quality records and better process control



Password protect individual objects or everything on a screen to prevent errors and tampering



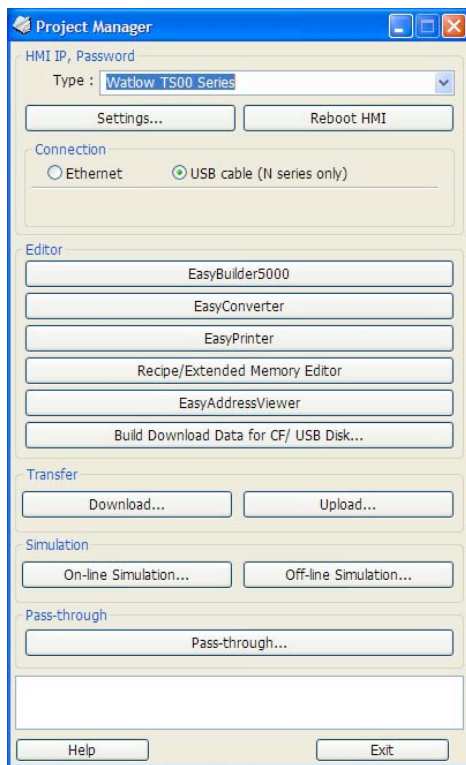
Import graphics for screens that present data the way users want to see it



Create screens that guide work flow

EZware-5000 Software Suite

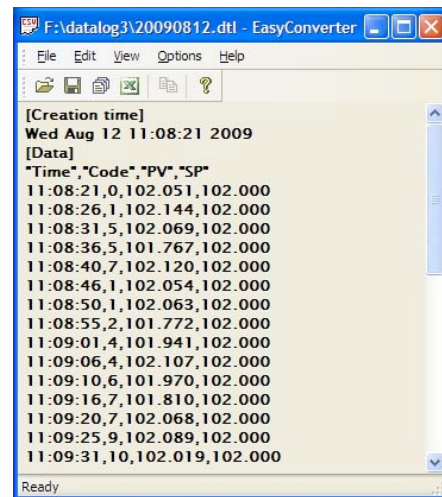
The EZware-5000 software suite includes EasyConverter, EasyBuilder5000, Project Manager and Recipe/Extended Memory Editor programs.



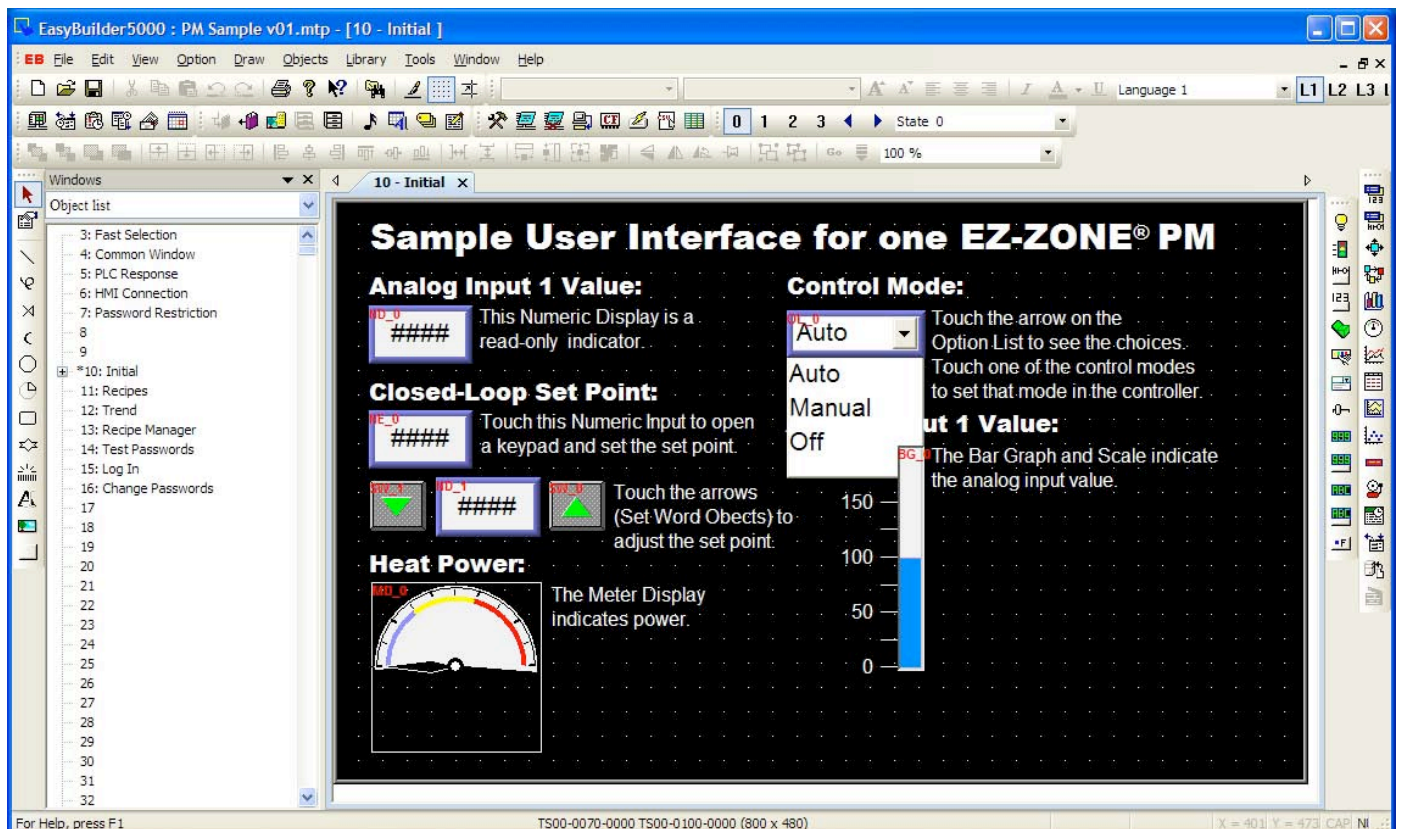
Project Manager uploads and downloads projects to and from the Silver Series OIT, opens compiled projects in simulation and launches the other EZware-5000 programs.

ID	ADDRESS	Recipe Name	Set Point 1	High Process Alarm 1	Set Point 2	High Process Alarm 2	Control
0	0	Standard Process	450.5	500	487	523	
1	19	Special for Customer	235	250	215	250	
2	38	Military Specificati	425.1	450	375	425	
3	57	FDA Test	140.3	175	150.7	180	
4	76	CE Test	50	65	75	100	
5	95		0	0	0	0	

The Recipe/Extended Memory Editor configures memory files for use with Silver Series OITs and allows offline creation of recipes.

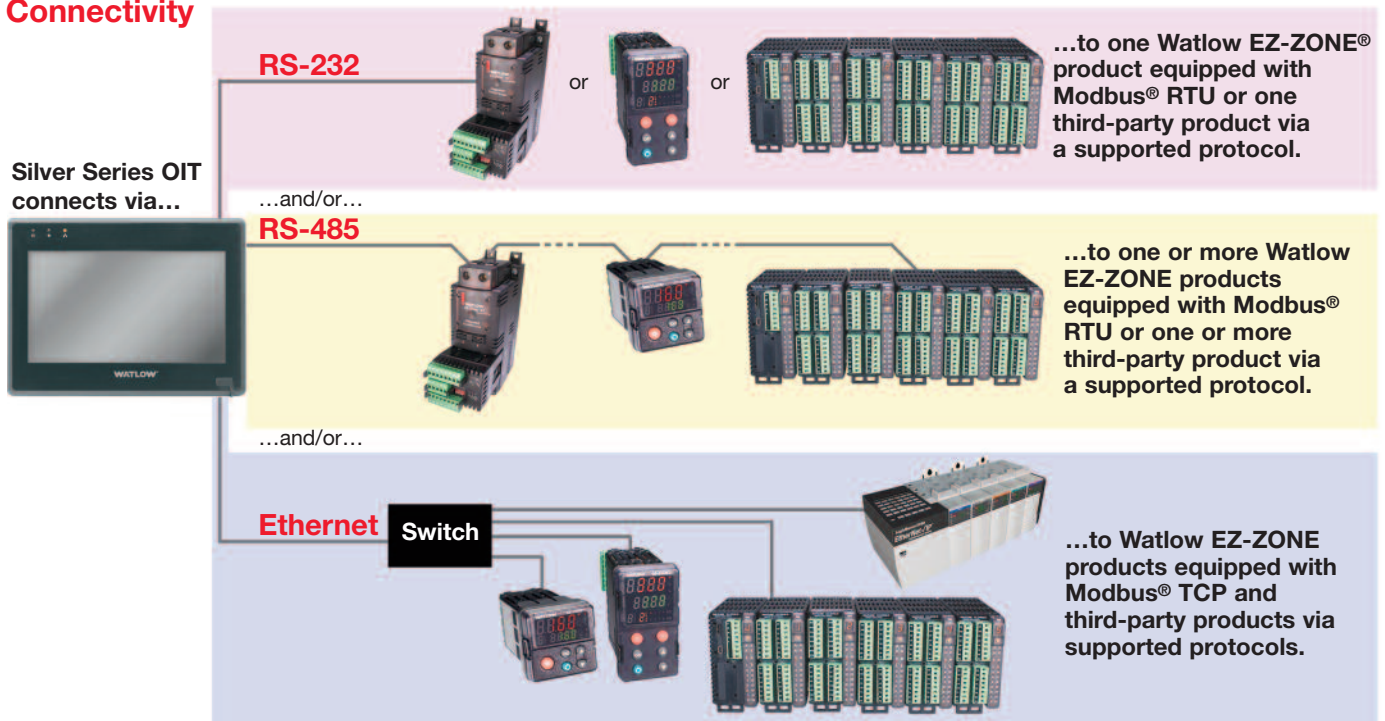


EasyConverter converts log files saved by the Silver Series OIT to file formats used by popular Window® software such as Microsoft® Excel.



EasyBuilder5000 provides a graphical screen designing environment with point-and-click access to features and drag-and-drop ease.

Connectivity



Ordering Information

Part Number	Description
TS00-0070-0000	7 in. (800 x 480 pixels) 65,536 (16-bit) color TFT LCD and an analog-resistive touchscreen
TS00-0100-0000	10 in. (800 x 480 pixels) 65,536 (16-bit) color TFT LCD and an analog-resistive touchscreen

Accessories

Part Number	Description
0601-0001-0000	Controller Support Tools CD-ROM with programming software, product manuals and sample projects
0830-0750-0000	Power supply, Input: 85-264VAC, Output: 24VDC, 1.1A, 25W (not Class 2)
0847-0299-0000	Class 2 power supply, Input: 90-264VAC, Output: 24VDC, 1.3A, 31W
0219-0374-0000	5-foot communication cable OIT COM1 (RS-485, 2-wire) to bare wires for Watlow EZ-ZONE controller screw terminals
0219-0375-0000	Splitter adapter for connecting to both COM1 (RS-232) and COM2 (RS-232)
0219-0376-0000	Splitter adapter for connecting to both COM1 (RS-485, 2-wire) and COM3 (RS-485, 2-wire)
0219-0377-0000	Splitter adapter for connecting to both COM1 (RS-485, 4-wire) and COM3 (RS-485, 2-wire)
0219-0378-0000	Splitter adapter for connecting to both COM1 (RS-485, 4-wire) and COM3 (RS-232)
0219-0379-0000	Splitter adapter for connecting to both COM1 (RS-485, 2-wire) and COM3 (RS-232)
0219-0382-0000	5-foot USB cable for downloading projects from a PC to the OIT
0830-0753-0000	Package of 5 ea. protective screen covers for the TS00-0070-0000
0830-0754-0000	Package of 3 ea. protective screen covers for the TS00-0100-0000

To be automatically connected to the nearest North American Technical Sales Office:

1-800-WATLOW2 • www.watlow.com • info@watlow.com

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