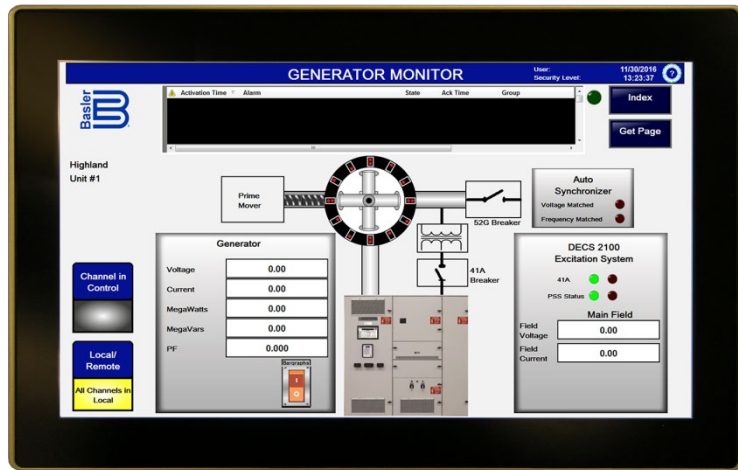





IDP-1500

Interactive Display Panel

Instruction Manual



 **WARNING:** California's Proposition 65 requires special warnings for products that may contain chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. Please note that by posting this Proposition 65 warning, we are notifying you that one or more of the Proposition 65 listed chemicals may be present in products we sell to you. For more information about the specific chemicals found in this product, please visit <https://www.basler.com/Prop65>.

Preface

This instruction manual provides information about the installation and operation of the IDP-1500. To accomplish this, the following information is provided:

- Mounting
- Connections
- Operation
- Maintenance
- Specifications

Conventions Used in this Manual

Important safety and procedural information is emphasized and presented in this manual through warning, caution, and note boxes. Each type is illustrated and defined as follows.

Warning!

Warning boxes call attention to conditions or actions that may cause personal injury or death.

Caution

Caution boxes call attention to operating conditions that may lead to equipment or property damage.

Note

Note boxes emphasize important information pertaining to installation or operation.



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Warning!

READ THIS MANUAL. Read this manual before installing, operating, or maintaining this equipment. Note all warnings, cautions, and notes in this manual as well as on the product. Keep this manual with the product for reference. Only qualified personnel should install, operate, or service this system. Failure to follow warning and cautionary labels may result in personal injury or property damage. Exercise caution at all times.

Basler Electric does not assume any responsibility to compliance or noncompliance with national code, local code, or any other applicable code. This manual serves as reference material that must be well understood prior to installation, operation, or maintenance.

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This publication contains confidential information of Basler Electric Company, an Illinois corporation. It is loaned for confidential use, subject to return on request, and with the mutual understanding that it will not be used in any manner detrimental to the interests of Basler Electric Company and used strictly for the purpose intended.

It is not the intention of this manual to cover all details and variations in equipment, nor does this manual provide data for every possible contingency regarding installation or operation. The availability and design of all features and options are subject to modification without notice. Over time, improvements and revisions may be made to this publication. Before performing any of the following procedures, contact Basler Electric for the latest revision of this manual.

The English-language version of this manual serves as the only approved manual version.

Revision History

A historical summary of the changes made to this instruction manual is provided below. Revisions are listed in reverse chronological order.

Visit www.basler.com to download the latest hardware, firmware, and BESTCOMS*Plus*® revision histories.

Instruction Manual Revision History

Manual Revision and Date	Change
B, May 2024	<ul style="list-style-type: none">• Clarified Ethernet port location
A, Dec 2023	<ul style="list-style-type: none">• Revised content to accommodate product hardware changes
—, Jan 2017	<ul style="list-style-type: none">• Initial release



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1 • Introduction

The IDP-1500 Interactive Display Panel is a high-resolution 15.6 inch/39.6 centimeter (measured diagonally) color touchscreen interface that enables a user to monitor and control a DECS-2100 excitation system. IDP-1500 monitoring and control features include excitation status, system control operations, and routine adjustments of the excitation setpoint.

Excitation system and generator system parameters are viewed and controlled through interactive pages (or screens) displayed by the IDP-1500. Screens are organized by function. Control of functions is achieved by touching buttons located on the IDP-1500 screens. Navigation between screens is also achieved by touching buttons or by a left or right swiping motion across a screen.

An IDP-1500 is typically mounted in the door of the excitation system enclosure. An additional IDP-1500 can be mounted remotely, such as, in the control room.

Communication between the IDP-1500 and the excitation system is facilitated through the Ethernet ports of the IDP-1500 and the system excitation control modules. USB ports on the IDP-1500 serve as an interface for a computer keyboard and/or mouse. These ports may also be used to download data in Portable Document Format (PDF) for viewing and analysis in a spreadsheet application.

Application

The IDP-1500 is compatible with all DECS-2100 excitation systems. An adaptor kit is available for retrofitting the IDP-1500 in DECS-2100 applications with an IDP-1200 or IDP-1201 display. Order Basler P/N 9501201100.

Features Summary

- 16:9 format, color TFT-LCD touch-enabled display with LED backlight
- Displays:
 - Generator parameters and rectifier bridge temperature trending
 - Digital or analog metering of generator voltage, and current, frequency, active power, reactive power, apparent power, power factor, and exciter voltage and current
 - Generator capability curve showing real-time operating point for up-to-date load status
 - System alarms and I/O status
- Trending and alarm data is retained in nonvolatile memory
- Ethernet communication ports and USB 3.0 ports
- Removable memory card slot accepts CFast card for storage of user data
- Multilevel password protection

Supporting Equipment

The IDP-1500 is supplied with an eight-port Ethernet switch (Basler P/N 41133).

Optional accessories available for use with the IDP-1500 include:

- Power supply, 24 Vdc at 3 Adc, Basler P/N 37563
- DIN mounting rail for power supply and Ethernet switch, Basler P/N 9323900004



2 • Mounting

This chapter provides the information needed for mounting the IDP-1500 and Ethernet switch.

Mounting the IDP-1500

Information is provided for two types of IDP-1500 installations:

- New installation in a panel
- Retrofit installation in an excitation system enclosure that currently houses an IDP-1200 or IDP-1201 display

Mounting Considerations

The IDP-1500 is intended for mounting in a cutout on a vertical panel in an environment where the ambient temperature is between 0 and 45°C (32 and 113°F). For optimum cooling, the IDP-1500 should not be installed in a panel that deviates more than 10 degrees from vertical. To enhance ventilation and maintenance, the IDP-1500 should be installed at least 2 inches or 50 millimeters away from adjacent equipment. Heat created by nearby equipment must not cause the ambient temperature surrounding the IDP-1500 to exceed its maximum operating temperature.

Mounting panel thickness can be no less than 0.059 inches or 1.5 millimeters.

New Installations

Cut an opening in the mounting panel that is 15.3 inches (388 millimeters) wide and 9.41 inches (239 millimeters) high. Figure 2-1 illustrates the panel cutting dimensions. Secure the IDP-1500 to the mounting panel according to the instructions provided in *Securing the IDP-1500*.

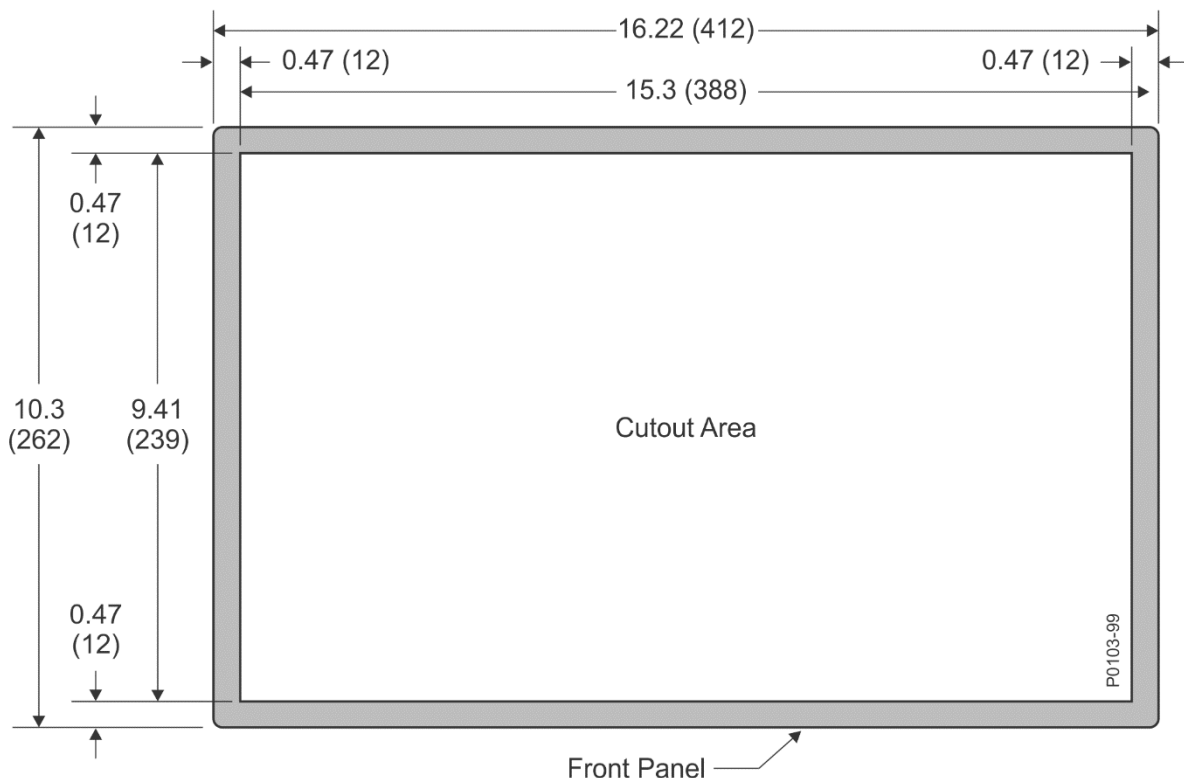


Figure 2-1. Panel Cutting Dimensions for New Installations

Retrofit Installations

The IDP-1500 retrofit installation kit, part number 9501201100, is designed for replacement of an IDP-1200 or IDP-1201 display mounted in a system enclosure door. The kit consists of the following:

- Assembly drawing
- Mounting bracket
- Thumbscrew and retainer ring

Warning!

The excitation cubicle housing the display panel must be removed from service and all related operating/control power voltage de-energized before proceeding with the following procedures.

To replace the display panel, perform the following procedure:

1. Remove the excitation control system from service and de-energize all operation/control power voltage. Remove all cables from the display panel.
2. Open the cubicle door and loosen the thumbscrew holding the hinged display panel mounting bracket against the door. See Figure 2, locator A.

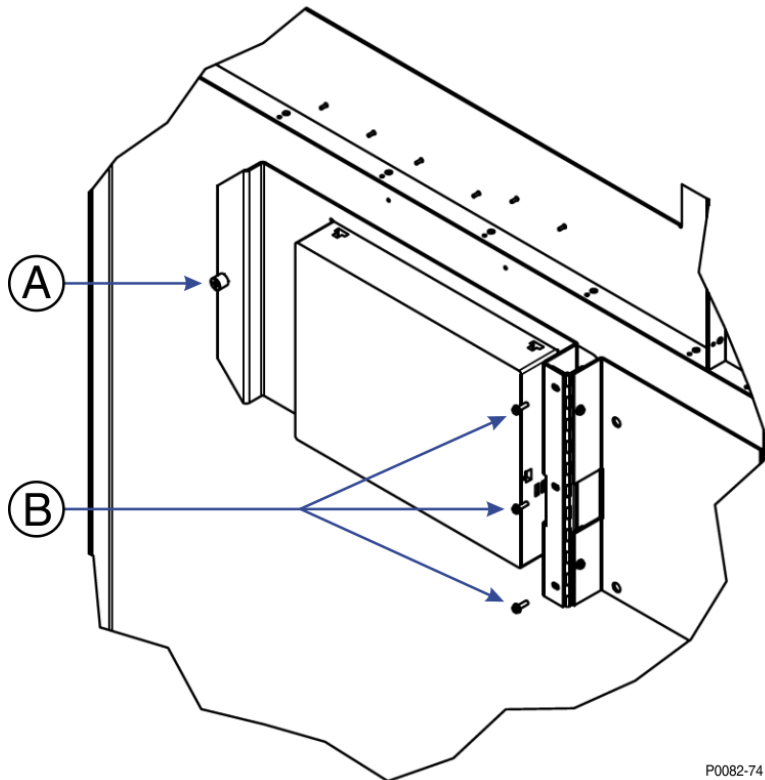


Figure 2-2. IDP-1200/IDP-1201 Mounting Bracket

3. Remove the three screws securing the mounting bracket to the hinge. See Figure 2, locator B. Remove the mounting bracket with display panel. Retain the hardware for later use.
4. Using the cutting dimensions illustrated in Figure 3, enlarge the door cutout to accommodate the larger IDP-1500 display panel (radius in corners not required).

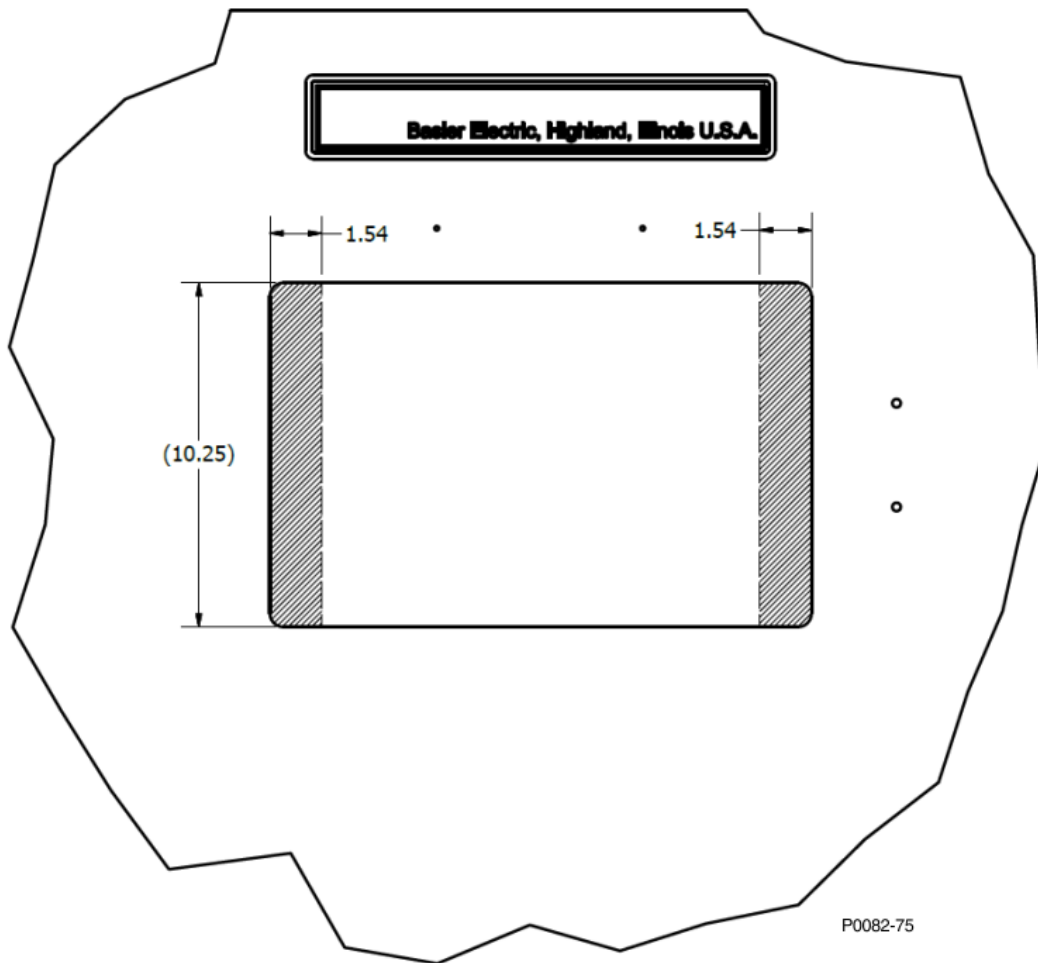
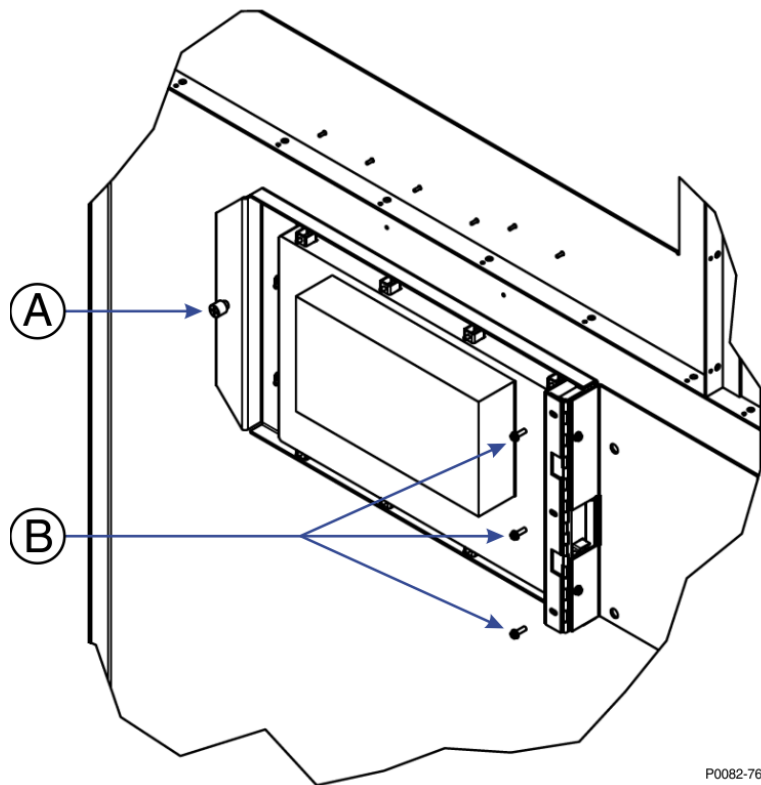


Figure 2-3. Door Cutting Dimensions

5. Secure the IDP-1500 into the supplied mounting bracket using the supplied fasteners. See *Securing the IDP-1500* below.
6. Install the assembled IDP-1500 and mounting bracket onto the hinge using the hardware removed in step 3, above. See Figure 4, locator B. Tighten the thumbscrew that holds the mounting bracket against the door. See Figure 4, locator A.



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Figure 2-4. IDP-1500 Mounting Bracket

Securing the IDP-1500

The IDP-1500 is secured to a mounting bracket or panel opening with hook-and-screw fasteners (Figure 2-5). Each fastener uses an M4 internal hex screw. The hook of each fastener is inserted into one of 10 display panel insertion slots and the fastener screw is tightened against the mounting bracket or panel. IDP-1500 display panels delivered prior to 2024 use the same fasteners in 12 insertion slots. Maximum torque for the fastener screws is 6.2 in-lb or 0.7 N•m. Figure 2-6 illustrates the 10 fasteners in place on the IDP-1500.

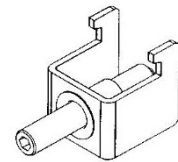


Figure 2-5. Fastener

IDP-1500 Securing Procedure

1. Insert the IDP-1500 into the panel or mounting bracket opening and hold the display panel against the mounting surface.
2. Insert the hook of a hook-and-screw fastener in one of the display panel insertion slots and rotate the screw clockwise to tighten the screw against the mounting surface.
3. Repeat step 2 for the remaining fasteners.
4. As necessary, adjust the display panel's position in the opening so that the IDP-1500 is centered in the door opening.

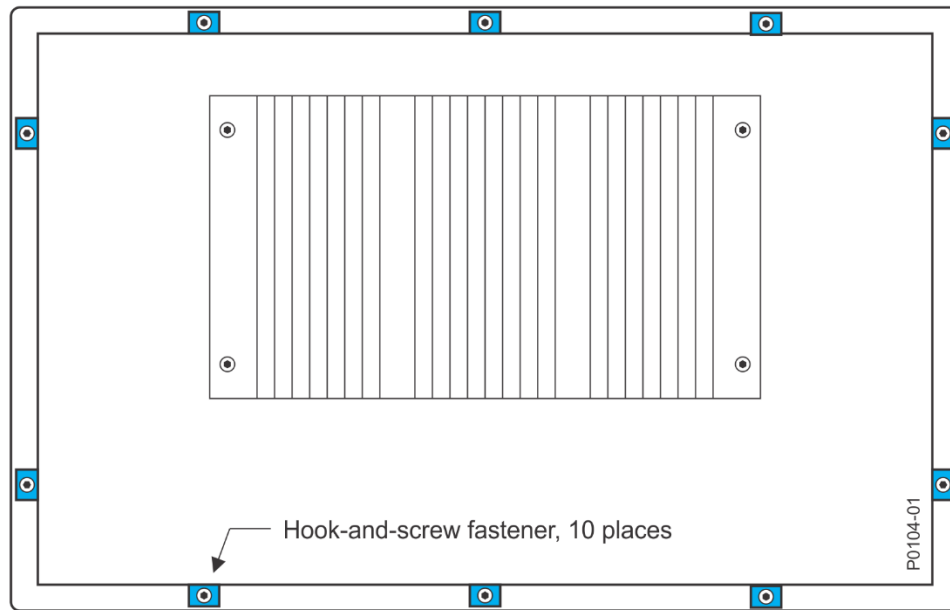


Figure 2-6. IDP-1500 Fastener Locations

Mounting the Ethernet Switch

An existing Multi-Drop Adapter (MDA) must be replaced with the supplied Ethernet switch. The Ethernet switch should be mounted within the control system enclosure. Mount the Ethernet switch according to the instructions provided with the Ethernet switch.



3 • Connections

IDP-1500 connections consist of control power wiring, chassis grounding, and communication connections for the display panel and supplied Ethernet switch. Connections should be made only after the IDP-1500 is mounted securely.

IDP-1500 Connector Location and Overview

The IDP-1500 connectors and memory card are located behind the display panel at the bottom of the housing. Due to product changes, the connector layout of an IDP-1500 delivered prior to 2024 differs from that of an IDP-1500 delivered in 2024 or later.

2024 and Later

Figure 3-1 illustrates the connector and memory card locations for an IDP-1500 delivered in 2024 or later. Table 3-1 summarizes the function of each element.

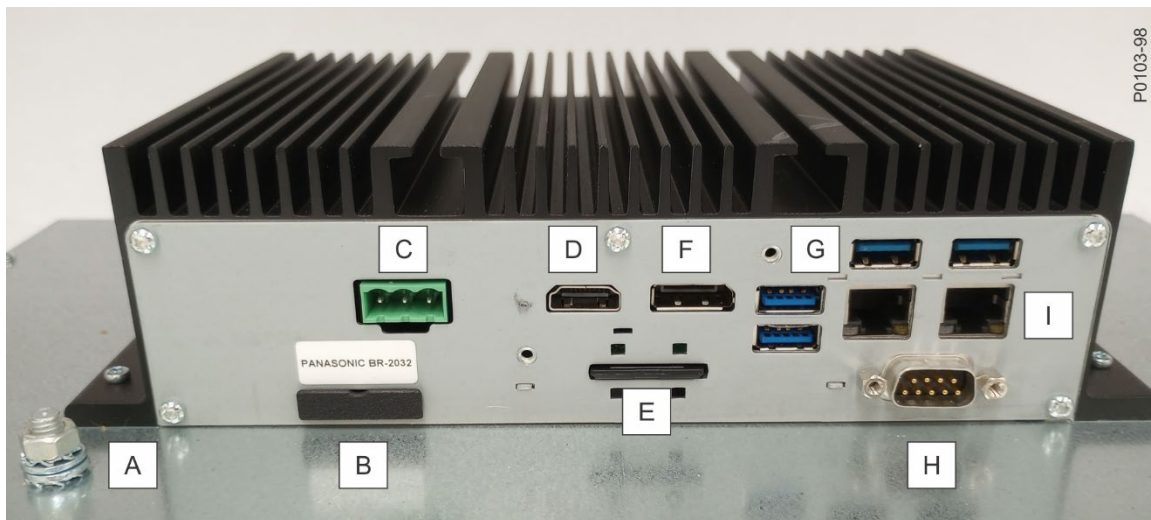


Figure 3-1. Connector Interface, 2024 and Later

Table 3-1. Connector Interface Summary, 2024 and Later

Locator	Connector/Element	Format
A	Ground stud	M6 threaded stud with washers and hex nut
B	Battery	BR2032 coin-type lithium battery
C	Control power	Three conductor header, mates with provided connector
D	HDMI	Video port, HDMI specification 1.4b
E	Memory card	SD or SDHC memory card
F	DP	Display port socket
G	USB 3.0	USB type A connector, four places
H	RS-232/422/485	D-sub male connector, nine conductors
I	Ethernet	RJ45 jack, two places (only left jack is utilized)

Prior to 2024

Figure 3-2 illustrates the connector and memory card locations for an IDP-1500 delivered prior to 2024. Table 3-2 summarizes the function of each element.

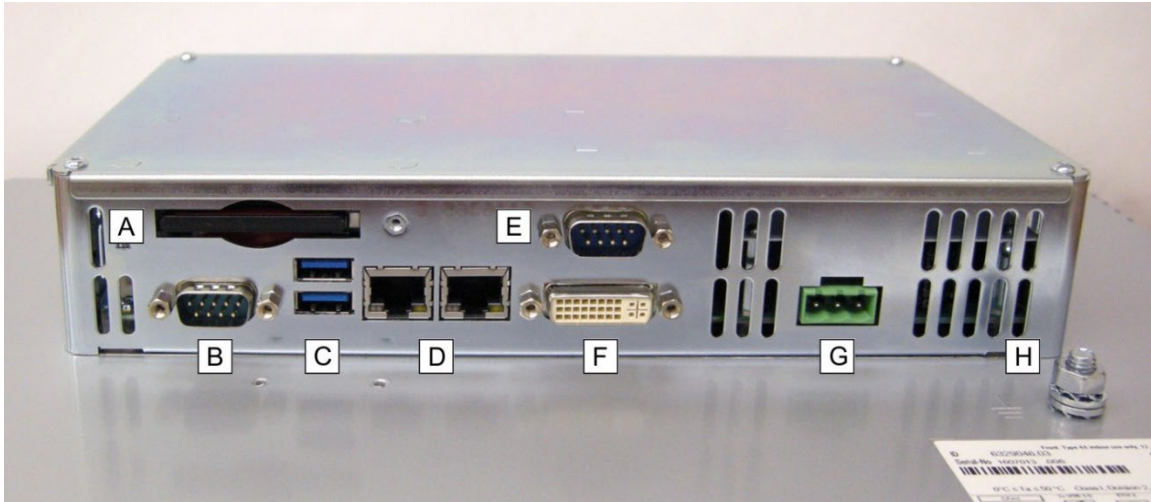


Figure 3-2. Connector Interface, Prior to 2024

Table 3-2. Connector Interface Summary, Prior to 2024

Locator	Connector/Element	Format
A	Memory card *	CFast
B	RS-485	D-Sub male connector, nine conductors
C	USB 3.0	USB type A connector, four places
D	Ethernet	RJ45 jack, two places (only left jack is utilized)
E	RS-232	D-Sub male connector, nine conductors
F	DVI-I display port	DVI-I socket, 24 + 5 conductors
G	Control power	Three conductor header, mates with provided connector
H	Ground stud	M6 threaded stud with washers and hex nut

* Memory card opening shown with cover removed. Cover attaches to the display panel with a captive thumbscrew.

IDP-1500 Grounding and Control Power

Perform the appropriate procedure for connecting the IDP-1500 control power and chassis ground in a retrofit installation or new installation.

Retrofit Installation

If replacing an IDP-1200 or IDP-1201 display, perform the following steps to connect the IDP-1500 control power and chassis ground.

1. De-energize the 24 Vdc control power applied to the display panel.
2. Disconnect the control power and ground wires from the power connector used for the IDP-1200 or IDP-1201 display.
3. Terminate the ground wire with a suitable wire lug and secure the wire to the IDP-1500's M6 ground stud with the provided hex nut. The torque applied to the ground stud should not exceed 7.7 lb-ft or 10.4 N•m.

4. As required, trim or strip the two control power wires so that 0.275 inches or 7 millimeters of conductor is exposed. Then, secure each wire in the provided control power connector as follows:
 - a. Insert and secure the positive polarity wire in position 1 of the connector using a small flat-blade screwdriver. When facing the rear panel of the display, this terminal position is on left side of the connector.
 - b. Insert and secure the negative polarity wire in position 3 of the connector. When facing the rear panel of the display, this terminal position is on the right side of the connector.

The torque applied to the connector terminal screws should not exceed 5.3 in-lb or 0.6 N•m. The center terminal of the control power connector is left vacant.
5. Insert the connector in the power input terminal block of the IDP-1500.

New Installation

If performing a new installation of the IDP-1500, perform the following steps to connect the control power and chassis ground.

1. Ground the IDP-1500 with a suitable ground wire terminated with a wire lug sized to accommodate a threaded M6 stud. Secure the wire to the IDP-1500 ground stud with the provided hex nut. The torque applied to the ground stud should not exceed 7.7 lb-ft or 10.4 N•m.
2. Strip the insulation from the two control power wires so that 0.275 inches or 7 millimeters of conductor is exposed. Then secure each wire in the provided control power connector as follows:
 - a. Insert and secure the positive polarity wire in position 1 of the connector using a small flat-blade screwdriver. When facing the rear panel of the display, this terminal position is on left side of the connector.
 - b. Insert and secure the negative polarity wire in position 3 of the connector. When facing the rear panel of the display, this terminal position is on the right side of the connector.

The torque applied to the connector terminal screws should not exceed 5.3 in-lb or 0.6 N•m. The center terminal of the control power connector is left vacant.
3. Insert the connector in the power input terminal block of the IDP-1500.

Ethernet Switch Control Power

Connect 24 Vdc control power to the Ethernet switch using the guidelines provided in the documentation supplied with the Ethernet switch.

Communication Connections

Use cables terminated with RJ-45 connectors to connect the IDP-1500 and excitation control modules (ECM-2s) to the Ethernet switch. The cables must be eight-conductor, with four twisted conductor pairs. Connect one end of the cable to Ethernet port LAN 2 on the IDP-1500 and the other end to Ethernet port 1 or 2 on the ECM-2.



4 • Operation

Control system and generator system parameters are viewed and controlled through interactive screens displayed by the IDP-1500. Screens are organized by function. Control of functions is achieved by touching simulated buttons located on the IDP-1500 screens. Navigation between screens is accomplished by touching buttons on the screens or by swiping a finger across a screen.

This chapter provides information about IDP-1500 screen navigation and the available control and monitoring functions.

Caution

This product contains one or more *nonvolatile memory* devices. Nonvolatile memory is used to store information (such as settings) that needs to be preserved when the product is power-cycled or otherwise restarted. Established nonvolatile memory technologies have a physical limit on the number of times they can be erased and written. During product application, consideration should be given to communications, logic, and other factors that may cause frequent/repeated writes of settings or other information that is retained by the product. Applications that result in such frequent/repeated writes may reduce the useable product life and result in loss of information and/or product inoperability.

Power-Up

The Initial screen (Figure 4-1) is displayed upon power-up of the IDP-1500. This screen lists the IDP-1500 firmware version information and can include custom information about the site where the equipment is applied.

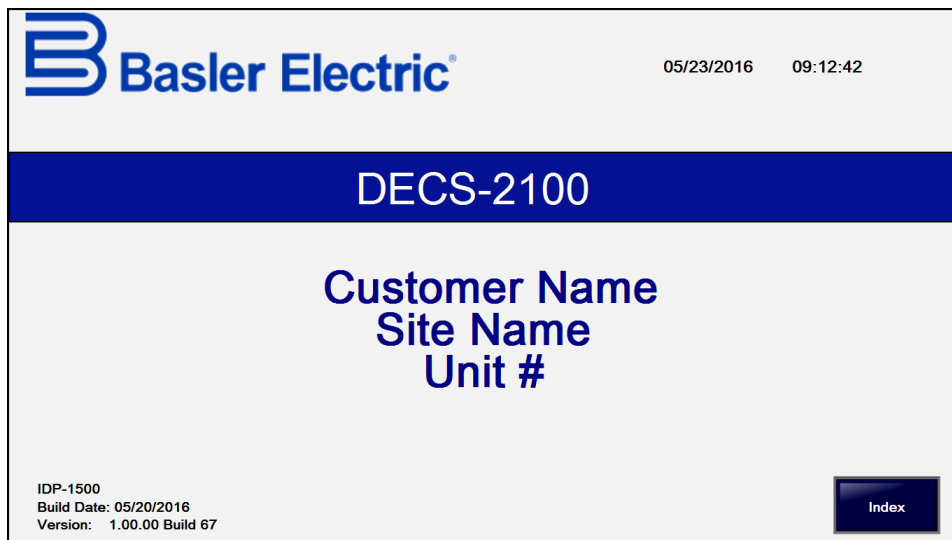


Figure 4-1. Initial Screen

The Initial screen can be accessed from other screens also. See *Screen Navigation* for more information.

Screen Elements

IDP-1500 screens include touch controls and indicators which can consist of numerical or graphical representations. Most screens include a group of commonly-used elements located in the top portion of the screen. These elements are illustrated in Figure 4-2. Locators in Figure 4-2 correspond to the element descriptions which follow in Table 4-1.

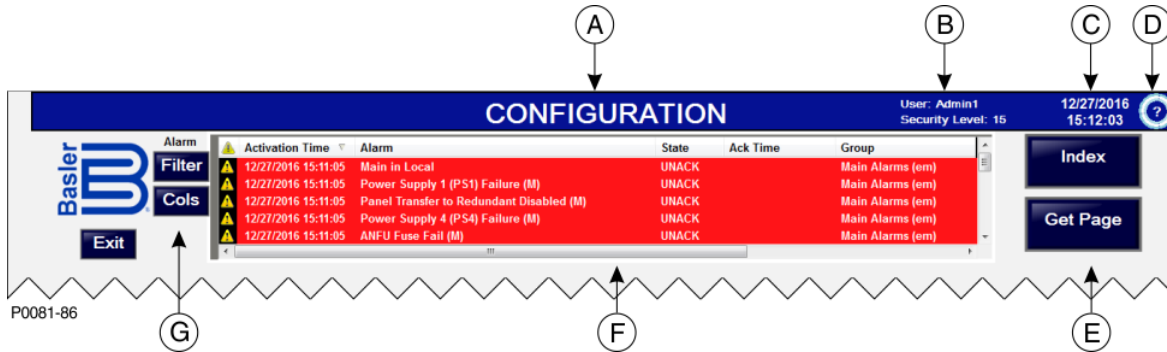


Figure 4-2. Commonly-Used Screen Elements

Table 4-1. Commonly-Used Screen Element Descriptions

Locator	Description
A	<i>Screen title:</i> each screen's title corresponds to labeled navigation aids accessed through the buttons of the General Index screen and the screens list of the Get Page window.
B	<i>User identification and security level:</i> the active username and corresponding security level is displayed here. Touching this information accesses the Log On window where the active user can be logged off or changed by entering a new username and password. See <i>Security</i> for more information.
C	<i>Time and date:</i> time and date information retained by the IDP-1500 operating system is displayed. The system time and date can be manually adjusted on the Configuration screen.
D	<i>Help button:</i> touching this button opens the IDP-1500 instruction manual in a PDF file reader
E	<i>Index button and Get Page button:</i> these buttons open the General Index screen and Select Page window which provide quick access to other IDP-1500 screens. See <i>Screen Navigation</i> for more information.
F	<i>Alarms banner:</i> lists each system alarm with a description, date, and time of the alarm. The timestamp for acknowledgement and clearing (if applicable) of alarms is also displayed. Active alarms are displayed as white text on a red background. Acknowledged alarms are displayed as yellow text on a black background. Cleared alarms are displayed as red text on a white background. Touching the Alarms Banner displays the Alarms/Faults screen where alarms can be acknowledged. See Alarms/Faults screen for more information.
G	<i>Alarm Filter and Columns:</i> Allows alarm filtering and column display. Administrator access is required.

Screen Navigation

IDP-1500 screen navigation tools include an Index screen, a Get Page window, and screen swiping gestures.

Index Screen

An Index button is available on every IDP-1500 screen except the Cleaning Lock and Screen Saver screens. When this button is touched, the General Index screen of Figure 4-3 is displayed. This screen provides access to commonly-used IDP-1500 screens through an array of buttons.

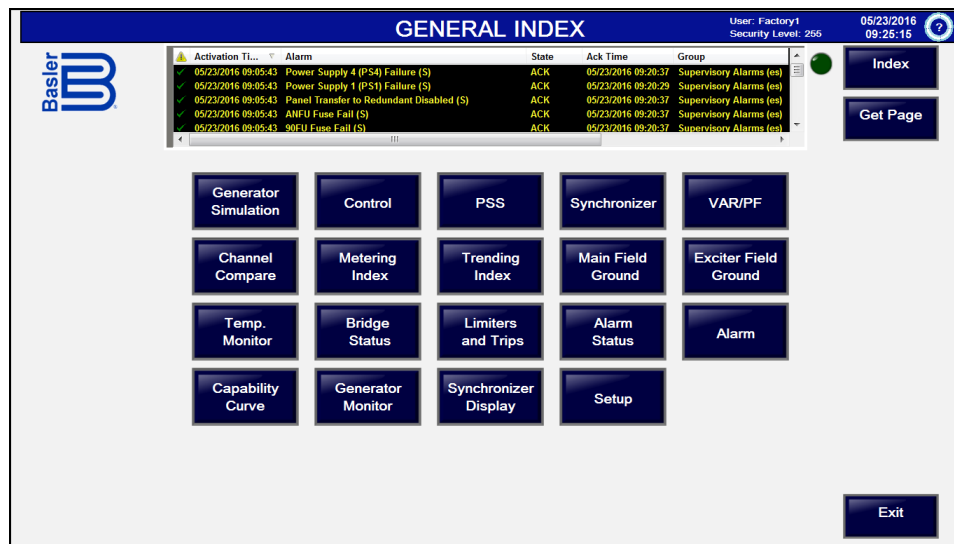


Figure 4-3. General Index Screen

Get Page Window

A Get Page button is available on every IDP-1500 screen except the Initial, Cleaning Lock, and Screen Saver screens. Touching this button displays the Select Page window of Figure 4-4 which lists all available IDP-1500 screens along with navigation, Select, and Cancel buttons. The desired screen is selected and then opened for direct access to the screen. Screen availability depends on the configuration of the excitation system.

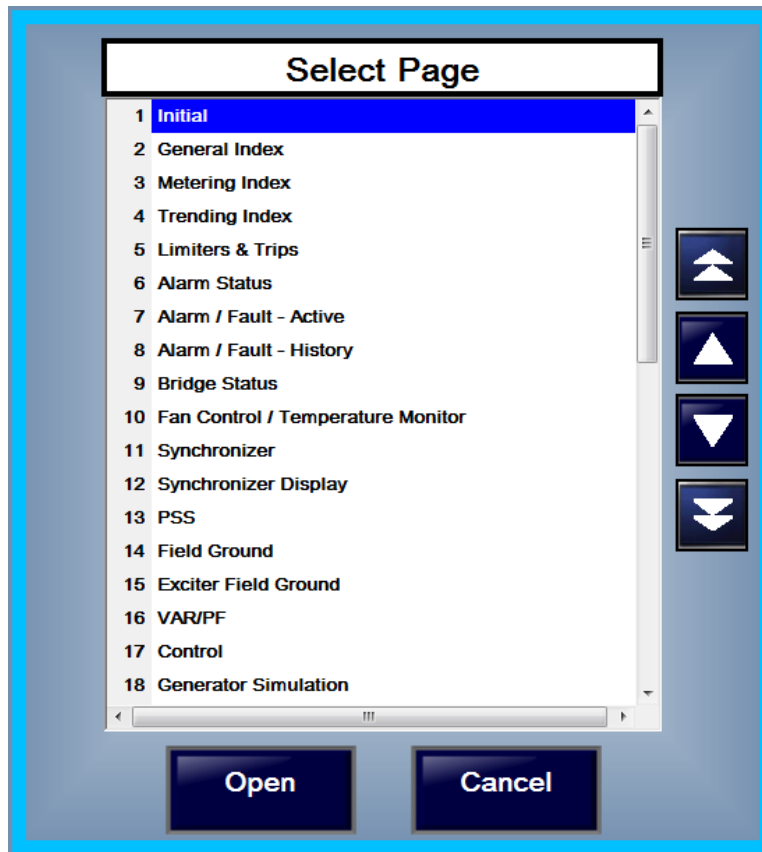




Figure 4-4. Get Page Window

Screen Swiping Gestures

Several IDP-1500 screens provide quick access to the adjacent screen through left or right swiping gestures. Screen swiping is enabled on the Alarms, Bridge Status, and Metering screens. Movement between the Initial and General Index screens is also possible through swiping. Table 4-2 lists the IDP-1500 screens with swiping enabled and the navigation possible with left or right swiping gestures.

Table 4-2. Screen Navigation with Swiping Gestures

 Swipe Left to View:	Active Screen	Swipe Right to View: 
N/A	General Index	Initial
Main Meter Panel	Supervisory Meter Panel	Redundant Meter Panel
Redundant Meter Panel	Main Meter Panel	Supervisory Meter Panel
Supervisory Meter Panel	Redundant Meter Panel	Main Meter Panel
Alarm/Fault – Active	Alarm Status	Alarm/Fault – History
Alarm/Fault – History	Alarm/Fault – Active	Alarm Status
Alarm Status	Alarm/Fault – History	Alarm/Fault – Active
Bridge 02–03 Status	Bridge 00–01 Status	Fan Control/Temp. Monitor
Fan Control/Temp. Monitor	Bridge 02–03 Status	Bridge 00-01 Status
Bridge 00–01 Status	Fan Control/Temp. Monitor	Bridge 02–03 Status

Configuration

Basic IDP-1500 setup functions are accessed on the Configuration screen shown in Figure 4-5. This screen is selected by touching the Setup button on the Index screen or by selecting System Configuration through the Select Page window.

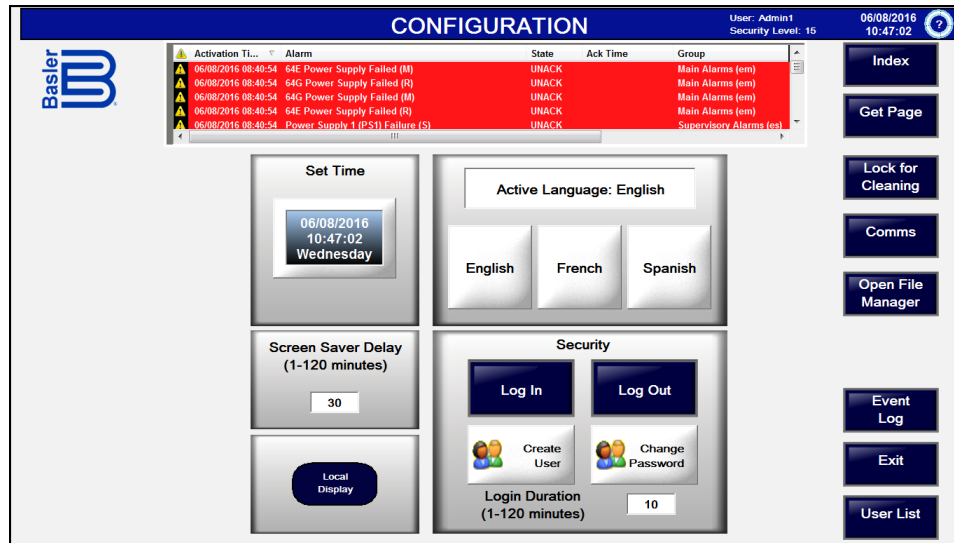


Figure 4-5. Configuration Screen

Setup functions include:

- Display language selection
- Time and date
- Screen saver activation delay
- Local/remote display selection
- Security (See the *Security* chapter for additional information)

Buttons, along the right side of the Configuration screen, serve as gateways to additional IDP-1500 setup and maintenance functions.

Cleaning Lock

Touching the Lock for Cleaning button displays a screen which allows for cleaning of the display without the risk for inadvertently triggering system operations. See the *Maintenance* chapter for display cleaning guidelines.

Communication Configuration

Touching the Comms button accesses the Communication Configuration screen which displays the IP address of the IDP-1500 and the excitation system peripheral (ECM-2) devices for each control channel. The IP address of each connected module can be configured by switching the IDP-1500 offline and then adjusting each applicable module address. See the *Instruction Manual for ECM-2 Excitation Control Module* (Basler publication 9411300990) for more information.

File Manager

Touching the Open File Manager button access the File Manager screen of Figure 4-6. This screen lists the files present on an inserted CFast memory card and connected USB device. Files can be copied or moved from one storage device to the other or deleted.

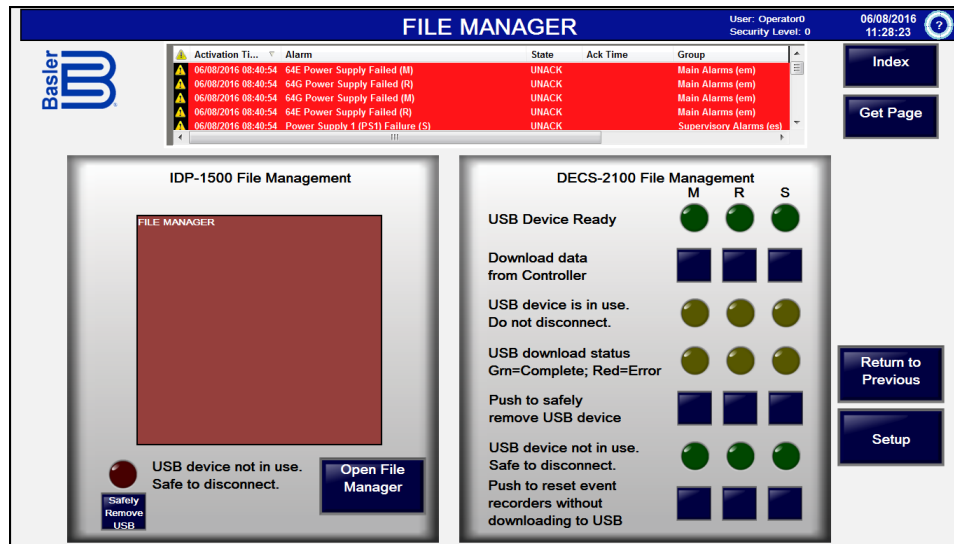


Figure 4-6. File Manager Screen

Event Log

Touching the Event Log button displays the Event Log screen which lists a history of all alarms. A Copy to USB button provides the ability to export the plot data to a USB device in a PDF format. The Alarms/Faults – Active screen displays the same information with the added ability of filtering and acknowledging alarms.

User List

Touching the User List button displays a window listing the login and password credentials for all default IDP-1500 users. This feature is available only with administrator (level 15) access. See the *Security* chapter for more information.

Control Functions

The Control and Var/PF screens provide system control, status indication, and metering of generator and excitation system parameters.

Control

Figure 4-7 illustrates the Control screen.

Controls

Control screen controls include buttons for regulation mode selection, logic, panel, and channel transfers, regulation setpoint adjustment, and 41A breaker operation. Touching a control button displays a window with buttons to make the available control selections.

Status Indicators

Indicators on the Control screen include:

- Transfer Status: indicates the logic transfer state.
- System Status: indicates the readiness of the control system channels.
- Channel in Control: indicates which of the control system channels is actively controlling the excitation level.
- Generator Breaker: indicates the status of the generator breaker: open or closed
- Local/Remote: indicates the local/remote control status of all control system channels. When a user is logged into the IDP-1500 with level 1 or higher credentials, this indicator functions as a control button which can be used to select either local or remote control.

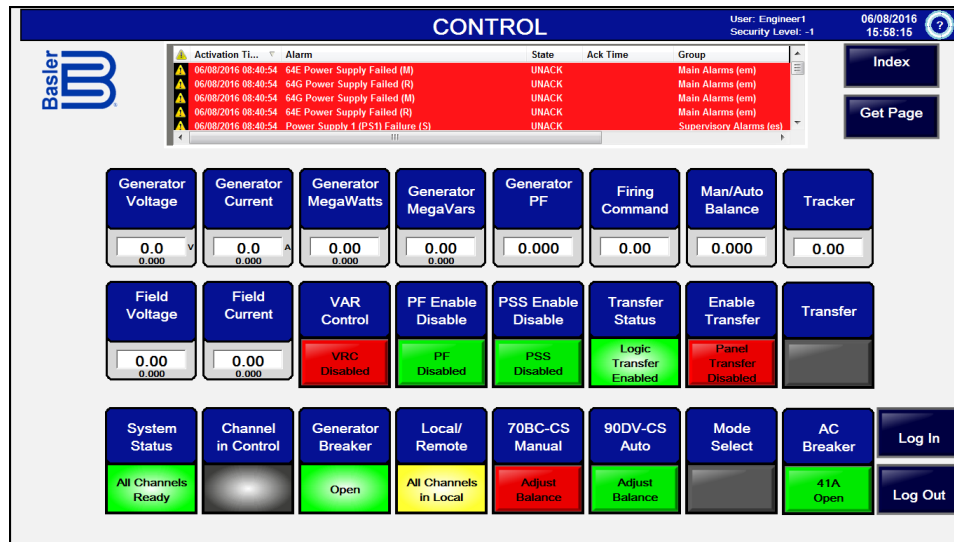


Figure 4-7. Control Screen

Metering

Control screen metering indications include:

- Field Current: level of field current in Adc.
- Field Voltage: level of field voltage in Vdc.
- Firing Command: SCR firing command level in percent.
- Generator Current: level of generator current in Aac.
- Generator megavars: level of reactive power supplied by the generator in Mvar.
- Generator Megawatts: level of active power supplied by the generator in MW.
- Generator PF: value of the generator power factor.
- Generator Voltage: level of generator terminal voltage in Vac.
- Man/Auto Balance: setpoint balance between manual and auto regulation modes.
- Tracker: percent difference (error) between the outputs of the main and redundant control channels

Metering indications with two values display the actual reading in the upper row of numbers and the per-unit (pu) value in the lower row of numbers.

Var/PF Control

Figure 4-8 illustrates the Var/PF screen.

Controls

Var/PF screen controls include buttons for regulation mode selection, regulation setpoint adjustment, and 41A breaker operation. Touching a control button displays a window with buttons to make the available control selections.

Status Indicators

Indicators on the Var/PF screen include:

- Channel in Control: indicates which of the control system channels is actively controlling the excitation level.
- Var Control Status: indicates whether var control is active or inactive.
- PF Control Status: indicates whether PF control is active or inactive.

Metering

Var/PF screen metering consists of generator voltage, generator current, generator megawatts, generator megavars, firing command, megavar reference, megavar balance, PF reference, and PF balance.

Metering indications with two values display the actual reading in the upper row of numbers and the per-unit (pu) value in the lower row of numbers.

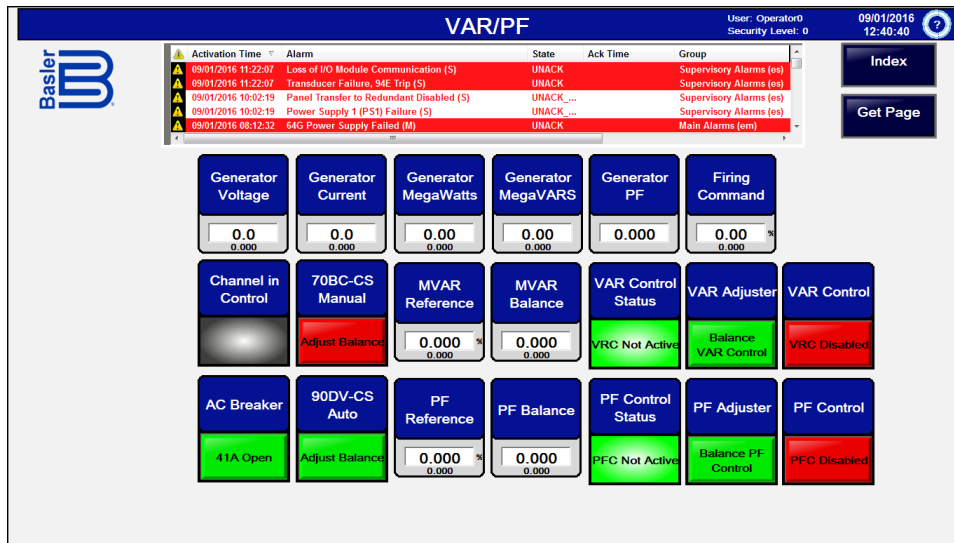


Figure 4-8. Var/PF Screen

Parameter Metering

Available parameter metering functions include:

- Analog metering of generator and excitation system parameters
- Trending graphs and data for generator and excitation system parameters
- Control channel parameters comparison tool

Analog Metering

Analog metering and metering configuration screens are accessed through the Metering Index screen or the Get Page window. Three metering screens are provided for the three possible control channels (main, redundant, and supervisory) and one metering screen is provided for generator parameters.

Control Channel Metering

Figure 4-9 illustrates the Main Meter Panel screen for the main control channel. The metering screens for the redundant and supervisory channels are identical.

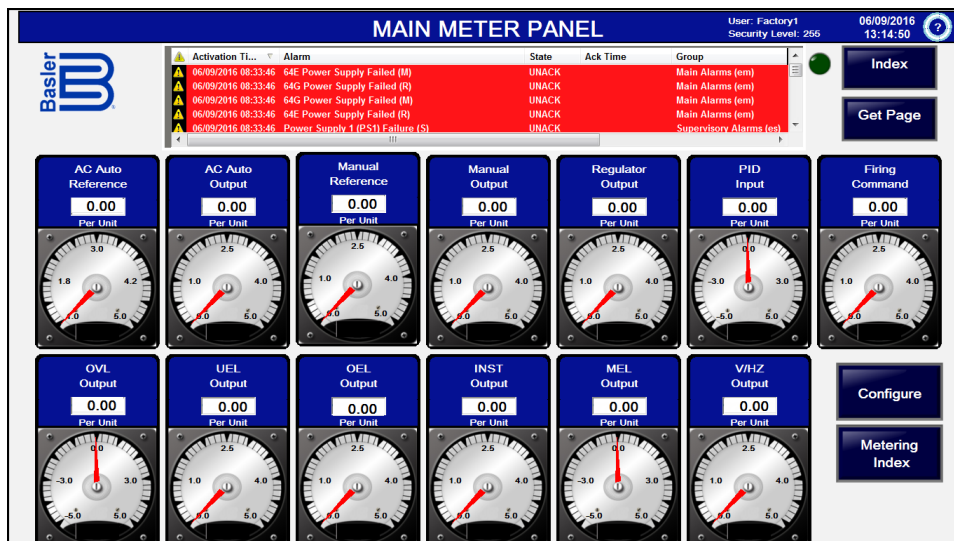


Figure 4-9. Control Channel Analog Metering Screen

Control Channel Metering Configuration

The minimum and maximum metering values displayed on the analog metering screens for the main, redundant, and supervisory channels are configured on the Analog Meter Configuration screen of Figure 4-10.

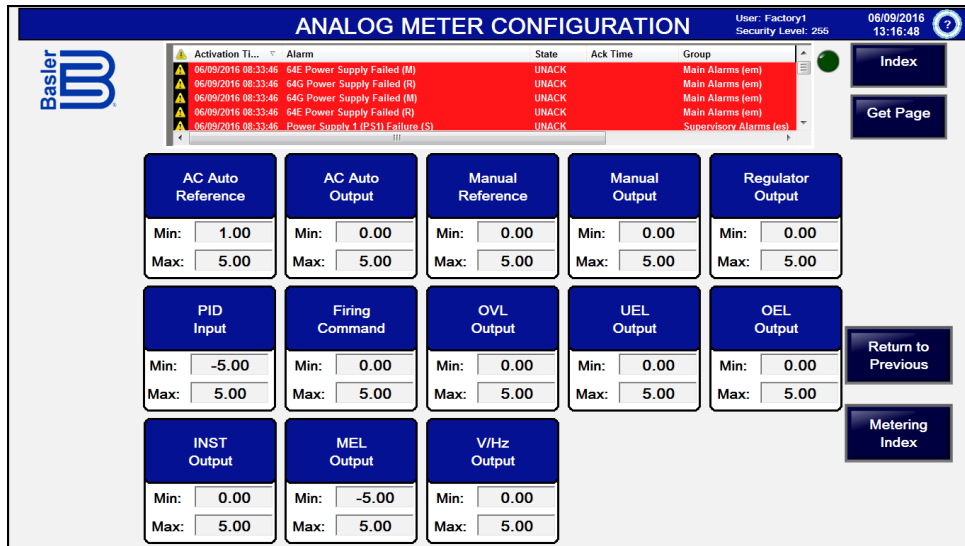


Figure 4-10. Control Channel Analog Metering Configuration Screen

Touching a value field displays a numeric keypad which is used to enter the desired minimum or maximum value.

Generator Metering

Figure 4-11 illustrates the Main Meter Panel screen for the main control channel.

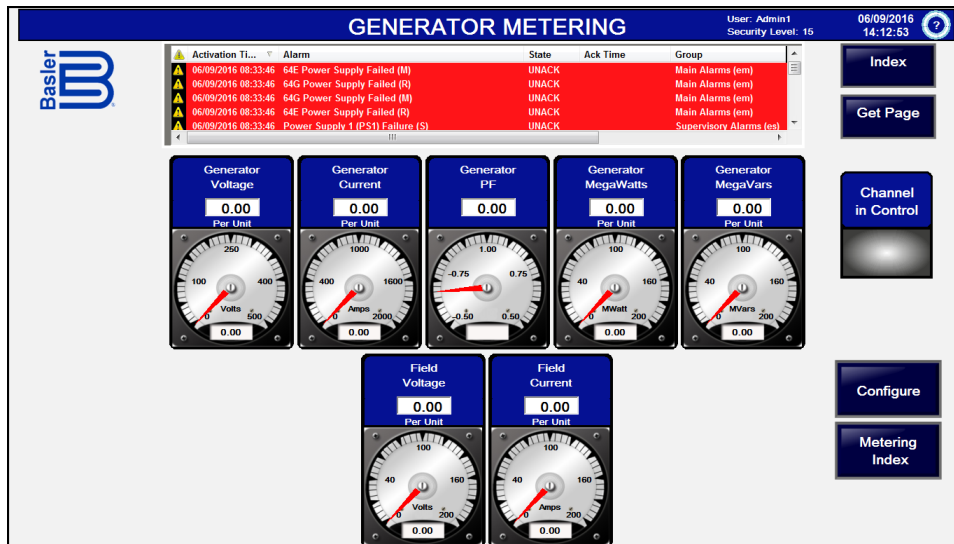


Figure 4-11. Generator Analog Metering Screen

Generator Metering Configuration

The minimum and maximum metering values displayed on the Generator Metering screen are configured on the Generator Metering Configuration screen of Figure 4-12.

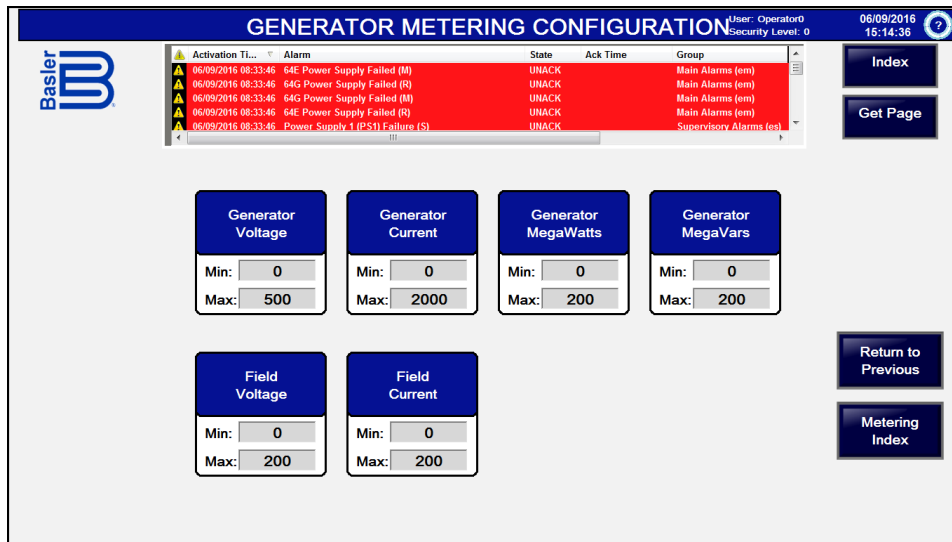


Figure 4-12. Generator Metering Configuration Screen

Touching a value field displays a numeric keypad which is used to enter the desired minimum or maximum value. The generator power factor metering range is fixed so no adjustment is provided. Minimum and maximum metering ranges for all other parameters are listed in Table 4-3.

Table 4-3. Generator Metering Parameter Ranges

Parameter	Minimum	Maximum
Field Current	-1500	1500
Field Voltage	-1500	1500
Generator Current	0	30000
Generator Voltage	0	30000
Generator Megavars	-1500	1500
Generator Megawatts	0	1500

Trending

Trending information for parameters associated with the control channels and power bridges are accessed through the Trending Index screen or the Get Page window. Trending information can be viewed in graphical or tabular data formats.

Control Channel Trending Graph

Figure 4-13 illustrates the Trending screen for the main control channel in graphical format. The trending graph screen for the redundant channel is identical.

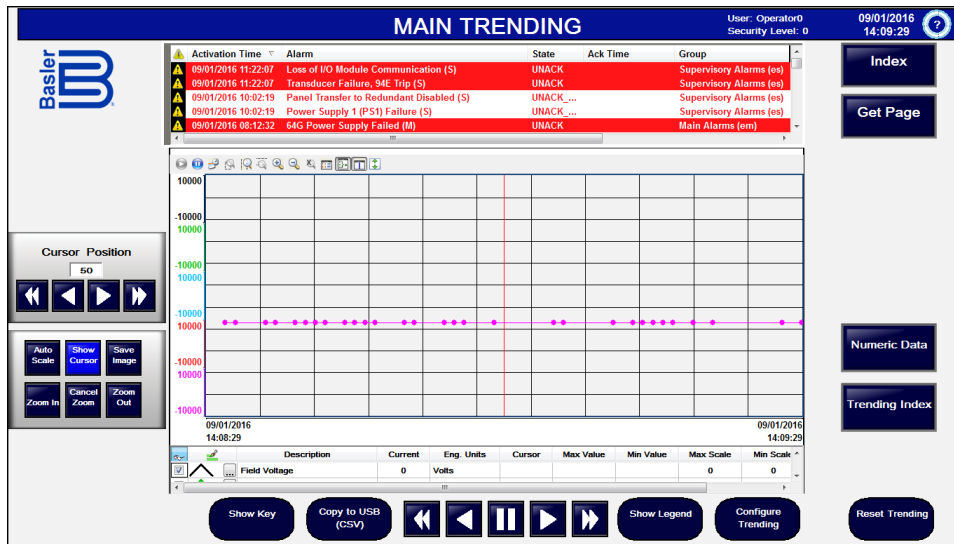


Figure 4-13. Trending Graph Screen

Control Channel Trending Data

Figure 4-14 illustrates the Trending screen for the main control channel in tabular data format. The trending data screen for the redundant channel is identical.

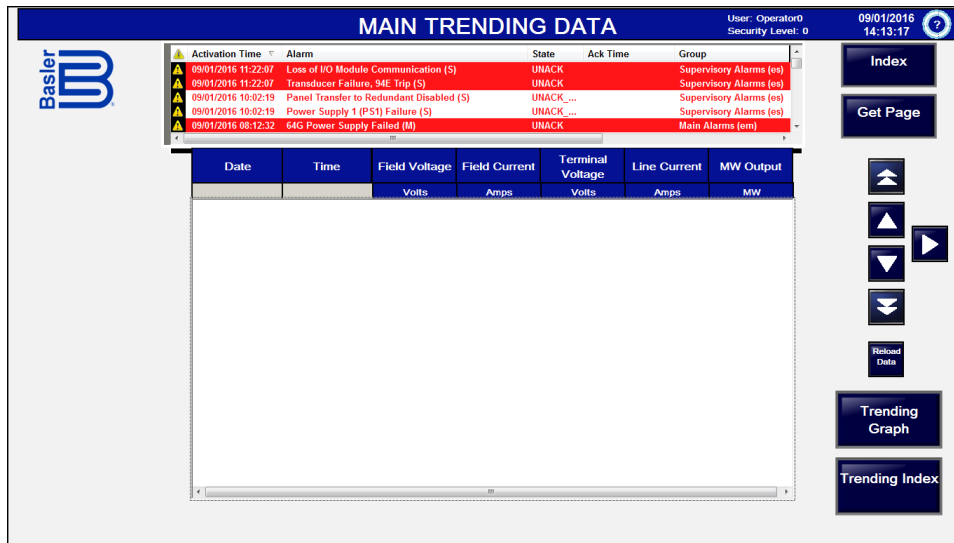


Figure 4-14. Trending Data Screen

Trending Configuration

The visibility of parameters and trending duration are configured on the Trending Configuration screen of Figure 4-15.

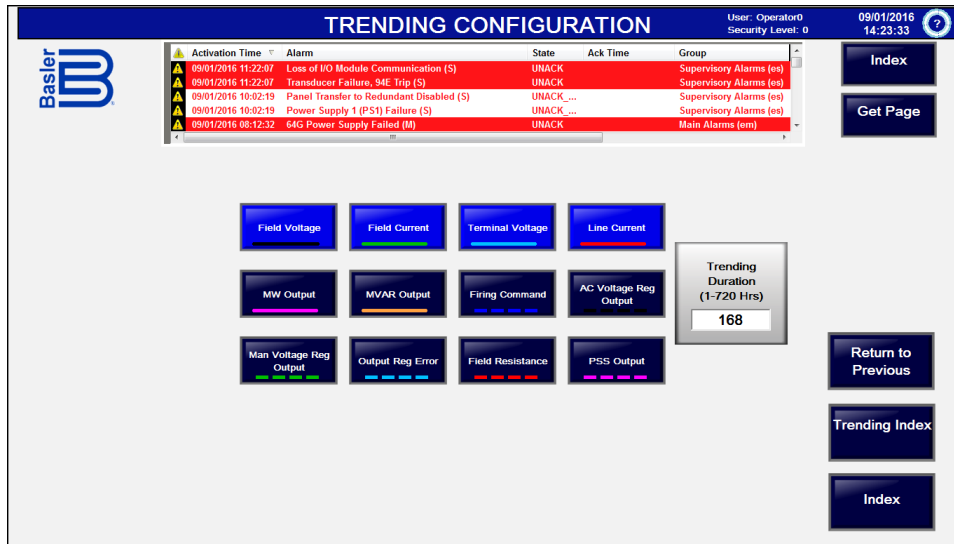


Figure 4-15. Trending Configuration Screen

Bridge 00-01 Temperature Trending Graph

Figure 4-16 illustrates the Temperature Trending screen for power bridges 00-01 in graphical format. The trending graph screen for power bridges 02-03 is identical.

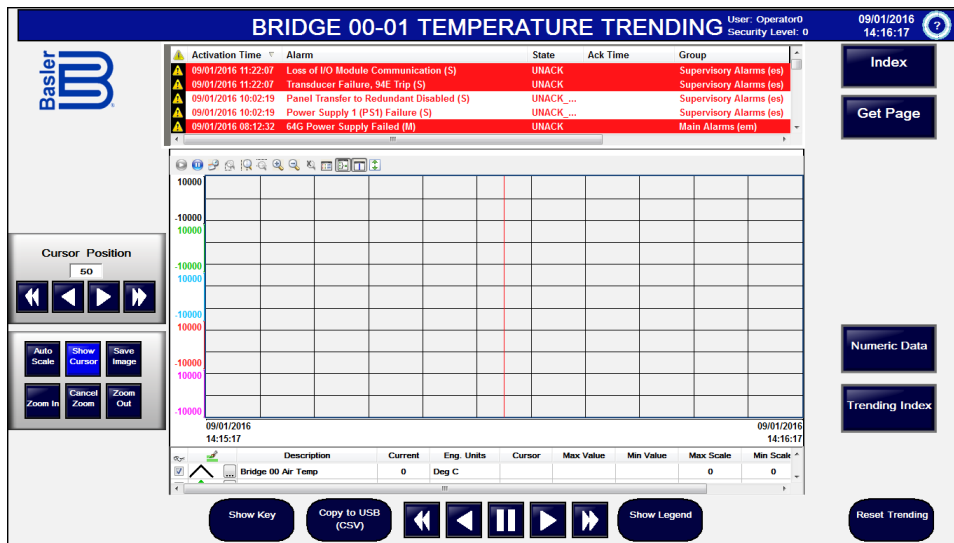


Figure 4-16. Power Bridge Temperature Trending Graph Screen

Bridge 00-01 Temperature Trending Data

Figure 4-17 illustrates the Temperature Trending screen for power bridges 00-01 in tabular data format. The trending data screen for power bridges 02-03 is identical.

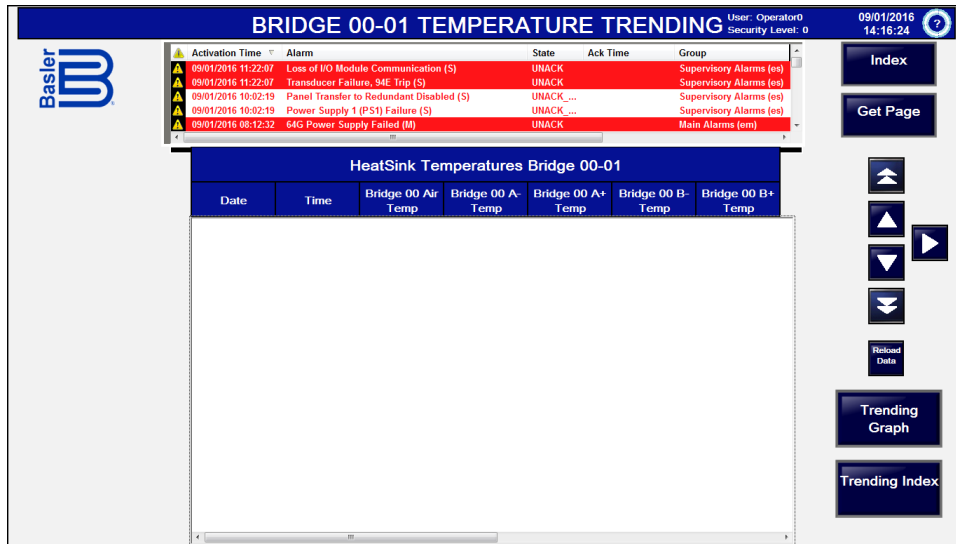


Figure 4-17. Power Bridge Temperature Trending Data Screen

Control Channel Parameter Comparison

A control channel parameter comparison tool is accessed by touching the Channel Compare button on the Index screen or by selecting Channel Compare through the Select Page Window. See Figure 4-18.

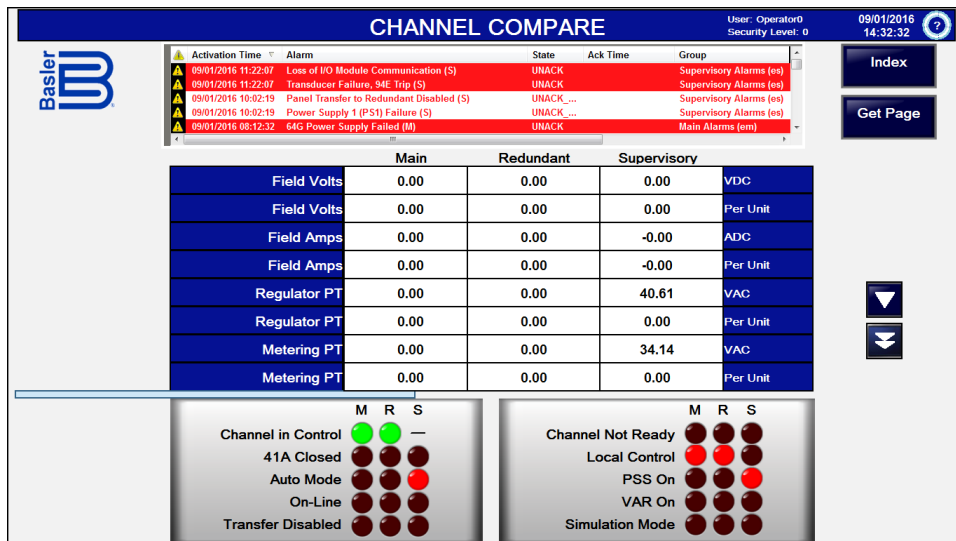


Figure 4-18. Control Channel Comparison Tool

Excitation system parameters for the three possible control channels (main, redundant, and supervisory) can be compared in tabular data format. Buttons are provided for navigation.

Power Bridge Monitoring

Available power bridge monitoring functions include power bridge status, fan status, and temperature monitoring.

Power Bridge Status

Figure 4-19 illustrates the Bridge Status screen. This screen is accessed by touching the Bridge Status button on the Index screen or by selecting Bridge Status through the Select Page window.

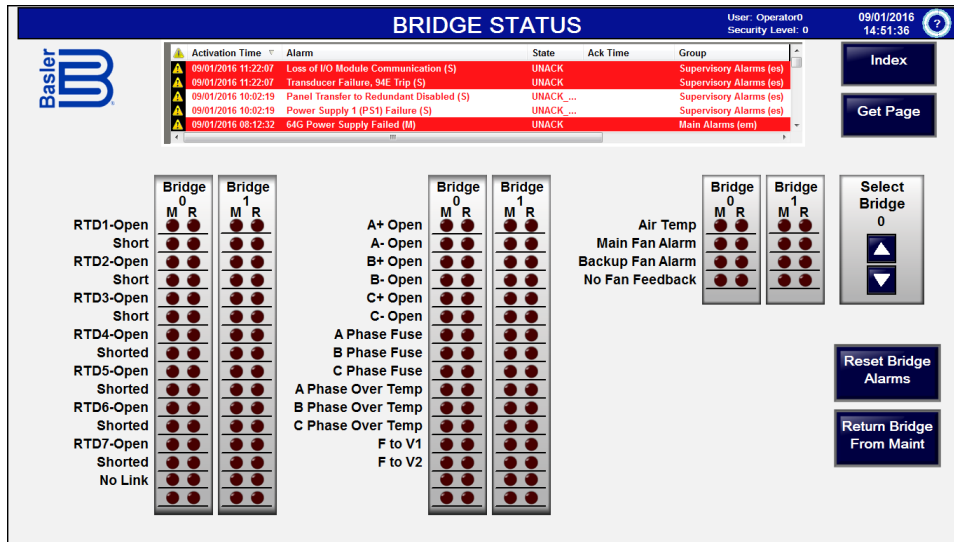


Figure 4-19. Power Bridge Status Screen

A Reset Bridge Alarms button can be used to reset any alarms associated with the Bridge Control Module.

The Return Bridge From Maint button must be touched when an out-of-service power converter is ready to be returned to service.

Fan Control / Temperature Monitor

Figure 4-20 illustrates the Fan Control / Temperature Monitor screen. This screen is accessed by touching the Temp. Monitor button on the Index screen or by selecting Fan Control / Temperature Monitor through the Select Page window.

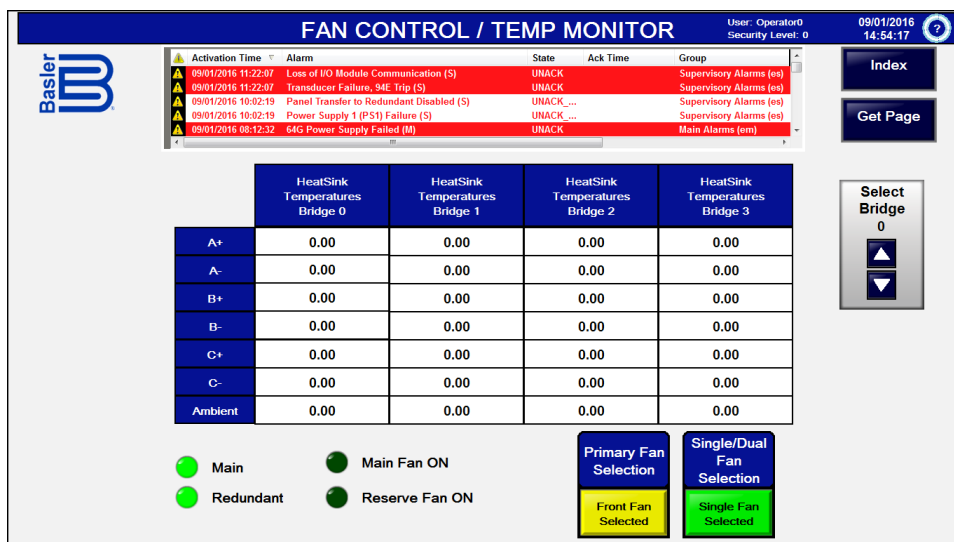


Figure 4-20. Fan Control / Temperature Monitor Screen

Buttons are provided for selecting bridge, primary fan, and single or dual fans.

Generator Monitor, Simulation, and Capability Curves

The following screens are provided for generator monitoring and testing.

Generator Monitor

The Generator Monitor screen graphically illustrates the excitation system and generator status.

Excitation system indicators are provided for ac breaker, auto synchronizer, and PSS status and field voltage and current levels. Generator voltage, current, watts, vars, and power factor are also displayed. Touching the *Bargraphs* button toggles numerical or graphical display of parameters. Figure 4-21 illustrates the Generator Monitor screen.

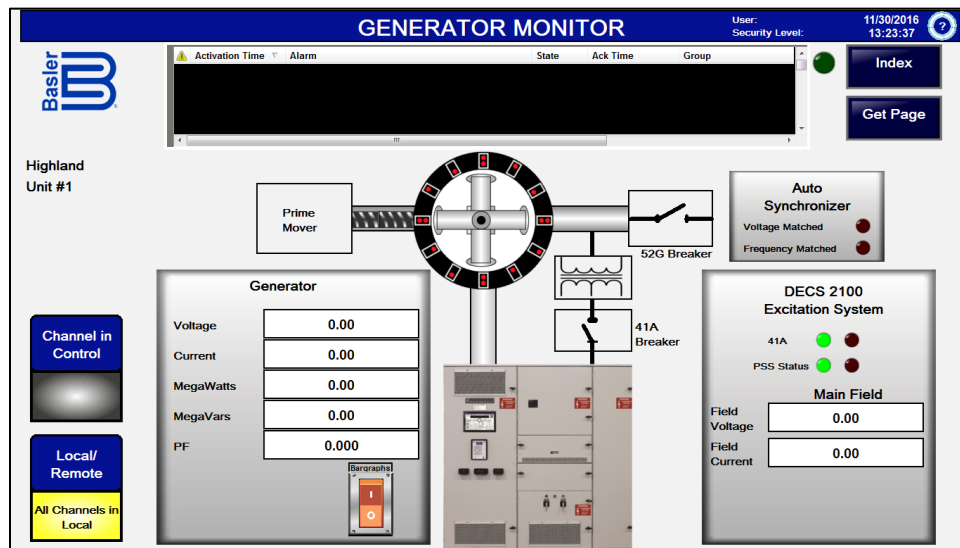


Figure 4-21. Generator Monitor Screen

Generator Simulation

The Generator Simulation screen provides the ability to test a group of settings offline.

Figure 4-22 illustrates the Generator Simulation screen.

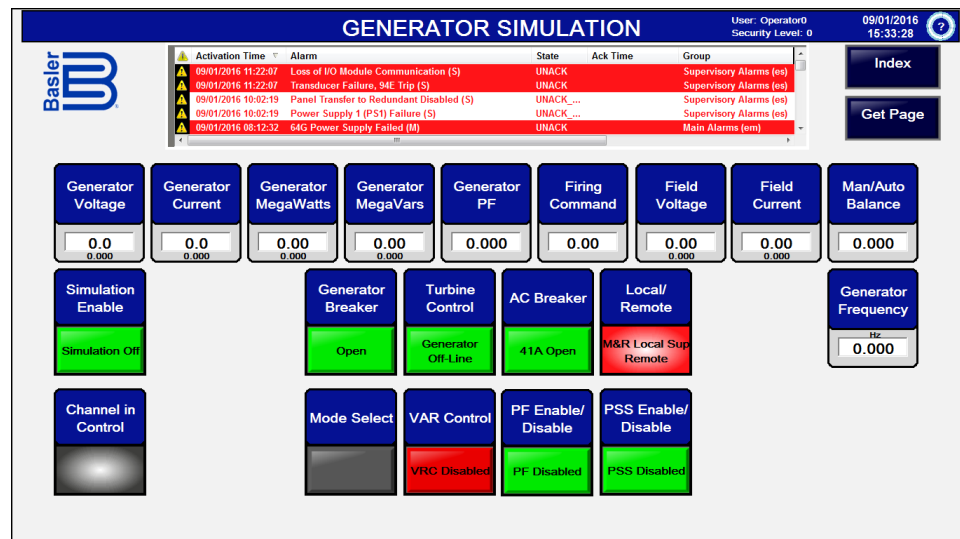


Figure 4-22. Generator Simulation Screen

Controls

Generator Simulation screen controls include buttons for 41A breaker operation, generator breaker operation, regulation mode selection, PF operation, PSS operation, simulation operation, turbine control, and var control. Touching a control button displays a window with buttons to make the available control selections.

Status Indicators

Indicators on the Generator Simulation screen include:

- Channel in Control: indicates which of the control system channels is actively controlling the excitation level.
- Local/Remote: indicates the local/remote control status of all control system channels. When a user is logged into the IDP-1500 with level 1 or higher credentials, this indicator functions as a control button which can be used to select either local or remote control.

Metering

Generator Simulation screen metering indications include:

- Field Current: level of field current in Adc.
- Field Voltage: level of field voltage in Vdc.
- Firing Command: SCR firing command level in percent.
- Generator Current: level of generator current in Aac.
- Generator Frequency: level of generator frequency in Hz.
- Generator megavars: level of reactive power supplied by the generator in Mvar.
- Generator Megawatts: level of active power supplied by the generator in MW.
- Generator PF: value of the generator power factor.
- Generator Voltage: level of generator terminal voltage in Vac.
- Man/Auto Balance: setpoint balance between manual and auto regulation modes.

Metering indications with two values display the actual reading in the upper row of numbers and the per-unit (pu) value in the lower row of numbers.

Capability Curves

Capability curve screens display the generator minimum excitation limit (MEL) capability curve in per-unit values super imposed on the actual excitation values.

Click on the Curve selection button to toggle display of MEL or UEL curves. The horizontal capability curve screen is shown in Figure 4-23. A vertical curve is also available.

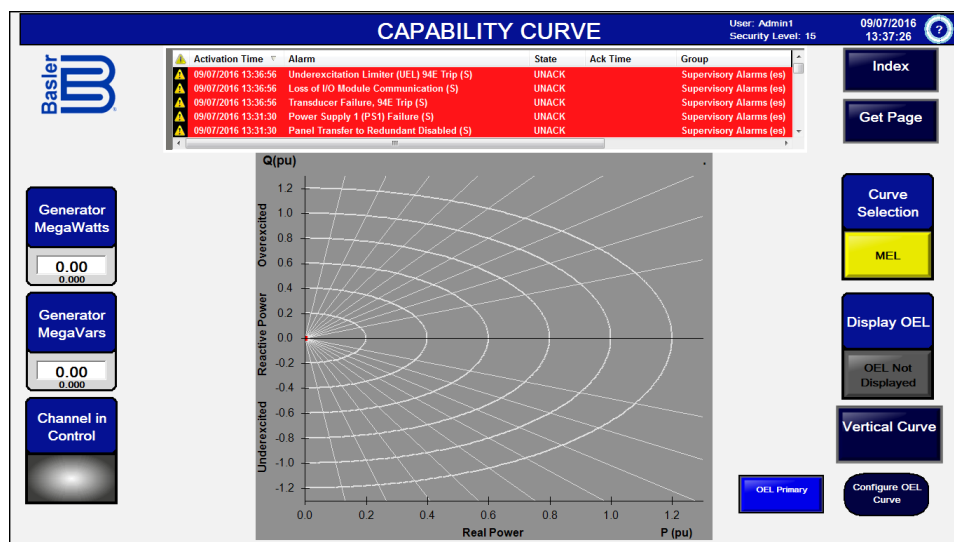


Figure 4-23. Horizontal Capability Curve Screen

Power System Stabilizer

The Power System Stabilizer (PSS) screen (Figure 4-24) displays PSS operating status and enables/disables PSS operation. PSS metering indications for each control system channel are displayed. The PSS output for the active channel is displayed adjacent to the Channel in Control indicator.

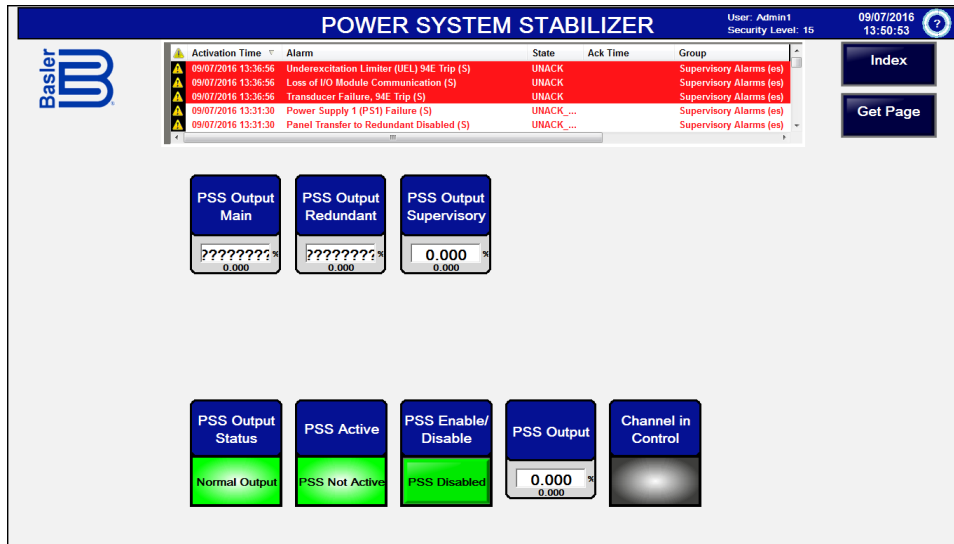


Figure 4-24. PSS Screen

Synchronizer

The following screens provide synchronizer status.

Synchronizer

The Synchronizer screen (Figure 4-25) provides controls for synchronizer operation, matching status indication, and voltage values. The buttons labeled Regulator PT Primary, Regulator PT Secondary, Voltage Match PT Primary, and Voltage Match PT Secondary can be used to enter the primary and secondary voltage magnitudes so that the synchronizing voltages can be displayed in actual voltage magnitudes in addition to per-unit values.

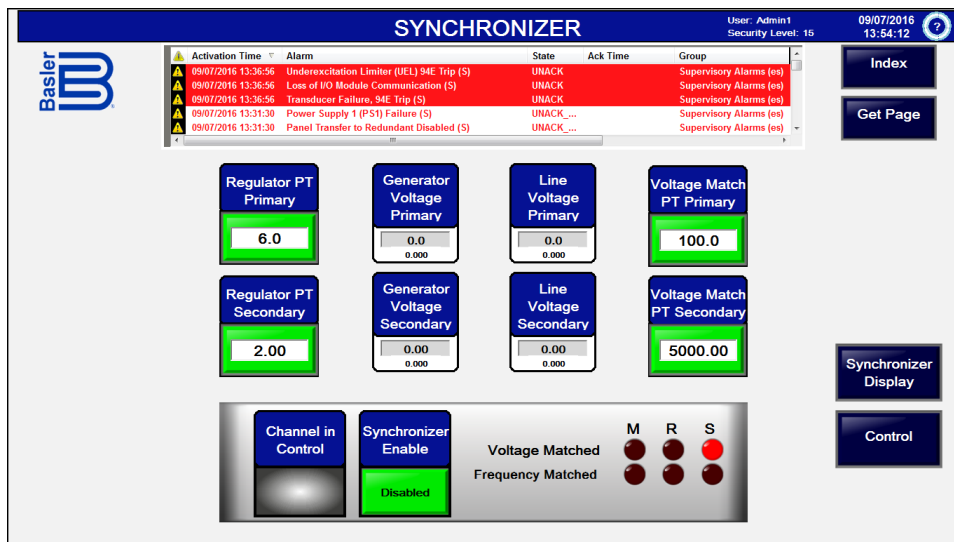


Figure 4-25. Synchronizer Screen

Synchronizer Display

The Synchronizer Display screen (Figure 4-26) provides synchronization status.

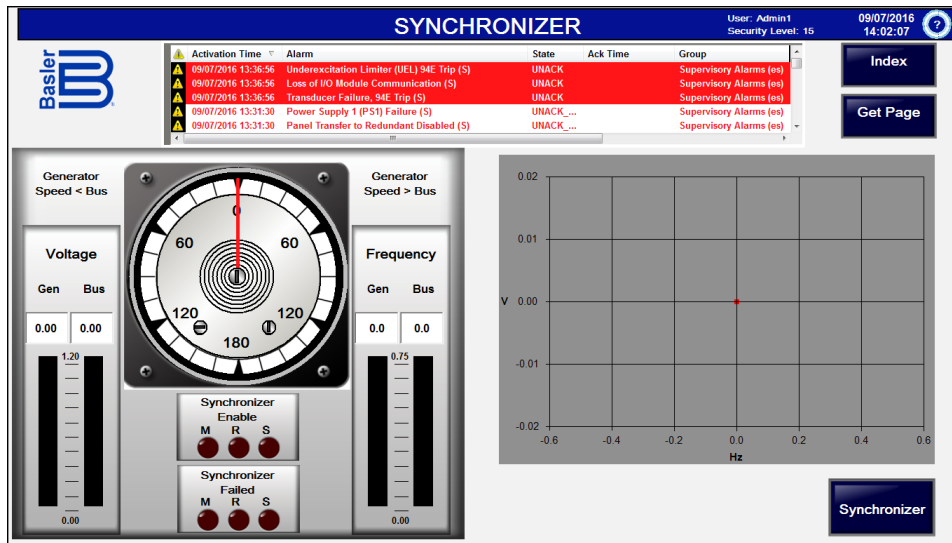


Figure 4-26. Synchronizer Display Screen

Voltage Matching

The Voltage Match screen (Figure 4-27) provides voltage matching status.

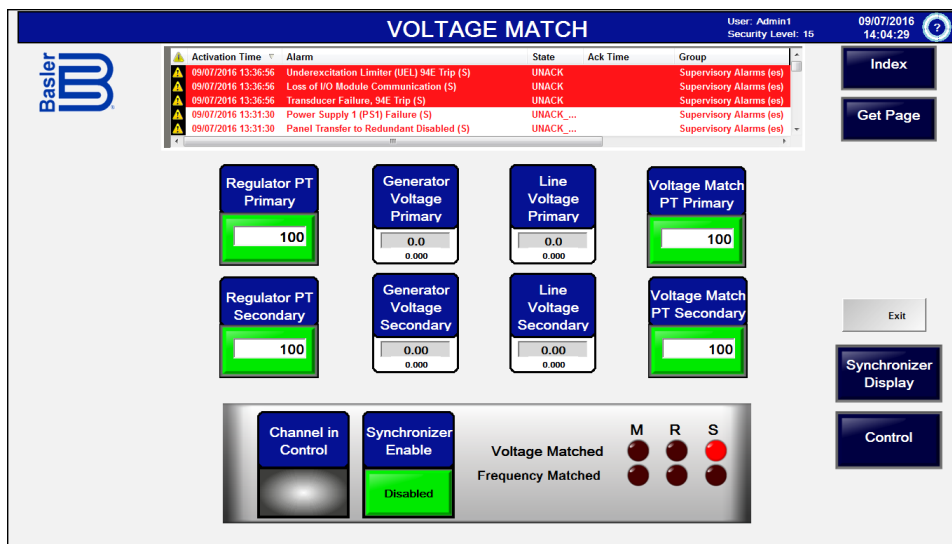


Figure 4-27. Voltage Match Screen

Field Ground Protection

Field ground screens display the field-to-ground resistance and calculated field temperature as measured/calculated by each channel. If the level of the field-to-ground resistance is detected as less than system variable FLDGND_RMIN, an alarm condition exists and is annunciated by the Field Ground indicator(s). The Main Field Ground screen is illustrated in Figure 4-28. An Exciter Field Ground screen is also available.

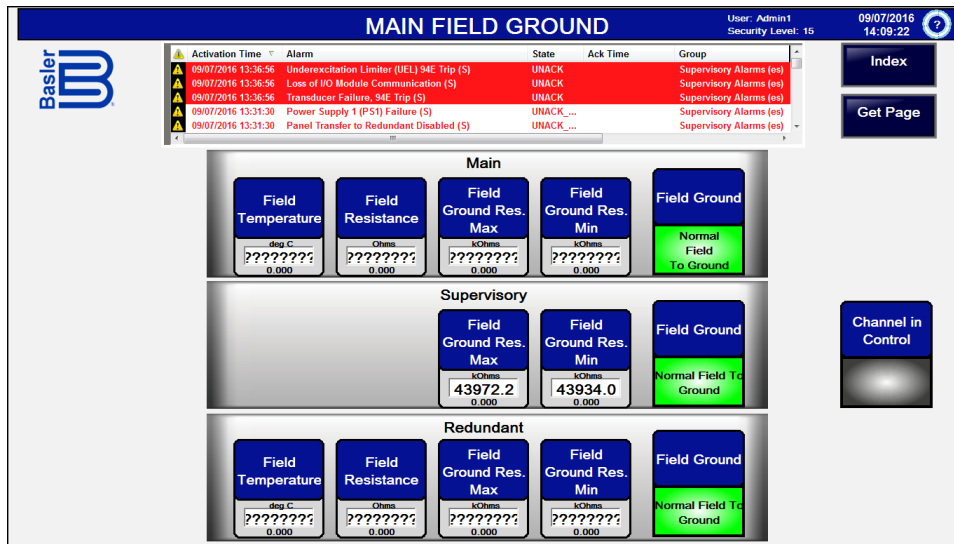


Figure 4-28. Main Field Ground Screen

Limiters and Trips

The Limiters and Trips screen (Figure 4-29) indicates the status of the following limiters and trip actions:

- Overexcitation (OEL)
- Volts per Hertz (HXL)
- Overvoltage (OVL)
- Instantaneous (INST)
- Minimum Excitation (MEL)
- Underexcitation (UEL)
- Loss of Sensing (LOS)
- External Initiated Lockout (86)
- Transformer Overtemperature (OTT)
- Loss of Both Cooling Fans (LBF)

Touching the Acronym Key button displays a list of acronym definitions for the Limiters and Trips screen.

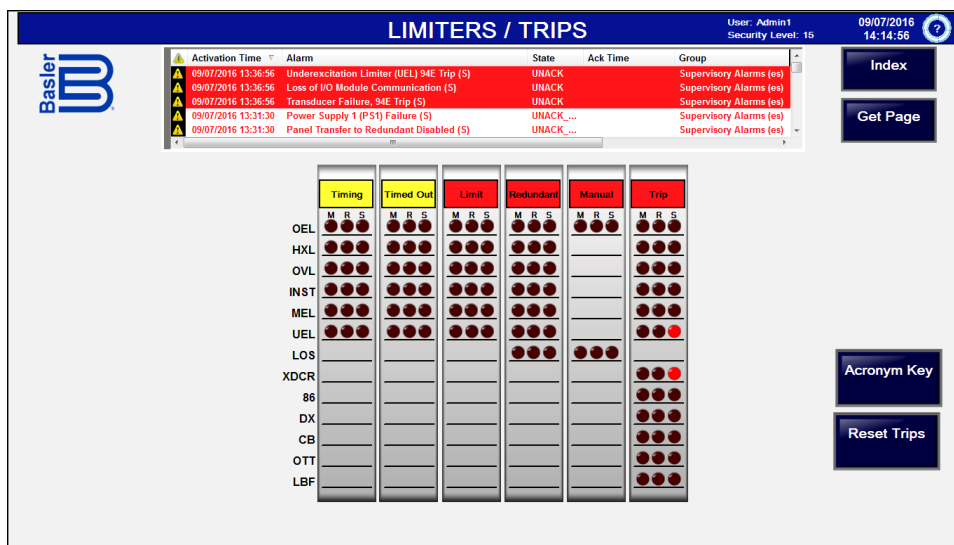


Figure 4-29. Limiters / Trips Screen

Alarms and Faults

The following screens provide alarm indicators and lists of active and all alarms.

Alarm Status

The Alarm Status screen (Figure 4-30) lists control system parameters, conditions, and modules along with their alarm status. Alarm status is displayed by two columns of indicators that are either black (no alarm) or red (alarm). Depending upon the features of the control system, each parameter has up to three alarm indicators labeled M (main channel), R (redundant channel), and S (supervisory channel). An active alarm is annunciated by a red indicator and is listed in the alarms banner along the top of the page. More information about how alarms are displayed is provided in the description for the Alarms and Faults screen.

Navigation to the Index, Bridge Status, and Output Control screens is available.

The screenshot shows the 'ALARM STATUS' screen. At the top, there is a header with the 'basler' logo, the title 'ALARM STATUS', and user information: 'User: Admin1', 'Security Level: 15', and the date/time '09/07/2016 14:21:45'. Below the header is a table of active alarms:

Activation Time	Alarm	State	Ack Time	Group
09/07/2016 13:36:56	Underexcitation Limiter (UEL) 94E Trip (S)	UNACK		Supervisory Alarms (es)
09/07/2016 13:36:56	Loss of I/O Module Communication (S)	UNACK		Supervisory Alarms (es)
09/07/2016 13:36:56	Transducer Failure, 94E Trip (S)	UNACK		Supervisory Alarms (es)
09/07/2016 13:31:30	Power Supply 1 (PS1) Failure (S)	UNACK,...		Supervisory Alarms (es)
09/07/2016 13:31:30	Panel Transfer to Redundant Disabled (S)	UNACK,...		Supervisory Alarms (es)

Below the table are two columns of indicator lights. The left column lists parameters with three lights (M, R, S) each: Bridge Alarm, 41A Failed to Close, 41A Failed to Open, Failed to Flash, Regulator PT, Meter PT, Voltage Unbalanced, Current Unbalanced, PLL Alarm, PLL Failed to Lock, PPT Hi-Temp Alarm, and PPT Hi-Hi-Temp Alarm. The right column lists parameters with three lights (M, R, S) each: Field Voltage Transducer, Field Current Transducer, Volts A-B Transducer, Volts B-C Transducer, AIO/DIO Module, Low Field to Ground, 41FU Status, 90FU Status, ANFU Status, Power Supply (PS4 A-C), Power Supply (PS 1), Power Supply (PS 2), and Power Supply (PS 3). On the right side of the screen, there are buttons for 'Index', 'Get Page', 'Reset Alarms', 'Output Control', and 'Bridge Status'.

Figure 4-30. Alarm Status Screen

Alarms and Faults - Active

This screen (Figure 4-31) lists only alarms that are active. Buttons are provided for alarm list navigation. Individual alarms can be acknowledged by selecting the alarm and then touching the Acknowledge Selected button. All alarms in the list can be acknowledged simultaneously by touching the Acknowledge All button. The History button provides access to the Alarms and Faults - History screen.

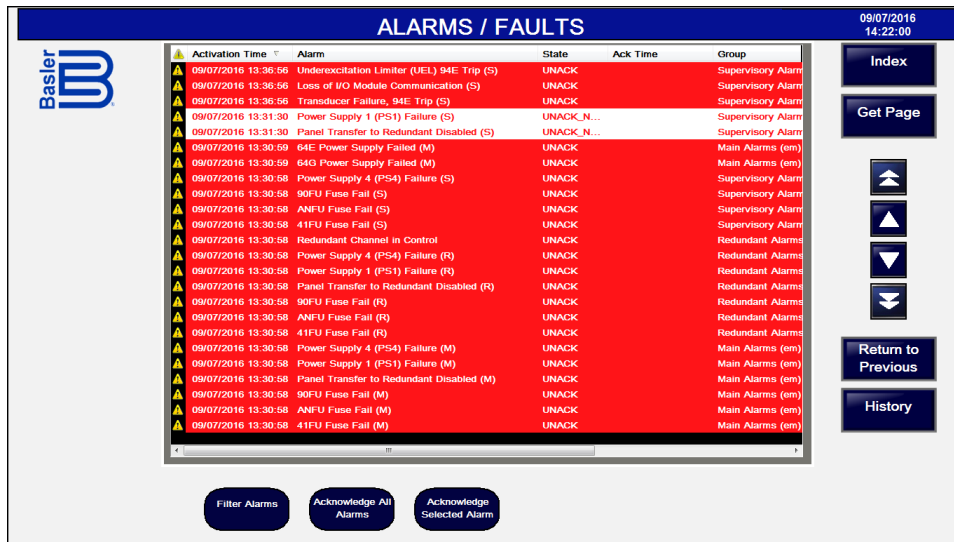


Figure 4-31. Alarm / Faults Screen

Alarms and Faults - History

This screen (Figure 4-32) lists all active, acknowledged, and cleared alarms. Active alarms are displayed as white text on a red background. Alarms that have been acknowledged (but not cleared) are displayed as yellow text on a black background. Cleared alarms are displayed as red text on a white background. Buttons are provided for alarm list navigation. Individual alarms can be acknowledged or cleared by selecting the alarm and then touching the Acknowledge Selected or Clear Selected button. All alarms in the list can be simultaneously acknowledged or cleared by touching the Acknowledge All or Clear All button. A Copy to USB button provides the ability to export the plot data to the IDP-1500's USB port in portable document format (PDF). The History button provides access to the Alarms and Faults - Active screen.

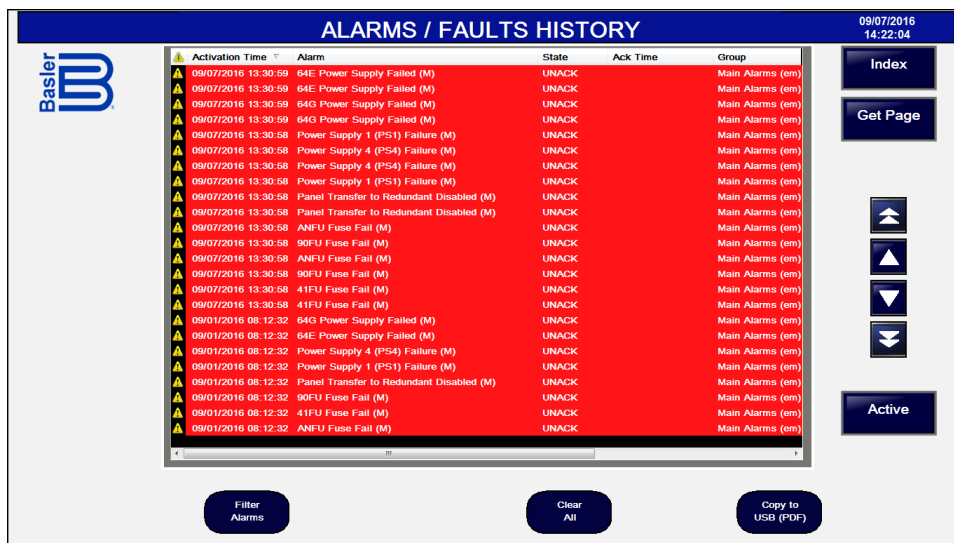


Figure 4-32. Alarms / Faults History Screen

Configuration Files

Each IDP-1500 is delivered with custom programming that is specific to the system and application where it will be used. If replacement of a display panel becomes necessary, the replacement IDP-1500 must be programmed with configuration files that are specific to the display panel model (IDP-1500) and its intended application.

Display panel configuration files are included on the documentation CD that accompanies the manual for an excitation system. If your system was supplied with an IDP-1500, then these files can be used to program a replacement IDP-1500 display panel.

IDP-1500 Programming Procedure

Use the following procedure to program an IDP-1500 with a configuration file provided by Basler Electric.

1. Copy the files required for programming the IDP-1500 onto a USB flash drive.
2. Insert the USB flash drive into one of the USB ports on the bottom panel of the IDP-1500.
3. While logged in with administrator access, touch the Exit button to close the IDP-1500 application.
4. Using the touch screen, swipe up from the bottom to reveal the Windows® taskbar and open the USB flash drive directory in Windows Explorer. Run "Install_IDP-1500.BAT".

Note
The Install_IDP-1500.BAT file refers to specific files and folders in its root directory. For successful installation, do not move or rename any files or folders within the root directory of the Install_IDP-1500.BAT file.

5. When installation is complete, the Protect Mode Manager dialog box appears. Touch the Commit button on the Commit Changes tab. The IDP-1500 is automatically restarted.
6. Verify that the IDP-1500 version and build have changed on the Initial screen.

5 • Security

Multiple levels of IDP-1500 security give personnel the level of access appropriate for the tasks they routinely perform while securing critical settings from unauthorized access.

Access Levels

Access to IDP-1500 controls and functions is divided into five distinct groups: Operator Level 0, Operator Level 1, Operator Level 2, Engineer, and Administrator. Access groups are not independent of one another. For example, an Administrator group can access levels 15, 5, 2, 1, and 0; an Engineer group can access levels 5, 2, 1, and 0. Access groups are described in Table 5-1.

Table 5-1. Access Group Descriptions

Access Group	Access Level	Description
Administrator	15	This group provides access to the User List, Manage Users, and Change Password controls on the Configuration screen.
Engineer	5	This group is identical to the Operator Level 2 access group.
Operator Level 2	2	This group provides access to the Local/Remote Display and Change Password controls on the Configuration screen.
Operator Level 1	1	This group provides access to the Active Language, Login Duration, and Change Password controls on the Configuration screen and access to the Local/Remote and Enable Transfer controls on the Control screen.
Operator Level 0	0	This group provides access to the Set Time and Screensaver Delay controls on Configuration screen. All parameters can be viewed with this access group.

Each user profile is assigned an access group to establish which settings and controls that user is allowed to modify. The credentials for the default Administrator user profile are:

User Name: **Admin1**
Password: **12345**

User Management

Users with Administrator level access have permission to view local and system user profiles, change user passwords, remove user profiles, create new user profiles, and import security settings. To view these settings, touch the Manage Users button on the Configuration screen while logged in with Administrator access.

Local and System Users

The IDP-1500 contains six default system user profiles. These profiles cannot be removed or renamed, but their passwords can be changed. The User List button displays a fixed list of the default system user names and passwords. If the default passwords are changed or if new users are created, they do not appear in this list. Changing these default passwords during IDP-1500 setup is recommended.

Local user profiles may be created and removed by a user with Administrator level access. See *Creating New Users* and *Removing Users*, below, for more information.

All user profiles are displayed on the Configuration > Manager Users > Manage Local Users or Manage System Users screens. Administrator access is required to view these screens.

Changing Passwords

To change the password for a local or system user profile, perform the following steps:

1. On the Configuration > Manager Users > Manage Local Users or Manage System Users screens, select the desired user profile. The Change Password button appears on the left-hand side of the screen.
2. Touch the Change User Password button. The Set User Password dialog box appears (Figure 5-1).
3. Input the Current Password and the New Password. Confirm the new password.
4. Touch the OK button.

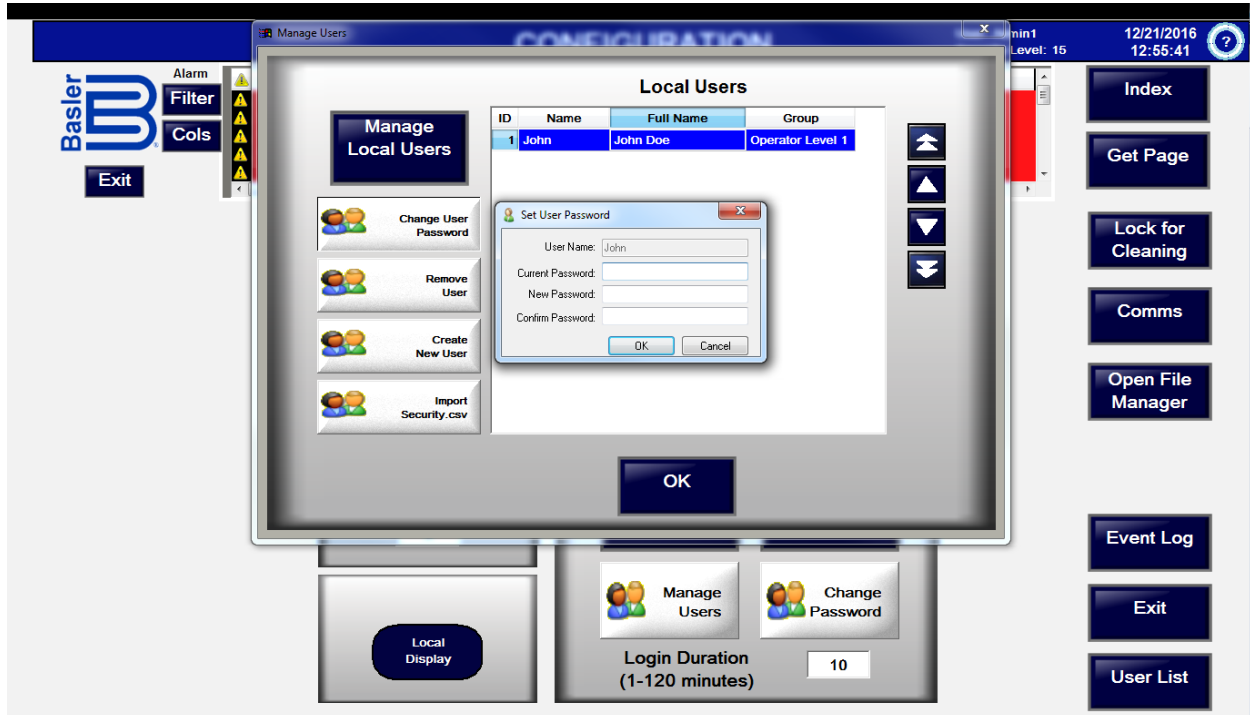


Figure 5-1. Changing a Password

Creating New Users

To create custom user profiles, perform the following steps.

1. On the Configuration > Manage Users > Manage Local Users screen, touch the Create User button. The Create User dialog appears (Figure 5-2). Administrator access is required to set up user names and passwords.
2. Enter a user name into the User Name field.
3. Entering a Full User Name is optional and intended for reference only.
4. Enter a password into the New Password and Confirm Password fields.
5. Assign an access group by selecting the group in the Available Groups list on the left and touching the right arrow button. The assigned group moves to the Assigned Groups list on the right. See *Access Levels*, above, for descriptions of the access groups.

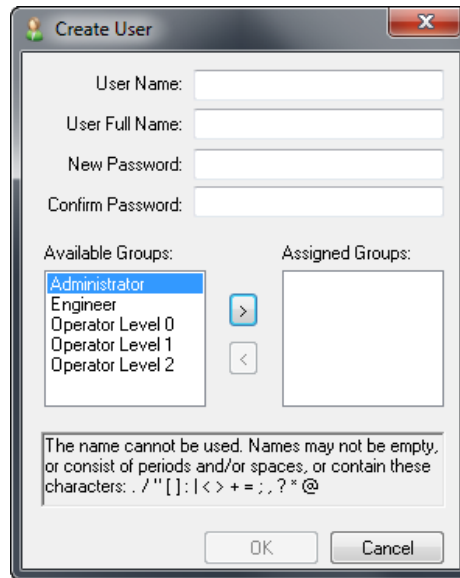


Figure 5-2. Create User Dialog

Removing Users

To remove a local user, perform the following steps:

1. On the Configuration > Manage Users > Manage Local Users screen, select the desired user profile. The Remove User button appears on the left-hand side of the screen.
2. Touch the Remove User button. Use caution as the user profile is removed immediately with no confirmation dialog.

Importing Security Settings

The IDP-1500 provides the ability to import user profiles and passwords from a CSV (comma separated values) file. This saves time configuring a spare IDP-1500 for operation. Use the following procedure to set up the CSV and import the security settings.

1. Create a CSV file named "Security.csv" structured exactly as shown in Table 5-2.

The first row must contain the exact column name labels shown in Table 5-2. The first column contains the user name of the profile. The second column contains the user's full name and is only for informational purposes. The third column must contain one of the following access groups (use exact syntax):

Administrator
 Engineer
 Operator Level 2
 Operator Level 1
 Operator Level 0

The fourth column contains the user profile password. Passwords are case sensitive and must be at least four characters long. All access groups except Operator Level 0 require a password.

Table 5-2. Security CSV Format Example

Name	FullName	Group	Password
Mary	Mary Clark	Administrator	^nb9#+
John	John Doe	Engineer	&&^j8h
Tim	Tim Davis	Operator Level 2	b6-tt3
Bill	Bill Smith	Operator Level 1	v5&gzx

2. Save the file into the root directory of a USB flash drive. Ensure that the file is not within a folder as the IDP-1500 searches for the file only in the root directory on the USB flash drive.
3. Insert the USB flash drive into a USB port on the bottom panel of the IDP-1500.
4. Touch the Configuration > Manage Users > Import Security.csv button. A dialog indicates whether the USB flash drive and the Security.csv file were found (Figure 5-3).
5. When both indicators are bright green, touch the OK button.

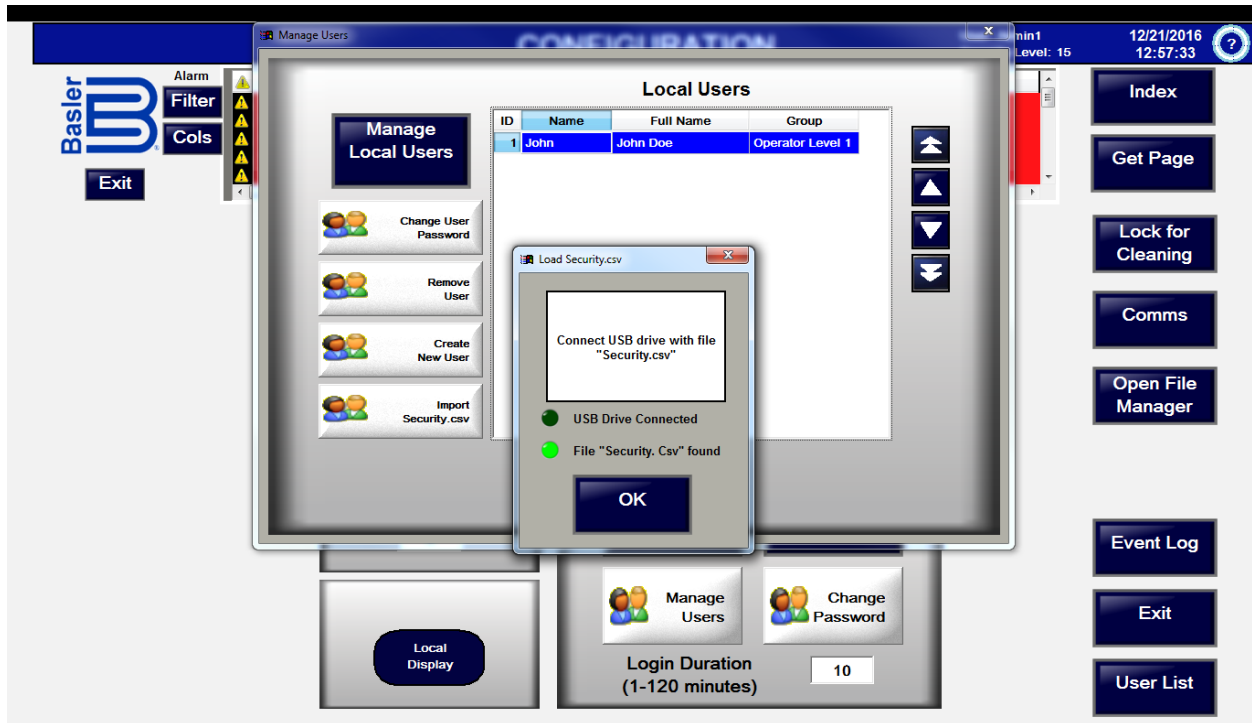


Figure 5-3. Import Security

6. If successful, the Security.csv dialog appears. All user profiles stored in the CSV are listed on this screen. To copy one user profile onto the local IDP-1500, select the desired user profile and touch the Create User [Name] button. To copy all user profiles stored on the CSV, touch the Create All Users button. Indication is given when each user profile is successfully copied.

6 • Maintenance

Cleaning

Before cleaning the touchscreen, select the cleaning lock screen to avoid triggering undesired actions. Clean the touchscreen surface using nothing more than a soft cloth, water, and a mild detergent.

CMOS Battery

The IDP-1500's nonvolatile BIOS memory (CMOS RAM) is supported by a long-life lithium battery. If symptoms of a failing CMOS battery are observed (such as loss of BIOS time and date), the battery can be replaced.

For an IDP-1500 delivered in 2024 or later, the battery is located in a battery holder behind the display at the bottom of the housing. Use a BR2032 battery.

For an IDP-1500 delivered before 2024, the battery is located behind the rear cover which is secured by four M3 Torx® screws. Use a CR2032 battery.

Storage

Store an unused IDP-1500 in an environment which complies with the temperature and humidity parameters listed in the *Specifications* chapter.



7 • Specifications

Control Power

Nominal Voltage:	24 Vdc
Voltage Range:	18 to 36 Vdc
Maximum Current Draw:	2.2 Adc

Display

Type:	Color active-matrix TFT-LCD, touch enabled
Screen Size:	396 mm (15.6 in.)
Visible Screen Area:	344 mm by 194 mm (13.5 in. by 7.6 in.)
Display Resolution:	1366 by 768 pixels (WXGA)
Format:	16:9
Color Resolution:	16.7 million colors

Communication Interfaces

Ethernet

Type:	10/100/1000 Mbps
Connection:	Two RJ-45 jacks with LED indication

USB

Type:	USB 3.0
Connection:	USB Type A receptacles

Environment

Operating Temperature:	0 to 45°C (32 to 113°F)
Storage Temperature:	-20 to 60°C (-4 to 140°F)
Humidity:	20 to 85%, noncondensing

Compliance

Designed and validated to the following standards:

Ingress Protection (IP)

Front:	IP65 per EN 60529-1 (indoor)
Rear:	IP20 per EN 60529-1

Product Safety

UL Class 1 Division 2 (Groups A, B, C, D)
UL 508
CSA C22.2 No. 142-M1987
ATEX Zone 22 Category 3D

CE Compliance

This product has been evaluated and complies with the relevant essential requirements set forth by the EU legislation as part of a system, not as a standalone device.

EMC (2004/108/EC EMC Directive)

Emitted Interference (EN 55022:2010 Class A, EN 61000-6-4:2007)
Interference Immunity (EN 55022:2010 & EN 61000-6-2:2005)
EN 61131-2:2007

ROHS

Hazardous Substances (RoHS2) 2011/65/EU

During Operation

Vibration Resistance (EN 60068-2-6)
Mechanical Shock Resistance (EN 60068-2-27)

Physical

Weight:	5.0 kg (11.0 lb.)
Dimensions (H x W x D):	262 x 412 x 89 mm (10.3 x 16.2 x 3.5 in.)



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