

# SBC-SD USER MANUAL



*SBC-SD User Manual*

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## WORLD HEADQUARTERS

American Auto-Matrix  
One Technology Lane  
Export, Pennsylvania 15632-8903 USA  
Tel (1) 724-733-2000  
Fax (1) 724-327-6124  
Email [aam@aamatrix.com](mailto:aam@aamatrix.com)  
[www.aamatrix.com](http://www.aamatrix.com)

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- . Updated bias resistor value from 3.32k to 510 Ohms.

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- . §2.3.2.3 - Added additional information for termination and biasing. Added information regarding earth ground tab.

**3/28/2007** - Initial Manual Release



This manual describes the installation and operation of the SBC-SD. This document is divided into the following sections, each beginning with a table of contents for the section:

- . One: Product Overview, describing the features of the SBC-SD and presenting the specifications for the controller.
- . Two: Wiring & Installation, detailing the wiring and installation procedures.
- . Three: Fundamental Concepts, listing rudimentary concepts of American Auto-Matrix technology.
- . Four: Channels and Attributes, listing all channels and attributes within the device.
- . Five: The Operator Interface, provides an overview of the operator interface for the SBC-SD.
- . Appendix A: Channels & Attributes, enumerating the attributes in every channel along with their datatype, access, storage and default values.

This document contains certain style and formatting conventions for conveying information in a clear and concise manner:

- . Attribute names are shown in **bold**. For example: **CV**.
- . Attribute with the associated channel specified are listed with the channel followed by a semicolon and then the attribute. For example: FE01; **CV**.
- . Menu commands appear with a ">" symbol between levels. For example: File>Open.
- . *Italics* indicate a section of this manual or another publication.
- . The following formats are used to highlight important information:

#### NOTE



Notes indicate noteworthy information and appear in boxes with this format separated from the running text.

#### CAUTION



*Cautions indicate information that may prevent serious system or user problems and appear in boxes with this format separated from the running text.*

#### WARNING



*Warnings indicate information that prevent personal injury or equipment damage and appear in boxes with this format separated from the running text.*



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# SECTION 1: OVERVIEW

This section provides a product overview of the SBC-SD, an American Auto-Matrix PUP networkable Small Display. The information contained within this section covers general details regarding the product and a quick-start reference, as well as a quick-start sheet for setup and configuration.

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## 1.1 PRODUCT DESCRIPTION

The SBC-SD is a compact, addressable network display device capable of interfacing with SBC-Series products, as well as SOLO-Series products that communicate using the American Auto-Matrix PUP network protocol. Easily adaptable to most standard applications requiring an operator interface, the SBC-SD provides a configurable data interface environment with a button driven design. The SBC-SD can have up to 50 configurable display screens and reference a maximum of 150 points from one or multiple controllers networked on the same PUP data bus. This product also provides useful maintenance utilities that allow you to access any PUP-based point on the network. Interfacing with the unit is achieved through the use of the 12-bit, 480 x 272 pixel LCD-based touch screen display.

The size of the SBC-SD is approximately 6 inches by 3.5 inches, making it small enough to be mounted in areas with limited space requirements. The display is housed in a chemical resistant "Kydex" plastic case, which can be mounted on both US and Euro switch boxes. The touch screen interface is protected by a chemically resistant polyester membrane - thereby providing an additional layer of protection for the roughest of environments.



Figure 1-1 SBC-SD

### 1.1.1 FEATURES

The SBC-SD contains many features, including:

- . button Driven Navigation
- . Configurable Data Screens
- . Alarm and Event Services
- . Network Diagnostics
- . Operator Password Protection

#### 1.1.1.1 BUTTON DRIVEN NAVIGATION

The operator interface consists of a multi-tiered button driven navigation environment with backlighting. The buttons are used for penetrating menus, accessing utilities and modifying parameters of the data displayed on the display. The button driven interface consists of an intuitive navigation menu, providing quick access to the Main Menu, Recent Alarms, Previous Screen and many other areas.

#### 1.1.1.2 CONFIGURABLE DISPLAY SCREENS

The SBC-SD provides up to 50 configurable data screens containing live network data. Each piece of live data (commonly referred to as a data slot) can be interrogated for modification purposes. To allow users to create a logical grouping of point data, each display screen can reference other display screens in a group-based format for easy system navigation. A total of 150 points can be programmed into the SBC-SD for quick monitoring or modification.

### 1.1.1.3 ALARM EXTENSIONS

When connected to a network with an area controller solution, the SBC-SD can examine all network traffic on the communication bus to store and display alarm and event information from devices polled by the area controller. Up to 128 alarms are can be stored within the SBC-SD at any given time. For administrative users, the SBC-SD provides a simple touch options to allow the system to be placed into Fire Mode for emergency situations.

### 1.1.1.4 NETWORK DIAGNOSTICS

For users or building managers whom need to access advanced information not configured within the display, the SBC-SD provides the ability to manually address, view, and modify any writable data point on the PUP network. This time-saving feature allows users to make quick changes to a system without the need to connect commissioning software to the network, or interrupt on-going network communications.

### 1.1.1.5 OPERATOR PASSWORD PROTECTION

The SBC-SD provides support for a maximum of eight (8) definable operators; each assigned with a unique numeric pass code (up to 5 digits in length). To provide secure application flexibility for environments with more than one operator, the product provides three-level administration. These access levels of administration are applied to any of the eight (8) defined operators to provide read/write permissions, and access to certain areas of the user interface.

## 1.2 PRODUCT SPECIFICATIONS

### 1.2.1 NETWORKING

- . **Line signaling:** EIA-485
- . **Data isolation:** GMR Data Isolated
- . **Termination:** 249 Ohm, switch selectable
- . **Biasing:** 510 Ohm, switch selectable
- . **Protocol:** American Auto-Matrix PUP (configurable as Full Administrator or Irresponsible Peer)

### 1.2.2 PRODUCT SETUP AND CONFIGURATION

- . **Software:** SoloPro v2.3.5 or later

### 1.2.3 RESOURCES

- . **Screens:** up to 50 data screens maximum
- . **Points:** up to 150 addressed points maximum

### 1.2.4 HARDWARE

- . **Processor:** ARM7-TDMI, 86Mhz
- . **Memory:** 8MB-flash
- . **Expansion slot:** SD card socket for applying firmware updates; future expansion
- . **LCD:** 4.3 in, 480x720 - 16:9 color TFT with white LED backlight
- . **Touch screen:** 4-wire analog resistive with protective flex window
- . **Beeper:** 4Khz On/Off

### 1.2.5 POWER REQUIREMENTS

- . **Power source:** 24 VAC/VDC, 50/60Hz
- . **Consumption:** 2.5W, 4W maximum
- . **Line protection:** 0.5A PTC, self-resetting fuse

### 1.2.6 OPERATING CONDITIONS

- . **Temperature:** 41-122° F (5 - 50° C) ambient
- . **Humidity:** 0-90%, non-condensing
- . **Altitude:** -2000 to + 10,000 ft. (-650 to + 3500m)

### 1.2.7 DIMENSIONS

- . **Size:** 3.400 in. (8.65cm) x 6.000 in. (15.24cm) x 1.019 in. (2.59cm)

### 1.2.8 AGENCY APPROVALS

- . CE Approved
- . FCC, Class A Computing Device
- . UL listed 916, Management Equipment, Energy (PAZX)
- . UL Listed 873, Component Temperature-Indicating and Regulating Equipment (XAPX2)
- . UL Listed, Component Temperature-Indicating and Regulation Equipment for Canada (XAPX8)

## NOTE



This product has been developed and manufactured including components designed for applications to mobile instrument products. If this product is to be used for any other system that requires high reliability and safety in performance, accuracy, etc. such as transportation systems (aircraft, rail, mobile), security or fire prevention systems, any other safety devices, etc. you are request to allow for safety design of the entire system or device, such as fail safe and redundancy design so as to maintain and assure its reliability and safety.

## NOTE



Do not apply this product to aerospace systems, mainline communication systems, nuclear power control systems or medical equipment involved in life support that require high reliability and safety, as it is not intended for such use or application.

### 1.3 QUICK START - SBC-SD SETUP

Use the quick-start to learn the order of tasks to perform when you configure an SBC-SD. The following table lists a logical order to follow for setup and configuration of the SBC-SD. Each step provides references to this document, or other documentation.

*Table 1-1: Quick Start Setup for SBC-SD*

Task		In This Document	In Other Documents
1	Determine the SBC-SD Unit ID and baud rate, PUP networking, and token passing configuration		Site Engineering Documentation
2	Install base-plate and hardware elements	Mounting the SBC-SD - Page 2-4	
3	Connect and apply power and network communications	Connecting Power - Page 2-6 Connecting the EIA-485 Network - Page 2-7	
4	Configure Slots	Slots - Page 4-12	
5	Configure Home Screen and Display Screens	Home Screen - Page 4-9 Display Screens - Page 4-11	
6	Configure User Interface Properties, Operator Passwords and Permissions using SoloPro or touch-screen display	Unit Setup - Pages 5-14 through 5-18	
7	Setup Network, Audio, Time Master, Fire Mode and Alarm Properties using SoloPro or touch-screen display	Unit Setup - Pages 5-14 through 5-18	



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## SECTION 2: WIRING & INSTALLATION

This section reviews general wiring and installation practices for the SBC-SD. Detailed information is given to many areas including wiring for power, communications, and important safety requirements.

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Connecting the EIA-485 Network.....	2-7
Shielding .....	2-7



## 2.1 WIRING AND INSTALLATION

The installation of the SBC-SD involves mounting the product, supplying power, and connecting to the communications network. All wiring connections to the SBC-SD are made with the use of plug (female) & socket (male) terminal blocks (TB). The plug consists of terminal ports and adjustment screws. The socket consists of a row of pins and is permanently mounted to the printed circuit board (PCB).

When connecting/disconnecting the two parts of the terminal block, align the holes on the plug with the pins on the socket and avoid twisting, thus damaging the assembly. Such damage will void the product warranty.

WARNING	
	<p><b><i>The sockets to which the terminal block plugs connect are permanently attached to the PCB. Twisting or applying torque when connecting/disconnecting will result in damage that will void the product warranty.</i></b></p>

### 2.1.1 TOOLS REQUIRED

The following tools and supplied may be requires for installation of the SBC-SD:

- . Torx screw driver: used to disassemble T-10 Torx screws from the SBC-SD housing
- . Small flat-blade screw driver: used for EIA-485 and Power connections
- . A 2 inch hole saw: to run wires to unit through wall
- . Wire strippers: for wiring purposes
- . A meter: for verifying power connections

## 2.2 MOUNTING THE SBC-SD

The SBC-SD can be installed near the equipment it is monitoring. The installation site must provide 24VAC supply power. The temperature range for operation must be between 32 F and 104 F (0 C and 40 C). In addition, the mounting area should be free from moisture and/or leakage, and should be unobstructed by equipment or machinery. Before mounting the product, be sure to determine exactly where you wish to install the product.

The housing back-plate of the SBC-SD provides pre-drilled areas for different methods of mounting the product. Using the mounting plate, the SBC-SD can be mounted simply on a wall, on top of a US standard 2x4 junction box, or UK standard junction box. The middle of the back-plate provides clearance for the network and power jacks for the SBC-SD. Figure 2-1 provides all clearance dimensions of the housing back-plate SBC-SD.

The middle of the backplate contains an open area to accommodate the EIA-485 networking port and power port for the SBC-SD. If you are going to mount the SBC-SD onto a wall surface, be sure to have the appropriate tools in order to do so (such as a 2.5 inch hole saw).

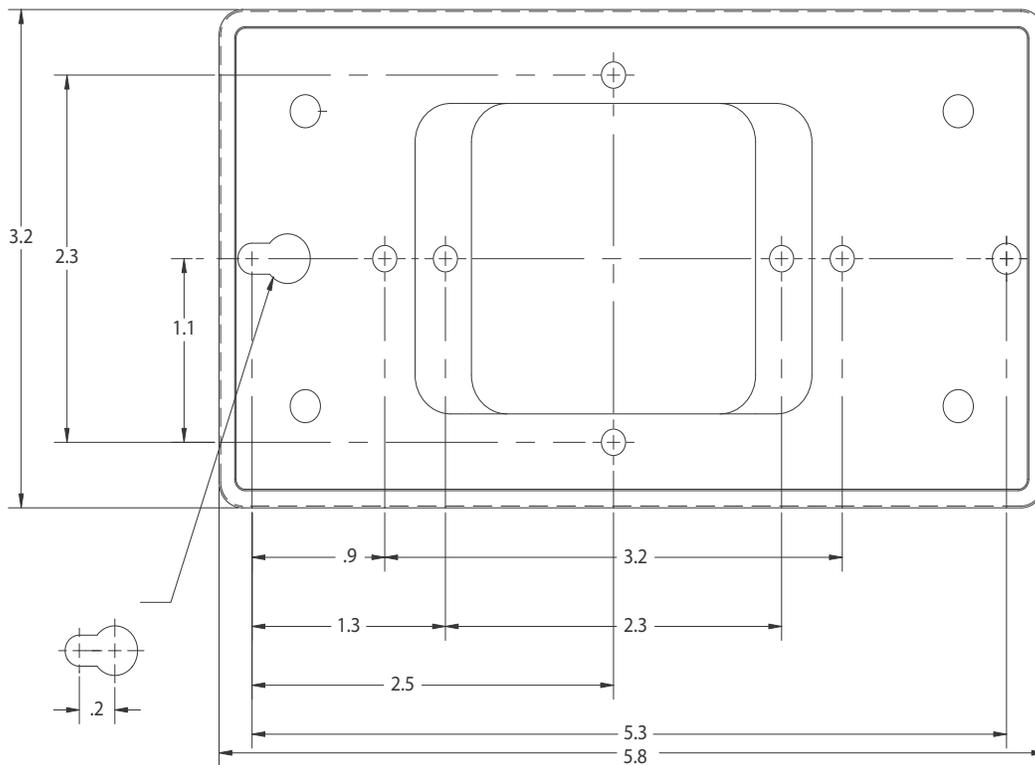


Figure 2-1 SBC-SD Housing Backplate Dimensions

### 2.2.1 DISASSEMBLE THE SBC-SD

Prior to mounting, you will need to disassemble the SBC-SD. To do this, you will need a Torx screw driver that accommodates size T-10 screws. To disassemble the SBC-SD, perform the following steps:

1. Carefully loosen the four (4) T-10 Torx Drive screws located at the front of the SBC-SD and remove the cover.

#### WARNING



***The printed circuit board and touch-screen hardware is assembled in a unconnected (“floating”) manner. Use care during assembly cycles.***

2. Remove PCB component set of the SBC-SD from housing (if still installed). Older units may require screw posts to be removed from the top of the PCB in order to achieve this. Screw posts can be loosened using an appropriate tool.
3. Retain all screws and housing components for later reassembly.

### 2.2.2 MOUNTING THE BACKPLATE

As discussed earlier, the backplate of the SBC-SD's housing can accommodate direct wall mounting, or mounting applications on electrical junction boxes. The backplate includes pre-formed screw holes that will align with drill holes located on the junction box. These screw holes are located near the middle of the backplate, near the cut out areas for power and network wiring.

For junction box mounting, use included screws from the junction box to mount the backplate.

For direct wall mounting, a keyhole-style screw hole is located on the outer left side of the backplate. The outer right side of the backplate contains a standard screw hole. The middle of the backplate contains an open area that accommodates network and power connections. To mount the backplate onto a wall, you may draw trace lines of the backplate prior to drilling.

## 2.3 WIRING REQUIREMENTS

**WARNING**



***For your safety, power should be removed when performing any type of wiring or installation maintenance to the SBC-SD.***

Follow the recommended wiring guidelines to reduce the chance of operation and communication errors. If you do not use proper wiring techniques, your site may not meet Federal Communications Commission (FCC) Class A regulations for radio frequency interference (RFI) emissions. All EIA-485 communications networks should employ shielded, twisted pair wiring. Each twisted pair must be individually shielded. Unshielded cables must be placed in solid metal conduit alone. Communications wiring **should not** be routed together with—or close to—other wiring carrying DC switching, AC lines, fluorescent lighting or any other RFI/electromagnetic interference (EMI)-emitting source. Failure to use these types of conductors may result in various system communications problems such as excessive network retries, noise susceptibility, and loss of communication.

### 2.3.1 CONNECTING POWER

You must use a 24VAC 50/60Hz transformer for power supply to the SBC-SD. AAM recommends that at least 18AWG wiring be used, but the terminals can accommodate 18–22AWG. Connect power to the X1 and X2 pins located at J2. The J2 terminal is located next to the EARTH ground tab, as illustrated in Figure 2-2.

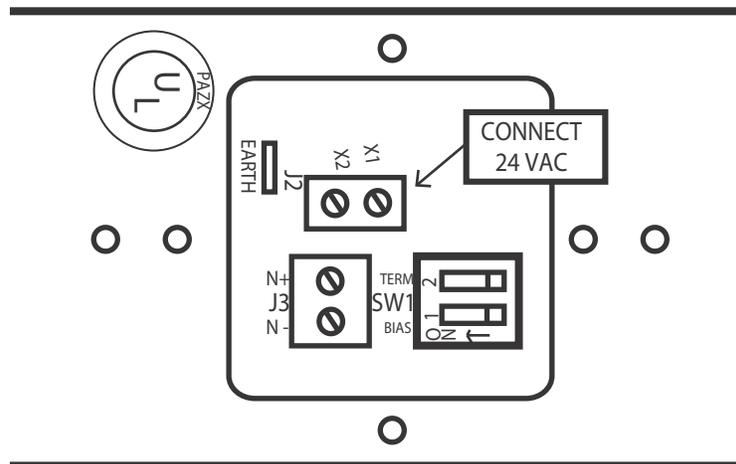


Figure 2-2 Power Connection on SBC-SD

To reduce the possibility of electrical interference or noise, two (2) ferrite beads have been included with your SBC-SD. In properly designed application, a ferrite bead must be placed on each end of your power line (near the transformer and near the SBC-SD unit itself).

Using the ground lead included with product packaging, the SBC-SD should be connected to a good known Earth ground connection at all times through the ground tab marked EARTH, located below the power input terminal block.

## CAUTION



AAM discourages the practice of sharing power transformers between devices. If this technique is used, AC polarity must be maintained throughout the power network.

## 2.3.2 CONNECTING THE EIA-485 NETWORK

Figure 2-3 illustrates the EIA-485 communications network wiring for the SBC-SD. AAM recommends using 18-22 AWG wire, but the terminal blocks can accommodate 14-22 AWG. The American Auto-Matrix PUP Protocol requires shielded, twisted pair wiring.

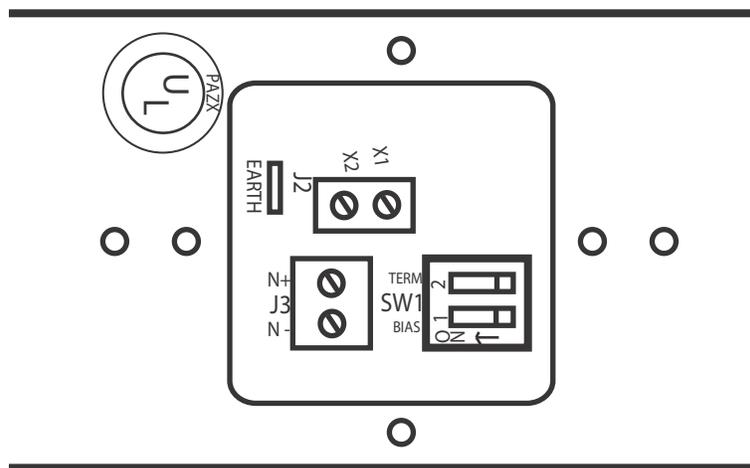


Figure 2-3 EIA-485 Network Connection on SBC-SD

Located to the right of the Network port is Switch Block 1(SW1). SW1 can be configured to provide 249 ohms of EIA-485 network termination and 510 ohms of network biasing. If the SBC-SD is electrically installed at an end of the network, you may choose to apply termination and biasing by moving the respective switch into the *ON* position (moved to left).

Terminating resistors are used to prevent line and data reflection. In a multi-drop network, one resistor at each end of the network is required. When applying termination, be certain that it is applied at both physical ends of your EIA-485 network at the two end devices. In networks with termination applications, biasing should also be enabled to ensure a proper idle state voltage. In most cases, biasing should always be enabled.

## 2.3.2.1 SHIELDING

In traditional 485 standard application, the cable shield from your 485 network wiring should be tied to earth ground at the first device on the network. Each successive device on the network should have its shield connected to the shield of the previous device. The shield of the last controller on the network should be taped back.



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## SECTION 3: FUNDAMENTAL CONCEPTS

This section provides information on general concepts and theory that must be understood prior to setup and configuration of the SBC-SD.

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## 3.1 FUNDAMENTAL CONCEPTS

This section of the user manual reviews standard fundamental concepts and provides an explanation of the prerequisite information necessary to know prior to installing American Auto-Matrix SBC-Series products.

### 3.1.1 AMERICAN AUTO-MATRIX PUP PROTOCOL

American Auto-Matrix PUP is a half-duplex EIA-485 network, designed to connect multiple SBC-series controllers together in a multi-drop (daisy chained) topology. All network communications occurs at 9.6kbps, unless modified by user intervention to a higher speed. A PUP network can contain up to a maximum of 64 devices connected at a given time.

In many cases, an installed network controller or area controller solution is a full administrator with configurable token passing down to devices. In this situation, all controllers connected to it are configured as irresponsible peers.

In network topologies that do not require a network controller or area controller solution, you may elect to configure a unitary controller as a full administrator. In this type of topology, a unitary controller can pass the token to other devices that may need to access the network for application purposes (peer-to-peer SPL applications, temperature broadcasts, etc.)

### 3.1.2 TOKEN PASSING

The SBC-SD is designed to maintain a master/slave relationship with other controllers on the same PUP network. The SBC-SD may also be configured to operate as a peer with other PUP devices such as SBC-GPC, SBC-ASC, Integra, and other such devices.

Peer-to-peer communication operates via token passing. Token passing is a communications scheme that allows PUP devices connected in a network to communicate with each other and share data among themselves. A "token" is passed from unit to unit on the network in a round-robin fashion. When any unit possesses the token, it performs any network activities for which it is responsible, and then passes the token to another unit. At any time, the unit that possesses the token is the only device permitted to initiate communications with another device on the network or to request information from it.

A device that receives the token may or may not need to perform network functions (e.g. read values from a remote device, broadcast information, etc.). If not, it will simply pass the token along the network. Determining how the token is passed along the network depends on which units may possess the token and what type of peer they are.

There are two types of devices that can potentially be connected on a PUP network:

- . Full Administrator
- . Irresponsible Peer

#### 3.1.2.1 FULL ADMINISTRATOR

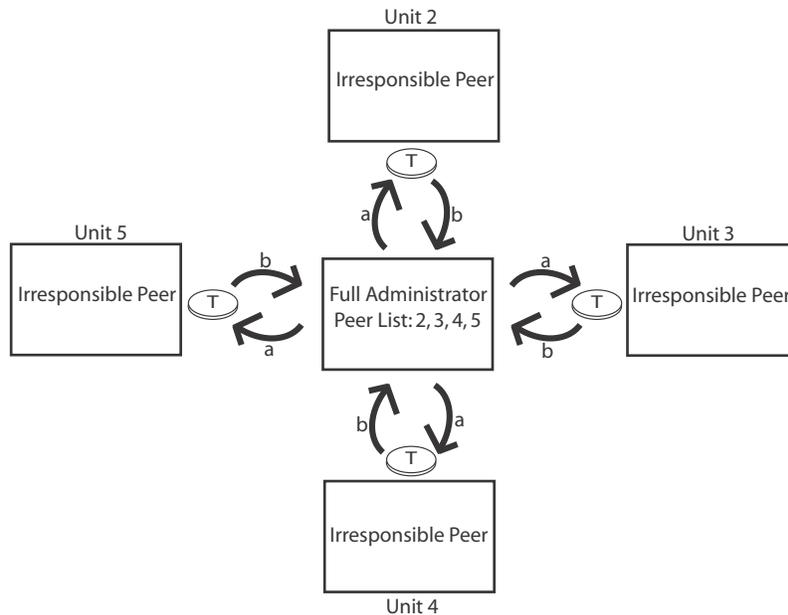
A full administrator is a device that passes network tokens to extend PUP communications. A full administrator maintains a list of peers (irresponsible peers or other full administrators) which get the token passed to them in a round robin fashion. Peers are addressed by referencing the Unit ID of the device that will receive the network token. A token is generally passed to a peer device with the understanding that the device that will receive the token will perform network transactions (read/write, broadcast, etc.). Once the peer device has finished using the token, it will be returned back to the source full administrator. A unit is typically configured as a full administrator by setting FF00;TP to a value of 1.

### 3.1.2.2 IRRESPONSIBLE PEER

An irresponsible peer is a device that can only return a network token to a full administrator which passed it the token. If an irresponsible peer is configured for an application that requires the network token, a full-administrator must pass the token to the irresponsible peer, through the use of its peer list.

### 3.1.2.3 NON-PEER DEVICES

While the SBC-SD cannot be configured as a non-peer, it is necessary to understand the existence of non-peer devices and how they react in a PUP environment. Some legacy SOLO devices (SOLO/TX version 1.xx, SOLO/HX v1.xx, SOLO/MX v1.xx, etc.) are non-peers. Non-peers are devices that were not intended to use a network token. Unlike a full administrator (which passes the token to other units that are specified in its peer list) or an irresponsible peer (which passes the token back to its sender), a non-peer has no knowledge of token passing and will drop the token if it receives one. Non-peers may exist on token passing networks - but should not be passed a network token. A configuration in such a manner will result in repeated token drops, thereby reducing the performance of your network communications and other control factors.



a = send token to peer  
b = receive token back from peer

NOTE: The above illustration is a logical example, and not a physical network wiring example

Figure 3-1 Logic Example of PUP Network Token Passing

### 3.1.3 TOKEN ERROR RECOVERY

Because units can only perform network activities when they possess the token, it is important for the system to be able to recover the token if it is ever dropped or not passed. Full administrators are equipped with error recovery routines that allow them to “pick up” the token whenever it is dropped. Most devices capable of being configured as a full administrator have an FF00;ER parameter to enable token error recovery. Token error recovery is enabled when FF00;ER is set to a value of 1. If your device is configured as an irresponsible peer, FF00;ER should be disabled (ER=0).

## 3.2 PUP DATA STRUCTURE

The SBC-SD is an operator interface device for SBC-series products, as well as SOLO-series products and connects to networks using the American Auto-Matrix PUP protocol. The SBC-SD can control devices that are wired to it through programmable parameters located in memory. These parameters can be accessed and/or changed from the SBC-SD using the button driven interface.

### 3.2.1 CHANNELS

All PUP-based devices have memory locations that specify details of how a particular feature of a given system operates. These memory locations, known as Channels, can be accessed through engineering software such as SoloPro, by other peer controllers with SPL capabilities (GPCs), an area controller solution, or the SBC-SD.

Within a PUP device, there are two types of channels - Root Channels and Sub-Channels.

- Root channels are displayed with their full hexadecimal channel number (e.g. FE00), typically ending 00 as part of the hexadecimal location.
- Subchannels are indicated with the last two characters of the channel number. For example, subchannel 1 would be addressed as FE01; subchannel 2 as FE02, etc. There can be up to 256 subchannels (00-FFh) for every PUP channel.

Root Channel FE00 - Universal Inputs
FE01 - Universal Input 1
FE02 - Universal Input 2
FE03 - Universal Input 3
FE04 - Universal Input 4
FE05 - Universal Input 5

*Figure 3-2 Channel Example*

### 3.2.2 ATTRIBUTES

Within each channel or subchannel are sets of parameters, dictating how features associated to a portion of the device may react. These parameters, known as Attributes, provide representational data to a user regarding how features are handled. Attributes are identified by a case sensitive two-character name; generally a mnemonic for the functionality that it represents. A good example of an attribute is a current value interpreted by a Universal Input. An attribute known as “**CV**” would represent the current value for the Universal Input channel.

Channel FE01
<pre>;ON - Object Name = OAT ;CV - Current Value = 72.0 ;RE - Reliability = 0 (Reliable) ;ST - Sensor Type = 7 (Precon Type 3)</pre>

*Figure 3-3 Channel and Attribute Example*

When discussing attribute functions and their operational relationships, attributes are displayed following the channel to which they belong. For example, the channel FF00 controller manufacturer attribute (**CM**) is shown as FF00;**CM**. All attributes appear in boldface to aid in locating descriptions of a particular attribute in the text of this document. Descriptions of the SBC-SD channels and their attributes are contained in the following sections of this manual.

### 3.3 LIMITATIONS AND IMPLICATIONS

In order to fully understand the capabilities and full range of possible applications of the SBC-SD, you should understand its limitations. Also, you should be aware of the implications of using certain features of this product.

#### 3.3.1 COMMUNICATION NETWORKING

When installing the SBC-SD onto a PUP network, the device is similar to any other EIA-485 device connected to the network and should be networked as any other device - in a daisy chain format. Communication problems often are the result of poor wiring practices such as “star” networking or “t-tapping” a device to an existing network. While some instances of such wiring practices may provide satisfactory results in select environments, American Auto-Matrix recommends following good EIA-485 wiring practices at all times.

#### 3.3.2 TEXT DATA TYPE SUPPORT

Similarly to the GPC Product Family, the SBC-SD has text data type attributes which are used to setup and configure various areas of the product. While American Auto-Matrix attempts to maintain backwards compatibility with each generation of product, older equipment will experience network communication problems when attempting to monitor and modify attributes from the SBC-SD. Table 3-1 outlines host-based products (past and present) and their ability to fully monitor values from the SBC-SD. Table 3-2 outlines commissioning environment products that support the ability to configure the SBC-SD.

While it could be possible that the SBC-SD may interface with older host and area controller equipment, it is strongly recommended that you install the SBC-SD in environments with the supported products below.

*Table 3-1: Host and Area Controller Support for SBC-SD*

Product	Supports Text Properties?	Revision Required
Integra	Yes	Niagara <sup>AX</sup> Framework v3.0.99 or later
SageMAX IP	Yes	SageMAX IP Operating System v1.9
SageMAX IPX	No	will not support SBC-SD
SF1	No	will not support SBC-SD
AI2100 Building Brain with APUP or GPUP	No	will not support SBC-SD
Auto-Pilot	Yes	v1.62 SP2 or greater
Spectra for Windows	No	will not support SBC-SD
Mouseview	No	will not support SBC-SD
Etherview	No	will not support SBC-SD

Table 3-2: Commissioning Software Support

Software	Supports Text Properties?	Revision Required	Notes
SoloPro for Windows	Yes	v2.3.5 or greater	included with Pro Engineering Tools
SoloPro DOS	No	will not support SBC-SD	

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# SECTION 4: CHANNELS AND ATTRIBUTES

This section reviews the grouping of channels and attributes used to control the parameters of SBC-SD. Detailed descriptions of all points in the controller appear here. Information on common usage of the attributes is also included throughout this section.

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Time Master, 1200 .....	4-15



## 4.1 SYSTEM, FF00

The FF00 Channel (commonly referred to as the System channel) is used to control and configure a number of general controller features of the SBC-SD. The FF00 channel has 29 attributes - **ON, SN, CT, VE, FT, FC, SR, CM, OS, DE, RS, ID, CP, TP, ER, U1, U2, U3, U4, U5, U6, U7, U8, TM, DT, BF, TF, BT,** and **FP**

Attribute **ON** is a string of printable characters to help identify the product. This value consists of the product description and serial number.

Attribute **SN** stores the controller's serial number. This number is set at the factory and cannot be changed.

Attribute **CT** states the controller type number. This number is always set to 108, to identify the product is a member of the Small Display family.

Attribute **VE** holds the version number of the SBC-SD firmware. **VE** is a read-only attribute, meaning it can be monitored, but not modified.

Attribute **FT** identifies the firmware type of the product. **FT** will always equal 41.

Attribute **FC** indicates the number of times the controller has been flash updated.

Attribute **SR** identifies the release code of the firmware currently flashed on the controller, used primarily for technical support purposes.

Attribute **CM** indicates the manufacturer of the SBC-SD. The **CM** attribute is factory set at 255 for American Auto-Matrix products. The controller type attribute, **CT**, is also factory set, but indicates the type of controller. For SBC-SD, attribute **CT** is 108. **CM** and **CT** are useful when host systems are connected to networks with unitary controllers from different manufacturers. Both **CM** and **CT** are read-only attributes, meaning they can be monitored, but not modified.

Attribute **OS** indicates the version number of the default factory firmware.

Attribute **DE** is used if you wish to return the SBC-SD to the factory default values for all attributes. Configuring the **DE** attribute to a value of 197 will clear all attribute values and return them to their factory default values.

Attribute **RS** provides a software point to reset (reboot) the controller. When **RS** = 1 (Yes), the processor is reset, temporarily clearing memory.

The baud rate is set through the **CP** (communication parameter) attribute. All PUP devices sharing the same network communications line must have their **CP** attribute set to the same rate. The baud rate is also the rate at which the PUP network communicates with an area controller (if one is used). **CP** defaults to 0, which is 9600 baud.

Table 4-1: Valid Communication Baud Rates

Value of FF00;CP	Baud Rate
0	9600 (default)

Table 4-1: Valid Communication Baud Rates

Value of FF00;CP	Baud Rate
6	38400
7	19200
8	115200
9	57600

## NOTE



For convenience of setup and configuration, the SBC-SD will automatically reset itself when the Unit ID or baud rate are modified.

Peer-to-peer communications operates with *token passing*, a communications scheme that allows PUP devices connected in a network to communicate with each other and share resources among themselves. SBC-SD may be configured as an irresponsible peer or as a full administrator. For more information on token passing, refer to [Section 3 - Fundamental Concepts](#).

Table 4-2: SBC-SD Token Pass Types

Peer Type	Definition
Irresponsible Peer	Can only perform network activities when it is passed a network token by another device, and always returns the token to the unit that it received it from.
Full Administrator	Maintains a list of peers to which they pass the network token. Full administrators are capable of token error recovery services if configured to do so.

Attribute **TP** defines which communication mode the controller will assume. The SBC-SD can operate as an irresponsible peer (**TP** = 0) or as a full administrator (**TP** = 1). As a full administrator, the SBC-SD can pass the network token to eight peer units whose ID numbers are specified in attributes **U1** through **U8**. When the controller is set to communicate as a full administrator, it can be configured to enable token error recovery using the **ER** attribute. When token error recovery is enabled (**ER** = 1), the controller will detect when the network token has been lost and will re-initiate communications by sending a new token onto the network.

Attributes **DT** and **TM** are the date and time attributes. The date is displayed in a MM/DD/YY format or DD/MM/YY when viewing the parameters using commissioning software such as SoloPro. The time is displayed in short time or in military format. For additional information regarding setup of time, "Time Master, 1200" on page 4-15.

**CAUTION**



*The SBC-SD does not have an on-board real time clock (RTC) module. Please note that at time master (unitary controller with RTC, area controller, etc.) should be present to maintain system time.*

Attribute **TF** indicates the Time to Remain in Fire Mode, and controls the length of time (in minutes) during which the controller will continue to broadcast a Fire Mode event service to the PUP network.

Attribute **BF** indicates whether or not the SBC-SD is currently sending fire mode broadcasts to the unitary controller network. **BF**=1 indicates that the SBC-SD is sending the broadcast message.

Attribute **BT** is the broadcast time interval attribute. **BT** (specified in minutes) regulates the minimum time between consecutive message broadcasts over the PUP network (from 0 to 254 minutes). This is used primarily for the Fire Mode broadcast feature of the SBC-SD. **BT** can have a value from 0 to 254. A value of 255 disables all broadcast from the SBC-SD. A value of 0 enables the SBC-SD to broadcast every time it possesses the PUP network token.

Attribute **FP** specifies the password level required for an operator to access Fire Mode Services from the local touch-screen display. If an operator with a privilege level lower than that specified in **FP** is logged into the system, the button for Fire Mode will not be available.

## 4.2 DISPLAY, D000

The D000 Channel provides configurable parameters for the eight possible operators for SBC-SD interfacing, alarm logging options, visual configuration, and audio configuration of the SBC-SD. The D000 Channel has 23 attributes - **OL**, **O1**, **P1**, **O2**, **P2**, **O3**, **P3**, **O4**, **P4**, **O5**, **P5**, **O6**, **P6**, **O7**, **P7**, **O8**, **P8**, **CL**, **SD**, **ST**, **LL**, **BC** and **AL**.

Attribute **OL** specifies the time, in minutes, that must elapse from initial entry before an operator is automatically logged out from the local touch-screen display.

NOTE	
	<p>The functionality contained within attribute <b>OL</b> is specifically from the time of entry. <b>OL</b> is not reset at any time from the last touch/keystroke made through the local touch-screen.</p>

Attributes **O1** through **O8** are the operator password attributes. By default, **O1** and **P1** are configured with a default operator password (default = 11111) and has Level 3 Privileges.

To login to the touch-screen interface display, any one of the eight programmable operator passwords can be used to gain access to the system. Each operator is assigned a “pin-style” numeric password, configurable from 0 - 99999.

Attributes **P1** through **P8** are operator privilege attributes. An operator privilege level dictates a unique permission required to modify a displayed point value. An operator privilege level may also provide access to key setup areas of the SBC-SD product. Operator privileges are assigned in a a tiered level (Level 1, Level 2, Level 3) fashion. An option to disable the operator password is also provided from this attribute. Privilege levels are inheritable in nature. For example, a Level 2 user has its own privilege capabilities, plus those of Level 1. A further discussion in level assignment can be found at Table 4-7 on page 4-12

*Table 4-3: Operator Privilege Level Inheritance*

Level	Inherited Privileges
Level 1	No Inheritance
Level 2	Inherits Level 1 Privileges
Level 3	Inherits Level 1 and Level 2 Privileges

*Table 4-4: Privilege Level Values*

Value for D000; P1 - P8	Privilege Level
0	Disabled
1	Level 1
2	Level 2

Table 4-4: Privilege Level Values

Value for D000; P1 - P8	Privilege Level
3	Level 3

Attribute **CL** specifies the minimum privilege level requirement in order to view data slot information through the SBC-SD's touch-screen display. When a user views detailed information regarding a data slot, information including the slot's programming assignments (including Unit ID, Channel and Attribute) can be displayed on the touch-screen display. Figure 4-1 illustrates how slot information can be displayed. Details regarding point addressing is displayed in blue text at the top of the data pane; whereas slot address information and privilege level details is displayed in red text at the bottom of the data pane.



Figure 4-1 Slot Display Information Example

Attribute **SD** is used in conjunction with attributes **ST** and **LL**. These three attributes are used to control and configure screen dimming capabilities for the SBC-SD's display. After a programmable timeout period where no touch actions occur on the display, the screen can be commanded to enter a dim mode, providing power savings and extended life expectancy of the touch-screen display. Three dimming appearance modes are available for selection and are outlined in Table 4-5. To enable screen dimming, configure attribute **SD** = 1. Attribute **ST** specifies, in minutes, the idle time before screen dim mode occurs. Attribute **LL** specifies the dimming level for the screen.

All dimming is controlled by touching the screen, which will restart an internal clock that tracks dimming.

Table 4-5: Screen Dimming Level Options

Value for D000;LL	Dimming Mode	Description
0	Totally Off	The touch-screen and backlight are turned off. To display data, a user must touch the screen once in order to turn the screen back on.
1	Dark	Power to the backlight of the screen is adjusted to a lower setting than that of "Light".

Table 4-5: Screen Dimming Level Options

Value for D000;LL	Dimming Mode	Description
2	Light	Power to the backlight of the screen is adjusted to a low power setting.

**CAUTION**

*To reduce the possibility of image burn-in or pattern retention, it is recommended that the SBC-SD be configured for either a dark or light dimming mode option.*

Attribute **BC** specifies whether or not audible button click sounds is enabled. Any time a touch to the screen is applied, a click sound will be generated by the SBC-SD. To enable button clicking, set **BC** = 1.

Attribute **AL** indicates if the SBC-SD shall log intercepted network alarms to the Alarm section of the user interface. To enable alarm logging, set **AL** = 1.

### 4.3 HOME SCREEN, C000

The C000 Channel is used to setup and configure the Home Screen for the SBC-SD interface. The Home Screen is the first screen displayed upon power-up of the SBC-SD, and is the screen displayed when a user touches the Home button. A Home Screen can be programmed to display point data configured in slots (refer to Section 4.5), provide links to other configurable data screens (refer to Section 5.4), or simply display blank lines. The C000 channel contains 11 attributes **TS**, **O1**, **T1**, **O2**, **T2**, **O3**, **T3**, **O4**, **T4**, **O5**, **T5**.

Attribute **TS** provides users with the ability to assign a custom home screen title for the SBC-SD. The home screen title is used throughout the SBC-SD and should be programmed as the name of the site, or a description of the equipment that the product is responsible for displaying data for. **TS** is a text-based attribute and will accept up to 24 printable characters, dependent on character width.

Attributes **O1** through **O5** specify the element number for the element type you are working with, and correlate to attributes **T1** through **T5**. To best explain how these attributes correlate within the system, a configuration example is provided in Table 4-6.

*Table 4-6: Sample Home Screen Configuration*

Home Screen Channel (C000)	Value	Refers To
;TS	'My Site'	n/a
;O1	0	displays a blank line on the Home Screen.
;T1	0 = Blank Line	
;O2	1	displays the point value programmed into Slot 1 (A001 Channel)
;T2	1 = Data Slot	
;O3	0	displays a blank line on the Home Screen.
;T3	0 = Blank Line	
;O4	1	displays a group link to Display Screen 1 (B001 Channel)
;T4	2 = Screen Link	
;O5	2	displays a group link to Display Screen 2 (B002 Channel)
;T5	2 = Screen Link	

The result of this configuration when displayed on the SBC-SD would look similar to Figure 4-2.



Figure 4-2 Home Screen Configuration on SBC-SD

## 4.4 DISPLAY SCREENS, B001 - B032

The B001 through B032 Channels are used to configure display screens for use with the SBC-SD. Similar to the setup and configuration of the Home Screen, Display Screens can be programmed to display point data configured in slots (Refer to Section 4.5), provide links to other configured data screens, or display blank lines. The SBC-SD provides a total of 50 configurable display screens. Each screen can be programmed to display up to 15 lines of data. Each display screen has a total of 31 attributes - **TS, 01, T2, 02, T2, 03, T3, 04, T4, 05, T5, 06, T6, 07, T7, 08, T8, 09, T9, 10, U0, 11, U1, 12, U2, 13, U3, 14, U4, 15,** and **U5**.

Attribute **TS** provides a custom title for the screen when it is displayed on the SBC.SD. A screen title can be up to 24 characters in length.

Attributes **01** through **15** specify the element number for the element type you are working with, and correlate to attributes **T1** through **T9** and **U0** through **U5**.

The functionality of creating a data screen is similar to the example provided on how to create a Home Screen. Refer to the creation example "Home Screen, C000" on page 4-9. for a detailed example.

### NOTE



To create a hyperlink to the Home Screen, configure your element to Display Screen 0 (zero).

## 4.5 SLOTS, A001 - A096

The A001 through A096 channels defined Slots. Slots reference specific points (channel and attribute) from the connected network, and also define additional characteristics of how point data is displayed and interpreted by a user when viewed. A slot defines the unit ID, channel and attribute for initial point referencing. This area also provides additional configuration of engineering units, text overlays, point descriptions, and other items. Each slot has a total of 10 attributes - **TS**, **ID**, **CH**, **AT**, **TL**, **TU**, **PM**, **FB**, **T1**, and **T0**.

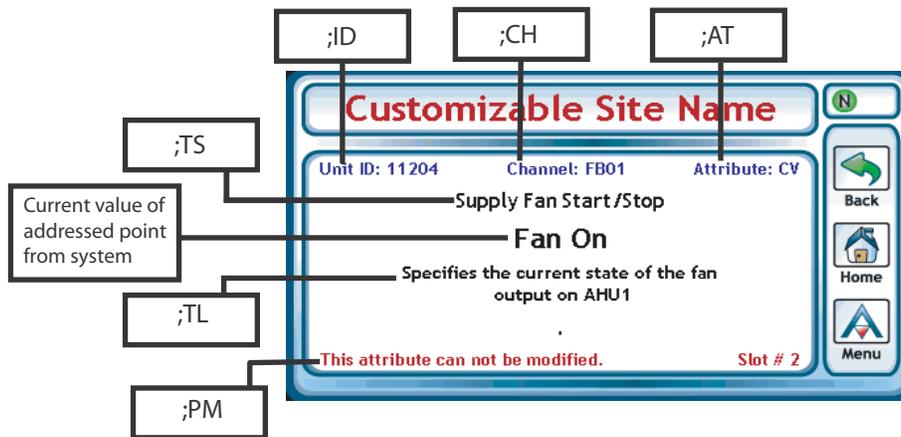


Figure 4-3 Slot Details Example

Attribute **TS** provides a short name for the referenced point when it is displayed on a display screen. A short name can have up to 24 printable characters.

To address a point from the system, attributes **ID**, **CH**, and **AT** must be assigned values. **ID** specifies the Unit ID of the controller you are referencing; typically assigned a value between 1 and 65534. The **CH** attribute specifies the PUP channel location of the point you are referencing (e.g. FE01, FE02, FB01, etc.). Finally, the **AT** attribute specifies the two-letter PUP attribute you wish to display (e.g. **ZT**, **CV**, **OI**, etc.).

Attribute **TL** provides the ability to assign a long name description for the referenced point. This can be up to 150 characters in length.

Attribute **TU** provides the ability to assign an engineering unit for the referenced point. Engineering units can be up to 5 characters in length.

Attribute **PM** specifies the privilege level assigned to the point. This privilege level is compared to the privilege level of an operator to prevent against unwanted point value modification. Table 4-7 provides an explanation of how each privilege level works when assigned to a slot.

Table 4-7: Slot Privilege Levels

Value of ;PM	Level	Description
0	None	Any operators have the ability modify this point from the touch-screen display

Table 4-7: Slot Privilege Levels

Value of ;PM	Level	Description
1	Level 1	Operators with Level 1 or higher privileges have the ability to modify this point from the touch-screen display.
2	Level 2	Operators with Level 2 or higher privileges have the ability to modify this point from the touch-screen display.
3	Level 3	Operators with Level 3 privileges have the ability to modify this point from the touch-screen display.
4	Read-Only	Specifies that the point is read-only and cannot be modified by any operator that is logged on

Attribute **FB** specifies the Focus Bit. Focus bit is used when you are assigning a slot to a bitmap based value. In PUP-based applications, a bitmap can have up to 32 positions, starting with bit position 0 and ending in bit position 31. A very common example of how a bitmap is used in a PUP-based application is the Active Days attribute in a Schedule channel for a unitary controller. The Active Days attribute is an 8-position bitmap, where 0 = Monday, and 7 = Holiday. To provide users with the ability to disable/enable a specific bit position, attribute **FB** must be correctly addressed. If you are working with an attribute that is not a bitmap datatype, configure **FB=32**. Table 4-8 provides an example of a bitmap configuration using the Focus Bit.

Table 4-8: Slot Configuration Example using a Focus Bit

Attribute	Value
<b>TS</b>	"Day of Week: Tuesday"
<b>ID</b>	115
<b>CH</b>	F901
<b>AT</b>	AD
<b>TL</b>	Active Day Bitmap Position for Tuesday
<b>TU</b>	
<b>PM</b>	Level 1
<b>FB</b>	1
<b>T1</b>	Tuesday On
<b>T0</b>	Tuesday Off

Attributes **T1** and **T0** provide users with the ability to display text for a numeric value of 0 or 1. These attributes can be used in *two* different scenarios.

*Scenario one* would use **T1** and **T0** when you are working with a bitmap value using the Focus Bit attribute (**FB**). When a bit indicates a value of 1, the text data programmed into **T1** will display on the touch-screen display. In the previous example (Table 4-8), the text “Tuesday On” would display on the screen when the value for the specified bit position is a value of 1. Likewise, if the value of the bit position is a value of 0, “Tuesday Off” would display on the screen.

*Scenario two* would use **T1** and **T0** when you are working with a numeric or boolean based value that indicates a value interpretation for a value of 0 or 1. A good example of this is a Digital Output or a Binary Input, where the polarity could be reversed (dependent on application). The ability to assign text values to your points relieves possible confusion of understanding what a value of 1 or 0 really means from an end device or a piece of equipment. In this case, attribute **FB** must be configured to a value of 0 so that it references the least significant bit. To disable the text overlay feature, **FB** should be set to 32.

## 4.6 TIME MASTER, 1200

The 1200 channel is used to define Time Master settings for the SBC-SD. The Time Master function is used because the SBC-SD does not have an internal real-time clock module. Therefore, a device with a real time clock must be referenced in order for the SBC-SD to properly keep time. This channel has a total of 4 attributes - **U1**, **U2**, **TT** and **DF**.

Attribute **U1** attribute defines the unit ID referenced for the Primary Time master.

Attribute **U2** attribute defines the unit ID referenced for the Backup Time Master, used in the event that the Primary Time Master cannot be reached through network communications for a valid time.

Attribute **TT** defines the clock display mode. This specifies how time is displayed on menus of the SBC-SD. Time can be displayed either in 12-Hour format (AM and PM) or in a 24-Hour Clock (military) format.

*Table 4-9: Time Display Values*

Value for 1200; TT	Time Display
0	12 Hour Format
1	24 Hour Format

Attribute **DF** defines the display mode. This specifies how date is displayed on menus of the SBC-SD. Date can be displayed in either MM/DD/YY format (e.g. 11/19/07 = November 19th, 2007) or DD/MM/YY format (e.g. 19/11/07 = 19th Day of November, 2007).

*Table 4-10: Date Display Values*

Value for 1200; DF	Date Display
0	MM/DD/YY
1	DD/MM/YY



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# SECTION 5: THE OPERATOR INTERFACE

*The operator interface provides an intuitive interface between an operator and the building automation system. This section provides detailed information regarding each area of the SBC-SD's operator interface, accessed through the local touch-screen display.*

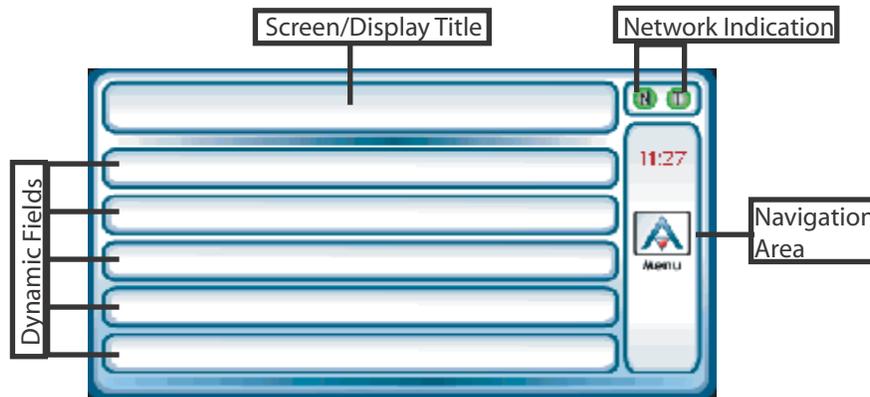
## IN THIS SECTION

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## 5.1 THE OPERATOR INTERFACE

The operator interface is the gateway between the user and the internal functions of the SBC-SD. The operator interface consists of dynamic fields referencing data or other areas of the system, a display title, network icons indicating network traffic and token possession, and a navigational pane providing access between different areas of the system. Other aspects of the operator interface may appear with additional buttons that are used to configure the SBC-SD, enter pin-passwords, penetrate menus, change system variables, monitor and modify network attributes, scroll through attribute and alarm lists, perform tests, and signal emergency override conditions. Buttons displayed on the SBC-SD will perform different functions depending on the situation.



### 5.1.1 THE HOME SCREEN

Upon start-up, the SBC-SD will display the Home Screen. The Home Screen can be configured to display default data from the system at start-up or during idle times when an operator is not logged in.

The Home Screen Title provides a configurable name which can be used to reference a site or location where the SBC-SD has been installed. The Home Screen provides five lines which can be configured to display data programmed in slots, provide links to other screens in order to fully navigate the system, or blank lines for cosmetic purposes.

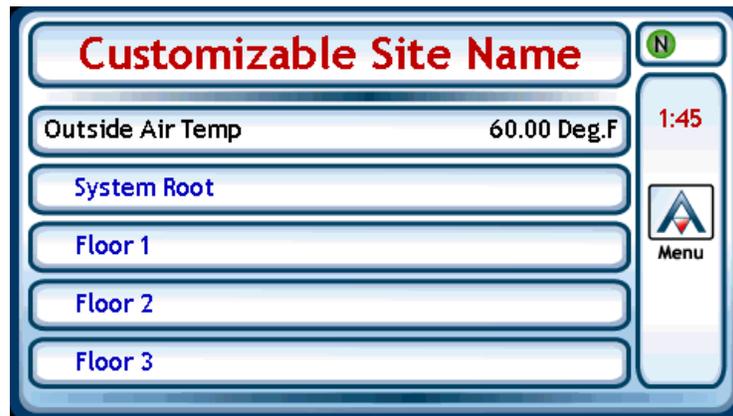


Figure 5-1 The Home Screen

### 5.1.2 MENU



The Menu button provides access to the main menu of the system. Depending on privilege level configurations, an operator may access specific functions within the SBC-SD. The Menu also displays the current system time, as well as an button for Recent Alarms or Fire Mode in the event that either feature is active within the system.

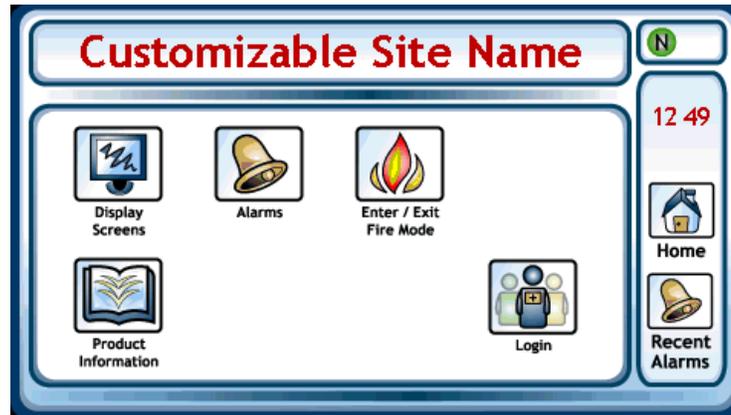


Figure 5-2 Menu

### 5.1.3 OPERATOR PASSWORD PROTECTION

The SBC-SD can define up to eight operator passwords which give access to different areas of the Menu, or provide certain point write privileges when interacting with the system using the touch-screen display.

To login as an operator, touch the Login button. The operator is prompted to enter a password to gain access to additional menu capabilities. From the password prompt screen, you must enter a five-digit password using the direction keys on the touch-screen display. When shipped from the factory, a default operator is programmed into the SBC-SD. The default operator password is 11111. This default operator account provides Level 3 permissions to the SBC-SD. The default account can be modified at any time.

If the five-digit password that you enter matches one of the programmable operator passwords in the SBC-SD, the system will log you in as the corresponding operator (having that operator's set of privileges) and the Menu is displayed. If the password does not match one of the programmed passwords, the display will revert back to the Menu. If multiple operators have the same password, the higher access level will be used when this password is used to log in.

Each operator has three possible levels of user privileges, where Level 1 is the lowest, and Level 3 providing the highest level of access. An operator may also be disabled from accessing the system when their corresponding privilege level attribute is set to a value of zero (0). In addition to specific read/write privileges, user privilege levels provide access to advanced areas of the SBC-SD.

### 5.1.4 DATA ENTRY OVERVIEW

Although data can be entered into the SBC-SD from different levels of menu penetration and for different reasons, the data entry techniques used within the SBC-SD are similar.

#### 5.1.4.1 VALUE EDITING

Before explaining the different data entry methods available to operators in the SBC-SD, it is essential to know how to edit a point value displayed on a data screen.

When navigating through different display screens, values are listed as they are programmed from top to bottom. Each data screen can contain up to 15 elements including point values, links to other screens, and blank lines (for cosmetic purposes). To initially view details about a point, touch the line that the point is listed on.

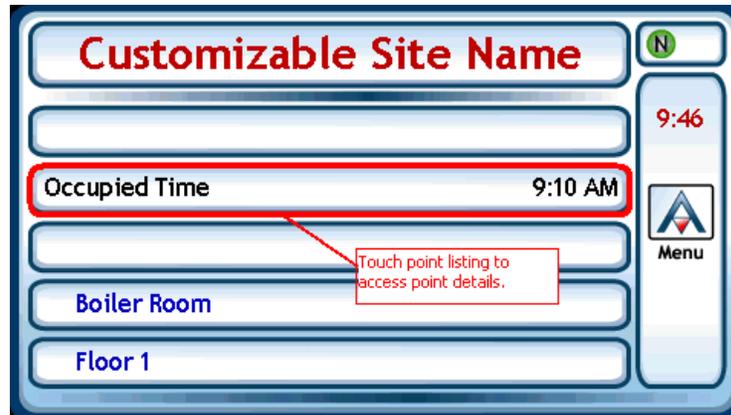


Figure 5-3 Selecting a Point from a Display Screen

By touching the point listing at the display screen, an operator will be navigated to the detail screen (Figure 5-4), which provides additional information about this point. The additional information displayed in this area is derived from slot configuration parameters. If the operator's privilege level meets or exceeds the priority level required to edit the slot, they can then touch the point value displayed on the details screen. This action invokes the value editor, providing the operator a method to enter and manipulate data.

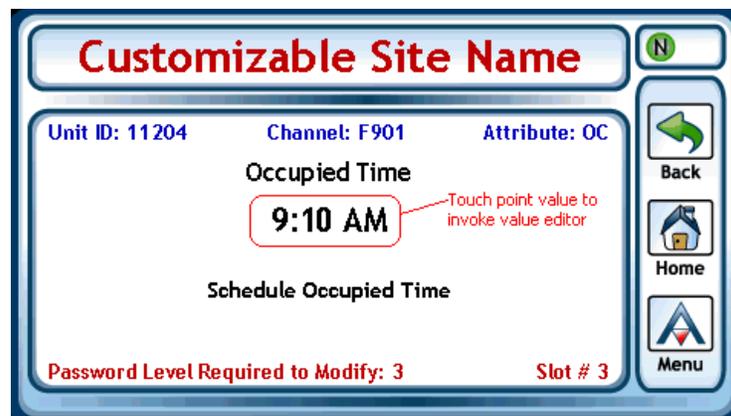


Figure 5-4 Point Details Screen

5.1.4.2 DATA ENTRY METHODS



Modifying values through the touch-screen display is accomplished through the use of the data entry panel. The data entry panel provides up, down, left, right and checkmark buttons. Using these buttons, modifications to numeric values can occur in one of two ways: an *up/down method* or an *individual digit method*.

In the *up/down method*, you use either the up or down arrow buttons to systematically increment or decrement a value to the desired new value. This method is convenient if the desired value is only a few units away from the previous value. A good example of this is changing a schedule time from 9:00 to 9:05. Touching the up or down buttons for longer than one second will result in faster, continuous increments or decrements of the desired value. The *up/down method* is displayed in Figure 5-5.

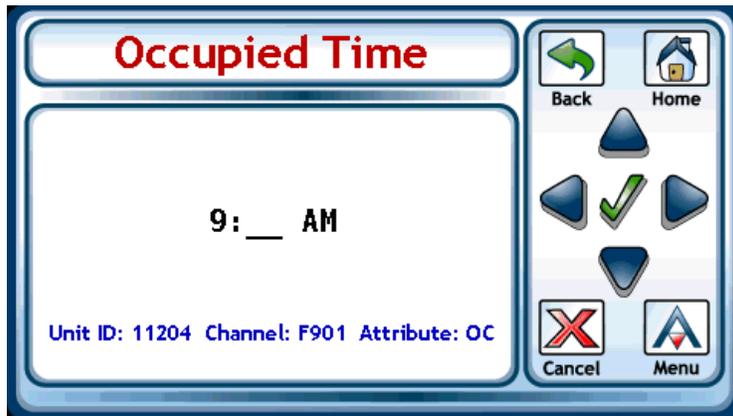


Figure 5-5 Up/Down Edit Method

The *individual digit method* is typically used for large value changes, thereby permitting the operator to move between each unit position using the left and right arrow buttons. A good example of a large value change would be to modify a PUP channel from FF00 to FA11.

As the operator navigates to each unit position, an “edit cursor” is displayed beneath the unit position that an operator may desire to modify. Once the edit cursor has been placed beneath the desired unit position, the up and down arrow buttons can be used to adjust the value. This method is displayed in Figure 5-6.

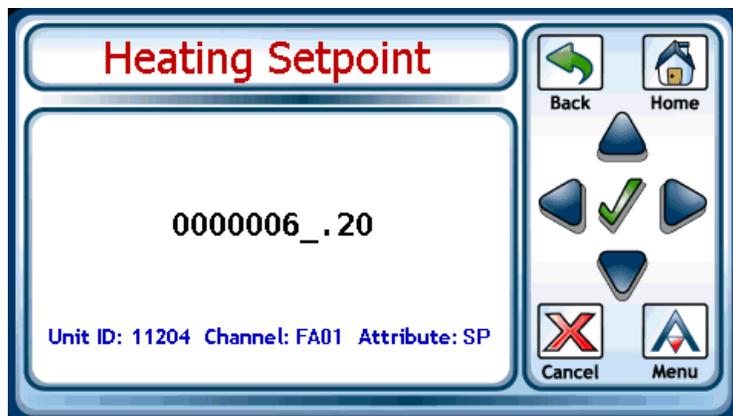


Figure 5-6 Individual Digit Method

## 5.2 MENU OPTIONS

### NOTE



A breakout of user privilege access levels can be found in Appendix B of this document.

### 5.2.1 DISPLAY SCREENS



Display  
Screens

The Display Screens button provide a single point of access to a complete index of configured screens programmed into the SBC-SD, as illustrated in Figure 5-7. Touching the up and down arrows buttons, an operator can scroll through the entire system index of available screens that can be chosen for navigation. To navigate to a specific display screen, touch the desired screen name. At any time, an operator may touch the Back button to navigate to previous displayed screens, or touch the Menu button to be taken back to the Menu area.

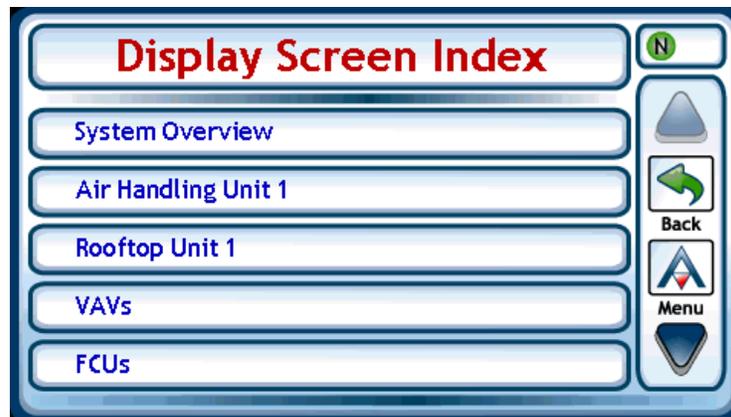


Figure 5-7 Display Screen Index

### 5.2.2 ALARMS



Alarms

The Alarms button provides access to the Alarm index of the SBC-SD. The Alarm index provides the ability to either view All Alarms, or Recent Alarms. Touching the All Alarms button will display the entire memory buffer of alarms processed by the SBC-SD. A maximum of 128 alarms can be stored in SBC-SD's memory at any given time.

In the event an alarm condition occurs on the system and is reported back to a main host such as an area controller, the Menu will display a Recent Alarms button, indicating that an alarm condition has occurred. To view recent alarms, simply touch the Recent Alarms button displayed at the Menu display. The Recent Alarms section will display any and all alarms that have been received since the SBC-SD booted.

For this function to display alarms, a networked host (area controller, building controller) must be actively polling devices for alarm information. Alarms broadcasted by a host controller may also be displayed in this section.



Figure 5-8 Menu - Alarm Reported



Figure 5-9 Recent Alarms

To view basic information regarding an alarm, simply touch the alarm entry displayed in either list. Details provided with each alarm include the unit ID origin of the alarm, the date and time in which the alarm occurred, exception code information, and the alarm entry number currently under review.

When an operator has reviewed the information, they may touch either the Back button or Menu button to return to another point in the system. Once an alarm has been viewed from either Alarm Menu section, it is automatically removed from the Recent Alarms list, but can be reviewed at any time from the All Alarms section.

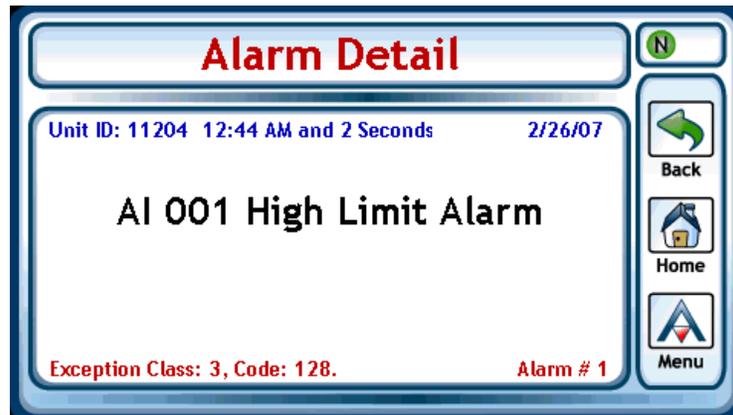


Figure 5-10 Alarm Details

## NOTE



Upon logging more than 128 alarms, SBC-SD will automatically erase the oldest alarm entry and save the most recent alarm in the All Alarms section.

## 5.2.3 ENTER/EXIT FIRE MODE



Enter / Exit  
Fire Mode

The Enter/Exit Fire Mode button provides access to the Fire Mode menu, used to execute Fire Mode broadcasts. After accessing the Fire Mode menu and touching the Enter Fire Mode button, the SBC-SD will broadcast a Fire Mode message to the PUP network.

Dependent on Fire Mode Configuration, the SBC-SD will either continue to send Fire Mode broadcast messages to the unitary controller network continuously (every time it has the network token), or periodically on a time-based interval (in minutes).

To stop the SBC-SD from sending a Fire Mode broadcast, touch the Exit Fire Mode button from the Fire Mode Menu. Alternatively, the SBC-SD will automatically stop Fire Mode once the programmed time to remain has elapsed.

## NOTE



Select unitary controllers may require a power-cycle in order to exit fire mode. Prior to configuring your system for Fire Mode applications, consult applicable user documentation for the unitary controllers with which you are interfacing the SBC-SD.

5.2.4 CHANGE NETWORK VALUE



The Change Network Value button is a useful utility that allows operators to directly communicate with specific PUP units via their individual PUP channel/attributes, regardless of whether or not they have been defined as slots within the SBC-SD. Operators can address a network value by entering the Unit ID, Channel, and Attribute. Touch the up and down arrows to adjust the value displayed for each required field. To navigate between the Unit ID, Channel, and Attribute fields, touch the left or right arrow buttons to move the edit cursor. To access this feature, an operator must have Level 3 Privileges

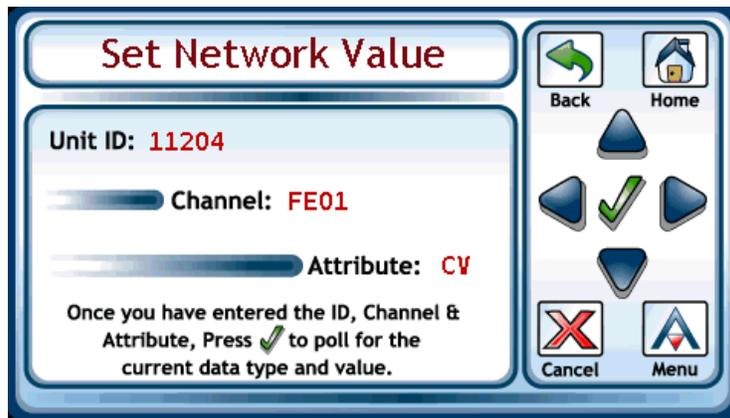


Figure 5-11 Change Network Value

If the controller you have referenced is online, the value will be displayed with ready options for editing. For reference purposes, the Unit ID, Channel, and Attribute will be displayed on the bottom of the touch-screen display. To edit the value use the directional arrows to move between fields and adjust the value using the screen cursor. When you are finished, touch the check mark button.

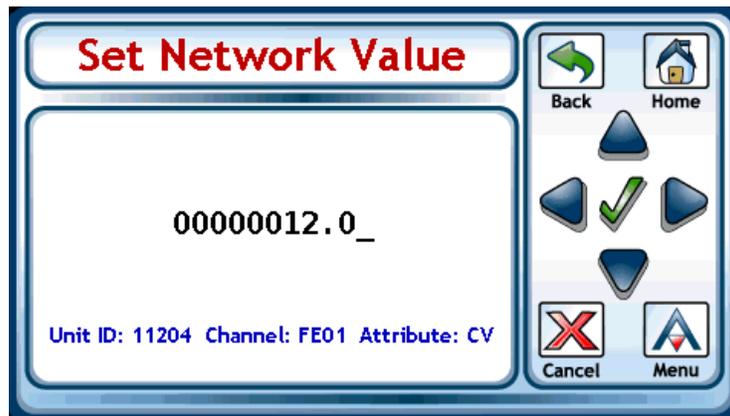


Figure 5-12 Display Networked Value

## 5.2.5 CONFIGURE



Configure

The Configure button provides advanced configuration options for the SBC-SD, available when logged into the display. This area includes options for:

- .Save All and Reboot
- .Calibrate Screen
- .Product Information
- .Store Debug Information
- .Modify Programming
- .Network Statistics



Figure 5-13 Configure Menu

## 5.2.5.1 SAVE ALL AND REBOOT

Save All &  
Reboot

The Save All and Reboot Feature provides a single point of touch-access to save all programmed data. The SBC-SD will then perform a warm-reboot once the save action has successfully completed.

To access this feature, an operator must have (at least) Level 1 Privileges.

## 5.2.5.2 CALIBRATE SCREEN

Calibrate  
Screen

The Calibrate Screen option provides single point access to calibrate the parameters of the SBC-SD's touch-screen display. When selected, a target button will display on select areas of the touch-screen display. To calibrate, simply touch the target button as displayed on each area of the screen.

To access this feature, an operator must have (at least) Level 1 Privileges.

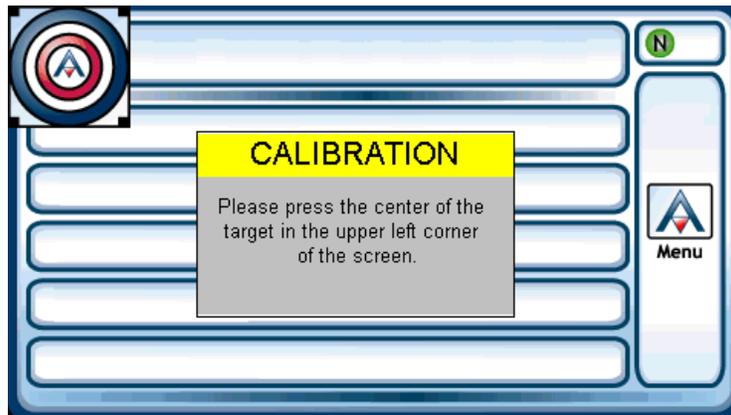


Figure 5-14 Screen Calibration

5.2.5.3 PRODUCT INFORMATION



The Product Information option provides a basic overview of read-only details regarding the SBC-SD. Details provided by this option include current firmware in use, serial number and manufacturing information, as well as network communication details.

To access this feature, an operator must have (at least) Level 1 Privileges.

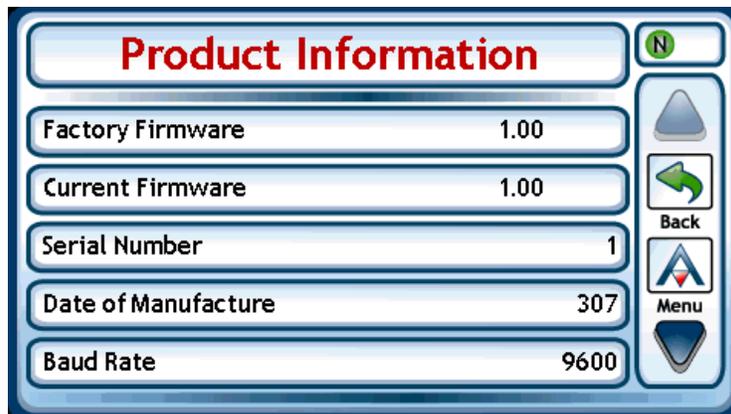


Figure 5-15 Product Information

5.2.5.4 STORE DEBUG INFORMATION



In the event you may need to troubleshoot a product issue with American Auto-Matrix, you may be asked to send debug information for further analysis. The Store Debug Information option commands the SBC-SD to take all current debug information currently processed and store it to onto the loaded SD Flash Memory card loaded into the drive slot. If a memory card is present, information will be saved. If a memory card is not present, an Operation Failed message will display.

To access this feature, an operator must have (at least) Level 2 Privileges.

## 5.2.5.5 MODIFY PROGRAMMING



**Modify  
Programming**

The Modify Programming button option is used to perform firmware upgrades to the SBC-SD. From the Modify Programming option, two sub-options, Update Firmware and Enter Passcodes, can be selected from this area.

The Update Firmware option allows users to update the product firmware to new revisions that are made available or purchased. The process to update firmware requires use of the SD Flash Memory card slot. A firmware upgrade procedure for each update is provided by American Auto-Matrix Technical Services upon release of a new firmware enhancement.

The Enter Passcodes option is to be used when directed to by American Auto-Matrix Technical Services.

To access this feature, an operator must have (at least) Level 3 Privileges.

## 5.2.5.6 NETWORK STATISTICS



**Network  
Statistics**

The Network Statistics button provides discrete network diagnostic information, intended for troubleshooting purposes when communicating with American Auto-Matrix for support incidents. In this section, details regarding successful transactions, transaction time-outs, and communication errors are counted in this area.

Using the up and down arrows to scroll through the list, operators can also view details regarding unit token passing activity that occurs on the network.

To access this feature, an operator must have (at least) Level 1 Privileges.

## 5.2.6 DIAGNOSTICS



**Diagnostics**

The Diagnostics button option provides additional debug information regarding active operations of the SBC-SD since up-time (initial power-up/start-up). Within this screen, several areas of performance feedback are provided by the SBC-SD for troubleshooting with American Auto-Matrix support personnel.

To access this feature, an operator must have (at least) Level 1 Privileges.

### 5.2.7 UNIT SETUP

The Unit Setup menu provides configuration access to system related variables of the SBC-SD. Access to the Unit Setup menu is available from the Main Menu by touching the Unit Setup button, provided that you are logged into the touch-screen display. The following sub-menus are available from Unit Setup:

- . User Interface
- . Network
- . Audio
- . Users
- . Time
- . Fire Mode
- . Alarms

#### NOTE



Unit Setup variables can be configured through either the local touch-screen display, or SoloPro engineering software.

## 5.2.7.1 USER INTERFACE



Setup: User Interface

The User Interface menu provides general configuration details for the user interface, including options to show slot information and details on screen dimming functionality.

To access this feature, an operator must have (at least) Level 1 Privileges.

Table 5-1: Setup: User Interface

Variable Names	SoloPro Location	Value	Description
Slot Information Display	System>Visual Customization	0 = No Login Required 1 = Level 1 2 = Level 2 3 = Level 3	Defines the minimum security level privilege required in order to view extended information about each data slot; including data slot number, channel number, attribute and password level required to modify.
Enable Screen Dimming	System>Visual Customization	0 = No 1 = Yes	Enables or disables screen dimming functionality.
Time Until Screen Dimming	System>Visual Customization	1 - 65535 (minutes)	A definable idle time which must elapse before screen dimming occurs.
Dimming Type	System>Visual Customization	0 = Screen Off 1 = Very Light 2 = Very Dark	Defines the setting of Screen Dimming mode. When the idle time occurs, the screen will remain dimmed until the next screen touch occurs.

## 5.2.7.2 NETWORK



Setup: Network

The Network menu provides the method to configure the network communication parameters of the SBC-SD; including unit ID assignment and token passing capabilities (Full Administrator enablement/disablement, token error recovery, and peer listing). The SBC-SD supports the ability to pass a network token to eight (8) other devices. Note that if the Unit ID or the baud rate are changed from this area, the SBC-SD will automatically reboot to take effect immediately.

To access this feature, an operator must have (at least) Level 3 Privileges.

Table 5-2: Setup: Network

Variable Names	SoloPro Location	Value	Description
Unit ID	System>Network Configuration	1 - 65534	Specifies the network address assigned to the SBC-SD
Communication Speed	System>Network Configuration	0 = 9.6kbps (Default) 6 = 38.4kbps 7 = 19.2kbps 8 = 115.2kbps 9 = 57.6kbps	Specifies the network baud rate at which the SBC-SD will communicate. This value defaults to 9.6kbps and should be modified only when the PUP Network in which it is connected to has a different baud rate.

*Table 5-2: Setup: Network*

Variable Names	SoloPro Location	Value	Description
Token Passing Type	System>Network Configuration	0 = Irresponsible Peer 1 = Full Administrator	Defines the mode for token passing. When SBC-SD is an Irresponsible Peer, it will retrieve information only when a Full Administrator passes it the token. In Full Administrator mode, the token is passed to each unit listed in the Peer List.
Token Recovery	System>Network Configuration	0 = Disabled 1 = Enabled	Enables token error recovery when SBC-SD's Token Passing Type is set to Full Administrator.
Peer <i>n</i> Unit #	System>Network Configuration	1 - 65534	Specifies the network address of a peer that will receive the network token when SBC-SD is configured as a Full Administrator.

5.2.7.3 AUDIO



Setup:  
Audio

The Audio menu provides the method to configure the audio properties for the SBC-SD. When enabled, the SBC-SD produces a “click” noise for each touch action performed on the local touch screen display.

To access this feature, an operator must have (at least) Level 1 Privileges.

*Table 5-3: Setup: Audio*

Variable Names	SoloPro Location	Value	Description
Button Clicking	System>Audio Setup	0 = Yes 1 = No	Enables or disables audio clicks generated by the product when a touch action is performed at the local display.

## 5.2.7.4 USERS

Setup:  
Users

The Users menu provides the method to configure user account privileges. The SBC-SD will store up to 8 operators, containing a unique pin password and privilege level.

To access this feature, an operator must have (at least) Level 3 Privileges.

Table 5-4: Setup: Users

Variable Names	SoloPro Location	Value	Description
Operator #n's Password	System>Operators	00000 - 99999	Specifies a unique pin password required for multi-tiered access to the local touch-screen display.
Operator #n's Access Level	System>Operators	0 = Operator Disabled 1 = Level 1 Privileges 2 = Level 2 Privileges 3 = Level 3 Privileges	Specifies the privilege level assigned to the user. To disable an operator account, set this value to 0 (Disable).
Session Timer	System>Operators	5 - 120 (minutes)	Specifies a timeout (in minutes) that an operator is automatically logged out of the system.

## 5.2.7.5 TIME

Setup:  
Time

The Time menu provides the method to configure the SBC-SD to retrieve system time from another device configured to be the time master for the network (area controller, programmable unitary controller, etc.). In the event of an unexpected system condition, a back-up time master unit should also be programmed into the SBC-SD.

To access this feature, an operator must have (at least) Level 1 Privileges.

Table 5-5: Setup: Time

Variable Names	SoloPro Location	Value	Description
Unit ID for Time Master 1	System>Date and Time	1 - 65534	Specifies the network address of a PUP device that is queried for system time at start-up
Unit ID for Time Master 2	System>Date and Time	1 - 65534	Specifies the network address of a PUP device that is queried for system at in the event of non response from Time Master 1
Clock Display Mode	System>Date and Time	0 = 12 Hour (am/pm) 1 = 24 Hour (military)	Specifies how time is displayed to users through the local touch-screen display.
Date Display Mode	System>Date and Time	0 = MM/DD/YY 1 = DD/MM/YY	Specifies how date is displayed to users through the local-touch screen display.

5.2.7.6 FIRE MODE



Setup:  
Fire Mode

The Fire Mode interface provides a method to configure parameters for how fire mode is broadcasted to the PUP network, including mode duration, broadcast interval and password reset privileges to suppress fire mode.

To access this feature, an operator must have (at least) Level 3 Privileges.

Table 5-6: Setup: Fire Mode

Variable Names	SoloPro Location	Value	Description
Duration of Fire Mode	System>Fire Mode Setup	0 = Disabled 1 - 254 (minutes)	Specifies, in minutes, the time period in which fire mode is enabled.
Broadcast Time Interval	System>Fire Mode Setup	0 = Constant Broadcast 1 - 254 (minutes)	Specifies, in minutes, the interval at which the SBC-SD will broadcast fire mode to connected units.
Password Level to set/reset	System>Fire Mode Setup	0 = Any User 1 = Level 1 minimum 2 = Level 2 minimum 3 = Level 3 users only	Specifies the minimum privilege level that an operator must have in order to enable/disable fire mode from the local touch-screen display.

5.2.7.7 ALARMS



Setup:  
Alarms

The Alarms menu provides a method through the local touch-screen display to enable or disable logging of network alarms that are reported by devices either as a broadcast or when they have been interrogated by an area controller.

To access this feature, an operator must have (at least) Level 1 Privileges.

Table 5-7: Setup: Alarms

Variable Names	SoloPro Location	Value	Description
Log network alarms?	Alarms	0 = No 1 = Yes	Specifies whether the SBC-SD will log network alarms for review purposes at the local touch-screen display.

5.2.8 LOGIN / LOGOUT



Login

The Login / Logout button provides a method for an operator to either login to the touch-screen display with permissions, or logout once they have completed whatever necessary tasks.

If an operator touches Login at start-up, the SBC-SD will request the operator to enter in their pin-password code.



Logout

If an operator touches Logout, the SBC-SD will log the operator out from the operator interface, reverting the local touch-screen display back to the Menu.

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# APPENDIX A: CHANNEL ATTRIBUTES

*The following tables contain a list of channel and attribute assignments for the SBC-SD. Each attribute is given with its PUP channel assignment, PUP data type, access code, where it is stored and a brief description of its function.*

## IN THIS SECTION

System Channel, FF00 .....	A-3
Display Channel, D000 .....	A-6
Home Screen Channel, C000 .....	A-8
Display Screens 1-50, B001 - B032 .....	A-9
Slots 1-150, A001-A096 .....	A-12
Time Master Channel, 1200 .....	A-13



## SYSTEM CHANNEL, FF00

Attribute	Data Type	Access	Storage	Default	Description
<b>ON</b>	DF	RW	FLASH		<b>Display's Name</b> specifies a unique name identify the device or describe the functionality for the SBC-SD.
<b>SN</b>	FE	RO	FLASH		<b>Serial Number</b> specifies the factory set serial number for the product.
<b>CT</b>	FE	RO	FLASH	108	<b>Controller Type</b> specifies the factory set controller type number for the controller. CT for the SBC-SD is 108.
<b>VE</b>	FA	RO	FLASH		<b>Firmware Version</b> specifies the version of firmware currently loaded onto the SBC-SD.
<b>FT</b>	FE	RO	FLASH	41	<b>Firmware Type</b> indicates which type of firmware is installed. This value should always be 41.
<b>FC</b>	FE	RO	FLASH		<b>FLASH Update Counter</b> indicates the number of times that the controller has had it's firmware updated.
<b>CM</b>	FE	RO	FLASH	255	<b>Manufacturer</b> indicates the factory set manufacturer number for the controller (CM for American Auto-Matrix controllers is always 255).
<b>CP</b>	FE	RW	FLASH	0 = 9.6kbps	<b>Communication Baud</b> specifies the network communication baud rate setting for the SBC-SD.  0 = 9.6kbps 1 = 4.8kbps 2 = 2.4kbps 3, 4, 5 = reserved 6 = 38.4kbps 7 = 19.2kbps 8 = 115.2kbps 9 = 57.6kbps
<b>OS</b>	FA	RO	FLASH		<b>Factory Firmware Version</b> indicates the original firmware revision loaded at time of production.
<b>DE</b>	FE	RW	FLASH	0	<b>Default Enable</b> used to return all attributes in the controller to their default values.  0=Normal operation 197=set attributes to their default values.
<b>RS</b>	FE	RW	FLASH	0 = No	<b>Reset the Controller?</b> used to reset the controller.  0=No 1=Yes
<b>TM</b>	E6	RW	FLASH		<b>Current Time</b> indicates the current time in the form HH:MM.
<b>DT</b>	E4	RW	FLASH		<b>Current Date</b> the current date displayed as MM/DD/YYYY.
<b>BF</b>	FE	RW	FLASH	0	<b>Currently Broadcasting Fire</b> specifies whether the SBC-SD is currently in fire mode.
<b>TF</b>	FE	RO	FLASH	30	<b>Time to Remain in Fire Mode</b> The time (in minutes) that the controller will remain in fire mode

Attribute	Data Type	Access	Storage	Default	Description
<b>BF</b>	FE	RO	FLASH		<p><b>Currently Broadcasting Fire Mode</b> specifies whether the SBC-SD is sending fire mode broadcast messages to the controller network</p> <p>0 = No 1 = Yes</p>
<b>BT</b>	FE	RW	FLASH	255	<p><b>Broadcast Time Interval</b> The time interval (in minutes) that the SBC-SD will broadcast a fire mode event to the control network.</p> <p>0 = Constant 1 - 254 = number of minutes</p>
<b>FP</b>	FE	RW	FLASH	0	<p><b>Password Level Required for Fire Functions</b> specifies the minimum privilege level required to enable or disable fire mode capabilities.</p> <p>0 = All Users 1 = Level 1 2 = Level 2 3 = Level 3</p>
<b>ID</b>	FE	RW	FLASH		<p><b>Unit Number (ID)</b> specifies the controller's identification number. The value of ID defaults to the last four digits of the unit's serial number.</p>
<b>SR</b>	FE	RO	FLASH		<p><b>Flash Release Code</b> the release code of the firmware currently flashed on the controller, used primarily for technical support purposes.</p>
<b>TP</b>	FE	RW	FLASH	0	<p><b>Token Passing Type</b> defines the mode for token passing.</p> <p>0=Irresponsible Peer 1=Full Administrator</p>
<b>ER</b>	FE	RW	FLASH	0	<p><b>Token Recovery?</b> If Token Error Recovery is enabled and a token is lost, Full Administrator will detect the condition and initiate a new token.</p> <p>0=Disabled 1=Enabled</p>
<b>U1</b>	FE	RW	FLASH	65535	<p><b>Peer Unit Number</b> Specifies the Unit ID number of a controller that will receive the network token when the SBC-SD is configured as a Full Administrator.</p>
<b>U2</b>	FE	RW	FLASH	65535	<p><b>Peer Unit Number</b> Specifies the Unit ID number of a controller that will receive the network token when the SBC-SD is configured as a Full Administrator.</p>
<b>U3</b>	FE	RW	FLASH	65535	<p><b>Peer Unit Number</b> Specifies the Unit ID number of a controller that will receive the network token when the SBC-SD is configured as a Full Administrator.</p>
<b>U4</b>	FE	RW	FLASH	65535	<p><b>Peer Unit Number</b> Specifies the Unit ID number of a controller that will receive the network token when the SBC-SD is configured as a Full Administrator.</p>
<b>U5</b>	FE	RW	FLASH	65535	<p><b>Peer Unit Number</b> Specifies the Unit ID number of a controller that will receive the network token when the SBC-SD is configured as a Full Administrator.</p>
<b>U6</b>	FE	RW	FLASH	65535	<p><b>Peer Unit Number</b> Specifies the Unit ID number of a controller that will receive the network token when the SBC-SD is configured as a Full Administrator.</p>

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Attribute	Data Type	Access	Storage	Default	Description
U7	FE	RW	FLASH	65535	<b>Peer Unit Number</b> Specifies the Unit ID number of a controller that will receive the network token when the SBC-SD is configured as a Full Administrator.
U8	FE	RW	FLASH	65535	<b>Peer Unit Number</b> Specifies the Unit ID number of a controller that will receive the network token when the SBC-SD is configured as a Full Administrator.

DISPLAY CHANNEL, D000

Attribute	Data Type	Access	Storage	Default	Description
<b>OL</b>	FE	RW	FLASH	30	<b>Time Until Auto Logout</b> specifies, in minutes, the maximum duration of time an operator may be logged in before they are logged out automatically.
<b>O1</b>	FE	RW	FLASH	11111	<b>Operator 1 Password</b> specifies the operator password for an operator
<b>P1</b>	FE	RW	FLASH	3= Level 3	<b>Operator 1 Privileges</b> specifies the privilege level for the corresponding operator  0 = Disabled 1 = Level 1 2 = Level 2 3 = Level 3
<b>O2</b>	FE	RW	FLASH	0	<b>Operator 2 Password</b> specifies the operator password for an operator
<b>P2</b>	FE	RW	FLASH	0 = Disabled	<b>Operator 2 Privileges</b> specifies the privilege level for the corresponding operator  0 = Disabled 1 = Level 1 2 = Level 2 3 = Level 3
<b>O3</b>	FE	RW	FLASH	0	<b>Operator 3 Password</b> specifies the operator password for an operator
<b>P3</b>	FE	RW	FLASH	0 = Disabled	<b>Operator 3 Privileges</b> specifies the privilege level for the corresponding operator  0 = Disabled 1 = Level 1 2 = Level 2 3 = Level 3
<b>O4</b>	FE	RW	FLASH	0	<b>Operator 4 Password</b> specifies the operator password for an operator
<b>P4</b>	FE	RW	FLASH	0 = Disabled	<b>Operator 4 Privileges</b> specifies the privilege level for the corresponding operator  0 = Disabled 1 = Level 1 2 = Level 2 3 = Level 3
<b>O5</b>	FE	RW	FLASH	0	<b>Operator 5 Password</b> specifies the operator password for an operator
<b>P5</b>	FE	RW	FLASH	0 = Disabled	<b>Operator 5 Privileges</b> specifies the privilege level for the corresponding operator  0 = Disabled 1 = Level 1 2 = Level 2 3 = Level 3
<b>O6</b>	FE	RW	FLASH	0	<b>Operator 6 Password</b> specifies the operator password for an operator

Attribute	Data Type	Access	Storage	Default	Description
<b>P6</b>	FE	RW	FLASH	0 = Disabled	<p><b>Operator 6 Privileges</b> specifies the privilege level for the corresponding operator</p> <p>0 = Disabled 1 = Level 1 2 = Level 2 3 = Level 3</p>
<b>O7</b>	FE	RW	FLASH	0	<p><b>Operator 7 Password</b> specifies the operator password for an operator</p>
<b>P7</b>	FE	RW	FLASH	0 = Disabled	<p><b>Operator 7 Privileges</b> specifies the privilege level for the corresponding operator</p> <p>0 = Disabled 1 = Level 1 2 = Level 2 3 = Level 3</p>
<b>O8</b>	FE	RW	FLASH	0	<p><b>Operator 8 Password</b> specifies the operator password for an operator</p>
<b>P8</b>	FE	RW	FLASH	0 = Disabled	<p><b>Operator 8 Privileges</b> specifies the privilege level for the corresponding operator</p> <p>0 = Disabled 1 = Level 1 2 = Level 2 3 = Level 3</p>
<b>CL</b>	FE	RW	FLASH	0 = All Users	<p><b>Who Can View Data Slot Info?</b> specifies the minimum privilege level required for an operator to view data slot info through the SBC-SD local touch-screen display.</p> <p>0 = All Users 1 = Level 1 2 = Level 2 3 = Level 3</p>
<b>SD</b>	FE	RW	FLASH	0 = No	<p><b>Enable Screen Dimming?</b> specifies whether screen dimming mode is enabled or disabled</p> <p>0 = No 1 = Yes</p>
<b>ST</b>	FE	RW	FLASH	2	<p><b>Time Until Screen Dimming</b> specifies the time, in minutes, that elapses before screen dimming mode occurs.</p>
<b>LL</b>	FE	RW	FLASH	2 = Light	<p><b>Dimming Level</b> specifies the dimming level of the screen backlight.</p> <p>0 = Totally Off 1 = Dark 2 = Light</p>
<b>BC</b>	FE	RW	FLASH	1 = Yes	<p><b>Enable Clicks for Button Presses</b> specifies whether click sounds are enabled when a button is touched.</p> <p>0 = No 1 = Yes</p>
<b>AL</b>	FE	RW	FLASH	1 = Yes	<p><b>Log Network Alarms?</b> specifies whether or not the SBC-SD should log alarms reported by a device.</p>

HOME SCREEN CHANNEL, C000

Attribute	Data Type	Access	Storage	Default	Description
<b>TS</b>	DF	RW	FLASH		<b>Home Screen Title</b> specifies a site name or title for the SBC-SD that is displayed when navigating throughout the system.
<b>01</b>	FF	RW	FLASH	0	<b>Line 1's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T1 attribute.
<b>T1</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 1's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>02</b>	FF	RW	FLASH	0	<b>Line 2's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T2 attribute.
<b>T2</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 2's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>03</b>	FF	RW	FLASH	0	<b>Line 3's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T3 attribute.
<b>T3</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 3's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>04</b>	FF	RW	FLASH	0	<b>Line 4's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T4 attribute.
<b>T4</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 4's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>05</b>	FF	RW	FLASH	0	<b>Line 5's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T5 attribute.
<b>T5</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 5's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)

## DISPLAY SCREENS 1-50, B001 - B032

Attribute	Data Type	Access	Storage	Default	Description
<b>TS</b>	DF	RW	FLASH	"Display Screen <i>n</i> Blank" (where <i>n</i> = Screen Number)	<b>Display Screen Title</b> specifies a title for the screen that is displayed when viewing the screen and navigating through the screen index.
<b>01</b>	FF	RW	FLASH	0	<b>Line 1's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T1 attribute.
<b>T1</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 1's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>02</b>	FF	RW	FLASH	0	<b>Line 2's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T2 attribute.
<b>T2</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 2's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>03</b>	FF	RW	FLASH	0	<b>Line 3's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T3 attribute.
<b>T3</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 3's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>04</b>	FF	RW	FLASH	0	<b>Line 4's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T4 attribute.
<b>T4</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 4's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>05</b>	FF	RW	FLASH	0	<b>Line 5's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T5 attribute.
<b>T5</b>	FF	RW	FLASH	0 = Blank Line	<b>Line 5's Type</b> specifies the element type desired for display purposes  0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)
<b>06</b>	FF	RW	FLASH	0	<b>Line 6's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T6 attribute.

Attribute	Data Type	Access	Storage	Default	Description
T6	FF	RW	FLASH	0 = Blank Line	<p><b>Line 6's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
07	FF	RW	FLASH	0	<p><b>Line 7's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T7 attribute.</p>
T7	FF	RW	FLASH	0 = Blank Line	<p><b>Line 7's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
08	FF	RW	FLASH	0	<p><b>Line 8's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T8 attribute.</p>
T8	FF	RW	FLASH	0 = Blank Line	<p><b>Line 8's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
09	FF	RW	FLASH	0	<p><b>Line 9's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding T9 attribute.</p>
T9	FF	RW	FLASH	0 = Blank Line	<p><b>Line 9's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
10	FF	RW	FLASH	0	<p><b>Line 10's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding U0 attribute.</p>
U0	FF	RW	FLASH	0 = Blank Line	<p><b>Line 10's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
11	FF	RW	FLASH	0	<p><b>Line 11's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding U1 attribute.</p>
U1	FF	RW	FLASH	0 = Blank Line	<p><b>Line 11's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
12	FF	RW	FLASH	0	<p><b>Line 12's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding U2 attribute.</p>

Attribute	Data Type	Access	Storage	Default	Description
U2	FF	RW	FLASH	0 = Blank Line	<p><b>Line 12's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
13	FF	RW	FLASH	0	<p><b>Line 13's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding U3 attribute.</p>
U3	FF	RW	FLASH	0 = Blank Line	<p><b>Line 13's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
14	FF	RW	FLASH	0	<p><b>Line 14's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding U4 attribute.</p>
U4	FF	RW	FLASH	0 = Blank Line	<p><b>Line 14's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>
15	FF	RW	FLASH	0	<p><b>Line 15's Assigned Value</b> specifies the referenced element number for the element type defined in the corresponding U5 attribute.</p>
U5	FF	RW	FLASH	0 = Blank Line	<p><b>Line 15's Type</b> specifies the element type desired for display purposes</p> <p>0 = Blank Line 1 = Data Slot (1 - 150) 2 = Screen Link (1 - 50)</p>

## SLOTS 1-150, A001-A096

Attribute	Data Type	Access	Storage	Default	Description
<b>TS</b>	DF	RW	FLASH	Slot #n (where n = slot number)	<b>Short Name</b> specifies a short display name for the slot/point when displayed on a data screen.
<b>ID</b>	FE	RW	FLASH	65535	<b>Unit ID</b> specifies the unit ID of the controller of the point you wish to reference.
<b>CH</b>	DF	RW	FLASH		<b>Channel</b> specifies the PUP channel assignment for the point you wish to reference.
<b>AT</b>	DF	RW	FLASH		<b>Attribute</b> specifies the channel attribute for the point you wish to reference.
<b>TL</b>	DF	RW	FLASH		<b>Long Name</b> specifies a descriptive name for the point, and is displayed when a user touches a point from a data screen.
<b>TU</b>	DF	RW	FLASH		<b>Units</b> specifies a custom engineering unit that is displayed next to the point value when displayed on a data screen.
<b>PM</b>	FF	RW	FLASH	3 = Level 3	<b>Password Level Required to Modify</b> specifies the minimum password level that an operator must be logged in to successfully edit a value.
<b>FB</b>	FE	RW	FLASH	32 = Disabled	<b>Focus Bit</b> specifies a bit position to focus on if the point programmed into a slot is a bitmap datatype. A value of 32 will disable focus-bit text overlay.
<b>T1</b>	DF	RW	FLASH		<b>Text Overlay for Value of 1</b> specifies a text value to display on the local touch-screen display when a point value is set to a value of 1.
<b>T0</b>	DF	RW	FLASH		<b>Text Overlay for Value of 0</b> specifies a text value to display on the local touch-screen display when a point value is set to a value of 0.

## TIME MASTER CHANNEL, 1200

Attribute	Data Type	Access	Storage	Default	Description
<b>U1</b>	FE	RW	FLASH	0	<b>Time Master's Unit ID</b> specifies the unit ID of a controller that is referenced for time.
<b>U2</b>	FE	RW	FLASH	0	<b>Backup Time Master's Unit ID</b> specifies a backup controller's unit ID that is referenced for time in the event that the primary Time Master Unit cannot be reached.
<b>TT</b>	FE	RW	FLASH	0 = 12 Hour (AM & PM)	<b>Clock Display Mode</b> specifies how time is displayed on the SBC-SD.  0 = 12 Hour (AM & PM) 1 = 24 Hour Clock (Military)
<b>DF</b>	FE	RW	FLASH	0 = MM/DD/YY	<b>Date Format</b> specifies how dates are displayed on the SBC-SD.  0 = MM/DD/YY 1 = DD/MM/YY



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## APPENDIX B: USER PRIVILEGES

The following tables provides an reference sheet for privilege levels required to access specific areas of SBC-SD functionality.

<i>Feature</i>	<i>Privilege Level Required</i>
Display Screens	All Users
View Alarms	All Users
Product Information	All Users
Fire Mode	<i>variable to setup configuration</i>
Change Network Value	Level 3 Required
Diagnostics	Level 2 or greater
Login/Logout	All Users
Configure>Save All and Reboot	Level 1 or greater
Configure>Calibrate Screen	Level 1 or greater
Configure>Product Information	Level 1 or greater
Configure>Store Debug Information	Level 2 or greater
Configure>Modify Programming	Level 3 Required
Configure>Network Statistics	Level 1 or greater
Configure>Diagnostics	Level 1 or greater
Setup>User Interface	Level 1 or greater
Setup>Network	Level 3 Required
Setup>Audio	Level 1 or greater
Setup>Users	Level 3 Required
Setup>Time	Level 1 or greater
Setup>Fire Mode	Level 3 Required
Setup>Alarms	Level 1 or greater

