*Smart*SCAN Portable AEI Reader

The *Smart*SCAN Portable Reader is a handheld Automatic Equipment Identification (AEI) reader for asset inventory applications. It allows you to identify tagged equipment and:

- Store AEI tags in individual sessions.
- Relate AEI tags to a specific track or area by using tags or manual entries to identify the location.
- Associate AEI tags with preprogrammed maintenance codes.
- Output all stored sessions to a host computer or serial printer.

Tags may be stored in sessions as they are read. Sessions may be:

- Sequential tag sessions, where tags are stored sequentially for later recall.
- Tag comparison sessions, where tags are stored in pairs and the fields of one tag are compared with the corresponding fields of the paired tag.

Up to 99 sessions may be stored, with up to 999 tags stored in each session. With 99 sessions, up to 2166 tags can be stored. With 3 sessions, up to 2233 tags can be stored.

STC's web site is www.southern-tech.com
their email address is stc@voy.net
their fax number is 423-499-0045
their phone number is 423-892-3029

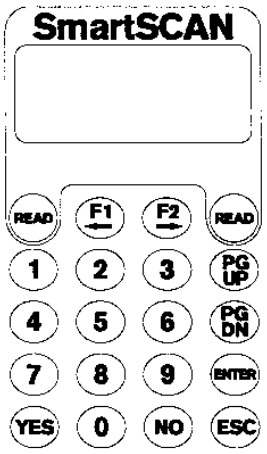
Operating Specifications

The following specifications are subject to change without notice.

- **Operational Frequency** 902 to 928 megahertz
- **Operating Temperature** -4°F to +122°F (-20°C to +50°C)
- **Tag Reading Range** 12 inches to 9 feet
- **Electromagnetic Compatibility** the portable reader complies with the limits established by Part 15 of the FCC rules for a Class A digital device
- **FCC Requirements** the customer should obtain a FCC license to operate the portable reader (use FCC Form 600 to obtain your license)

Screen

The screen is a backlit LCD consisting of 4 lines of 16 characters per line. If System -> Setup -> Display Mode -> Backlight is set to "ON," it lights when a key is pressed between 4:00 p.m. and 9:00 a.m. It remains lit until there is one minute of keypad inactivity.



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4405 W. 259th Terrace
Louisburg, KS 66053
Phone/Fax: (913) 837-3214

SOUTHERN TECHNOLOGIES CORPORATION
MODEL: SMARTSCAN PORTABLE AEI READER
FCC ID: xxx2200-540

Keypad

On the backlit keypad are 10 digit keys and 10 function keys. Here's what happens when a given function key is pressed.

[ENTER] - Indicates data entry is complete; responds to a query; enters tag manually when in Read Tags menu.

[ESC] - Exits a function without entering data; exits to the previous menu.

[F1 ←] - Backspaces over characters when entering data, deleting characters as it goes. In tag comparison mode, aligns out-of-sync tag pairs. In Recall-View mode, displays oldest session or first tag in session.

[F2 →] - Skips over characters when entering data, without having to re-enter the characters. In Recall-View mode, displays newest session or last tag in session.

[NO] - Responds to a query; recalls the last tag read.

[PG DN] - Pages down through sessions, through tags within a session, through tag fields within a tag, and through maintenance codes; pages down to next menu selections.

[PG UP] - Pages up through sessions, through tags within a session, through tag fields within a tag, and through maintenance codes; pages up to prior menu selections.

[READ] - Reads an AEI tag when in Read Tags menu.

[YES] - Responds to a query; selects a session or tag to operate on.

Functional Summary

Reading Tags - You can read AEI tags or manually enter:

- Location (ASCII) tags, which are intended as site or track identifiers.
- Railcar tags, for which owner code and equipment number are keyed.

Precoded maintenance codes may be added to any tag type in a sequential tag session.

Maintenance Codes - There are up to 99 sets of preprogrammed maintenance text, each identified by a two-digit code. The text can be changed only by STC. The codes may be appended to a tag as it is read or later via the Recall Session option of the main menu.

Recalling Tags - Tags may be recalled later for viewing or editing.

Host Transfer - Recorded sessions may be outputted to a host computer.

Power-Up Screen – On power-up, the LCD briefly displays the time, date, battery voltage, and user ID. It then displays the main menu.

RAM Storage - The handheld has 48 kilobytes of RAM for tag storage, allowing for storage of up to 2233 tags. When memory is full, tags continue to be stored, overwriting the oldest data first. To prevent this overlap, data should be outputted to a host frequently and the buffers should then be cleared.

Serial Port - The serial port is an RS232 connection set to 19,200 baud, with 8 data bits, 1 stop bit, no parity. With the supplied cable, this port may be connected to a host computer to output data or to a serial printer to print tags as they are read. The STC battery charger is also plugged into this port.

Batteries - The nickel-metal hydride batteries are internal, rechargeable 9.6 VDC, designed to operate for a minimum of eight hours. They can be recharged fully in about 1.2 hours. Up to 1500 tags can be read on one battery charge. Use only the supplied STC battery charger to recharge your batteries.

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Setup

1 Turn on Portable Reader.
2 Check battery.
3 If low or no voltage, recharge battery before proceeding.
4 Set system setup parameters.
5 Clear buffers.
6 Turn off Portable Reader.

Use

1 Turn on Portable Reader.
2 Check battery.
3 If low or no voltage, recharge battery before proceeding.
4 Set system setup parameters, if needed.
5 Read tags by pressing [1] (Read Tags), at the main menu and then by pressing [1], [2], or [3].
6 Output tags to host, if desired.
7 If tags were outputted to host, clear buffers.
8 Turn off Portable Reader.

Menu Selections

The main menu has the following four options.

```
1=Read Tags
2=Recall Session
3=Host Transfer
4=System
```

1=Read Tags - To read tags, press [1] at the main menu. This screen appears.

```
1=Point And Read
2=Build Session
3=Compare Tags
Esc=Prev Menu
```

Now, press [1], [2], [3], or [ESC].

[1] reads a tag without storing it. Tag fields are displayed for you to examine.

[2] stores and displays AEI tags as read; lets you manually enter tags (ASCII tags with free text up to 19 characters, or railcars with owner code and equipment number); lets you enter up to two maintenance codes per tag.

[3] compares and displays pairs of AEI tags. If tags do not match, fields are displayed for comparison. If tags match, displays "matched."

[ESC] returns to main menu.

2=Recall Session - To recall stored tags, press [2] at the main menu. This screen appears.

```
Enter session ##
Enter=Last
```

Now, enter the two-digit session number to be recalled or press [ENTER] to recall the most recent session. (If you enter a session number larger than the last session, the last session is displayed.) A screen similar to this appears.

```
Session 16 09/29
#Tags=0038 15:41
STCZ 123456
YES/PGUP/PGDN
```

Displayed are the session number, time and date the session was started, number of tags in session, and first tag in session.

Now, press [YES], [PG UP], or [PG DN].

[YES] selects the displayed session.

[PG UP] pages up through the sessions.

[PG DN] pages down through the sessions.

Once you have selected a session, press [YES], [PG UP], or [PG DN].

[YES] selects the displayed tag.

[PG UP] pages up through the tags.

[PG DN] pages down through the tags.

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Once you have selected a tag, a screen similar to this appears.

```
Chassis     005
STCZ 123456
1=Edit,2=Replace
3=Add,4=Delete
```

Now, press [1], [2], [3], or [4]. Options 2, 3, and 4 are available only for sequential sessions.

[1] - All tags (except in comparison session) may have maintenance codes added or edited. For manually entered tags, ASCII tags may have text changed; railcars may have owner code and equipment number changed. May also be used to display fields within a tag.

[2] - Tags may be replaced with either AEI tags or with manually entered tags.

[3] - Up to three tags may be added at the end of a session; may be added from any point within the session.

[4] - Tags may be deleted from a session.

3=Host Transfer - For all host transfer operations, press [3] at the main menu. This screen appears.

```
1=Upload To Host
2=Host Initiated

Esc=Prev Menu
```

Now, press [1], [2], or [ESC].

[1] - Handheld initiates transfer, using comma-delimited format. (See below.)

[2] - Host initiates transfer by sending requests using predefined protocol. When transfer is complete, handheld returns to main menu.

[ESC] returns to main menu.

If you pressed [1] (Upload To Host) above, press [1], [2], [3], [4], [5], [6], or [7].

[1] selects a specific session for transfer by pressing [Yes] when its header is displayed.

[2] transfers only newest session in memory.

[3] transfers all sessions in memory.

[4] transfers a range of sessions.

[5] transfers only session headers.

[6] transfers only system setup parameters.

[7] transfers only maintenance codes.

4=System - For all system functions, press [4] at the main menu. This screen appears.

```
1=Clearbuffers
2=Setup
3=Check Battery
Esc=Prev Menu
```

Now, press [1], [2], [3], or [ESC].

[1] erases all session data. After pressing [1], press [1] (ClrSessionData).

[2] lets you enter system setup parameters. (See below.)

[3] displays the present battery voltage and the three low-power levels. If voltage drops below first level, "Low Batt Level 1" appears for 5 seconds every 5 minutes. Below second level, "Low Batt Level 2" appears for 5 seconds every minute. Below third level, "Low Batt Level 3; ShuttingDown NOW" appears for 5 seconds and the reader goes into stand-by mode. The only way to restart from this point is to recharge the batteries.

[ESC] returns to main menu.

If you pressed [2] (Setup) above, press [1], [2], [3], or [4].

[1] (Enter User ID) lets you enter up to 9 characters to identify the user or site.

[2] (Set Date/Time) lets you enter the time (in 24-hour format) and the date (in month-day-year format).

[3] (Display Mode) selects display options.

1=Field Display - select [1] (Detail) to show field labels and values when displaying tags in edit mode or [2] (Summary) to show field values only.
2=Backlight - to turn the backlight on or off between 4:00 p.m. and 9:00 a.m. If [1] (LiteOn) is selected, backlight turns on when a key is pressed during those hours.

[4] (Send/Print Tags) lets you specify if tags are outputted from the serial port as they are read. If you specify that they are, you can append to each tag the time it was read.