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Module

Mk11 Paged Technician's Terminal Installation Manual

Endorsement and Authorisation

For endorsement, authorisation and issue record of this document, please refer to the SSI Applications Manual Contents, NR/L2/SIG/17002

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User information

This Network Rail standard contains colour-coding according to the following Red–Amber–Green classification.

Red requirements – *No variations, could stop the railway*

- **Red requirements shall** always be complied with and achieved.
- Red requirements shall be presented in a red box **with the word “shall” or expressed as a direct instruction**.
- Accountability for the efficacy of red requirements lies with the Professional Head/Standard Owner.
- Red requirements are monitored for compliance.
- Corrective actions shall be enforced if deviations are discovered through functional checks (e.g. engineering verification visits, audit or Operations Self-Assurance).

Amber requirements – *Controlled variations, approved risk analysis and mitigation*

- **Amber requirements shall** be complied with unless variation has been approved in advance.
- Amber requirements shall be presented with an amber sidebar **and with the word “shall” or expressed as a direct instruction**.
- Accountability for the efficacy of these requirements lies with the Professional Head/Standard Owner, or their nominated Delegated Authority.
- Amber requirements are monitored for compliance.
- Variations **may** be permitted. Variations are approved by the Standard Owner or through existing Delegated Authority arrangements.
- Corrective actions shall be enforced if **non-approved** variations are discovered through functional checks (e.g. engineering verification visits, audit or Operations Self-Assurance).

Green – *Guidance*

- Guidance is based on good practice. Guidance represents supporting information to help achieve **Red** and **Amber** requirements.
- Guidance shall be presented with a dotted green sidebar **and with the word “should” (usually in notes) or as a direct instruction**.
- Guidance is **not mandatory** and is not monitored for compliance.
- Alternative solutions may be used. Alternative solutions do not need to be formally approved.
- Decisions made by a competent person to use alternative solutions should be backed up by appropriate evidence or documentation.

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Issue record

Issue	Date	Comments
1	Feb 2001	1st Issue
2	05/09/2015	AMD 04/01 (7) incorporated .

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 06/12/2015.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 (Option Selection) to continue to comply with the issue of any relevant Network Rail standards current when GRIP Stage 3 was completed and not to comply with requirements contained herein, unless stipulated otherwise in the scope of this standard.

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1 Introduction

This manual describes the installation and setting up of the SSI MkII Technician's Terminal with paged memory running SSI4301-D5 software. It also shows how to convert a MkII Technician's Terminal with non-paged memory to one with paged memory and SSI4301-D5 software.

The MkII Technician's Terminal is based on an STE bus configuration using off-the-shelf components from a number of manufacturers. Technician's Terminals running software from SSI4301-C1 through SSI4301-D4 use a non-paged configuration. They can be converted to paged memory running SSI4301-D5 by the installation of an extra RAM chip and changes to the jumpers on one board. The SSI4301-D5 program is supplied on three EPROMs, whereas earlier programs were supplied on two. Details of the conversion are given later in this document.

SSI4301-D5 has more facilities than earlier versions, and more memory. It can be connected to a radio clock which can synchronise it to an accurate time standard based at Rugby. Details of how to operate the Technician's Terminal running SSI4301-D5 software can be found in the Operating Instructions.

It should be noted that programs SSI4301-A* and SSI4301-B* ran on the MkI Technician's Terminal which used completely different hardware and cannot be converted.

This document replaces the Technician's Terminal Hardware Specification and Paged Changes document.

If an upgrade from a non-paged memory to a paged memory Technician's Terminal is being undertaken, then continue reading at Section 0

2 Installing a New Technician's Terminal

2.1 Requirements

The following items will be needed to construct a new SSI MkII paged Technician's Terminal:

2.1.1 Terminal Processor

- Card Cage. This should be in a standard 19" rack-mounted 3U high frame.
- Backplane. This should be an STE-bus backplane with enough slots for the required number of cards. Possibilities are EITHER

Arcom SBPL10 – this is a 10-slot backplane with integral double-ended terminators;

OR

DEAN PS1-014-8F backplane with DEAN DBSTNA-01 active bus terminators. This backplane is a 14-slot version without terminators.

- Power Supply. This shall conform to the STE standard.
- The 10-slot version shall output +5V 10A, +12V 1.5A, -12V 1A.
- The 14-slot version shall output +5V 15A, +12V 2A, -12V 1.5A.

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- Arcom[®] SC09 Processor Board. This has a Motorola 68B09E 2MHz processor with capacity for up to 64K bytes of on-board RAM or EPROM.
- GMT 1021-1 Memory/Clock Board. This has a 146818 clock/calendar generator and capacity for up to 128K of on-board RAM or EPROM.
- DSP SL800 RS232 I/O Board. This has eight serial I/O lines using Z8530 chips.
- Arcom SERCOM4 RS422 I/O Boards. This has four serial I/O lines using Z8530 chips. One board will be required for each Interlocking cubicle connected to the Technician's Terminal.

All the above items can be supplied by Acal Electronics Ltd. Acal (who have taken over Dean Microsystems) may be able to supply complete frames with the backplane installed and pre-wired specifically for the SSI Technician's Terminal.

The card cage and backplane may be supplied by Dage Backplane Systems Ltd or Vero Electronics.

- Memory Chips. The processor and memory/clock boards are supplied without memory so they can be configured for individual requirements. For the paged memory Technician's Terminal, the following will be needed:
- Two 32K Static RAMs type 62256. Only D.I.L. (Dual-in-line) package types shall be used (not Surface Mount S.M.T. or Skinny-DIP), and non-volatile or any type with in-built batteries shall be avoided.
- The SSI4301-D5 program. This will be supplied in accordance with the SSI Applications Manual SSI8505.
- Resistors. 4 off, 120Ω, ¼W resistors will be needed for each SERCOM4 board.

2.1.2 Peripherals

- System Terminal. This should be any ANSI-compatible terminal, e.g. Wyse WY520ES available from good computer suppliers.
- System Printer. This should be any ASCII text printer with an RS232 serial interface.
- Logger. This shall be a dual-drive Penny & Giles System 7000 cartridge recorder, or equivalent.
- Radio Clock. This is optional but advisable and is used to automatically set and maintain the system date and time without manual intervention. This shall be an EES M210 with an LF Receiver Module configured to receive 60kHz Rugby, a suitable antenna, and a Quad Serial Interface Module, or equivalent. Most IECCs will already have one in which case it will not be necessary to purchase another. If a new one is required, the installer is advised to contact Time and Frequency Solutions before ordering in order to ascertain the correct requirements.
- Modem. This is optional but, if included, allows remote access of a sub-set of the facilities available on the VDU terminal. A 300, 1200, 2400 or 9600 baud RS232 modem is suitable.