



RAIL NETWORK TELECOMMUNICATIONS SPECIFICATION No. BBH0262

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Trunking System Controller (TSC) for MPT 1327 Radio Trunking site

FUNCTION	TITLE & DIVISION	NAME	SIGNATURE	DATE
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I. DISTRIBUTION

Once updated, a copy of the latest revision will be published in the document management system in use. E-mail to this effect will be sent to the relevant personnel or heads of department.

II. DOCUMENT CHANGE HISTORY

ISSUE NO.	DATE ISSUED	ISSUED BY	HISTORY DESCRIPTION
1.00	July 2017		New document

I. ABBREVIATIONS, ACRONYMS AND DEFINITIONS

ABBREVIATIONS AND ACRONYMS	DESCRIPTION
DC	Direct Current
FFSK	Fast frequency shift keying
MPT1327	Ministry of Post and Telegraph 1327 - signalling protocol standard for analogue trunked radio
MS	Microsoft
PC	Personal Computer
SCI	System Control Interface
SIO	2-wire balanced bi-directional serial bus which allows communications between all TSC channel cards and SCI on a site.
SYSCON	System Control Terminal Software for Fylde Trunking System
TFR	Transnet Freight Rail
TSC	Trunking System Controller

1. INTRODUCTION

- 1.1. This specification covers the requirements of Transnet for the supply of a Trunking System Controller with integrated line interface for a MPT1327 radio trunking site.
- 1.2. The Trunking System Controller controls the radio base station. It performs the major MPT1327 trunked radio functions. It must interface with the SCI, and radio base station on TFR's existing MPT1327 Fylde trunking network.

2. FEATURES

- 2.1. Full-featured applications from a single-site to multi-sites.
- 2.2. It must be flash programmable, easy to use and accurate.
- 2.3. There must be no need for extra test equipment to check and set channel card levels.
- 2.4. The control channel must entail soft configuration that includes built-in audio waveform monitor to measure line amplitude, frequency, and distortion.
- 2.5. Must be able to route voice calls, i.e. local and inter-site and process data calls, i.e. status calls, short data messages and long data calls.
- 2.6. Interface to system control interface via SIO bus, to manage validation of radios.

3. OPERATION

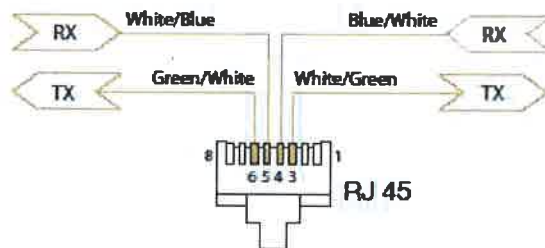
- 3.1. Each TSC channel card must run from a separate 12Vdc nominal supply from base station, to preserve the graceful degradation of the system.
- 3.2. It must operate with default control parameters stored in Flash Memory.
- 3.3. The TSC card should monitor various alarms and provide visual indications of status.
- 3.4. TSC card must be able to interface to all the radio base stations on the list of evaluated radio equipment BBD8208 v 5.3.3.
- 3.5. The TSC card should be able to process repeater alarms, i.e. low forward power and high reverse power. The appropriate code should be sent to the SYSCON terminal, via the system control interface.
- 3.6. All configuration parameters, FFSK and line levels must be set via software through the channel card programming port.
- 3.7. It must be compatible with the existing Fylde SCI03.
- 3.8. It must be compatible with the existing Fylde SYSCON management.
- 3.9. It must retain all the functionality and operations of the existing MPT1327 Fylde Trunking network.

4. TECHNICAL SPECIFICATION

- 4.1. TSC must be 19" rack mount with a maximum size of 1U.
- 4.2. Each TSC unit must be able to accommodate up to four individual channel cards to control four radio base stations.
- 4.3. TSC channel card must interface to the radio base station via a 25 way D type plug, controlling the RF channels operation.
- 4.4. The TSC channel card must have provision for line interface via a RJ45 plug, used for audio path routing of inter site calls using 4 wire circuits of 600 ohm impedance.
- 4.5. Levels must be adjusted via software using 'soft pot'.
- 4.6. Must be able to provide a loop for automatic line testing.
- 4.7. The TSC must be equipped with a status display for individual channel cards.
- 4.8. The TSC must interface with the SCI via a 9 way D type plug for the SIO bus. The channels cards SIO bus must be internally connected.
- 4.9. Each TSC channel card must be programed and aligned individually via a serial port with a PC running MS Windows 7 or later operating system.
- 4.10. All software and manuals must be supplied in English

5.0 INTERFACE CABLE CONNECTIONS.

5.1 Audio Line Interface



5.2 Channel card programing Port.

Program 9 Way D-Type	
PIN No	DESCRIPTION
1	
2	TXD
3	RXD
4	
5	Signal Gnd
6	
7	
8	
9	
Shell	Screen Gnd

5.3 SIO bus.

SIO Bus 9 Way D-Type	
PIN No	DESCRIPTION
1	SIO T
2	
3	
4	
5	SIO C
6	
7	
8	
9	
Shell	Screen Gnd

5.4 Radio Base station.

25 Way D-Type	
PIN No	DESCRIPTION
1	+12 Volts
2	AUXIO 0
3	AUXIO 1
4	AUXIO 2
5	FFSK TX KEY
6	TALK TX KEY
7	LIFUISEN
8	LIFULOCEN
9	LIFUSTATUS <small>Ground if initial site working</small>
10	REFLPWR
11	RFCARRIER
12	TXPOWER
13	VSS
14	FFSK OUT
15	VSS
16	FFSK IN
17	RELAY NC1
18	RELAY NC1
19	RELAY COM 1
20	RELAY NC2
21	RELAY NC2
22	RELAY COM 2
23	BASE TX
24	BASE RX
25	VSS

END OF DOCUMENT