Thamesiders Model Railroad Group

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Construction specification for HO scale Branchline Modules

Document Reference TM-S2

Issue 1F December 2018

Thamesiders Model Railroad Group

1. Introduction

This RP introduces the concept of branch line modules as a second type of modules designed for use in a Thamesiders MRG layout set-up. The concept is based upon the Free-Mo modular system. The Free-Mo system has a single track mainline centred on a 24” wide baseboard and specifies no back scene making the units reversible, allowing easy configuration of layouts to incorporate both facing and trailing spurs Free-Mo allows for narrower branch line modules with tighter minimum radii, for branchline use . These form the basis for this standard. This standard aims to encourage the construction of Free-Mo style modules and reflects a growing interest in prototypical terminal to terminal and branchline modelling.

2. Module Dimensions and Construction

Modules must meet the minimum requirements for dimension and construction detailed below. Modules do not have to follow standard shapes as long as the minimum dimensions and minimum track standards are followed. It should be noted that 11.5, 22, 45 and 90 degree curved modules allow turn back and other loops etc to be constructed

For ease of understanding the primary requirements are presented in a list form.

Width:	12” minimum, no maximum specified
Length:	6” minimum (allowing for signal modules)
Height of frame:	4in minimum
Back scene :	No back scene preferred, however if one is fitted it should be a maximum of 12in high from board top. Backscenes for Curved modules are prohibited, allowing for reversal of modules.

Layout Height

The track height is to be 45in from floor level to railhead. All multi-board modules to be self-supporting and all legs are to have height adjustment, mobiles consisting solely of one board must make provision for at least one leg but do not require permanent legs. The Minimum height adjustment to be provided is ±1in.

Alignment and fastening

The modules will be aligned with pattern makers dowels fitted to the ends of the module and will be joined by use of 6mm fixings. The module ends must be manufactured to the profile shown in drawing number CONS/BREND/1. A steel drilling jig will be made available for loan on request to the module committee. To ease construction the module committee can provide pre-drilled module ends on request. An alignment fixture will also be available to ensure the track is correctly positioned at the board end.

3. Track

In keeping with the secondary track requirements of a branch line, a single through track is required.

Through Track

Distance from front of board:	Track must be located a minimum of 6” from either side of the module. Therefore the track must be centred for a 12” wide module. The track to locating dowel relationships must be maintained to ensure interoperability with other modules.
Minimum radius:	36in.
Track:	Peco “Streamline” Code 75 or “83 Line” code 83 flextrack
Switches (minimum):	All switches to be Live frog. Code 75 medium radius or code 83 number 5

The first 6in of track at each end of the module must be straight to avoid sharp 'S' curves, which may derail long rolling stock. Track must be laid to the end of the module and fully ballasted

Other Trackage
The individual modeller is free to use any other track on the rest of the module. Recommend minimum rail is code 40

Clearance and other requirements – All tracks
All track must meet the requirements of NMRA Recommended Practice RP7 for clearances (RP7.1, RP7.3 and RP7.5) and track centres (RP7.1 and RP7.2) and Recommended Practice RP-11 for minimum curvature.

All turnouts must be remotely controlled. Controls at the nominated rear of the module shall be available for use at public exhibitions. Control from the nominated front is optional but is attractive for use at informal gatherings. Where DCC accessory decoders are used to control switch machines no other controls are required. See section 5.1 for more details.

All turnouts must be DCC compatible, either by modification or as purchased. Please see the Technical Manager for more details.

4. Electrical

4.1 Layout Control System

The main Thamesiders layout uses the Lenz Digital Plus DCC system and the wiring has been designed to support the full use of this system. A normal DC controller can be fitted in the event of catastrophic DCC system failure.

4.2 Wiring

Track Bus

Each module is to provide a three-wire track bus from one end of the module to the other, which will be used to feed the mainline track on that module and to provide track power to the adjoining module(s).

The track bus will use three 4mm Banana sockets at each end of the module, the both rails will be fed by white terminals and the green will provide the booster common point. Please refer to drawing number WIRE/BRTRA/1 for full details. This allows the modules to be reversed without adding complexity to the wiring. All modules longer than 4' must include a third set of connections to act as a power input connector; this is also shown in the drawing.

The cable used for the track connections shall be 1.5mm square or larger, cable stripped from domestic lighting cable is suitable.

DCC Control Bus

All modules shall include an eight-wire DCC Control bus that shall provide connections between DCC boosters and to provide a cab bus for connections between the command station and the handheld cabs. The DCC control bus is connected via 8-pin circular type DIN sockets fitted at each end of each module. It is important that this bus is maintained along the layout and the same DIN connects should be used at each intermediate joint. Please see drawing number WIRE/DCC/2 for full details. The eight-pin connectors should be mounted under the end of the module, keeping the fascia clear enabling modules to be easily reversed.

Where the modeller does not wish to use DCC control at home no further connections are required.

To provide the connections for the handheld cabs 5-pin 180 degree DIN sockets are to be provided. The number of these is left to individual choice and no cab connections are mandated for basic modules, although members may fit them if wanted. Where these connections are provided the maximum recommended distance between connectors is 5ft. Where provided, sockets shall be placed on both the front and rear fascia of the module. All modules longer than 4ft must include a DCC Bus input socket for connection to a booster or command station and a minimum of one 5-pin cab bus socket, as shown in drawing WIRE/DCC/2.

Accessory Bus
The accessory bus is an optional bus designed to carry a 2-wire 16V AC power bus for powering accessory devices, such as building lights or animated accessories.. The bus will use a 6 pin audio locking chassis plug with the AC bus connected to pins 1 and 2. If the bus is used the remaining four pins must be terminated at a small tagstrip or "choc block" near to the socket to allow easy connection in the future without needing to remove the plugs from their fixings
Due to the fact that many different devices could be connected to the bus at any one time it is sensible for all modules to be provided with short circuit protection to ensure a small fault does not stop the rest of the layout from functioning. Please see drawing number WIRE/ACC/1 for full details.

Interconnecting Leads
The modeller must provide a set of plug-to-plug leads, one of each type, for connecting the modules to each other. The group will hold a buffer stock of leads for use if leads are forgotten.

The module wiring has been designed so any module can be used to connect the command station and boosters to the branch line section of layout. This means a special "power module" will not required and will be achieved by the use of an additional set of connectors, one for each bus located underneath (or at the rear of) the module, which the boosters can be connected into. The group will hold a minimum of one set of these additional leads. DCC equipment owners are encouraged to build a set to ensure sufficient are available.

4.3 Track switch (turnout) control

If electric switch motors are required individual modellers must provide their own power supply.

Accessory Decoder Addresses
If members choose to use DCC accessory decoder on branch line modules the addresses will be allocated by the Technical Manager to eliminate issues of addresses conflicts. A master list of addresses will be held by the Technical Manager and will be available on request.

5. Scenery

To follow TM-S1 with the exception that back scenes are optional. See section 2 Module Dimensions and Construction.

6. Uncouplers

Please see TM-S1 for further details

7. Acceptance

Please see TM-S1 for further details

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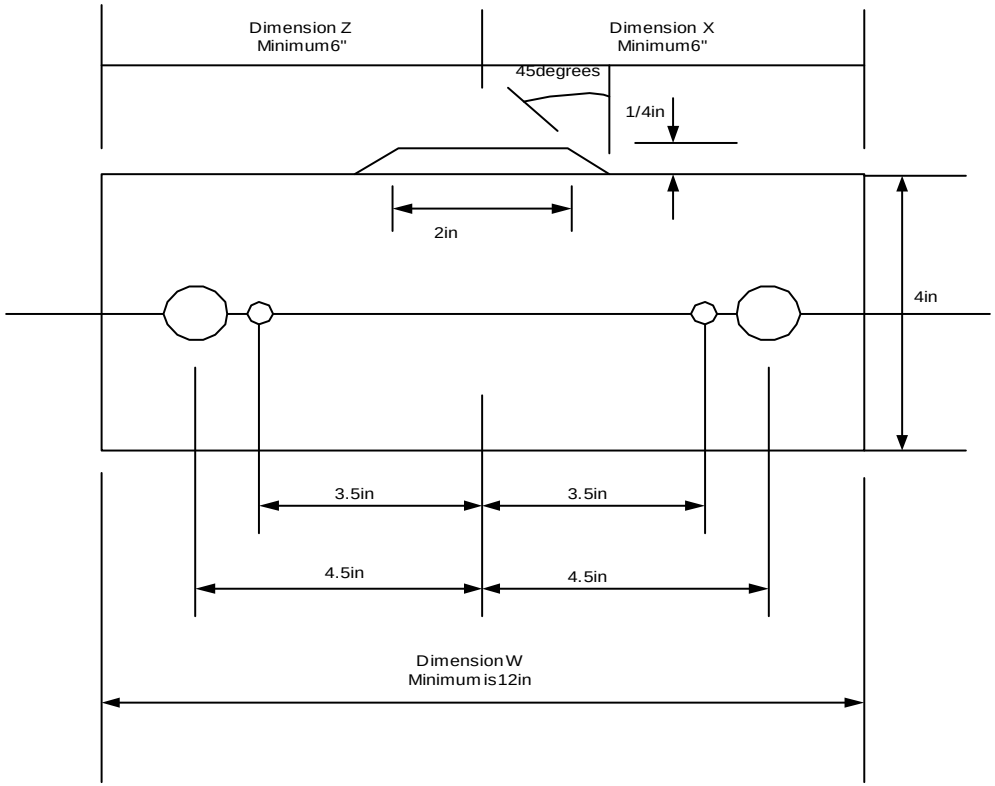

Thamesiders Model Railroad Group			Modular Layout Specification
DWGNoCONS/BREND/1	Issue A	Date: 11/058/06	Description : Branch Module end profile

Document Ref : TM-S2 04/12/18 Drafted by G. Tiller
Issue 1F

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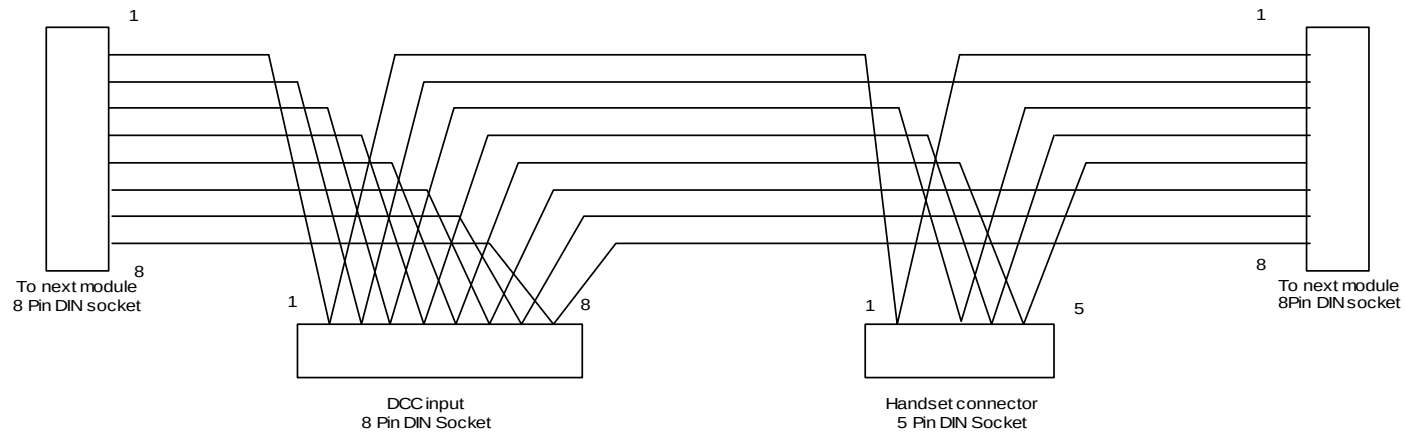
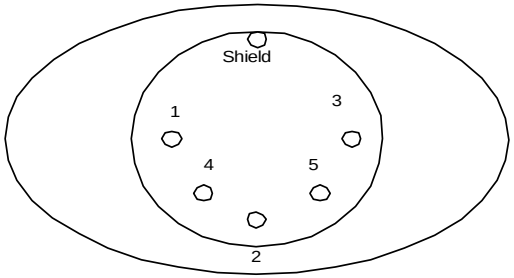
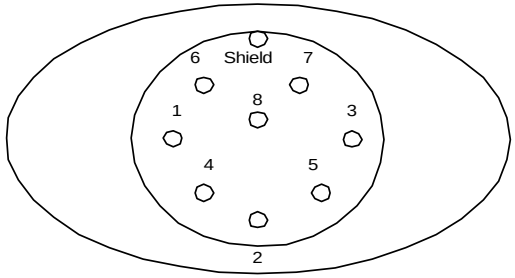




View of connections (rear) of 180 degree 5 pin DIN socket, panel mount type

Connection LIst

8 Pin SOC Pin No.	5 Pin SOC Pin No.	Lenz name	Colour
5	5	- RS-485 "B"	White/Green
4	4	+ RS-485 "A"	Green
1	1	+ 12V "L"	Brow n
3	3	Ground "M"	White/Brow n
6		Booster Bus "C"	Gold
7		Booster Bus "D"	White/Gold
2		Feedback bus "R"	
8		feedback bus "S"	



View of connections (rear) for Circular type 8 pin DIN socket, panel mount type

Thamesiders Model Railroad Group			Modular Layout Specification
DWG No WIRE/DCC/2	Issue B	Date 26/11/2010	Description : DCC Control Bus Wiring

Document Ref : TM-S2 04/12/18 Drafted by G. Tiller
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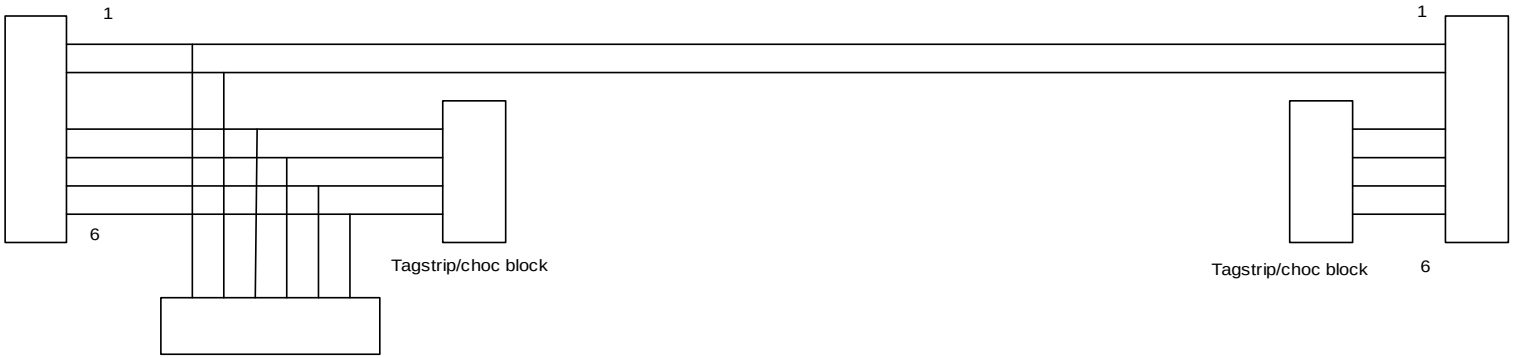

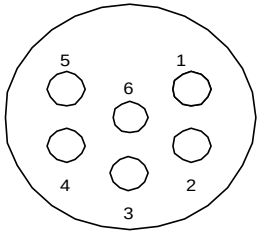

View of connection for chassis plug

Parts LIst	
Description	Maplin Part Number
6 way audio locking chassis Plug	FM54J
6 way audio locking line socket	FK26D
6 core cable	Any 6 way cable 5 Amp max load

Thameside Model Railroad Group			Modular Layout Specification
DWG No WIRE/ACC/1	Issue B	Date : 02/08/05	Description : Module accessory bus

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Issue 1F

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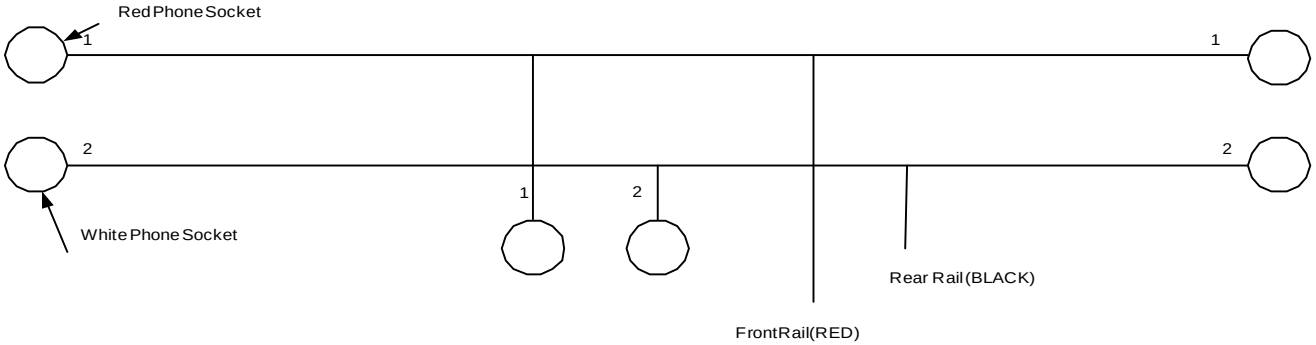

Each cable used MUST be 1.5mm square or larger. Domestic lighting cable is suitable if stripped out of the outher sheath.

Connection List		
Pin	Use	Colour
1	Front rail	Red
2	Rear rail	Black

Parts List			
Description	Maplin Part Number	CPC Order Code	Rapid Order Code
Red cable			
Black cable			
Green cable			

Thameside Model Railroad Group			Modular Layout Specification
DWG No Wire/BRTRA/1	Issue A	Date : 11/08/06	Description : Btanch track bus wiring

Document Ref : TM-S2 04/12/18 Drafted by G. Tiller
Issue 1F

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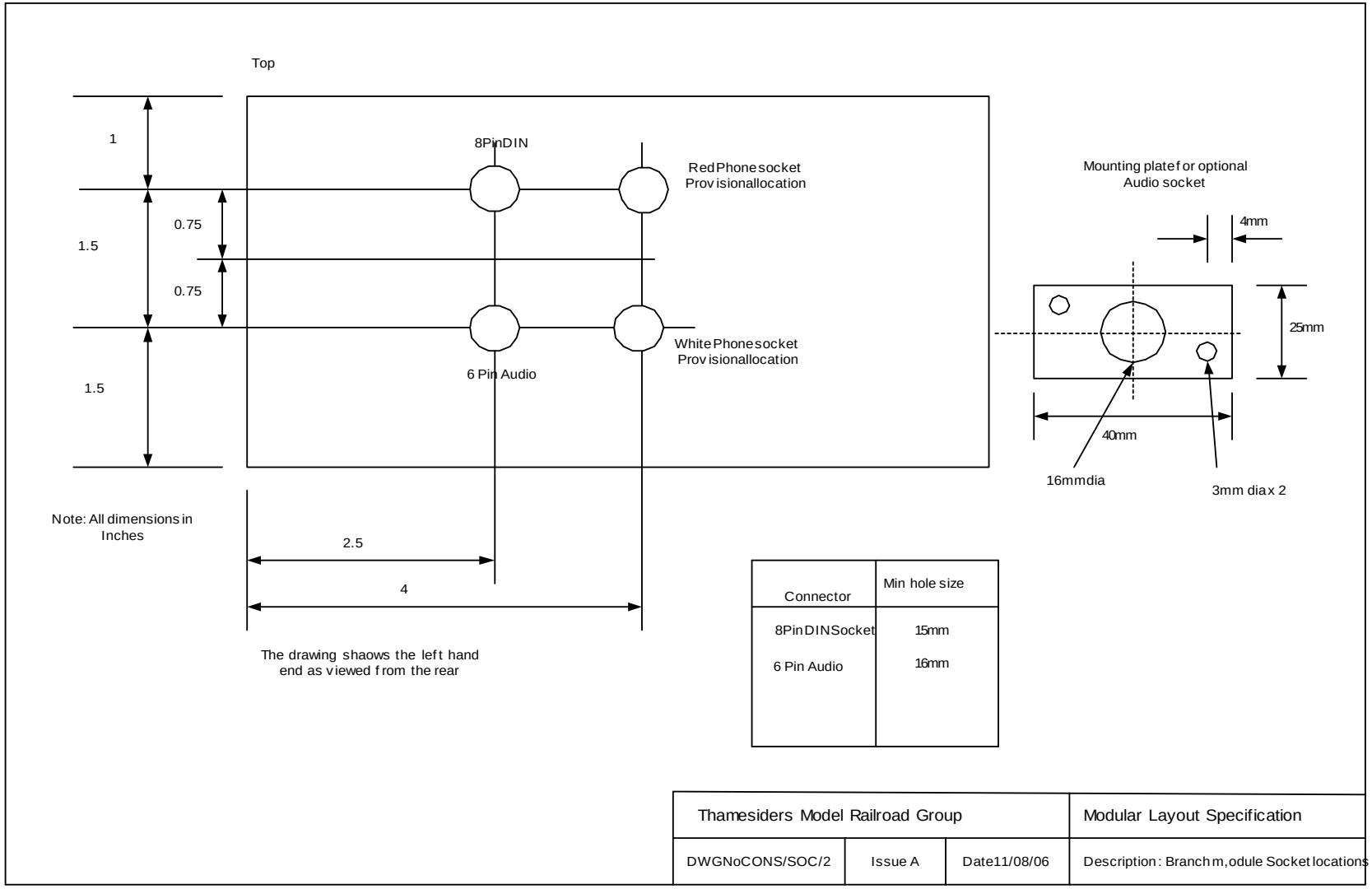

Connector	Min hole size
8PinDINSocket	15mm
6 Pin Audio	16mm

Thamesiders Model Railroad Group			Modular Layout Specification
DWGNoCONS/SOC/2	Issue A	Date11/08/06	Description: Branchm,odule Socketlocations

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