Alsager Railway Association

Final

DESCRIPTION & USE of CONTROL SYSTEM

FOR 00 SCALE (4mm) MODULES

Final

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Contents

1. Background

- The module specification is made possible by DCC.
- The Modules when used together will be powered by the MERG DCC system
- this description & use document is to ensure compatibility & reliability when modules are assembled together.

2. DCC Requirements

- This section assumes a DCC system.
- Traction is supplied by DCC Command Station, 2 Boosters and handheld Cabs/Throttles either wired or wireless.

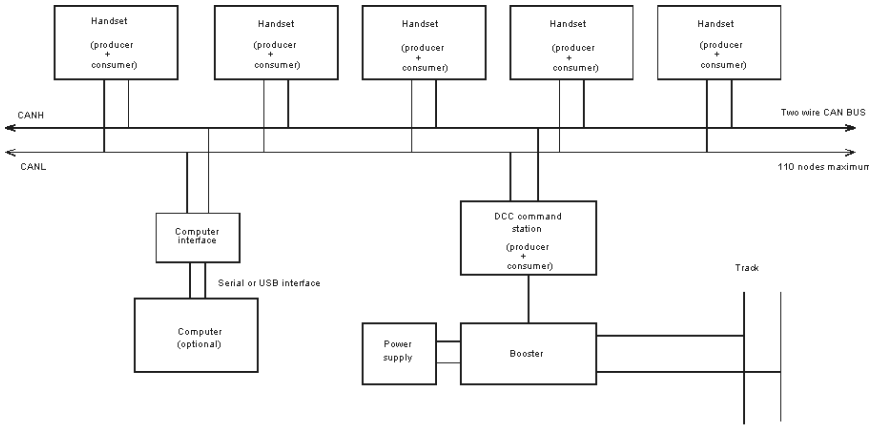


Figure 2 CBUS Basic arrangement for DCC 'CAB' bus.

- These requirements can be met using MERG components. The Cabs are actually fed via the CANBUS which simplifies wiring.
  - CANBUS consists of two pairs CAN pair and 12v/0v pair for the CABs. 12 volt DC will be supplied via the Throttle Bus to power wired CABS/Throttles only.
  - The Ancillary Box will supply 12V DC via the Bus for additional Throttles/Cabs It is advisory that each module has its own 12v supply for this purpose and the supply of ancillaries.
  - It is also recommended that the 0v line is connected within each module.

3.1 Electrical Specification - Mandatory

E1: Mains Power.

There should be no mains power on any module.

E2: Track Bus Requirements

- The track bus is a two-wire bus that provides commands and power to the locomotives and lighted cars.

Track bus colour code

All track bus wiring at the module ends should be of two colours.

Blue and Yellow

Since modules are non reversible,

we need one colour **(BLUE)** for the front rails and another **(YELLOW)** for the rear rails.

Wire Size.

Droppers	15amp Fuse wire with sleeving
Track feeds	16/0.2mm multistrand wire
DCC Bus	32/0.2mm multistrand wire minimum

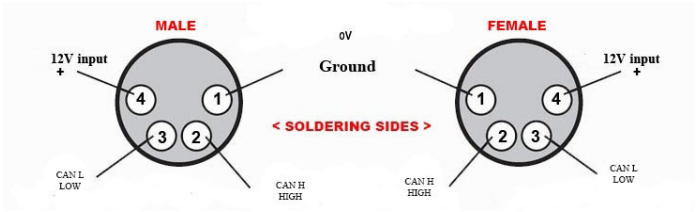
E8 12v DC POWER

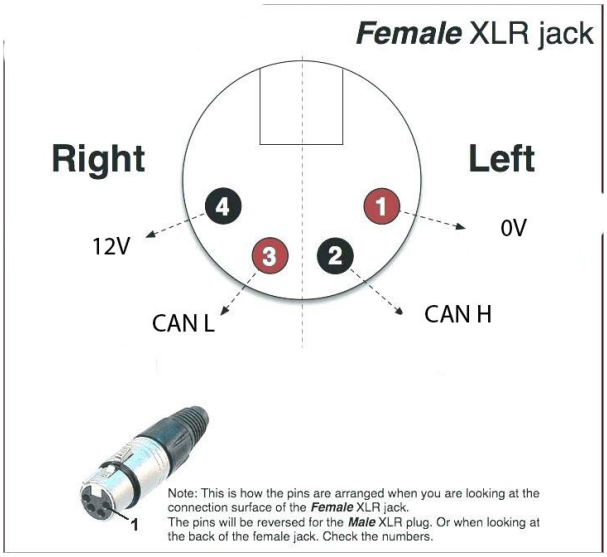
I recommend each Module has its own 12v power BUS. This to power CABs and Ancillaries as required. The Throttle Bus will have 12V available for CABs only.

Wire size 16/0.2mm or 24/0.2mm multistrand wire

4. Description of Module DCC System

- The system consists of two ‘control’ boxes.
- The first is an all metal box with power, track and CANBus sockets (XLR 4 pin) on the rear and indicator LEDs and Throttle sockets (RJ22) on the front.
- Internally there is a MERG Command Module linked to two 5 Amp Boosters. All three are powered by 15 Volt DC.
- There are two power sockets available #1 & #2. #1 supply also provides power for the DCC Command Module and must always be connected first.
- Each Booster is connected to TRACK Outputs Yellow & Blue. To ensure consistency and prevent short circuits when assembling modules every front rail on a module will connect to Blue and every back rail will connect to Yellow.
- When both boosters are used, the modules supplied by each booster need to be isolated from one another.
- There is a 4 pin XLR Male Socket on the reverse of the power box. This is the Throttle Bus.
  - Pin 1 – 0V
  - Pin 2 – CAN H
  - Pin 3 – CAN L
  - Pin 4 – 12V





- Each connecting cable will be Female to Female Socket

- On the front of the box are two pairs of LEDs. 1 pair for each booster.
  - Green – Power
  - Red – Short
  - There is no indication for the Command Module
- There are two further sockets (RJ22) on the front to plug in Handheld Throttles/CABs.

5 Throttle BUS

- This consists of 4 wires.
  - 0V – Grey
  - 12V – Red
  - CAN H – White
  - CAN L – Black
- The CANBUS needs terminating resistors at each end of the BUS. These should be 120R. The resistance across the BUS (CAN H to CAN L) should be 60R.
- The first resistor will be in the Metal Power Box.
- The terminator resistor should be plugged into the final module when set up and before use.

6 Ancillary Box

- 4 CAB Sockets (RJ22)
- 2 BUS sockets (4 Pin XLR)
- USB Module (to connect to PC/Laptop)
- WiFi Module (to connect to Mobile Phones etc for WiFi Throttles)
- Power socket for 12 V DC
- The RJ22 sockets and all ancillaries will take their 12V from the local supply.
- The 12V line from the Power Box is not connected.
- The 0V line is joined to the local supply