

Resource
Data Management

RDM CANbus Network Wiring

Application Note
Revision 1.0

CANbus Wiring

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Please ensure all power is switched off before installing or maintaining this product.

CANbus Network

CANbus (Controller Area Network bus) is an industry standard network communication system which is used by an RDM Parent Controller to communicate with RDM CANbus expansion devices. An RDM Parent Controller can be an Intuitive Plant Controller, a DM Touch or miniDM, an RDM CANbus expansion device can be any of the Intuitive Plant Expansion board range or any of the CANbus Humidity/Temperature sensor range.

CANbus communication cable **MUST** be of a standard to meet ISO11898 (RDM part number PR0649) or equivalent and the screen cable **MUST** be connected at one end of the network line only. The CAN High and CAN Low conductors should be a twisted pair.

End of line termination resistors must be used on the CANbus network. The Intuitive Plant Controller, Intuitive Plant Expansion Boards, miniDM and CANbus Humidity/Temperature sensors have a termination resistor built in which is selected by a jumper. The termination jumper must be set on the first device and last device in the network chain.

The DM Touch has a termination resistor built in so is always in place, no other termination resistor is required at the DM Touch. For this reason, the DM Touch should be at the start of the CANbus network line.

A single network cable should be used and devices wired in a daisy chain configuration, spur connections off the main CANbus cable should not be used. The maximum allowable network cable length is 500M (1640ft) in total from one end of the network to the other providing a CANbus network cable which meets ISO11898 or equivalent is used.

A maximum of 10 Intuitive Expansion boards can be connected to a single RDM Parent Device (Intuitive Plant Controller or DM Touch/miniDM.)

A maximum of 16 CANbus Humidity/Temperature sensors can be connected to an Intuitive Plant TDB Controller only.

When connecting an RDM Parent Device to an RDM Canbus Expansion Device the following should be observed.

DM Touch or First Device		Expansion Device
CAN High	Connects to	CAN High
Can Low	Connects to	Can Low
Screen	Connects to	Do Not Connect*
Ground	Not Connected	Ground**

Notes:

* The screen conductor should be connected at one point only at the beginning or end of the network line. This can be either at the DM Touch/First Device end **or** the last expansion device at the other end of the cable.

** If using an RDM CANbus cable (PR0649) a ground conductor is not available or is required.

If using a 3rd party CANbus cable which does have a separate ground conductor this can be connected to the ground terminal on every device on the network.

End of Line Termination Resistor

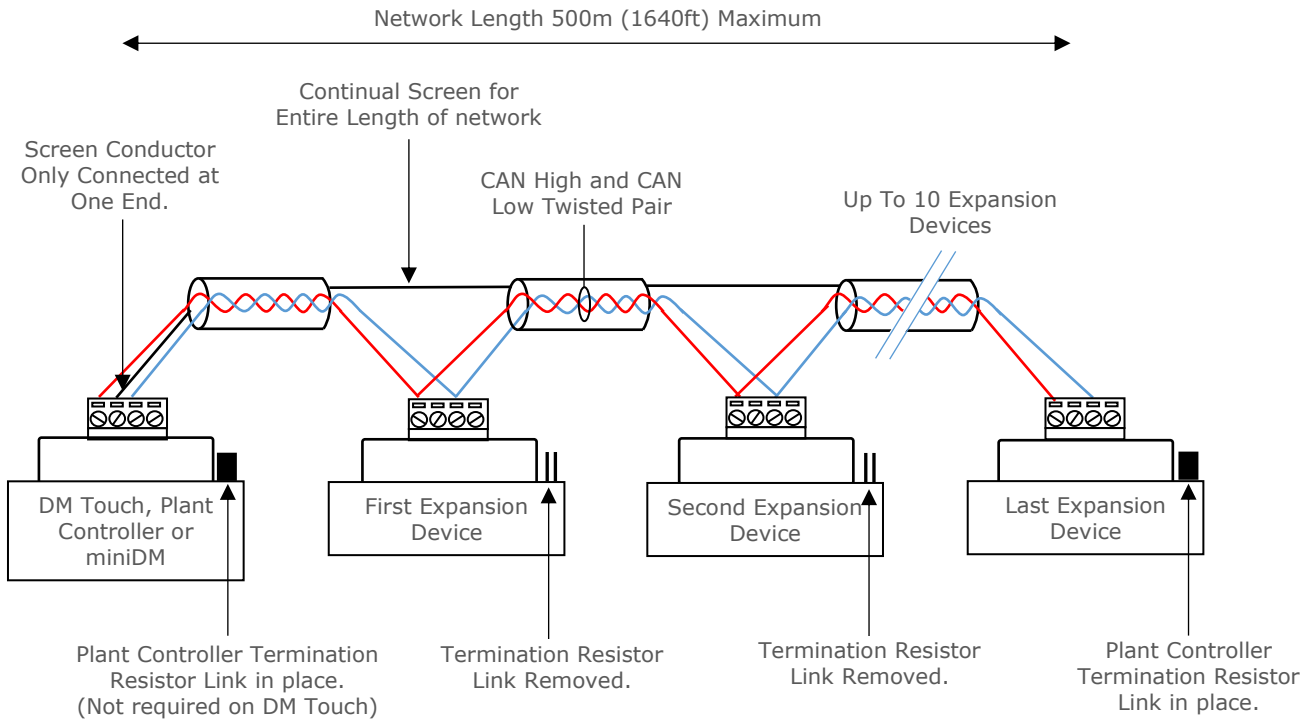


The end of line termination resistor link should be fitted to the middle and bottom pins on the first and last device on the CANbus network. All other expansion devices should have the link removed or fitted to the middle and top pins. The example shown on the left is an Intuitive Plant Controller, the CANbus Humidity/Temperature sensor has a similar termination link. The DM Touch does not require a link or resistor fitted.



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Typical Wiring



Additional Considerations

Wherever possible low voltage signal cables, such as CANbus, should be routed away from mains and high voltage cables and devices that can produce significant electrical noise such as inverter drives, contactors and lighting ballasts.

CANbus cable typically has a minimum bend radius of 10 times the cable diameter, so in the case of RDM CANbus cable (PR0649) this is around 60mm.

All CANbus expansion devices require a unique identifier on the network to distinguish it from other CANbus devices. RDM Intuitive Plant Expansion boards have a ten-position rotary switch to give each device a unique CANbus identifier. The RDM CANbus Humidity/Temperature sensor can be given a unique identifier using the built-in keypad.

Disclaimer

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Revision History

Revision	Date	Changes
1.0	28/10/2022	First Release



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