

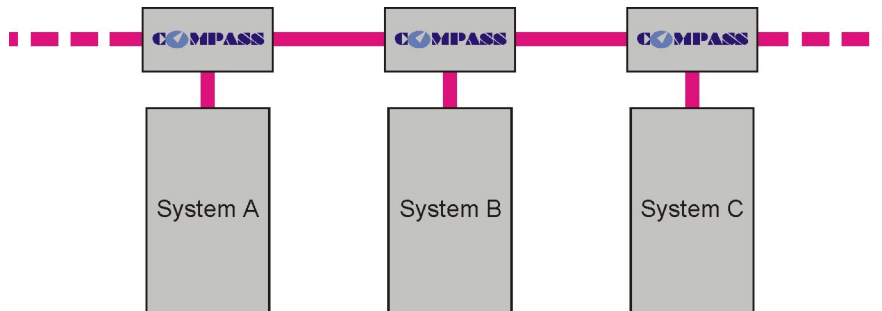
Compass Networks

Introduction

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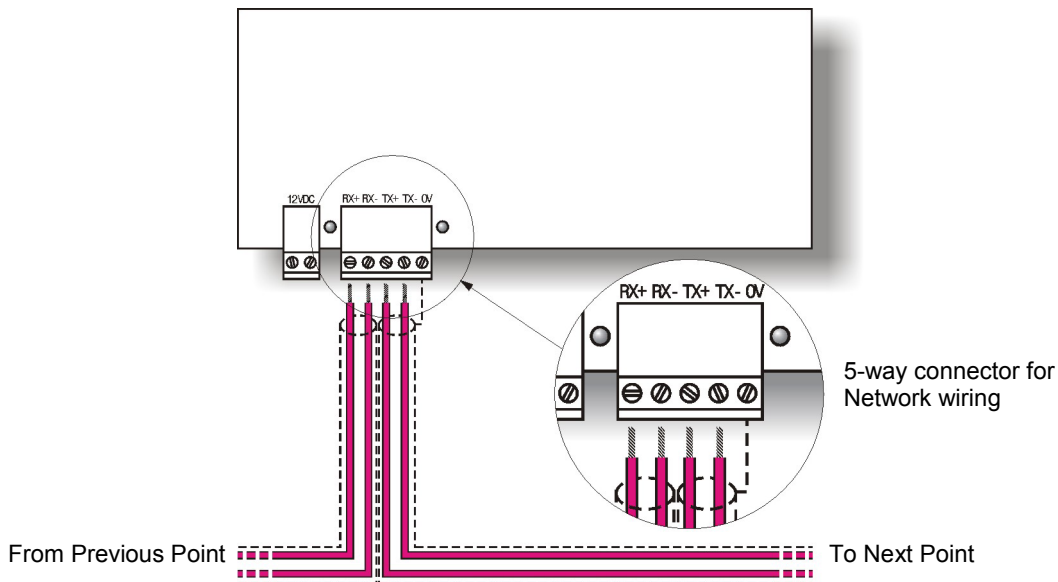
The Compass System

Compass is a distributed protocol conversion system, and allows control systems from several different manufacturers to be linked together to form one complete building control system that can share values over the Compass Network. The Compass Network is made up of nodes, called Compass Points, and each Compass Point connects a particular device or system to the network.



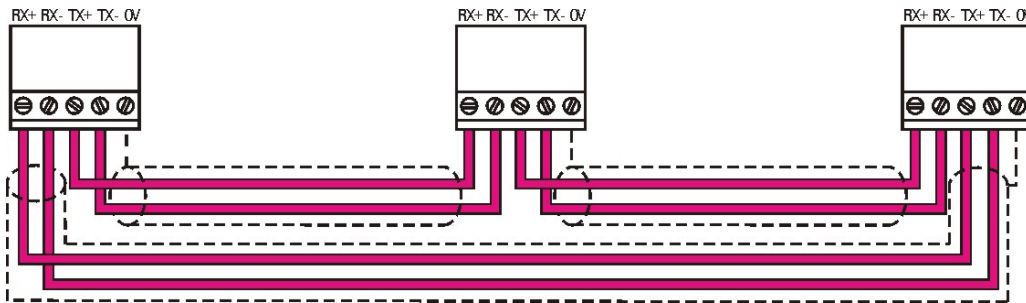
Compass Networks

Every Compass Point has a 5-way connector for the network wiring. By wiring the network connector on all Compass Points to the previous and next Point, a ring is formed. A single Network can have up to 63 Compass Points connected to it



Wiring the Network

The Compass Network connector has two receive terminals, RX+ and RX-, two transmit terminals, TX+ and TX-, and a shield-ground terminal, 0V. Network messages are transmitted out of a Point's TX terminals to the next Point's RX terminals, then from that Point's TX terminals to the following Point's RX terminal, and so on. Information therefore flows around the Compass Network in one direction only. This forms the ring that is the Compass Network. The Compass Network connectors are **polarity dependent**. The diagram below shows the Network wiring for three Compass Points.



- The first point's TX+ terminal is connected to the next Point's RX+ terminal
- The first point's TX- terminal is connected to the next Point's RX- terminal
- The second point's TX+ terminal is connected to the next Point's RX+ terminal
- The second point's TX- terminal is connected to the next Point's RX- terminal
- The last point's TX+ terminal is connected to the next Point's RX+ terminal
- The last point's TX- terminal is connected to the next Point's RX- terminal

The screen/drain wire of a cable is connected at TX end only, to the 0V terminal. Note: DO NOT connect screen at both ends, as this forms 'earth loops'.

Network Cable

Cable Types

The network cable should be a screened twisted-pair cable. Recommended cables include:

- Belden 8761
- Alpha 2401C
- BICC H8082
- Brand Rex BE-56761

Cable Installation

When installing network cables, avoid running them parallel to power cables, especially if the power cables carry large currents, or are switched on/off frequently.

Cable Length

When using the recommended cable types, and avoiding power cables, distances of up to 1km between Points are possible. If necessary, a Compass Point can be used to boost the network signal.

Network Checking

Each Compass Point monitors the network, to determine whether the network has broken. The results of the network tests are displayed on the green LED positioned next to the 5-way network connector.

LED State	Meaning	Advice
On	Point is OK, Network is OK	
Fast Flash	Point is OK, this Point has detected broken network	Check cable between Point and it's previous point
Slow Flash	Point is OK, another Point has detected broken network	Find Point with Fast Flash LED, or use ObView
Off	Point has hardware fault, or is not powered	Check power/fuse

The complete Compass Network must be operational (i.e. all Compass Points must have the green LED permanently on) before any communications can take place between Points across the Network.

The results of the network tests are also available as objects within Compass Points: see 'Introduction to Compass Objects'.

Linking Compass Networks

A single Compass Network can have up to 63 Compass Points. If necessary, whole Compass Networks can be linked together to form even larger structures.

For more information about linking Compass Networks together, see 'Introduction to Compass NetLinks'