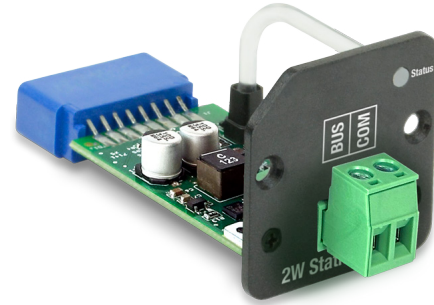


Overview

Smart modules add additional functionality and connectivity to select CueServer 3 models by plugging them into an available module slot.

Use **SM-SBUS-2W** modules to add the ability to connect to 2-Wire CueStation button stations (such as Mystique or Ultra stations).

The **SM-SBUS-2W** module provides enough drive capability to operate up to 10 stations, with a maximum distance from the module to any station of 1,000 feet (300 meters). The recommended wire types include inexpensive options, greatly reducing installation costs. The CueStation 2-wire protocol is both topology-free and polarity-free, meaning that “star” and “daisy-chain” wiring can be mixed together while not being concerned with polarity of the signal. Additionally, an LED indicator on the module provides at-a-glance operational status.



SM-SBUS-2W
2-Wire Station Bus Smart Module

Features

- Connect up to ten (10) 2-Wire stations
- Maximum distance from module to farthest station of 1,000 feet (300 meters)
- Preferred wire type is CAT-6 cable
- Also supports many other inexpensive low resistance 2-conductor cable types (including Belden 5340, Belden 9740, Alpha M8528010 or similar)
- Can work with a wide variety of additional cable types, including many found in retrofit applications
- Topology-Free and Polarity-Free wiring
- Built-in status indicator LED

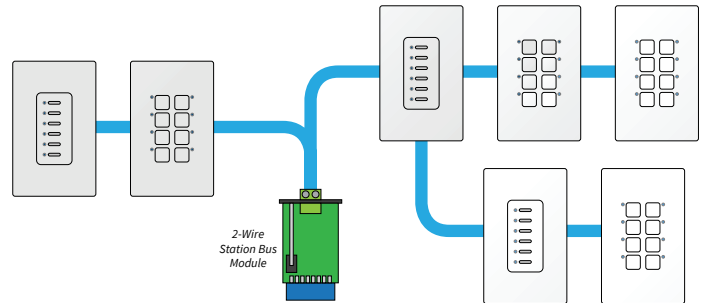
Ordering

SM-SBUS-2W **2-Wire Station Bus Smart Module**
Includes 2-position pluggable terminal block

Specifications

Module Power Requirements	
Off	0.0 W
Module On, without any Stations	0.3 W
Load per Station (Mystique or Ultra)	0.4 W
Software Requirements	
Minimum Firmware Version	v5.2.4

Typical Wiring



Module Status LED

●	Off
●	Initializing
●	On (Magenta = CueStation Protocol)
⦿	CueStation Bus Activity
⦿	Incorrect Configuration
⦿	Module Error

○ = Solid, ⦿ = Slow Flashing, ⦿ = Fast Flashing

Continued on back...

Installation

Each **SM-SBUS-2W** module can drive up to ten (10) 2-Wire stations (either Mystique or Ultra series).

Recommended Cable

To meet the full 10-station 1000’ maximum distance specification, a low-resistance cable of 18AWG (or better), with a resistance of 6.5 Ω/1000ft (or less) should be used.

Our recommendation for an inexpensive way to meet these requirements is to use quality CAT-6 (or better) cable, with multiple pairs tied together to form a 2-conductor cable (4 x 23AWG conductors performs similarly to a single 18 AWG). Refer to the *Example* diagram to the right for recommended pairings (all Orange + Blue tied together, and all Green + Brown tied together).

Many other 18AWG cable types also meet these requirements, including Belden 5340, Belden 9740, and Alpha M8528010.

Lower quality cable with a resistance greater than 7.0 Ω/1000ft can also be used, but the maximum possible distance from the module to the stations will be lower.

However, if the maximum station distance is small (less than 100 feet from the module), then the specifications of the cable becomes less important. As long as you can get two decent conductors to the stations, they will likely work.

Topology and Polarity Free

Any combination of Star and/or Daisy-Chain topologies may be used. See the *Topology-Free Example* diagram for an example of a mixed topology.

The CueStation 2-Wire network is also polarity-free. This means that it does not matter which of the BUS or COM signals are connected to the two terminals on each station.

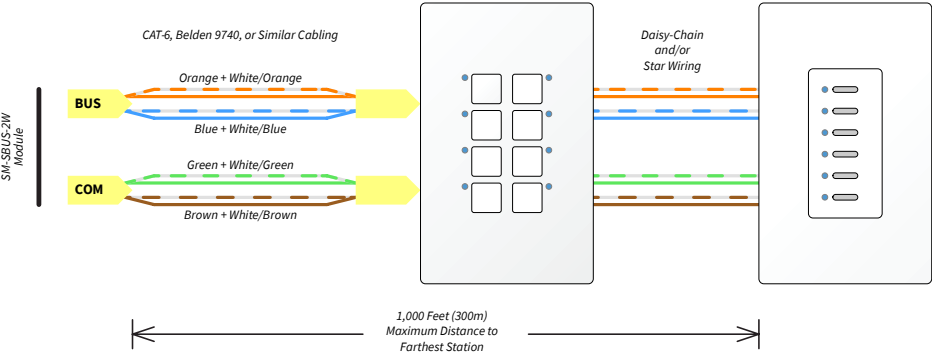
Maximum Wire Length

The maximum wire-length distance from the 2-Wire Module to *any* station is 1,000 feet (300 meters).

To achieve this full specification, a quality cable must be used that has a resistance of 6.5Ω/1000ft or less.

Higher resistance cables will shorten the maximum distance and/or the maximum number of stations on the network.

Example Connections Using CAT-6 Cable



Installation (continued)

Power Supply Considerations

The module uses 0.3 watts of power when on, and each station can use up to 0.4 watts of power. If the total wattage exceeds the power budget for the host device, the power supply may need to be upgraded to provide a higher total wattage capacity.

To approximate module power requirements, use the following formula:

Module Power (Watts) =
 $0.3 + (<number\ of\ stations> \times 0.4)$

Resistance of Popular Cable Types

This table shows the resistance value (in Ω/1000ft) of several popular cable types. These values are provided for reference only.

Cable Type	Ω	AWG	Cost
Stranded Pure Copper Speaker Cable ⁽¹⁾	3.9	14	\$
Belden 8471 ⁽²⁾	4.5	16	\$\$\$\$
Belden 1032A	5.9	18	\$\$\$
CAT-6 550MHz Solid 23AWG ⁽³⁾	6.2	18 ⁽³⁾	\$
Belden 5340FT	6.6	18	\$\$
Alpha M8528010	6.6	18	\$\$
Belden 5340U1	6.9	18	\$\$
Belden 9740	6.9	18	\$\$\$
Alpha 881802	7.0	18	\$\$
Alpha 1897C	7.0	18	\$\$
CAT-5e 350Mhz Solid 24AWG ⁽³⁾	7.4	18 ⁽³⁾	\$
Alpha 6459	7.5	18	\$\$

⁽¹⁾ This cable has excellent low-resistance, but it's large AWG makes it difficult to fit into the terminal blocks.
⁽²⁾ This cable is recommended by ETC for use with their Echo and Paradigm button stations.
⁽³⁾ CAT-5/6 meets these specifications only when multiple pairs are joined to make 2 conductors.

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