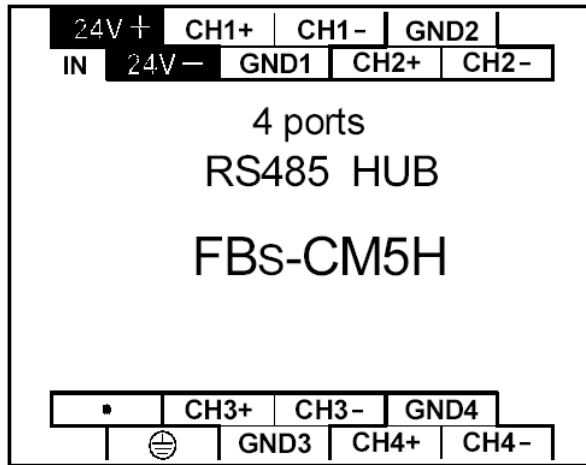


## FBs-CM5H Module Quick Reference Guide

### Introduction

The FBs-CM5H module is a 4-port Hub or repeater of RS485 network. The function of this module is to buffer and amplify the signal that comes into any one of the four ports of this module and generates the signal to the other three ports. With this feature can concentrate the multiple RS485 bus segments into one unify RS485 network. The RS485 network can only suit for bus structure topology, when there is a need to deploy the star topology then using this module is a right answer.

### 1. Signals and Connectors



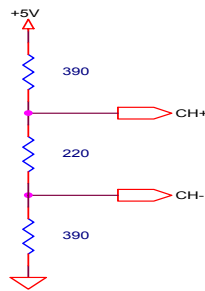
Signal Name	Description
<b>24V+</b>	Positive terminal of external 24V power supply
<b>24V-</b>	Negative terminal of external 24V power supply
<b>CH1+</b>	Positive signal terminal of CH1
<b>CH1-</b>	Negative signal terminal of CH1
<b>GND1</b>	Signal ground of CH1
<b>CH2+</b>	Positive signal terminal of CH2
<b>CH2-</b>	Negative signal terminal of CH2
<b>GND1</b>	Signal ground of CH2
<b>CH3+</b>	Positive signal terminal of CH3
<b>CH3-</b>	Negative signal terminal of CH3
<b>GND3</b>	Signal ground of CH3
<b>CH4+</b>	Positive signal terminal of CH4
<b>CH4-</b>	Negative signal terminal of CH4
<b>GND4</b>	Signal ground of CH4
⊕	Framing ground

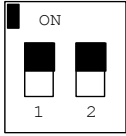
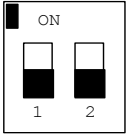
## 2. Jumper and DIP Switches

There are four DIP switches and one jumper inside the module can be used for setup.

### 2.1 Terminator Setup

When install the RS485 network, one resistor should be added in parallel with the signal line for each end of the bus segment for impedance matching. In order to easy the installation, there is one resistor and one DIP switch for each channel built in this module. The termination circuit of this module is of biased termination. This kind of termination has the high noise immunity capability. When the bus is in off state(no driver enable), there exist a 1V voltage difference between positive and negative terminal while normal termination is near 0 V. The equivalent circuit of biased termination is shown at below. If the termination is not provided by this module, please make sure the termination is of biased termination type(All FBs series RS485 communication product/port are of biased termination), otherwise the communication quality will be poor.



Port	Switch	Terminator installed	Terminator not installed
CH1	SW1		
CH2	SW2		
CH3	SW3		
CH4	SW4		
		1,2 SW all ON	1,2 SW all OFF

## 2.2 Working Mode Setup

There are two working modes can be selected for this module.

### 2.2.1 Symmetry Mode

Under this mode, normally all port are in receive state. When any one of four ports sense an activity on its port terminal, all other ports will be turned into transmit state. The message received by the active port will be sent to the other three ports.

### 2.2.2 Asymmetry Mode

Under this mode, normally all port are in receive state. If CH1 port sense an activity on its port terminal, all other ports (CH2~CH4) will be turned into transmit state. The message received by the CH1 port will be sent to the other three ports (CH2~CH4).

If any one of CH2~CH4 ports sense an activity on its port terminal, only the CH1 will be turned into transmit state. The message received by the active port (one of CH2~CH4) will be sent to the CH1. This working mode is suit for master/slave type communication. If connect the master station with CH1 and other slave stations with CH2~CH4, then all the slave stations can receive the messages sent by the master station while only the master station can receive the reply message from slave. The working mode can be set according following figure



## 3 Indicators

Label	Function Description
<b>POW</b>	Power indicator. When apply the 24V power this LED will be lighted.
<b>ACTIVE</b>	There are four LEDs dedicated for the indication of bus activity of all ports. Each LED corresponds to one port. When lit, means the corresponding port is a active port, the message of other ports will derive from the active port
<b>COLLISION</b>	There are four LEDs dedicated for the indication of collision status of all ports. Each LED corresponds to one port. When lit, means the actual port signal of corresponding port is not consistent with the signal that intended to drive.

The default factory setting of FBs-CM5H is

**Terminator-** CH1~CH4 all install

**Working mode-** Symmetry

For those applications that require the setting differ than the above default setting should make some modification according to the tables listed above.