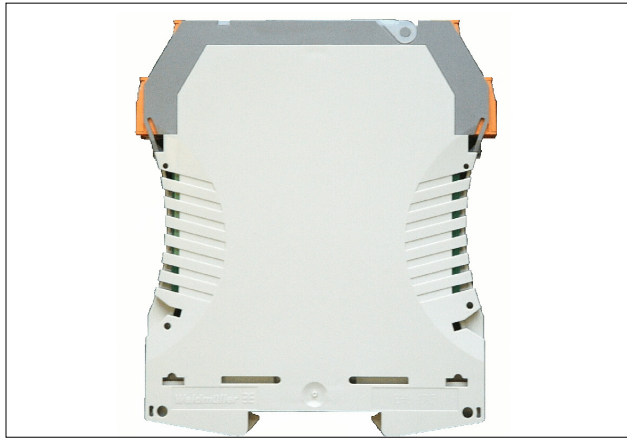


## FRICK® SERIAL COMMUNICATIONS CONVERTER MODULE (Part Number 639B0086H01)

### Description

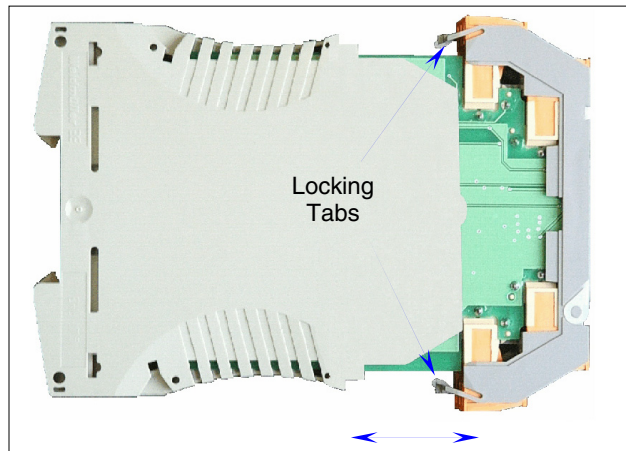
Frick® Controls has developed a DIN-rail mountable communications module for the purpose of converting typical RS-232 serial protocol to either RS-422 or RS-485 serial protocols. The module will also work converting RS-422 or RS-485 to RS-232 (bi-directional). Due to the tight mounting restrictions in many existing control panels, this module provides the ultimate solution for field communications upgrades or modifications. No drilling is required, and no valuable space is lost. The only requirement is an external source of 24 volt DC power.



**Figure 1 - Frick® Communications Converter Module**

### Setting the jumpers

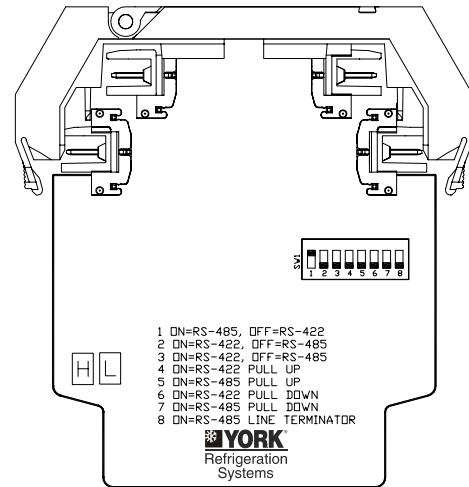
Inside the module is a circuit board which contains a DIP switch. This switch must be set according to the necessary protocol parameters that you are trying to achieve. It is recommended to set or verify the settings of this DIP switch before mounting and wiring the module. The circuit board must be removed from its housing in order to access this DIP switch. Each end of the housing has a small tab, located just below the bottom most terminal block of each end. Hold the module as shown in the following pictorial (Figure 2):



**Figure 2 - Disassembling the module**

Press the tabs using the thumb and finger, and with your other hand carefully slide the circuit board out of the housing. Ensure that proper anti-static guidelines are followed while handling the circuit board.

The following diagram (Figure 3) shows the circuit board:



**Figure 3 – Module circuit board**

For easy reference, the DIP switch position functions are provided on the board. For the purpose of clarity however, refer to Table 1:

**TABLE 1 – MODULE DIP SWITCH SETTINGS**

Switch Position	ON Function	OFF Function
1	RS-485	RS-422
2	RS-422	RS-485
3	RS-422	RS-485
4	RS-422 Pull up	No pull up
5	RS-485 Pull up	No pull up
6	RS-422 Pull down	No pull down
7	RS-485 Pull down	No pull down
8	RS-485 line termination	No line termination

### Mounting the module

This module can be mounted on the standard din rail that is available in most control panels.

1. Find an open area of the din rail (5/8 inch minimum, for the width of the module), and preferably as far away from any inductive loads (relays, contactors, etc.) as possible.
2. Module orientation is not critical, however, try to mount it so that all wiring connections can be made neatly, and according to any applicable local codes.
3. Catch one end of the DIN rail latch (at the bottom of the module, under one edge of the DIN rail,

then snap the other latch onto the opposite side of the DIN rail, as shown below in Figure 4:



Figure 4 – Module mounted to DIN rail

**Wiring the module**

There are twelve total wire terminal points on this module. Refer to Table 2 for the pin-out:

Table 2 – Wire terminal connections

Terminal Position	Module Power	RS-232	RS-422	RS-485
1			-RX	
2			+RX	
3 (Not Used)				
4			-TX	-RX/-TX
5			+TX	+RX/+TX
6 (Not Used)				
7	-24 VDC			
8 (Not Used)				
9	+24 VDC			
10		GND		
11		TX		
12		RX		

1. Locate a suitable source for the +24 volt DC power. Using a minimum of 18 AWG stranded wire, connect the MINUS wire to terminal # 7. Connect the PLUS wire to terminal # 8.
2. All remaining connections will be based upon the particular protocols that you have decided to use. Simply match the SIGNAL NAME from the source device to match the SIGNAL NAME of the module. All external communications wiring must conform with the Frick® *Proper Installation of Electronic Equipment in an Industrial Environment* publication.

**RS-232 Connections**

Refer to Figure 5 for the pin connections showing how to wire a standard 9-Pin RS-232 connector directly to the Frick® Communications Converter Module:

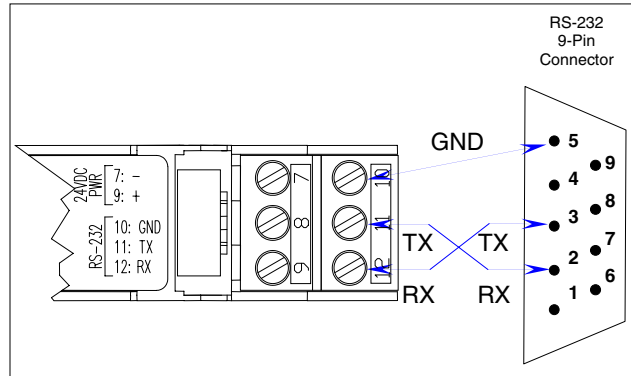


Figure 5 – RS-232 Connections

**RS-422 CONNECTIONS**

Refer to Figure 6 for the pin connections showing how to attach a 4-wire RS-422 cable directly to the Frick® Communications Converter Module:

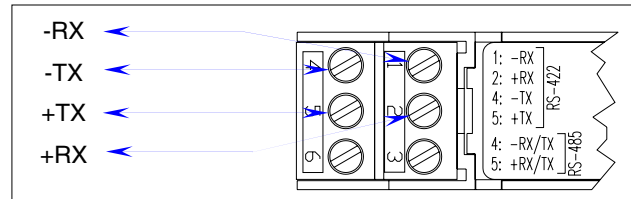


Figure 6 – RS-422 Connections

**RS-485 CONNECTIONS**

Although typical RS-485 communications requires a control signal to change the state of the RX/TX driver lines to establish handshaking, this board incorporates a smart feature that handles this handshaking internally, without the user needing to provide it. It is a true two-wire system. Refer to Figure 7 for the pin connections showing how to attach a 2-wire RS-485 cable directly to the Frick® Communications Converter Module:

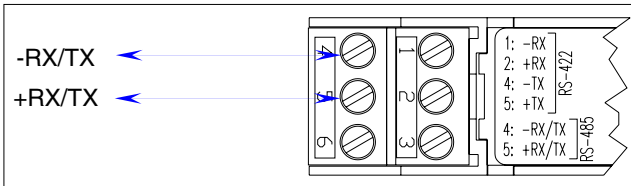


Figure 7 – RS-485 Connections