



**Provides Two Extra Comms Ports  
High Performance  
Each Port RS232 and RS485**

### Introduction

The 400-COM module provides two extra communication ports for use within the FMT-400 system. A maximum of one 400-COM module is supported by the 400-CPU-B (therefore providing two extra comms ports) and a maximum of three 400-COM modules are supported by the 400-CPU-C (therefore providing six extra comms ports). The 400-COM is not supported by the 400-CPU-A.

Each port provides both RS232 and RS 485 communications and supports the wide range of communication protocols offered by the FMT-400. The maximum baud rate supported is 57600 when used with the 400-CPU-B and 115200 when used with the 400-CPU-C.

(Please see separate data sheets for more information on the CPU modules).

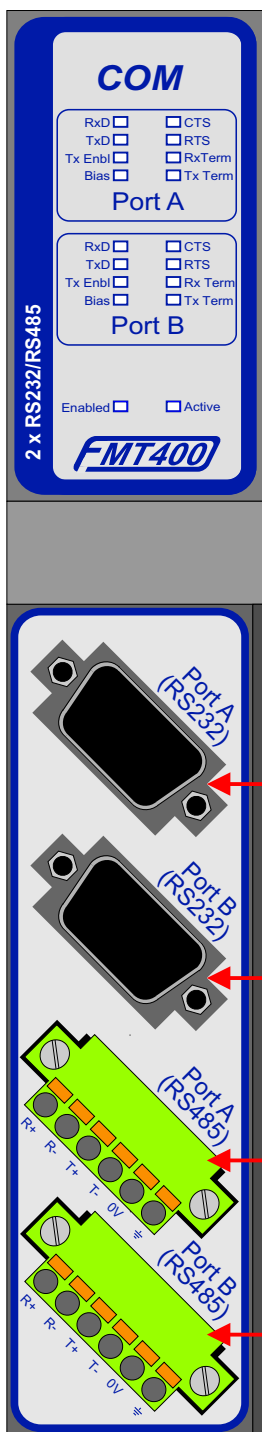
### General Specifications

Storage temperature	-20 to +70 °C
Operating temperature	0 to 55 °C
Humidity	10-90% non condensing
Weight	510g
Dimensions	Standard FMT-400 size single width module
Spring terminal wire gauge	0.2 to 1.5mm csa (24 to 14 AWG)
Current consumed from rack	180mA from rack power supply
Port A Maximum Baudrate	57600 (if used with 400-CPU-B) 115200 (if used with 400-CPU-C)
Port B Maximum Baudrate	57600 (if used with 400-CPU-B) 115200 (if used with 400-CPU-C)
Ports A & B RS232 Protection	+/- 15KV ESD protected
Ports A & B RS485 Protection	Opto isolated



### Connection Details

Connections should be made to the 400-COM connectors as shown in the following diagrams.  
 The RS232 connectors are 9-way female D-type connectors (pin out listed below).  
 The RS485 connectors are 6-way spring terminal connectors (see page 3 for connections).  
 To insert wires into the connector apply downwards pressure on orange tab using a small screwdriver or similar, insert wire then release pressure, the wire will be gripped firmly.



**Note:** For each port (A or B) you can use either RS232 or RS485 communications but not both types at the same time.  
**Examples:**  
 If the RS232 connector of port A is in use then the RS485 connector of port A can not be used.  
 If the RS485 connector of port B is in use then the RS232 connector of port B can not be used etc.  
 It is permissible to have one port using RS232 and the other RS485.

**RS232 Ports Pin Assignments**

Pin No	Port A	I/O	Port B	I/O
1	Protective Earth	-	Protective Earth	-
2	Receive Data	I	Receive Data	I
3	Transmit Data	O	Transmit Data	O
4	RTS	O	RTS	O
5	CTS	I	CTS	I
6	Programming	I	N/C	I
7	Common	-	Common	-
8	N/C	-	N/C	-
9	N/C	-	N/C	-

Port A RS232 Connector

Port A RS232 Connector

Port A RS485 Connector

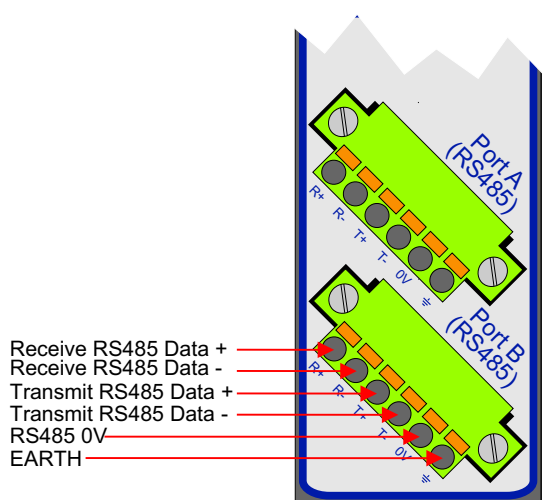
Port A RS485 Connector



### Connection Details (continued)

Connections to the RS485 connector should be made in accordance with the terminal markings on the label (shown below). Either two or four wire RS485 communications can be used with the 400-COM. The following points relating to RS485 communications using the COM-400 should be noted:

- RS485 allows up to 32 ports to be connected together in a multidrop.
- The maximum allowable cable length is 1200 metres.
- Stub lengths from a junction box to the COM-400 port should be kept to a minimum
- Use good quality screened cable with twisted pairs.
- The screens should be continuous throughout the cable run and connected to a good earth at one end only.



### Port Parameters Set Up

The port parameters are configured from within the 'Comms' page of the Flex32 project configuration screen. The parameters are common for both the RS232 and RS485 connectors of the port which is being configured. The following parameters can be configured for each port:

- Baudrate
- Number of data bits
- Parity
- Number of stop bits
- Station number (for user with Modbus RTU slave, Linkline and LinkLine Plus)
- Communications Protocol

For more information please see the Flex32 help.



### RS485 Communications Additional Configuration

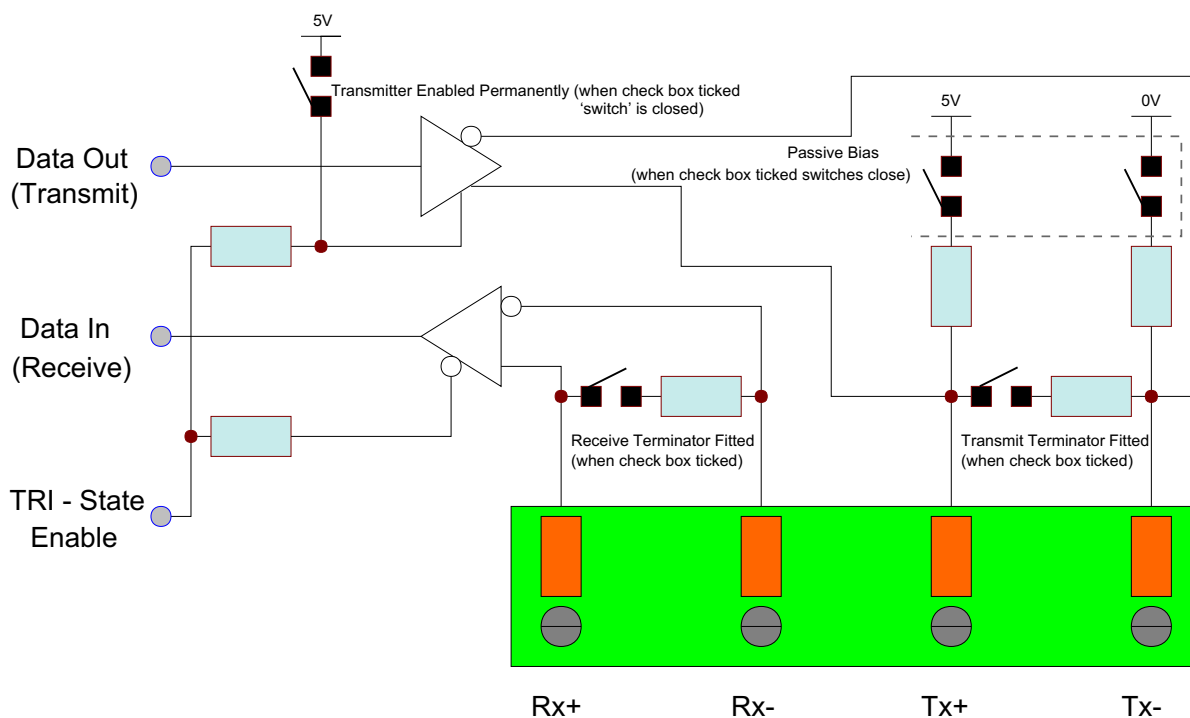
In addition to the configurable parameters already mentions on the previous page, the RS485 connectors can also have the additional settings made:

- Passive Biasing
- Receive Terminator
- Transmit Terminator
- Transmitter Permanently Enabled

The above settings can be made by clicking on the 'Adjust' button on the Flex32 toolbar, you will be presented with check boxes for each parameter. The affect of ticking the check boxes is listed below:

Setting	Check Box Ticked	Check Box Unticked	Comments
Passive Biasing	Transmitter Biased	Transmitter Tri State	Tick the check box if it is necessary to bias the transmitter lines to 5V and 0V (TxD+ and TxD- respectively, via 620 resistors). This is useful in electrically noisy environments. <b>Note:</b> A maximum of two transmitters on any one multidrop network should have these links fitted.
Receive Terminator	120 resistor fitted between Rx+ and Rx-	No resistor fitted	Tick the check box if terminating resistors to the ports at each end of the cable run are required.
Transmit Terminator	120 resistor fitted between Tx+ and Tx-	No resistor fitted	Tick the check box if terminating resistors to the ports at each end of the cable run are required.
Transmitter Permanently Enabled	Transmitter Permanently Enabled	Transmitter only enabled when the port is sending out data	Tick this check box only if the transmitter is only connected to one receiver. Do not tick this check box if the transmitter is connected to other transmitters in a multidrop.

### Illustration Representing Function Of Check Box Settings:





### LED Descriptions

Label		Colour	Description
RxD	(Port A)	Green	Flashes when data is received on Port A (at high data rate this LED may appear to be constantly illuminated).
TxD	(Port A)	Red	Flashes when data is sent from Port A (at high data rate this LED may appear to be constantly illuminated).
Tx Enbl	(Port A)	Yellow	When illuminated the RS 485 transmitter on Port A is permanently enabled.
Bias	(Port A)	Yellow	When illuminated passive bias has been applied to the RS485 transmitter on Port A.
CTS	(Port A)	Yellow	Indicates the status of the external 'Clear To Send' input on the RS232 port on Port A, when illuminated the CTS line is high and data can be sent out of the RS232 port.
RTS	(Port A)	Yellow	Indicates the status of the external 'Request to Send' output on the RS232 port on Port A, when illuminated the RTS line is high and data can be received by the port.
RxTerm	(Port A)	Yellow	When illuminated the RxD terminating resistor is connected across RS485 Rx+ and Rx- on Port A.
Tx Term	(Port A)	Yellow	When illuminated the TxD terminating resistor is connected across RS485 Tx+ and Tx- on Port A.
RxD	(Port B)	Green	Flashes when data is received on Port B (at high data rate this LED may appear to be constantly illuminated).
TxD	(Port B)	Red	Flashes when data is sent from Port B (at high data rate this LED may appear to be constantly illuminated).
Tx Enbl	(Port B)	Yellow	When illuminated the RS 485 transmitter on Port B is permanently enabled.
Bias	(Port B)	Yellow	When illuminated passive bias has been applied to the RS485 transmitter on Port B.
CTS	(Port B)	Yellow	Indicates the status of the external 'Clear To Send' input on the RS232 port on Port B, when illuminated the CTS line is high and data can be sent out of the RS232 port.
RTS	(Port B)	Yellow	Indicates the status of the external 'Request to Send' output on the RS232 port on Port B, when illuminated the RTS line is high and data can be received by the port.
RxTerm	(Port B)	Yellow	When illuminated the RxD terminating resistor is connected across RS485 Rx+ and Rx- on Port B.
Tx Term	(Port B)	Yellow	When illuminated the TxD terminating resistor is connected across RS485 Tx+ and Tx- on Port B.
Enabled		Yellow	When illuminated shows that the module has been correctly set up within your project in Flex32 and that the CPU module has initialised the module. If not illuminated then the module may not have been set up in your project configuration.
Active		Yellow	Indicates activity within the module, this will normally flicker or appear to be constantly illuminated, activity occurs when the CPU module is writing data to the 400-COM.

**Notes:**

**FMT-400**

**400-COM High Performance Comms Module**



**Colter  
Group**

Notes:

**FMT-400**

**400-COM High Performance Comms Module**



Colter  
Group



Data Sheet Issue: 1.20  
Date: 11 May 2005

## **Order Codes**

Part Number  
400-COM

**COLTER GROUP**  
**COLTER PRODUCTS LIMITED**

UNIT 7, ZONE C  
CHELMSFORD ROAD INDUSTRIAL ESTATE  
DUNMOW  
ESSEX  
CM6 1HD

Telephone: + 44 (0)1371 876887  
Fax: + 44 (0)1371 875638

E-Mail: [sales@coltergroup.co.uk](mailto:sales@coltergroup.co.uk)  
Web Site: [www.coltergroup.co.uk](http://www.coltergroup.co.uk)

© Copyright 2000

The unit described on this datasheet is designed and manufactured in Great Britain by Colter Products Ltd.  
Colter Products reserve the right to amend these specifications and the user is asked to check the validity of the datasheet prior to use