Introduction

This instruction sheet provides information on using the GE MDS 03-6139A01 TD220/RCL220 Adapter Board. This adapter board allows access to the special DB-25 pinout of the TD220 and RCL220 radios with more standard connectors. The MDS Part Number for the Adapter Board is 03-6139A01. The kit is available as 03-4758A03. Below is a photograph of the board. Note the out-of-order placement of COM1, COM2, and COM3.
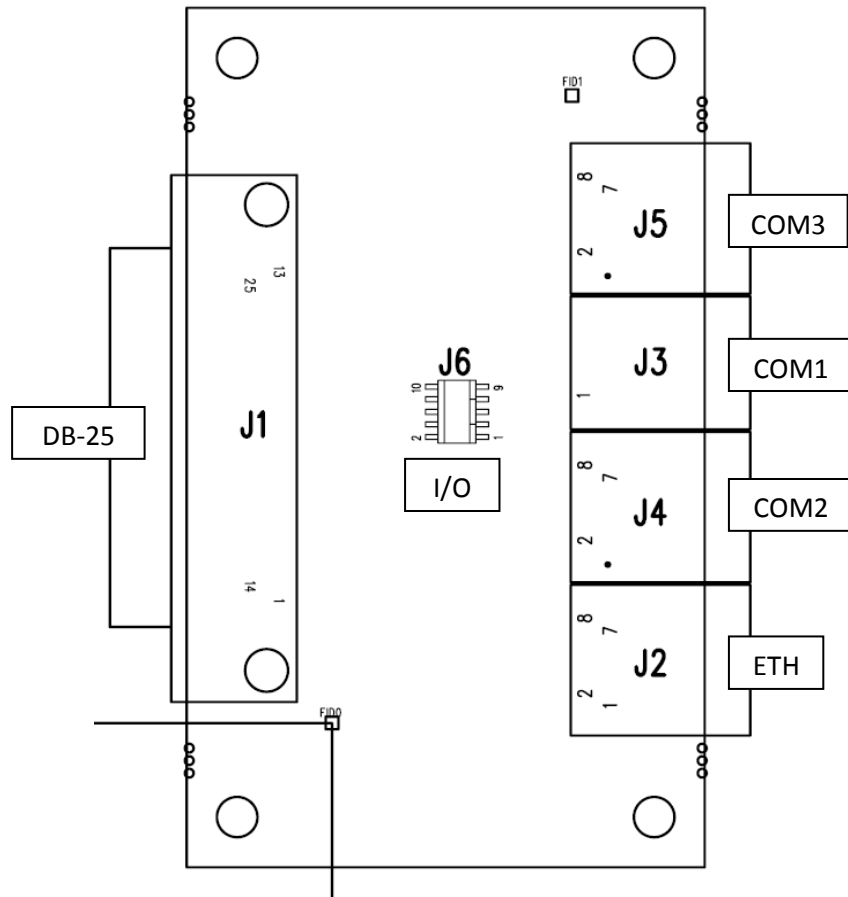

Figure 1. The 03-6139A01 TD220/RCL220 Adapter Board

Connector Purposes

The table below describes the purpose of each of the adapter's connectors in different applications.

Ref Des	Connector	TD Family	RCL220 Repeater AP	RCL220 Repeater Remote	RCL220 Locomotive AP	RCL220 Locomotive Remote
J1	DB-25	DB-25	DB-25	DB-25	DB-25	DB-25
J2	ETH	ETH	ETH	Not Used	ETH	Not Used
J3	COM1	Console	Aux Receiver Remote COM2	Not Used	GPS NMEA Data	Locomotive AP COM2
J4	COM2	GPS NMEA Data	Transmitter COM2	Repeater AP COM1, 2, or 3	Locomotive Remote COM1	RCL Equipment
J5	COM3	Not Connected	Primary Receiver COM2	Not Connected	Not Used	Not Connected
J6	I/O	I/O	Not Used	I/O	Not Used	I/O

J1 DB-25 Connector

The DB-25 Connector provides connection to the radio. The adapter board has a Female connector, permitting the use of the 03-3828A01/D cable to attach to the radio.

The contacts on the DB-25 connector are listed below.

DB-25 Pin	Signal	Direction WRT MDS Equipment	Notes
1	COM3_DCD	Input	Reserved
2	COM2_TXD	Input	GPS NMEA Data Expected
3	COM2_RXD	Output	
4	COM2_RTS	Input	
5	COM2_CTS	Output	
6	COM3_TXD	Output	Reserved
7	GND	Input/Output	
8	COM2_DCD	Output	
9	COM3_CTS	Input	Reserved
10	COM3_RTS	Output	Reserved
11	COM3_DTR	Output	Reserved
12	COM3_RXD	Input	Reserved
13	GND	Input/Output	
14	ETH_TX_H	Output	
15	ETH_TX_L	Output	
16	ETH_RX_H	Input	
17	ETH_RX_L	Input	
18	EXT_KEY	Output	Reserved
19	EXT_DET	Input	Reserved
20	COM2_DTR	Input	
21	ALARM_OUT	Output	Reserved
22	GPS_PPS_L	Input	For TTL PPS, leave this open
23	GPS_PPS_H	Input	For TTL PPS, use this input
24	COM1_RXD	Input	Console
25	COM1_TXD	Output	Console

The DB-25 connector is female, and the orientation of the connector as looking into the connector is as shown below.

13	12	11	10	9	8	7	6	5	4	3	2	1
	25	24	23	22	21	20	19	18	17	16	15	14

Digital Energy
MDS

J2 ETH Connector

The contacts of the ETH connector are listed below. A standard CAT5 cable can be used between the adapter and a PC Ethernet port.

Pin	Signal Name	Direction with respect to MDS Equipment	Description
1	ETH_TX_H	Output	Ethernet transmit high
2	ETH_TX_L	Output	Ethernet transmit low
3	ETH_RX_H	Input	Ethernet receive high
4	N/C	N/A	N/A
5	N/C	N/A	N/A
6	ETH_RX_L	Input	Ethernet receive low
7	N/C	N/A	N/A
8	N/C	N/A	N/A

J3 COM1 Connector

The contacts of the COM1 connector are listed below. An 03-2198A05 cable and 73-2434A02 adapter can be used between the adapter board and a PC DB-9 serial port.

Pin	Signal Name	Direction with respect to MDS Equipment	Description
1	N/C	N/A	N/A
2	N/C	N/A	N/A
3	N/C	N/A	N/A
4	COM1_TXD	Output	COM1 Transmit Data
5	COM1_RXD	Input	COM1 Receive Data
6	GROUND	Input	Signal Return

J4 COM2 Connector

The contacts for the COM2 connector are listed below. An 03-2198A21 cable and 73-2434A12 adapter can be used between the adapter board and a PC DB-9 serial port.

Pin	Signal Name	Direction with respect to MDS Equipment	Description
1	N/C	N/A	N/A
2	COM2_DCD	Output	COM2 Data Carrier Detect
3	COM2_DTR	Input	COM2 Data Terminal Ready
4	GROUND	N/A	Signal Return
5	COM2_RXD	Output	COM2 Receive Data
6	COM2_TXD	Input	COM2 Transmit Data
7	COM2_CTS	N/A	COM2 Clear to Send (shorted to COM2_RTS)
8	COM2_RTS	N/A	COM2 Request to Send (shorted to COM2_CTS)

J5 COM3 Connector

The contacts for the COM2 connector are listed below. An 03-2198A21 cable and 73-2434A12 adapter can be used between the adapter board and a PC DB-9 serial port.
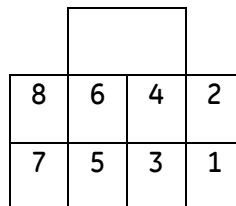
Pin	Signal Name	Direction with respect to MDS Equipment	Description
1	N/C	N/A	N/A
2	COM3_DCD	Input	COM3 Data Carrier Detect
3	COM3_DTR	Output	COM3 Data Terminal Ready
4	GROUND	N/A	Signal Return
5	COM3_RXD	Input	COM3 Receive Data
6	COM3_TXD	Output	COM3 Transmit Data
7	COM3_CTS	Input	COM3 Clear to Send
8	COM3_RTS	Output	COM3 Request to Send

J6 I/O Connector

The contacts for the I/O connector are listed below. An 03-4152A01 cable can be used to wire out the contacts for this connector.

Pin	Signal Name	Direction WRT MDS Equipment	Notes
1	EXT_KEY	Output	Power Amplifier TX Key. 0-3.3 V.
2	EXT_DET	Input	Power Amplifier Feedback. 0-5 V.
3	ALARM_OUT	Output	Discrete Output. Active Low. 0-3.3 V.
4	GROUND	Input	Signal Return.
5	GPS_PPS_L	Input	GPS 1 PPS timing. RS-422 Low In.
6	GPS_PPS_H	Input	GPS 1 PPS timing. RS-422 High In.
7	Reserved		
8	Reserved		

Note: Looking into the adapter connection at the end of the 03-4152A01 cable, wiring is as shown below.

8	6	4	2
7	5	3	1

Conclusion

The GE MDS 03-6139A01 TD220/RCL220 Adapter Board and 03-4758A03 kit provides access to the signals on the transceiver's DB-25 connector via more standard connector types. This instruction sheet described the cabling and signal pinouts for using the Adapter Board.