Application Note for Using the Operator Station HE500TIU050/10X/11X/20X with the Hitachi EB/EC/EMii Series PLC

Protocol File Name

HE500TIU050 = Emii_R?.0xx
HE500TIU1xx = Emii_R?.1xx
HE500TIU2xx = Emii_R?.2xx
(The "?" = the TIU firmware revision)

Configuring the Operator Station

To verify the Automated Equipment type the Operator Station is setup for, watch the screen of the Operator Station on power up. The first screen message details the setup of the Operator Station. To configure the Operator Station for particular Automated Equipment, select the Automated Equipment in the Communication Settings from the Configure menu in ***CBREEZE*** software. Select the appropriate Manufacturer and the appropriate Remote Equipment Model. Then from the File menu select Update Protocol, the appropriate file name will appear in the file name field. The programmer may need to point to the correct folder name/location. If further information is required see the manual or ***CBREEZE*** help on update/change protocol.

Protocol Revisions

Version 1.06 Supports master only operation to the slave PLC.

Serial Port Format

Both the Operator Station and the Hitachi PLC default to operation at 9600 baud with seven data bits, one stop bit and an even parity bit and RS232 Mode.

Node Address.

The Hitachi E Series Protocol does not support a station number and the station number is thus ignored.

Register Type Specification

The following register types are implemented on the Hitachi E Series Protocol...

Data Words (2 Byte) eg 400,401
The allowable register range is 400 to 991. The data is read as two consecutive bytes forming a word. Data is expected to be coded in BCD format.

Internal Relays
The allowable register range is 400 to 991. Where analog values are being read the data is stored by concatenating multiple bits, for example if a numeric value is required and the register specified is Internal Relay 500, relays 500 to 515 will be read and packed into a single 16 bit word. Data read in this manner is expected to be coded in binary format.

Digital Inputs
The allowable register range is 0 to 195. Where analog values are being read the data is stored by concatenating multiple bits, for example if a numeric value is required and the register specified is Digital Input 100, inputs 100 to 115 will be read and packed into a single 16 bit word. Data read in this manner is expected to be coded in binary format.

Digital Outputs
The allowable register range is 200 to 395. Where analog values are being read the data is stored by concatenating multiple bits, for example if a numeric value is required and the register specified is Digital Output 200, outputs 200 to 215 will be read and packed into a single 16 bit word. Data read in this manner is expected to be coded in binary format.

T/C Setpoints
The allowable register range is 200 to 295. When writing use T/C Presets.

T/C Values
The allowable register range is 100 to 195.

T/C Status
The allowable register range is 0 to 95.

Analog Inputs
The allowable register range is 0 to 195. Data is expected to be coded in binary format.

Analog Outputs
The allowable register range is 0 to 195. Data is expected to be coded in binary format.

T/C Presets
The allowable register range is 200 to 295. This differs from the T/C setpoint type in that writes to the presets are completed in atomic actions. This is the preferred method.

Modifying Analog Values in the PLC

Where analog values are to be written back to the PLC it is recommended that the bit based types are avoided because the writing of analog values is slow to the bit types due to the protocol characteristics. This applies equally where items are mapped to the PLC, for example the Keyboard status information or the Clock Calendar. Basically the system will run but operation will appear sluggish and update time will be long.

Avoid the following types where data is being written to the PLC...

- Internal Relays
- Digital Inputs
- Digital Outputs

Instead try to use the following types...

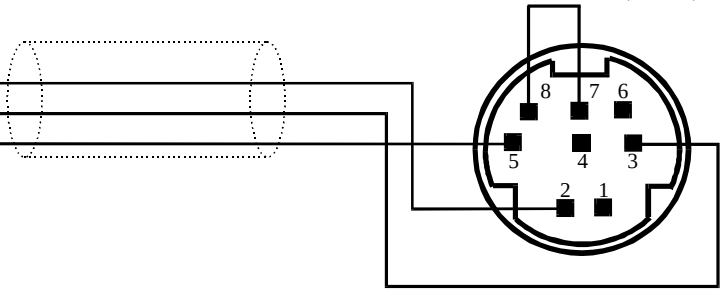
- Data Words (2 Byte) eg 400,401
- Timer Counter Values
- Timer Counter Presets

CONNECTING AN OPERATOR STATION
AHitachi EC Series PLCs

TIU

+5V	1
TX 485/422+	2
TX 485/422-	3
RX 485/422+	4
RX 485/422-	5
TX RS232	6
0V(GND)	7
RX RS232	8
TX 4-20mA +	9
TX 4-20mA-	10
RX 4-20mA+	11
RX 4-20mA-	12
EARTH	13

8 Way Micro Din connector (rear)



TIU 100/110

TIU

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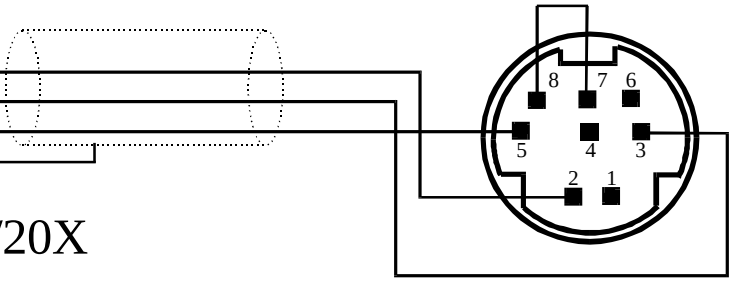
RX 485/422+	3
RX 485/422-	4
TX RS232	5
0V(GND)	6
RX RS232	7
SHIELD	8

SHIELD

8 Way Micro Din connector (rear)



TIU 50/101/102/111/112/20X

CONNECTING AN OPERATOR STATION
A Hitachi EMii Series PLCs

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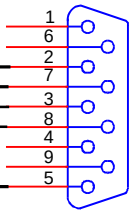
RX 485/422+	4
RX 485/422-	5
TX RS232	6
0V (GND)	7
RX RS232	8
TX 4-20mA +	9
TX 4-20mA-	10
RX 4-20mA+	11
RX 4-20mA-	12
EARTH	13

9 Pin Male
D type (Rear)



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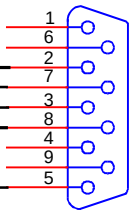

SHIELD

TIU 50/101/102/111/112/20X