HORNER
APG

Application Note for Using the Operator Station HE500TIU050/10X/11X/20X with the Hitachi H200/H300/H700/EH150 Series PLCs

Protocol File Name

HE500TIU050 = H200_R?.0xx
HE500TIU1xx = H200_R?.1xx
HE500TIU2xx = H200_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 1.03   Supports master only operation to the slave PLC.

Serial Port Format

The Hitachi H/EH Series PLCs run at a fixed data format of 7 data bits, Even Parity and 1 stop bit.

The Operator Station Communication Mode must also be set to "RS232 with CTS".

The Forcibly Occupy PLC Mode should be checked if you are using the PLC Programming Software at the same time as the Operator Station, otherwise the Operator Station will not be able to fully access some of the data registers.

H Series
The H Series have configurable baud rate which is set in one of two ways. The first way is by wiring on the 15 way D-type connector which fixes it to 19200 or via CPU DIP switches (see the connection drawing and your H series manual for further details).
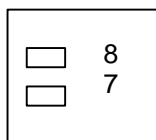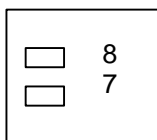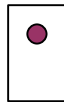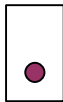
EH150 Series
When connecting to Port 1 or Port 2 of a EH150 Series PLC selection of the baud rate and mode is set via a bank of 8 DIP switches and a separate toggle switch on the side of the CPU.

Switch	ON		OFF	Description
1	Remote Mode		Normal Mode	In Remote mode, RUN / STOP is executed via the communications. This is not applicable to the Operator Station.
2	Modem Control		TRNS0 operation.	Port 1 operation (Only valid when switch 5 is turned off).
3,4	3	4	Port 1 Baud Rate	Select the same Baud Rate here as selected in *CBreeze* if connecting to Port 1.
	ON	ON	4800	
	OFF	ON	9600	
	ON	OFF	19200	
	OFF	OFF	38400	
5	Dedicated Port		General Purpose Port	Port 1 operation. Set to dedicated port for Operator Station.
6	6	PHL	Port 2 Baud Rate	Select the same Baud Rate here as selected in *CBreeze* if connecting to Port 2. Note. PHL is a Toggle switch located above the 8 Way DIL switch.
	ON	Low	4800	
	ON	High	9600	
	OFF	Low	19200	
	OFF	High	38400	
7	(System mode)		Normal operation mode	Do not turn on.
8	(System mode)		Normal operation mode	Do not turn on.

PHL OFF   **PHL ON**

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Node Address.

A Remote Node ID can be set if a Comm module is being used. This should be in the range of 0 to 31.

Special care should be taken when connecting directly to the H/EH Series CPU since no station ID is used. For this link to work set the Remote Node ID to 32. This configures the Operator Station to not send a Node ID.

Register Type Specification

All accesses are applied to word types. This does not pose a problem since all bit types with the exception of R bits can be obtained from the appropriate word types.
The types are treated as follows...

WM Registers

Access the word block indicated. Start register is entered in hexadecimal. For example access two words at WM0020 (enter 20 in the location field in *CBREEZE*) gives access to Bits M0200 to M021F. The bits are packed as...

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
M20F	M20E	M20D	M20C	M20B	M20A	M209	M208	M207	M206	M205	M204	M203	M202	M201	M200
M21F	M21E	M21D	M21C	M21B	M21A	M219	M218	M217	M216	M215	M214	M213	M212	M211	M210

If a single bit is required for a Bit Status embedded field the last digit in the location field specifies the bit number. For example M20C was to control the Bit Status the location field would actually contain 20C.

WR Registers

Access WR registers.

WX Registers

Start Register is made up of either...

Local IO   0USW

- U expansion Unit
- S Slot number
- W Word number

Remote IO MRSW

- M Remote Master unit
- R Remote slave unit
- S Slot number
- W Word Number

Where bit access is required the bits are packed such that the first bit number is given by 16 x W (word number) hence reading WX0020 gives access to bits X200 to X215...

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
X215	X214	X213	X212	X211	X210	X209	X208	X207	X206	X205	X204	X203	X202	X201	X200

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WY Registers

As WX registers

TC Registers

Access given to the 256 timer counter registers. No distinction is drawn between the various timer and counter types available.

WL Registers

Access the link word block indicated. Start register is entered in hexadecimal. When accessing bits the bit number is omitted and the bits are packed at the Operator Station in the same manner as are WM registers.

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CONNECTING AN OPERATOR STATION
A Hitachi H Series PLCs

TIU

**15 Pin Male
D type (Rear)**

+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

TIU 100/110

TIU
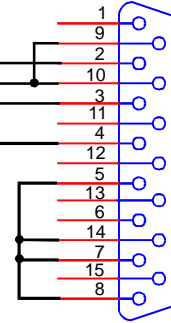
**15 Pin Male
D type (Rear)**

TX 485/422+	1
TX 485/422-	2
RX 485/422+	3
RX 485/422-	4
TX RS232	5
0V (GND)	6
RX RS232	7
SHIELD	8

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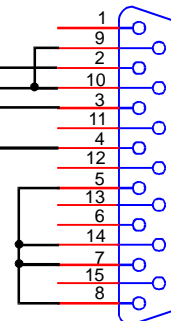
TIU 50/101/102/111/112/20X

Pin 8: This pin selects 19200 Baud (as shown)
or CPU DIP switch set baud rate.
Pin 8 to Pin 14 19200 Baud
Pin 8 to Pin 13 DIP switch Baud

CONNECTING AN OPERATOR STATION
A Hitachi Eh150 Series PLCs

TIU

EH150 Com1 / Com2
RJ45 Connector

+5V	1	1	RS1
TX 485/422+	2	2	DR1
TX 485/422-	3	3	RD1
RX 485/422+	4	4	Sd1
RX 485/422-	5	5	
TX RS232	6	6	
0V (GND)	7	7	
RX RS232	8	8	SG1
TX 4-20mA+	9		
TX 4-20mA-	10		
RX 4-20mA+	11		
RX 4-20mA-	12		
EARTH	13		

TIU 100/110

1 2 3 4 5 6 7 8
VIEWED FROM
REAR OF PLUG

TIU

EH150 Com2 Only
RJ45 Connector

TX 485/422+	1	1	RS1
TX 485/422-	2	2	DR1
RX 485/422+	3	3	RD1
RX 485/422-	4	4	SD1
TX RS232	5	5	
0V (GND)	6	6	
RX RS232	7	7	+5V
SHIELD	8	8	SG1

SHIELD

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