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## Application Note for Using the Operator Station HE500TIU050/10X/11X/20X with the Danfoss VLT Servo Drive

### Protocol File Name

HE500TIU050 = VLTServo\_R?.0xx  
HE500TIU1xx = VLTServo\_R?.1xx  
HE500TIU2xx = VLTServo\_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.

The Horner APG VLTServo protocol currently supports : -

- Parameters (Read and Write)
- Status (Read Only) (a subset of all Status Words)

## Serial Port Format

Care should be taken to match both ends of the link for baud rate and parity. The default setting for the HE500TIU100 being 9600 baud with eight data bits, one stop bit and no parity. In addition ensure that the VLTServo nodes connected have handshaking lines disabled.

These settings are intended as a guide and are correct at time of writing. Refer to your VLTServo documentation for further details and modifications regarding configuring the RS485 Option port on the device to which the HE500TIU100 is to be connected.

## VLT Communications Mode

The VLT servo communications mode must be set for...

- ✓ No Handshake
- ✓ Block Check Character Enabled
- ✓ End Sign Of Server Reply = Cr Lf >
- ✓ Servo Reply Without Preceding Address...

Hence the options for parameter p196 are...

	No Parity	Odd Parity	Even Parity
No Timeout Supervision	8	10	14
With Timeout Supervision	24	26	30

## Node Address.

The RS485 node address for the drive is specified in parameter 194

The TIU Series supports three modes of connection to VLTServo systems.

1:1 via RS232

In the TIU configuration package serial port settings set the node address to zero. The address is omitted from the communication packet and the connection can be made direct in through the RS232 port on the Servo drive.

1:1 via RS485

When connecting to a single drive via RS485, set the node address on the communications setup page, and specify target registers directly.

1:N via RS485

In order to connect to a network of VLT Servo drives select Network Mode Enable in the communications setup page, and specify target node directly when specifying the location.

## Baud Rate

The VLT servo RS485 baud rate is specified in P195.

The Danfoss VLTServo Protocol gives the TIU Series access to the Danfoss VLTServo Range. It allows the user to read and write the parameters and read a subset of the status registers of the drive. The protocol supports multi station operation allowing a single TIU to connect to a network of up to 31 drives.

## Data Types Supported

Release 1.02 of the protocol provides support only for fixed decimal point integer values.

All values read and written to the drive will have a fixed, predefined decimal point position which will automatically be inserted when writing to a specified register, and removed when reading a specified register.

It is anticipated that in the future releases of the protocol support will be made for accessing all Danfoss floating point format registers.

### Parameter Multipliers

For parameters, the following multipliers are utilised...

#### **X 100**

Parameters

1,  
10, 11, 12, 13,  
23, 24, 25, 26, 27,  
30, 31, 32, 33, 35, 36, 37, 38, 39  
75, 76, 77, 78, 79  
80, 81, 82, 83, 84, 85, 86, 87, 88, 89,  
91, 92, 95, 96, 97, 98, 99

eg if parameter 1 contains 12.34 the value read will be 1234

#### **X10000**

Parameters

21, 22

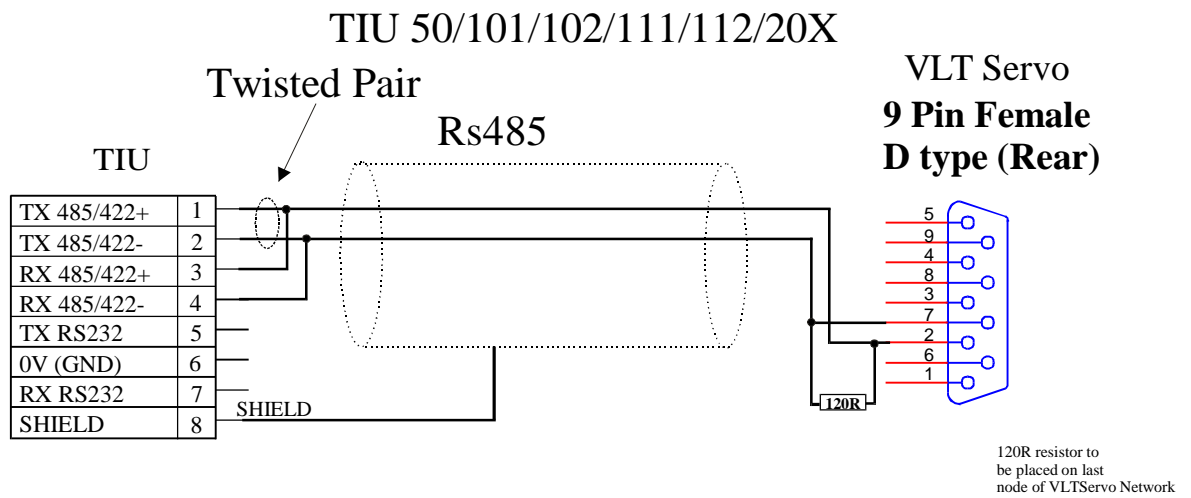
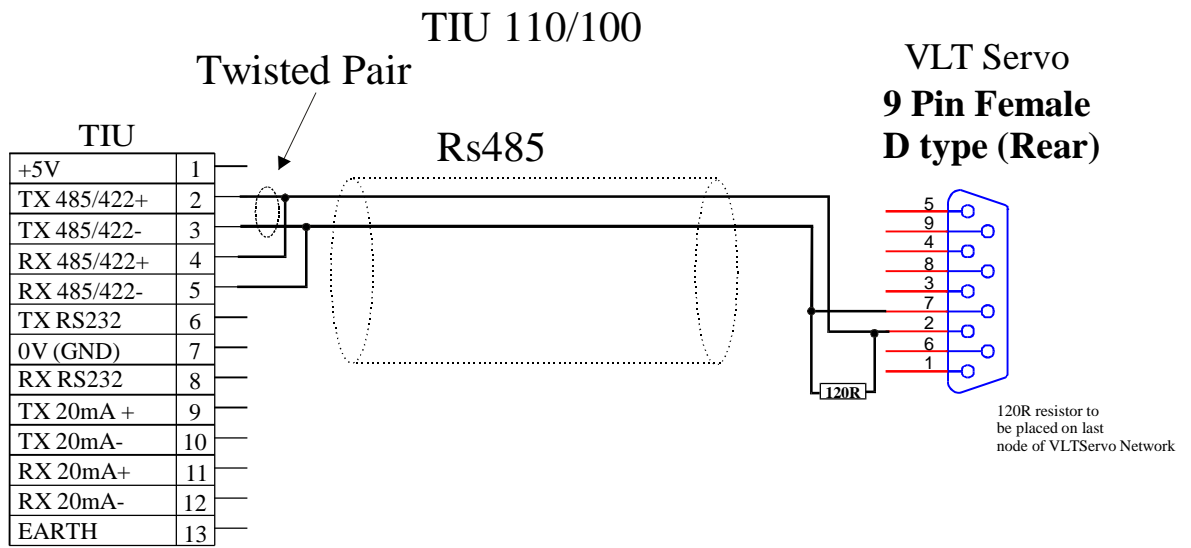
All Other Parameters are treated as integers

## Status Register Multipliers

Status Registers are given the following multipliers...

Status Register	Function	Multiplier
1	Actual Position	100
2	Target Position	100
3	Tracking Error	100
4	Speed	1000
5	Torque	1
6	Temperature	1
7	Control Voltage	1
8	Power Voltage	1
9	Proceed Course	1
10	Operating Hours	10
11	Repeat Counter	1
12	Encoder Position	100
13	Optimisation Display (1)	1000
14	Optimisation Display (2)	100
15	Status Monitor	10000000

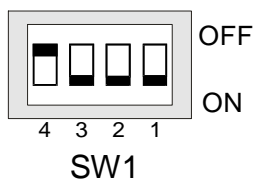
# CONNECTING THE OPERATOR STATION TO THE DANFOSS VLT SERVO DRIVE



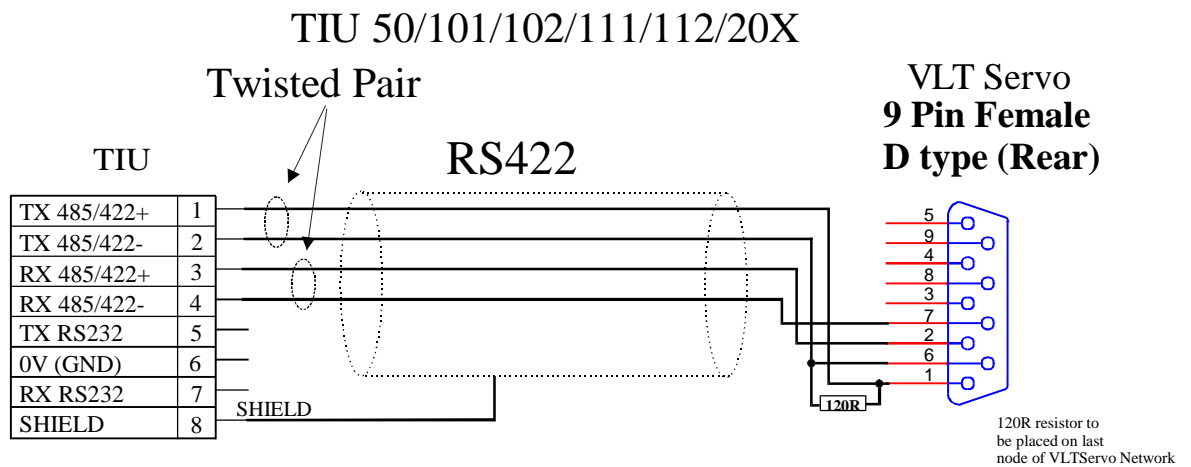
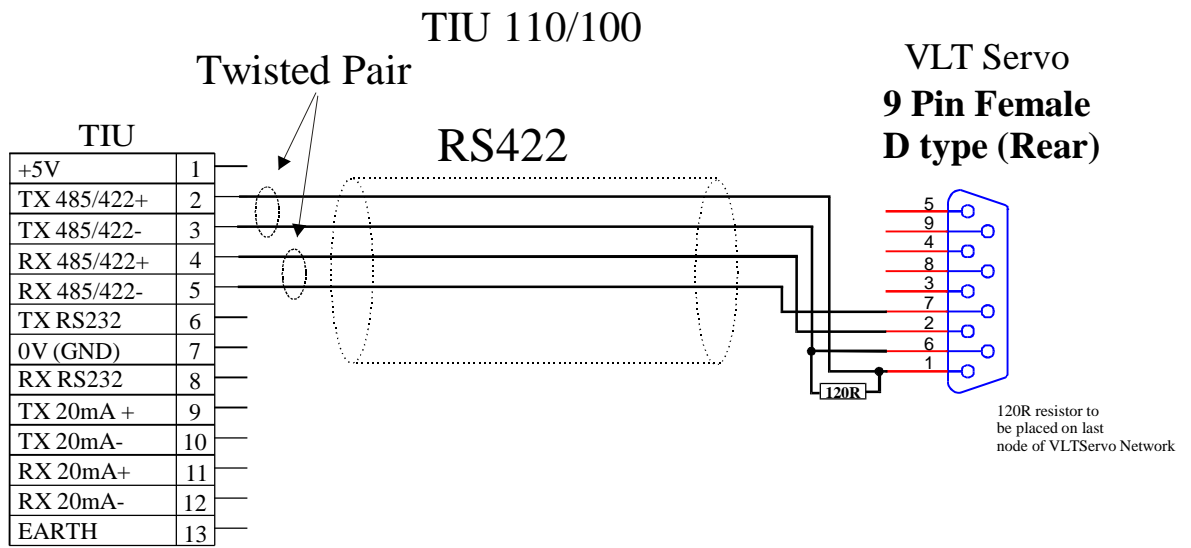
Configuration Bank		
Switch	ON	OFF
1	Pull-up	No Pull-up
2	120 termination	No termination
3	Pull-down	No Pull-down
4	Reserved for future use	

NOTE: Switch 1 and 3 must be used together.

Cable Screened Twisted Pair Beldon 9501  
One Pair Tx & RX Data



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Cable Screened Twisted Multipair Beldon 9502  
One Pair Tx Data  
One Pair Rx Data

