

CONTROL AND MODBUS COMMUNICATION

APPENDIX TO THE VTS5000 (SYv2) MANUAL ITEMS AS FOLLOW:

| Index Number | Description | Model |
|---------------|-------------------------|----------------|
| 1-2-1208-5032 | FC 11 3PH 380-480V HD | VTS5000-011G-4 |
| 1-2-1208-5029 | FC 5,5kW 3PH 3~400V VFD | VTS5000-5R5P-4 |
| 1-2-1208-5030 | FC 7,5kW 3PH 3~400V VFD | VTS5000-7R5P-4 |
| 1-2-1208-5031 | FC 11kW 3PH 3~400V VFD | VTS5000-011P-4 |



THE FOLLOWING MANUAL ASSUMES GOOD KNOWLEDGE OF TECHNICAL DOCUMENTATION INCLUDED WITH THE AIR HANDLING UNIT (AHU). THIS MANUAL CONSIDERS ONLY THE CONTROL AND COMMUNICATION CIRCUITS. THE INSTALLATION OF THE FREQUENCY CONVERTER AND INSTALLATION OF MAINS AND MOTOR CABLES SHOULD BE DONE ACCORDING TO THE VTS5000 MANUAL.

1. FOR ALL CONFIGURATIONS SET THE COMMON PARAMETER LIST

| Parameter | Code | Value | Comments |
|----------------------------------|-------|-------|---|
| Maximum frequency | F0.15 | 100 | - |
| Upper limit frequency | F0.16 | 100 | - |
| Lower limit frequency | F0.17 | 20 | - |
| Acceleration time | F0.19 | 45 | Recommended - 45 sec. |
| Deceleration time | F0.20 | 45 | Recommended - 45 sec. |
| Motor rated power | F2.01 | * | - |
| Motor rated frequency | F2.02 | 50 | - |
| Motor rated speed | F2.03 | * | - |
| Motor rated voltage | F2.04 | * | 0~999V |
| Motor rated current | F2.05 | * | Scale: 0.1 A |
| V / F curve setting | F5.00 | 4 | Square curve |
| Input terminal X3 function | F7.02 | 9 | Normally close input for external fault |
| Motor overload protection factor | FA.01 | 100% | 20.0%~120.0% |

* - as per motor data

2. CONFIGURATIONS WITHOUT VTS CONTROLS

2.1 Local control using integrated control panel

Set additional parameters:

| Parameter | Code | Value | Comments |
|---|-------|-------|---|
| Start signal selection | F0.06 | 0 | Operation panel (FWD/REV/STOP) |
| Main frequency source selection | F0.07 | 9 | Local keypad potentiometer setting mode |
| AI1 input corresponding physical quantity | F6.00 | 0 | Speed command (output freq., -100.0%~100.0%) |
| AI1 input lower-limit | F6.01 | 0.00 | 0.00V/0.00mA~10.00V/20.00mA |
| AI1 lower limit corresponding physical quantity set | F6.02 | 0.0% | -200.0%~200.0% note : range is relevant to F6.00 |
| AI1 input upper limit current | F6.03 | 10.0 | 0.00V/0.00mA~10.00V/20.00mA |
| AI1 upper limit corresponding physical quantity setting | F6.04 | 100% | -200.0%~200.0% note : range is relevant to F6.00 |

Use the RUN and STOP/RST buttons to control the drive

Use buttons to set frequency

2.2 Remote control with three speeds

Set additional parameters:

| Parameter | Code | Value | Comments |
|---------------------------------|-------|-------|----------------------------|
| Start signal selection | F0.06 | 1 | I/O terminal |
| Main frequency source selection | F0.07 | 7 | Multi-speed |
| SET multi function terminal X4 | F7.03 | 15 | Multi-speed selector bit 1 |
| SET multi function terminal X5 | F7.04 | 16 | Multi-speed selector bit 2 |
| SET multi function terminal X6 | F7.05 | 17 | Multi-speed selector bit 3 |
| Multi-speed 1 (speed 1) | F9.07 | * | 20 – 100Hz |
| Multi-speed 3 (speed 2) | F9.09 | * | 20 – 100Hz |
| Multi-speed 7 (speed 3) | F9.13 | * | 20 – 100Hz |

* - as per user preferences

Wire the I/O terminal of the inverter according to the figure below:

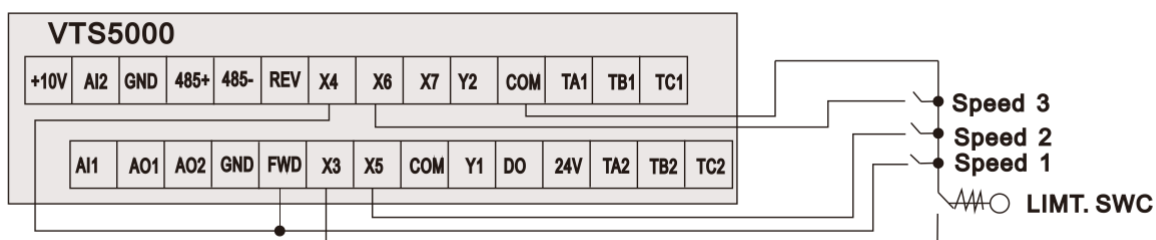


Figure 1

Use FWD/X4/X5/X6 inputs to set desired drive function (1=on,0=off)

| | |
|-------------------------|----------------|
| 0000 = STOP | - |
| 1100 = START, 1ST SPEED | Value is F9.07 |
| 1110 = START, 2ND SPEED | Value is F9.09 |
| 1111 = START, 3RD SPEED | Value is F9.13 |

3. EXHAUST UNIT WITH VTS CONTROL SYSTEM

Set additional parameters:

| Parameter | Code | Value | Comments |
|---------------------------------|-------|-------|----------------------------|
| Start signal selection | F0.06 | 1 | I/O terminal |
| Main frequency source selection | F0.07 | 7 | Multi-speed |
| SET multi function terminal X4 | F7.03 | 15 | Multi-speed selector bit 1 |
| SET multi function terminal X5 | F7.04 | 16 | Multi-speed selector bit 2 |
| SET multi function terminal X6 | F7.05 | 17 | Multi-speed selector bit 3 |
| Multi-speed 1 (speed 1) | F9.07 | * | 20 – 100Hz |
| Multi-speed 3 (speed 2) | F9.09 | * | 20 – 100Hz |
| Multi-speed 7 (speed 3) | F9.13 | * | 20 – 100Hz |

* - as per user preferences

Wire the I/O terminal of the inverter according to the figure below:

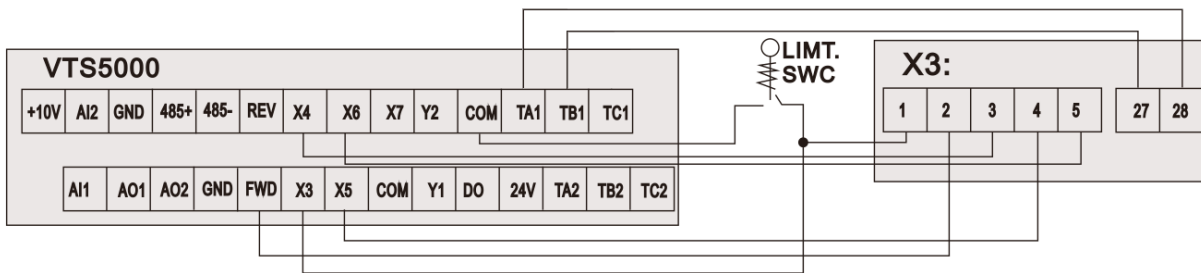


Figure 2a

Use FWD/X4/X5/X6 inputs to set desired drive function (1=on,0=off)

| | |
|-------------------------|----------------|
| 0000 = STOP | - |
| 1100 = START, 1ST SPEED | Value is F9.07 |
| 1110 = START, 2ND SPEED | Value is F9.09 |
| 1111 = START, 3RD SPEED | Value is F9.13 |

NOTE! If the AHU is equipped with more than one fan, follow below figure for proper cabling:

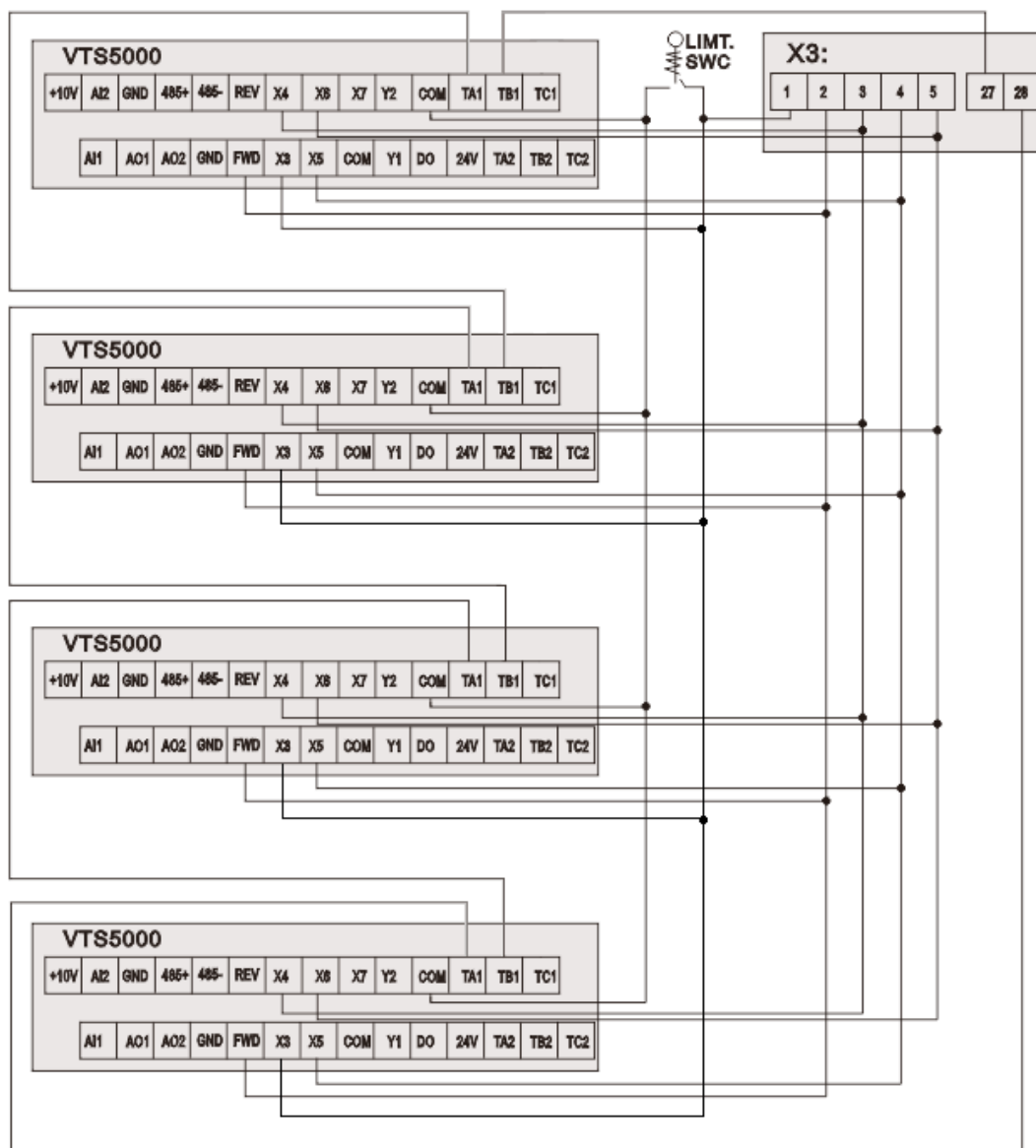


Figure 2b

4. AHU WITH VTS CONTROLS TYPE uPC3

NOTE! To allow control of the VTS5000 frequency drivers, set VFD type to SYv2 in uPC3 settings (HMI Advanced mask I03).

Set additional parameters:

| Parameter | Code | Value | Comments |
|---------------------------------------|----------------------|-------|-------------------------------------|
| Start signal selection | F0.06 | 2 | RS485 communication |
| Main frequency source selection | F0.07 | 2 | RS485 communication |
| Action for RS485 communication error | FA.24 | 0 | Protection action and coast to stop |
| Communication time-out detection time | FA.25 | 30 | 30 sec. |
| Converter's address in Modbus Network | FB.01 | 2 | Air-supply fan |
| | | 3 | Air-exhaust fan |
| | | 5 | Air-supply fan No.2 / redundant |
| | | 7 | Air-supply fan No.3 |
| | | 9 | Air-supply fan No.4 |
| | | 6 | Air-exhaust fan No.2/ redundant |
| | | 8 | Air-exhaust fan No.3 |
| 10 | Air-exhaust fan No.4 | | |
| Baudrate | FB.02 | 2 | 9600 |
| Parity and stop bit | FB.03 | 0 | 8N1 |

Wire the I/O terminal of the inverter according to the figure below:

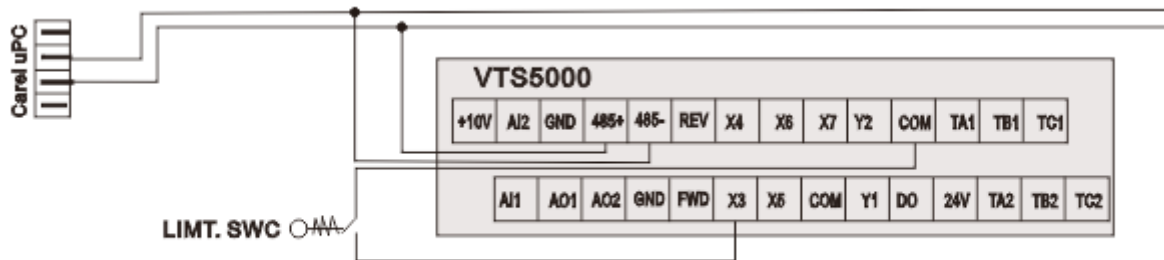


Figure 3

NOTE! To restore VTS5000 to default settings set FE.13=2 and switch off the power supply.