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:

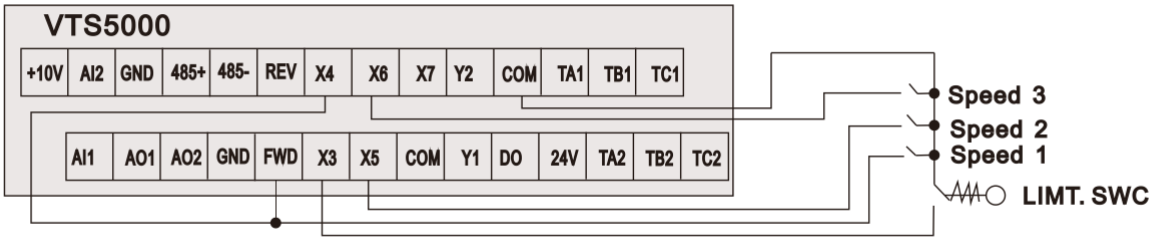

Figure 1

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:

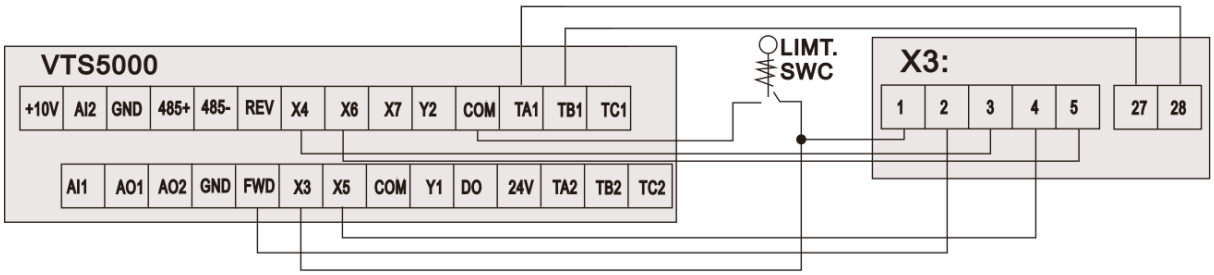

Figure 2a

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:

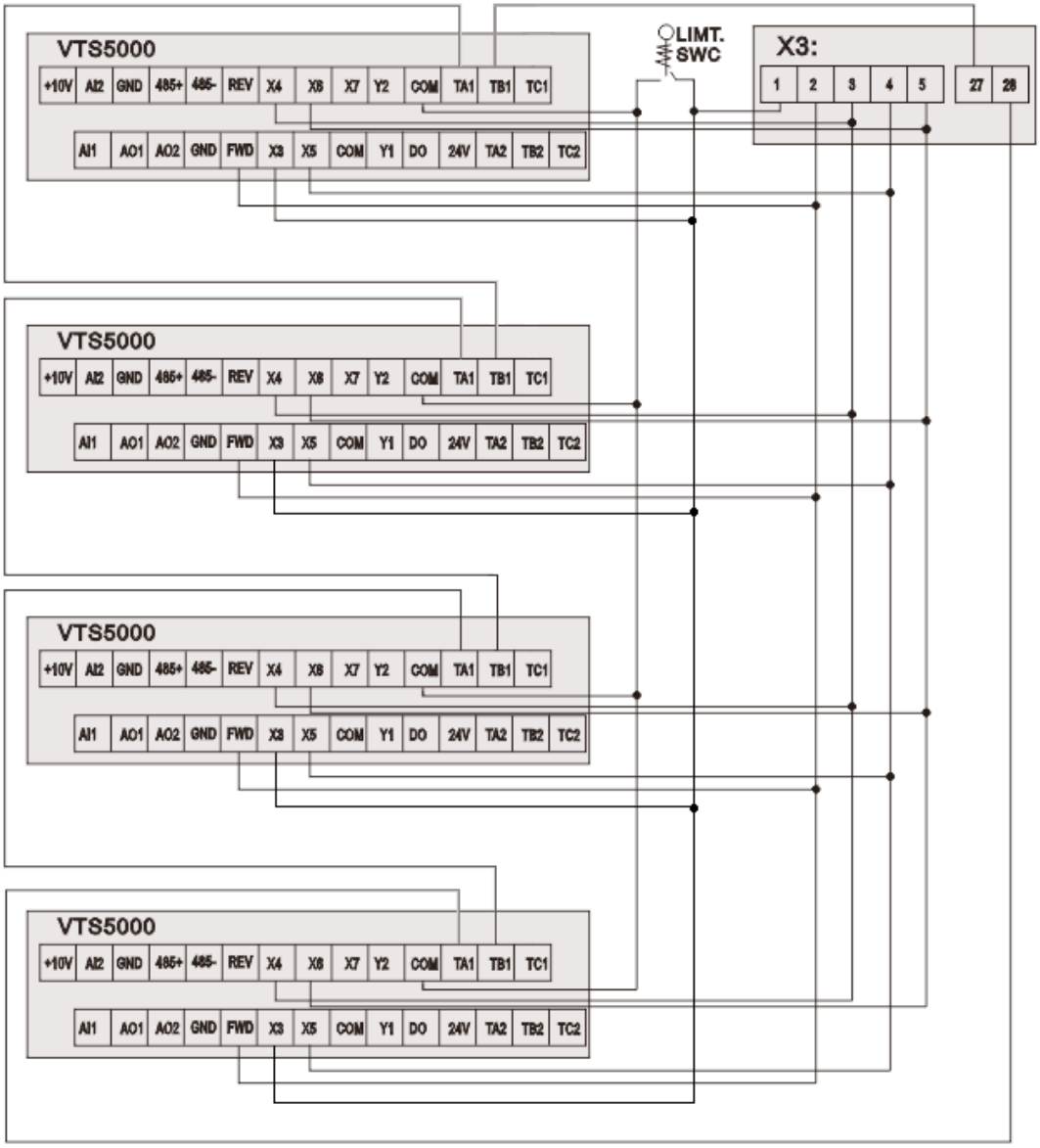

Figure 2b

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:

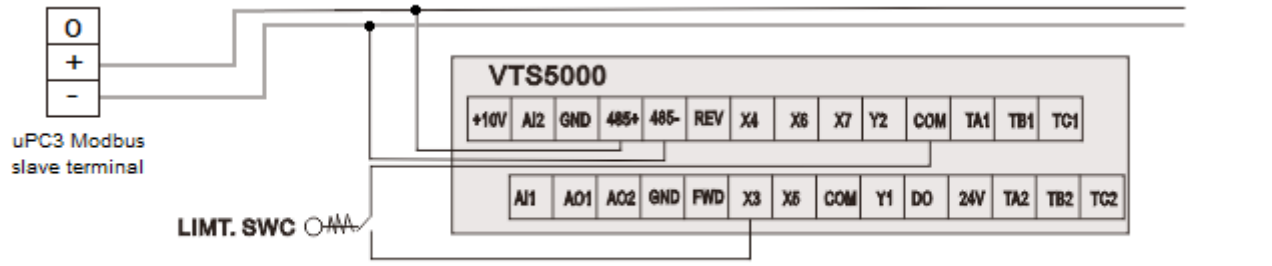

Figure 3

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