

CONTROL AND MODBUS COMMUNICATION

APPENDIX TO THE VTS5000 MANUAL ITEMS AS FOLLOW:

Index Number	Description	Sanyu Customized 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 output frequency	F0.15	100	
Acceleration time 1	F0.19	45	recommended 45 sec.
Deceleration time 1	F0.20	45	recommended 45 sec.
Rated motor frequency	F2.02	50	
V/F curve setting	F5.00	4	square curve
Motor overload protection	FA.00	1	1 common motor 2, variable frequency motor
Motor overload protection factor	FA.01	100%	20.0%~120.0%
Motor's rated speed	F2.03	*	
Motor's rated voltage	F2.04	380	0~999V
Motor's rated current	F2.05	*	Scale: 0.1 A
No-load current of asynchronous motor	F2.10	**	Scale: 0.1 A
Input terminal X3 function	F7.02	8	Normally open input for external fault

2. CONFIGURATIONS WITHOUT VTS CONTROLS

2.1 Local control using integrated control panel

Set additional parameters:

Parameter	Code	Value	Comments
Operation command channel	F0.06	0	operation panel run command channel
Main frequency source A	F0.07	9	panel Potentiometer
Upper limit frequency	F0.16	100	【F0.17】 ~ 【F0.15】
Lower limit frequency	F0.17	20	0.00Hz~ 【F0.16】
Switch AI jumper to I to choose analog current input			
AI1 input corresponding physical quantity	F6.00	0	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
ACI 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
Operation command channel	F0.06	1	terminal run command channel
Main frequency source A	F0.07	7	multispeed running setting
Input terminal X4 function	F7.03	15	multi-speed selection 1
Input terminal X5 function	F7.04	16	multi-speed selection 2
Input terminal X6 function	F7.05	17	multi-speed selection 3
Multi-speed freq. 1	F9.07	*	20 – 100Hz
Multi-speed freq. 2	F9.08	*	20 – 100Hz
Multi-speed freq. 3	F9.09	*	20 – 100Hz

Wire the I/O terminal of the VTS5000 inverter according to the Figure 1

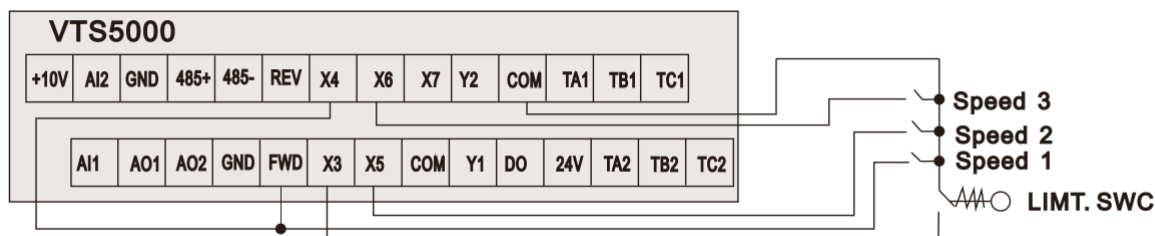


Figure 1

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 F9.07 +F9.08
1111 = START, 3RD SPEED	Value is F9.07+F9.08+F9.09

3. EXHAUST UNIT WITH VTS CONTROL SYSTEM

Parameter	Code	Value	Comments
Operation command channel	F0.06	1	terminal run command channel
Main frequency source A	F0.07	7	multispeed running setting
Input terminal X4 function	F7.03	15	multi-speed selection 1
Input terminal X5 function	F7.04	16	multi-speed selection 2
Input terminal X6 function	F7.05	17	multi-speed selection 3
Multi-speed freq. 1	F9.07	*	20 – 100Hz

Multi-speed freq. 2	F9.08	*	20 – 100Hz
Multi-speed freq. 3	F9.09	*	20 – 100Hz

Wire the I/O terminal and the terminal X3 of the control box CG according to the Figure 2a

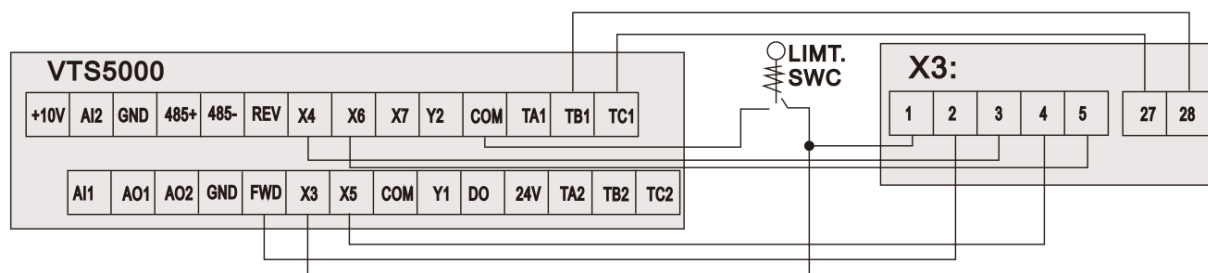


Figure 2a

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 F9.07 +F9.08
1111 = START, 3RD SPEED	Value is F9.07+F9.08+F9.09

NOTE! If the AHU is equipped with more than 1 fan, follow Figure 2b for proper cabling.

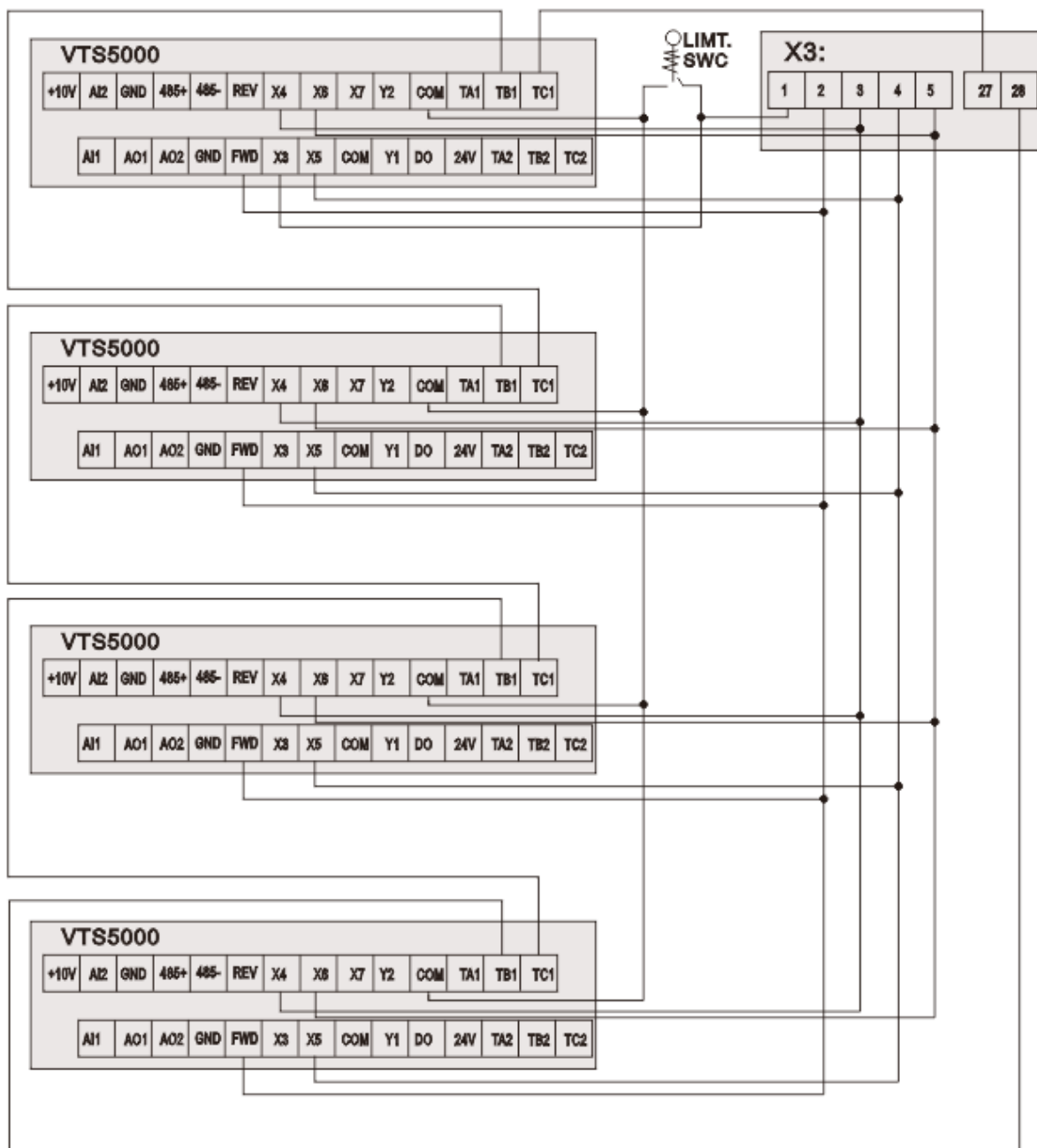


Figure 2b

4. AHU WITH VTS CONTROLS TYPE: VS ... CG ACX36 EVO ... or VS ... CG uPC ...

- Set additional parameters:

Parameter	Code	Value	Comments
Operation command channel	F0.06	2	2: communication run command channel
Main frequency source A	F0.07	2	2: digital set 3 (communication set)
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
Action of RS485 communication error	FA.24	0	0 : protection action and coast to stop 1 : alarm and maintain the current operation 2 : alarm and stop according to the preset mode
RS485 communication timeout detect	FA.25	30	30 sec.

Communication parameters as below: Modbus RS-485, 9600 8N1,

Wire the communication terminal of the VTS5000 inverter according to the Figure 3

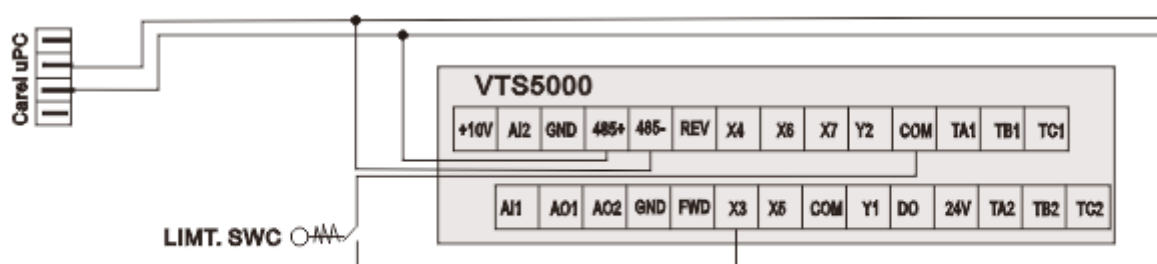


Figure 3

CAUTION! It is recommended to apply an automatic procedure for the converters' configuration, which is available in advanced options of the HMI Advanced panel.

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