CONTROL AND MODBUS COMMUNICATION

APPENDIX TO THE VTS2000   MANUAL   ITEMS AS FOLLOW:

Index Number	Description	Sanyu Customized Model
1-2-1208-5028	FC 4kW 3PH 3~400V VFD	VTS2000-004G-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 VTS2000 MANUAL.

1. FOR ALL CONFIGURATIONS SET THE COMMON PARAMETER LIST

Parameter	Code	Value	Comments
Acceleration time	F0.10	45	recommended 45 sec.
deceleration time	F0.11	45	recommended 45 sec.
Maximum output frequency	F0.04	100	
V / F curve setting	F0.13	1	square curve
Motor overload protection	F5.00	1101	active
Motor rated voltage	F4.00	380V	
Motor rated current	F4.01	*	Scale: 0.1 A
Motor rated speed	F4.02	*	
Motor rated frequency	F4.03	50	
Motor no-load current	F4.05	**	Scale: 0.1 A
Input terminal X2 function	F2.14	9	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
Running command channel selection	F0.02	0	Panel command channel
Frequency setting selection	F0.03	0	Panel potentiometer
Upper limit frequency	F0.05	100	
Lower limit frequency	F0.06	20	
ACI input lower limit current	F2.04		0.00～【F2.05】
ACI input upper limit current	F2.05		【F2.04】～20.00mA
ACI lower limit corresponding setting	F2.06		-100.0%～100.0%
ACI upper limit corresponding setting	F2.07		

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
Running command channel selection	F0.02	1	Terminal command channel
Frequency setting selection	F0.03	5	ACI setting (0 - 20mA)
ACI input lower limit current	F2.04	0.00mA	0.00～【F2.05】
ACI input upper limit current	F2.05	20.00mA	【F2.04】～20.00mA
ACI lower limit corresponding setting	F2.06	0.00%	-100.0%～100.0%
ACI upper limit corresponding setting	F2.07	100.00%	
SET multi function terminal X3	F2.15	13	Multi-speed selection S1
SET multi function terminal X4	F2.16	14	Multi-speed selection S2
SET multi function terminal X5	F2.17	15	Multi-speed selection S3
Multi-speed frequency 1	F1.17	*	20 – 100Hz
Multi-speed frequency 2	F1.18	*	20 – 100Hz
Multi-speed frequency 3	F1.19	*	20 – 100Hz

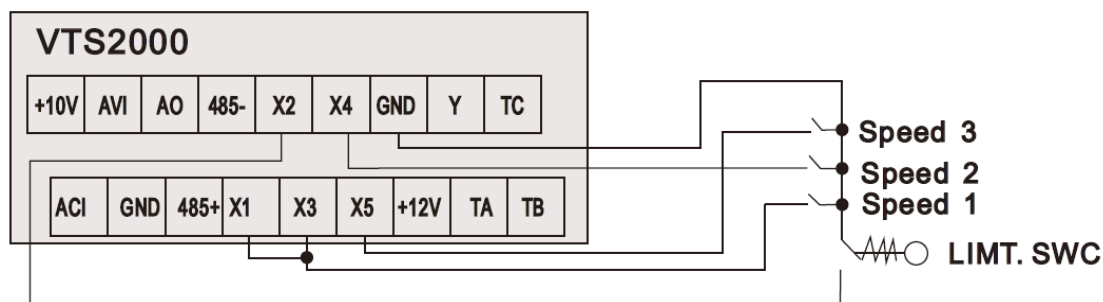Wire the I/O terminal of the VTS2000 inverter according to the Figure 1

Figure 1

Use X1/X3/X4/X5 inputs to set desired drive function (1=on,0=off)

0000 = STOP	
1100 = START, 1ST SPEED	Value is F1.17
1110 = START, 2ND SPEED	Value is F1.17+F1.18
1111 = START, 3RD SPEED	Value is F1.17+F1.18+F.19

3. EXHAUST UNIT WITH VTS CONTROL SYSTEM

Parameter	Code	Value	Comments
Running command channel selection	F0.02	1	Terminal command channel
Frequency setting selection	F0.03	5	ACI setting (0 - 20mA)
ACI input lower limit current	F2.04	0.00mA	0.00～【F2.05】
ACI input upper limit current	F2.05	20.00mA	【F2.04】～20.00mA
ACI lower limit corresponding setting	F2.06	0.00%	-100.0%～100.0%
ACI upper limit corresponding setting	F2.07	100.00%	

SET multi function terminal X3	F2.15	13	Multi-speed selection S1
SET multi function terminal X4	F2.16	14	Multi-speed selection S2
SET multi function terminal X5	F2.17	15	Multi-speed selection S3
Multi-speed frequency 1	F1.17	*	20 – 100Hz
Multi-speed frequency 2	F1.18	*	20 – 100Hz
Multi-speed frequency 3	F1.19	*	20 – 100Hz

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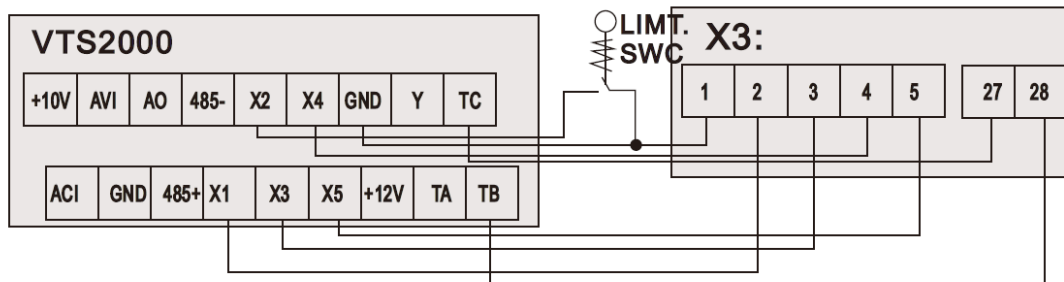

Figure 2a

Use X1/X3/X4/X5 inputs to set desired drive function (1=on,0=off)

0000 = STOP	
1100 = START, 1ST SPEED	Value is F1.17
1110 = START, 2ND SPEED	Value is F1.17+F1.18
1111 = START, 3RD SPEED	Value is F1.17+F1.18+F.19

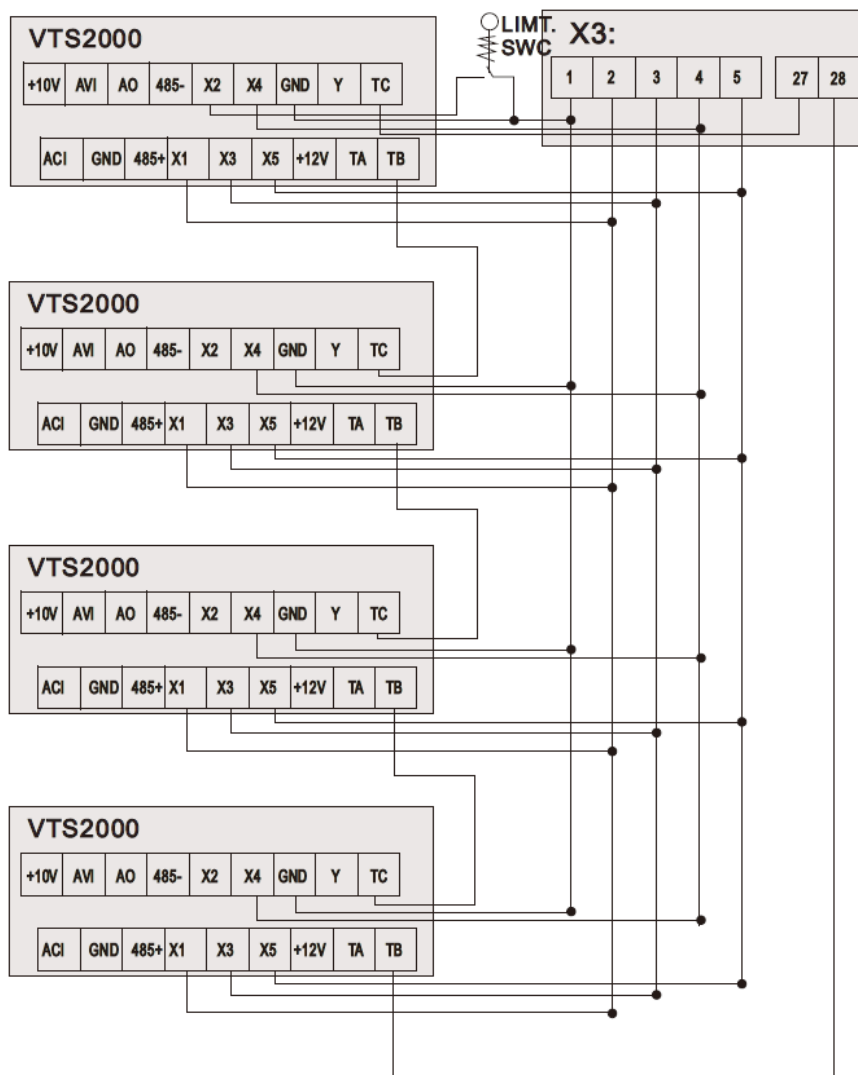NOTE! If the AHU is equipped with more than 1 fan, follow Figure 2b for proper cabling.

Figure 2b

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

- Set additional parameters:

Parameter	Code	Value	Comments
Running command channel selection	F0.02	2	Communication command channel
Frequency setting selection	F0.03	6	Communication setting
Converter's address in Modbus Network	F6.00	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
Reaction on communication time-out		default	Stop
Communication time-out detection time	F6.02	30	30 sec.

Communication parameters as below: Modbus RS-485, 9600 8N1,
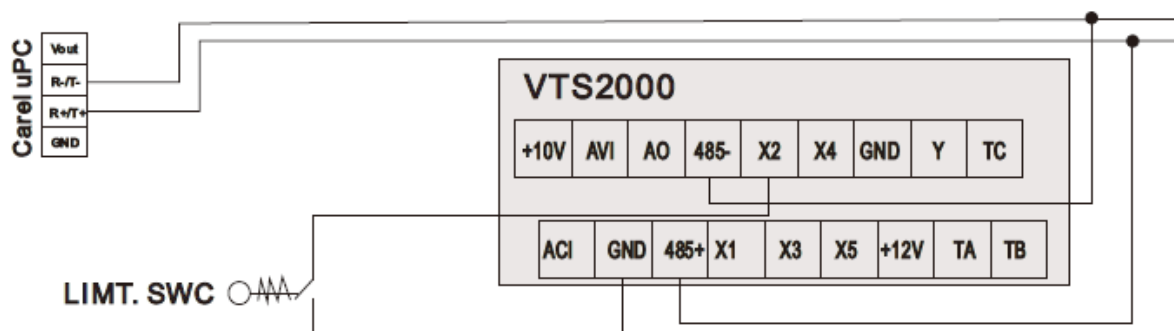Wire the communication terminal of the VTS2000 inverter according to the Figure 3

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 VTS2000 to default settings set **F8.03 = 1** and switch off the power supply.