



**CONTROL AND MODBUS COMMUNICATION**  
**APPENDIX TO THE LG iG5A MANUAL**



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 LG iG5A MANUAL.

**1. FOR ALL CONFIGURATIONS SET THE COMMON PARAMETER LIST**

Parameter	Code	Value	Comment
Ramp up time	ACC	45	recommended 45 sec.
Ramp down time	dEc	45	recommended 45 sec.
Max. operation frequency	F21	100	
Rated motor frequency	F22	50	
U/f ratio	F30	1	square char.
Motor overload protection	F50	1	active
Number of motor poles	H31	*	2-12
Rated motor slip	H32	**	Scale: 0.01 Hz
Rated motor current	H33	*	Scale: 0.1 A
Motor idle run current	H34	**	Scale: 0.1 A
Rotation speed conversion factor	H74	**	Scale: 1
P5 function: external trip B (EtB)	I21	19	

**2. CONFIGURATIONS WITHOUT VTS CONTROLS**

**2.1. Local control using integrated control panel**

- Set additional parameters:

Parameter	Code	Value	Comment
Way of Control	DRV	0	Local via the keypad
Frequency setting method	Frq	0	Local via potentiometer
Frequency corresponding to I 2	I3	20	
Frequency corresponding to I 4	I5	100	

- 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	Comment
Way of Control	DRV	1	
Frequency setting method	Frq	4	
Constant speed value 1 (speed I)	St1	*	20 – 100Hz
Constant speed value 3 (speed II)	St3	*	20 – 100Hz
Constant speed value 7 (speed III)	I33	*	20 – 100Hz

- Wire the I/O terminal of the iG5A inverter according to the **Figure 1**
- Use P1/P6/P7/P8 inputs to set desired drive function  
0000 = STOP  
1100 = START, 1<sup>ST</sup> SPEED  
1110 = START, 2<sup>ND</sup> SPEED  
1111 = START, 3<sup>RD</sup> SPEED

**3. EXHAUST UNIT WITH VTS CONTROL SYSTEM**

- Set additional parameters:

Parameter	Code	Value	Comment
Way of Control	DRV	1	
Frequency setting method	Frq	4	
Constant speed value 1 (speed I)	St1	*	20 – 100Hz
Constant speed value 3 (speed II)	St3	*	20 – 100Hz
Constant speed value 7 (speed III)	I33	*	20 – 100Hz

- Wire the I/O terminal and the terminal X3 of the control box CG according to the **Figure 2a**
- The P1/P6/P7/P8 inputs force desired drive function  
0000 = STOP  
1100 = START, 1<sup>ST</sup> SPEED  
1110 = START, 2<sup>ND</sup> SPEED  
1111 = START, 3<sup>RD</sup> SPEED

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

\* Parameter values to be determined by the user

\*\* Parameter values to be calculated:

$$\text{motor\_rated\_slip} = (1 - \text{No\_of\_motor\_poles} \cdot \text{Motor\_rated\_speed} / 6000) \cdot 50\text{Hz}$$

$$\text{no\_load\_motor\_current} = 0,3 \text{ motor\_rated\_current}$$

$$\text{RPM\_conversion\_factor} = 1/60 \cdot \text{No\_of\_motor\_poles} \cdot \text{Motor\_rated\_speed}$$

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

**4.1. Manual configuration of the inverters**

- Set additional parameters:

Parameter	Code	Value	Comment		
Way of Control	DRV	3			
Frequency setting method	Frq	7			
Converter's address in Modbus Network	I60	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	I62	2	Stop
		Communication time-out	I63	30	30 sec.

- Wire the communication terminal of the iG5A inverter according to the **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 iG5A to default settings set H93 = 1 and switch off the power supply.

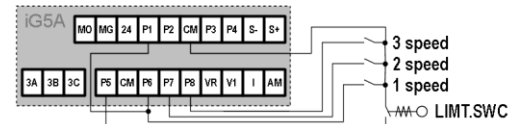


Figure 1

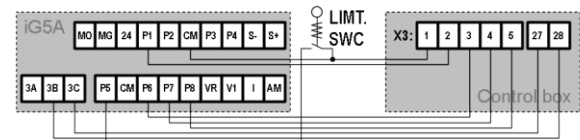


Figure 2a

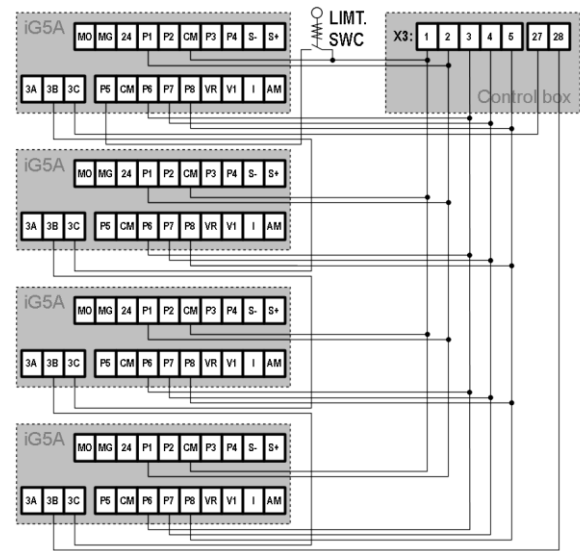


Figure 2b

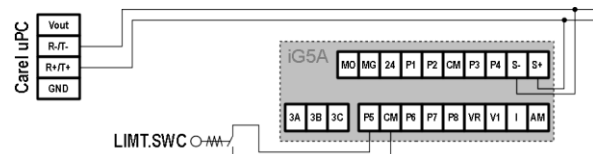


Figure 3