Venture Industries Sp. z o.o.

Configuration of basic parameters of inverters LS S100/G100 on fan example RF/6-630T

These guidelines are an addition to the operating instructions for the fan and the inverter itself, which should perform the connection activities qualified personnel. Other inverter models have different codes, and this material is based on the knowledge and configuration of the mentioned device types. Venture Industries Sp. z o. o. is not responsible for the consequences of incorrect configuration. In case of doubt, the user should contact contact the inverter manufacturer.

Inverter is used to regulate the motors. In order to control the fan operation, the motor data must be entered in the inverter and set the speed setting method and start/stop method. In this manual you will see an example for set speed for the terminals and start, stop from bistable button.

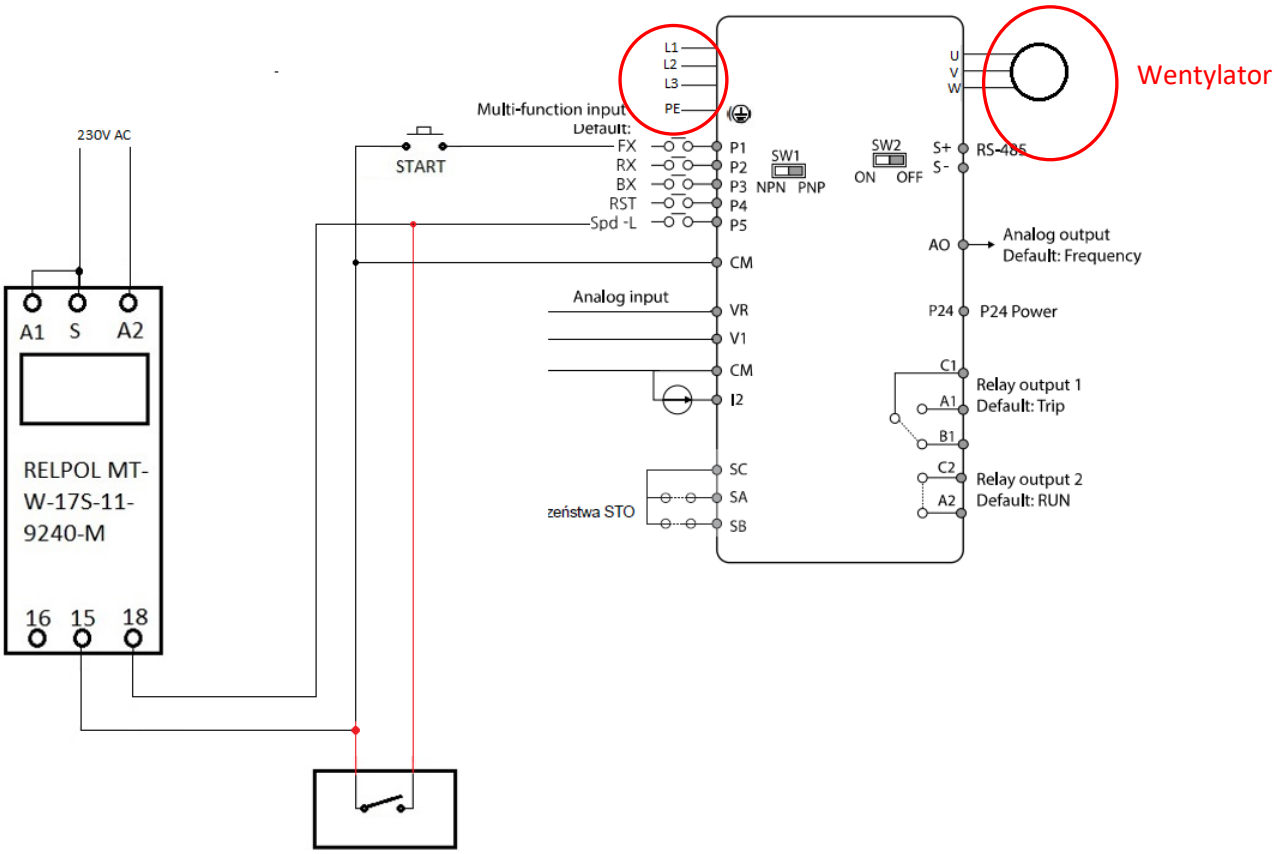
G100

S100

[Rys. 1] Inverter Panel

ATTENTION!
For safety reasons, the requirements in the original instructions must be observed for the S100/G100 frequency inverter.

1. Wiring diagram of connection inverter to electrical network and the fan to inverter



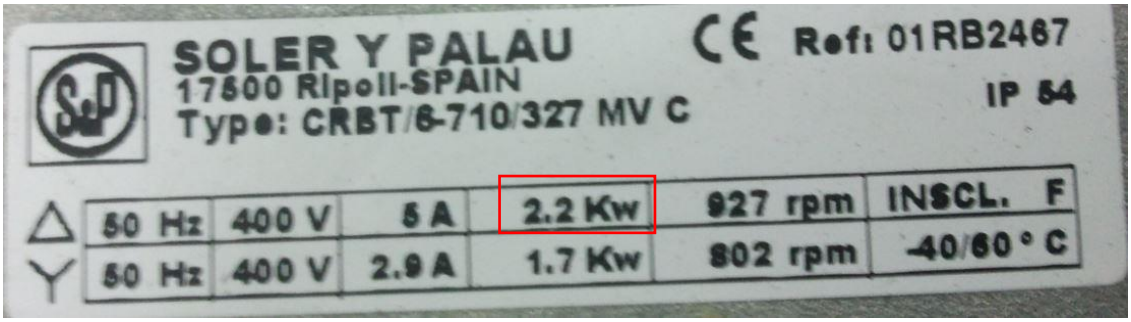
[Rys. 3] Wiring diagram of connection to regulate from gas detector and time relay (LS S100).

2. Introduction of inverter parameters

All parameters which we need, we can find in motor rating plate or commute in easy way (if the manufacturer did not supply them).

a) Rated power

dr-14	0h110E	Rated power of motor	0.2-22	Rated power o motor form rating plate. The power is assigned rated power of inverter.	
				0.2	0.2 kW
				~	~
				18.5	18.5 kW
				22	22 kW



In this case the power of motor is 2.2 kW so the parameter dr-14 should be set on 2.2.

b) Number of poles

bA-11	0h120B	Number of poles	2-12	Number of poles written from motor rating plate. This value inverter converts to display rotation speed.

If the number of poles is not specified by manufacturer on rating plate it can easily be counted according to the formula:

$$n_1 = \frac{60.f_1}{p}$$

p — number of poles

n_1 - synchronous speed

f_1 - current frequency

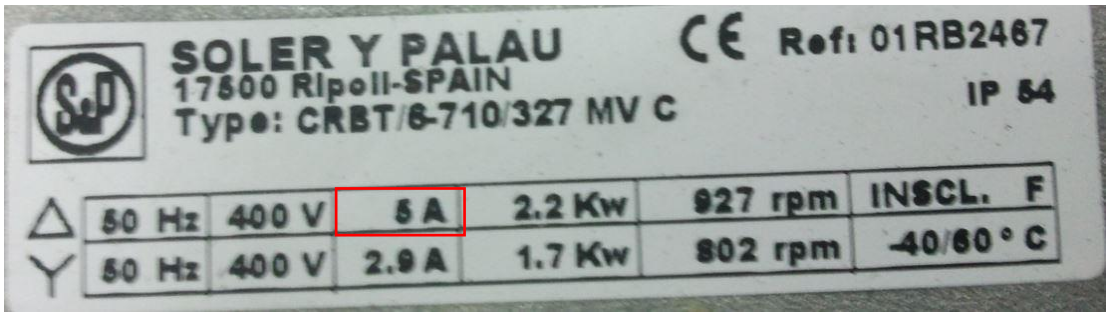
If we have rotation speed 927 rpm, we have to take 100 rpm because this is synchronous speed (without slip) according to the table below:

Number of poles *P*	1	2	3	4	5	6	8	10	12
Rotation speed (rpm)	3000	1500	1000	750	600	500	375	300	250

Transforming the formula to calculate *p* you can see that motor has 3 pairs of poles so 4 poles. This is the value of parameter bA-11 we set on 6.

a) Rated current

bA-13	0h120D	Rated current	1.0-150 [A]	Rated current from motor rating plate



For this motor with triangle connection, the rated current will be 5 A, so parameter bA-13 will be 5.

b) Motor current without load

bA-14	0h120E	Motor current without load	0.1-50 [A]	Motor current at rated speeds without load. In absence of data you should write 50% of bA-13parameter.

In this case parameter bA-14 we set on 2,5 (5 A / 2).

a) Setting characteristics.

bA-07	0h1207	Characteristic U/f	0:3	0	Liniear
				1	Square
				2	Stworzona przez użytkownika
				3	Square 2

For fans we use square characteristic.

a) Frequency

dr-20	0h1114	Maximum frequency	40-400[Hz]	Maximum frequency which can be obtained at the output of inverter. To this frequency are referred acceleration and braking times.

Maximum frequency of work during engine control is 50Hz.

b) Rated frequency

dr-18	0h1112	Base frequency	30-400[Hz]	Rated frequency of motor

Rated frequency of this motor is 50Hz so parameter dr-18 we set on 50.

c) Minimum frequency

dr-19	0h1113	Initial frequency	0-400[Hz]	Frequency from which inverter starts working.

Usually it is 25Hz so we should set this value.

d) Motor protection

Pr-17	0h1B11	Choice of electronic thermal protection	0-1	Choice of thermal motor protection.	
				0	No
				1	Yes

You should set Pr-17 parameter on 150% and F52 on 110%.

3. Engine control

1) Engine start/stop

Drv	Motor START/STOP Control mode	0-3	0	Start/Stop which i realized through buttons on inverter panel.	
			1	Terminals control mode	FX – Switching forward work RX – Switching backward work
			2		FX – Inverter work RX – Choice of work forw./back.
			3	RS 485 communication	

The value of parameter drv we set on 1 for output control.

2) Frequency setting method

Frq	Frequency setting method	0-7	0	Digital	Keyboard 1 After pressing the enter button you should set desired frequency and after next pressing the enter button, the inverter will has a new frequency
			1		Keyboard 2 After pressing the enter button you can smoothly adjust the frequency of the inverter with the up/down buttons.
			2	Analog	V1(1) Voltage control of terminal V1 in terms of -10[V]-10[V]
			3		V1(2) Voltage control of terminal V1 in terms of 0-10[V]
			4		I Current control of terminal I in terms of 4-20[mA]
			5		V1(1) + I Simultaneous control of terminal V1 i I
			6		V1(2) + I Simultaneous control of terminal V1 i I
			7		RS 485
			8		Up/down control

The frq parameter we set on 1 for the inverter panel regulation.

4. Work with gas detector

Setting input frequency for function P6 input (signal from gas detector) we set on 50 [Hz] (100% efficiency)

St1	A105	Step frequency 1	0-400 [Hz]	Setting step frequency 1 during multi-step work. You need to define used terminal P1-P8 to multi-step work (par. I17-I24 on 5)

Need to check on P5 input to which we connect gas detector is there value IN-69 set on 7 (default value).

IN-69	0h1545	Specify the multifunction input function P5	7	Speed-L

5. Conclusions

Correct reading and write the motor parameters to inverter memory will allow the fan of function properly. The above settings will allow for the user start and stop the fan by time relay. With the gas detector frequency of work is changes.

If there is ambiguity or need for another control of fan, please contact with technical department Venture Industries.

Uwagi końcowe :