

## Low frequency protection (C00.28=6920)

(If your software C00.28=6907, Function description unchanged)

Change of function code F21 to F14, like F21.XX → F14.XX )

### The significance of low frequency protection:

When the light intensity is not high on cloudy days or in the early morning and late evening, the solar panels produce very low conversion energy, resulting in low bus voltage and the machine will run at a low frequency. On the one hand, a motor running at low speed cannot do its job well, on the other hand, if it runs at low frequency for a long time it may cause the motor to heat up, etc. To avoid damage to the motor, we use low frequency protection.

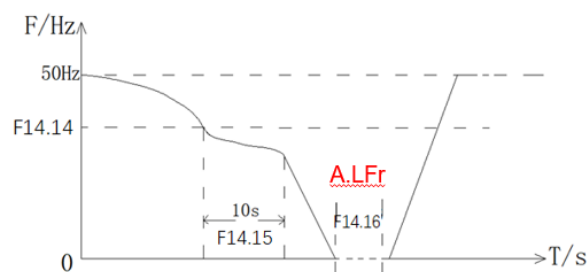
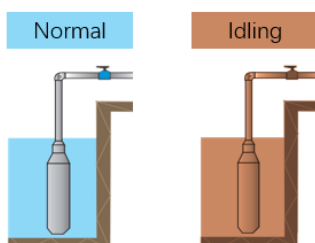
(当阴天光照强度不高或者清晨傍晚的时候，光伏板子产生转换的能量很低，导致母线电压较低，机器就会以一个低频的状态运行。一方面低速运行的电机无法很好的完成工作，另一方面如果长时间低频运行可能会导致电机发热等情况。为了避免对电机的损坏，我们使用低频保护。)

### Principle of detection:

The low frequency protection report must be due to the frequency drop caused by the reduction of the bus voltage, and at the same time drop to the set value after a sustained period of time before the report A.LFr. (Many customers test, with the mains connected to the inverter and then set the low frequency parameters, the frequency will be set very low but just do not report the fault, this is because your operating frequency is set by you, and not really due to the low bus voltage caused by the frequency (The low frequency fault reported must be triggered by low voltage)

(低频保护报故障必须是由于母线电压降低导致的频率下降，同时下降到设定值之后持续一段时间才会报 A.LFr。(很多客户测试的时候，用市电连接变频器然后设置好低频参数，将频率设定很低但是就是不报故障，这是由于你的运行频率是你设定的，并不是真正由于母线电压低导致的频率下降，所以报低频故障的情况必须是由低压引发的低频))

### Low frequency operation leads to insufficient head and idle motor operation



## Related parameter settings:

Function code number	Function code name	Set value range and definition	Factory setting	Instruction	Address
F21. 14	Low frequency protection detection frequency	0. 00Hz ~ 300. 00Hz	0. 00Hz	A.LFr displayed on alarm, F14.14 set to 0 to switch off low frequency protection	0xE0E
F21. 15	Low frequency protection detection time	0. 0sec~ 3000. 0sec	10. 0sec	Low frequency protection exit judgement time is related to F14.16	0xE0F
F21. 16	Automatic recovery time for low frequency protection	0. 0sec~ 3000. 0sec	10. 0sec	Low frequency protection does not increase the number of sleeps F14.16	0xE10

## Low frequency protection function logic:

1.1、A.LFr warning is reported after F21.15 low frequency protection detection time when the frequency converter is in MPPT regulation state and the output frequency is less than F21.14 low frequency protection detection frequency.

1.2、After the warning is reported, the frequency converter is decelerated or stopped freely according to the setting of F21.53 Decimal.

1.3、From the point where the warning is reported, after the F21.16 low-frequency protection automatic recovery time, the frequency converter starts running from the current frequency.

1.4、If the F21.14 low frequency protection detection frequency is set to 0, the low voltage protection is switched off.

1.5、Low frequency protection can still be triggered in the deceleration and stop state. After triggering the protection, it will stop according to the setting of F21.53 decimal, and will not resume operation again after stopping.

1.6、If the frequency is raised above the low frequency protection detection frequency during the low frequency protection detection time, the inverter will not report the low frequency protection warning, and each detection time is independent of each other and will not be accumulated.

(1.1、当变频器处于 MPPT 调节状态，且输出频率小于 F21. 14 低频保护检出频率后，经过 F21. 15 低频保护检出时间报 A. LFr 警告。

1. 2、报警后，变频器按照 F21. 53 十位的设定进行减速或自由停机。

1. 3、从报警点开始，经过 F21. 16 低频保护自动恢复时间后，变频器从当前频率开始运行。

1. 4、若 F21. 14 低频保护检出频率设为 0，则关闭低压保护。

1. 5、减速停机状态下依然能触发低频保护，触发保护后将按照 F21. 53 十位的设定进行停机，停机后不会再次恢复运行。

1. 6、若在低频保护检出时间内，频率提高到低频保护检出频率以上，变频器将不会报低频保护警告，每次的检测时间彼此独立，不进行累计。)