

## Dry run 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 dry run protection:

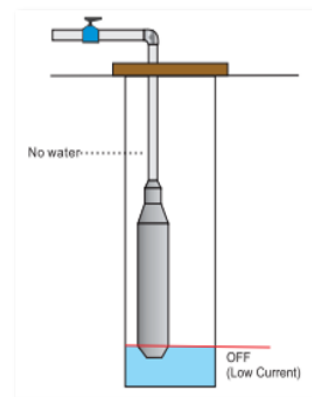
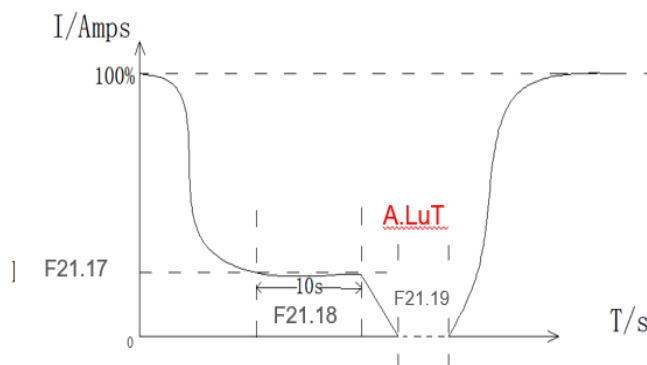
As we know, dry running is a very common scene in application site, After the pump has drained the water in the well, the motor does not have enough water to cool down, Motor running at idle for a long time without sufficient cooling water will cause the motor to overheat and increase the abrasion. Based on above application scenarios, we've designed the dry run protection.

(正如我们所知，在应用现场中打干运行是一个非常常见的显现，当泵把井里的水抽干后，电机没有足够的水来冷却，电机在没有足够冷却水的情况下长期空载运行，会导致电机过热，增加磨损。基于上述应用场景，我们设计了干运行保护)

### Principle of detection:

Hit dry protection reported fault is generally due to the motor is in idle state, the output current is reduced, less than the set value and continues for a period of time, the function opens to stop the inverter and display A.LuT. Generally, if dry protection continues to occur, the setting can be reduced or changed to 0 to disable the Dry Protection function.

(打干保护报故障一般是由于电机处于空转状态，输出电流减小，小于设定值并持续一段时间，功能打开停止变频器并显示 A.LuT。一般如果持续出现打干保护可以减小设定值或者将设定值改为 0，则可以将打干保护功能关闭)



## Related parameter settings:

Function code number	Function code name	Set value range and definition	Factory setting	Instruction	Address
F21. 17	Dry run protection detection current	0.0 -999.9A	0.0A	A.LuT is displayed on alarm, F21.17 is set to 0 to switch off the dry run protection 100.0% corresponds to the rated motor current	0xE0E
F21. 18	Dry run protection detection time	0.0sec~3000.0sec	10.0sec		0xE0F
F21. 19	Dry run auto restore working time	0.0sec~3000.0sec	10.0sec		0xE10

## Dry run protection function logic:

### 1、 Dry run protection 1 logic

1.1、 When the inverter is in operation, F21.29 thousand bits is 0 without sensor, and the output current is less than F21.17 hit dry protection detection point, after F21.18 hit dry detection time, A.LuT warning is reported.

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、 Timing starts after the warning is reported and the frequency converter starts running from the current frequency after the F21.19 hit dry protection recovery delay.

1.4、 If the F21.17 hit dry protection detection point is set to 0, the dry run protection is switched off.

1.5、 The deceleration and stop state can still trigger the hit and dry protection, 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 output current increases to above the protection point within the detection time of the hit-and-dry protection, it will not enter the hit-and-dry protection again, each time the detection time is independent of each other, no accumulation.

### 2、 Dry run protection 2 logic

2.1、 When the inverter is in running state, F21.29 thousand bits is 1 with sensor, any X terminal input function is set to 83 and is valid, it will enter the hit dry protection detection stage, other logic is the same as dry run protection 1.

#### (1、 打干保护 1 逻辑

1.1、 当变频器处于运行状态中， F21.29 千位为 0 无传感器， 且输出电流小于 F21.17 打干保护检测点后， 经过 F21.18 打干检出时间后报 A.LuT 告警。

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、 从报警后开始计时， 经过 F21.19 打干保护恢复延时后， 变频器从当前频率开始运行。

1.4、 若 F21.17 打干保护检测点设为 0， 则关闭打干保护。

1.5、 减速停机状态下依然能触发打干保护， 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、 若在打干保护检出时间内， 输出电流增大至保护点以上后， 不会再进入打干保护， 每次的检测时间彼

此独立，不进行累计。

## 2、打干保护 2 逻辑

2.1、当变频器处于运行状态中，F21.29 千位为 1 有传感器，任意 X 端子输入功能设置为 83 且有效时，进入打干保护检出阶段，其他逻辑和打干保护 1 相同。)