

BECKHOFF

运动控制中故障的分析与解决

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➤ 伺服调试常见故障的处理 (AX5000系列)

➤ NC error故障分析与复位方法

➤ 伺服硬件故障处理

➤ 通讯故障的介绍

使能阶段发生的故障

- 供电不足
- 电机型号不匹配

点动阶段发生的故障

- 控制模式
- 增益参数不匹配

(online调试界面: 故障采集、Information system 安装, 分析)

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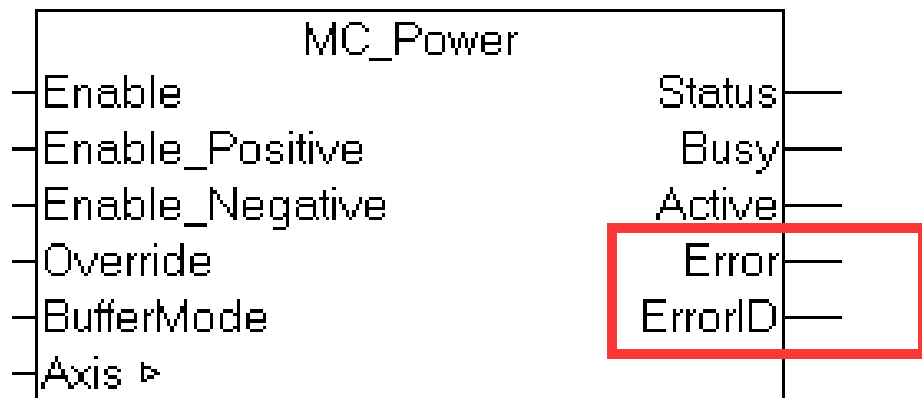
点动阶段发生的故障

- 控制模式
- 增益参数不匹配

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在具体设备逻辑中我们使用TC2_MC2运动库包，该库更好的适应PLCopen。有着完善的诊断方式。

MC_Power



■ 17510/18005 (AX5000侧显示F415)

4466	17510	Monitoring	<p>Invalid IO data for more than n subsequent NC cycles (encoder) The axis (encoder) has detected for more than n subsequent NC cycles (NC SAF task) invalid encoder IO data (e.g. n=3). Typically, regarding an EtherCAT member it is about a Working Counter Error (WcState) what displays that data transfer between IO device and controller is disturbed. If this error is set for a longer period of time continuously, this situation can lead to losing the axis reference (the "homed" flag will be reset and the encoder will get the state "unreferenced"). Possible reasons for this error: An EtherCAT slave may have left its OP state or there is a too high real time usage or a too high real time jitter.</p>
4655	18005	Monitoring	<p>'Invalid IO data for more than 'n' continuous NC cycles' The axis (encoder or drive) has detected invalid IO data (e.g. n=3) for more than 'n' continuous NC cycles (NC SAF task). EtherCAT fieldbus: 'working counter error ("WCState")' As a result it is possible that the encoder referencing flag will be reset to FALSE (i.e. the encoder is given the status 'unreferenced'). Lightbus fieldbus: 'CDL state error ("CdlState")' As a result it is possible that the encoder calibration flag will set to FALSE (that means uncalibrated).</p>

通讯故障(17510/18005/F415)

确认故障源:

- 检查控制器状态，TC状态灯是否为RUN。
- 使用EtherCAT诊断，是否有多个从站掉线，偶发可以使用配置模式下的Emergency sacn 确认异常从站。

http://download-cn.beckhoff.com.cn/download/EtherCAT/2_EtherCAT%20Diagnostics%20-%20cn.pdf

处理方法:

- 重新插拔网络线缆，更换标准线缆。
- 检查现场的接地，是否有环境干扰。

(*其他第三方驱动器配置阶段出现该错误，可能是由于配置步骤或者没有映射必要的参数导致，解决请联系第三方厂商索取对应当前软件的配置文档)



总结:

故障原因分类

- 程序中操作不当或者参数设置不当
- 驱动器硬件故障 (AX5000)
- 通讯故障

故障代码的获取和复位

- Motion的online调试界面
- Driver manager界面 (AX5000)

故障代码的描述查找

- [Information system 安装](#)
- [Nc error](#)
- [Device diagnostics](#) (<https://infosys.beckhoff.com>)

实例 常见故障监控及复位

- 未使能情况下运行轴 (16992)
- 跟随误差过大 (17744)
- 驱动器的故障分析及复位 (18000: 供电, 极限, 电机型号匹配)
- 通讯故障 (18005/17510)