故障指示及对策

交流马达驱动器本身有过电压、低电压及过电流等多项警示信息及保护功能，一旦异常故障发生，保护功能动作，交流马达驱动器停止输出，异常接点动作，马达自由运转停止。请依交流马达驱动器之异常显示内容对照其异常原因及处置方法。异常记录会储存在交流马达驱动器内记忆体，请注意：异常发生后，必须先将异常状况排除，按 RESET 键才有效。

一、异常发生及排除方法

显示符号	异常现象说明	可能的故障原因	对策
SC	短路故障	1.加速太快； 2. IGBT 内部损坏； 3.干扰引起误动作； 4.接地是否良好。	1.增大加速时间； 2.寻求支援； 3.检查外围设备是否有强干扰源。
oc 1	加速运行过电流	1.加速太快； 2.输入电源电压偏低； 3.变频器功率偏小； 4.矢量控制时没有进行参数学习； 5.手动转矩提升或 V/f 曲线不合适； 6.启动时电机在旋转中； 7.变频器输出回路存在短路。	1.增大加速时间； 2.检查输入电源； 3.选用功率大一档的变频器； 4.进行参数自学习； 5.调整手动提升转矩或 V/f 曲线； 6.选择速度追踪或等电机停止后启动； 7.排除外围故障。
oc2	减速运行过电流	1.减速太快； 2.负载惯性转矩大； 3.变频器功率偏小； 4.矢量控制时没有进行参数学习； 5.变频器输出回路存在短路。	1.增大减速时间； 2.外加合适的能耗刹车组件； 3.选用功率大一档的变频器； 4.进行参数自学习； 5.排除外围故障。
oc3	恒速运行过电流	1.负载发生突变或异常； 2.输入电源电压偏低； 3.变频器功率偏小； 4.矢量控制时没有进行参数学习； 5.变频器输出回路存在短路。	1.检查负载或减小负载的突变； 2.检查输入电源； 3.选用功率大一档的变频器； 4.进行参数自学习； 5.排除外围故障。
ou 1	加速运行过电压	1.输入电压异常； 2.瞬间停电后，对旋转中电机实施再启动。	1.检查输入电源； 2.避免停机再启动。
ou2	减速运行过电压	1.减速太快； 2.负载惯量大； 3.输入电压异常；	1.增大减速时间； 2.增大能耗刹车组件； 3.检查输入电源。
ou3	恒速运行过电压	1.输入电压发生异常变动； 2.负载惯量大。	1.安装输入电抗器； 2.外加合适的能耗刹车组件。

显示符号	异常现象说明	可能的故障原因	对策
Uu	母线欠压	1.输入电源电压偏低； 2.瞬间停电； 3.电路板异常。	1.检查输入电源 2.复位故障 3.寻求服务
oL2	变频器过载	1.加速太快； 2.对旋转中的电机实施再启动； 3.输入电源电压过低； 4.负载过大。	1.增大加速时间； 2.避免停机再启动； 3.检查输入电源电压； 4.选择功率更大的变频器。
oL 1	电机过载	1.输入电源电压过低； 2.电机额定电流设置不正确； 3.电机堵转或负载突变过大； 4.大马拉小车。	1.检查输入电源电压； 2.重新设置电机额定电流； 3.检查负载，调节转矩提升量； 4.选择合适的电机。
oL3	电机过载 2	1.电机堵转或负载过大； 2.保护参数设置不当。	1.检查负载； 2.设置合适保护参数。
SP ,	输入侧缺相	R/L1、S/L2、T/L3 输入有缺相	1.检查输入电源； 2.检查安装配线。
SPo	输出侧缺相	U/T1、V/T2、W/T3 输出缺相（或负载三相严重不对称）	1.检查输出配线； 2.检查电机及电缆
oH2	模块过热	1.变频器瞬间过流； 2.输出三相有相间或接地短路； 3.风道堵塞或风扇损坏； 4.环境温度过高； 5.控制板连线或插件松动； 6.辅助电源损坏，驱动电压欠压； 7.功率模块桥臂直通； 8.控制板异常。	1.参见过流对策； 2.重新配线； 3.疏通风道或更换风扇； 4.降低环境温度； 5.检查并重新连接； 6.寻求服务； 7.寻求服务； 8.寻求服务。
EF	外部故障	MI 外部故障输入端子动作	检查外部设备输入
CE	通讯故障	1.波特率设置不当； 2.采用串行通讯的通讯错误； 3.通讯长时间中断。	1.设置合适的波特率； 2.按 STOP/RESET 键复位，寻求服务； 3.检查通讯接口配线。
ItE	电流检测电路故障	1.控制板连接器接触不良； 2.辅助电源损坏； 3.霍尔器件损坏； 4.放大电路异常。	1.检查连接器，重新插线； 2.寻求服务； 3.寻求服务； 4.寻求服务。
SC	电机对地短路故障	电机对地短路	检查电机或更改电缆、电机。
tE	电机自学习故障	1.电机容量与变频器容量不匹配； 2.电机额定参数设置不当； 3.自学习出的参数与标准参数偏差过大； 4.自学习超时。	1.更换变频器型号； 2.按电机铭牌设置额定参数； 3.使电机空载，重新辩识； 4.检查电机接线，参数设置。

显示符号	异常现象说明	可能的故障原因	对策
ECod	编码器故障	1.编码器接线错误； 2.干扰引起误动作； 3.接地是否良好。	1.检查接线； 2.检查外围设备是否有强干扰源。
EEP	EEPROM 读写故障	1.控制参数的读写发生错误； 2.EEPROM 损坏。	1.按 STOP/RESET 键复位，寻求服务； 2.寻求服务。
Eond	累计运行时间到达故障	累计运行时间达到设定值；	使用参数初始化功能清除记录信息
EU1	模拟故障	由按键 STOP+RUN 产生模拟故障	按 STOP 键复位故障
E ind	累计上电时间到达故障	累计上电时间达到设定值；	使用参数初始化功能清除记录信息
oLL	掉载故障	变频器运行电流小于 11-64	检查负载或 11-64、11-65 参数是否符合实际工况
P idE	PID 反馈断线故障	1.PID 反馈断线； 2.PID 反馈源消失。	1.检查 PID 反馈信号线； 2.检查 PID 反馈源。
CLb	逐波限流故障	1.负载是否过大或发生电机堵转 2.变频器功率偏小	1.减小负载并检查电机及机械情况 2.选用功率大一档的变频器
dEu	速度偏差过大	1.编码器与电机方向不匹配 2.负载重 3.干扰引起误动作	1.调整方向相序； 2.调节速度环 PI 参数； 3.检查外围设备是否有强干扰源。
oS	电机超速度	1.速度检测过速 2.干扰引起误动作	1.编码器或电机参数检查； 2.检查外围设备是否有强干扰源。
ot	电机过温	1.负载重电流大 2.电机散热差	1.减轻负载； 2.加强散热。
intP	磁极位置检测失败	永磁同步电机是否正常连接	检查电机连接
End			联系服务商。
E8	充电电阻故障	输入电源是否异常。	检查输入电源。
E2P	CPU 检验异常	1.干扰引起误动作； 2.CPU 异常。	1.尝试重新上电 2.寻求服务。
PSt	CPU 数据异常	1.干扰引起误动作； 2.参数应用不合理 3.CPU 异常。	1.尝试重新上电 2.恢复参数重设置。 3.寻求服务。
PCU	CPU 代码异常	1.干扰引起误动作； 2.CPU 异常。	1.尝试重新上电 2.寻求服务。
oH4	充电电阻过热	输入电源是否异常。	检查输入电源。
Ed66	上电初始化异常	1.输入电源是否异常； 2.电源或器件损坏。	1.检查电源； 2.寻求服务。
Ed74	反电动势异常	1.检测到电机反电动势异常。	1.检查 01-20 是否正确设置； 2.永磁电机是否正确连接。

二、一般故障检查方式

异常现象	检查要点	处理内容
马达不运转	电源电压是否有送入 R/L1、S/L2、T/L3 吗?	电源是否有投入； 将电源先断电后再送电一次； 电源电压等级确认； 端子螺丝是否锁紧。
	输出端子 U/T1、V/T2、W/T3，是否有电压输出吗?	将电源先断电后再送电一次
	负荷是否过重，造成马达堵死吗?	减轻负荷使马达可以运转
	变频器有异常发生吗?	参考故障指示排除处理配线检查并更正
	正转或反转指令有下达吗?	
	类比频率设定值有输入吗?	类比频率输入信号配线是否正确； 频率输入设定电压是否正确。
	运转模式设定值正确吗?	由数位操作运转
马达运转 方向相反	输出端子 U/T1、V/T2、W/T3 配线正确吗?	要与马达之 U/T1、V/T2、W/T3 相配合
	正转或反转信号配线正确吗?	配线检查并更正
马达运转 无法变速	类比频率输入配线正确吗?	配线检查并更正
	运转模式设定正确吗?	操作面板运转模式设定检查
	负荷是否过重吗?	减轻负荷
马达运转速度 过高或过低	马达的规格（极数电压）正确吗?	确认马达规格
	齿轮比正确吗?	确认齿轮比
	最高输出频率设定值正确吗?	确认最高输出频率值
	马达端电压有极端的下降吗?	V/f 特性曲线设定正确
马达运转时 速度变动异常	负荷会过重吗?	减轻负荷
	负荷的变动很大吗?	负荷变动要减少； 变频器及马达容量加大。
	输入电源是否有欠相之情形吗?	使用单相规格时，在入力电源侧加 AC 电抗器； 使用三相规格时检查配线。

TROUBLE SHOOTING

AC motor drive is provided with functions of warning and protection such as over voltage, low voltage and over current. Once fault occurs, protection function shall act, AC motor drive output stop, fault contactor act and also free running of motor shall stop. For causes and corrective measures of fault, display of fault shall be taken for reference. The alarm records will be stored into the computer memory of AC motor driver. Attention shall be paid that RESET key, would be available only after the fault has been eliminated.

6.1 Failures & Failure Elimination

Display	Description	Possible reason	corrective-measures
SC	Short circuit fault	1.Accelerate too fast. 2.Internal damage of IGBT. 3.Malfunction caused by interference. 4.Whether the grounding is good.	1.Increase acceleration time. 2.Seek support. 3.Check whether the peripheral equipment has a strong interference source.
oc 1	Overcurrent during acceleration	1.Accelerate too fast. 2.The input power voltage is low. 3.The power of the inverter is too small. 4.No parameter learning is performed during vector control. 5.Manual torque boost or V/f curve is not suitable. 6.The motor is rotating when starting. 7.There is a short circuit in the inverter output circuit.	1.Increase the acceleration time. 2.Check the input power. 3.Select a inverter with a higher power. 4.Perform parameter self-learning. 5.Adjust manual lifting torque or V/f curve. 6.Choose speed tracking or start after the motor stops. 7.Eliminate peripheral faults.
oc2	Overcurrent during deceleration	1.Decelerate too fast. 2.Large load inertia torque. 3.The power of the inverter is too small. 4.No parameter learning is performed during vector control. 5.There is a short circuit in the inverter output circuit.	1.Increase the deceleration time. 2.Add appropriate energy consumption brake components. 3.Select a frequency converter with a higher power. 4.Perform parameter self-learning. 5.Eliminate peripheral faults.
oc3	Overcurrent at constant speed	1.Abrupt or abnormal load. 2.The input power voltage is low. 3.The power of the inverter is too small. 4.No parameter learning is performed during vector control. 5.There is a short circuit in the inverter output circuit.	1.Check the load or reduce the sudden change of load. 2.Check the input power. 3.Select a frequency converter with a higher power. 4.Perform parameter self-learning. 5.Eliminate peripheral faults.
ou 1	Overvoltage during acceleration	1.The input voltage is abnormal. 2.After a momentary power failure, restart the rotating motor.	1.Check the input power. 2.Avoid restarting after stopping.
ou2	Overvoltage during deceleration	1.Decelerate too fast. 2.Large load inertia. 3.The input voltage is abnormal.	1.Increase the deceleration time. 2.Increase energy consumption brake components. 3.Check the input power.
ou3	Overvoltage at constant speed	1.Abnormal changes in input voltage. 2.The load inertia is large.	1.Install input reactor. 2.Plus suitable energy consumption brake components.
Uu	BUS undervoltage	1.The input power supply voltage is low. 2.Instant power outage. 3.The circuit board is abnormal.	1.Check the input power 2.Reset fault 3.Seek service
oL2	Inverter overload	1.Accelerate too fast. 2.Restart the rotating motor. 3.The input power voltage is too low. 4.The load is too large.	1.Increase the acceleration time. 2.Avoid restarting after shutdown. 3.Check the input power voltage 4.Select the inverter with higher power.

Display	Description	Possible reason	corrective-measures
oL 1	Motor overload	1.The input power voltage is too low. 2.The motor rated current is set incorrectly. 3.The motor is blocked or the load mutation is too large. 4.Motor overloaded.	1.Check the input power voltage. 2.Reset the rated current of the motor. 3.Check the load and adjust the torque boost. 4.Choose the right motor.
oL3	Motor overload 2	1.The motor is blocked or the load is too large. 2.Improper setting of protection parameters.	1.Check the load. 2.Set appropriate protection parameters.
SP,	Input phase loss	R/L1,S/L2,T/L3 Input phase loss	1.Check the input power. 2.Check the installation wiring.
SPo	Output phase loss	U/T1,V/T2,W/T3 phase loss on output side (or the load three-phase is severely asymmetric)	1.Check the output wiring. 2.Check the motor and cable
oH2	Module overheat	1.Inverter overcurrent instantly. 2.The output three phases have interphase or ground short circuit. 3.The air duct is blocked or the fan is damaged. 4.The ambient temperature is too high. 5.Loose connection of control board or plug-in. 6.The auxiliary power supply is damaged, and the driving voltage is undervoltage. 7.Power module bridge arm is straight through. 8.The control board is abnormal.	1.See overcurrent countermeasures. 2.Rewiring. 3.Ventilate channels or replace fans. 4.Reduce the ambient temperature. 5.Check and reconnect. 6.Seek service. 7.Seek service. 8.Seek service.
EF	External fault	MI external fault input terminal action	Check external device input
CE	Communication error	1.The baud rate is not set properly. 2.Communication error using serial communication. 3.Communication is interrupted for a long time.	1.Set the appropriate baud rate. 2.Press STOP/RESET button to reset and seek service. 3.Check the wiring of the communication interface.
,tE	Current detection circuit fault	1.Poor contact of the control board connector. 2.The auxiliary power supply is damaged. 3.The Hall device is damaged. 4.The amplifier circuit is abnormal.	1.Check the connector and reinsert the cable. 2.Search for factory maintenance. 3.Search for factory maintenance. 4.Search for factory maintenance.
SG	Motor to ground short circuit fault	Short circuit of motor to ground	Check the motor or change the cable or motor
tE	Motor auto-tunning error	1.The capacity of the motor does not match the capacity of the inverter. 2.Improper setting of rated motor parameters. 3.The deviation of the self-learned parameters and the standard parameters is too large. 4.Auto-tuning timeout.	1.Replace the inverter model. 2.Set rated parameters according to the motor nameplate. 3.Make the motor empty and re-identify. 4.Check the motor wiring and parameter settings.
ECod	Encoder Fault	1.Encoder Wiring Error. 2.Fault Caused by Interference. 3.Check if Grounding is Proper.	1.Check Wiring. 2.Check if There Are Strong Interference Sources Nearby.
EEP	EEPROM reading-writing error	1.An error occurs in the reading and writing of control parameters. 2.The EEPROM is damaged.	1.Press STOP/RESE key and search for factory maintenance. 2.Search for factory maintenance

Display	Description	Possible reason	corrective-measures
Eond	Accumulated running time reaches fault	Cumulative running time to set value	Use the parameter initialization function to clear the record information.
EU1	Simulate fault	1.Simulated fault generated by pressing STOP+RUN button	1.Press the STOP button to reset the fault
E ind	Accumulated power-on time reaches error	The cumulative power-on time reaches the set value.	Use the parameter initialization function to clear the record information.
oLL	Load failure	The running current of the inverter is less than 11-64.	Check whether the load or 11-64, 11-65 parameters are in accordance with the actual working conditions.
P idE	PID feedback disconnection fault	1.PID feedback disconnected. 2.The PID feedback source disappears.	1.Check the PID feedback signal line. 2.Check the PID feedback source.
CLb	Wave-by-wave current limiting fault	1.Whether the load is too large or the motor stalls. 2.Inverter power is too small.	1.Reduce the load and check the motor and mechanical conditions. 2.Select the inverter with higher power.
dEu	Speed deviation too large	1.Encoder and motor direction do not match. 2.Heavy load. 3.Malfunction caused by interference.	1.Adjust the phase sequence of the direction. 2.Adjust the speed loop PI parameters. 3.Check if surrounding devices have strong interference sources.
oS	Motor Overspeed	1.Overspeed detected. 2.Malfunction caused by interference.	1.Check the encoder or motor parameters. 2.Check if surrounding devices have strong interference sources.
ot	Motor Overheating	1.Heavy load and large current. 2.Poor motor cooling.	1.Reduce the load. 2.Improve cooling.
inLP	Magnetic pole position detection failed	1.Is the permanent magnet synchronous motor connected properly	1.Check the motor connection
End			Contact the service provider
E8	Charging resistor fault	Whether the input power is abnormal	Check the input power supply
E2P	CPU inspect fault	1.Misoperation caused by Interference 2.CPU fault	1.Try powering on again 2.Seek services.
PSt	CPU data fault	1.Misoperation caused by Interference 2.unreasonable parameter application 3.CPU fault	1.Try powering on again 2.Restore parameter reset. 3.Seek services.
PCU	CPU code error	1.Misoperation caused by Interference 2.CPU fault	1.Try powering on again 2.Seek services.
oH4	Charging resistor overheating	Whether the input power is abnormal	Check the input power supply
Ed66	Power-on initialization abnormal	1.Whether the input power supply is abnormal. 2.The power supply or device is damaged.	1.Check the power supply. 2.Seek service.
Ed74	Abnormal Back E MF	1.Abnormal back electromotive force (EM F) detected in the motor.	1.Check whether settings 01-20 are c orrect; 2.Check whether the permanent mag net motor is properly connected.

6.2 General Troubleshooting Method

Abnormal phenomenon	Check points	Processing content
The motor does not run	Has the power supply voltage been sent to R/L1, S/L2, and T/L3?	Whether the power supply is input; Turn off the power first and then send it again; Confirm the power voltage level; Whether the terminal screw is tight.
	Is there voltage output at the output terminals U/T1, V/T2, W/T3?	Turn off the power first and then send it again
	Check if the load is too heavy, causing the motor to block?	Reduce the load so that the motor can run
	Check if there is any abnormality in the inverter?	Refer to the troubleshooting instructions to deal with wiring inspection and correction
	Are forward or reverse instructions issued?	
	Check if there is an input for the analog frequency setting value?	Whether the analog frequency input signal wiring is correct; Whether the frequency input setting voltage is correct.
	Are the operating mode settings correct?	Operated by digital operation
Motor running Opposite direction	Are the output terminals U/T1, V/T2, and W/T3 wired correctly?	Must work with the U/T1,V/T2,W/T3 phase of the motor.
	Is the forward or reverse signal wiring correct?	Check and correct the wiring
Motor running Can't change speed	Is the analog frequency input wiring correct?	Check and correct the wiring
	Is the operation mode set correctly?	Operation panel operation mode setting check
	Is the load too heavy?	Lighten the load
Motor running speed is too high or too low	Is the motor specification (pole voltage) correct?	Check motor specifications
	Is the gear ratio correct?	Confirm gear ratio
	Is the maximum output frequency setting correct?	Confirm the maximum output frequency value
	Is there an extreme drop in the voltage at the motor end?	The V/f characteristic curve is set correctly
When the motor is running Abnormal speed changes	Will the load be too heavy?	Lighten the load
	Does the load change greatly?	Load fluctuation should be reduced; The capacity of the inverter and motor is increased.
	Is there any phase loss in the input power supply?	When using single-phase specifications, add AC reactor on the input power side; Check wiring when using three-phase specifications.