

Capture Systems

Registers



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1. Introduction

This document completes the 'Capture Command and Control API' document. Every 'Capture' system includes several status registers. Those registers describe the current status of each axis of the system.

For each axis, we monitor the following data:


- MER – Motion Error Register.
- MSR – Motion Status Register.
- DER – Detailed Error Register.
- SRH – Status Register High.
- SRL – Status Register Low.

Those values stored in the system as unsigned integers (16 bits) and every bit in this number represents different data.

For example: Bit 12 in the MER register describes an over voltage error in the selected axis. So, while this value equals to 1 an over voltage error occurred and while the bit value is 0 no error occurred.

2. Warnings









In any case that an error that marked with  keeps showing please contact Capture support team in order to monitor the error.



Most of the errors in the MER and DER registers will stop the motion of the axis. In order to reset the errors (after your inspection) you can send the MOT_ResetFaults and the MOT_AxisOn commands.

3. MER – Motion Error Register

MER is a 16-bit status register. It groups together all of the errors conditions. Most of those errors conditions trigger the Fault status.

Bit	Description	Notes
0	CAN bus error	0 – No CAN bus error 1 – CAN bus error Check your CAN bus wiring and communication protocol.
1	Short-circuit protection	0 – No short circuit error 1 – Short circuit error
2	Setup table status	0 – The drive has a valid setup table. 1 – The drive has an invalid setup table. The system axes should be reconfigured.
3	Control error 	0 – No control error 1 – Control error Control error can occur if the motor doesn't reach the desired position or speed.
4	Communication error	0 – No serial communication error 1 – Serial communication error Please check your serial communication line with the drive.
5	Position sensor error 	0 – No error 1 – Error reading the position sensor. Please restart the system.
6	Positive limit switch active	0 – LSP is not active 1 – LSP is active
7	Negative limit switch active	0 – LSN is not active 1 – LSN is active
8	Over current error 	0 – No over-current error 1 – Over-current error The system current consumption reached the protection limit.
9	I2T protection error 	0 – No drive or motor I2T error 1 – Drive or motor I2T error The system current consumption over time reached the protection limit. Please check if there are no mechanical limitations that prevent the system from moving.
10	Motor over temperature error 	0 – No motor over temperature error 1 – Drive motor temperature error. The motor is overheating. Make sure that your system supports your operation environment regarding the operation temperature.
11	Drive over temperature error 	0 – No drive over temperature error 1 – Drive over temperature error. The system is overheating. Make sure that your system supports your operation environment regarding the operation temperature.
12	Over voltage error	0 – No over voltage error 1 – Over voltage error Check the system power supply for both logic and motor and set it to the desired level.
13	Under voltage error	0 – No under voltage error 1 – Under voltage error Check the system power supply for both logic and motor.

Bit	Description	Notes
14	Command error	<p>0 – No command error</p> <p>1 – Command error. The bit set in two cases:</p> <ul style="list-style-type: none"> a. An UPD command is received during the AXISON command execution. MER (14) = 1 & SRL (7) = 0. b. A cancelable call is received while a TML function is active following a previous cancelable call. MET (14) = 1 & SRL (7) = 1.
15	Enable status of drive	<p>0 – Drive enabled</p> <p>1 – Drive disabled</p> <p>Check enable input state (in supported systems only)</p>

4. MSR – Motion Status Register





MSR is a 16-bit status register, containing information about motion system status and some specific events like: control error condition, limit switches, etc.

For most of our users we advise to monitor only the Motion-status bit (9) and the Axis-status bit (13). The rest of the bits are for internal inspection.

Bit	Description	Notes
0	Drive initialization status	0 – Not performed. 1 – Performed.
1	S-Curve update status	0 – S-curve motion profile updated successfully 1 – S-curve motion profile update denied.
2	Software protection status	0 – Not triggered. 1 – Triggered.
3	Control error status	0 – Not triggered. 1 – Triggered.
4	Reserved	
5	Position wrap-around	0 – Not triggered. 1 – Triggered.
6	Positive limit switch	0 – Not triggered. 1 – Triggered.
7	Negative limit switch	0 – Not triggered. 1 – Triggered.
8	Position capture	0 – Not triggered. 1 – Triggered.
9	Motion status	0 – In motion. 1 – Motion complete.
10	Contour	0 – Not in contour mode. 1 – In contour mode.
11	Events	0 – No event set, or programmed event not occurred yet. 1 – Last event reached.
12	Reserved	
13	Axis status	0 – Axis off. 1 – Axis on.
14	Event status	0 – Reset after update. 1 – Set for update.
15	Update the motion mode	0 – No update. 1 – Update.

5. DER – Detailed Error Register

DER is a 16-bit status register. It groups together more errors conditions. Most of the errors conditions trigger the Fault status.

Bit	Description	Notes
0	Axis stack overflow	0 – No stack overflow. 1 – Stack overflow. Check your protocol implementation.
1	Axis stack underflow	0 – No stack underflow. 1 – Stack underflow. Check your protocol implementation.
2	Homing not available 	0 – Not triggered. 1 – Triggered. If the homing sequence should work in your system you should contact Capture support team.
3	Function not available 	0 – Not triggered. 1 – Triggered. If a customized function should work in your system you should contact Capture support team.
4	UPD ignored	0 – Not triggered. 1 – Triggered. Message ignored. Please check your communication protocol implementation.
5	Cancelable call ignored	0 – Not triggered. 1 – Triggered.
6	Software positive limit switch	0 – Not triggered. 1 – Triggered.
7	Software negative limit switch	0 – Not triggered. 1 – Triggered.
8	Invalid S-curve profile.	0 – Not triggered. 1 – Triggered. Resend your S-curve profile with different values.
9	UPD ignored for S-curve	0 – Not triggered. 1 – Triggered. The S-curve parameters are invalid.
10	Encoder broken wire 	0 – Not triggered. 1 – Triggered. If this error keeps showing please contact Capture.
11	Motionless start fail 	0 – Not triggered. 1 – Triggered. For brushless motors only. If this error keeps showing please contact Capture.
12	Axis heartbeat ignored	0 – Not triggered. 1 – Triggered. Check your communication wires.
13	Self-check error	0 – Not triggered. 1 – Triggered.
14	Reserved	
15	Reserved	

6. SRH – Status Register High

SRH is the high part of a status register grouping together all the key status information concerning the axis.

Bit	Description	Notes
0	Drive initialization status	0 – Not performed. 1 – Performed.
1	Reserved	
2	Reserved	
3	Reserved	
4	Reserved	
5	Auto run mode status	0 – Disabled. 1 – Enabled.
6	Positive limit switch event/interrupt	0 – Not triggered. 1 – Triggered.
7	Negative limit switch event/interrupt	0 – Not triggered. 1 – Triggered.
8	Capture event/interrupt	0 – Not triggered. 1 – Event/interrupt triggered.
9	Target command	0 – Not reached. 1 – Target reached.
10	Motor I2T protection warning	0 – Motor I2T warning limit not reached. 1 – Motor I2T warning limit reached.
11	Drive I2T protection warning	0 – Drive I2T warning limit not reached. 1 – Drive I2T warning limit reached.
12	Reserved	
13	Gear ratio in electronic gearing mode	0 – Not reached. 1 – Reached.
14	Reference position in absolute electronic camming mode	0 – Not reached. 1 – Reached.
15	Fault status	0 – No fault 1 Axis is in fault status

7. SRL - Status Register Low

SRL is the low part of a status register grouping together all the key status information concerning the axis.

Bit	Description	Notes
7	Homing / Function call warning	0 - Not triggered. 1 - Warning triggered.
8	Homing / Function call active	0 - Homing not active. 1 - Homing is active.
10	Motion is complete	0 - In motion. 1 - Motion complete.
14	Event has occurred	0 - Not triggered. 1 - Event/interrupt triggered.
15	Axis is on	0 - Axis is Off. 1 - Axis is On.