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### AL status codes

The “AL status code” (AL: Application Layer) describes the error code of a slave device if a requested change in state cannot be executed or if a slave detects an internal error.

In case of error, the Rexroth EtherCAT master automatically retrieves the AL status code (ESC register 0x0134:0x0135) and acknowledges the error indication in the slave. Upon the next change in slave state, the read AL status code is reset in the master.



If there is an unspecified error or a configuration is detected as invalid, refer to the product documentation of the slave device or contact the vendor of the slave device.

The following abbreviations are used in the following table:

- I = State “*Init*”
- B = State “*Bootstrap*”
- P = State “*Pre-Operational*”
- S = State “*Safe-Operational*”
- O = State “*Operational*”

AL status code	Description	Current state or change in state	Resulting state
0x0000	No error	All	Current state
0x0001	Unspecified error	All	All
0x0002	No memory	All	All
0x0003	Invalid device configuration	P → S	P

AL status code	Description	Current state or change in state	Resulting state
0x0004	Invalid revision	P → S	P
0x0005	Reserved due to compatibility reasons	-	-
0x0006	SII/EEPROM data does not match the firmware	I → P	I
0x0007	Firmware update not successful	All	All
0x000E	License errors	All	I
0x0011	Invalid change in state requested	I → S, I → O, P → O, P → B, S → B, O → B	Current state
0x0012	Unknown state requested	All	Current state
0x0013	“Bootstrap” state not supported	I → B	I
0x0014	No valid firmware	I → P	I
0x0015	Invalid mailbox configuration (Bootstrap)	I → B	I
0x0016	Invalid mailbox configuration (PreOP)	I → P	I
0x0017	Invalid Sync manager configuration	P → S, S → O	Current state

AL status code	Description	Current state or change in state	Resulting state
0x0018	No valid inputs available	O, S → O	S
0x0019	No valid outputs possible	O, S → O	S
0x001A	Synchronization error (different causes)	O, S → O	S
0x001B	Sync manager watchdog	O, S	S
0x001C	Invalid Sync manager types	O, S, P → S	S
0x001D	Invalid Sync manager configuration (outputs)	O, S, P → S	S
0x001E	Invalid Sync manager configuration (inputs)	O, S, P → S	P
0x001F	Invalid watchdog configuration	O, S, P → S	P
0x0020	Slave requires cold start	All	Current state
0x0021	Slave requires the state <i>"Init"</i>	B, P, S, O	Current state
0x0022	Slave requires the state <i>"Pre-operational"</i>	S, O	S, O
0x0023	Slave requires the state <i>"Safe-operational"</i>	O	O

AL status code	Description	Current state or change in state	Resulting state
0x0024	Invalid mapping input data	P → S	P
0x0025	Invalid mapping output data	P → S	P
0x0026	Inconsistent settings (general)	P → S	P
0x0027	“Free Run” not supported	P → S	P
0x0028	Sync mode not supported	P → S	P
0x0029	“Free Run” requires “Sync Manager” in 3 buffer mode	P → S	P
0x002A	Background watchdog	S, O	P
0x002B	No valid input and output data	O, S → O	S
0x002C	Fatal sync error Sync0 or Sync1 signal not received anymore.	O	S
0x002D	No sync signal Slave waits for Sync0/Sync1 signal (S → O timeout) in <i>“Safe-Operational”</i> .	S → O	S
0x002E	Cycle time too small The set EtherCAT cycle time is not supported by the slave.	S → O	S
0x0030	Invalid DC sync configuration	O, S → O, P → S	S, P

AL status code	Description	Current state or change in state	Resulting state
0x0031	Invalid DC latch configuration	O, S → O, P → S	S, P
0x0032	PLL errors, Master is not synchronized, but at least one DC event is received.	O, S → O	S
0x0033	DC sync I/O error Multiple synchronization errors; master and slave are not synchronized anymore.	O, S → O	S
0x0034	DC sync timeout error Multiple synchronization error, too many SM events omitted	O, S → O	S
0x0035	Invalid DC cycle time	P → S	P
0x0036	DC Sync0 cycle time does not run with application	P → S	P
0x0037	DC Sync1 cycle time does not run with application	P → S	P
0x0041	Mailbox AoE	B, P, S, O	Current state
0x0042	Mailbox EoE	B, P, S, O	Current state
0x0043	Mailbox CoE	B, P, S, O	Current state
0x0044	Mailbox FoE	B, P, S, O	Current state

AL status code	Description	Current state or change in state	Resulting state
0x0045	Mailbox SoE	B, P, S, O	Current state
0x004F	Mailbox VoE	B, P, S, O	Current state
0x0050	EEPROM no access	All	All
0x0051	EEPROM errors	All	All
0x0052	External hardware not ready for operation	All	All
0x0060	Slave executed restart	All	I
0x0061	Device identification value updated	P	P
0x0070	Invalid module configuration For a slave with modular device profile, the configured modules (0xF030) do not match the physical modules (0xF050).	P → S	P
0x00F0	Application control available	I	I
< 0x8000	Reserved	-	-
0x8000 - 0xFFFF	Vendor-specific	-	-