

10 Faults and alarms

When a fault or alarm message is activated, it is displayed both on the simple operator control panel (PMU) and on the OP1S user-friendly operator control panel (see also Section 7.2, Operator control panels).

An alarm stops being displayed immediately the cause of the alarm signal has been eliminated.

A fault message must be cancelled by pressing the P key on the PMU or Reset key on the OP1S (panel must be in "Operational display" status) as soon as the cause has been eliminated.

NOTE

Setting parameters when fault or alarm message is active

On the PMU:

You can shift an active fault message or alarm "to the background" by pressing the P key and Higher key simultaneously on the PMU.

If you do not press any key on the PMU within a 30 s period, the fault message or active alarm in the background is automatically displayed again.

You can fetch a message back to the foreground earlier by pressing the P key and Higher key simultaneously on the PMU when the parameter number level is selected.

On the OP1S:

You can set parameters normally even if a fault message or alarm is active.

10.1 Fault messages

10.1.1 General information about faults

Fault message display:

On the PMU: F (fault) and a three-digit number. The red LED (Fault) lights up.

On the OP1S: On bottom line of operational display: The red LED (Fault) lights up.

Only one current fault message can be displayed at a time, i.e. other simultaneously active faults are ignored.

Many fault messages (see List of Fault Messages) can only be active in certain operating states.

The system responses to a fault are as follows:

- The armature current is reduced, the firing pulses are disabled and the SIMOREG unit switches to operating state o11.0 (fault)
- Fault message is displayed on the operator panel (PMU, OP1S)
- B0106 (= status word 1, bit 3) is set and B0107 cancelled (see also alarm bits for special faults such as undervoltage, overtemperature, external faults, etc.)
- Parameters
 - r047 (fault diagnostic memory)
 - r049 (fault time)
 - r947 (fault memory, see also r947 in Section 11, Parameter List)
 - r949 (fault value)
 - P952 (number of faults)
 are updated

A text is also displayed for each individual fault in parameter r951 (fault text list). These texts can, for example, be displayed on the OP1S.

If a fault is not acknowledged before the electronics supply voltage is switched off, then fault message F040 will be displayed when the supply is next switched on.

10.1.2 List of fault messages

NOTE

Further information about the causes of fault messages

When a fault message is activated, values providing more information about the fault cause are stored in parameter r047. Where the values can be interpreted by the user, they are included in the following list of fault messages.

The value in r047.001 is referred to as the "fault value". This is also stored in r949 which also contains the fault values belonging to older fault messages. The values in r047 are overwritten when the next fault message occurs.

Values for r047 which are not included in the list below can help a SIEMENS specialist to locate a fault cause. For this reason, all indices of parameter r047 should be read out whenever a fault message occurs, even if the meaning of the individual indices of parameter r047 is not specified for every fault message listed below.

Please note: Before you contact SIEMENS with any query regarding a fault message, please make a note of the contents of all indices of parameter r047.

Fault No.	Description	Further information (r047.002 to r047.016)
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	

10.1.2.1 Supply faults

F001	Failure of electronics power supply (active in all operating states)	<p>Failure of the electronics supply voltage (terminals 5U1, 5W1, 5N1) in "RUN" state for longer than the "restart" time set in parameter P086 or the electronics are operating on undervoltage.</p> <p>Possible fault causes:</p> <ul style="list-style-type: none"> • Line contactor has opened in "RUN" state • Brief supply failure • Supply voltage too low <p>Fault value: r047 Index 002 to 016:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 5%;">1</td> <td style="width: 45%;">Electronics supply voltage in "RUN" has been interrupted for longer than setting in P086</td> <td style="width: 50%;">i002 Duration of actual supply failure in 1/10 seconds</td> </tr> <tr> <td>2</td> <td>Supply failure prewarning responds periodically</td> <td>-</td> </tr> <tr> <td>3</td> <td>Supply failure prewarning is active for longer than 1.28 s</td> <td>-</td> </tr> </tbody> </table>	1	Electronics supply voltage in "RUN" has been interrupted for longer than setting in P086	i002 Duration of actual supply failure in 1/10 seconds	2	Supply failure prewarning responds periodically	-	3	Supply failure prewarning is active for longer than 1.28 s	-
1	Electronics supply voltage in "RUN" has been interrupted for longer than setting in P086	i002 Duration of actual supply failure in 1/10 seconds									
2	Supply failure prewarning responds periodically	-									
3	Supply failure prewarning is active for longer than 1.28 s	-									
F004	Phase failure in armature supply (active in operating states of ≤ o4)	<p>The supply voltage RMS value, calculated from the area of each supply half-wave (rectified average value * peak factor), must be greater than the response value for phase failure monitoring</p> $P078.001 * \frac{P353}{100\%}$ <p>The distance between two identical supply zero passages of a phase must not exceed 450 degrees.</p> <p>If one of these two conditions remains unfulfilled for longer than the "restart time" set in P086, a fault message is activated. After switch-on, the converter waits in operating states o4 and o5 together for a period not exceeding the setting in P089 for voltage to appear at the power terminals (and for field current) before activating the fault message.</p> <p>Possible fault causes:</p> <ul style="list-style-type: none"> • Parameter P353 is incorrectly set • Armature phase has failed • Line contactor opened in operation • Fuse has blown on three-phase side in armature circuit • Fuse has blown in power section • Interruption in a thyristor firing pulse cable (auxiliary cathodes at connectors X12, X14, X16 are voltage carriers). 									

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
	Fault value: 1 Voltage failure has occurred in armature supply (1U1, 1V1, 1W1) (when P086=0) 2 Delay time set in parameter P089 has expired in operating state o4 3 Fuse has blown in power section 4 Voltage failure has lasted longer than period set in P086 (if this is >0)	
F005	Fault in the field circuit (active in operating states of \leq o5) The line voltage RMS value calculated from the area of each network half-wave (rectification average value * peak factor) must be greater than the response value for phase failure monitoring $P078.002 * \frac{P353}{100\%}$ The distance between two identical network zero passages of the voltage for the field converter must not exceed 450 degrees. The actual field current K0265 equals < 50% of the required field current setpoint K0268 for more than 500ms. This monitoring function is effective only if the field current setpoint corresponds to >2% of the converter rated field current. If one of the fault conditions described persists in operation (or \leq o4) for longer than the "restart" time set in P086, the fault message is output. After the converter is switched on, it waits in operating state o5 for a period not exceeding the setting in P089 for the field supply voltage or sufficiently high field current before this fault message is activated. As from Version 1.7, monitoring is achieved by timeout on field reduction or build-up after field reversal has been initiated. Possible fault causes <ul style="list-style-type: none"> • Threshold for phase failure (P353) set incorrectly • Field phase failed • Line contactor opened during operation • Fuse blown in the field circuit • Field current controller and/or field current precontrol not optimized or badly optimized (check P112, P253 to P256; possibly execute current controller optimization) • If the fault value is 6: Offset fault in the actual field current value sensing, relevant parameter: P825.i01-i03 (Offset depends on P076.i02) or P394, P395 (Threshold and hysteresis for message I_field < I_field_min) must be checked • If the fault value is 7: Circuit for the "new" field direction is interrupted (e.g. because the contactor for "new" field direction does not pick up), P398, P399 (Threshold and hysteresis for message I_field < I_field_x) must be checked Fault value: 1 Voltage failure occurred in the field supply (terminals 3U1 and 3W1) (if P086 = 0) 2 Delay time according to P089 elapsed in state o5.1 (waiting for voltage at the field power section) 3 Delay time according to P089 elapsed in state o5.0 (waiting until I _{field act} (K0265) is > 50% of the instantaneous field current setpoint K0268) 4 After P086 > 0 has elapsed (time for automatic restart) in operating state \leq o4: Voltage failure in the field supply or I _{field act} (K0265) < 50% I _{field set} (K0268) for longer than 500 ms 5 When P086 = 0 (no automatic restart) in operating state \leq o4: I _{field act} (K0265) < 50% I _{field set} (K0268) for longer than 500 ms 6 If field reduction before field reversal, I _{field} \leq I _{field_min} (P394) is not reached within 30 s 7 If field build-up after field reversal, I _{field} > I _{field_x} (P398) is not reached within 30 s	

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
F006	Undervoltage (active in operating states of ≤ o4)	
	The voltage at terminals 1U1, 1V1 or 1W1 and 3U1, 3W1 is lower than the response threshold for longer than the "restart time" set in P086.	
	Response threshold for armature supply voltage: $P078.001 * (1 + \frac{P351}{100\%})$	
	Response threshold for field supply voltage: $P078.002 * (1 + \frac{P351}{100\%})$	
Possible fault causes		
<ul style="list-style-type: none"> • Line undervoltage • Monitoring values set too sensitively or incorrectly (P351, P078) 		
Fault value:		r047 Index 002 to 016:
1	Undervoltage has occurred	i002 Number of phase that has activated fault message 0.... Phase UV 1.... Phase VW 2.... Phase WU 3.... Phase field i003 Incorrect voltage value (normalized to 16384)
4	Undervoltage persists for longer than time set in parameter P086 (if this is set to >0)	-
F007	Overvoltage (active in operating states of ≤ o4)	
	The voltage at terminals 1U1, 1V1 or 1W1 and 3U1, 3W1 is higher than the response threshold (for longer than the "restart time" set in P086).	
	Response threshold for armature supply voltage: $P078.001 * (1 + \frac{P352}{100\%})$	
	Response threshold for field supply voltage: $P078.002 * (1 + \frac{P352}{100\%})$	
Possible fault causes		
<ul style="list-style-type: none"> • Line overvoltage • Monitoring values set too sensitively or incorrectly (P352, P078) 		
NOTE		
This monitoring function is deactivated in the delivery state. It can be activated via parameter P820.		
Fault value:		r047 Index 002 to 016:
1	Overvoltage has occurred	002 Number of phase that has activated fault message 0.... Phase UV 1.... Phase VW 2.... Phase WU 3.... Phase field i003 Incorrect voltage value (normalized to 16384)
4	Undervoltage persists for longer than time set in parameter P086 (if this is >0)	-
F008	Line frequency less than the minimum line frequency acc. to parameter P363 (active in operating states of ≤ o5)	
	This fault message is activated if the line frequency is less than the minimum line frequency (for longer than the "restart time" set in parameter P086). <u>Note:</u> Up to software version 1.7 the threshold for activation of the fault message (minimum line frequency) is 45Hz.	

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
	Fault value:	
	1 Frequency of the armature supply < minimum line frequency	
	2 Frequency of the field supply < minimum line frequency	
	4 Line frequency less than the minimum line frequency for longer than set in parameter P086 (if >0)	
F009	Line frequency greater than the maximum line frequency acc. to parameter P364 (active in operating states of $\leq o5$)	
	This fault message is activated if the line frequency is greater than the maximum line frequency (for longer than the "restart time" set in parameter P086).	
	<u>Note:</u> Up to software version 1.7 the threshold for activation of the fault message (maximum line frequency) is 65Hz	
	Fault value:	
	1 Frequency of the armature supply > maximum line frequency	
	2 Frequency of the field supply > maximum line frequency	
	4 Line frequency greater than the maximum line frequency for longer than set in parameter P086 (if >0)	

10.1.2.2 Interface error

F011	<p>Telegram failure at GSST1</p> <p>when <u>P780 = 2</u>:</p> <p>USS telegram failure at G-SST1 (active from the first receipt of a valid protocol in all operating states)</p> <p>After the receipt of the first valid protocol, no further telegrams have been received within the time period set in parameter P787.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Cable break • Error in USS master
F012	<p>Telegram failure at GSST2</p> <p>when <u>P790 = 2</u>:</p> <p>USS telegram failure at G-SST2 (active from the first receipt of a valid protocol in all operating states)</p> <p>After the receipt of the first valid protocol, no further telegrams have been received within the time period set in parameter P797.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Cable break • Error in USS master <p>when <u>P790 = 4 or 5</u> and <u>P798 = 32 or 33</u>:</p> <p>Peer-to-peer telegram failure at G-SST2 (active in operating states of $\leq o6$)</p> <p>After the receipt of the first valid protocol, no further telegrams have been received within the time period set in parameter P797.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Interruption in connecting cable • EMC interference on connecting cable • P797 is set too low

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
F013	Telegram failure at GSST3	
	<p>when <u>P800 = 2</u> and <u>P808 = 32 or 33</u>:</p> <p>USS telegram failure to G-SST3 (active from the first receipt of a valid protocol in all operating states)</p> <p>After the receipt of the first valid protocol, no further telegrams have been received within the time period set in parameter P807.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Cable break • Error in USS master <p>when <u>P800 = 4 or 5</u>:</p> <p>Peer-to-peer telegram failure at G-SST3 (active in operating states of ≤ 06)</p> <p>After the receipt of the first valid protocol, no further telegrams have been received within the time period set in parameter P807.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Interruption in connecting cable • EMC interference on connecting cable • P807 is set too low 	
F014	<p>Telegram failure at paralleling interface (active when <u>U800 = 1 or 2</u> from the first receipt of a valid protocol in all operating states)</p> <p>After the receipt of the first valid protocol, no further telegrams have been received within the time period set in parameter U807.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Interruption in connecting cable • EMC interference on connecting cable • U807 is set too low 	
F015	<p>Telegram failure on one SIMOLINK board (active when <u>U741 > 0</u> as soon as the first valid telegram is received)</p> <p>After receipt of one valid telegram, no further valid telegrams have arrived within the period set in parameter U741.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Break in connecting cable • Parameter setting change during telegram exchange (for parameters see Section 11 "Configuration of SIMOLINK board) • U741 is set to low <p>Fault value:</p> <p>1 Telegram failure on 1st SLB 2 Reserved</p>	
F016	Hardware fault on expansion board EB1	
	<p>Fault value:</p> <p>1 Fault on first EB1 2 Fault on second EB1</p>	
F017	Hardware fault on expansion board EB2	
	<p>Fault value:</p> <p>1 Fault on first EB2 2 Fault on second EB2</p>	

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
F018	Short circuit or overloading of binary outputs (active in all operating states)	
	Possible fault causes <ul style="list-style-type: none"> • Short circuit or overload at terminals 46, 48, 50 or 52 and 26 or 34 	
	Fault value: r047 Index 002 to 016:	
1	Short circuit or overload at binary outputs	i002 Bit 8 = 1: Overload at terminal 46 Bit 9 = 1: Overload at terminal 48 Bit 10 = 1: Overload at terminal 50 Bit 11 = 1: Overload at terminal 52 Bit 12 = 1: Overload at terminal 26 (24 V output) Bit 13 = 1: Overload at terminal 34, 44 and/or 210 (24 V output)
NOTE This monitoring function is deactivated in the delivery state. It can be activated via parameter P820.		

10.1.2.3 External faults

F019	Fault message from free function block FB286 (active in all operating states)
	Fault value: 1 the binector wired via parameter U100 Index.005 is in the state log."1" 2 the binector wired via parameter U100 Index.006 is in the state log."1" 3 the binector wired via parameter U100 Index.007 is in the state log."1" 4 the binector wired via parameter U100 Index.008 is in the state log."1"
F020	Fault message from free function block FB287 (active in all operating states)
	Fault value: 1 the binector wired via parameter U101 Index.005 is in the state log."1" 2 the binector wired via parameter U101 Index.006 is in the state log."1" 3 the binector wired via parameter U101 Index.007 is in the state log."1" 4 the binector wired via parameter U101 Index.008 is in the state log."1"
F021	External fault 1 (active in all operating states)
	Bit 15 in control word 1 was in the log. "0" state for longer than the time set in P360 index 001
F022	External fault 2 (active in all operating states)
	Bit 26 in control word 2 was in the log. "0" state for longer than the time set in P360 index 002
F023	Fault message from free function block FB2 (active in all operating states)
	Fault value: 1 the binector wired via parameter U100 Index.001 is in the state log."1" 2 the binector wired via parameter U100 Index.002 is in the state log."1" 3 the binector wired via parameter U100 Index.003 is in the state log."1" 4 the binector wired via parameter U100 Index.004 is in the state log."1"
F024	Fault message from free function block FB3 (active in all operating states)
	Fault value: 1 the binector wired via parameter U101 Index.001 is in the state log."1" 2 the binector wired via parameter U101 Index.002 is in the state log."1" 3 the binector wired via parameter U101 Index.003 is in the state log."1" 4 the binector wired via parameter U101 Index.004 is in the state log."1"

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)

10.1.2.4 Fault messages from motor sensors

F025	<p>Brush length too short (active in operating states of $\leq o3$)</p> <p>When parameter P495=2 (binary sensing of brush length), fault message at log."0" signal (longer than 10s) at terminal 211</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> Encoder for brush length has responded Open circuit in encoder cable 				
F026	<p>Bearings in bad condition (active in operating states of $\leq o6$)</p> <p>When parameter P496=2 (bearing condition sensing) fault message at log. "1" signal (longer than 2 s) at terminal 212</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> Encoder for bearing condition has responded 				
F027	<p>Air-flow monitoring of motor fan (active in operating states of $< o6$)</p> <p>When parameter P497=2 (air-flow monitoring), fault message at log "0" signal (longer than 40s) at terminal 213</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> Encoder for fan monitoring has responded Open circuit in encoder cable 				
F028	<p>Motor overtemperature (active in operating states of $\leq o6$)</p> <p>When parameter P498=2 (thermostat connected), fault message at log. "0" signal (longer than 10s) at terminal 214</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> Thermostat for monitoring motor temperature has responded Open circuit in encoder cable 				
F029	<p>Motor overtemperature (active in all operating states)</p> <p>Select via P493=2 or 3 (temperature sensor at terminals 22 / 23) or P494=2 or 3 (temperature sensor at terminals 204 / 205)</p> <p><u>When parameter P490.01=1 (KTY84 at terminals 22 / 23) or P490.02=1 (KTY84 at terminals 204 / 205):</u> The fault message is activated if the motor temperature reaches or exceeds the value set in parameter P492.</p> <p><u>When parameter P490.01=2, 3, 4 or 5 (PTC thermistor at terminals 22 / 23) or P490.02=2, 3, 4 or 5 (PTC thermistor at terminals 204 / 205):</u> The fault message is activated if the motor temperature reaches or exceeds the response value of the selected PTC thermistor.</p> <p>Fault value:</p> <table border="0"> <tr> <td style="padding-right: 10px;">1</td> <td>Fault activation through temperature sensor at terminals 22 / 23</td> </tr> <tr> <td>2</td> <td>Fault activation through temperature sensor at terminals 204 / 205</td> </tr> </table>	1	Fault activation through temperature sensor at terminals 22 / 23	2	Fault activation through temperature sensor at terminals 204 / 205
1	Fault activation through temperature sensor at terminals 22 / 23				
2	Fault activation through temperature sensor at terminals 204 / 205				

10.1.2.5 Drive faults

NOTE	
<p>The following monitoring functions, F031 to F037, are deactivated in the delivery state. They can be activated via parameter P820.</p>	
F031	<p>Speed controller monitoring (active in operating states of --, I, II)</p> <p>The monitor responds when the difference between the connectors selected in P590 and P591 (factory setting: Setpoint/actual value difference of speed controller) exceeds the limit set in parameter P388 for longer than the time set in parameter P390.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> Open control loop Controller not optimized P590 or P591 is not correctly parameterized

Fault No.	Description
Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)

10.1.2.6 External faults

F033	<p>Fault message from free function block FB4 (active in all operating states)</p> <p>Fault value:</p> <ol style="list-style-type: none"> 1 the binector wired via parameter U102 Index.001 is in the state log."1" 2 the binector wired via parameter U102 Index.002 is in the state log."1" 3 the binector wired via parameter U102 Index.003 is in the state log."1" 4 the binector wired via parameter U102 Index.004 is in the state log."1"
F034	<p>Fault message from free function block FB5 (active in all operating states)</p> <p>Fault value:</p> <ol style="list-style-type: none"> 1 the binector wired via parameter U103 Index.001 is in the state log."1" 2 the binector wired via parameter U103 Index.002 is in the state log."1" 3 the binector wired via parameter U103 Index.003 is in the state log."1" 4 the binector wired via parameter U103 Index.004 is in the state log."1"

10.1.2.7 Drive faults

F035	<p>Drive is blocked (active in operating states of --, I, II)</p> <p>This monitoring function responds if the following conditions are fulfilled for longer than the period set in parameter P355:</p> <ul style="list-style-type: none"> • Positive or negative torque or armature current limit • The armature current is higher than 1% of the converter rated armature DC current • The actual speed is less than 0.4% of maximum speed <p>Possible fault causes</p> <ul style="list-style-type: none"> • Drive is blocked
F036	<p>No armature current is flowing (active in operating states of --, I, II)</p> <p>This monitoring function responds if the armature firing angle is at the rectifier stability limit for more than 500 ms and the armature current is less than 1% of the converter rated armature DC current.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Armature circuit is open (e.g. DC fuses have blown, open circuit, etc.) • Rectifier stability limit α_G (P150) is incorrectly set • Drive is operating at α_G limit (e.g. due to supply undervoltage) • EMF is too high because maximum speed setting is too high, refer to P083, P115, P143, P741) • EMF is too high because field weakening is not selected (refer to P082) • EMF is too high because field current is set too high (refer to P102) • EMF is too high because transition speed for field weakening is set too high (refer to P101) ??
F037	<p>I²t motor monitor has responded (active in operating states of --, I, II)</p> <p>This monitoring function responds when an I²t value is reached which corresponds to the final temperature at 110% of the rated motor armature current.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Parameter P114 is incorrectly set • Drive has been operating for too long at >110% of rated motor armature current
F038	<p>Overspeed (active in operating states of --, I, II)</p> <p>This fault message is activated if the actual speed value (selected in P595) exceeds the positive (P380) or negative (P381) threshold by 0.5%.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Lower current limit has been input • Current-controlled operation • P512, P513 are set too low • Tachometer cable contact fault in operation close to maximum speed

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
F039	<p>I²t power section monitor has responded (active in operating states of --, I, II)</p> <p>This monitoring function responds if the calculated I²t value of the power section reaches the permissible value for the power section concerned (see also P075).</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Drive has been operating at overload for too long • Parameter P075 is incorrectly set • Parameter P077 is incorrectly set 	
F040	<p>Electronics supply disconnected in active fault status (active in all operating states)</p> <p>This fault message is activated if the electronics power supply has been disconnected, even though a fault was displayed and not yet acknowledged.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Not all fault messages have been acknowledged <p>Fault value:</p> <p>Last active fault message</p>	
F041	<p>Ambiguous selection of parameter set or ramp-function generator (active in all operating states)</p> <ul style="list-style-type: none"> • While an optimization run is in progress, the function data set selection must not be changed. Fault F041 is displayed if another, different function data set is selected while an optimization run is being executed. • Check whether ramp-function generator parameter set 1 or 2 or 3 (parameters P303 to P314) is clearly selected. If parameter sets 2 and 3 are selected simultaneously for more than 0.5s, then fault message F041 is displayed. While the parameter set selection is ambiguous, the system continues to apply the last clearly identified ramp-function generator parameters. <p>Possible fault causes</p> <ul style="list-style-type: none"> • P676 or P677 (selection of binectors which determine the active function data set in control word 2, bits 16 and 17) is incorrectly set • P637 or P638 (selection of binectors which determine ramp-function generator setting) is incorrectly set <p>Fault value:</p> <p>2 The selection of the function data set has been changed during an optimization run</p> <p>3 Ambiguous selection of ramp-function generator parameter set</p>	

Fault No.	Description					
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)				
F042	<p>Tachometer fault (active in operating states of --, I, II)</p> <p>A check is performed every 20ms to ensure that $\frac{\text{Actual speed (K0179)}}{\text{Actual EMF (K0287)}} \text{ is } > +5\%$</p> <p>If the check result is incorrect for 4 times in succession, the fault message is activated.</p> <p>The following rule applies: 100% actual speed = maximum speed 100% actual EMF = ideal average DC voltage at $\alpha \geq 0$, i.e. when the thyristor bridge is fully gated</p> <p>The ideal DC voltage average value at $\alpha = 0$ is $P078.001 * \frac{3 * \sqrt{2}}{\pi}$</p> <p>The monitoring function is effective only if the EMF > a % of $P078.001 * \frac{3 * \sqrt{2}}{\pi}$</p> <p>"a" is a percentage that can be set in parameter P357 (default setting 10%). The monitoring function is effective only if the armature current is > 2% of the converter rated DC current set in r072.002.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Open circuit in tachometer or pulse encoder cable. • Tachometer or pulse encoder cable incorrectly connected. • Pulse encoder supply has failed. • Polarity for actual speed value (P743) is incorrectly set. • Armature circuit data (P110 und P111) are incorrectly set (execute current controller optimization run). • Tachometer or pulse encoder defective • Pulse encoder supply voltage is incorrectly set (P140) • The field polarity is not reversed by the external hardware when the field is reversed. <p>Fault value: r047 Index 002 to 016:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">1 Open circuit in tachometer or pulse encoder cable</td> <td style="border: none;">i002 Actual speed value (K0179) in case of fault</td> </tr> <tr> <td style="border: none;">2 Polarity of tachometer or pulse encoder is incorrect</td> <td style="border: none;">i003 Actual EMF value (K0287) in case of fault</td> </tr> </table>		1 Open circuit in tachometer or pulse encoder cable	i002 Actual speed value (K0179) in case of fault	2 Polarity of tachometer or pulse encoder is incorrect	i003 Actual EMF value (K0287) in case of fault
1 Open circuit in tachometer or pulse encoder cable	i002 Actual speed value (K0179) in case of fault					
2 Polarity of tachometer or pulse encoder is incorrect	i003 Actual EMF value (K0287) in case of fault					
F043	<p>EMF too high for braking operation (active in operating states of --, I, II)</p> <p>This fault message is activated if the following 5 conditions are fulfilled when a <u>torque direction reversal is requested</u> (selection of MI or MII):</p> <ul style="list-style-type: none"> • P272=0 (fault message is parameterized and not alarm + field weakening) • A parameterized, additional, torque-free interval (P160 ≠ 0) has expired • Parallel drive is ready for engagement of the new torque direction • The absolute value of the <u>armature current (K0118)</u> requested in the new torque direction is <u>≥0.5% of P072</u> • The <u>calculated firing angle (K0101)</u> for the armature current requested for the new torque direction is <u>≥165 degrees</u>. <p>Possible fault causes</p> <ul style="list-style-type: none"> • No "speed-dependent field weakening" (P081=0) is parameterized even though operation in the field weakening range is needed for the requested maximum speed <p>Note: In motor operation, it is possible to reach EMF values corresponding to the peak of the phase-to-phase supply voltage at a firing angle of $\alpha_G=30^\circ$ (rectifier stability limit P150) and low armature currents.</p> <ul style="list-style-type: none"> • Setpoint EMF for field weakening operation too high (parameter P101 is set too high) • Supply voltage dip • EMF controller or field current controller is not optimized, possibly resulting in excessive EMF on power-up. <p>Fault value: r047 Index 002 to 016:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">Calculated firing angle (armature) before limitation (K0101)</td> <td style="border: none;">i002 Instantaneously measured actual EMF (K0287)</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;">i003 Armature current controller setpoint (K0118)</td> </tr> </table>		Calculated firing angle (armature) before limitation (K0101)	i002 Instantaneously measured actual EMF (K0287)		i003 Armature current controller setpoint (K0118)
Calculated firing angle (armature) before limitation (K0101)	i002 Instantaneously measured actual EMF (K0287)					
	i003 Armature current controller setpoint (K0118)					
F044	<p>A slave connected to the paralleling interface is not operating (active when <u>U800 = 1 or 2</u> and <u>U806>10 (master)</u> after receipt of the first valid protocol in operating states --, I, II)</p> <p>Fault value:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: none;">1 A fault message is active on a slave</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">2 A slave is not in operation (e.g. because its enable input is set to "0")</td> <td style="border: none;"></td> </tr> </table>		1 A fault message is active on a slave		2 A slave is not in operation (e.g. because its enable input is set to "0")	
1 A fault message is active on a slave						
2 A slave is not in operation (e.g. because its enable input is set to "0")						

Fault No.	Description					
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)				
F046	<p>Analog select input for main setpoint (terminals 4 and 5) faulty (active in operating states of ≤ o6)</p> <p>This fault message is activated when P700=2 (current input 4 to 20 mA) and an input current of less than 2mA is flowing.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Open circuit in supply cable • P700 is incorrectly set 					
F047	<p>Analog select input 1 (terminals 6 and 7) is faulty (active in operating states of ≤ o6)</p> <p>This fault message is activated when P710=2 (current input 4 to 20 mA) and an input current of less than 2mA is flowing.</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • Open circuit in supply cable • P710 is incorrectly set 					
F048	<p>Fault in measuring channel for digital speed sensing using pulse encoder (active in all operating states)</p> <p><u>1. Disturbances on encoder cables:</u> Faults on the encoder cables (transitions to 0 with a 1 signal or to 1 with a 0 signal) are signalled as a rotational direction change by the evaluation circuit. Frequent changes in rotational direction can occur only at speeds around 0. The fault message is activated if 10 consecutive pulse encoder signal evaluations identify "direction of rotation change" at a speed of ≥ 48 rev/min and an EMF > threshold (see below).</p> <p><u>2. Pulse encoder defective:</u> The fault message is activated if, at an EMF > threshold (see below) 10 consecutive pulse encoder signal evaluations identify "implausible characteristics" of these signals (i.e. frequent rotational direction changes, edges too close together, failure of an encoder cable or short circuit between two encoder cables).</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> • EMC-related interference on a pulse encoder signal (terminals 28 to 31) • Pulse encoder defective • Interruption in an encoder cable • Short circuit between an encoder cable and the supply voltage or another encoder cable • P110 or P111 is incorrectly set (resulting in incorrect calculation of EMF) <p>Note: When the speed encoder is operating correctly, signal sequences, which are characteristic of a faulty pulse encoder or disturbances on the pulse encoder cables, may occur continuously at the input terminals (e.g. continuous changes in rotational direction or short pulse intervals) at about 0 speed, e.g. as the result of slight oscillation around a bright/dark transition on the speed encoder disk).</p> <p>For this reason, fault F048 is not activated until the $EMF > 10\% \text{ of } P078.001 * \frac{3 * \sqrt{2}}{\pi}$.</p> <p>Fault value:</p> <table border="1"> <tr> <td>1</td> <td>Disturbances on encoder cables</td> </tr> <tr> <td>2</td> <td>Defective pulse encoder</td> </tr> </table>		1	Disturbances on encoder cables	2	Defective pulse encoder
1	Disturbances on encoder cables					
2	Defective pulse encoder					

10.1.2.8 Start-up faults

F050	<p>Optimization run not possible (active in all operating states)</p> <p>A fault has occurred during an optimization run.</p>
<p>NOTE</p> <p>The contents of r047, Index 002 to 016, can provide specialists with more detailed information about fault causes. For this reason, please read out and document all the indices associated with this fault and pass them on when you contact Siemens for help.</p>	

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
	Fault value:	
1	<p>Armature current is too low when $\alpha=30^\circ$ and EMF=0. (average armature current <75% of $I_{A, \text{ motor}}$ or <75% of $I_{A, \text{ rated}}$)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Armature circuit interrupted • High-resistance load • P150 (Alpha G limit) has been set to excessively high value 	
2	<p>It was not possible to determine the armature circuit resistance (P110) because the armature current was $\geq 37.5\%$ of P100 in fewer than 20 of the 150 firing cycles of the measuring phase.</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Armature current of 37.5% of P100 ($I_{A, \text{ motor}}$) is no longer possible (although a current of 75% of P100 was already flowing, maybe a fuse has blown). 	
3	<p>Armature current peaks are too small at $\alpha=30^\circ$ and EMF=0 (armature current peak value <50% of $I_{A, \text{ motor}}$ or <50% of $I_{A, \text{ rated}}$)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Armature circuit inductance is too high (field supply from armature terminals) • P150 (Alpha G limit) has been set to excessively high value <p>Possible remedy:</p> <ul style="list-style-type: none"> • Reduce P100 ($I_{A, \text{ motor}}$) while this optimization run is in progress 	
4	<p>The armature circuit inductance (P111) cannot be determined from the sampled values of the armature current and line voltage of the armature current crest last generated</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • P100 ($I_{A, \text{ motor}}$) or r072.i002 ($I_{A, \text{ rated}}$) very much smaller than actual motor rated current of the armature • $L_A > 327.67\text{mH}$ (armature circuit inductance too large) • P100 ($I_{A, \text{ motor}}$) very much smaller than r072.i002 ($I_{A, \text{ rated}}$) • Armature circuit short-circuited 	
5	<p>Offset adjustment of actual field current sensing is not possible (value detected for P825 is outside permissible value range)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Fault in actual field current sensing circuit (defective A7004 gating board or A7001 electronics board) 	
7	<p>The field circuit resistance (P112) is indeterminable (the actual field current does not reach the internally specified setpoint of 95% of P102 as a result of P112 variation)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • $R_A > 3276.7\Omega$ • Fault in actual field current sensing circuit (defective gating board or A7001 electronics board) • The command "Inject standstill field" is applied • P102 is set too high • A thyristor in the field bridge is not firing 	
8	<p>80% of rated EMF ($K287=P101 - P100 * P110$) cannot be reached within 15s (or maximum of the three set acceleration times)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Acceleration time (P303, P307, P311) is set too low • P101 does not match the set maximum speed (U_A at $n_{\text{max}} < P101$) or setting for P102 is too low • The command "Ramp-function generator enable"=0 or "Ramp-function generator stop"=1 	
9	<p>Field current control loop is not stable enough to record field characteristics (30s after injection of internal field current setpoint, actual field current is deviating by more than (0.39% of P102 + 0.15 % of r073.002) from the setpoint)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Field current controller or field current precontrol is not optimized or optimized badly (check P112, P253 to P256 or execute a current controller optimization run (P051=25)) 	
10	<p>Field characteristic is not uniform (i.e. in spite of field current setpoint reduction, the flux values of this measuring point calculated from EMF and actual speed are rising)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • High armature reaction and sharp load variations during recording of field characteristics • Field current controller or field current precontrol is not optimized or optimized badly (check P112, P253 to P256 or execute a current controller optimization run (P051=25)) 	

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
11	<p>A lower field current limit of $\geq 50\%$ of P102 ($I_{F,motor}$) is applied (for this reason, it is not possible to plot a minimum of 9 field weakening measuring points)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • P103 $\geq 50\%$ of P102 Check P614 ! 	
12	<p>The drive has reached the positive torque limit even though the applied field current setpoint is still $\geq 50\%$ of P102 ($I_{F,motor}$)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Armature current is very "unsteady", e.g. due to high speed controller P gain setting in P225 (on drive with high integral-action time). In this case, setting a lower actual speed filtering value in P200 and execution of another speed controller optimization run (P051=26) may help. • Check torque limits 	
13	<p>The drive has reached the positive armature current limit even through the applied field current setpoint is still $\geq 50\%$ of P102 ($I_{F,motor}$)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Armature current is very "unsteady", e.g. due to high speed controller P gain setting in P225 (on drive with high integral-action time). In this case, setting a lower actual speed filtering value in P200 and execution of another speed controller optimization run (P051=26) may help • Check armature current limits 	
14	<p>The speed has changed by more than 12.5% at a constant speed setpoint even through the applied field current setpoint is still $\geq 50\%$ of P102 ($I_{F,motor}$)</p> <p>Possible cause: as for fault value 12</p>	
15	<p>The EMF setpoint is too small to plot a field characteristic</p> $EMF_{set} = U_A - I_{A,motor} \cdot R_A = P101 - P100 \cdot P110 < 10\% \text{ of } 1.35 \cdot P078.i001$ <p>(e.g. P078.i001 = 400 V . . . minimum $EMF_{set} = 54 \text{ V}$)</p>	
16	<p>Field weakening operation is not allowed in operation without a tachometer (P083=3)</p>	
17	<p>The field current controller cannot be optimized because the field circuit time constant cannot be determined (actual field current does not decay after switch-off to below $0.95 \cdot \text{initial value}$ within approximately 1s or to below $0.8 \cdot 0.95 \cdot \text{initial values}$ within approximately 2 s)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Setting in P103 is too high • Field circuit inductance is too high • Fault in actual field current sensing circuit (gating board or A7001 electronics board defective) • Ratio r073.02 / P102 is too high (change P076.02 if necessary) 	
18	<p>Field weakening range is too wide, i.e. during power-up (at full field) to a speed setpoint of $+10\% n_{max}$, the EMK is $> 77\%$ of setpoint EMF ($P101 - P100 \cdot P110$)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Maximum speed setting is incorrect • Pulse encoder parameters are incorrect (P140 to P143) • Parameters for tachometer adaptation are incorrect (P741) • Setpoint EMF is not correct (P101, P100, P110) • An excessively high load torque (in positive or negative direction, e.g. a suspended load) causes the drive to rotate, one of the armature current or torque limits may be parameterized too low 	
19	<p>A steady-state actual speed of $+10\%$, $+20\%$, $+30\%$. . . or $+100\%$ of the maximum speed cannot be reached within 3 minutes (or maximum value of the three set acceleration times) in speed-controlled operation (the speed setpoint/actual value difference averaged over 90 firing cycles must equal $< 0.1\% n_{max}$ for a specific time period)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Acceleration time is set too low (P303, P307, P311) • Drive is blocked • An excessively high load torque (in positive or negative direction, e.g. a suspended load) causes the drive to rotate, one of the armature current or torque limits may be parameterized too low • Poor speed controller setting (P225, P226, P228) or speed controller is parameterized as pure P controller or with droop • A band elimination filter (P201, P202 or P203, P204) is active • Command "Ramp-function generator enable" =0 or "Ramp-function generator STOP" =1 is applied 	

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
20	<p>Current limit is too low (With speed controller optimization run: Less than 30% or 45% of P100 ($I_{A, motor}$) + the armature current required for zero speed, With optimization run for friction moment and moment of inertia compensation: Less than 20% of P100 ($I_{A, motor}$) + the armature current required for a steady-state speed corresponding to 10% of maximum speed)</p>	
21	<p>Field weakening range is too wide ($n_{act} < +7\% n_{max}$ produces $EMF > 54\%$ setpoint EMF) (setpoint EMF = $K289 = P101 - P100 * P110$)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Maximum speed setting is incorrect • Pulse encoder parameters are incorrect (P140 to P143) • Parameters for tachometer adaptation are incorrect (P741) • Setpoint EMF is not correct (P101, P100, P110) • Caution: Even a high absolute negative actual speed value can produce an EMF of $> 54\%$ setpoint EMF 	
22	<p>With speed controller optimization run: With an acceleration current equalling 20% or 30% of P100 ($I_{A, motor}$) + armature current required for zero speed or With optimization run for friction moment and moment of inertia compensation: With an acceleration current equalling the current required to achieve a steady-state speed of 10% of maximum speed + 20% of P100 ($I_{A, motor}$), the maximum speed cannot be reached within 45s +7%</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Centrifugal mass is too large • Drive is blocked, heavily speed-dependent or excessively high load torque • "Active" load is attempting to maintain a certain speed <p>Possible remedy:</p> <ul style="list-style-type: none"> • Increase P100 while the optimization run is in progress in order to raise the applied acceleration current during optimization (during the speed controller optimization run, a maximum of 45% of $I_{A, motor}$ (+ armature current for zero speed) is applied as the armature current setpoint, $I_{A, motor}$ (P100) can thus be increased to 2.2 times the value at maximum without exceeding 100% $I_{A, motor}$ during optimization) 	
23	<p>With speed controller optimization run: With an acceleration current equalling 20% or 30% of P100 ($I_{A, motor}$) + armature current required for zero speed or With optimization run for friction moment and moment of inertia compensation: With an acceleration current equalling the current required to achieve a steady-state speed of 10% of maximum speed + 20% of P100 ($I_{A, motor}$), the maximum speed or 100% of setpoint EMF cannot be reached within 90s +13%</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Flywheel mass is too large • Drive is blocked, heavily speed-dependent or excessively high load torque • "Active" load is attempting to maintain a certain speed <p>Possible remedy:</p> <ul style="list-style-type: none"> • Increase P100 while the optimization run is in progress in order to raise the applied acceleration current during optimization (during the speed controller optimization run, a maximum of 45% of $I_{A, motor}$ (+ armature current for zero speed) is applied as the armature current setpoint, $I_{A, motor}$ (P100) can thus be increased to 2.2 times the value at maximum without exceeding 100% $I_{A, motor}$ during optimization) 	
24	<p>With speed controller optimization run: The actual speed does not drop to below +2% of maximum speed or to below the speed threshold n_{min} set in P370 within 2 minutes With optimization run for field weakening: The actual speed does not drop to below +2% of maximum speed or to below the speed threshold n_{min} set in P370 within 10 minutes With optimization run for friction moment and moment of inertia compensation: The actual speed does not drop to below +2% of maximum speed or to below the speed threshold n_{min} set in P370 within 11 or 2 minutes</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Single-quadrant drive coasts to a standstill too slowly 	

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
25	<p>The average armature current required for the speed range from +7% to approximately +13% of maximum speed to cover the friction and/or steady-state load torque cannot be calculated</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • Drive with very little friction or very small integral-action time and, as a result of the very short measuring time, computational inaccuracies during evaluation • Distorted or disturbed actual speed value • Large flywheel mass that is coupled to the drive via long shaft with high torsion, possibly via a coupling with large amount of play <p>Possible remedy:</p> <ul style="list-style-type: none"> • Reduce P100 for duration of the optimization run to decrease the acceleration current applied during optimization and thus to lengthen the measuring time 	
26	<p>Load torque too high ($n_{set}=0\%$ n_{max} results in $n_{ict} \geq 40\%$ n_{max}) (actual speed value is averaged over 90 firing cycles, speed monitoring at $\geq 40\%$ n_{max} does not start for 1s after application of speed setpoint of $n_{set}=0$)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • An excessively high load torque (in a positive or negative direction, e.g. suspended load) causes the drive to rotate (the speed controller parameters are parameterized according to the factory setting during this run) • One of the armature current or torque limits is parameterized too low (the motor field may not be reaching full field strength fast enough with the result that the initial motor torque is too low) • Maximum speed setting is incorrect • Pulse encoder parameters are incorrect (P140 to P143) • Parameters for tachometer adjustment are not correct (P741) 	
27	<p>Load torque is too high ($n_{set}=0\%$ n_{max} results in $EMF \geq 100\%$ setpoint EMF) (EMF monitoring at $\geq (P101 - P100 * P110)$ does not start for 1 s after application of speed setpoint of $n_{set}=0$)</p> <p>Possible cause:</p> <ul style="list-style-type: none"> • An excessively high load torque (in a positive or negative direction, e.g. suspended load) causes the drive to rotate (the speed controller parameters are parameterized according to the factory setting during this run) • One of the armature current or torque limits is parameterized too low (the motor field may not be reaching full field strength fast enough with the result that the initial motor torque is too low) • Maximum speed setting is incorrect • Pulse encoder parameters are incorrect (P140 to P143) • Parameters for tachometer adjustment are not correct (P741) • Setpoint EMF settings are incorrect (P101, P100, P110) 	
28	<p>A steady-state actual speed corresponding to 0% of maximum speed cannot be reached within 0 s in speed-controlled operation (the speed setpoint/actual value difference averaged over 90 firing cycles must be $<1.0\%$ n_{max} for a total of 4s)</p> <p>Possible cause: As for fault value 26</p>	
29	<p>The calculated <u>armature circuit inductance is greater than 327.67 mH</u>, therefore <u>P111 = 327.67 mH has been set</u>. All other parameters (the current controller parameters P155 and P156 too) have been set correctly despite that. (For the real armature circuit inductance in mH, see r047.i010).</p> <p>Possible cause:</p> <ul style="list-style-type: none"> •e.g. field supply from the armature terminals 	
30	<p>The calculated <u>armature circuit inductance is greater than 327.67 mH and the calculated armature circuit resistance is greater than 32.767 Ω</u>, therefore <u>P111 = 327.67 mH and P110 = 32.767 Ω has been set</u>. All other parameters have also been set. However, the values of the current controller parameters P155 and P156 might differ from the optimum setting.</p> <p>Possible cause:</p> <ul style="list-style-type: none"> •e.g. field supply from the armature terminals 	
31	<p>The calculated <u>armature circuit resistance is greater than 32.767 Ω</u>, therefore <u>P110 = 32.767 Ω has been set</u>. All other parameters have also been set. Possibly the calculated P111 and therefore also the current controller parameters P155 and P156 have been distorted by the limitation in P110 .</p> <p>Possible cause:</p> <ul style="list-style-type: none"> •e.g. field supply from the armature terminals 	
r047 Index 002:		
1	Fault has occurred during optimization run for current controller and precontrol for armature and field (selected by means of P051=25)	
2	Fault has occurred during optimization run for speed controller (selected through setting P051=26)	
3	Fault has occurred during optimization run for field weakening (selected through setting P051=27)	
4	Fault has occurred during internal offset adjustments (selected through P051=22)	
5	Fault has occurred in optimization run for friction and moment of inertia compensation (selected through setting P051=28)	

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
F052	Optimization run aborted as a result of external cause (active in operating states of --, I, II) This fault message is activated when the converter ceases operating in the RUN state (state I, II or --) during an optimization run (and thus in response to every FAULT) or if the EMERGENCY STOP or SHUTDOWN command is applied. The optimization run is aborted. Only those parameters which had been fully optimized prior to activation of the fault message are altered. When the STANDSTILL command is applied, this fault message is <u>not</u> activated if the optimization run for field weakening is interrupted <u>after</u> the 1st field weakening measuring point has been recorded or, in the case of the optimization run for friction and moment of inertia compensation, <u>after</u> the measuring point at 10% maximum speed has been determined. In these cases, the run may be interrupted by STANDSTILL so as to be able to complete the run in several stages (by repeated restarts) for a limited travel path.	
	Fault value: 1 Run was aborted because converter is <u>no longer</u> operating in RUN mode 2 Run was aborted because EMERGENCY STOP command was applied (speed controller setpoint=0) 3 Run was aborted because STANDSTILL command was applied (ramp-function generator setpoint=0) 4 Operation has been aborted because P051 was changed during the optimization run 5 Run was aborted because SWITCH-ON command was not applied within 30 s of selection of optimization run 6 Operation has been aborted because the OPERATING ENABLE command was not entered within 1 minute of selection of the optimization run. 7 Operation has been aborted because converter was not in operating state < o7.2 15 s after selection of the optimization run with P051 = 25, 26, 27 or 28 (input of OFF1 command may have been forgotten)	r047 Index 002 to 016: i002=1 Fault has occurred during optimization run for current controller and precontrol for armature and field (selected by means of P051=25) i002=2 Fault has occurred during optimization run for speed controller (selected through setting P051=26) i002=3 Fault has occurred during optimization run for field weakening (selected through setting P051=27) i002=5 Fault has occurred in optimization run for friction and moment of inertia compensation (selected through setting P051=28)

10.1.2.9 External faults

F053	Fault message from free function block FB288 (active in all operating states) Fault value: 1 the binector wired via parameter U102 Index.005 is in the state log."1" 2 the binector wired via parameter U102 Index.006 is in the state log."1" 3 the binector wired via parameter U102 Index.007 is in the state log."1" 4 the binector wired via parameter U102 Index.008 is in the state log."1"
F054	Fault message from free function block FB289 (active in all operating states) Fault value: 1 the binector wired via parameter U103 Index.005 is in the state log."1" 2 the binector wired via parameter U103 Index.006 is in the state log."1" 3 the binector wired via parameter U103 Index.007 is in the state log."1" 4 the binector wired via parameter U103 Index.008 is in the state log."1"

10.1.2.10 Start-up faults

F055	No field characteristic recorded (active in operating states of --, I, II) Possible fault causes <ul style="list-style-type: none"> The optimization run for field weakening (P051=27) has not yet been executed. Fault value: 1 P170 = 1 ("torque control") selected, but "no valid field characteristic has been recorded" (P117=0) yet 2 P081 = 1 ("speed-dependent field weakening") selected, but "no valid field characteristic has been recorded" (P117=0) yet (P117=0)
F056	Important parameter is not set (active in operating states of ≤ o6) This fault message is activated if certain parameters are still set to 0.

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
	Fault value:	
	1 Speed controller actual value selection in P083 is still set to 0 2 Rated motor armature current in P100 is still set to 0.0 3 Rated motor field current in P102 is still set to 0.00 (fault message only when P082 ≠ 0)	
F058	Parameter settings are not consistent (active in operating states of ≤ o6) Inconsistent values have been set in mutually dependent parameters. Fault value:	
	2 The parameters for speed-dependent current limitation are not set correctly (the following applies: P105>P107 (I1>I2) and P104 < P106 (n1<n2)) 3 The field characteristic is not uniform 4 The first threshold for P gain adaptation of the speed controller set in parameter P556 is higher than the second threshold setting in parameter P559 5 P557 is set to greater than P560 6 P558 is set to greater than P561 7 If P083=1 (analog tachometer), then P746 may not equal 0 (main actual value is not connected) 8 If P083=2 (pulse encoder), then P140 may not equal x0 (no pulse encoder installed) 9 If P083=3 (EMF control) then P082 may not equal x1x (field weakening operation) 10 P090 (stabilization time for supply voltage) ≥P086 (time for automatic restart) 11 P090 (stabilization time for supply voltage) ≥P089 (waiting time in state o4 or o5) 12 P445=1 is set (switch-on, shutdown and crawl act as a pushbutton) although no binector is parameterized as a shutdown button (P444=0)	
F059	Time has elapsed for temporary enabling of technology option S00 (active in all operating statuses) The temporary enabling of technology option S00 for 500 operating hours no longer applies. The functions are now no longer available, but the parameter settings have been retained. If you wish to continue using technology option S00, please contact to your nearest Siemens Regional Office for a PIN number for permanent enabling of technology option S00. You will need to know the serial number of your SIMOREG DC Master. For further details, please refer to the description of parameters U977 and n978 in Chapter 11 of the Parameter List.	

10.1.2.11 Hardware faults

F061	Fault message from thyristor check function (active in operating state o3) This fault message can be activated only if the thyristor check is activated via parameter P830. If “Thyristor defective” or “Thyristor unable to block” is signalled, then the relevant thyristor module must be replaced. Possible causes for irreparable damage to thyristors: <ul style="list-style-type: none"> • Interruption in snubber circuit • Current controller and precontrol are not optimized (excessive current peaks) • Inadequate cooling (e.g. fan is not operating, ambient temperature is too high, fan is rotating in wrong direction (incorrect phase sequence), inadequate air supply, heatsink is very dirty) • Excessive voltage peaks in incoming supply system • External short circuit or fault to ground (check armature circuit) If “Thyristor unable to block” is signalled, the cause can generally be attributed to a firing circuit fault, rather than to a defective thyristor. Possible causes: <ul style="list-style-type: none"> • Firing pulse cable to relevant thyristor is interrupted • Ribbon cable X101 or X102 is incorrectly inserted or interrupted • Defective electronics or gating board • Internal interruption in gating cable in thyristor module The designations of the firing cables and associated thyristors can be found in Section 6.4 (power connections).
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Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
	Fault value:	
1	Defective thyristor (short circuit in module V1, on 15A and 30 converters: V1 or V4)	
2	Defective thyristor (short circuit in module V2, on 15A and 30 converters: V2 or V5)	
3	Defective thyristor (short circuit in module V3, on 15A and 30 converters: V3 or V6)	
4	Defective thyristor (short circuit in module V4, on 15A and 30 converters: V4 or V1)	
5	Defective thyristor (short circuit in module V5, on 15A and 30 converters: V5 or V2)	
6	Defective thyristor (short circuit in module V6, on 15A and 30 converters: V6 or V3)	
8	Fault to ground in armature circuit	
9	I=0 message defective Possible fault cause <ul style="list-style-type: none"> Defective A7001 electronics board 	
11	Thyristor cannot be fired (X11)	
12	Thyristor cannot be fired (X12)	
13	Thyristor cannot be fired (X13)	
14	Thyristor cannot be fired (X14)	
15	Thyristor cannot be fired (X15)	
16	Thyristor cannot be fired (X16)	
17	2 or more thyristors (MI) cannot be fired Possible fault cause <ul style="list-style-type: none"> Armature circuit interrupted 	
21	Thyristor cannot be fired (X21)	
22	Thyristor cannot be fired (X22)	
23	Thyristor cannot be fired (X23)	
24	Thyristor cannot be fired (X24)	
25	Thyristor cannot be fired (X25)	
26	Thyristor cannot be fired (X26)	
27	2 or more thyristors (MII) cannot be fired	
31	Thyristor unable to block (X11 or X21)	
32	Thyristor unable to block (X12 or X22)	
33	Thyristor unable to block (X13 or X23)	
34	Thyristor unable to block (X14 or X24)	
35	Thyristor unable to block (X15 or X25)	
36	Thyristor unable to block (X16 or X26)	

10.1.2.12 Internal faults

F062	<p>Fault in parameter memory (active in all operating states)</p> <p>Software monitoring of correct functioning of the EEPROM module (non-volatile memory) on the A7009 board. The EEPROM values contains all data which must be protected in the case of a power failure (i.e. parameter values and process data which must remain stored during power failures).</p> <p>The following are monitored:</p> <ul style="list-style-type: none"> Connection between the A7001 electronics board and the EEPROM on the A7009 backplane wiring assembly Whether the parameter values stored on the EEPROM are within the permissible value range Whether data are being correctly stored on the EEPROM. For this purpose, values are read and checked for correctness after they are transferred to the module Whether the checksum of the non-volatile process data in the EEPROM is correct <p>Possible causes for all fault types: Excessive EMC-related interference is present (e.g. due to unprotected contactors, unscreened cables, loose shield connections)</p>
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Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
	Fault value:	r047 Index 002 to 016:
1	<p>Connection to EEPROM is faulty</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> A7001 electronics board is defective A7009 backplane wiring assembly is defective Plug-in connection X109 is defective 	
2	<p>Parameter value is outside permissible value range</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> "Restore to default value" has never been executed with this software (e.g. after software replacement) A7009 backplane wiring assembly is defective <p>Possible remedy:</p> <ul style="list-style-type: none"> Acknowledge fault, execute "Restore to default value" and start up the drive again 	<p>i002 Number of faulty parameter</p> <p>i003 Index of faulty parameter</p> <p>i004 Faulty parameter value</p>
3	<p>Parameter value cannot be stored on EEPROM</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> A7001 electronics board is defective A7009 backplane wiring assembly is defective Plug-in connection X109 is defective 	<p>i002 Address of fault memory location</p> <p>i003 Faulty value in EEPROM</p> <p>i004 Correct parameter value</p>
11	Checksum of non-volatile data (part 1) is not correct	<p>i002 Calculate checksum</p> <p>i003 Checksum found in EEPROM</p>
12	Checksum of non-volatile data (part 2) is not correct	
13	Checksum of non-volatile data (part 3) is not correct	
20	<p>Checksum of configuring table of parameter values is not correct</p> <p>Possible fault causes</p> <ul style="list-style-type: none"> Defective EEPROM "Restore to default value" has never been executed with this software (e.g. after software replacement) <p>Possible remedy:</p> <ul style="list-style-type: none"> Acknowledge fault, execute "Restore to default value" and start up the drive again! Check interference suppression measures and improve if necessary. 	
F063	<p>Errors in compensation data of analog inputs and outputs (active in all operating states)</p> <p>This function monitors whether the factory-set compensation data for the analog inputs and outputs are plausible</p> <p>Possible fault cause:</p> <ul style="list-style-type: none"> Defective A7001 or A7006 electronics board <p>Fault value: r047 Index 002 to 016:</p>	
11	Incorrect number of words in compensation values for analog inputs and outputs of A7001	i002 Incorrect number of words
12	Checksum error in compensation values for analog inputs and outputs of A7001	<p>i002 Calculated checksum</p> <p>i003 Errored checksum</p>
13	Incorrect value among compensation values for analog inputs and outputs of A7001	i002 Incorrect value
23	Incorrect value among compensation values for analog inputs and outputs of A7006	i002 Incorrect value

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
F064	Watchdog timer has initiated a reset (active in all operating states) An internal microprocessor hardware counter monitors whether the program for calculating the firing pulses runs at least once every 14 ms (program is executed on average every 2.7 to 3.3 ms). If this is not the case, the counter initiates a reset, Fo64 is then displayed. Possible fault causes <ul style="list-style-type: none"> • A7001 electronics board is defective • Excessive EMC-related interference is present (e.g. due to unprotected contactors, unscreened cables, loose shield connections) 	
	F065 Illegal microprocessor status (active in all operating states) An internal microprocessor hardware function monitors the microprocessor for illegal operating states. Possible fault causes <ul style="list-style-type: none"> • A7001 electronics board is defective • Excessive EMC-related interference is present (e.g. due to unprotected contactors, unscreened cables, loose shield connections) 	
F067	Converter cooling faulty (active in operating states of ≤ 013) The heatsink temperature monitoring function is activated 6s after connection of the electronics supply. (The current heat sink temperature is indicated at parameter r013 and on connector K050) Fault value: r047 Index 002 to 016:	
	1	Heatsink temperature > 95°C
	2	Heatsink temperature sensor is defective
	3	Converter fan is defective
F068	Analog measuring channel faulty (main setpoint, main actual value or analog select input) (active in all operating states) Hardware monitoring of measuring circuits Possible fault causes <ul style="list-style-type: none"> • A7001 module defective • Measuring circuit saturated (input voltage at terminals 4 and 5 or 6 and 7 higher than approx. 11.3V) 	
	Fault value:	
	1	Measuring channel for main setpoint / analog select input 1 faulty (terminals 4 and 5)
	2	Measuring channel for main actual value faulty (terminals 103 and 104)
F069	MLFB data are faulty (active in all operating states) Possible fault causes <ul style="list-style-type: none"> • Excessive EMC-related interference is present (e.g. due to unprotected contactors, unscreened cables, loose shield connections) • A7009 backplane wiring assembly is defective 	
	Fault value: r047 Index 002 to 016:	
	1	MLFB code number (r070) = MLFB code number (r070) is illegal
	2	MLFB data checksum error
	3	Works number checksum error
	4	Number of words of MLFB data is incorrect

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)

10.1.2.13 Communication errors with supplementary boards

F080	Error in initialization of a CB/TB board		
	Possible causes for fault values 1 and 6: <ul style="list-style-type: none"> • CB/TB board is defective • CB/TB board is not installed correctly • CB/TB board is taking too long to run up (e.g. due to very complex TB configuration) 		
	Fault value (r949 index 001):		
	r047 index 002 to 016:		
	1	The "Heartbeat counter" of the CB/TB has not started to count within 20 s	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB
2	The product version of the installed CT/TB board is not compatible with the SIMOREG 6RA70 converter	i002 Code number of slot containing incompatible board: 2 Slot D 3 Slot E 4 Slot F 5 Slot G 6 CB when configuration includes TB	
5	Parameters P918, U711 to U721 are not correctly set or not accepted after a change by means of U710 = 0 setting. (The meanings of these parameters are defined in the manual for the relevant CB board, see also function diagrams, Section 8, Sheets 30 and 31)	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB	
6	The initialization run for a CB/TB board has not been completed within 40 s	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB	
F081	CB/TB heartbeat error CB/TB has not incremented the monitoring counter for a period of 800 ms Possible causes of fault <ul style="list-style-type: none"> • CB/TB board is defective • CB/TB board is not correctly installed 	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB	
F082	CB/TB message timeout or error in data exchange		
	Possible causes of fault <ul style="list-style-type: none"> • CB/TB PZD message timeout (with fault value 10) • Excessive EMC-related interference (e.g. due to unprotected contactors, unscreened cables, loose screen connections) • CB/TB board is defective • CB/TB board is not correctly inserted 		
	Fault value (r949 index 001):		
	r047 Index 002 to 016:		
	1	Fault in alarm channel from CB to basic unit	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB
	2	Fault in alarm channel from TB to basic unit	
	3	Fault in fault channel from TB to basic unit	
	5	Fault in parameter job channel from CB to basic unit	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB
	6	Fault in parameter response channel from basic unit to CB	i015 Code number of board: 1 1 st TB or 1 st CB 2 2 nd CB
	7	Fault in parameter job channel from TB to basic unit	
	8	Fault in parameter response channel from basic unit to TB	
	10	CB/TB process data failure (message timeout period set in U722)	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB
	11	Fault in parameter job channel from PMU to TB	
12	Fault in parameter response channel from TB to PMU		

Fault No.	Description	
	Cause as a function of fault value (r047.001, r949.001 or r949.009 with acknowledged error)	Further information (r047.002 to r047.016)
15	Fault in setpoint channel from CB/TB to basic unit	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB
16	Fault in actual value channel from basic unit to CB/TB	i015 Code number of board: 1 TB or 1 st CB 2 2 nd CB

10.1.2.14 Fault messages from supplementary boards

F101 to F147	This group of fault messages is activated by supplementary boards Please refer to the operating manual of the relevant supplementary board for explanation of the fault messages and fault values
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10.2 Alarm messages

Alarm message display:

On the PMU: A (Alarm) and a three-digit number. The red LED (Fault) flashes.

On the OP1S: On the bottom line of the operational display. The red LED (Fault) flashes.

An alarm message cannot be acknowledged, but disappears automatically when the cause has been eliminated.

Several alarm messages can be active at the same time, these are then displayed in succession.

Many alarms (see List of Alarm Messages) can only be active in certain operating states.

The system responses to an alarm are as follows:

- Alarm message is displayed on the operator panel (PMU, OP1S)
- B0114 (= status word 1, bit 7) is set and B0115 is cancelled (see also special alarm bits in status word 2, e.g. for an external alarm, overload, etc.)
- The corresponding bit in one of the alarm words r953 (K9801) to r960 (K9808) is set

Alarm No.	Description
A015	Simolink start (active in all operating states) Although the board has been initialized, it cannot yet exchange telegrams (parameters have not yet been correctly configured on all nodes or the boards have not yet been linked via fiber optics to form a closed ring).
A018	Short circuit at binary outputs (active in all operating states) Hardware monitoring function to check for short circuit at one of the binary select outputs (see also F018 and r011).
A019	Alarm message from free function block FB256 (active in all operating states) The binector wired via parameter U104 Index.002 is in the state log."1"
A020	Alarm message from free function block FB257 (active in all operating states) The binector wired via parameter U105 Index.002 is in the state log."1"
A021	External alarm 1 (active in all operating states) Bit 28 in control word 2 was in the log. "0" state for longer than the time set in P360 index 003.
A022	External alarm 2 (active in all operating states) Bit 29 in control word 2 was in the log. "0" state for longer than the time set in P360 index 004.
A023	Alarm message from free function block FB6 (active in all operating states) The binector wired via parameter U104 Index.001 is in the state log."1"
A024	Alarm message from free function block FB7 (active in all operating states) The binector wired via parameter U105 Index.001 is in the state log."1"
A025	Brush length too short (active in all operating states) When parameter P495=1 (binary sensing of brush length): Alarm in response to log. "0" signal (longer than 10s) at terminal 211 Possible causes <ul style="list-style-type: none"> • Encoder for brush length has responded • Interruption in encoder cable

Alarm No.	Description
A026	<p>Poor bearing condition (active in all operating states)</p> <p>When parameter P496=1 (bearing condition sensing): Alarm in response to log. "0" signal (longer than 2s) at terminal 212</p> <p>Possible causes</p> <ul style="list-style-type: none"> Encoder for bearing condition has responded
A027	<p>Air flow monitoring (active in operating states of < 06)</p> <p>When parameter P497=1 (air flow monitoring): Alarm in response to log. "0" signal (longer than 40s) at terminal 213</p> <p>Possible causes</p> <ul style="list-style-type: none"> Encoder for fan monitoring has responded Interruption in encoder cable
A028	<p>Motor overtemperature (active in all operating states)</p> <p>When parameter P498=1 (thermostat connected): Alarm in response to log. "0" signal (longer than 10s) at terminal 214</p> <p>Possible causes</p> <ul style="list-style-type: none"> Thermostat for monitoring motor temperature has responded Interruption in encoder cable
A029	<p>Motor overtemperature (active in all operating states)</p> <p>Selection via P493=1 or 3 (thermostat at terminals 22 / 23) or P494=1 or 3 (thermostat at terminals 204 / 205)</p> <p>When parameter P490.01=1 (KTY84 at terminals 22 / 23) or P490.02=1 (KTY84 at terminals 204 / 205): The alarm is activated if the motor temperature reaches or exceeds the values set in parameter P492.</p> <p>When parameter P490.01=2, 3, 4 or 5 (PTC thermistor at terminals 22 / 23) or P490.02=2, 3, 4 or 5 (PTC thermistor at terminals 204 / 205): The alarm is activated if the motor temperature reaches or exceeds the trip value of the selected PTC.</p>
A031	<p>Speed controller monitoring (active in operating states of --, I, II)</p> <p>The monitor responds when the difference between the connectors selected in P590 and P591 (factory setting: Setpoint/actual value difference of speed controller) exceeds the limit set in parameter P388 for longer than the time set in parameter P390.</p> <p>Possible causes</p> <ul style="list-style-type: none"> Control loop interrupted Controller is not optimized P590 or P591 is not correctly parameterized
A033	<p>Alarm message from free function block FB8 (active in all operating states)</p> <p>The binector connected via parameter U106 Index.001 is in the log. "1" state</p>
A034	<p>Alarm message from free function block FB9 (active in all operating states)</p> <p>The binector connected via parameter U107 Index.001 is in the log. "1" state</p>
A035	<p>Drive blocked (active in operating states of --, I, II)</p> <p>The monitoring function responds if the following conditions are fulfilled for longer than the time set in parameter P355:</p> <ul style="list-style-type: none"> Positive or negative torque or armature current limit reached Armature current is greater than 1% of converter rated armature DC current The actual speed value is less than 0.4% of maximum speed
A036	<p>No armature current can flow (active in operating states of --, I, II)</p> <p>This monitoring function responds if the armature firing angle is at the rectifier stability limit for more than 500 ms and the armature current is less than 1% of the converter rated armature DC current.</p>

Alarm No.	Description
A037	<p>I²t motor monitor has responded (active in operating states of --, I, II)</p> <p>This monitoring function responds when an I²t value is reached which corresponds to the final temperature at 110% of the rated motor armature current.</p>
A038	<p>Overspeed (active in operating states of --, I, II)</p> <p>The monitoring function responds if the actual speed value (selected in P595) exceeds the positive (P512) or negative (P513) threshold by 0.5%.</p> <p>Possible causes</p> <ul style="list-style-type: none"> • Lower current limit has been input • Current-controlled operation • P512, P513 are set too low • Tachometer cable contact fault in operation close to maximum speed
A039	<p>I²t value of power section too high (active in all operating states)</p> <p>This alarm is activated if the permissible I²t value for the relevant power section is reached. At the same time, the current limit is set to P077 * 100% of the converter rated DC current. This limit is not cancelled again until the setpoint drops below 100% of the converter rated DC current. See also Fault F039 and Parameter P075.</p>
A043	<p>Automatic field current reduction if EMF is too high in operation (active in operating states of --, I, II)</p> <p>This alarm is active only when parameter P272=1 and activated if the following equation applies to firing angle α (armature) before limitation (K101):</p> <p style="margin-left: 40px;">$\alpha > (\alpha_{\text{W}} \text{ (inverter stability limit acc. to P151)} - 5 \text{ degrees})$ or , at a low (pulsating) current</p> <p style="margin-left: 40px;">$\alpha > (165 \text{ degrees} - 5 \text{ degrees})$</p> <p>The field is reduced simultaneously with A043, implemented through control of the armature firing angle to α_{W} (or 165 degrees) - 5 degrees) using a P controller whose output reduces the EMF controller setpoint. For this reason, "Field current setpoint input through internal EMF control" (PO81=1) must be parameterized.</p> <p>When a tchange in torque direction is requested, both torque directions are inhibited until the calculated control angle (K101) is <165 degrees for the armature current requested in the new torque direction, i.e. until the field, and thus the EMF, have been reduced accordingly.</p> <p>See also parameter P082.</p>
A044	<p>An alarm is active on one slave connected to the paralleling interface (active in all operating states)</p>
A046	<p>Analog select input for main setpoint (terminals 4 and 5) faulty (active in operating states of $\leq o6$)</p> <p>This alarm is activated when P700=2 (current input 4 to 20 mA) and the input current is less than 3mA.</p>
A047	<p>Analog select input 1 (terminals 6 and 7) faulty (active in operating states of $\leq o6$)</p> <p>This alarm is activated when P710=2 (current input 4 to 20 mA) and the input current is less than 3mA.</p>
A053	<p>Alarm message from free function block FB258 (active in all operating states)</p> <p>The binector connected via parameter U106 Index.002 is in the log. "1" state</p>
A054	<p>Alarm message from free function block FB259 (active in all operating states)</p> <p>The binector connected via parameter U107 Index.002 is in the log. "1" state</p>
A059	<p>Remaining time for temporary enabling of the S00 technology option is now less than 50 operating hours (active in all operating statuses)</p> <p>Remaining time for temporary enabling of the S00 technology option is now less than 50 operating hours. The functions will soon be unavailable.</p> <p>If you wish to continue using technology option S00, please contact to your nearest Siemens Regional Office for a PIN number for permanent enabling of technology option S00.</p> <p>You will need to know the serial number of your SIMOREG DC Master. For further details, please refer to the description of parameters U977 and n978 in Chapter 11 of the Parameter List.</p>
A067	<p>Converter cooling faulty (active in all operating states)</p> <p>The heatsink temperature is > 90 °C. The monitoring function is activated 6s after the electronics supply is connected.</p> <p>(The current heat sink temperature is indicated at parameter r013 and on connector K050)</p>

Alarm No.	Description
A081	<p>CB alarm from 1st CB (active in operating states \leq o11)</p> <p>For PROFIBUS board (CB1 or CBP): The combinations of identifier bytes sent in the configuration message by the DP Master do not conform to the permitted identifier byte combinations (configuring error in DP Master) Effect: No link is set up with the DP Master; re-configuration necessary.</p>
A082	<p>CB alarm from 1st CB (active in operating states \leq o11)</p> <p>For PROFIBUS board (CB1 or CBP): No valid PPO type can be identified from the configuration message sent by the DP Master. Effect: No link is set up with the DP Master; re-configuration necessary.</p>
A083	<p>CB alarm from 1st CB (active in operating states \leq o11)</p> <p>For PROFIBUS board (CB1 or CBP): No useful data or invalid useful data have been received from the DP Master. Effect: The process data are not transferred to the basic unit. When the message timeout monitor is active (U722 set to value other than 0), fault message F082 with fault value 10 is output.</p>
A084	<p>CB alarm from 1st CB (active in operating states \leq o11)</p> <p>For PROFIBUS board (CB1 or CBP): The data exchange between the communications board and DP Master has been interrupted. Effect: When the message timeout monitor is active (U722 set to value other than 0), fault message F082 with fault value 10 is output.</p>
A085	<p>CB alarm from 1st CB (active in operating states \leq o11)</p> <p>For PROFIBUS board (CB1 or CBP): Error in DPS software of communications board. Effect: Fault message F081 is output.</p>
A086 to A088	<p>CB alarm from 1st CB (active in operating states \leq o11)</p>
A089	<p>CB alarm from 2nd CB (active in operating states \leq o11)</p> <p>Meaning as for A081, but from 2nd CB.</p>
A090	<p>CB alarm from 2nd CB (active in operating states \leq o11)</p> <p>Meaning as for A082, but from 2nd CB.</p>
A091	<p>CB alarm from 2nd CB (active in operating states \leq o11)</p> <p>Meaning as for A083, but from 2nd CB.</p>
A092	<p>CB alarm from 2nd CB (active in operating states \leq o11)</p> <p>Meaning as for A084, but from 2nd CB.</p>
A093	<p>CB alarm from 2nd CB (active in operating states \leq o11)</p> <p>Meaning as for A085, but from 2nd CB.</p>
A094 to A096	<p>CB alarm from 2nd CB (active in operating states \leq o11)</p>
A097 to A128	<p>TB alarms (active in operating states \leq o11)</p> <p>For more information about TECH BOARD alarms, please refer to Operating Instructions or Configuring Guide of the relevant board.</p>

