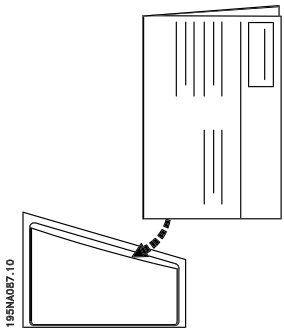


Parameter list

This list can be used for checking and making a note of your parameter settings. The list can be folded and placed in the enclosed plastic folder.



Control keys

QUICK MENU [QUICK MENU] gives access to the parameters used in the Quick menu. The [QUICK MENU] key is also used if a change of a parameter value is not to be carried out. See also [QUICK MENU] + [+].

CHANGE DATA [CHANGE DATA] is used for changing a setting. The [CHANGE DATA] key is also used for confirming the change of a parameter setting.

+ / - [+] / [-] are used for selecting a parameter and for changing the chosen parameter value. These keys are also used in Display mode for switching between operating variable read-outs.

QUICK MENU + + [QUICK MENU]+[+] keys must be pressed simultaneously to give access to all parameters.

STOP/RESET [STOP/RESET] is used for stopping the connected motor or for resetting the frequency converter after a trip.

START [START] is used for starting the frequency converter. Is always active, but the [START] key cannot override a stop command.

Status messages

F r The frequency converter shows the present output frequency in Hertz [Hz].

I o The frequency converter shows the present output current in Amps [A].

U o The frequency converter shows the present output voltage in Volts [V].

U d The frequency converter shows the intermediate circuit voltage in Volts [V].

P o The frequency converter shows the calculated output power in kilowatts [kW].

no trun This message is displayed if an attempt is made to change a parameter value, while the motor is running. Stop the motor to change the parameter value.

L C P This message is shown if an LCP 2 control unit has been installed and the [QUICK MENU] or [CHANGE DATA] key has been activated. With an LCP 2 unit installed, it is only possible to change parameters via this unit.

Err A warning or alarm will be shown by means of a digit code on the display, e.g. Err 13. A warning will be shown on the display until the fault has been corrected, and an alarm will flash until [RESET] is activated.

Ha The frequency converter shows the present Hand mode reference in Herz [Hz].

Warnings/alarm messages

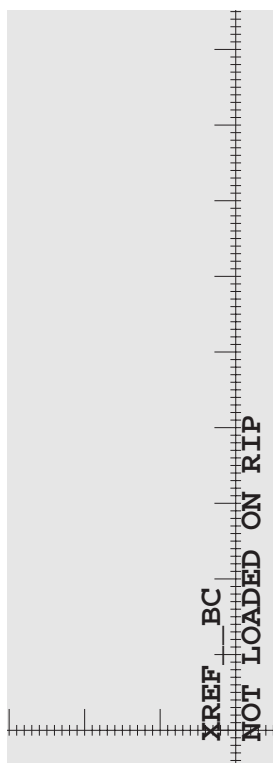
The list below gives a description of the different warnings and alarms. After a *Trip locked*, the mains supply must be disconnected and the fault must be corrected. Connect the mains supply again and reset the frequency converter. The frequency converter is now ready for operation.

A Trip can be reset manually in three different ways:
 - Via the control key [STOP/RESET]
 - Via a digital input.
 - Via serial communication.

The manual gives a description of the different faults.

- No. 2 Live zero fault
- No. 4 Mains phase fault
- No. 5 Voltage warning high
- No. 6 Voltage warning low
- No. 7 Overvoltage
- No. 8 Undervoltage
- No. 9 Inverter overload
- No. 10 Motor overload
- No. 11 Motor thermistor
- No. 12 Current limit
- No. 13 Overcurrent
- No. 14 Earth fault
- No. 15 Switch mode fault
- No. 16 Short-circuit
- No. 17 Serial communication time-out
- No. 18 HPFB bus time-out
- No. 33 Out of frequency range
- No. 34 HPFB communication fault
- No. 35 Inrush fault
- No. 36 Overload temperature
- Nos. 37-45 Internal faults
- No. 50 AMT R_s outside limit
- No. 51 AMT fault re. nameplate data
- No. 52 AMT faulty motor phase
- No. 53 AMT motor too small
- No. 54 AMT incorrect motor
- No. 55 AMT timeout
- No. 56 AMT warning during AMT
- No. 99 Locked

#	Parameter-description	Selection/range	Factory setting	Setting
001	Language	[0]=English, [1]=German, [2]=French, [3]=Danish, [4]=Spanish, [5]=Italian	[0]=English	
002	Local/remote operation	[0]=Remote operation, [1]=Local operation	[0]=Remote operation	
003	Local reference	$0-f_{MAX} / Ref_{MIN}-Ref_{MAX} / -Ref_{MAX} - +Ref_{MAX}$	000,000.000	
004	Active Setup	[0]=Factory Setup, [1]=Setup 1, [2]=Setup 2, [3]=Setup 3, [4]=Setup 4, [5]=Multi Setup	[1]=Setup 1	
005	Programming Setup	[0]=Factory Setup, [1]=Setup 1, [2]=Setup 2, [3]=Setup 3, [4]=Setup 4, [5]=Active Setup	[5]=Active Setup	
006	Setup copying	See manual	[0]=No copying	
007	LCP copy	[0]=No copying, [1]=Upload all parameters, [2]=Download all parameters, [3]=Download power-independent parameters	[0]=No copying	
008	Display scaling of output frequency	0.01 - 100.00	1.00	
009	Large display readout	See manual	[4]=Frequency [Hz]	
010	Small display readout 1.1	See manual	[1]=Reference [%]	
011	Small display readout 1.2	See manual	[6]=Motor current [A]	
012	Small display readout 1.3	See manual	[8]=Power [kW]	
013	Local control	[0]=Local not active, [1]=Local control and open loop, [2]=Remote operated control and open loop, [3]=Local control as par. 100, [4]=Remote operated control as par. 100	[4]=Remote operated control as par. 100	
014	Local stop/Reset	[0]=Not active, [1]=Active	[1]=Active	
015	Local jog	[0]=Not active, [1]=Active	[0]=Not active	
016	Local reversing	[0]=Not active, [1]=Active	[0]=Not active	
017	Local reset of trip	[0]=Not active, [1]=Active	[1]=Active	
018	Lock for data change	[0]=Not locked, [1]=Locked	[0]=Not locked	
019	Operating mode at power-up, local operation	[0]=Auto restart, use saved ref. [1]=Forced stop, use saved ref. [2]=Forced stop, set ref. to 0	[1]=Forced stop, use saved ref.	
020	Lock for Hand mode	[0]=Not active, disable [1]=Active, enable	[1]=Active, enable	
024	User-defined Quick Menu	[0]=Not active, [1]=Active	[0]=Not active	
025	Quick Menu Setup	[Index 1-20] Value 0-999	000	
100	Configuration	[0]=Speed regulation, open loop [1]=Speed regulation, closed loop [3]=Process regulation, closed loop	[0]=Speed regulation, open loop	
101	Torque characteristic	[1]=Constant torque [2]=Variable torque, low [3]=Variable torque, medium [4]=Variable torque, high [5]=Variable torque, low CT start [6]=Variable torque, medium CT start [7]=Variable torque, high CT start [8]=Special motor characteristic	[1]=Constant torque	
102	Motor power $P_{M,N}$	0.37 - 11 kW	Depends on unit	
103	Motor voltage $U_{M,N}$	200-240 V/380-480 V	Depends on unit	
104	Motor frequency $f_{M,N}$	24-1000 Hz	50 Hz	
105	Motor current $I_{M,N}$	$0.01 \cdot I_{MAX}$	Depends on choice of motor	
106	Rated motor speed	$100 \cdot f_{M,N} \times 60$ (max. 60000 rpm)	Depends on choice of motor	
107	Automatic motor tuning	[0]=Optimisation off [2]=Optimisation on	[0]=Optimisation off	
108	Stator resistance R_s	$0.000 \cdot X.XXX \Omega$	Depends on choice of motor	
109	Stator reactance X_s	$0.00 \cdot X.XX \Omega$	Depends on choice of motor	
119	High start torque	0.0 - 0.5 sec.	0.0 sec.	
120	Start delay	0.0-10.0 sec.	0.0 sec.	
121	Start function	[0]=DC hold during start delay time [1]=DC brake during start delay time [2]=Coasting during start delay time [3]=Start frequency/voltage clockwise [4]=Start frequency/voltage in reference direction	[2]=Coasting during start delay time	
122	Function at stop	[0]=Coasting [1]=DC hold	[0]=Coasting	
123	Min. frequency for activating of function at stop	0.1 - 10.0 Hz	0.1 Hz	
126	DC brake time	0-60 sec.	10 sec.	
127	DC brake cut-in frequency	0.0 (OFF) - par. 202. <i>Output frequency high limit, f_{MAX}</i>	OFF	
128	Motor thermal protection	See manual	[0]=No protection	
130	Start frequency	0.0-10.0 Hz	0.0 Hz	
131	Voltage at start	0.0 - 200.0 V	0.0 V	





Installation: _____

Operator: _____

VLT no.: _____

Date: _____

#	Parameter-description	Selection/range	Factory setting	Setting
132	DC brake voltage	0-100% of max. DC brake voltage	0%	
133	Start voltage	0.00-100.00 V	Depends on unit	
134	Load compensation	0.00-300.0%	100.0%	
135	U/f ratio	0.00-20.0 at Hz	Depends on unit	
136	Slip compensation	-500 - +500% of rated slip compensation	100%	
137	DC hold voltage	0-100% of max. DC hold voltage	0%	
138	Brake cut out value	0.5 - 132.0/1000.0 Hz	3.0 Hz	
139	Brake cut in frequency	0.5 - 132.0/1000.0 Hz	3.0 Hz	
140	Current, minimum value	0 - 100% of Within	0%	
142	Spread reactance	0.000-XXX.XXX Ω	Depends on choice of motor	
143	Internal fan control	[0]=Automatic, [1]=Always switched on, [2]=Always switched off	[0] = Automatic	
144	Gain AC brake	1.0 - 1.50	1.30	
146	Reset voltage vector	[0]=Off [1]=Reset	[0]=Off	
200	Output frequency range	[0]=Only clockwise, 0-132 Hz [1]=Both directions, 0-132 Hz [2]=Only anti-clockwise, 0-132 Hz [3]=Only clockwise, 0-1000 Hz [4]=Both directions, 0-1000 Hz [5]=Only anti-clockwise, 0-1000 Hz	[0]=Only clockwise, 0-132 Hz	
201	Output frequency low limit, f_{MIN}	0.0 - f_{MAX}	0.0 Hz	
202	Output frequency high limit, f_{MAX}	f_{MIN} - 132/1000 Hz	132 Hz	
203	Reference/feedback range	[0]=Min. ref./fb - Max. ref./fb [1]=-Max. ref./fb - Max. ref./fb	[0]=Min. ref./fb - Max. ref./fb	
204	Min. reference Ref_{MIN}	Par. 100 Config. = Open loop [0] - 100,000.000 - par. 205 Ref_{MAX} Par. 100 Config. = Closed loop [1]/[3] - Par. 414 Min. fb - Par. 205 Ref_{MAX}	0.000 Hz	0.000
205	Max. reference Ref_{MAX}	Par. 100 Config. = Open loop [0] Par. 204 Ref_{MIN} -1000.000 Hz Par. 100 Config. = Closed loop [1]/[3] Par. 204 Ref_{MIN} - Par. 415 Max. fb	50.000 Hz	50.000
206	Ramp type	[0]=Linear [1]=Sine-shaped [2]=Sine- ² shaped	[0]=Linear	
207	Ramp-up time 1	0.02-3600 sec.	3.00 sec.	
208	Ramp-down time 1	0.02-3600 sec.	3.00 sec.	
209	Ramp-up time 2	0.02-3600 sec.	3.00 sec.	
210	Ramp-down time 2	0.02-3600 sec.	3.00 sec.	
211	Jog ramp time	0.02-3600 sec.	3.00 sec.	
212	Quick stop ramp-down time	0.02-3600 sec.	3.00 sec.	
213	Jog frequency	0.0- Par. 202 Output frequency high limit	10.0 Hz	
214	Reference function	[0]=Sum [1]=Relative [2]=External/preset	[0]=Sum	
215	Preset ref. 1	-100.00% - + 100.00%	0.00%	
216	Preset ref. 2	-100.00% - + 100.00%	0.00%	
217	Preset ref. 3	-100.00% - + 100.00%	0.00%	
218	Preset ref. 4	-100.00% - + 100.00%	0.00%	
219	Catch up/slow down reference	0.00-100% of the current reference	0.00%	
221	Current limit, I_{LM}	[A] = x-xxx.x% of I_{MAX}	160%	
223	Warning: Low current	0.0 - Par. 224 Warning: High current, I_{HIGH}	0.0 A	
224	Warning: High current	Par. 223 Warning: Low current, I_{LOW} - I_{MAX}	I_{MAX}	
225	Warning: Low frequency	0.0 - par. 226 Warning: High frequency, f_{HIGH}	0.0 Hz	
226	Warning: High frequency	Par 225 f_{LOW} - 120/1000 Hz	132.0 Hz	
227	Warning: Low feedback, FB_{LOW}	100,000.000 - par. 228 Warning: FB_{HIGH}	-4000.000	
228	Warning: High feedback, FB_{HIGH}	Par. 227 - Warning: FB_{LOW} - 100,000.000	4000.000	
229	Frequency bypass, bandwidth	0 (OFF) - f_{MAX}	0 Hz	
230	Frequency bypass 1	0 - 132/1000 Hz	0.0 Hz	
231	Frequency bypass 2	0 - 132/1000 Hz	0.0 Hz	
302	Digital input Terminal 18	See manual	[7]=Start	
303	Digital input Terminal 19	See manual	[9]=Reversing	
304	Digital input Terminal 27	See manual	[3]=Reset and coasting inverse	
305	Digital input Terminal 29	See manual	[13]=Jog	
307	Digital input Terminal 33	See manual	[0]=No operation	
308	Term. 53, analogue input voltage	[0]=No operation, [1]=Reference [2]=Feedback	[1]=Reference	
309	Term. 53, Min. scaling	0.00 - 10.0 V	0.0 V	

#	Parameter-description	Selection/range	Factory setting	Setting
310	Term. 53, Max. scaling	0 - 10.0 V	10.0 V	
314	Term. 60, analogue input current	[0]=No operation, [1]=Reference [2]=Feedback	[0]=No operation	
315	Term. 60, Min. scaling	0.0 - 20.0 mA	0.0 mA	
316	Term. 60, Max. scaling	0.0 - 20.0 mA	20.0 mA	
317	Time out	1 - 99 sec.	10 sec.	
318	Function after time out	[0]=No operation, [1]=Freeze output frequency, [2]=Stop, [3]=Jog, [4]=Max. speed, [5]=Stop and trip	[0]=No operation	
319	Term. 42, analogue output	See manual	[7] = 0- I_{INV} 0-20 mA	
323	Relay output	See manual	[1]=Drive ready	
327	Pulse/reference feedback	150 - 67600 Hz	5000 Hz	
341	Term. 46, digital output	See manual	[1]=Drive ready	
342	Term. 46, Max. pulse output	150 - 10,000 Hz	5000 Hz	
343	Precise stop function	See manual	[0] = Normal ramp stop	
344	Counter value	1 - 999999	100000 pulses	
349	Speed comp delay	0 - 100 ms	10 ms	
400	Brake function	[0]=Off, [1]=Resistor brake [4] AC brake, [5]=Load sharing	Depends on unit	
405	Reset function	See manual	[0]=Manual reset	
406	Automatic restart time	0 - 10 sec.	5 sec.	
409	Trip delay overcurrent	0 - 60 sec. (61=OFF)	OFF	
411	Switching frequency	3000 - 14000 Hz	4500 Hz	
412	Output frequency dependent switching	[2] = No LC-filter [3] = LC-filter fitted	[2] = No LC-filter	
413	Overmodulation function	[0]=Off, [1]=On	[1]=On	
414	Min. feedback, FB_{MIN}	-100,000.000 - par. 415 FB_{MAX}	0.000	
415	Max. feedback, FB_{MAX}	par. 414 FB_{MIN} - 100,000.000	1500.000	
416	Process units	See manual	[0]=No unit	
417	Speed PID proportional gain	0.000 (OFF) - 1.000	0.010	
418	Speed PID integral time	20.00 - 999.99 ms (1000 = OFF)	100.00 ms	
419	Speed PID differential time	0.00 (OFF) - 200.00 ms	20 ms	
420	Speed PID D-gain limit	5.0 - 50.0	5.0	
421	Speed PID lowpass filter time	20 - 500 ms	20 ms	
423	U1 voltage	0.0 - 999.0 V	par. 103	
424	F1 frequency	0.0 - par. 426 F2 frequency	par. 104 Motor frequency	
425	U2 0voltage	0.0 - 999.0 V	par. 103	
426	F2 frequency	Par. 424 F1 frequency - par. 428 F3 frequency	par. 104 Motor frequency	
427	U3 voltage	0.0 - 999.0 V	0.0 V	
428	F3 frequency	Par. 426 F2 frequency - 1000 Hz	par. 104 Motor frequency	
437	Process PID Normal/inverse control	[0]=Normal, [1]=Inverse	[0]=Normal	
438	Process PID anti windup	[0]=Not active, [1]=Active	[1]=Active	
439	Process PID start frequency	f_{MIN} - f_{MAX} (par. 201/202)	Par. 201 Output frequency low limit, f_{MIN}	
440	Process PID proportional gain	0.0 - 10.00	0.01	
441	Process PID integration time	0.01 - 9999.99 ms (OFF)	OFF	
442	Process PID differentiation time	0.00 (OFF) - 10.00 sec.	0.00 sec.	
443	Process PID diff. gain limit	5.0 - 50.0	5.0	
444	Process PID lowpass filter time	0.02 - 10.00	0.02	
445	Flying start	[0]=Off, [1]=OK same direction, [2]=OK both directions, [3]=DC. brake and start	[0]=OFF	
451	FF factor	0 - 500%	100%	
452	Controller range	0 - 200%	10%	
456	Brake voltage reduce	0 - 25 V if 200V device 0 - 50 V if 400V device	0	