

SIMOREG DC-MASTER

Operating Instructions

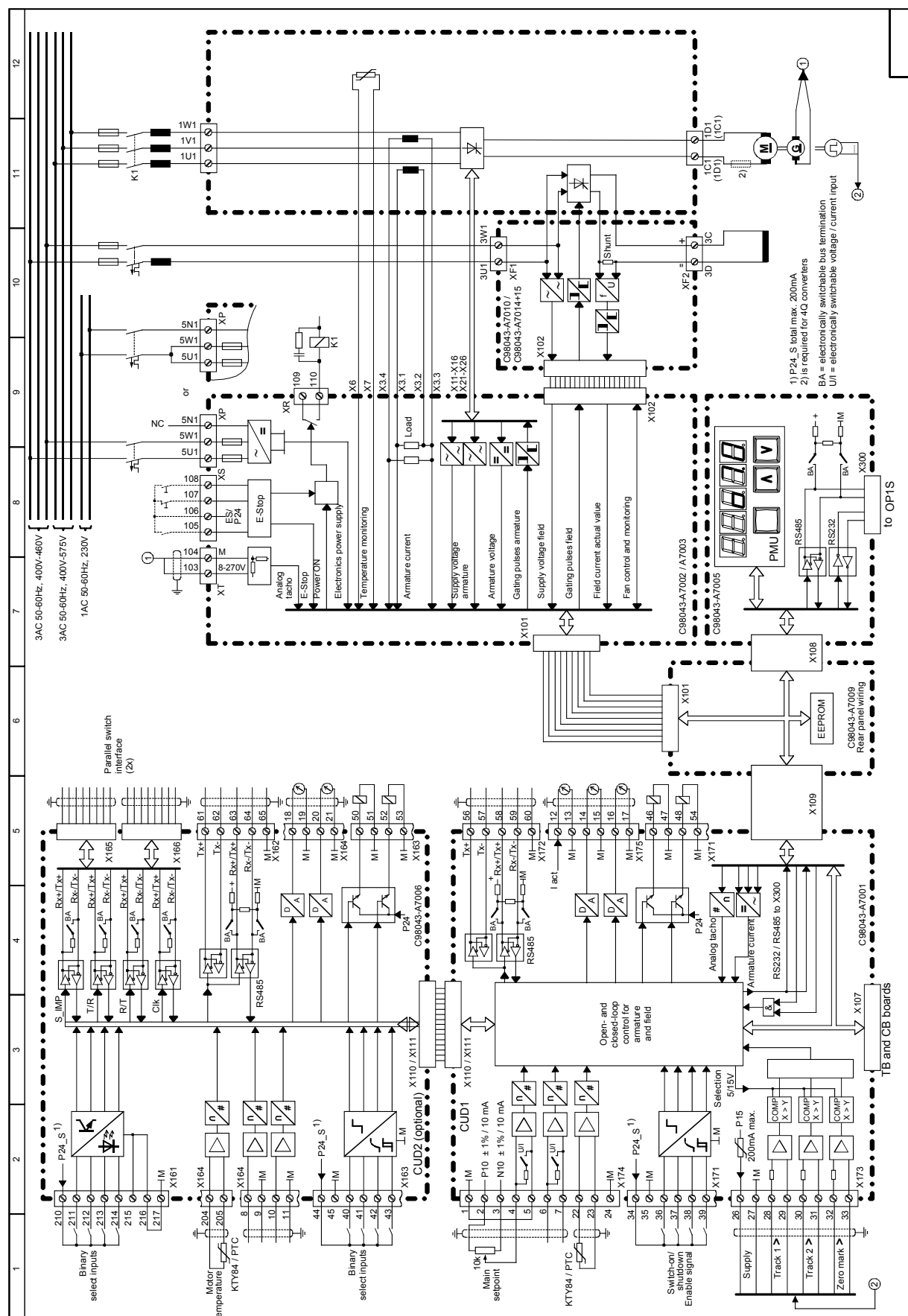
6RA70 Series

Microprocessor-Based Converters from 6kW to 2500kW
for Variable-Speed DC Drives

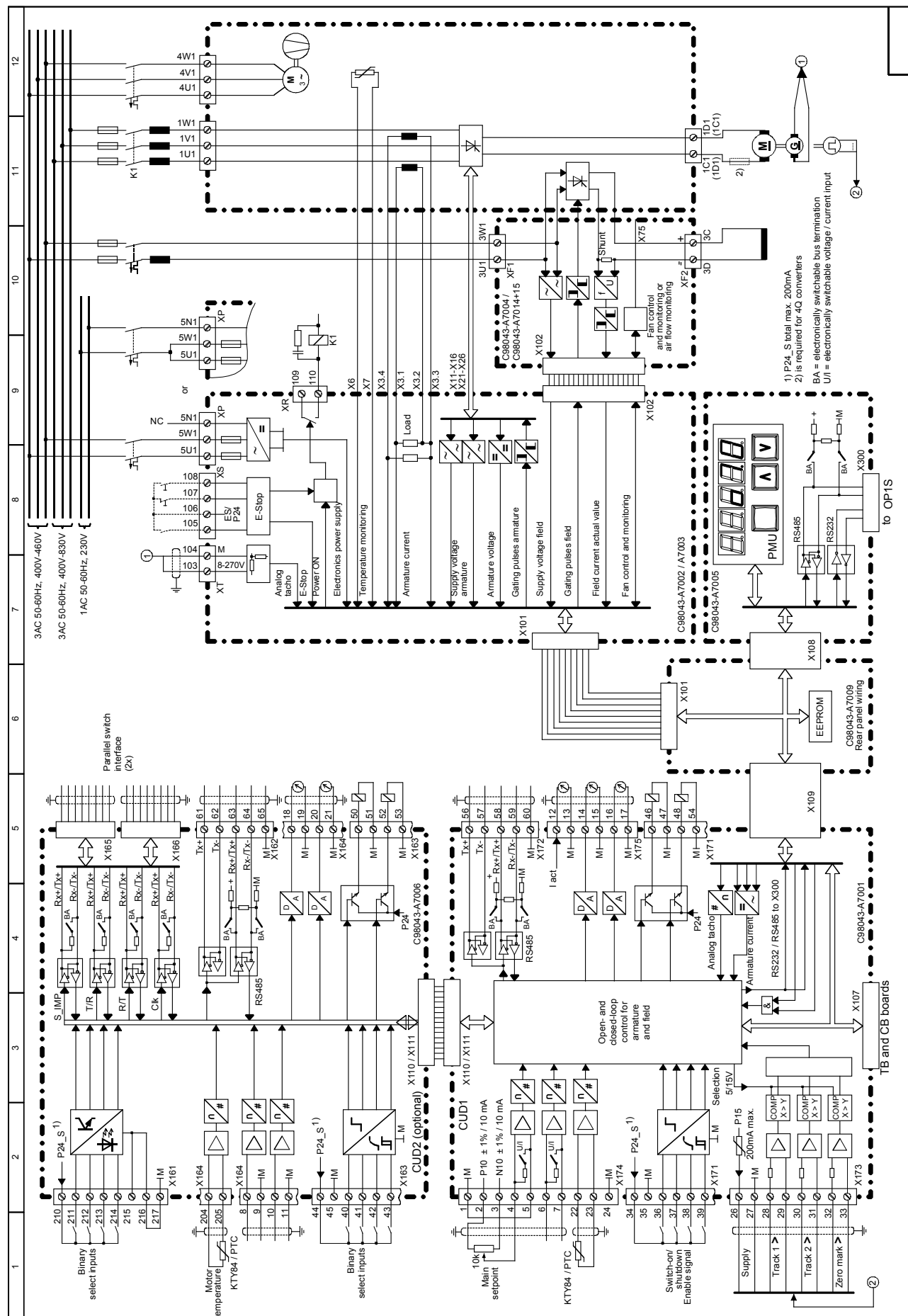


6.2 Block diagram with recommended connection

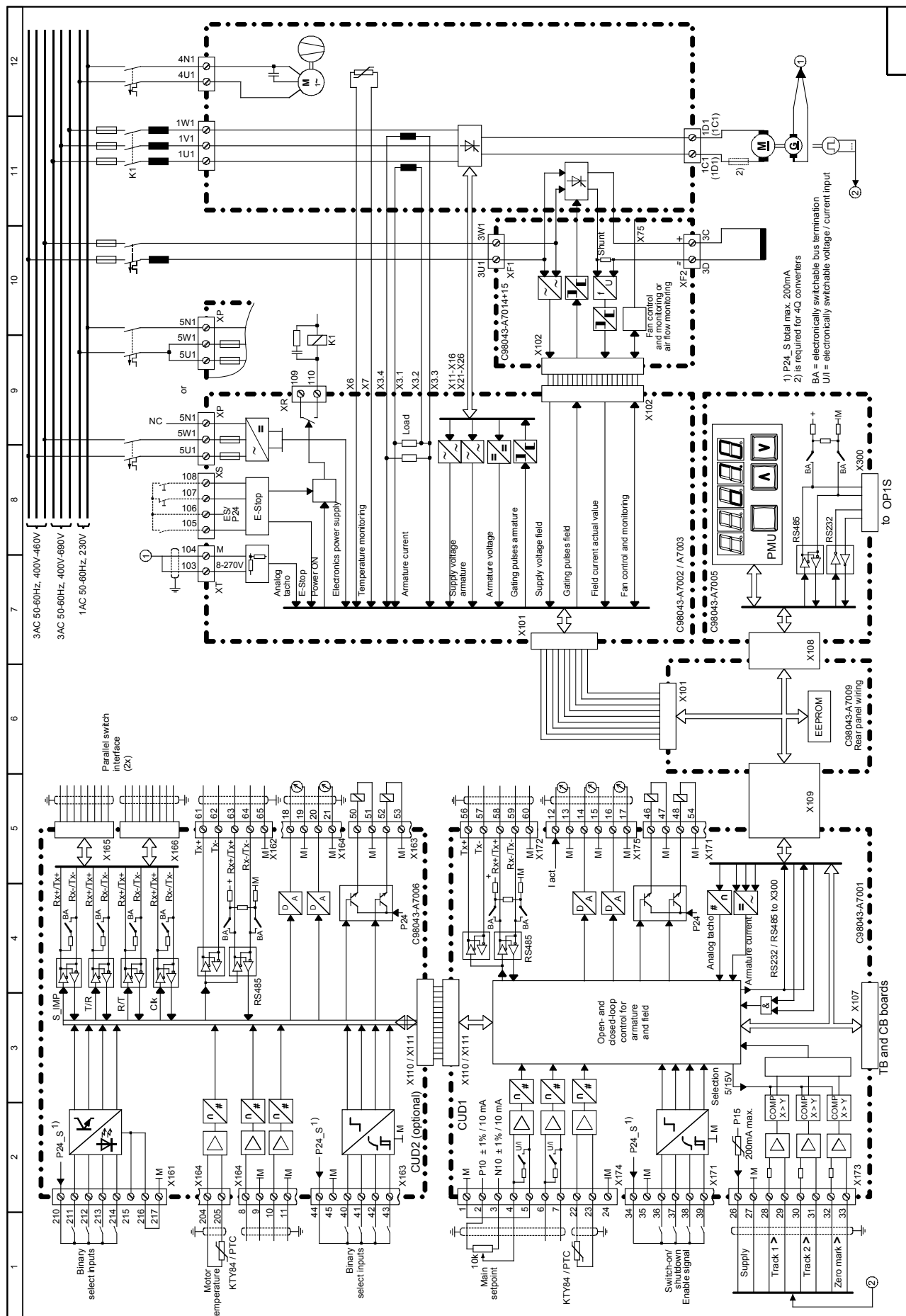
6.2.1 Converters: 15A to 125A



6.2.3 Converters: 400A to 3000A with a 3-phase fan

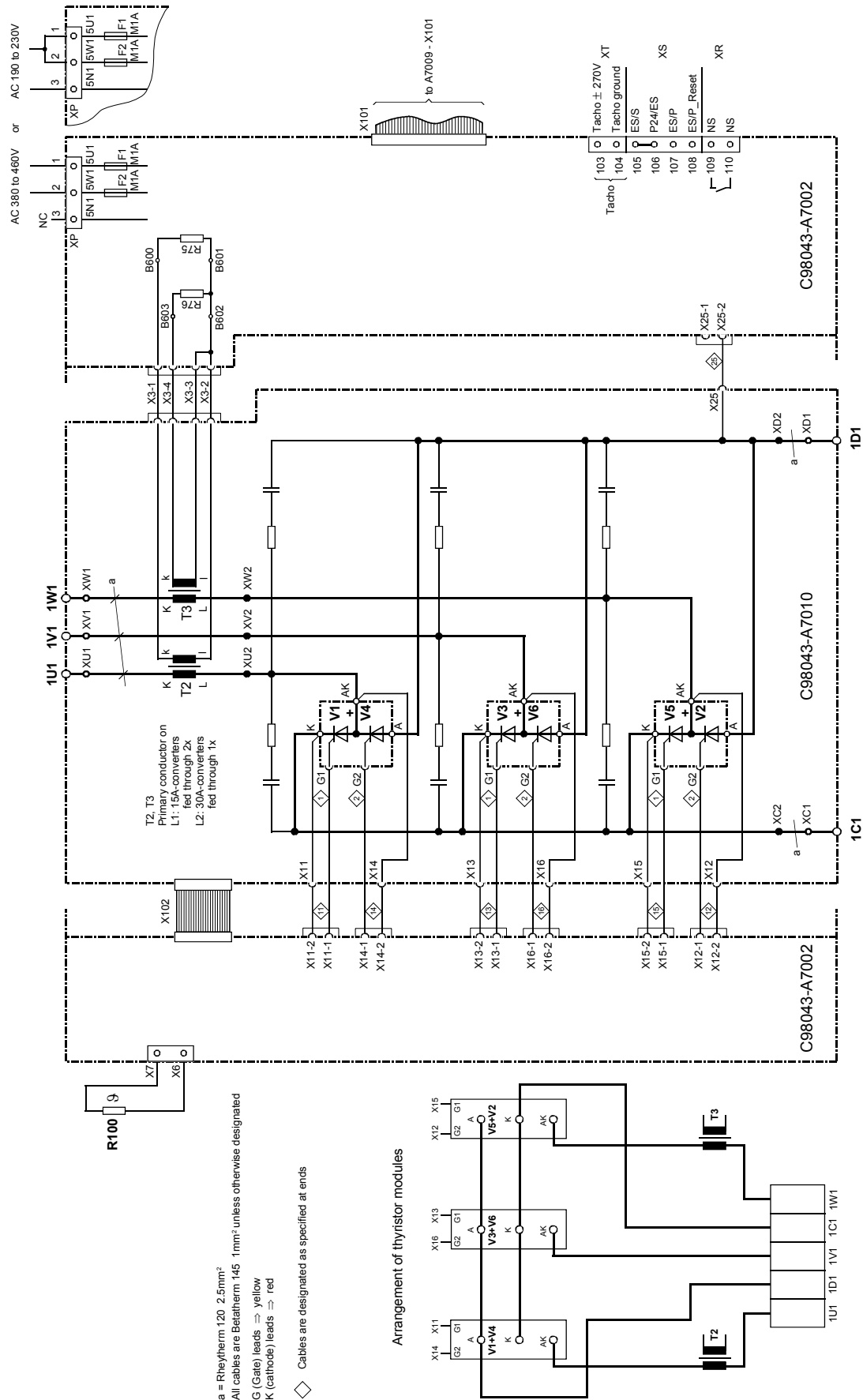


6.2.4 Converters: 450A to 850A with a 1-phase fan

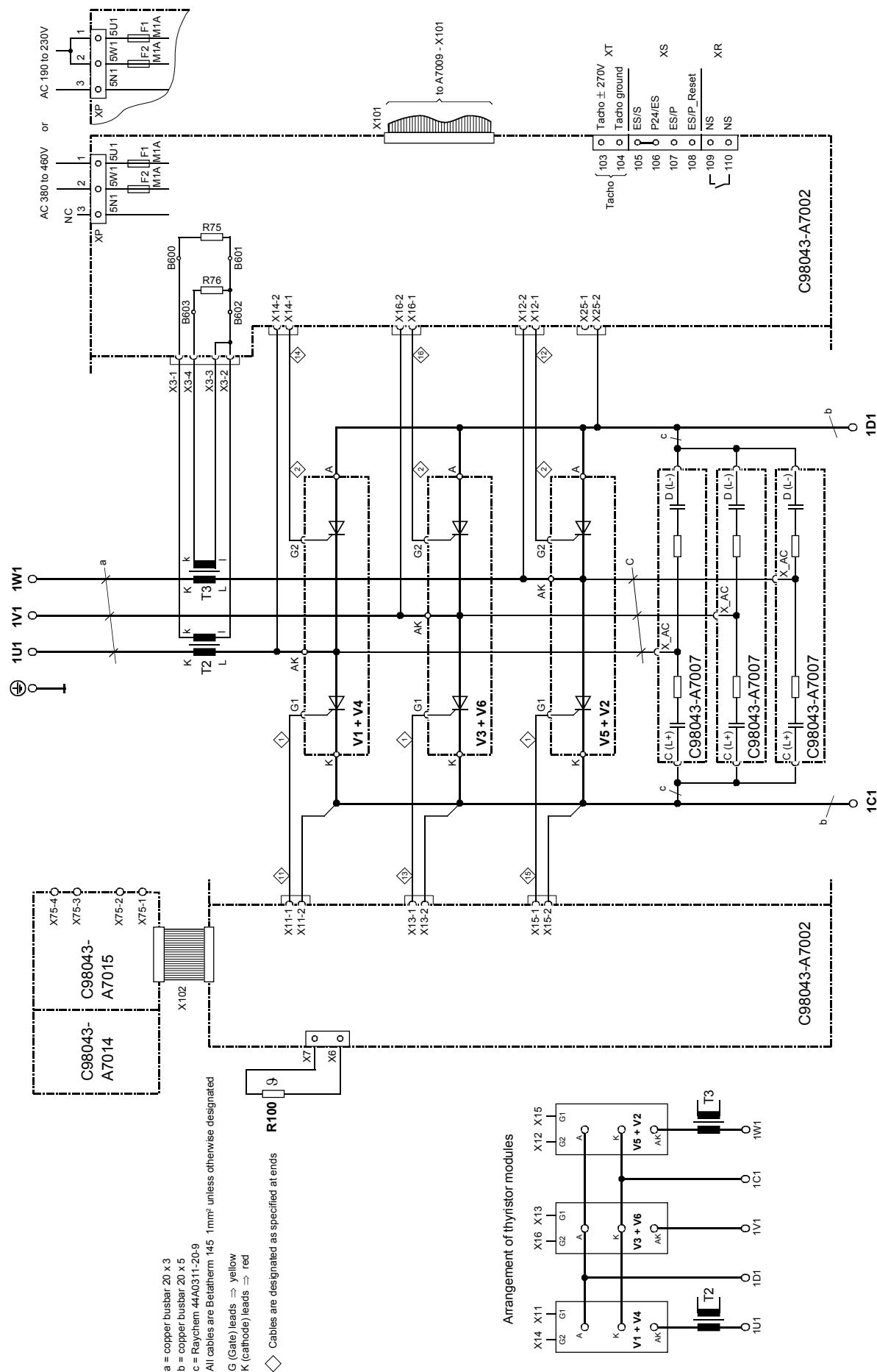


6.4 Power connections

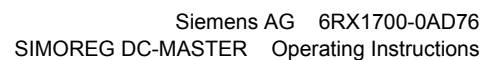
6.4.1 Converters: 30A, 1Q



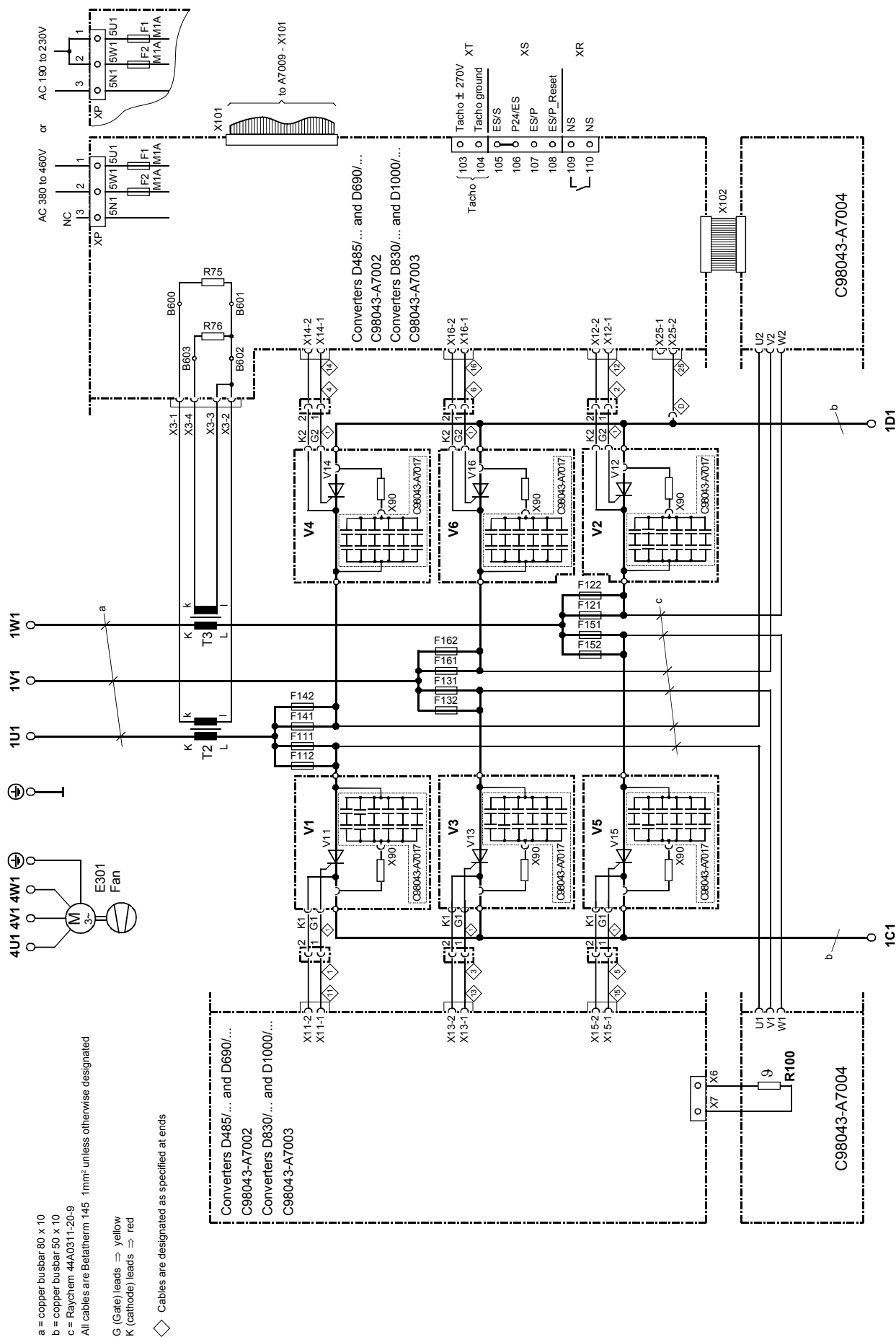
6.4.2 Converters: 60A, 1Q



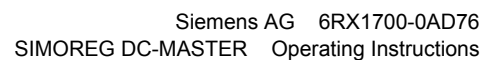
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6.4.10 Converters: 400V/3000A, 575V/2800A, 690V/2600A, 950V/2200A 1Q



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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 • 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 • 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	Fault in parameter memory (active in all operating states) 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). The following are monitored: ◆ 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 Possible causes for all fault types: Excessive EMC-related interference is present (e.g. due to unprotected contactors, unscreened cables, loose shield 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:	r047 Index 002 to 016:
	1 Connection to EEPROM is faulty Possible fault causes • A7001 electronics board is defective • A7009 backplane wiring assembly is defective • Plug-in connection X109 is defective	
	2 Parameter value is outside permissible value range Possible fault causes • "Restore to default value" has never been executed with this software (e.g. after software replacement) • A7009 backplane wiring assembly is defective Possible remedy: • Acknowledge fault, execute "Restore to default value" and start up the drive again	i002 Number of faulty parameter i003 Index of faulty parameter i004 Faulty parameter value
	3 Parameter value cannot be stored on EEPROM Possible fault causes • A7001 electronics board is defective • A7009 backplane wiring assembly is defective • Plug-in connection X109 is defective	i002 Address of fault memory location i003 Faulty value in EEPROM i004 Correct parameter value
	11 Checksum of non-volatile data (part 1) is not correct 12 Checksum of non-volatile data (part 2) is not correct 13 Checksum of non-volatile data (part 3) is not correct 20 Checksum of configuring table of parameter values is not correct Possible fault causes • Defective EEPROM • "Restore to default value" has never been executed with this software (e.g. after software replacement) Possible remedy: • Acknowledge fault, execute "Restore to default value" and start up the drive again! Check interference suppression measures and improve if necessary. In the case of fault value 20, the factory setting is restored automatically	i002 Calculate checksum i003 Checksum found in EEPROM
F063	Errors in compensation data of analog inputs and outputs (active in all operating states)	
	This function monitors whether the factory-set compensation data for the analog inputs and outputs are plausible	
	Possible fault cause: ♦ Defective A7001 or A7006 electronics board	
	Fault value:	r047 Index 002 to 016:
	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	i002 Calculated checksum i003 Errored checksum
	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, F064 is then displayed. Possible fault causes ◆ 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 ◆ 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 > permissible heatsink temperature (depending on the MLFB)	i002 Measured heatsink temperature (16384 .. 100°C)
	2 Heatsink temperature sensor is defective	i003 Measured ADC value
	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 • 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)	
	3 Measuring channel for analog select input 1 faulty (terminals 6 and 7)	
F069	MLFB data are faulty (active in all operating states) Possible fault causes ◆ 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	i002 Incorrect MLFB code number
	2 MLFB data checksum error	-
	3 Works number checksum error	-
	4 Number of words of MLFB data is incorrect	-

10.1.2.13 Communication errors with supplementary boards

F070	SCB1: Serious initialization error (active in all operating states) SCB1 and SCI cannot power up correctly (see diagnostic parameter n697 for details)
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