

MCS220 C/CX GeN2 -MCBIII

Service Tool Manual

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1 General software overview

The software baseline 30762 is intended for use on the MCB3 board in conjunction with vector-oriented motor control systems. Operation is possible for:

- synchronous (SM) motor vector control;
- controller interface via CAN-bus.

The latest released software version GAA30762BAG runs on the following PCB's (depending on application):

- GCA26800KF1 (MCS220 C Gen2) (or higher)
- GCA26800KF2 (MCS220 CX Gen2) (or higher)

2 Service Tool Description

2.1 General

The Service Tool is a pocket terminal that lets you control all elevator functions:

- Monitoring of software states, system inputs and outputs and system messages
- Setup of installation parameters
- Use of software tools.

The access of each function is controlled by the Menu System which allows convenient work with the Service Tool.

The Service Tool Manual describes the Menu System and the single Service Tool functions.

2.2 "Plug and See" function

The "Plug and See" function (a subfunction of the "Central Failure Management" feature) requires the following software:

- MCB3 GAA30762BAG (or higher)
- GECB GAA30780DAB (or higher)

The function is started after plugging in the service tool at the SCBC connector. If the elevator is blocked the blockage reason is displayed in the service tool w/o the need to enter any further commands. The following table shows the relationship between the blockage messages sent by the MCB3 and the MCB3 event/error logging message. Refer to chapter 5, "Event/Error Logging (M – 2 – 2)" to get further service hints.

	MCB3 error	Plug and See Message
2	SYS: DDP	DRIVE DDP - No LV within DDP time limit

3	SYS: E2P failure	DRIVE MCB EEPROM defect
6	SYS: E2P InvPara	DRIVE MCB parameter out of range
7	SYS: ParaConflkt	DRIVE MCB parameter conflict
10	SYS: <24V Supply	DRIVE No 24V supply
11	SYS: <15V Supply	DRIVE No 15V supply
15	SYS: 1LS + 2LS	PRS 1LS&2LS active
21	INV: >Volt DC	DRIVE High DC link voltage
21	INV: >Volt DC	DRIVE High DC link voltage - Drive power down
22	INV: >Heat Packg	DRIVE Inverter overheat
23	INV: <Volt DC	DRIVE Low DC link voltage
24	INV: Pwr Section	DRIVE Motor current not 0 after stop
25	INV: >Curr IGBT	DRIVE High inverter current
25	INV: >Curr IGBT	DRIVE High inverter current - Drive power down
27	INV: >Curr Motor	DRIVE High motor current
27	INV: >Curr Motor	DRIVE High motor current - Drive power down
29	INV: brake chopp	DRIVE DBR circuit - Drive power down
39	M C:FR w/o Learn	DRIVE No learn run
41	M C: MC+SafetyCh	SAFETY CHAIN UIB or DIB active without TCI/ERO command
42	M C: Encodr adj?	DRIVE ENCODER No encoder adjustment
43	M C:OCSS disabld	DRIVE MCB Parameter "MCB operat" active
44	M C: Chk SW Sig	DRIVE High SW signal in idle
44	M C: Chk SW Sig	DRIVE Low SW signal at start
45	M C: Chk DBD Sig	CONTACTOR DBD - No 24V during stop

45	M C: Chk DBD Sig	CONTACTOR DBD - No 0V during run
46	M C: Chk RDY Sig	DRIVE MCB3 READY stuck high/low
47	M C: Chk BS1/BS2	BRAKE BS1 stuck low before start
47	M C: Chk BS1/BS2	BRAKE BS2 stuck low before start
47	M C: Chk BS1/BS2	BRAKE BS1 and BS2 stuck low before start
47	M C: Chk BS1/BS2	BRAKE BS1 stuck high after start
47	M C: Chk BS1/BS2	BRAKE BS2 stuck high after start
47	M C: Chk BS1/BS2	BRAKE BS1 and BS2 stuck high after start
60	MLS: LV Missed	PRS LV signal not detected
61	MLS: LV lost	PRS LV signal detected then lost
71	DRV: >Speed	DRIVE ENCODER High motor speed
72	DRV: <Speed	DRIVE ENCODER Low motor speed
78	DRV: OverId>Time	DRIVE Motor Current > 200% > 3 Sec
80	DRV: Phase Down	DRIVE Motor phase U - no current
80	DRV: Phase Down	DRIVE Motor phase V - no current
80	DRV: Phase Down	DRIVE Motor phase W - no current
80	DRV: Phase Down	DRIVE All motor phases - no current
80	DRV: Phase Down	DRIVE Current measured in only 1 motor phase
94	ADJ: EncAdj err	DRIVE ENCODER Encoder adjustment failure

2.3 Access to the MCB_III

The MCB_III has no own service tool connector. Service tool communication is only possible via SPBC plug (located in the E&I panel) and a functioning CAN-bus link.

When the service tool has been connected, the system menu will appear (example):

0:ALL	1:TCBC	>
2:DRIVE	5:SPBC	>

Press <2> to select the MCB_III subsystem.

Note: the complete description within this document refers to the MCB_III subsystem only.

Press <M><M> immediately to leave the MCB_III subsystem and return to the system menu.

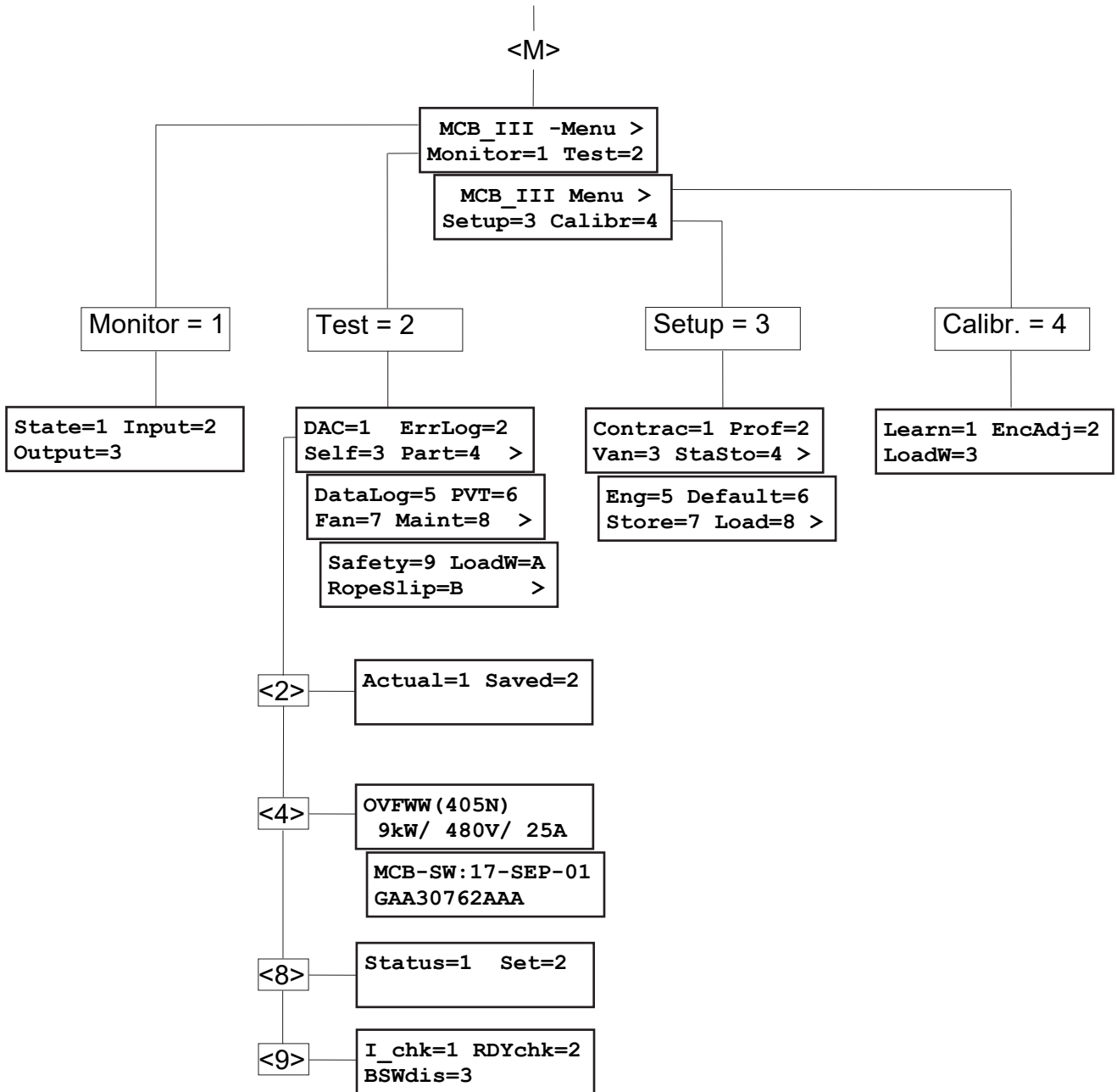
For a detailed description of the system menu refer to document "System Service tool manual".

Note:

If the drive has been switched off (e.g. by the "power save" - feature), the MCB_III subsystem will not response. A "Wait" message is displayed instead.

For the "power save" - feature, the drive must be "awaked" again by entering a call or by switching to ERO.

2.4 MCB_III service tool menu overview



3 Monitor menus

3.1 State (M – 1 – 1)

This display is used to observe the system state. Example:

NORMAL	IDLE	0
DRV: Rollb Start		

Description:

NORMAL = Motion Command Mode

IDLE = Motion Logic State

00 = floor counter

Range starts from parameter "BOTTOM FLOOR" (normally = 0).

If floor number is undefined a ** is displayed.

DRV: Rollb Start = Actual Event Display (if applicable)

Table of Motion Command Modes:

SHT_DWN	A run is interrupted due to a fault. An event display (Errlog = 2 Actual = 1) always explains the reason.
WT_F_SF	Wait for Safety, the drive waits for DIB, UIB or both signal(s).
NORMAL	With both active signals UIB & DIB the drive waits for a run command from the TCBC.
RUN_UP	Normal run up
RUN_DWN	Normal run down
INS UP	Inspection run up <i>Inspection run is started with UIB or DIB</i>
INS DWN	Inspection run down
ES	Emergency stop, during normal run the safety chain (UIB, DIB signal) has been interrupted.

Note: The states of UIB / DIB must match to the run command: either UIB or DIB active for INS_UP / INS_DWN; both UIB & DIB active for RUN_UP / RUN_DWN.

Table of Motion Logic States:

IDLE	Waiting for a command (Inverter power section disabled)
START	Energize BY and SW relays and premagnetization
ACC	Accelerating to NOM SPE
CONST	Normal speed or reduced speed generates IP signals and waits for deceleration command or 1LS / 2LS.
T DEC	Deceleration to CRE SPE
CREEP	Creep run, waiting for LV
HALT	Deceleration to zero speed, electrical stop, brake drop.

The **event display** is described in chapter "Event/Error logging".

Note: if "SYS: Msg lost" is displayed, too many events occurred at the same time. Not all events could be displayed. In this case refer to the actual event logging (M - 2 - 2 - 1).

Table of **Motion Commands** sent by TCBC via CAN-bus interface:

<cc dd>	Explanation
<WT>		WAIT, the drive waits for the next run command
<TCI		Top of Car Inspection
<ERO		Electrical Recall Operation
<COR		Correction Run
<RSC		Rescue Run
	UP>	up direction
	DN>	down direction
	ST>	stop
<GOTO	>	normal run to floor number
<REL		Releveling
	EN>	enable
	ST>	stop

3.3 Output (M – 1 – 3)

This display is used to watch the state (HIGH or low) of output values. Example:

NORMAL	IDLE	0
up	dn	by INVD

Description:

The 1st line shows the motion command & status as described in section "Status" above.
The 2nd line shows a group of up to four outputs.

Uppercase letters means that the output is active; e.g. FAN: output is active
fan: output is not active.

Press <GOON> / <GOBACK> to select the next / previous group of outputs.

It is possible to fade-in current event messages on display (i.e. if an error event occurs, the 2nd line will be overwritten by the event text for a short moment).

- Activate this feature by pressing <Shift> <1> (or <ON>).
- Deactivate this feature it by pressing <Shift> <0> (or <OFF>).

Table of available **outputs**:

Output variable	Explanation	Pin (MCB III)
UP	Run direction signal up	-internal-
DN	Run direction signal down	-internal-
BY	Brake relay	P 1.2
INVD	Inverter (PWM) disabled	-internal-
FAN	Fan relay	P 8.3
REL	Inverter relay, switches on/off the inverter	P 8.5
< Drive State		CAN-bus
SC	Speed Check	CAN-bus
Accepted Target Floor		CAN-bus
Next Commitable Floor		CAN-bus
Actual Floor >	middle between two doorzone magnets	CAN-bus

Table of **Drive States** sent by MCB III via CAN

Command	Explanation
<Down	Shut Down
<Init	Initialization after power on
<Idle	Idle
<Runn	Running
<Dece	Decelerating
<Targ	At Target
<Cali	Calibration Run initiated by MCB
<Wfsf	Wait for Safety Chain

4 Test menus

4.1 DAC - values display (M – 2 – 1)

Some control- and sensor variables can be monitored by the Service Tool (SVT). Example:

PROFILE GENERATR	= Name of selected variable
= 950 [0.1% fn]	= actual value and unit of selected variable

Press <GOON> / <GO BACK> to select the next / previous variable.

Table of available DAC values:

SVT-Display	Description
PROFILE GENERATR	Internal reference speed
SPEED	Measured speed depending on the encoder pulses
ACCELERATION	Measured acceleration depending on the encoder pulses
SPEED ERROR	Speed control error (difference between reference and measured speed)
STATOR CURRENT	Motor current (inverter output)
IGBT TEMPERATURE	IGBT heat sink temperature
DC-LINK VOLTAGE	Inverter DC link voltage

Note: a DAC - output for oscilloscope measurement is not available on the MCB_III.

4.2 Selftest (M – 2 – 3)

This will perform a board selftest.

EEPROM+ PROM0

Description:

EEPROM = Self test of the EEPROM

PROM = Self test of the PROM (FLASH - or OTP devices)

0 = Self test was not yet executed

? = Executing the self test

+ = Self test O.K.

- = Self test not O.K.

After pressing <GOON> the following selftest step is started.

4.3 Part number display (M – 2 – 4)

Data about the software version and package duty (example):

Press <GOON> / <GO BACK> to select the next / previous field.

OVFWW (405N) 9kW/ 480V/ 25A
--

= general info on used power section (boards)

= Package duty / Nom. line voltage / Nom. output current [RMS]

↓ <GO ON>

MCB-SW: 08-APR-05 GAA30785AAC
--

= Software authorization date (example)

= Software version (example)

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