

Base fault Code	Description	Sub fault code	Description	Remedies
Controller warning - Reduces only performance - Fault will itself (if possible)				
0	No error	-	-	at B400R not relevant
1	N/A	-		at B400R not relevant
2	Voltage getting low	1	Battery voltage below absolute minimum	Check battery G1, wiring and plug/screws (G1
		2	Capacitor voltage below absolute minimum	Change drive controller
		3	Battery voltage below battery-management- system cut back adjustment (drive cut back	Check battery G1, wiring and plug/screws (G1 - F3 - A4+A5 B+/1)
		4	Capacitor voltage below battery-management- system cut off adjustment (drive cut back active)	Check battery G1, wiring and plug/screws (G1 - F3 - A4+A5 B+/1)
3	Inhibit drive / Battery-management- system Cut / External battery controller via can	1	battery-management-system Cut out (Battery below battery-management- system cut Level)	at B400R not relevant
		2	Pump inhibit input active (Only Pump Software)	at B400R not relevant
		3	External battery controller via CAN message time out	at B400R not relevant
		4	External battery controller via CAN message toggle security bit fail	at B400R not relevant
4	Voltage getting high	1	Battery voltage above absolute minimum	at B400R not relevant
		2	Capacitor voltage above absolute minimum	Change drive controller
		3	Battery voltage above High Voltage cut back adjustment (brake cut back active)	High-impedance resistance in connection between drive controller
		4	Capacitor voltage above High Voltage cut back adjustment (brake cut back	Change drive controller
5	Motor temperature high	-	Motor temperature higher than threshold level. Speed reducing	Let cool down, than reset by drive pedal through neutral position. If failure stays; check motor
6	Controller temperature high	-	Controller temperature higher than threshold level. Speed reducing	Let cool down, than reset by drive pedal through neutral position. If failure stays; check

		1	Master does not share the main relay but any one of the slave does	Check wiring (A4PIN A15 - K2PIN N, respectively A4PIN A14 -
		2	Master shares the main relay but one of the requested slave	Check configuration and wiring (A5PIN A15 -
		3	A slave node number larger than last sharing node also share the main	
		4	WigWag is enabled but walkie	at B400R not relevant
		5	inching and walkie are both	at B400R not relevant
		6	dual motor with speed control	at B400R not relevant
		7	shared LC and Control Via CAN user interface both active	---
		8	Inching and Control Via CAN user interface both active	Check signal from A2 (control panel) and wiring (A2X109/3+4 -
		9	Walkie and Control Via CAN user interface both active	at B400R not relevant
		10	Control Via CAN user interface enabled and CAN node number set as master	---
		11	Hill hold Enabled and Torque control enabled	at B400R not relevant
		12	---	---
		13	CAN control type options are active but Control Via CAN user interface is not	---
		14	Can Node ID via digital input enabled but control but Control Via CAN user	---
		15	means Shared main relay user interface option is activated ("ShareLC">=2) on but not control via CAN user interface active (CANMsgs>=4).	---
		16	Shared main relay user interface "master node" ("CAN node") is higher/equal than last node ("LstNode"). This happens in the controller with the setting "ShareLC"=2 if "CAN node">= "LstNode", that is a non-sense. Solution: check node assignment, and make sure	---

7	Adjustment out of range	17	Shared main relay user interface "slave node" "CAN node") is lower/equal than Shared main relay user interface "master" node (defined in "LstNode"). This happens in the controller with the setting "ShareLC"=3 if "CAN node" <= "LstNode", that is a non-sense. Solution:	---
		18	Safe Stop 1 and CAN node ID Via digital Inputs not compatible	---
		19	PC interface request controller to stop pulsing	---
		< 999	First digit: menu number Last 2 digits: adjustment number within menu	---
		999	Power PCB doesn't match	---
8	Default adjustments used	-		---
Drive error faults - s graceful neutral brake – cycle action to reset fault Requires a neutral rec				
9	Memory chip fault	> 0	Contact DMC	Change drive controller
10	Both forward and reverse inputs active	-	Both direction switches are active at the same time. Notice that this fault is detected with 1s delay.	Check signal from A2 (control panel) and wiring (A2X109/3+4 - A4PIN A1+A2)
11	Ride-on: Seat switch not closed or timed out Walkie: Tiller switch not closed	-		Check switch S5 and wiring (S5 - A1(work master) - A4(Drive front) or A5(drive rear))
		1	Traction: FS1 switch active at power up	Misuse or check switch B3 and wiring

12	Power up sequence fault	2	Traction: Forward switch active at power up	Misuse or check signal from A2 (control panel) and check wiring
		3	Traction: Reverse switch active at power up	Misuse or check signal from A2 (control panel) and check wiring
		4	Pump: speed 1 or pump pot active at power up	at B400R not relevant
		5	Pump: speed 2 active at	at B400R not relevant
		6	Pump: speed 3 active at	at B400R not relevant
		7	Pump: speed 4 active at	at B400R not relevant
		8	Pump: speed 5 active at	at B400R not relevant
		9	Inching: Forward switch active at power up	Misuse or check signal from A2 (control
		10	Inching: Reverse switch active at power up	Misuse or check signal from A2 (control
		11	Inhibit direction change fault	---
		12	CAN user interface Safety Stop 1 switch inactive fault	---
		13	---	---
		14	Rear motor drives forward, while front motor drives forward	---
		15	EM brake switch manual relased at rear motor	Misuse or check switch S2 and wiring
		13	Accelerator more than 50% at power	1
2	Wig-wag high at power up			Check potentiometer B3 and wiring (B3PIN5 -
		0	Mashine controller disable	Check sub failure
14	Inching sequence faults	1	Forward switch active when	at B400R not relevant
		2	Reverse switch active when	at B400R not relevant
		3	FS1 switch active when inching	Misuse or check switch B3 + signal from A2(control panel)
		4	Seat switch active when inching	Misuse or check switch S5 + signal from A2(control panel) and wiring (S5 - A1(work
		5	Foot Brake switch active when inching	Misuse or check switch S2 + signal from A2 (control panel) and wiring
		6	Hand Brake active when inching	Misuse or check switch S15 + signal from A2(control panel) and
		7	Both inching buttons active when inching	at B400R not relevant

		8	Inching buttons active when normal drive	at B400R not relevant
	Belly switch active	-		---
Soft error faults - ately stops pulsing - Requires a neutral recycle action to reset fault				
15	Supply voltage fault	1	+5 V supply voltage too low	
		2	+5 V supply voltage too high	
		3	+14 V supply voltage too low	
		4	+14 V supply voltage too high	
16	Error in other controller	0	F15 or saftey line between controllers disconnected	Check wiring (A4PIN A17 - A5PIN A11+A30)
17	Battery voltage too low	1	Battery voltage below Low Voltage absolute minimum	Check battery G1, wiring and plug/screws (G1 - F3 - A4+A5 B+/1)
		2	Capacitor voltage below Low Voltage absolute minimum	Change drive controller
		3	Battery voltage below Low Voltage error adjustment	Check battery G1, wiring and plug/screws (G1 - F3 - A4+A5 B+/1)
		4	Capacitor voltage below Low Voltage error adjustment	Change drive controller
18	sided mosfets short	1	M1 mosfets	Change drive controller
		2	M2 mosfets	Change drive controller
		3	M3 mosfets	Change drive controller
19	Motor stall protection	-	Motor blocked for more than 10s, or encoder wire broken	Check motor M1+M2, encoder (M1+M2) and wiring (M1+M2 X1PIN2+3 - A4+A5 PIN
Hard error faults - stops pulsing and open main relay – Reset onl y by a key switch recycle				
20	Hardware over current detected	1	Positive overcurrent detected during initialization	
		2	Negative overcurrent detected during initialization	
		3	Positive overcurrent detected	
		4	Negative overcurrent detected	
		> 4	Contact DMC	Change drive controller
		1	Digital contactor output 1 short circuit during initialization	Check drive contactor K2+K3, wiring and plugs (A4+ A5 PIN A15 -
		2	Digital contactor output 1 short circuit at closing	Check drive contactor K2+K3, wiring and

21	Contacto r coil driver fault (e.g. short circuit)	3	Digital contactor output 1 short circuit when closed	Check drive contactor K2+K3, wiring and plugs (A4+ A5 PIN A15 -
		4	Digital contactor output 2 short circuit during initialization	Check brake switch S21, wiring and plugs(A4PIN A16 - S21PIN NC2 - M1
		5	Digital contactor output 2 short circuit at closing	Check brake switch S21, wiring and plugs(A4PIN A16 - S21PIN NC2 - M1
		6	Digital contactor output 2 short circuit when closed	Check brake switch S21, wiring and plugs(A4PIN A16 - S21PIN NC2 - M1
		7	Digital contactor output 3 short circuit during initialization	Check wiring and plugs (A4PIN A17 - X11PIN4 - A5PIN A11+A30)
			Digital contactor output 3 short circuit at closing	
		8	Digital contactor output 3 short circuit when closed	Check wiring and plugs (A4PIN A17 - X11PIN4 - A5PIN
		9	Digital output 4 short circuit during initialization	Check wiring and plugs (A4PIN A17 -
		10	Digital output 4 short circuit at	at B400R not relevant
		11	Digital output 4 short circuit when closed	at B400R not relevant
		12	Unknow fault	at B400R not relevant
		13	Battery voltage above High Voltage absolute maximum	Change drive controller
		22	Voltage is too high	1
2	Battery voltage above High Voltage error adjustment			Change drive controller
3	Capacitor voltage above High Voltage error adjustment			---
4	M1 mosfets			Change drive controller
23	LOW sided mosfets short circuit in	1	M2 mosfets	Change drive controller
		2	M3 mosfets	Change drive controller
		3	Cannot finish checking the hardware fail safe	Change drive controller
		1	Hardware fail safe feedback is low at startup	Reset and than key OFF and ON. If failure
		2	Hardware fail safe feedback is high during toggling	Reset and than key OFF and ON. If failure stay change drive

24	Hardware fail safe fault	3	Hardware fail safe feedback is low after toggling stops	Reset and than key OFF and ON. If failure stay change drive
		4	Hardware fail safe encountered an unknown	Reset and than key OFF and ON. If failure
		5	Hardware fail safe is not alive during normal run	Reset and than key OFF and ON. If failure
		6	Main loop is stuck	Reset and than key OFF and ON. If failure
		7	Software watchdog caused a reset. Recalculation is disabled now!	Reset and than key OFF and ON. If failure stay change drive
		8	Could not discharge the capacitor bank	Reset and than key OFF and ON. If failure
25	relay fault (e.g. short circuit)	1	Capacitor bank dit not charge sufficiently to safely close the main relay	Change drive controller
		2	Main relay opened	Change drive controller
		3	Pump thermal shutdown	Check drive contactor K2+K3 and wiring
26	Thermal shutdown	1	Pump low voltage shutdown	at B400R not relevant
		2	M1 mosfets	at B400R not relevant
27	Low sided mosfets short	1	M2 mosfets	Change drive controller
		2	M3 mosfets	Change drive controller
		3	Quadrature encoder sensor wire off or noise detected (AC	Change drive controller
28	Wire off detected	1	5 V supply wire off detected	Check encoder (M1+M2) and wiring (M1+M2)
		2	0 V supply wire off detected	Check encoder (M1+M2) and wiring (M1 + M2)
		3	Wig-wag out of safety range	Check encoder (M1+M2) and wiring (M1+M2)
		4	Motor Temperature Sensor wire off	Check potentiometer B3 and wiring (B3PIN5 - A4PIN A9, respectivly
		5	---	Check sensor (M1+M2) and wiring (M1+M2)
		6	---	---
		7	EM brake wire off or short to battery minus detected	---
		8	Accelerator potentiometer wire off detected or not matching with Fs1 digital signal	Bremse (M1+M2)und check wiring (M1 X3PIN1 - A4PIN A14, respectivly M1 X3PIN2 - S21 PIN NO1+NC1 (- NO2 - XS6 -
		9	Steer potentiometer wire off (<0,2V or >4,5V) in rear controller	at B400R not relevant
		10	shared main relay slave time	at B400R not relevant

29	CAN node fault	1	shared main relay Master fails to broadcast to slaves	Check CAN-Bus		
		2	shared main relay requested slave is not found by master	Check CAN-Bus		
		3	shared main relay master time	Check CAN-Bus		
		4	Control Via CAN user interface timeout (not receive CAN Drive Command Message from	Check CAN-Bus		
		5	Control Via CAN user interface security bit error (machine controller fails to	Check CAN-Bus		
		6	Control Via CAN user interface enable switch/wire is not connected	Check CAN-Bus		
		7	---	Check wiring (A4PIN A17		
		8	---	---		
		9	---	---		
		10	---	---		
		11	---	---		
		<u>12</u> 13	Can Node ID via digital inputs is detected to 0, check input status	Sub fault code		
		<u>14</u> <u>15</u> <u>16</u> 17	---	Check CAN-Bus		
		18	Control unit message counter	---		
		19	Control unit check sum error	Check CAN-Bus		
		20	Control unit time out timer setting 13 in CAN setup menu	Check CAN-Bus		
		21	No message recieved by rear controller after time out timer setting 13 in CAN setup menu	Check CAN-Bus		
		22	Security bit is not toggeling due to whatever CAN problems	Check CAN-Bus		
		30	Motor overspeeding	1	No message recieved by front controller after time out timer setting 14 in CAN setup menu	Check CAN-Bus
				2	Security bit is not toggeling due to whatever CAN problems	Check CAN-Bus

31	Motor fault	> 0	Stand alone vehicle but front controller still receive message from rear controller	Check CAN-Bus
32	Motor Module initialization error	> 0	Motor speed is too high to commence safe pulsing (speed is > 80 % of maximum motor)	Check configuration
33	Motor Module configuration inconsistency	> 0	Motor speed is higher than absolute maximum speed (Check Absolute Maximum Speed)	Check encoder (M1+M2)
34	Motor Module parameter inconsistency	> 0	See table "Motor sub error codes"	Check encoder (M1+M2)
35	Current sensor calibration	1	See table "Motor sub error codes"	see Motor failure list
		2	See table "Motor sub error codes"	see Motor failure list
36	Controller temperature over 100 degree	-	See table "Motor sub error codes"	see Motor failure list (down)
39	Generic time out	1	Could not initialize the	see Motor failure list
		2	Time out during calibration	Reset and than key OFF and ON. If failure
		3		Reset and than key OFF and ON. If failure
40	System Fault	> 0	Time out on configuration upload	at B400R not relevant
			Time out on getting stable inputs	Reset and than key OFF and ON. If failure
			Time out on motor ready	Reset and than key OFF and ON. If failure
			Sub Code	Internal system error Contact DMC
		0	Motor failure	Change drive controller
		1	Description	
		2	No errors in the motor module.	list
		3	The motor module could not be initialized. Internal init failure: load default and reparametrize. If persist refer to DMC.	Remedies

4	The motor could not be fluxed in time or motor not connected, Check motor	---
5	A motor overcurrent is	
6	Internal unrecoverable Failure: Refer to DMC.	
7	Wrong current: rated motor current is greater than maximum current : Increase Maximum Current in the	
8	internal error. Refer to DMC.	
9	internal error. Refer to DMC.	
10	Internal error: load default and reparametrize. If persist refer to DMC.	
11	internal error: load default and reparametrize. If persist refer to DMC.	
12	internal error: load default and reparametrize. If persist refer to DMC.	
13	internal error: load default and reparametrize. If persist refer to DMC.	
14	internal error: load default and reparametrize. If persist refer to DMC.	
15	Wrong settings: min flux demand is greater than max flux demand. Check setting number #in the Motor Setup menu it must be greater or equal to	
16	internal error: load default and reparametrize. If persist refer to DMC.	
17	Unable to calculate motor curves: → decrease motor nominal frequency (do autotuning again) → increase nominal current (do autotuning again)	

18	Unable to recalculate motor parameters because unable to find the frequency base point for field weakening within the set max frequency: a.reduce maximum current in the autotuning menu (do autotuning again) b.increase max. frequency parameter in the autotuning
	Unable to re calculate motor parameters because flux is out of table: → perform auto tuning again decreasing
	An internal unknown error occurred: refer to DMC.