SMC66-85 Register List Work in progress . . .

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Number	Mactalk name	Range	Description
0	No Selection		
1	Program Version	•	The firmware and configuration version.
2	Operating Mode	0-15,32	Controls the current operating mode of the motor. 0: Passive 1: Velocity 2: Position 3: Gear 11: Stop (during deceleration) 12: Torque Homing 13 : Homing Type 1 14 : Homing Type 2 15: Safe (for configuration) 32: Cyclic Synchronous Position (Ethernet only)
3	Requested Position	(-2^31) - (2^31-1)	The requested position. When in Position Mode, the motor will move to this position. This value can be changed at any time.Note: When using turn table mode the position range is limited to the turn table min./max setup.See also register 28 and 30.
4			Reserved
5	Max Velocity	-300000 - 300000	The maximum allowed velocity. When in Velocity Mode the motor will run constantly at this velocity. Specify a negative velocity to invert the direction.This value can be changed at any time. Note: The sign is ignored unless the motor is set in velocity mode.
6	Acceleration	1 - 500000	The acceleration/deceleration ramp to use. If this value is changed during at movement it will be used when the motor stops or changes direction.
7	Running Current	0 - 1533	Current to use when the motor is running.() = SMC66/MIS17x/MIS23x
8	Standby Time	1 - 65535	Number of milliseconds before changing to standby current when actual velocity is 0 RPM. Note: This register not used if closed loop (option) operation is enabled.
9	Standby Current	0 - 1022	The motor current used when the motor stands still after Standby Time has passed.
10	Projected Position	(-2^31) - (2^31-1)	The actual position of the function generator, which could also be expressed as the “theoretical position”. Note: When using turn table mode the position range is limited to the turn table min./max setup.See also register 28 and 30.
11			Reserved
12	Actual Velocity	-300000 - 300000	The actual velocity of the function generator, which could also be expressed as the “theoretical velocity”. When Closed Loop is enabled, the Actual Velocity is the actual measured velocity from the encoder.
13	Start Velocity	0 - 300000	The start velocity of the function generator. The motor will start the acceleration at this velocity.Value is unsigned. Sign is determined by V_SOLL (Reg 5)
14	Gear Output	(-2^31) - (2^31-1)	The dividend of the gear ratio. With the default register values, the calculation is 409600 / 2048 = 200. Which means that 1 count from the External Encoder Position adds 200 to the Requested Position.
15	Gear Input	(-2^31) - (2^31-1)	The dividend of the gear ratio. With the default register values, the calculation is 409600 / 2048 = 200. Which means that 1 count from the External Encoder Position adds 200 to the Requested Position.
16	Actual Encoder Position	(-2^31) - (2^31-1)	The position feedback from the internal encoder. This is the physical position of the motor. The resolution of the optional internal encoder is as follows:H2 or H4: 4096 counts/rev. H3: 1024

Number	Mactalk name	Range	Description
			counts/rev. In both cases the encoder position will be converted to motor counts (409600 counts/rev.)
17			Reserved
18	Digital Inputs	0 - 255	The current status of the digital inputs. 1 digital input per bit counting from 0 to 7.
19	Digital Outputs	0 - 255	The current status of the digital outputs. 1 digital output per bit counting from 0 to 7.
20	Follow Error	(-2^31) - (2^31-1)	The encoder deviation from the calculated position (Actual Position). Follow Error = Actual Position - Encoder Position.
21			Reserved
22	Follow Error Max	(-2^31) - (2^31-1)	The maximum allowed value in Follow Error before an error is triggered. If Follow Error Max = 0, the error is disabled.
23			Reserved
24	Special Command	0 - (2^32-1)	Used to issue commands to the motor. 0-127 are FastMac commands, often used by ePLC. FastMac commands are within the range 0-127. Other Special Commands are within the range: >255
25	Status Bits	0 - (2^32-1)	Status bits, counting from bit 0: Bit 1: Auto Correction active Bit 2: In Physical Position Bit 3: At Velocity Bit 4: In Position Bit 5: Accelerating Bit 6: Decelerating Bit 7: Homing Done Bit 8: ePLC Password Lock Bit 9: Internal Encoder Error Bit 12: Error (same as bit 0 in Errors, reg 35) Bit 14: External brake active Bit 15: Closed loop lead/lag detected Bit 16: Closed loop activated Bit 17: Ready for closed loop Bit 18: Standby current is used Bit 19: STO enabled Bit 20: Internal encoder ok Bit 21: Ethernet sync activated Bit 22: In target position Bit 23: STO channel A status Bit 24: STO channel B status Bit 25-26: Memory size Bit 28: Motor has homed (saved in flash) Bit 29-31: ?
26	Temperature low res. Use 246 from firmware 4.04	•	Temperature measured inside the motor. Register is used to trigger the Temperature error bit in Errors (reg 35). See the detailed description for information on the value scaling. The resolution is approximately 3 °C in this register. A higher resolution is available in Temperature (reg 246).
27	Turn Table Rev	(-2^31) - (2^31-1)	In Turn Table Mode, this is the number of revolutions within the Turn Table Size.
28	Position Limit Min	(-2^31) - (2^31-1)	Negative software position limit. When both Position Limit Min and Position Limit Max are set to 0, the software position limits are disabled. In Turn Table Mode these registers are used for the minimum and maximum limits of the Turn Table in order to calculate the total Turn Table Size.
29			Reserved
30	Position Limit Max	(-2^31) - (2^31-1)	Positive software position limit. When both Position Limit Min and Position Limit Max are set to 0, the software position limits are disabled. In Turn Table Mode these registers are used for the minimum and maximum limits of the Turn Table in order to calculate the total Turn Table Size.
31			Reserved
32	Error Deceleration	1 - 500000	Deceleration to use when performing an emergency stop when an error has occurred.
33	'In Position' Window	0 - (2^32-1)	Selects how close the Encoder Position must be to Requested Position to set the In Physical Position status bit and prevent further Auto Correction.

Number	Mactalk name	Range	Description
34	'In Position' Retries	0-100	The number of times to attempt Auto Correction. A value of 0 disables Auto Correction.
35	Errors	0 - (2^32-1)	Error bits: Bit 0: General error (set with any error) Bit 1: Follow error Bit 2: I/O driver Bit 3: Position Limit Bit 4: Low bus voltage Bit 5: Over voltage Bit 6: Temperature >90 °C Bit 7: Internal (Self diagnostics failed) Bit 8: Absolute multiturn encoder lost position Bit 9: Absolute multiturn encoder counting Bit 10: No comm. to absolute multiturn encoder Bit 11: SSI encoder counting Bit 12: Closed loop needs calibration Bit 13: Internal memory Bit 14: Absolute singleturn encoder Bit 16: Homing timeout Bit 17: CVI unstable Bit 18: Motor driver overload Bit 21: CAN Slave follow error. Bit 24: Overspeed error Bit 27: Safe Torque Off - Fatal error Bit 29: Safe Torque Off - Activated
36	Warnings	•	Warning bits: Bit 0: Positive position limit active Bit 1: Negative position limit active Bit 2: Positive position limit has been active Bit 3: Negative position limit has been active Bit 4: Low bus voltage Bit 5: I/O driver Bit 6: Temperature >80 °C Bit 7: SSI encoder Bit 8: Driver overload Bit 9: Safe Torque Off - Activated Bit 10: SSI overflow Bit 11: SSI underflow Bit 12: Encoder amplitude clipping
37	Startup Operating Mode	0-15	The motor will change to this Operating Mode after power up. This is also the mode that is used after a homing is completed. See Operating Mode register for a list of possible modes.
38	Homing Position Offset	(-2^31) - (2^31-1)	The detected zero (home) point is offset with this position.
39			Reserved
40	Homing Velocity	-300000 - 300000	The velocity to use during homing. Set a negative velocity to search in the negative direction.
41	Homing Torque	0 - 2047	Torque level to detect during Torque Homing.
42	Homing Mode	(0-14)*256	Select the homing that should start on power up. This does not work on motors with Ethernet module installed because it needs to be set either in a PLC or within the ePLC program after a certain delay.
43			Reserved
44			Reserved
45			Reserved
46	Abs Encoder Position		Reserved
47	SSI Encoder Position	0 - (2^32-1)	The position from the external SSI Encoder.
48	Flexible Register	0 - (2^32-1)	A mix of 16 bits from different registers. The user can set this up with the registers Flex Reg Setup 1-8.
49	Position 1	(-2^31) - (2^31-1)	Position register 1
50			Reserved

Number	Mactalk name	Range	Description
51	Position 2	(-2^31) - (2^31-1)	Position register 2
52			Reserved
53	Position 3	(-2^31) - (2^31-1)	Position register 3
54			Reserved
55	Position 4	(-2^31) - (2^31-1)	Position register 4
56			Reserved
57	Position 5	(-2^31) - (2^31-1)	Position register 5
58			Reserved
59	Position 6	(-2^31) - (2^31-1)	Position register 6
60			Reserved
61	Position 7	(-2^31) - (2^31-1)	Position register 7
62			Reserved
63	Position 8	(-2^31) - (2^31-1)	Position register 8
64			Reserved
65	Velocity 1	(-2^31) - (2^31-1)	Velocity register 1
66	Velocity 2	(-2^31) - (2^31-1)	Velocity register 2
67	Velocity 3	(-2^31) - (2^31-1)	Velocity register 3
68	Velocity 4	(-2^31) - (2^31-1)	Velocity register 4
69	Velocity 5	(-2^31) - (2^31-1)	Velocity register 5

Number	Mactalk name	Range	Description
70	Velocity 6	(-2^31) - (2^31-1)	Velocity register 6
71	Velocity 7	(-2^31) - (2^31-1)	Velocity register 7
72	Velocity 8	(-2^31) - (2^31-1)	Velocity register 8
73	Acceleration 1	(-2^31) - (2^31-1)	Acceleration register 1
74	Acceleration 2	(-2^31) - (2^31-1)	Acceleration register 2
75	Acceleration 3	(-2^31) - (2^31-1)	Acceleration register 3
76	Acceleration 4	(-2^31) - (2^31-1)	Acceleration register 4
77	Current 1	(-2^31) - (2^31-1)	Current register 1
78	Current 2	(-2^31) - (2^31-1)	Current register 2
79	Current 3	(-2^31) - (2^31-1)	Current register 3
80	Current 4	(-2^31) - (2^31-1)	Current register 4
81	Analog Filt 1	0 - 4095	The voltage on input 1 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.
82	Analog Filt 2	0 - 4095	The voltage on input 2 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.
83	Analog Filt 3	0 - 4095	The voltage on input 3 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.
84	Analog Filt 4	0 - 4095	The voltage on input 4 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.
85	Analog Filt 5	0 - 4095	The voltage on input 5 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.
86	Analog Filt 6	0 - 4095	The voltage on input 6 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.
87	Analog Filt 7	0 - 4095	The voltage on input 7 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Number	Mactalk name	Range	Description
88	Analog Filt 8	0 - 4095	The voltage on input 8 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.
89	Analog 1	0 - 4095	The unfiltered voltage on input 1. 5 V is equal to a value of 4095.
90	Analog 2	0 - 4095	The unfiltered voltage on input 2. 5 V is equal to a value of 4095.
91	Analog 3	0 - 4095	The unfiltered voltage on input 3. 5 V is equal to a value of 4095.
92	Analog 4	0 - 4095	The unfiltered voltage on input 4. 5 V is equal to a value of 4095.
93	Analog 5	0 - 4095	The unfiltered voltage on input 5. 5 V is equal to a value of 4095.
94	Analog 6	0 - 4095	The unfiltered voltage on input 6. 5 V is equal to a value of 4095.
95	Analog 7	0 - 4095	The unfiltered voltage on input 7. 5 V is equal to a value of 4095.
96	Analog 8	0 - 4095	The unfiltered voltage on input 8. 5 V is equal to a value of 4095.
97	Bus voltage (P+)	0 - 4095	The voltage for the motor driver.
98	Bus Voltage Min	0 - 4095	Trigger point for Undervoltage Error.
99	Encoder Type	0-4	Internal encoder type: 0: No encoder 1: H2 (Singleturn Encoder 10 bit) 2: H3 (Absolute Multiturn Encoder 10 bit) 3: H2 (Singleturn Encoder 12 bit) 4: H4 (Singleturn Encoder 12 bit + Absolute Multiturn encoder (10 bit).
100	Analog: Setup	•	Bits 0-7: Bitmask for which of the analog inputs that will use the current value of the Analog: Conf Min/Max, Max Slope and Filter registers. Bit 15: Set when values have been copied and used.
101	Analog: Index	0, 32775	Bits 0-7: Index (1-8) of the analog input whose Analog: Conf Min/Max, Max Slope and Filter values to load into the corresponding Analog: xxx registers (for read-back). Bit 15: Is set after the registers have been updated.
102	Analog: Conf Min	0 - 4094	Minimum confidence limit for analog inputs.
103	Analog: Conf Max	1 - 4095	Maximum confidence limit for analog inputs.
104	Analog: Max Slope	2 - 4095	Maximum slope limit for analog inputs.
105	Analog: Filter	1 - 64	Filter value for analog inputs.
106	Analog: Status	0 - 65535	Individual status bits for 50 % of samples outside confidence limits (high 8 bits) and 50 % of samples violated the slope limit. (low 8 bits)
107	SSI Encoder Setup 1		
108			

Number	Mactalk name	Range	Description
109			
110	Position Settling Time	0 - 32676	Number of milliseconds to wait after an Auto Correction attempt before testing for the position being within the target window ('In Position' Window).
111	SSI Encoder Setup 2	•	SSI setup bits: Bit 0-7: Prepare Time Bit 8: Gray to Bin Conversion Bit 9: Reserved Bit 10: Disable Interrupts Bit 11-18: Wait Time
112			Reserved
113			Reserved
114			Reserved
115			Reserved
116			Reserved
117			Reserved
118			Reserved
119			Reserved
120			Reserved
121	Modbus Setup	•	Modbus setup bits: Bit 0: Enabled RS485 Bit 1: RS485 Modbus Type Bit 2-3: RS485 Parity Bit 4: RS485 Data bits Bit 5: RS485 Stop bits Bit 8 Enabled RS422 Bit 9: RS422 Modbus Type Bit 10-11: RS422 Parity Bit 12: RS422 Data bits Bit 13: RS422 Stop bits
122	Homing Setup	•	Bits to control homing: Bit 0: Reserved Bit 1: Change direction on limit. Bit 2: Search for opposite side of sensor. Bit 3: Reserved Bit 4: Ignore position limit switches. Bit 5: Disable the 60 s homing time out.
123	General Setup2	•	bit 2..0: slavefollow Slave enable: 0: None, 1: Relative, 2: Absolute bit 5..3: slaveFollow Master enabler: 0: None, 1: velocity master, 2: Relative Master pos bit 8: Enable gearing of external encoder. bit 9: Sync register 16 P_ENC with register 171 P_AXIS bit 10: Stall detection enable (external encoder) bit 11: Use register 32 D_ERROR for stall deceleration
124	General Setup	•	Setup bits: Bit 0: Invert motor direction. Bit 1: Don't start program after power up. Bit 2-3: External encoder input type Bit 4: CANopen DSP402 enable Bit 5: Synchronize to encoder position after passive. Follow error will be 0. Bit 6: In Phys. Position bit updates continuously Bit 8: CAN J1939 enable Bit 9: Disable sync (Requested Position = Actual Position) in Passive mode. Bit 10: Startup: Transfer single turn position to P_IST Bit 11: Startup: Transfer multi turn position to P_IST Bit 12: Startup: Keep External Encoder Bit 13: Startup: Keep SSI Value Bit 14: CANopen: Beckhoff mode Bit 15: Disable internal encoder Bit 16: External Encoder counting direction Bit 17: Disable position limit error Bit 18: Enable indirect addressing for V7/V8 Bit 19: Disable external brake temporarily Bit 20: Disable SSI encoder error Bit 21: Low bus voltage -> Error Bit 22: Low bus voltage -> Passive Bit 23: Low bus voltage -> 0 RPM Bit 24: Enable closed loop Bit 25: Enable closed loop current control Bit 28: Position limits without memory (simple mode) Bit 29: STO activated -> Error Bit 30: STO activated -> Passive Bit 31: STO activated -> 0 RPM
125	Digital I/O Setup	•	Bits 0-7 set the I/O active level. Bits 8-15 enable the I/O as an output.

Number	Mactalk name	Range	Description
126	Turn Table Mode	0-5	Value of lowest byte (Bit 7-0): 0 = Turn Table disabled. 1 = Singleturn CW rotation 2 = Singleturn CCW rotation 3 = Shortest Path 4 = Multiturn CW rotation 5 = Multiturn CCW roration Bit 8: Use actual postion as starting point for next move
127	Turn Table Size	•	The size of the Turn Table expressed in motor Counts. Turn Table Size = Position Limit Max - Position Limit Min + 1.
128			
129	Negative Limit Input	•	Input mask for Negative Limit Sensor input(s), each bit set selects which I/O 1-8 to use.
130	Positive Limit Input	•	Input mask for Positive Limit Sensor input(s), each bit set selects which I/O 1-8 to use.
131			
132	Homing Sensor Input	•	Input mask for Home Sensor Input(s), each bit set selects which I/O 1-8 to use.
133			
134			
135	Digital Input Filter Setup	•	Input mask to enable filter on digital inputs.
136	Digital Input Filter Time	•	The number of milliseconds the filtered digital inputs must be stable before accepting a change.
137	'In Position' Output	•	Output mask for status bit 'In Position' output
138	'Error' Output	•	Output mask for status bit 'Error' output.
139	Acceptance Voltage	•	The Control Voltage (CVI) that must be measured before the firmware is started.
140	Acceptance Voltage Count	•	The number of times the Acceptance Voltage must be measured before starting the firmware.
141	Shutdown Voltage	•	The voltage that determines how low the Control Voltage (CVI) can be before shut down.
142			
143	Control Voltage (CVI)	•	The actual measured Control Voltage (CVI).
144	Position Offset	(-2^31) - (2^31-1)	Used with Special Command 354 for changing both the Actual and Requested Position in one operation either absolute or relative.
145			

Number	Mactalk name	Range	Description
146	Serial Baud Rate (RS485)	0-7	The baud rate on the RS485 serial port: 0 : 9600 baud 1 : 19200 baud (default setting) 2 : 38400 baud 3 : 57600 baud 4 : 115200 baud 5 : 230400 baud 6 : 460800 baud 7 : 921600 baud
147	Serial Transmit Delay (RS485)	1-255	The time to wait before the response is transmitted on the RS485 serial port. The unit corresponds to the time of one bit at the current baud rate.
148	Group: ID	0-255	The Group ID of the motor - used for the Group Write telegram on the MacTalk protocol.
149	Group: Sequence	0-255	The last received Group Sequence (write) - part of the MacTalk serial protocol.
150	Motor Address	0-254	The motor address. Used on the MacTalk serial protocol.
151	Motor Type	80-254	The motor type. Examples: 80: SMC85 81: MIS340 120: MIS17 150: SMC66 151: MIS230 250: MIL340
152	Motor Serial Number	•	The unique serial number of the motor.
153	SSI Encoder Offset		
154	Firmware Checksum 1	0-65535	Firmware Checksum part 1
155	Firmware Checksum 2	0-65353	Firmware Checksum part 2
156	Hardware Revision	0-65535	The revision of the hardware. When read as hex: 0x12 means version 1.02.
157	Bus Voltage Max	0-100[VDC] 0-9000[mARMS]	Bit 0-15: Max voltage on bus If the bus voltage exceeeds this value, the motor will go in error. Bit 16-31: Full scale motor current in mARMS
158		•	Bits 0-15: Defines what IO that are avaible on the connector Bits 16-31: The max current to the motor. (1-1532)
159		0-65535	The version of the bootloader. When read as hex: 0x12 means version 1.02.
160		0-65535	This register is not used internally, but will always be 0 after power on. Please notice that MacTalk uses this register.
161			
162			
163			
164			
165		0-65535	This register contains information about what options that are available. Bits 0-7 define the options available in the hardware. Bits 8-15 define the options available in the firmware. Bit 0 and 8 : CANopen Fieldbus

Number	Mactalk name	Range	Description
166	CANopen Node ID	0-127	The node id on the CANopen Fieldbus Interface.
167	CANopen Baud Rate	0-8	The baudrate used on the CANopen Fieldbus Interface. 0 : 1000 kbit/s 2 : 500 kbit/s 3 : 250 kbit/s 4 : 125 kbit/s 5 : 100 kbit/s 6 : 50 kbit/s 7 : 20 kbit/s 8 : 10 kbit/s
168	Module Type	•	Type of module installed in the motor: 0 = No module 0x34 = EthernetIP 0x35 = EtherCAT 0x36 = PowerLink 0x37 = Profinet 0x38 = Modbus/TCP 0x3A = Sercos
169		•	Number of times the registers have been saved to motor.
170	External Encoder Position	•	The External Encoder Position.
171	External Encoder Geared	•	Resulting position from external encoder. After processing and gearing if enabled.
172	External Encoder Velocity	•	The velocity of the External Encoder. The velocity is measured every 16 ms.
173	Threshold Stall Detection	0 - (2^31-1)	Stall detection compares following error to this value to detect stall with non closed loop application
174	Deceleration	1 - 500000	The deceleration ramp. If this value is changed during at movement it will be used when the motor stops or changes direction. If the register is set to 0, the Acceleration rate is used for Deceleration.
175	Internal Encoder Setup	•	Bit 2-4: Resolution (16,15,14,13,12*,11,10,9) *Closed loop compatible
176	Firmware Build	•	Current firmware build number.
177	'In Target Position' Time	0-1000	Time the motor must stand still before 'In Target Position' bit is set.
178			
179	Brake Output	•	Bits 0-7: Bit mask to setup User Output for brake. Bits 8-15: Brake on time (T_ON) Bits 16-23: Brake off time (T_OFF)
180	CANopen Gear Motor Revolutions	1 - (2^31-1)	Object 6091 subindex 1
181	CANopen Gear Shaft Revolutions	1 - (2^31-1)	Object 6091 subindex 2
182	CANopen Feed	1 - (2^31-1)	Object 6092 subindex 1
183	CANopen Shaft Revolutions	1 - (2^31-1)	Object 6092 subindex 2
184	CANopen Velocity Factor Numerator	1 - (2^31-1)	Object 6094 subindex 1

Number	Mactalk name	Range	Description
185	CANopen Velocity Factor Divisor	1 - (2^31-1)	Object 6094 subindex 2
186	CANopen Accelerator Factor Numerator	1 - (2^31-1)	Object 6097 subindex 1
187	CANopen Accelerator Factor Numerator	1 - (2^31-1)	Object 6097 subindex 2
188	CANopen Object Index/SubIndex		Reserved
189	CANopen Read/Write Data		Reserved
190	CANopen Command/Data type		Reserved
191	CANopen Status/Control Word	0 - (2^31-1)	Lo 16 bit Object 6041 subindex 0 statusword Hi 16 bit Object 6040 subindex 0 Controlword
192	CANopen Hardware/Network Management		Reserved
193			Reserved
194			Reserved
195		0 - 255	Object 607E subindex 0
196			
197			
198			
199	ModBus Slave Timeout [ms]	0 - 10000	0:disabled. No master monitoring Any value above 0 will enable master monitoring. Timout will result in a timeout action
200	ModBus Slave Action	0 - 2	The action that will accour when master does not communicatie in the time set by timeout. 0: No action 1:V_SOLL = 0 2:passive mode
201			
202	Ticks	•	Increments at a fixed rate of one count per millisecond. Starts at zero after the motor has been reset.
203			

Number	Mactalk name	Range	Description
204			
205	Master list over live slaves	0 - (2^32-1)	Slave follow. Each bit reprrecent a slave in the slave follow network. Only master uses this register.
206			
207	Max following error for slaves	0 - (2^31-1)	Slave follow. The following error of the slave with the largest following error. Only master uses this register
208	Status and Error on master	0 - (2^31-1)	Slave follow. Bit 0-15 status Bit 0: All slaves are ready Bit 1: All slaves are homed Bit 16-31 error (If bit 21 is set in register 35) Bit 16: slave aborted active mode Bit 17: Slave went offline Bit 18: Slave following error time exceeded Bit 19: Slave has CAN error
209	Time for slave following error timeout	0 - (2^31-1)	Slave follow. Set the time any slave is allowed a following error larger then master Catchup window register 245. If FLWerr is not under catchup value before time exceeded, an error is set. 0 = disable slave catchup timeout
210	Timeout for slave responding as expected	0 - (2^31-1)	Slave follow. The time the salve has to respond to master mode change
211	Unit scale command		
212	CL: Current Max	0 - 2047	Closed loop: Max current in closed loop with current control. 2047 = 100 % of Running Current.
213	CL: Current Min	0 - 2047	Closed loop: Min current in closed loop with current control. 2047 = 100 % of Running Current.
214			
215	CL: Current Dec Factor	1 - 10000	Closed loop: The slope of the velocity dependent current decrementation rate.
216	KPhase	0 - 200	Closed loop: A motor dependent factor which optimizes the commutation angle at high velocity. Factory setting.
217	Actual Torque	0 - 2047	Closed loop: The actual motor current in closed loop with active current control. 2047 = 100 % of the Running Current.
218	CL: Current Pos Slope	1 - 100000	Closed loop: Current increment rate in closed loop with current control. (1=fastest)
219	CL: Current Neg Slope	1 - 100000	Closed loop: Current decrement rate in closed loop with current control. (1=fastest)
220	Switch board: Read A		
221	Switch board: Read D		

Number	Mactalk name	Range	Description
222	Switch board: Write A	•	Address for the internal switch board/cross field setup.
223	Switch board: Write D	•	Data for the internal switch board/cross field setup.
224	Flex Reg Setup 1	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.
225	Flex Reg Setup 2	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.
226	Flex Reg Setup 3	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.
227	Flex Reg Setup 4	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.
228	Flex Reg Setup 5	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.
229	Flex Reg Setup 6	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.
230	Flex Reg Setup 7	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.
231	Flex Reg Setup 8	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.
232	LED Setup 1	•	Sets up 'LED L3' and 'LED L2' on the motor.
233	LED Setup 2	•	Sets up 'LED L1 Green' and L1 Red' on the motor.
234			
235			
236	Auto Correction Velocity	-300000 - 300000	In Position Mode the Auto Correction is run with Max Velocity, but if Auto Correction Velocity != 0 it will be used in stead.
237	Actual Velocity (Open Loop)	-300000 - 300000	The actual velocity of the function generator, which could also be expressed as the “theoretical velocity”.
238	Motor Rotations	•	Number of revolutions the motor has run since last power on.
239		•	The cyclic setup from the Ethernet module. Bit 0-15: Cycle period (us) Bit 16-31: Sync0 offset in percent.
240			

Number	Mactalk name	Range	Description
241		•	CRC error counter of the internal communication between controller and Ethernet module.
242	Homing Crawl Velocity	0 - 300000	In Homing type 2, the crawl velocity is Homing Velocity / 64 by default. If register Homing Crawl Velocity is ! = 0, this velocity is used.
243	Homing Timeout	•	The number of milliseconds before Homing Timeout occurs. If set to 0, the Homing Timeout is by default 60000 ms.
244	Temperature Limits	•	The actual temperature limits in the motor: Bit 0-15: Warning limit (unit: °C) Bit 16-31: Error limit (unit: °C)
245	CL: Allowable Overspeed	•	Bit 0-7: Allowable overspeed in percent (0-100) Bit 8-31: Follow error limit before overspeed is used.
246	Temperature	•	The actual temperature measured in higher resolution than Temperature (reg 26).
247			
248			
249			
250	Extended Program Version		
251			
252	Shutdown Voltage Count	•	Number of times in a row the voltage can be too low before shutting down the motor. Time between each measurement is 100 us.
253	Internal Encoder Velocity	-300000 - 300000	The actual measured velocity from the encoder. (For filtering options see Reg 254)
254	Reserved 254	0 - 10000	Bit 16: Use encoder values. Activate to use velocity from encoder as actual velocity. Bit 15-0: Encoder Filter Constant used to implement a low-pass velocity filter for V_ENC (Reg 253). This constant is proportional to the time constant of the filter T = Δ * N Δ = sample time (~ 60 µs) N = filter constant
255	Reserved 255		Reserved
256	Reserved 256	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)
257	Reserved 257	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)
258	Reserved 258	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Number	Mactalk name	Range	Description
259	Reserved 259	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)
260	read nom scaling	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)
261	read shift count denom scaling	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)
262	write nom scaling	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)
263	write shift count denom scaling	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)
264	Rec counter	•	Current index into the sample/scope buffer.
265	Scope control	•	Scope setup: Bit 2: Selects to sample every 100 us when set, or every 1 ms when cleared. Bit 11: Is set by the motor when the trigger condition is met. Bit 12: Arm the trigger. Is cleared when the trigger condition is met. Bit 13: Enable min/max/avg sampling.Bits 23+28: Selects the buffer length and number of channels.
266	Capture and compere 0		
267	Capture and compere 1	•	Scope setup: Bits 0-6: Trigger condition type Bit 7: When set, the Capture Compare 3 and 4 are used to point to another register. Bits 8-11: Sets the trigger point position. Bits 12-16: Define for how many samples to calculate min/max/avg. Bit 17: TrigOnChange
268	Capture and compere 2	•	Scope setup: Register number of the left-side expression, L.
269	Capture and compere 3	•	Scope setup: Register number or value of the right-side expression, R. Capture Compare 1 bit 7 determines if register number or value is used.
270	Capture and compere 4	•	Scope setup: Register number or value of the right-side expression, H. Capture Compare 1 bit 7 determines if register number or value is used.
271	Capture and compere 5		
272	Capture and compere 6		
273	Capture and compere 7		
274	DMX512 Options	•	Bit 0: Auto clear errors Bit 2: Set acc with every position update Bit 3: Skip homing Bit 6: Enable DMX on RS485 port Bit 7: Enable DMX on RS422 port

Number	Mactalk name	Range	Description
275	DMX512 Default Velocity	0 - 300000	DMX Defult velocity
276	DMX512 Velocity	0 - 300000	DMX Jog velocity
277	DMX512 StartAddress 1/2	•	DMX addresses Bit 0-15 start adresse 1 Pos + cmd Defailt = 1 Bit 16-31 Start adress 2 Velocity and Acc default and range: Address1 = 1 range 1-509 Address 2 = 500 Range 1-510
278	DMX512 Position Nominator	(-2^31) - (2^31-1)	The received DMX position factored with this numerator and the denominator register 279
279	DMX512 Position Denominator	(-2^31) - (2^31-1)	The received DMX position factored with this denominator and the numerator register 278
280	DMX512 Position Offset	(-2^31) - (2^31-1)	This value is added to position used with DMX
281	DMX512 Acceration Nom/Den	•	The received DMX acceleration factored with this numerator and denominator. Bit 0-15 accleration factor numerator Bit 16-31 acceleration factor denominator Default rate is 1/1
282	DMX512 Acceration Offset	1 - 500000	This value is added to acceleration used with DMX
283	DMX512 Velocity Nom/Den	•	The received DMX velocity factored with this numerator and denominator. Bit 0-15 velocity factor numerator Bit 16-31 velocity factor denominator Default rate is 10/1
284	DMX512 Velocity Offset	0 - 300000	This value is added to velocity used with DMX
285	DMX512 Homing Mode	1,2,3,12,14,15	1 or 13: Zero search sensor 1 mode 2 or 12: Zero search torque mode 3 or 14 Zero search sensor 2 mode All other values Sensor 2 mode Is used
286	Serial Baud Rate (RS422)	0 - 7	The baud rate on the RS422 serial port: 0 : 9600 baud 1 : 19200 baud 2 : 38400 baud 3 : 57600 baud 4 : 115200 baud 5 : 230400 baud 6 : 460800 baud (default setting) 7 : 921600 baud
287	Serial Transmit Delay (RS422)	1 - 255	The time to wait before the response is transmitted on the RS422 serial port. The unit corresponds to the time of one bit at the current baud rate.
288	Reserved 288		
289	Reserved 289		
290	Reserved 290		
291	Reserved 291		
292	Reserved 292		
293	Analog Filter Setup 0		

Number	Mactalk name	Range	Description
294	Analog Filter Setup 0		
295	Analog Filter Setup 0		
296	Analog Filter Setup 0		
297	Analog Filter Setup 1		
298	Analog Filter Setup 1		
299	Analog Filter Setup 1		
300	Analog Filter Setup 1		
301	Analog Filter Setup 2		
302	Analog Filter Setup 2		
303	Analog Filter Setup 2		
304	Analog Filter Setup 2		
305	Analog Filter Setup 3		
306	Analog Filter Setup 3		
307	Analog Filter Setup 3		
308	Analog Filter Setup 3		
309	Analog Filter Setup 4		
310	Analog Filter Setup 4		
311	Analog Filter Setup 4		

Number	Mactalk name	Range	Description
312	Analog Filter Setup 4		
313	Analog Filter Setup 5		
314	Analog Filter Setup 5		
315	Analog Filter Setup 5		
316	Analog Filter Setup 5		
317	Analog Filter Setup 6		
318	Analog Filter Setup 6		
319	Analog Filter Setup 6		
320	Analog Filter Setup 6		
321	Analog Filter Setup 7		
322	Analog Filter Setup 7		
323	Analog Filter Setup 7		
324	Analog Filter Setup 7		
325	Reserved 325		
326	Reserved 326		
327	KPHASE V0		
328	KPHASE A0		
329	KPHASE A1		
330	KPHASE B1		

Number	Mactalk name	Range	Description
331	Error Counters		
332	Error Counters		
333	Error Counters		
334	Error Counters		
335	Error Counters		
336	Reserved 336		
337	Reserved 337		
338	Reserved 338		
339	Reserved 339		
340	Reserved 340		
341	Reserved 341		
342	Reserved 342		
343	Reserved 343		
344	Reserved 344		
345	Reserved 345		
346	Reserved 346		
347	Reserved 347		
348	Reserved 348		
349	Reserved 349		
350	User Regiser 0		
351	User Regiser 1		
352	User Regiser 2		
353	User Regiser 3		
354	User Regiser 4		

Number	Mactalk name	Range	Description
355	User Regiser 5		
356	User Regiser 6		
357	User Regiser 7		
358	User Regiser 8		
359	User Regiser 9		
360	User Regiser 10		
361	User Regiser 11		
362	User Regiser 12		
363	User Regiser 13		
364	User Regiser 14		
365	User Regiser 15		
366	User Regiser 16		
367	User Regiser 17		
368	User Regiser 18		
369	User Regiser 19		
370	User Regiser 20		
371	User Regiser 21		
372	User Regiser 22		
373	User Regiser 23		
374	User Regiser 24		
375	User Regiser 25		
376	User Regiser 26		
377	User Regiser 27		
378	User Regiser 28		

Number	Mactalk name	Range	Description
379	User Regiser 29		
380	User Regiser 30		
381	User Regiser 31		
382	User Regiser 32		
383	User Regiser 33		
384	User Regiser 34		
385	User Regiser 35		
386	User Regiser 36		
387	User Regiser 37		
388	User Regiser 38		
389	User Regiser 39		
390	User Regiser 40		
391	User Regiser 41		
392	User Regiser 42		
393	User Regiser 43		
394	User Regiser 44		
395	User Regiser 45		
396	User Regiser 46		
397	User Regiser 47		
398	User Regiser 48		
399	User Regiser 49		
400	User Regiser 50		
401	User Regiser 51		
402	User Regiser 52		

Number	Mactalk name	Range	Description
403	User Regiser 53		
404	User Regiser 54		
405	User Regiser 55		
406	User Regiser 56		
407	User Regiser 57		
408	User Regiser 58		
409	User Regiser 59		
410	User Regiser 60		
411	User Regiser 61		
412	User Regiser 62		
413	User Regiser 63		
414	User Regiser 64		
415	User Regiser 65		
416	User Regiser 66		
417	User Regiser 67		
418	User Regiser 68		
419	User Regiser 69		
420	User Regiser 70		
421	User Regiser 71		
422	User Regiser 72		
423	User Regiser 73		
424	User Regiser 74		
425	User Regiser 75		
426	User Regiser 76		

Number	Mactalk name	Range	Description
427	User Regiser 77		
428	User Regiser 78		
429	User Regiser 79		
430	User Regiser 80		
431	User Regiser 81		
432	User Regiser 82		
433	User Regiser 83		
434	User Regiser 84		
435	User Regiser 85		
436	User Regiser 86		
437	User Regiser 87		
438	User Regiser 88		
439	User Regiser 89		
440	User Regiser 90		
441	User Regiser 91		
442	User Regiser 92		
443	User Regiser 93		
444	User Regiser 94		
445	User Regiser 95		
446	User Regiser 96		
447	User Regiser 97		
448	User Regiser 98		
449	User Regiser 99		
450	User Regiser 100		

Number	Mactalk name	Range	Description
451	User Regiser 101		
452	User Regiser 102		
453	User Regiser 103		
454	User Regiser 104		
455	User Regiser 105		
456	User Regiser 106		
457	User Regiser 107		
458	User Regiser 108		
459	User Regiser 109		
460	User Regiser 110		
461	User Regiser 111		
462	User Regiser 112		
463	User Regiser 113		
464	User Regiser 114		
465	User Regiser 115		
466	User Regiser 116		
467	User Regiser 117		
468	User Regiser 118		
469	User Regiser 119		
470	User Regiser 120		
471	User Regiser 121		
472	User Regiser 122		
473	User Regiser 123		
474	User Regiser 124		

Number	Mactalk name	Range	Description
475	User Regiser 125		
476	User Regiser 126		
477	User Regiser 127		
478	User Regiser 128		
479	User Regiser 129		
480	User Regiser 130		
481	User Regiser 131		
482	User Regiser 132		
483	User Regiser 133		
484	User Regiser 134		
485	User Regiser 135		
486	User Regiser 136		
487	User Regiser 137		
488	User Regiser 138		
489	User Regiser 139		
490	User Regiser 140		
491	User Regiser 141		
492	User Regiser 142		
493	User Regiser 143		
494	User Regiser 144		
495	User Regiser 145		
496	User Regiser 146		
497	User Regiser 147		
498	User Regiser 148		

Number	Mactalk name	Range	Description
499	User Regiser 149		
500	Reserved 500		
501	Reserved 501		
502	Reserved 502		
503	Reserved 503		
504	Reserved 504		
505	Reserved 505		
506	Reserved 506		
507	Reserved 507		
508	Reserved 508		
509	Reserved 509		
510	Reserved 510		
511	Reserved 511		

Number	Mactalk name	Range	Description
0	No Selection		

Description: test

Firmware Name: flash_magic

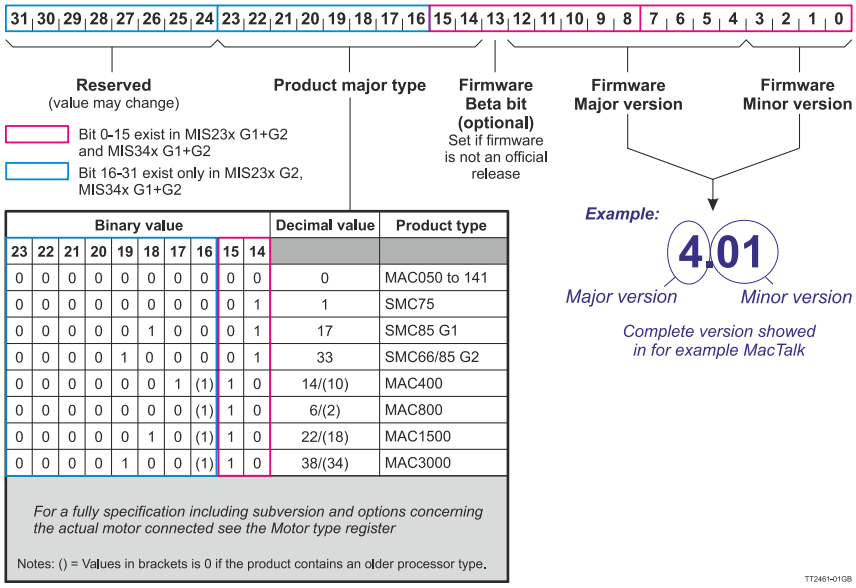
Data Type: int32_t

Number	Mactalk name	Range	Description
1	Program Version	•	The firmware and configuration version.

Description: The firmware version. The Bit 14 is set to indicate that the type is SMC75 or SMC85.
Bit 0-3 is the minor version and bit 4-12 is the major version.
Bit 13 is set if the actual firmware is a beta version (not officially released).
Bit 14 to 23 indicate the overall motor type. For specific motor type see Motor type chart in register 151.

Detailed description of the individual bits:

PROG_VER register (register 1) bit 0 to 15 (31) explanation.



Binary value										Decimal value	Product type
23	22	21	20	19	18	17	16	15	14		
0	0	0	0	0	0	0	0	0	0	0	MAC050 to 141
0	0	0	0	0	0	0	0	0	1	1	SMC75
0	0	0	0	0	1	0	0	0	1	17	SMC85 G1
0	0	0	0	1	0	0	0	0	1	33	SMC66/85 G2
0	0	0	0	0	0	1	(1)	1	0	14/(10)	MAC400
0	0	0	0	0	0	0	(1)	1	0	6/(2)	MAC800
0	0	0	0	0	1	0	(1)	1	0	22/(18)	MAC1500
0	0	0	0	1	0	0	(1)	1	0	38/(34)	MAC3000

For a fully specification including subversion and options concerning the actual motor connected see the Motor type register

Notes: () = Values in brackets is 0 if the product contains an older processor type.

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Firmware Name: prog_version

Data Type: int32_t

Default Value: •

Number	Mactalk name	Range	Description
2	Operating Mode	0-15,32	Controls the current operating mode of the motor. 0: Passive 1: Velocity 2: Position 3: Gear 11: Stop (during deceleration) 12: Torque Homing 13 : Homing Type 1 14 : Homing Type 2 15: Safe (for configuration) 32: Cyclic Synchronous Position (Ethernet only)

Firmware Name: mode_reg

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
3	Requested Position	(-2^31) - (2^31-1)	The requested position. When in Position Mode, the motor will move to this position. This value can be changed at any time.Note: When using turn table mode the position range is limited to the turn table min./max setup.See also register 28 and 30.

Firmware Name: p_soll

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
4			Reserved

Firmware Name: fpga_version

Data Type: int32_t

Number	Mactalk name	Range	Description
5	Max Velocity	-300000 - 300000	The maximum allowed velocity. When in Velocity Mode the motor will run constantly at this velocity. Specify a negative velocity to invert the direction.This value can be changed at any time. Note: The sign is ignored unless the motor is set in velocity mode.

Firmware Name: v_soll

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
6	Acceleration	1 - 500000	The acceleration/deceleration ramp to use. If this value is changed during at movement it will be used when the motor stops or changes direction.

Firmware Name: a_soll

Data Type: int32_t

Default Value: 1000

Number	Mactalk name	Range	Description
7	Running Current	0 - 1533	Current to use when the motor is running.() = SMC66/MIS17x/MIS23x

Firmware Name: cur_run

Data Type: int32_t

Default Value: 511

Number	Mactalk name	Range	Description
8	Standby Time	1 - 65535	Number of milliseconds before changing to standby current when actual velocity is 0 RPM. Note: This register not used if closed loop (option) operation is enabled.

Firmware Name: stdby_time

Data Type: int32_t

Default Value: 500

Number	Mactalk name	Range	Description
9	Standby Current	0 - 1022	The motor current used when the motor stands still after Standby Time has passed.

Firmware Name: cur_stdby

Data Type: int32_t

Default Value: 128

Number	Mactalk name	Range	Description
10	Projected Position	(-2^31) - (2^31-1)	The actual position of the function generator, which could also be expressed as the “theoretical position”. Note: When using turn table mode the position range is limited to the turn table min./max setup.See also register 28 and 30.

Firmware Name: p_ist

Data Type: int32_t

Default Value:

-

Number	Mactalk name	Range	Description
11			Reserved

Firmware Name: reg11

Data Type: int32_t

Number	Mactalk name	Range	Description
12	Actual Velocity	-300000 - 300000	The actual velocity of the function generator, which could also be expressed as the “theoretical velocity”. When Closed Loop is enabled, the Actual Velocity is the actual measured velocity from the encoder.

Firmware Name: v_ist

Data Type: int32_t

Default Value:

-

Number	Mactalk name	Range	Description
13	Start Velocity	0 - 300000	The start velocity of the function generator. The motor will start the acceleration at this velocity.Value is unsigned. Sign is determined by V_SOLL (Reg 5)

Firmware Name: v_start

Data Type: int32_t

Default Value: 1000

Number	Mactalk name	Range	Description
14	Gear Output	(-2^31) - (2^31-1)	The dividend of the gear ratio. With the default register values, the calculation is 409600 / 2048 = 200. Which means that 1 count from the External Encoder Position adds 200 to the Requested Position.

Firmware Name: gear1

Data Type: int32_t

Default Value: 409600

Number	Mactalk name	Range	Description
15	Gear Input	(-2^31) - (2^31-1)	The dividend of the gear ratio. With the default register values, the calculation is 409600 / 2048 = 200. Which means that 1 count from the External Encoder Position adds 200 to the Requested Position.

Firmware Name: gear2

Data Type: int32_t

Default Value: 2048

Number	Mactalk name	Range	Description
16	Actual Encoder Position	(-2^31) - (2^31-1)	The position feedback from the internal encoder. This is the physical position of the motor. The resolution of the optional internal encoder is as follows:H2 or H4: 4096 counts/rev. H3: 1024 counts/rev. In both cases the encoder position will be converted to motor counts (409600 counts/rev.)

Firmware Name: p_enc

Data Type: int32_t

Default Value:

-

Number	Mactalk name	Range	Description
17			Reserved

Firmware Name: p_enc_singleturn

Data Type: int32_t

Number	Mactalk name	Range	Description
18	Digital Inputs	0 - 255	The current status of the digital inputs. 1 digital input per bit counting from 0 to 7.

Firmware Name: inputs

Data Type: io_bits_t

Default Value: •

Type:

#	Name	Description
0	IO1	Input/Output pin 1
1	IO2	Input/Output pin 2
2	IO3	Input/Output pin 3
3	IO4	Input/Output pin 4
4	IO5	Input/Output pin 5
5	IO6	Input/Output pin 6
6	IO7	Input/Output pin 7
7	IO8	Input/Output pin 8
8-31	reserved	

Number	Mactalk name	Range	Description
19	Digital Outputs	0 - 255	The current status of the digital outputs. 1 digital output per bit counting from 0 to 7.

Firmware Name: outputs

Data Type: io_bits_t

Default Value: 0

Type:

#	Name	Description
0	IO1	Input/Output pin 1
1	IO2	Input/Output pin 2
2	IO3	Input/Output pin 3
3	IO4	Input/Output pin 4
4	IO5	Input/Output pin 5
5	IO6	Input/Output pin 6
6	IO7	Input/Output pin 7
7	IO8	Input/Output pin 8
8-31	reserved	

Number	Mactalk name	Range	Description
20	Follow Error	(-2^31) - (2^31-1)	The encoder deviation from the calculated position (Actual Position). Follow Error = Actual Position - Encoder Position.

Firmware Name: flwerr

Data Type: int32_t

Default Value:

-

Number	Mactalk name	Range	Description
21			Reserved

Firmware Name: reg21

Data Type: int32_t

Number	Mactalk name	Range	Description
22	Follow Error Max	(-2^31) - (2^31-1)	The maximum allowed value in Follow Error before an error is triggered. If Follow Error Max = 0, the error is disabled.

Firmware Name: flwerr_max

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
23			Reserved

Firmware Name: flwerr_max_cal

Data Type: int32_t

Number	Mactalk name	Range	Description
24	Special Command	0 - (2^32-1)	Used to issue commands to the motor. 0-127 are FastMac commands, often used by ePLC. FastMac commands are within the range 0-127. Other Special Commands are within the range: >255

Firmware Name: command

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
25	Status Bits	0 - (2^32-1)	Status bits, counting from bit 0: Bit 1: Auto Correction active Bit 2: In Physical Position Bit 3: At Velocity Bit 4: In Position Bit 5: Accelerating Bit 6: Decelerating Bit 7: Homing Done Bit 8: ePLC Password Lock Bit 9: Internal Encoder Error Bit 12: Error (same as bit 0 in Errors, reg 35) Bit 14: External brake active Bit 15: Closed loop lead/lag detected Bit 16: Closed loop activated Bit 17: Ready for closed loop Bit 18: Standby current is used Bit 19: STO enabled Bit 20: Internal encoder ok Bit 21: Ethernet sync activated Bit 22: In target position Bit 23: STO channel A status Bit 24: STO channel B status Bit 25-26: Memory size Bit 28: Motor has homed (saved in flash) Bit 29-31: ?

Firmware Name: status_bits

Data Type: status_bits_t

Default Value: •

Type:

#	Name	Description
0	invert_dir	Inverse the motor direction.
1	prog_stop	Dont start ePLC program automatically when firmware starts.
2-3	extenc_mode	Register 2
4	dsp402_en	Enable DSP402 mode
5	enc_auto_sync	Register 5
6	inphyspos_mode	If set, recalc InPhysPos continuously. If 0, only after stop.
7	ssi_encoder_enabled	Register 7
8	j1939_ena	Activate J1939 mode. (Disable CANopen)
9	psoll_sync_dis	Disables the P_SOLL sync in passive mode
10	enc_to_p_ist	Automatically transfer the absolute encoder position to P_IST at power up.
11	multiturn	Automatically transfer the encoder-adjusted saved P_IST to actual P_IST at power up.
12	keep_ext_enc	Do not zero the external encoder count on startup (in CleanSetup())
13	keep_ssi	Do not zero the SSI data register on startup (in CleanSetup())
14	beckhoff_mode	use the Beckhoff variant of CAN
15	intenc_dis	Overrules the factory setting, can be useful for SMC66/SMC85 customers where the pcb is shipped with encoder and its not used in the application.
16	extenc_dir	Counting direction for the external encoder
17	ignore_pos_limit_error	If high, the will be no errors on position limits.
18	zup_mem_read_write	Indirect adressing of all registers, including >255.
19	brake_disable	Temp. disable the brake.
20	extenc_error_dis	Disable errors from the SSI encoder
21	lowbus_err	set error in case of too low bus voltage ("under voltage")
22	lowbus_passive	go to passive mode in case of too low bus voltage ("under voltage")
23	lowbus_zero	set V_SOLL=0 in case of too low bus voltage ("under voltage")
24	cl_enable	enable the closed loop
25	cl_cc_enable	enable the current control (requires closed loop to be enabled)
26	multiturn_enc	Automatically transfer the encoder-adjusted saved encoder position to actual P_IST at power up.

#	Name	Description
27	cl_extenc	enable closed loop with an external encoder
28	pos_lim_simple	Register 28
29	sto_error	Set error bit 29 on STO
30	sto_passive	Go to passive mode on STO
31	sto_zero	Set V_SOLL = 0 on STO

Number	Mactalk name	Range	Description
26	Temperature low res. Use 246 from firmware 4.04	•	Temperature measured inside the motor. Register is used to trigger the Temperature error bit in Errors (reg 35). See the detailed description for information on the value scaling. The resolution is approximately 3 °C in this register. A higher resolution is available in Temperature (reg 246).

Firmware Name: temp_lowres

Data Type: int32_t

Default Value: •

Number	Mactalk name	Range	Description
27	Turn Table Rev	(-2^31) - (2^31-1)	In Turn Table Mode, this is the number of revolutions within the Turn Table Size.

Firmware Name: turntable_rev_count

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
28	Position Limit Min	(-2^31) - (2^31-1)	Negative software position limit. When both Position Limit Min and Position Limit Max are set to 0, the software position limits are disabled. In Turn Table Mode these registers are used for the minimum and maximum limits of the Turn Table in order to calculate the total Turn Table Size.

Firmware Name: p_min

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
29			Reserved

Firmware Name: reg29

Data Type: int32_t

Number	Mactalk name	Range	Description
30	Position Limit Max	(-2^31) - (2^31-1)	Positive software position limit. When both Position Limit Min and Position Limit Max are set to 0, the software position limits are disabled. In Turn Table Mode these registers are used for the minimum and maximum limits of the Turn Table in order to calculate the total Turn Table Size.

Firmware Name: p_max

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
31			Reserved

Firmware Name: reg31

Data Type: int32_t

Number	Mactalk name	Range	Description
32	Error Deceleration	1 - 500000	Deceleration to use when performing an emergency stop when an error has occurred.

Firmware Name: d_error

Data Type: uint32_t

Default Value: 10000

Number	Mactalk name	Range	Description
33	'In Position' Window	0 - (2^32-1)	Selects how close the Encoder Position must be to Requested Position to set the In Physical Position status bit and prevent further Auto Correction.

Firmware Name: in_position_window

Data Type: uint32_t

Default Value: 20000

Number	Mactalk name	Range	Description
34	'In Position' Retries	0-100	The number of times to attempt Auto Correction. A value of 0 disables Auto Correction.

Firmware Name: auto_correction_retries

Data Type: uint32_t

Default Value: 2

Number	Mactalk name	Range	Description
35	Errors	0 - (2^32-1)	Error bits: Bit 0: General error (set with any error) Bit 1: Follow error Bit 2: I/O driver Bit 3: Position Limit Bit 4: Low bus voltage Bit 5: Over voltage Bit 6: Temperature >90 °C Bit 7: Internal (Self diagnostics failed) Bit 8: Absolute multiturn encoder lost position Bit 9: Absolute multiturn encoder counting Bit 10: No comm. to absolute multiturn encoder Bit 11: SSI encoder counting Bit 12: Closed loop needs calibration Bit 13: Internal memory Bit 14: Absolute singleturn encoder Bit 16: Homing timeout Bit 17: CVI unstable Bit 18: Motor driver overload Bit 21: CAN Slave follow error. Bit 24: Overspeed error Bit 27: Safe Torque Off - Fatal error Bit 29: Safe Torque Off - Activated

Firmware Name: ErrorBits

Data Type: error_bits_t

Default Value: 0

Type:

#	Name	Description
0	error	General error bit. Is always set together with another error bit.
1	follow	The follow error has exceeded Par.FLWERR_MAX.
2	io_driver	The IO driver has a mismatch between out and in, when set as an output. Might be shorted.
3	pos_limit	The position limit has been reached.
4	low_bus_v	The Par.U_CVI is measured too low.
5	high_bus_v	The Par.U_BUS is measured too high.
6	temperature	The temperature has exceeded the limit (typically 90 degC)
7	Internal	MAX10 is not loaded due to wrong checksum.
8	ame_lostpos	encoder lost position, clear by a preset cmd
9	ame_reed	reed sensor counting sequence error detected
10	ame_com	No communication with encoder
11	ssi	SSI encoder has read wrong data according to the setup
12	cl_err	Closed loop needs calibration
13	memory	Selftest of internal FRAM memory has failed.
14	ase_cal	IC Haus encoder error not calibrated or not working
15	bit15	Register 15
16	homing_timeout	The homing took longer than the timeout limit.
17	cvi_unstable	CVI has been measured too low for a short while, but now high again.
18	Overload	Driver overload, only available on SMC85
19	ssi_encoder_speed_too_great	Magnet rotation speed is excessive. Please reduce rotation speed
20	ssi_encoder_wrong_magnet_distance	Wrong distance to magnet. Please correct distance according to data sheet
21	SlfError	Slave follow error.
22	bit22	Register 22
23	bit23	Register 23
24	high_velocity	Motor is running above max allowed velocity
25	bit25	Register 25
26	bit26	Register 26
27	sto_alarm	Fatal error for the STO circuit. Should never happen.

#	Name	Description
28	dummy28	Register 28
29	sto	STO is active.
30	dummy30	Register 30
31	dummy31	Register 31

Number	Mactalk name	Range	Description
36	Warnings	•	Warning bits: Bit 0: Positive position limit active Bit 1: Negative position limit active Bit 2: Positive position limit has been active Bit 3: Negative position limit has been active Bit 4: Low bus voltage Bit 5: I/O driver Bit 6: Temperature >80 °C Bit 7: SSI encoder Bit 8: Driver overload Bit 9: Safe Torque Off - Activated Bit 10: SSI overflow Bit 11: SSI underflow Bit 12: Encoder amplitude clipping

Firmware Name: warn_bits

Data Type: warning_bits_t

Default Value: 0

Type:

#	Name	Description
0	pos_lim_act	
1	neg_lim_act	
2	pos_has_been	
3	neg_has_been	
4	low_bus	
5	io_driver	
6	temperature	
7	ssi_encoder	
8	Overload	
9	sto	
10	ssi_overflow	
11	ssi_underflow	
12	encoder_amplitude_clipping	

Number	Mactalk name	Range	Description
37	Startup Operating Mode	0-15	The motor will change to this Operating Mode after power up. This is also the mode that is used after a homing is completed. See Operating Mode register for a list of possible modes.

Firmware Name: start_mode

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
38	Homing Position Offset	(-2^31) - (2^31-1)	The detected zero (home) point is offset with this position.

Firmware Name: p_home

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
39			Reserved

Firmware Name: reg39

Data Type: int32_t

Number	Mactalk name	Range	Description
40	Homing Velocity	-300000 - 300000	The velocity to use during homing. Set a negative velocity to search in the negative direction.

Firmware Name: v_home

Data Type: int32_t

Default Value: -5000

Number	Mactalk name	Range	Description
41	Homing Torque	0 - 2047	Torque level to detect during Torque Homing.

Firmware Name: t_home

Data Type: int32_t

Default Value: 1023 (50%)

Number	Mactalk name	Range	Description
42	Homing Mode	(0-14)*256	Select the homing that should start on power up. This does not work on motors with Ethernet module installed because it needs to be set either in a PLC or within the ePLC program after a certain delay.

Firmware Name: home_mode

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
43-45			Reserved

Firmware Name: reg43

Data Type: int32_t

Number	Mactalk name	Range	Description
46	Abs Encoder Position		Reserved

Firmware Name: p_enc_abs

Data Type: int32_t

Number	Mactalk name	Range	Description
47	SSI Encoder Position	0 - (2^32-1)	The position from the external SSI Encoder.

Firmware Name: ssi_data_low

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
48	Flexible Register	0 - (2^32-1)	A mix of 16 bits from different registers. The user can set this up with the registers Flex Reg Setup 1-8.

Firmware Name: flex_reg

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
49	Position 1	(-2^31) - (2^31-1)	Position register 1

Firmware Name: p0

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
50			Reserved

Firmware Name: reg50

Data Type: int32_t

Number	Mactalk name	Range	Description
51	Position 2	(-2^31) - (2^31-1)	Position register 2

Firmware Name: p1

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
52			Reserved

Firmware Name: reg52

Data Type: int32_t

Number	Mactalk name	Range	Description
53	Position 3	(-2^31) - (2^31-1)	Position register 3

Firmware Name: p2

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
54			Reserved

Firmware Name: reg54

Data Type: int32_t

Number	Mactalk name	Range	Description
55	Position 4	(-2^31) - (2^31-1)	Position register 4

Firmware Name: p3

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
56			Reserved

Firmware Name: reg56

Data Type: int32_t

Number	Mactalk name	Range	Description
57	Position 5	(-2^31) - (2^31-1)	Position register 5

Firmware Name: p4

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
58			Reserved

Firmware Name: reg58

Data Type: int32_t

Number	Mactalk name	Range	Description
59	Position 6	(-2^31) - (2^31-1)	Position register 6

Firmware Name: p5

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
60			Reserved

Firmware Name: reg60

Data Type: int32_t

Number	Mactalk name	Range	Description
61	Position 7	(-2^31) - (2^31-1)	Position register 7

Firmware Name: p6

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
62			Reserved

Firmware Name: reg62

Data Type: int32_t

Number	Mactalk name	Range	Description
63	Position 8	(-2^31) - (2^31-1)	Position register 8

Firmware Name: p7

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
64			Reserved

Firmware Name: reg64

Data Type: int32_t

Number	Mactalk name	Range	Description
65	Velocity 1	(-2^31) - (2^31-1)	Velocity register 1

Firmware Name: v[0]

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
66	Velocity 2	(-2^31) - (2^31-1)	Velocity register 2

Firmware Name: v[1]

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
67	Velocity 3	(-2^31) - (2^31-1)	Velocity register 3

Firmware Name: v[2]

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
68	Velocity 4	(-2^31) - (2^31-1)	Velocity register 4

Firmware Name: v[3]

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
69	Velocity 5	(-2^31) - (2^31-1)	Velocity register 5

Firmware Name: v[4]

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
70	Velocity 6	(-2^31) - (2^31-1)	Velocity register 6

Firmware Name: v[5]

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
71	Velocity 7	(-2^31) - (2^31-1)	Velocity register 7

Firmware Name: v[6]

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
72	Velocity 8	(-2^31) - (2^31-1)	Velocity register 8

Firmware Name: v[7]

Data Type: int32_t

Default Value: 10000

Number	Mactalk name	Range	Description
73	Acceleration 1	(-2^31) - (2^31-1)	Acceleration register 1

Firmware Name: a[0]

Data Type: uint32_t

Default Value: 1000

Number	Mactalk name	Range	Description
74	Acceleration 2	(-2^31) - (2^31-1)	Acceleration register 2

Firmware Name: a[1]

Data Type: uint32_t

Default Value: 1000

Number	Mactalk name	Range	Description
75	Acceleration 3	(-2^31) - (2^31-1)	Acceleration register 3

Firmware Name: a[2]

Data Type: uint32_t

Default Value: 1000

Number	Mactalk name	Range	Description
76	Acceleration 4	(-2^31) - (2^31-1)	Acceleration register 4

Firmware Name: a[3]

Data Type: uint32_t

Default Value: 1000

Number	Mactalk name	Range	Description
77	Current 1	(-2^31) - (2^31-1)	Current register 1

Firmware Name: t[0]

Data Type: uint32_t

Default Value: 511

Number	Mactalk name	Range	Description
78	Current 2	(-2^31) - (2^31-1)	Current register 2

Firmware Name: t[1]

Data Type: uint32_t

Default Value: 511

Number	Mactalk name	Range	Description
79	Current 3	(-2^31) - (2^31-1)	Current register 3

Firmware Name: t[2]

Data Type: uint32_t

Default Value: 511

Number	Mactalk name	Range	Description
80	Current 4	(-2^31) - (2^31-1)	Current register 4

Firmware Name: t[3]

Data Type: uint32_t

Default Value: 511

Number	Mactalk name	Range	Description
81	Analog Filt 1	0 - 4095	The voltage on input 1 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Firmware Name: ain_fltrd[0]

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
82	Analog Filt 2	0 - 4095	The voltage on input 2 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Firmware Name: ain_fltrd[1]

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
83	Analog Filt 3	0 - 4095	The voltage on input 3 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Firmware Name: ain_fltrd[2]

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
84	Analog Filt 4	0 - 4095	The voltage on input 4 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Firmware Name: ain_fltrd[3]

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
85	Analog Filt 5	0 - 4095	The voltage on input 5 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Firmware Name: ain_fltrd[4]

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
86	Analog Filt 6	0 - 4095	The voltage on input 6 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Firmware Name: ain_fltrd[5]

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
87	Analog Filt 7	0 - 4095	The voltage on input 7 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Firmware Name: ain_fltrd[6]

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
88	Analog Filt 8	0 - 4095	The voltage on input 8 after being filtered. See the Analog: xxx registers for filter parameters. 5 V is equal to a value of 4095.

Firmware Name: ain_fltrd[7]

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
89	Analog 1	0 - 4095	The unfiltered voltage on input 1. 5 V is equal to a value of 4095.

Firmware Name: ain_raw[0]

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
90	Analog 2	0 - 4095	The unfiltered voltage on input 2. 5 V is equal to a value of 4095.

Firmware Name: ain_raw[1]

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
91	Analog 3	0 - 4095	The unfiltered voltage on input 3. 5 V is equal to a value of 4095.

Firmware Name: ain_raw[2]

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
92	Analog 4	0 - 4095	The unfiltered voltage on input 4. 5 V is equal to a value of 4095.

Firmware Name: ain_raw[3]

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
93	Analog 5	0 - 4095	The unfiltered voltage on input 5. 5 V is equal to a value of 4095.

Firmware Name: ain_raw[4]

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
94	Analog 6	0 - 4095	The unfiltered voltage on input 6. 5 V is equal to a value of 4095.

Firmware Name: ain_raw[5]

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
95	Analog 7	0 - 4095	The unfiltered voltage on input 7. 5 V is equal to a value of 4095.

Firmware Name: ain_raw[6]

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
96	Analog 8	0 - 4095	The unfiltered voltage on input 8. 5 V is equal to a value of 4095.

Firmware Name: ain_raw[7]

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
97	Bus voltage (P+)	0 - 4095	The voltage for the motor driver.

Firmware Name: u_bus

Data Type: uint32_t

Default Value: •

Number	Mactalk name	Range	Description
98	Bus Voltage Min	0 - 4095	Trigger point for Undervoltage Error.

Firmware Name: u_bus_min

Data Type: uint32_t

Default Value: 565

Number	Mactalk name	Range	Description
99	Encoder Type	0-4	Internal encoder type: 0: No encoder 1: H2 (Singleturn Encoder 10 bit) 2: H3 (Absolute Multiturn Encoder 10 bit) 3: H2 (Singleturn Encoder 12 bit) 4: H4 (Singleturn Encoder 12 bit + Absolute Multiturn encoder (10 bit).

Firmware Name: enc_type

Data Type: uint32_t

Default Value: •

Number	Mactalk name	Range	Description
100	Analog: Setup	•	Bits 0-7: Bitmask for which of the analog inputs that will use the current value of the Analog: Conf Min/Max, Max Slope and Filter registers. Bit 15: Set when values have been copied and used.

Firmware Name: afz_writebits

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
101	Analog: Index	0, 32775	Bits 0-7: Index (1-8) of the analog input whose Analog: Conf Min/Max, Max Slope and Filter values to load into the corresponding Analog: xxx registers (for read-back). Bit 15: Is set after the registers have been updated.

Firmware Name: afz_read_idx

Data Type: uint32_t

Default Value: 32768

Number	Mactalk name	Range	Description
102	Analog: Conf Min	0 - 4094	Minimum confidence limit for analog inputs.

Firmware Name: afz_conf_min

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
103	Analog: Conf Max	1 - 4095	Maximum confidence limit for analog inputs.

Firmware Name: afz_conf_max

Data Type: uint32_t

Default Value: 4095

Number	Mactalk name	Range	Description
104	Analog: Max Slope	2 - 4095	Maximum slope limit for analog inputs.

Firmware Name: afz_slope

Data Type: uint32_t

Default Value: 4095

Number	Mactalk name	Range	Description
105	Analog: Filter	1 - 64	Filter value for analog inputs.

Firmware Name: afz_filter

Data Type: uint32_t

Default Value: 64

Number	Mactalk name	Range	Description
106	Analog: Status	0 - 65535	Individual status bits for 50 % of samples outside confidence limits (high 8 bits) and 50 % of samples violated the slope limit. (low 8 bits)

Firmware Name: afz_status

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
107	SSI Encoder Setup 1		

Firmware Name: ssi_setup1

Data Type: ssi_setup1_t

Number	Mactalk name	Range	Description
108-109			

Firmware Name: pulsdir_mask

Data Type: uint32_t

Number	Mactalk name	Range	Description
110	Position Settling Time	0 - 32676	Number of milliseconds to wait after an Auto Correction attempt before testing for the position being within the target window ('In Position' Window).

Firmware Name: auto_correction_settling_time

Data Type: uint32_t

Default Value: 100

Number	Mactalk name	Range	Description
111	SSI Encoder Setup 2	•	SSI setup bits: Bit 0-7: Prepare Time Bit 8: Gray to Bin Conversion Bit 9: Reserved Bit 10: Disable Interrupts Bit 11-18: Wait Time

Firmware Name: ssi_setup2

Data Type: ssi_setup2_t

Default Value: 52364

Number	Mactalk name	Range	Description
112-120			Reserved

Firmware Name: reg112_119[0]

Data Type: uint32_t

Number	Mactalk name	Range	Description
121	Modbus Setup	•	Modbus setup bits: Bit 0: Enabled RS485 Bit 1: RS485 Modbus Type Bit 2-3: RS485 Parity Bit 4: RS485 Data bits Bit 5: RS485 Stop bits Bit 8 Enabled RS422 Bit 9: RS422 Modbus Type Bit 10-11: RS422 Parity Bit 12: RS422 Data bits Bit 13: RS422 Stop bits

Firmware Name: modbus_setup

Data Type: modbus_setup_t

Default Value: 24

Number	Mactalk name	Range	Description
122	Homing Setup	•	Bits to control homing: Bit 0: Reserved Bit 1: Change direction on limit. Bit 2: Search for opposite side of sensor. Bit 3: Reserved Bit 4: Ignore position limit switches. Bit 5: Disable the 60 s homing time out.

Firmware Name: home_bits

Data Type: home_bits_t

Default Value: 0

Number	Mactalk name	Range	Description
123	General Setup2	•	bit 2..0: slavefollow Slave enable: 0: None, 1: Relative, 2: Absolute bit 5..3: slaveFollow Master enabler: 0: None, 1: velocity master, 2: Relative Master pos bit 8: Enable gearing of external encoder. bit 9: Sync register 16 P_ENC with register 171 P_AXIS bit 10: Stall detection enable (external encoder) bit 11: Use register 32 D_ERROR for stall deceleration

Firmware Name: setup_bits2

Data Type: setup_bits2_t

Default Value: 512

Number	Mactalk name	Range	Description
124	General Setup	•	Setup bits: Bit 0: Invert motor direction. Bit 1: Don't start program after power up. Bit 2-3: External encoder input type Bit 4: CANopen DSP402 enable Bit 5: Synchronize to encoder position after passive. Follow error will be 0. Bit 6: In Phys. Position bit updates continuously Bit 8: CAN J1939 enable Bit 9: Disable sync (Requested Position = Actual Position) in Passive mode. Bit 10: Startup: Transfer single turn position to P_IST Bit 11: Startup: Transfer multi turn position to P_IST Bit 12: Startup: Keep External Encoder Bit 13: Startup: Keep SSI Value Bit 14: CANopen: Beckhoff mode Bit 15: Disable internal encoder Bit 16: External Encoder counting direction Bit 17: Disable position limit error Bit 18: Enable indirect addressing for V7/V8 Bit 19: Disable external brake temporarily Bit 20: Disable SSI encoder error Bit 21: Low bus voltage -> Error Bit 22: Low bus voltage -> Passive Bit 23: Low bus voltage -> 0 RPM Bit 24: Enable closed loop Bit 25: Enable closed loop current control Bit 28: Position limits without memory (simple mode) Bit 29: STO activated -> Error Bit 30: STO activated -> Passive Bit 31: STO activated -> 0 RPM

Firmware Name: setup_bits

Data Type: setup_bits_t

Default Value: 1126172704

Number	Mactalk name	Range	Description
125	Digital I/O Setup	•	Bits 0-7 set the I/O active level. Bits 8-15 enable the I/O as an output.

Firmware Name: io_setup

Data Type: io_setup_t

Default Value: 255

Number	Mactalk name	Range	Description
126	Turn Table Mode	0-5	Value of lowest byte (Bit 7-0): 0 = Turn Table disabled. 1 = Singleturn CW rotation 2 = Singleturn CCW rotation 3 = Shortest Path 4 = Multiturn CW rotation 5 = Multiturn CCW roration Bit 8: Use actual postion as starting point for next move

Firmware Name: turntable_mode

Data Type: turntable_mode_t

Default Value: 0

Number	Mactalk name	Range	Description
127	Turn Table Size	•	The size of the Turn Table expressed in motor Counts. Turn Table Size = Position Limit Max - Position Limit Min + 1.

Firmware Name: turntable_size

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
128			

Firmware Name: reg128

Data Type: int32_t

Number	Mactalk name	Range	Description
129	Negative Limit Input	•	Input mask for Negative Limit Sensor input(s), each bit set selects which I/O 1-8 to use.

Firmware Name: nl_mask

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
130	Positive Limit Input	•	Input mask for Positive Limit Sensor input(s), each bit set selects which I/O 1-8 to use.

Firmware Name: pl_mask

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
131			

Firmware Name: reg131

Data Type: uint32_t

Number	Mactalk name	Range	Description
132	Homing Sensor Input	•	Input mask for Home Sensor Input(s), each bit set selects which I/O 1-8 to use.

Firmware Name: home_mask

Data Type: uint32_t

Default Value: 8

Number	Mactalk name	Range	Description
133-134			

Firmware Name: reg133

Data Type: uint32_t

Number	Mactalk name	Range	Description
135	Digital Input Filter Setup	•	Input mask to enable filter on digital inputs.

Firmware Name: inp_filt_mask

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
136	Digital Input Filter Time	•	The number of milliseconds the filtered digital inputs must be stable before accepting a change.

Firmware Name: inp_filt_cnt

Data Type: uint32_t

Default Value: 5

Number	Mactalk name	Range	Description
137	'In Position' Output	•	Output mask for status bit 'In Position' output

Firmware Name: inpos_mask

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
138	'Error' Output	•	Output mask for status bit 'Error' output.

Firmware Name: error_mask

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
139	Acceptance Voltage	•	The Control Voltage (CVI) that must be measured before the firmware is started.

Firmware Name: u_cvi_ok

Data Type: uint32_t

Default Value: 2054

Number	Mactalk name	Range	Description
140	Acceptance Voltage Count	•	The number of times the Acceptance Voltage must be measured before starting the firmware.

Firmware Name: u_cvi_cnt

Data Type: uint32_t

Default Value: 100

Number	Mactalk name	Range	Description
141	Shutdown Voltage	•	The voltage that determines how low the Control Voltage (CVI) can be before shut down.

Firmware Name: u_cvi_min

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
142			

Firmware Name: reg142

Data Type: uint32_t

Number	Mactalk name	Range	Description
143	Control Voltage (CVI)	•	The actual measured Control Voltage (CVI).

Firmware Name: u_cvi

Data Type: uint32_t

Default Value: •

Number	Mactalk name	Range	Description
144	Position Offset	(-2^31) - (2^31-1)	Used with Special Command 354 for changing both the Actual and Requested Position in one operation either absolute or relative.

Firmware Name: p_new

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
145			

Firmware Name: reg145

Data Type: int32_t

Number	Mactalk name	Range	Description
146	Serial Baud Rate (RS485)	0-7	The baud rate on the RS485 serial port: 0 : 9600 baud 1 : 19200 baud (default setting) 2 : 38400 baud 3 : 57600 baud 4 : 115200 baud 5 : 230400 baud 6 : 460800 baud 7 : 921600 baud

Firmware Name: baud_rate_usart1

Data Type: uint32_t

Default Value: 1

Number	Mactalk name	Range	Description
147	Serial Transmit Delay (RS485)	1-255	The time to wait before the response is transmitted on the RS485 serial port. The unit corresponds to the time of one bit at the current baud rate.

Firmware Name: tx_delay_usart1

Data Type: uint32_t

Default Value: 15

Number	Mactalk name	Range	Description
148	Group: ID	0-255	The Group ID of the motor - used for the Group Write telegram on the MacTalk protocol.

Firmware Name: group_id

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
149	Group: Sequence	0-255	The last received Group Sequence (write) - part of the MacTalk serial protocol.

Firmware Name: group_seq

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
150	Motor Address	0-254	The motor address. Used on the MacTalk serial protocol.

Firmware Name: my_addr

Data Type: uint32_t

Default Value: 254

Number	Mactalk name	Range	Description
151	Motor Type	80-254	The motor type. Examples: 80: SMC85 81: MIS340 120: MIS17 150: SMC66 151: MIS230 250: MIL340

Firmware Name: motortype

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
152	Motor Serial Number	•	The unique serial number of the motor.

Firmware Name: serialnumber

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
153	SSI Encoder Offset		

Firmware Name: p_offset

Data Type: int32_t

Number	Mactalk name	Range	Description
154	Firmware Checksum 1	0-65535	Firmware Checksum part 1

Firmware Name: checksum_fw1

Data Type: int32_t

Default Value:

-

Number	Mactalk name	Range	Description
155	Firmware Checksum 2	0-65353	Firmware Checksum part 2

Firmware Name: checksum_fw2

Data Type: int32_t

Default Value:

-

Number	Mactalk name	Range	Description
156	Hardware Revision	0-65535	The revision of the hardware. When read as hex: 0x12 means version 1.02.

Firmware Name: vers_hw

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
157	Bus Voltage Max	0-100[VDC] 0-9000[mARMS]	Bit 0-15: Max voltage on bus If the bus voltage exceeeds this value, the motor will go in error. Bit 16-31: Full scale motor current in mARMS

Firmware Name: u_bus_max

Data Type: uint32_t

Default Value:

-

Number	Mactalk name	Range	Description
158		•	Bits 0-15: Defines what IO that are avaible on the connector Bits 16-31: The max current to the motor. (1-1532)

Firmware Name: avaible_io

Data Type: uint32_t

Default Value: •

Number	Mactalk name	Range	Description
159		0-65535	The version of the bootloader. When read as hex: 0x12 means version 1.02.

Firmware Name: vers_bl

Data Type: uint32_t

Default Value: •

Number	Mactalk name	Range	Description
160		0-65535	This register is not used internally, but will always be 0 after power on. Please notice that MacTalk uses this register.

Firmware Name: notsaved

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
161-164			

Firmware Name: h3_data0

Data Type: int32_t

Number	Mactalk name	Range	Description
165		0-65535	This register contains information about what options that are available. Bits 0-7 define the options available in the hardware. Bits 8-15 define the options available in the firmware. Bit 0 and 8 : CANopen Fieldbus

Firmware Name: option_bits

Data Type: option_bits_t

Default Value:

-

Number	Mactalk name	Range	Description
166	CANopen Node ID	0-127	The node id on the CANopen Fieldbus Interface.

Firmware Name: fbus_node_id

Data Type: uint32_t

Default Value: 5

Number	Mactalk name	Range	Description
167	CANopen Baud Rate	0-8	The baudrate used on the CANopen Fieldbus Interface. 0 : 1000 kbit/s 2 : 500 kbit/s 3 : 250 kbit/s 4 : 125 kbit/s 5 : 100 kbit/s 6 : 50 kbit/s 7 : 20 kbit/s 8 : 10 kbit/s

Firmware Name: fbus_baud

Data Type: uint32_t

Default Value: 2

Number	Mactalk name	Range	Description
168	Module Type	•	Type of module installed in the motor: 0 = No module 0x34 = EthernetIP 0x35 = EtherCAT 0x36 = PowerLink 0x37 = Profinet 0x38 = Modbus/TCP 0x3A = Sercos

Firmware Name: module_type

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
169		•	Number of times the registers have been saved to motor.

Firmware Name: flashwrite_cnt

Data Type: int32_t

Default Value: •

Number	Mactalk name	Range	Description
170	External Encoder Position	•	The External Encoder Position.

Firmware Name: p_extenc

Data Type: int32_t

Default Value: •

Number	Mactalk name	Range	Description
171	External Encoder Geared	•	Resulting position from external encoder. After processing and gearing if enabled.

Firmware Name: p_axis

Data Type: int32_t

Default Value: •

Number	Mactalk name	Range	Description
172	External Encoder Velocity	•	The velocity of the External Encoder. The velocity is measured every 16 ms.

Firmware Name: v_extenc

Data Type: int32_t

Default Value: •

Number	Mactalk name	Range	Description
173	Threshold Stall Detection	0 - (2^31-1)	Stall detection compares following error to this value to detect stall with non closed loop application

Firmware Name: stallthresh

Data Type: int32_t

Default Value: 100000

Number	Mactalk name	Range	Description
174	Deceleration	1 - 500000	The deceleration ramp. If this value is changed during at movement it will be used when the motor stops or changes direction. If the register is set to 0, the Acceleration rate is used for Deceleration.

Firmware Name: d_soll

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
175	Internal Encoder Setup	•	Bit 2-4: Resolution (16,15,14,13,12*,11,10,9) *Closed loop compatible

Description: The internal encoder has different settings available:

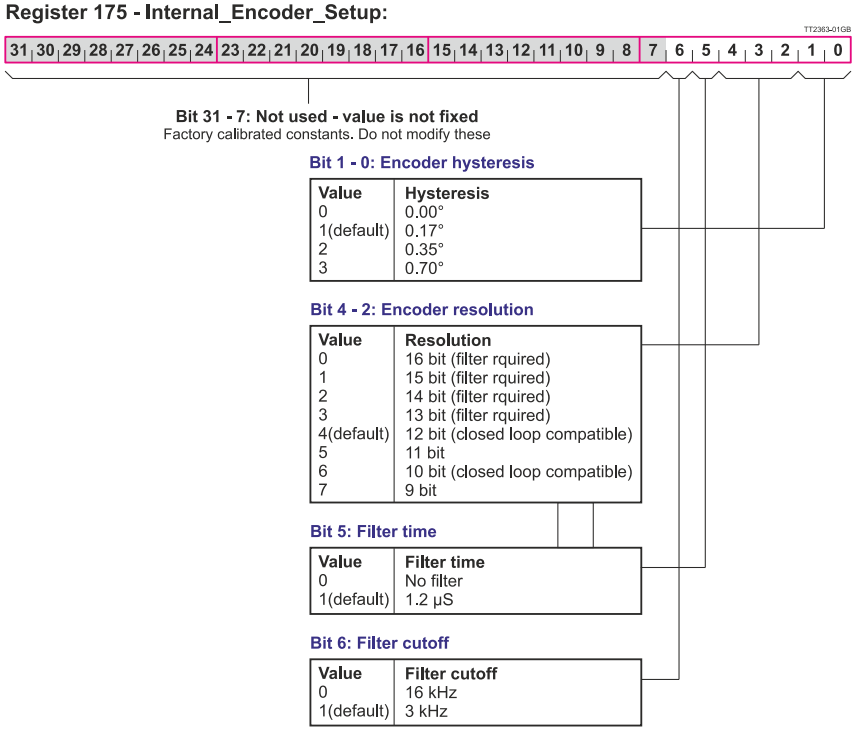
Hysteresis
Is used to prevent flickering of the angular position LSBs. Bit 0-1 set the hysteresis.

Resolution
Bit 2-4 determines the resolution, i.e. number of counts in 1 revolution. If the motor is set up to output the encoder pulses, this will also be affected by changing the resolution.

Filter
The filter can be enabled to allow resolutions above 12 bits. Bit 5 set the filter.

Filter cutoff frequency.
A filter cutoff frequency on 3 kHz is recommended in the entire velocity range from 0 to 3000 RPM. The cutoff frequency is controlled by bit 6.

Register 175 - Internal_Encoder_Setup:



Firmware Name: enc_setup

Data Type: mhm_setup_t

Default Value: 134490128

Number	Mactalk name	Range	Description
176	Firmware Build	•	Current firmware build number.

Firmware Name: fw_build

Data Type: uint32_t

Default Value: •

Number	Mactalk name	Range	Description
177	'In Target Position' Time	0-1000	Time the motor must stand still before 'In Target Position' bit is set.

Firmware Name: intargpos_time

Data Type: uint32_t

Default Value: 10

Number	Mactalk name	Range	Description
178			

Firmware Name: err_code

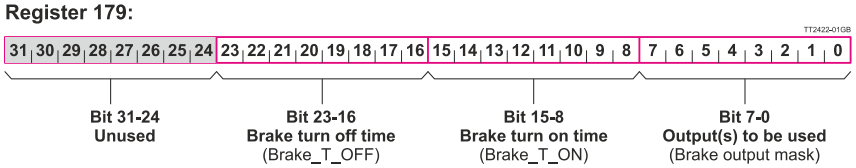
Data Type: uint32_t

Number	Mactalk name	Range	Description
179	Brake Output	•	Bits 0-7: Bit mask to setup User Output for brake. Bits 8-15: Brake on time (T_ON) Bits 16-23: Brake off time (T_OFF)

Description: This register selects which one of the eight IO (IO1 to IO8) pins to use for the external brake. Each of the first 8 bits in this register corresponds to 1 output pin. The selected IO pin must be configured in register 125 as an output.
See also *User outputs*, page 35.

The bits have following function:

Register 179:



Firmware Name: brake_setup

Data Type: brake_t

Default Value: 0

Example: Output 4 is used for the Brake Output. T_ON time is 40 ms and T_OFF is 50 ms:
The following string will define this (shown in groups of 8 bits)
00000000 / 00110010 / 00101000 / 00001000 = in hex : 00 32 28 08

Bit 0-7: Brake output mask = 8, define that output 4 controls the brake.
Bit 8-15: Brake_T_ON - Time from motor is stopped until brake is activated = 40 ms
Bit 16-23: Brake_T_OFF - Time from the motor is activated until the brake is released = 50 ms.

Number	Mactalk name	Range	Description
180	CANopen Gear Motor Revolutions	1 - (2^31-1)	Object 6091 subindex 1

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value: 1

Number	Mactalk name	Range	Description
181	CANopen Gear Shaft Revolutions	1 - (2^31-1)	Object 6091 subindex 2

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value: 1

Number	Mactalk name	Range	Description
182	CANopen Feed	1 - (2^31-1)	Object 6092 subindex 1

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value: 409600

Number	Mactalk name	Range	Description
183	CANopen Shaft Revolutions	1 - (2^31-1)	Object 6092 subindex 2

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value: 1

Number	Mactalk name	Range	Description
184	CANopen Velocity Factor Numerator	1 - (2^31-1)	Object 6094 subindex 1

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value: 1

Number	Mactalk name	Range	Description
185	CANopen Velocity Factor Divisor	1 - (2^31-1)	Object 6094 subindex 2

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value: 1

Number	Mactalk name	Range	Description
186	CANopen Accelerator Factor Numerator	1 - (2^31-1)	Object 6097 subindex 1

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value: 1

Number	Mactalk name	Range	Description
187	CANopen Accelerator Factor Numerator	1 - (2^31-1)	Object 6097 subindex 2

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value: 1

Number	Mactalk name	Range	Description
188	CANopen Object Index/SubIndex		Reserved

Firmware Name: dsp402

Data Type: dsp402_par_t

Number	Mactalk name	Range	Description
189	CANopen Read/Write Data		Reserved

Firmware Name: dsp402

Data Type: dsp402_par_t

Number	Mactalk name	Range	Description
190	CANopen Command/Data type		Reserved

Firmware Name: dsp402

Data Type: dsp402_par_t

Number	Mactalk name	Range	Description
191	CANopen Status/Control Word	0 - (2^31-1)	Lo 16 bit Object 6041 subindex 0 statusword Hi 16 bit Object 6040 subindex 0 Controlword

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value:

-

Number	Mactalk name	Range	Description
192	CANopen Hardware/Network Management		Reserved

Firmware Name: dsp402

Data Type: dsp402_par_t

Number	Mactalk name	Range	Description
193-194			Reserved

Firmware Name: dsp402

Data Type: dsp402_par_t

Number	Mactalk name	Range	Description
195		0 - 255	Object 607E subindex 0

Firmware Name: dsp402

Data Type: dsp402_par_t

Default Value:

Number	Mactalk name	Range	Description
196-198			

Firmware Name: cl_diff

Data Type: int32_t

Number	Mactalk name	Range	Description
199	ModBus Slave Timeout [ms]	0 - 10000	0:disabled. No master monitoring Any value above 0 will enable master monitoring. Timout will result in a timeout action

Firmware Name: mbSlTimeout

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
200	ModBus Slave Action	0 - 2	The action that will accour when master does not communicatie in the time set by timeout. 0: No action 1:V_SOLL = 0 2:passive mode

Firmware Name: mbSlTimeoutCmd

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
201			

Firmware Name: reg201

Data Type: int32_t

Number	Mactalk name	Range	Description
202	Ticks	•	Increments at a fixed rate of one count per millisecond. Starts at zero after the motor has been reset.

Firmware Name: ticks

Data Type: uint64_t

Default Value: 0

Number	Mactalk name	Range	Description
203-204			

Number	Mactalk name	Range	Description
205	Master list over live slaves	0 - (2^32-1)	Slave follow. Each bit reprrecent a slave in the slave follow network. Only master uses this register.

Firmware Name: slf_livelist

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
206			

Firmware Name: cl_cal_stat

Data Type: int32_t

Number	Mactalk name	Range	Description
207	Max following error for slaves	0 - (2^31-1)	Slave follow. The following error of the slave with the largest following error. Only master uses this register

Firmware Name: slf_maxFollowErr

Data Type: int32_t

Default Value:

-

Number	Mactalk name	Range	Description
208	Status and Error on master	0 - (2^31-1)	Slave follow. Bit 0-15 status Bit 0: All slaves are ready Bit 1: All slaves are homed Bit 16-31 error (If bit 21 is set in register 35) Bit 16: slave aborted active mode Bit 17: Slave went offline Bit 18: Slave following error time exceeded Bit 19: Slave has CAN error

Firmware Name: slfStatus

Data Type: slf_status_bits_t

Default Value:

-

Number	Mactalk name	Range	Description
209	Time for slave following error timeout	0 - (2^31-1)	Slave follow. Set the time any slave is allowed a following error larger then master Catchup window register 245. If FLWerr is not under catchup value before time exceeded, an error is set. 0 = disable slave catchup timeout

Firmware Name: slf_maxFeTime

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
210	Timeout for slave responding as expected	0 - (2^31-1)	Slave follow. The time the salve has to respond to master mode change

Firmware Name: slf_timeout

Data Type: uint32_t

Default Value: 200

Number	Mactalk name	Range	Description
211	Unit scale command		

Firmware Name: reg211

Data Type: int32_t

Number	Mactalk name	Range	Description
212	CL: Current Max	0 - 2047	Closed loop: Max current in closed loop with current control. 2047 = 100 % of Running Current.

Firmware Name: cl_cur_max

Data Type: int32_t

Default Value: 2047

Number	Mactalk name	Range	Description
213	CL: Current Min	0 - 2047	Closed loop: Min current in closed loop with current control. 2047 = 100 % of Running Current.

Firmware Name: cl_cur_min

Data Type: int32_t

Default Value: 1

Number	Mactalk name	Range	Description
214			

Firmware Name: reg214

Data Type: int32_t

Number	Mactalk name	Range	Description
215	CL: Current Dec Factor	1 - 10000	Closed loop: The slope of the velocity dependent current decrementation rate.

Firmware Name: cl_cur_dec

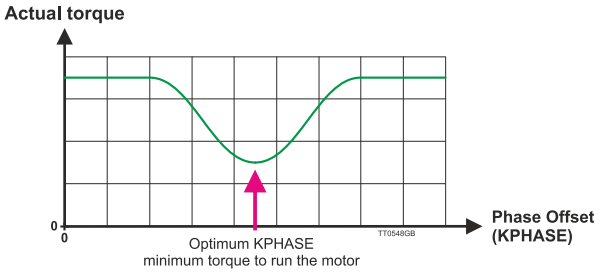
Data Type: int32_t

Default Value: 500

Number	Mactalk name	Range	Description
216	KPhase	0 - 200	Closed loop: A motor dependent factor which optimizes the commutation angle at high velocity. Factory setting.

Description: The KPHASE parameter is decisive for how far commutation of the motor is offset from the motor's actual position. KPHASE is velocity dependent, which means that it has increasing significance as motor velocity increases. The KPHASE parameter is factory calibrated, but can be adjusted by the user if necessary.

Finding the optimal KPHASE
The optimal KPHASE value is found by running the motor at high speed (2000 RPM) and observing the "Actual torque" in MacTalk. The actual torque will settle at its minimum value at the optimal KPHASE. The new KPHASE can be saved in flash and will then be used automatically after a reset.



Firmware Name: reg_formerly_known_as_kphase

Data Type: uint32_t

Default Value:
-

Number	Mactalk name	Range	Description
217	Actual Torque	0 - 2047	Closed loop: The actual motor current in closed loop with active current control. 2047 = 100 % of the Running Current.

Firmware Name: cl_cur_act

Data Type: uint32_t

Default Value:
-

Number	Mactalk name	Range	Description
218	CL: Current Pos Slope	1 - 100000	Closed loop: Current increment rate in closed loop with current control. (1=fastest)

Firmware Name: cl_cur_inc_frq

Data Type: uint32_t

Default Value: 2000

Number	Mactalk name	Range	Description
219	CL: Current Neg Slope	1 - 100000	Closed loop: Current decrement rate in closed loop with current control. (1=fastest)

Firmware Name: cl_cur_dec_frq

Data Type: uint32_t

Default Value: 4000

Number	Mactalk name	Range	Description
220	Switch board: Read A		

Firmware Name: shadow_rd_addr

Data Type: uint32_t

Number	Mactalk name	Range	Description
221	Switch board: Read D		

Firmware Name: shadow_rd_data

Data Type: uint32_t

Number	Mactalk name	Range	Description
222	Switch board: Write A	•	Address for the internal switch board/cross field setup.

Firmware Name: shadow_wr_addr

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
223	Switch board: Write D	•	Data for the internal switch board/cross field setup.

Firmware Name: shadow_wr_data

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
224	Flex Reg Setup 1	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.

Firmware Name: flex_reg_zup[0]

Data Type: flex_reg_setup_t

Default Value: 0

Number	Mactalk name	Range	Description
225	Flex Reg Setup 2	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.

Firmware Name: flex_reg_zup[1]

Data Type: flex_reg_setup_t

Default Value: 0

Number	Mactalk name	Range	Description
226	Flex Reg Setup 3	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.

Firmware Name: flex_reg_zup[2]

Data Type: flex_reg_setup_t

Default Value: 0

Number	Mactalk name	Range	Description
227	Flex Reg Setup 4	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.

Firmware Name: flex_reg_zup[3]

Data Type: flex_reg_setup_t

Default Value: 0

Number	Mactalk name	Range	Description
228	Flex Reg Setup 5	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.

Firmware Name: flex_reg_zup[4]

Data Type: flex_reg_setup_t

Default Value: 0

Number	Mactalk name	Range	Description
229	Flex Reg Setup 6	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.

Firmware Name: flex_reg_zup[5]

Data Type: flex_reg_setup_t

Default Value: 0

Number	Mactalk name	Range	Description
230	Flex Reg Setup 7	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.

Firmware Name: flex_reg_zup[6]

Data Type: flex_reg_setup_t

Default Value: 0

Number	Mactalk name	Range	Description
231	Flex Reg Setup 8	•	Each of the FLEX setup registers in range 224-231 sets up 2 bits in the FlexRegister 48, 16 bits in total when all 8 has been setup.

Firmware Name: flex_reg_zup[7]

Data Type: flex_reg_setup_t

Default Value: 0

Number	Mactalk name	Range	Description
232	LED Setup 1	•	Sets up 'LED L3' and 'LED L2' on the motor.

Firmware Name: led_zup[0]

Data Type: flex_reg_setup_t

Default Value: 0x06190819

Number	Mactalk name	Range	Description
233	LED Setup 2	•	Sets up 'LED L1 Green' and L1 Red' on the motor.

Firmware Name: led_zup[1]

Data Type: flex_reg_setup_t

Default Value: 0x1E190000

Number	Mactalk name	Range	Description
234-235			

Firmware Name: reg234

Data Type: uint32_t

Number	Mactalk name	Range	Description
236	Auto Correction Velocity	-300000 - 300000	In Position Mode the Auto Correction is run with Max Velocity, but if Auto Correction Velocity != 0 it will be used in stead.

Firmware Name: v_auto_correction

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
237	Actual Velocity (Open Loop)	-300000 - 300000	The actual velocity of the function generator, which could also be expressed as the “theoretical velocity”.

Firmware Name: v_ist_func

Data Type: int32_t

Default Value: 0

Number	Mactalk name	Range	Description
238	Motor Rotations	•	Number of revolutions the motor has run since last power on.

Firmware Name: motor_rev

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
239		•	The cyclic setup from the Ethernet module. Bit 0-15: Cycle period (us) Bit 16-31: Sync0 offset in percent.

Firmware Name: ex_setup

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
240			

Firmware Name: canopen_cmd

Data Type: uint32_t

Number	Mactalk name	Range	Description
241		•	CRC error counter of the internal communication between controller and Ethernet module.

Firmware Name: ex_crc_err

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
242	Homing Crawl Velocity	0 - 300000	In Homing type 2, the crawl velocity is Homing Velocity / 64 by default. If register Homing Crawl Velocity is ! = 0, this velocity is used.

Firmware Name: v_home_crawl

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
243	Homing Timeout	•	The number of milliseconds before Homing Timeout occurs. If set to 0, the Homing Timeout is by default 60000 ms.

Firmware Name: home_timeout

Data Type: uint32_t

Default Value: 60000

Number	Mactalk name	Range	Description
244	Temperature Limits	•	The actual temperature limits in the motor: Bit 0-15: Warning limit (unit: °C) Bit 16-31: Error limit (unit: °C)

Firmware Name: temp_limits

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
245	CL: Allowable Overspeed	•	Bit 0-7: Allowable overspeed in percent (0-100) Bit 8-31: Follow error limit before overspeed is used.

Firmware Name: cl_catch_up

Data Type: cl_catch_up_t

Default Value: 0

Number	Mactalk name	Range	Description
246	Temperature	•	The actual temperature measured in higher resolution than Temperature (reg 26).

Firmware Name: temp_highres

Data Type: int32_t

Default Value: •

Number	Mactalk name	Range	Description
247-249			

Firmware Name: reg247

Data Type: uint32_t

Number	Mactalk name	Range	Description
250	Extended Program Version		

Firmware Name: extended_version

Data Type: uint32_t

Number	Mactalk name	Range	Description
251			

Firmware Name: reg251

Data Type: uint32_t

Number	Mactalk name	Range	Description
252	Shutdown Voltage Count	•	Number of times in a row the voltage can be too low before shutting down the motor. Time between each measurement is 100 us.

Firmware Name: u_cvi_low_cnt

Data Type: int32_t

Default Value: 10

Number	Mactalk name	Range	Description
253	Internal Encoder Velocity	-300000 - 300000	The actual measured velocity from the encoder. (For filtering options see Reg 254)

Firmware Name: v_enc

Data Type: int32_t

Default Value: •

Number	Mactalk name	Range	Description
254	Reserved 254	0 - 10000	Bit 16: Use encoder values. Activate to use velocity from encoder as actual velocity. Bit 15-0: Encoder Filter Constant used to implement a low-pass velocity filter for V_ENC (Reg 253). This constant is proportional to the time constant of the filter T = Δ * N Δ = sample time (~ 60 µs) N = filter constant

Firmware Name: encoder_settings

Data Type: encoder_settings_t

Default Value: 50

Number	Mactalk name	Range	Description
255	Reserved 255		Reserved

Firmware Name: reg255

Data Type: uint32_t

Number	Mactalk name	Range	Description
256	Reserved 256	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Firmware Name: sample1[0]

Data Type: sample_reg_t

Default Value: 0

Number	Mactalk name	Range	Description
257	Reserved 257	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Firmware Name: sample1[1]

Data Type: sample_reg_t

Default Value: 0

Number	Mactalk name	Range	Description
258	Reserved 258	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Firmware Name: sample1[2]

Data Type: sample_reg_t

Default Value: 0

Number	Mactalk name	Range	Description
259	Reserved 259	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Firmware Name: sample1[3]

Data Type: sample_reg_t

Default Value: 0

Number	Mactalk name	Range	Description
260	read nom scaling	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Firmware Name: sample2[0]

Data Type: sample_reg_t

Default Value: 0

Number	Mactalk name	Range	Description
261	read shift count denom scaling	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Firmware Name: sample2[1]

Data Type: sample_reg_t

Default Value: 0

Number	Mactalk name	Range	Description
262	write nom scaling	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Firmware Name: sample2[2]

Data Type: sample_reg_t

Default Value: 0

Number	Mactalk name	Range	Description
263	write shift count denom scaling	•	Scope setup: Bit 0-15: Register number to sample. Bits 16-19: Operation type Bits 22-26: First bit in the register to use (start of bit field) Bits 27-31: Size of bit field to sample (0=32 bits, 1..31=1..31 bits)

Firmware Name: sample2[3]

Data Type: sample_reg_t

Default Value: 0

Number	Mactalk name	Range	Description
264	Rec counter	•	Current index into the sample/scope buffer.

Firmware Name: rec_cnt

Data Type: uint32_t

Default Value: 0

Number	Mactalk name	Range	Description
265	Scope control	•	Scope setup: Bit 2: Selects to sample every 100 us when set, or every 1 ms when cleared. Bit 11: Is set by the motor when the trigger condition is met. Bit 12: Arm the trigger. Is cleared when the trigger condition is met. Bit 13: Enable min/max/avg sampling.Bits 23+28: Selects the buffer length and number of channels.

Firmware Name: scope_control_bits

Data Type: scope_cntrl_bits_t

Default Value: 0

Number	Mactalk name	Range	Description
266	Capture and compere 0		

Firmware Name: capcom0

Data Type: capcom_t

Number	Mactalk name	Range	Description
267	Capture and compere 1	•	Scope setup: Bits 0-6: Trigger condition type Bit 7: When set, the Capture Compare 3 and 4 are used to point to another register. Bits 8-11: Sets the trigger point position. Bits 12-16: Define for how many samples to calculate min/max/avg. Bit 17: TrigOnChange

Firmware Name: capcom1

Data Type: capcom_t

Default Value: 0

Number	Mactalk name	Range	Description
268	Capture and compere 2	•	Scope setup: Register number of the left-side expression, L.

Firmware Name: capcom2

Data Type: capcom_t

Default Value: 0

Number	Mactalk name	Range	Description
269	Capture and compere 3	•	Scope setup: Register number or value of the right-side expression, R. Capture Compare 1 bit 7 determines if register number or value is used.

Firmware Name: capcom3

Data Type: capcom_t

Default Value: 0

Number	Mactalk name	Range	Description
270	Capture and compere 4	•	Scope setup: Register number or value of the right-side expression, H. Capture Compare 1 bit 7 determines if register number or value is used.

Firmware Name: capcom4

Data Type: capcom_t

Default Value: 0

Number	Mactalk name	Range	Description
271	Capture and compere 5		

Firmware Name: capcom5

Data Type: capcom_t

Number	Mactalk name	Range	Description
272	Capture and compere 6		

Firmware Name: capcom6

Data Type: capcom_t

Number	Mactalk name	Range	Description
273	Capture and compere 7		

Firmware Name: capcom7

Data Type: capcom_t

Number	Mactalk name	Range	Description
274	DMX512 Options	•	Bit 0: Auto clear errors Bit 2: Set acc with every position update Bit 3: Skip homing Bit 6: Enable DMX on RS485 port Bit 7: Enable DMX on RS422 port

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 5

Number	Mactalk name	Range	Description
275	DMX512 Default Velocity	0 - 300000	DMX Defult velocity

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 10000

Number	Mactalk name	Range	Description
276	DMX512 Velocity	0 - 300000	DMX Jog velocity

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 10000

Number	Mactalk name	Range	Description
277	DMX512 StartAddress 1/2	•	DMX addresses Bit 0-15 start adresse 1 Pos + cmd Defailt = 1 Bit 16-31 Start adress 2 Velocity and Acc default and range: Address1 = 1 range 1-509 Address 2 = 500 Range 1-510

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 32768001

Number	Mactalk name	Range	Description
278	DMX512 Position Nominator	(-2^31) - (2^31-1)	The received DMX position factored with this numerator and the denominator register 279

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 100

Number	Mactalk name	Range	Description
279	DMX512 Position Denominator	(-2^31) - (2^31-1)	The received DMX position factored with this denominator and the numerator register 278

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 1

Number	Mactalk name	Range	Description
280	DMX512 Position Offset	(-2^31) - (2^31-1)	This value is added to position used with DMX

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 0

Number	Mactalk name	Range	Description
281	DMX512 Acceration Nom/Den	•	The received DMX acceleration factored with this numerator and denominator. Bit 0-15 accleration factor numerator Bit 16-31 acceleration factor denominator Default rate is 1/1

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 65537

Number	Mactalk name	Range	Description
282	DMX512 Acceration Offset	1 - 500000	This value is added to acceleration used with DMX

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 0

Number	Mactalk name	Range	Description
283	DMX512 Velocity Nom/Den	•	The received DMX velocity factored with this numerator and denominator. Bit 0-15 velocity factor numerator Bit 16-31 velocity factor denominator Default rate is 10/1

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 65546

Number	Mactalk name	Range	Description
284	DMX512 Velocity Offset	0 - 300000	This value is added to velocity used with DMX

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 0

Number	Mactalk name	Range	Description
285	DMX512 Homing Mode	1,2,3,12,14,15	1 or 13: Zero search sensor 1 mode 2 or 12: Zero search torque mode 3 or 14 Zero search sensor 2 mode All other values Sensor 2 mode Is used

Firmware Name: dmxsetup

Data Type: dmx_par_t

Default Value: 14

Number	Mactalk name	Range	Description
286	Serial Baud Rate (RS422)	0 - 7	The baud rate on the RS422 serial port: 0 : 9600 baud 1 : 19200 baud 2 : 38400 baud 3 : 57600 baud 4 : 115200 baud 5 : 230400 baud 6 : 460800 baud (default setting) 7 : 921600 baud

Firmware Name: baud_rate_uart4

Data Type: uint32_t

Default Value: 6

Number	Mactalk name	Range	Description
287	Serial Transmit Delay (RS422)	1 - 255	The time to wait before the response is transmitted on the RS422 serial port. The unit corresponds to the time of one bit at the current baud rate.

Firmware Name: tx_delay_uart4

Data Type: uint32_t

Default Value: 15

Number	Mactalk name	Range	Description
288	Reserved 288		

Firmware Name: reg288

Data Type: uint32_t

Number	Mactalk name	Range	Description
289	Reserved 289		

Firmware Name: shadow2_rd_addr

Data Type: uint32_t

Number	Mactalk name	Range	Description
290	Reserved 290		

Firmware Name: shadow2_rd_data

Data Type: uint32_t

Number	Mactalk name	Range	Description
291	Reserved 291		

Firmware Name: reg291

Data Type: uint32_t

Number	Mactalk name	Range	Description
292	Reserved 292		

Firmware Name: reg292

Data Type: uint32_t

Number	Mactalk name	Range	Description
293-296	Analog Filter Setup 0		

Firmware Name: filter_cond[0]

Data Type: ana_filt_cond_t

Number	Mactalk name	Range	Description
297-300	Analog Filter Setup 1		

Firmware Name: filter_cond[1]

Data Type: ana_filt_cond_t

Number	Mactalk name	Range	Description
301-304	Analog Filter Setup 2		

Firmware Name: filter_cond[2]

Data Type: ana_filt_cond_t

Number	Mactalk name	Range	Description
305-308	Analog Filter Setup 3		

Firmware Name: filter_cond[3]

Data Type: ana_filt_cond_t

Number	Mactalk name	Range	Description
309-312	Analog Filter Setup 4		

Firmware Name: filter_cond[4]

Data Type: ana_filt_cond_t

Number	Mactalk name	Range	Description
313-316	Analog Filter Setup 5		

Firmware Name: filter_cond[5]

Data Type: ana_filt_cond_t

Number	Mactalk name	Range	Description
317-320	Analog Filter Setup 6		

Firmware Name: filter_cond[6]

Data Type: ana_filt_cond_t

Number	Mactalk name	Range	Description
321-324	Analog Filter Setup 7		

Firmware Name: filter_cond[7]

Data Type: ana_filt_cond_t

Number	Mactalk name	Range	Description
325	Reserved 325		

Firmware Name: notsave0

Data Type: uint32_t

Number	Mactalk name	Range	Description
326	Reserved 326		

Firmware Name: notsave1

Data Type: uint32_t

Number	Mactalk name	Range	Description
327	KPHASE V0		

Firmware Name: kphase_v0

Data Type: uint32_t

Number	Mactalk name	Range	Description
328	KPHASE A0		

Firmware Name: kphase_a0

Data Type: uint32_t

Number	Mactalk name	Range	Description
329	KPHASE A1		

Firmware Name: kphase_a1

Data Type: uint32_t

Number	Mactalk name	Range	Description
330	KPHASE B1		

Firmware Name: kphase_b1

Data Type: uint32_t

Number	Mactalk name	Range	Description
331-335	Error Counters		

Firmware Name: ErrorCounters

Data Type: error_counters_t

Number	Mactalk name	Range	Description
336	Reserved 336		

Firmware Name: reg336_349[0]

Data Type: uint32_t

Number	Mactalk name	Range	Description
337	Reserved 337		

Firmware Name: reg336_349[1]

Data Type: uint32_t

Number	Mactalk name	Range	Description
338	Reserved 338		

Firmware Name: reg336_349[2]

Data Type: uint32_t

Number	Mactalk name	Range	Description
339	Reserved 339		

Firmware Name: reg336_349[3]

Data Type: uint32_t

Number	Mactalk name	Range	Description
340	Reserved 340		

Firmware Name: reg336_349[4]

Data Type: uint32_t

Number	Mactalk name	Range	Description
341	Reserved 341		

Firmware Name: reg336_349[5]

Data Type: uint32_t

Number	Mactalk name	Range	Description
342	Reserved 342		

Firmware Name: reg336_349[6]

Data Type: uint32_t

Number	Mactalk name	Range	Description
343	Reserved 343		

Firmware Name: reg336_349[7]

Data Type: uint32_t

Number	Mactalk name	Range	Description
344	Reserved 344		

Firmware Name: reg336_349[8]

Data Type: uint32_t

Number	Mactalk name	Range	Description
345	Reserved 345		

Firmware Name: reg336_349[9]

Data Type: uint32_t

Number	Mactalk name	Range	Description
346	Reserved 346		

Firmware Name: reg336_349[10]

Data Type: uint32_t

Number	Mactalk name	Range	Description
347	Reserved 347		

Firmware Name: reg336_349[11]

Data Type: uint32_t

Number	Mactalk name	Range	Description
348	Reserved 348		

Firmware Name: reg336_349[12]

Data Type: uint32_t

Number	Mactalk name	Range	Description
349	Reserved 349		

Firmware Name: reg336_349[13]

Data Type: uint32_t

Number	Mactalk name	Range	Description
350	User Regiser 0		

Firmware Name: user_regs[0]

Data Type: uint32_t

Number	Mactalk name	Range	Description
351	User Regiser 1		

Firmware Name: user_regs[1]

Data Type: uint32_t

Number	Mactalk name	Range	Description
352	User Regiser 2		

Firmware Name: user_regs[2]

Data Type: uint32_t

Number	Mactalk name	Range	Description
353	User Regiser 3		

Firmware Name: user_regs[3]

Data Type: uint32_t

Number	Mactalk name	Range	Description
354	User Regiser 4		

Firmware Name: user_regs[4]

Data Type: uint32_t

Number	Mactalk name	Range	Description
355	User Regiser 5		

Firmware Name: user_regs[5]

Data Type: uint32_t

Number	Mactalk name	Range	Description
356	User Regiser 6		

Firmware Name: user_regs[6]

Data Type: uint32_t

Number	Mactalk name	Range	Description
357	User Regiser 7		

Firmware Name: user_regs[7]

Data Type: uint32_t

Number	Mactalk name	Range	Description
358	User Regiser 8		

Firmware Name: user_regs[8]

Data Type: uint32_t

Number	Mactalk name	Range	Description
359	User Regiser 9		

Firmware Name: user_regs[9]

Data Type: uint32_t

Number	Mactalk name	Range	Description
360	User Regiser 10		

Firmware Name: user_regs[10]

Data Type: uint32_t

Number	Mactalk name	Range	Description
361	User Regiser 11		

Firmware Name: user_regs[11]

Data Type: uint32_t

Number	Mactalk name	Range	Description
362	User Regiser 12		

Firmware Name: user_regs[12]

Data Type: uint32_t

Number	Mactalk name	Range	Description
363	User Regiser 13		

Firmware Name: user_regs[13]

Data Type: uint32_t

Number	Mactalk name	Range	Description
364	User Regiser 14		

Firmware Name: user_regs[14]

Data Type: uint32_t

Number	Mactalk name	Range	Description
365	User Regiser 15		

Firmware Name: user_regs[15]

Data Type: uint32_t

Number	Mactalk name	Range	Description
366	User Regiser 16		

Firmware Name: user_regs[16]

Data Type: uint32_t

Number	Mactalk name	Range	Description
367	User Regiser 17		

Firmware Name: user_regs[17]

Data Type: uint32_t

Number	Mactalk name	Range	Description
368	User Regiser 18		

Firmware Name: user_regs[18]

Data Type: uint32_t

Number	Mactalk name	Range	Description
369	User Regiser 19		

Firmware Name: user_regs[19]

Data Type: uint32_t

Number	Mactalk name	Range	Description
370	User Regiser 20		

Firmware Name: user_regs[20]

Data Type: uint32_t

Number	Mactalk name	Range	Description
371	User Regiser 21		

Firmware Name: user_regs[21]

Data Type: uint32_t

Number	Mactalk name	Range	Description
372	User Regiser 22		

Firmware Name: user_regs[22]

Data Type: uint32_t

Number	Mactalk name	Range	Description
373	User Regiser 23		

Firmware Name: user_regs[23]

Data Type: uint32_t

Number	Mactalk name	Range	Description
374	User Regiser 24		

Firmware Name: user_regs[24]

Data Type: uint32_t

Number	Mactalk name	Range	Description
375	User Regiser 25		

Firmware Name: user_regs[25]

Data Type: uint32_t

Number	Mactalk name	Range	Description
376	User Regiser 26		

Firmware Name: user_regs[26]

Data Type: uint32_t

Number	Mactalk name	Range	Description
377	User Regiser 27		

Firmware Name: user_regs[27]

Data Type: uint32_t

Number	Mactalk name	Range	Description
378	User Regiser 28		

Firmware Name: user_regs[28]

Data Type: uint32_t

Number	Mactalk name	Range	Description
379	User Regiser 29		

Firmware Name: user_regs[29]

Data Type: uint32_t

Number	Mactalk name	Range	Description
380	User Regiser 30		

Firmware Name: user_regs[30]

Data Type: uint32_t

Number	Mactalk name	Range	Description
381	User Regiser 31		

Firmware Name: user_regs[31]

Data Type: uint32_t

Number	Mactalk name	Range	Description
382	User Regiser 32		

Firmware Name: user_regs[32]

Data Type: uint32_t

Number	Mactalk name	Range	Description
383	User Regiser 33		

Firmware Name: user_regs[33]

Data Type: uint32_t

Number	Mactalk name	Range	Description
384	User Regiser 34		

Firmware Name: user_regs[34]

Data Type: uint32_t

Number	Mactalk name	Range	Description
385	User Regiser 35		

Firmware Name: user_regs[35]

Data Type: uint32_t

Number	Mactalk name	Range	Description
386	User Regiser 36		

Firmware Name: user_regs[36]

Data Type: uint32_t

Number	Mactalk name	Range	Description
387	User Regiser 37		

Firmware Name: user_regs[37]

Data Type: uint32_t

Number	Mactalk name	Range	Description
388	User Regiser 38		

Firmware Name: user_regs[38]

Data Type: uint32_t

Number	Mactalk name	Range	Description
389	User Regiser 39		

Firmware Name: user_regs[39]

Data Type: uint32_t

Number	Mactalk name	Range	Description
390	User Regiser 40		

Firmware Name: user_regs[40]

Data Type: uint32_t

Number	Mactalk name	Range	Description
391	User Regiser 41		

Firmware Name: user_regs[41]

Data Type: uint32_t

Number	Mactalk name	Range	Description
392	User Regiser 42		

Firmware Name: user_regs[42]

Data Type: uint32_t

Number	Mactalk name	Range	Description
393	User Regiser 43		

Firmware Name: user_regs[43]

Data Type: uint32_t

Number	Mactalk name	Range	Description
394	User Regiser 44		

Firmware Name: user_regs[44]

Data Type: uint32_t

Number	Mactalk name	Range	Description
395	User Regiser 45		

Firmware Name: user_regs[45]

Data Type: uint32_t

Number	Mactalk name	Range	Description
396	User Regiser 46		

Firmware Name: user_regs[46]

Data Type: uint32_t

Number	Mactalk name	Range	Description
397	User Regiser 47		

Firmware Name: user_regs[47]

Data Type: uint32_t

Number	Mactalk name	Range	Description
398	User Regiser 48		

Firmware Name: user_regs[48]

Data Type: uint32_t

Number	Mactalk name	Range	Description
399	User Regiser 49		

Firmware Name: user_regs[49]

Data Type: uint32_t

Number	Mactalk name	Range	Description
400	User Regiser 50		

Firmware Name: user_regs[50]

Data Type: uint32_t

Number	Mactalk name	Range	Description
401	User Regiser 51		

Firmware Name: user_regs[51]

Data Type: uint32_t

Number	Mactalk name	Range	Description
402	User Regiser 52		

Firmware Name: user_regs[52]

Data Type: uint32_t

Number	Mactalk name	Range	Description
403	User Regiser 53		

Firmware Name: user_regs[53]

Data Type: uint32_t

Number	Mactalk name	Range	Description
404	User Regiser 54		

Firmware Name: user_regs[54]

Data Type: uint32_t

Number	Mactalk name	Range	Description
405	User Regiser 55		

Firmware Name: user_regs[55]

Data Type: uint32_t

Number	Mactalk name	Range	Description
406	User Regiser 56		

Firmware Name: user_regs[56]

Data Type: uint32_t

Number	Mactalk name	Range	Description
407	User Regiser 57		

Firmware Name: user_regs[57]

Data Type: uint32_t

Number	Mactalk name	Range	Description
408	User Regiser 58		

Firmware Name: user_regs[58]

Data Type: uint32_t

Number	Mactalk name	Range	Description
409	User Regiser 59		

Firmware Name: user_regs[59]

Data Type: uint32_t

Number	Mactalk name	Range	Description
410	User Regiser 60		

Firmware Name: user_regs[60]

Data Type: uint32_t

Number	Mactalk name	Range	Description
411	User Regiser 61		

Firmware Name: user_regs[61]

Data Type: uint32_t

Number	Mactalk name	Range	Description
412	User Regiser 62		

Firmware Name: user_regs[62]

Data Type: uint32_t

Number	Mactalk name	Range	Description
413	User Regiser 63		

Firmware Name: user_regs[63]

Data Type: uint32_t

Number	Mactalk name	Range	Description
414	User Regiser 64		

Firmware Name: user_regs[64]

Data Type: uint32_t

Number	Mactalk name	Range	Description
415	User Regiser 65		

Firmware Name: user_regs[65]

Data Type: uint32_t

Number	Mactalk name	Range	Description
416	User Regiser 66		

Firmware Name: user_regs[66]

Data Type: uint32_t

Number	Mactalk name	Range	Description
417	User Regiser 67		

Firmware Name: user_regs[67]

Data Type: uint32_t

Number	Mactalk name	Range	Description
418	User Regiser 68		

Firmware Name: user_regs[68]

Data Type: uint32_t

Number	Mactalk name	Range	Description
419	User Regiser 69		

Firmware Name: user_regs[69]

Data Type: uint32_t

Number	Mactalk name	Range	Description
420	User Regiser 70		

Firmware Name: user_regs[70]

Data Type: uint32_t

Number	Mactalk name	Range	Description
421	User Regiser 71		

Firmware Name: user_regs[71]

Data Type: uint32_t

Number	Mactalk name	Range	Description
422	User Regiser 72		

Firmware Name: user_regs[72]

Data Type: uint32_t

Number	Mactalk name	Range	Description
423	User Regiser 73		

Firmware Name: user_regs[73]

Data Type: uint32_t

Number	Mactalk name	Range	Description
424	User Regiser 74		

Firmware Name: user_regs[74]

Data Type: uint32_t

Number	Mactalk name	Range	Description
425	User Regiser 75		

Firmware Name: user_regs[75]

Data Type: uint32_t

Number	Mactalk name	Range	Description
426	User Regiser 76		

Firmware Name: user_regs[76]

Data Type: uint32_t

Number	Mactalk name	Range	Description
427	User Regiser 77		

Firmware Name: user_regs[77]

Data Type: uint32_t

Number	Mactalk name	Range	Description
428	User Regiser 78		

Firmware Name: user_regs[78]

Data Type: uint32_t

Number	Mactalk name	Range	Description
429	User Regiser 79		

Firmware Name: user_regs[79]

Data Type: uint32_t

Number	Mactalk name	Range	Description
430	User Regiser 80		

Firmware Name: user_regs[80]

Data Type: uint32_t

Number	Mactalk name	Range	Description
431	User Regiser 81		

Firmware Name: user_regs[81]

Data Type: uint32_t

Number	Mactalk name	Range	Description
432	User Regiser 82		

Firmware Name: user_regs[82]

Data Type: uint32_t

Number	Mactalk name	Range	Description
433	User Regiser 83		

Firmware Name: user_regs[83]

Data Type: uint32_t

Number	Mactalk name	Range	Description
434	User Regiser 84		

Firmware Name: user_regs[84]

Data Type: uint32_t

Number	Mactalk name	Range	Description
435	User Regiser 85		

Firmware Name: user_regs[85]

Data Type: uint32_t

Number	Mactalk name	Range	Description
436	User Regiser 86		

Firmware Name: user_regs[86]

Data Type: uint32_t

Number	Mactalk name	Range	Description
437	User Regiser 87		

Firmware Name: user_regs[87]

Data Type: uint32_t

Number	Mactalk name	Range	Description
438	User Regiser 88		

Firmware Name: user_regs[88]

Data Type: uint32_t

Number	Mactalk name	Range	Description
439	User Regiser 89		

Firmware Name: user_regs[89]

Data Type: uint32_t

Number	Mactalk name	Range	Description
440	User Regiser 90		

Firmware Name: user_regs[90]

Data Type: uint32_t

Number	Mactalk name	Range	Description
441	User Regiser 91		

Firmware Name: user_regs[91]

Data Type: uint32_t

Number	Mactalk name	Range	Description
442	User Regiser 92		

Firmware Name: user_regs[92]

Data Type: uint32_t

Number	Mactalk name	Range	Description
443	User Regiser 93		

Firmware Name: user_regs[93]

Data Type: uint32_t

Number	Mactalk name	Range	Description
444	User Regiser 94		

Firmware Name: user_regs[94]

Data Type: uint32_t

Number	Mactalk name	Range	Description
445	User Regiser 95		

Firmware Name: user_regs[95]

Data Type: uint32_t

Number	Mactalk name	Range	Description
446	User Regiser 96		

Firmware Name: user_regs[96]

Data Type: uint32_t

Number	Mactalk name	Range	Description
447	User Regiser 97		

Firmware Name: user_regs[97]

Data Type: uint32_t

Number	Mactalk name	Range	Description
448	User Regiser 98		

Firmware Name: user_regs[98]

Data Type: uint32_t

Number	Mactalk name	Range	Description
449	User Regiser 99		

Firmware Name: user_regs[99]

Data Type: uint32_t

Number	Mactalk name	Range	Description
450	User Regiser 100		

Firmware Name: user_regs[100]

Data Type: uint32_t

Number	Mactalk name	Range	Description
451	User Regiser 101		

Firmware Name: user_regs[101]

Data Type: uint32_t

Number	Mactalk name	Range	Description
452	User Regiser 102		

Firmware Name: user_regs[102]

Data Type: uint32_t

Number	Mactalk name	Range	Description
453	User Regiser 103		

Firmware Name: user_regs[103]

Data Type: uint32_t

Number	Mactalk name	Range	Description
454	User Regiser 104		

Firmware Name: user_regs[104]

Data Type: uint32_t

Number	Mactalk name	Range	Description
455	User Regiser 105		

Firmware Name: user_regs[105]

Data Type: uint32_t

Number	Mactalk name	Range	Description
456	User Regiser 106		

Firmware Name: user_regs[106]

Data Type: uint32_t

Number	Mactalk name	Range	Description
457	User Regiser 107		

Firmware Name: user_regs[107]

Data Type: uint32_t

Number	Mactalk name	Range	Description
458	User Regiser 108		

Firmware Name: user_regs[108]

Data Type: uint32_t

Number	Mactalk name	Range	Description
459	User Regiser 109		

Firmware Name: user_regs[109]

Data Type: uint32_t

Number	Mactalk name	Range	Description
460	User Regiser 110		

Firmware Name: user_regs[110]

Data Type: uint32_t

Number	Mactalk name	Range	Description
461	User Regiser 111		

Firmware Name: user_regs[111]

Data Type: uint32_t

Number	Mactalk name	Range	Description
462	User Regiser 112		

Firmware Name: user_regs[112]

Data Type: uint32_t

Number	Mactalk name	Range	Description
463	User Regiser 113		

Firmware Name: user_regs[113]

Data Type: uint32_t

Number	Mactalk name	Range	Description
464	User Regiser 114		

Firmware Name: user_regs[114]

Data Type: uint32_t

Number	Mactalk name	Range	Description
465	User Regiser 115		

Firmware Name: user_regs[115]

Data Type: uint32_t

Number	Mactalk name	Range	Description
466	User Regiser 116		

Firmware Name: user_regs[116]

Data Type: uint32_t

Number	Mactalk name	Range	Description
467	User Regiser 117		

Firmware Name: user_regs[117]

Data Type: uint32_t

Number	Mactalk name	Range	Description
468	User Regiser 118		

Firmware Name: user_regs[118]

Data Type: uint32_t

Number	Mactalk name	Range	Description
469	User Regiser 119		

Firmware Name: user_regs[119]

Data Type: uint32_t

Number	Mactalk name	Range	Description
470	User Regiser 120		

Firmware Name: user_regs[120]

Data Type: uint32_t

Number	Mactalk name	Range	Description
471	User Regiser 121		

Firmware Name: user_regs[121]

Data Type: uint32_t

Number	Mactalk name	Range	Description
472	User Regiser 122		

Firmware Name: user_regs[122]

Data Type: uint32_t

Number	Mactalk name	Range	Description
473	User Regiser 123		

Firmware Name: user_regs[123]

Data Type: uint32_t

Number	Mactalk name	Range	Description
474	User Regiser 124		

Firmware Name: user_regs[124]

Data Type: uint32_t

Number	Mactalk name	Range	Description
475	User Regiser 125		

Firmware Name: user_regs[125]

Data Type: uint32_t

Number	Mactalk name	Range	Description
476	User Regiser 126		

Firmware Name: user_regs[126]

Data Type: uint32_t

Number	Mactalk name	Range	Description
477	User Regiser 127		

Firmware Name: user_regs[127]

Data Type: uint32_t

Number	Mactalk name	Range	Description
478	User Regiser 128		

Firmware Name: user_regs[128]

Data Type: uint32_t

Number	Mactalk name	Range	Description
479	User Regiser 129		

Firmware Name: user_regs[129]

Data Type: uint32_t

Number	Mactalk name	Range	Description
480	User Regiser 130		

Firmware Name: user_regs[130]

Data Type: uint32_t

Number	Mactalk name	Range	Description
481	User Regiser 131		

Firmware Name: user_regs[131]

Data Type: uint32_t

Number	Mactalk name	Range	Description
482	User Regiser 132		

Firmware Name: user_regs[132]

Data Type: uint32_t

Number	Mactalk name	Range	Description
483	User Regiser 133		

Firmware Name: user_regs[133]

Data Type: uint32_t

Number	Mactalk name	Range	Description
484	User Regiser 134		

Firmware Name: user_regs[134]

Data Type: uint32_t

Number	Mactalk name	Range	Description
485	User Regiser 135		

Firmware Name: user_regs[135]

Data Type: uint32_t

Number	Mactalk name	Range	Description
486	User Regiser 136		

Firmware Name: user_regs[136]

Data Type: uint32_t

Number	Mactalk name	Range	Description
487	User Regiser 137		

Firmware Name: user_regs[137]

Data Type: uint32_t

Number	Mactalk name	Range	Description
488	User Regiser 138		

Firmware Name: user_regs[138]

Data Type: uint32_t

Number	Mactalk name	Range	Description
489	User Regiser 139		

Firmware Name: user_regs[139]

Data Type: uint32_t

Number	Mactalk name	Range	Description
490	User Regiser 140		

Firmware Name: user_regs[140]

Data Type: uint32_t

Number	Mactalk name	Range	Description
491	User Regiser 141		

Firmware Name: user_regs[141]

Data Type: uint32_t

Number	Mactalk name	Range	Description
492	User Regiser 142		

Firmware Name: user_regs[142]

Data Type: uint32_t

Number	Mactalk name	Range	Description
493	User Regiser 143		

Firmware Name: user_regs[143]

Data Type: uint32_t

Number	Mactalk name	Range	Description
494	User Regiser 144		

Firmware Name: user_regs[144]

Data Type: uint32_t

Number	Mactalk name	Range	Description
495	User Regiser 145		

Firmware Name: user_regs[145]

Data Type: uint32_t

Number	Mactalk name	Range	Description
496	User Regiser 146		

Firmware Name: user_regs[146]

Data Type: uint32_t

Number	Mactalk name	Range	Description
497	User Regiser 147		

Firmware Name: user_regs[147]

Data Type: uint32_t

Number	Mactalk name	Range	Description
498	User Regiser 148		

Firmware Name: user_regs[148]

Data Type: uint32_t

Number	Mactalk name	Range	Description
499	User Regiser 149		

Firmware Name: user_regs[149]

Data Type: uint32_t

Number	Mactalk name	Range	Description
500	Reserved 500		

Firmware Name: reg500_510[0]

Data Type: uint32_t

Number	Mactalk name	Range	Description
501	Reserved 501		

Firmware Name: reg500_510[1]

Data Type: uint32_t

Number	Mactalk name	Range	Description
502	Reserved 502		

Firmware Name: reg500_510[2]

Data Type: uint32_t

Number	Mactalk name	Range	Description
503	Reserved 503		

Firmware Name: reg500_510[3]

Data Type: uint32_t

Number	Mactalk name	Range	Description
504	Reserved 504		

Firmware Name: reg500_510[4]

Data Type: uint32_t

Number	Mactalk name	Range	Description
505	Reserved 505		

Firmware Name: reg500_510[5]

Data Type: uint32_t

Number	Mactalk name	Range	Description
506	Reserved 506		

Firmware Name: reg500_510[6]

Data Type: uint32_t

Number	Mactalk name	Range	Description
507	Reserved 507		

Firmware Name: reg500_510[7]

Data Type: uint32_t

Number	Mactalk name	Range	Description
508	Reserved 508		

Firmware Name: reg500_510[8]

Data Type: uint32_t

Number	Mactalk name	Range	Description
509	Reserved 509		

Firmware Name: reg500_510[9]

Data Type: uint32_t

Number	Mactalk name	Range	Description
510	Reserved 510		

Firmware Name: reg500_510[10]

Data Type: uint32_t

Number	Mactalk name	Range	Description
511	Reserved 511		

Firmware Name: reg511

Data Type: uint32_t