

8.11.8 MAIN MENU → PARAM → D-BRAKE

USE EXT BRAKE						Miniaction 200
Menu	Parameter	Display	Level	Condition	Type	
1.6.1	32930	3	3	D	▶▶	
	Unit	Range		Default		
	-	0 - 1		0		
	Used to enable the dedicated output for braking resistance: 0: DISABLED Braking resistanceoutput disabled. 1: ENABLED Braking resistanceoutput enabled.					
RESISTANCE						Miniaction 200
Menu	Parameter	Display	Level	Condition	Type	
1.6.2	32828	3	3	D	▶▶	
	Unit	Range		Default		
	Ohm	30 - 500		200		
	Used to set the value of an externally connected braking resistor.					
POWER NOM [W]						Miniaction 200
Menu	Parameter	Display	Level	Condition	Type	
1.6.3	32831	3	3	D	▶▶	
	Unit	Range		Default		
	Watt	1 - 20000		1500		
	Used to set the nominal power of an externally connected braking resistor.					

8.11.9 MAIN MENU → PARAM → DRIVE

IRMS NOM [mA]					
			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.7.1	112	-	-	-	RO
	Unit	Range		Default	
	mA	-		As a function of PWM.	
	Displays the nominal current speed that can be delivered by the servo drive. This value varies with the PWM frequency used. See the PWM VALUES ALLOWED table for information on downgrading as a function of PWM frequency.				
I PEAK MAX [mA]					
			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.7.2	110	-	-	-	RO
	Unit	Range		Default	
	mA	-		15000	
	Displays the peak current that can be delivered by the drive.				

8.11.10 MAIN MENU → PARAM → FEEDBACK					
FEEDBACK TYPE			Miniaction 200		
Menu	Parameter	Display	Level	Condition	Type
1.8.1	32905	-	2	C, D	▶▶
	Unit	Range		Asynchronous default	Synchronous default
	-	0 – 1 - 2		0	2
	Used to set the type of angular transducer installed on the motor. 0: NONE No transducer installed. 1: INC ENCODER Incremental encoder. 2: RESOLVER Resolver.				
FEEDBACK DIR			Miniaction 200		
Menu	Parameter	Display	Level	Condition	Type
1.8.2	32904	13	2	C, D	▶▶
	Unit	Range		Default	
	-	0 - 1		1	
	Used to assign direction of angular rotation to the transducer. 0: NORMAL Positive value: anti-clockwise. 1: INVERTED Positive value: clockwise.				
MOT CABLE DIR			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.8.3	32955	-	2	D	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	Used to assign direction of rotation set by wiring of motor phases. This parameter is automatically obtained by the drive during calibration. However, the user can set it to facilitate drive replacement by eliminating the need for recalibrating the angular transducer 0: POS DIR Motor rotates in the direction imposed by the wiring. 1: NEG DIR Motor rotates in the direction opposite the direction imposed by the wiring.				
PHASE OFFSET			Miniaction 200		
Menu	Parameter	Display	Level	Condition	Type
1.8.4	32957	24	2	D	▶▶
	Unit	Range		Default	
	-	0 - 65535		11100	
	This parameter expresses the phase offset between the angle provided by the angular transducer and the electrical phase. This parameter is automatically obtained by the drive during calibration. However, the user can set it to facilitate drive replacement by eliminating the need for recalibrating the angular transducer.				

The value resulting from the calibration procedure may vary, as it depends on the starting position of the rotor.					
ENCOD RES			Miniaction 200		
Menu	Parameter	Display	Level	Condition	Type
1.8.5	32914	14	2	D	▶▶
	Unit	Range		Default	
	Pulses/revolution	1 - 65536		512	
	Sets the resolution of the encoder installed on the motor.				
HALL DIRECTION			Miniaction 200		
Menu	Parameter	Display	Level	Condition	Type
1.8.6	32956	23	2	D	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	Used to assign direction of rotation set by the wiring of hall sensors on the motor. This parameter is automatically obtained by the drive during calibration. However, the user can set it to facilitate drive replacement by eliminating the need for recalibrating the angular transducer and/or to correct incorrect wiring of hall sensors. 0: POS DIR Motor rotates in the direction imposed by the wiring. 1: NEG DIR Motor rotates in the direction opposite the direction imposed by the wiring.				
CALIBRATE PHASE			Miniaction 200		
Menu	Parameter	Display	Level	Condition	Type
1.8.7	35128	10	2	D	P ▶▶
	Unit	Range		Default	
	-	NO - YES		NO	
	Runs the calibration procedure for the angular transducer installed on the motor: select YES and confirm with 8				
CALIBRATION			Miniaction 200		
Menu	Parameter	Display	Level	Condition	Type
1.8.8	32965	10	2	D	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	Used to check whether the calibration procedure for the angular transducer has been run. The parameter is automatically modified by the drive at the end of the calibration procedure according to the outcome of the procedure. However, the user can set it to facilitate drive replacement by eliminating the need for recalibrating the angular transducer 0: NOT DONE Calibration has not been completed. 1: DONE Calibration has been completed				

8.11.11 MAIN MENU → PARAM → PROFILES

PROFILE NUMBER						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.9.1	-	-	2	D	▶▶		
	Unit	Range	Default				
	-	0 - 127	0				
<p>The drive can store 128 movement profiles. In order to display and/or modify the value of a particular profile parameter, the profile must first be selected.</p> <p>This menu is used to select the movement profile that subsequent menus refer to.</p>							
PROFILE TYPE						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.9.2	-	-	2	D	▶▶		
	Unit	Range	Default				
	-	1 or 4	2				
<p>Used to choose the type of movement profile from the following:</p> <p>1: SPEED If this type of profile is selected, speed control with the specific target speed and acceleration/deceleration for the profile is applied to the motor.</p> <p>4: TORQUE If this type of profile is selected, torque control with the specific reference torque and maximum speed limit for the profile is applied to the motor.</p>							
ACC TIME						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.9.3	-	11	2	D	▶▶		
	Unit	Range	Default				
	ms	5 - 10000	500				
<p>If the type of profile is different from a torque profile, this menu is displayed that can be used to set the acceleration time required for accelerating from 0 to the specific speed specified in the profile.</p> <p>This parameter is ignored if the profile is a homing profile.</p>							
TORQUE REF						Miniaction 200	
Menu	Parameter	Display	Level	Condition	Type		
1.9.4	-	12	2	D	▶▶		
	Unit	Range	Default				
	mA - RPM	-10000 - 10000	500				
<p>If the profile is type 4: TORQUE, this menu is displayed that can be used to set the reference torque.</p> <p>The reference torque is expressed in mA for synchronous motors and in RPM for asynchronous motors.</p>							
SPEED REF						Miniaction 200	Miniaction 400

Menu	Parameter	Display	Level	Condition	Type
1.9.5	-	-	2	D	▶▶
	Unit	Range		Default	
	RPM	-6000* - 6000		600	
	Used to set the reference speed of the profile. If the profile is a torque profile, this value limits the rotation speed to the absolute value of this parameter. If the profile is a speed profile, this parameter sets the programmed speed. If the profile is a position profile (whether absolute or relative), this value limits rotation speed during movement to the absolute value of this parameter. This parameter is ignored if the profile is a homing profile. Note*: If the profile is a position profile, the speed entered must be positive.				
DEC TIME			Miniaction 200	Miniaction 400	
1.9.6	-	11	2	D	▶▶
	Unit	Range		Default	
	ms	5 - 10000		500	
	If the type of profile is different from a torque profile, this menu is displayed that can be used to set the deceleration time required for decelerating from the specific speed specified in the profile to 0. This parameter is ignored if the profile is a homing profile.				
LOAD DEFAULT			Miniaction 200	Miniaction 400	
1.9.7	35129	21	2	D	P▶▶
	Unit	Range		Default	
	-	NO - YES		NO	
	If the active controller is digital inputs (parameter 35166 = 2), the following menu is displayed that can be used to reconfigure all the profiles to the default condition without saving them. To save the profiles in non-volatile memory, save them using procedure 3284, SAVE PROFILES , menu 3.				

8.11.12 MAIN MENU → PARAM → MODBUS					
DEVICE ID			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.10.1	35191	-	2	D	▶▶
	Unit	Range		Default	
	-	1 - 247		1	
	This parameter is used to program the modbus address of the device. To apply the change, all parameters must be saved using procedure 32842, and the drive must then be restarted.				
MODBUS TIMEOUT			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.10.2	35192	-	2	D	▶▶
	Unit	Range		Default	
	ms	0 - 65535		1500	
	Used to set the timeout for modbus communication. If the time elapsed since the last frame was received exceeds the time programmed with this parameter, the device will be disabled due to a communication timeout. If the parameter is set to 0, timeout detection is disabled.				
MODBUS BAUD RATE			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.10.3	35193	-	2	D	▶▶
	Unit	Range		Default	
	kbps	0 - 1 - 2 - 3 - 4 - 5		4: 57600	
	This parameter sets the speed of communication over the modbus.				
	0: 4800 1: 9600 2: 19200 3: 38400 4: 57600 5: 115200				
	To apply the change, all parameters must be saved using procedure 32842, and the drive must then be restarted.				
MODBUS PARITY			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.10.4	35194	-	2	D	▶▶
	Unit	Range		Default	
	-	0 - 1 - 2		0	
	Used to set the parity bit for modbus communication 0: NONE The parity bit is set to 0. 1: ODD The parity bit in odd-numbered frames is set to 1				

2: EVEN The parity bit in even-numbered frames is set to 1 To apply the change, all parameters must be saved using procedure 32842, and the device must then be restarted.					
MB NO LOC ENABLE			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.10.5	35143	-	2	D	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	Used to exclude local enabling commands when the modbus controller is active. 0: NO If the drive is being controlled remotely over the modbus bus, it will verify enabling commands over inputs T_ENABLE and V_ENABLE, and also verify remote enabling. 1: YES If the drive is being controlled remotely over the modbus bus, it will verify remote enabling commands, only.				

8.11.13 MAIN MENU → PARAM → VISIO

DISPLAY VALUE						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.11.1	35195	-	2	-	▶▶		
	Unit	Range	Default				
	-	0 – 4 ; 6	0				
	Used to select the information provided on the standard menu . 0: STATUS The standard menu displays the status of the drive. 1: SPEED The standard menu displays the speed of the motor. 2: I MOT The standard menu displays the current supplied to the motor. 3: V MOT The standard menu displays the phase voltage supplied to the motor. 4: INT TEMP The standard menu displays the temperature of the drive. 6: PROFILE The standard menu displays the profile being run.						
ALWAYS LIGHT ON						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.11.2	35196	-	2	-	▶▶		
	Unit	Range	Default				
	-	0 - 1	0				
	Used to set the operating mode of the backlight in the display. 0: NO The back light in the display lights up when any key is pressed and shuts off if no command is given by the operator for 3 minutes. 1: YES The back light stays on.						

8.11.14 MAIN MENU → PARAM → IN / OUT

ANALOGUE IN SOURCE						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.12.1	35136	-	2	-	▶▶		
	Unit	Range		Default			
	-	0 - 1		0			
	Used to select the active analogue input. 0: 0-10 V The active analogue input is the input with voltage range of 0 – 10 V. 1: 4-20 mA The active analogue input is the input with current range of 4 – 10 mA.						
IN OFFSET [mA]						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.12.2	35138	16	2	-	▶▶		
	Unit	Range		Default			
	mA	0 - 19000		4000			
	Used to set the offset of the 4-20 mA analogue input. The menu is displayed if the current-type analogue input is active (parameter 35136 = 1). If the analogue input is lower than this value, the reference is zero. Note that the cancelling current offset enables the system to interface with sensors that have a 0-20 A output.						
IN OFFSET [mV]						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.12.3	35137	15	2	-	▶▶		
	Unit	Range		Default			
	mV	0 - 9000		1000			
	Used to set the offset of the 0-10 V analogue input. The menu is displayed if the voltage-type analogue input is active (parameter 35136 = 0). If the analogue input is lower than this value, the reference is zero.						
TORQUE MAX VALUE						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		
1.12.4	35141	-	2	-	▶▶		
	Unit	Range		Default			
	mA - RPM	0 - 65535		200			
	This parameter is used to set the maximum reference torque delivered when active torque control has been selected as the operating mode (parameter 35165 = 0) and the reference is received through the analogue input (parameter 35167 = 2). The current (synchronous motor) or slip (asynchronous motor, V/f control) set with this parameter is the torque reference associated with the maximum value of the active analogue input.						
TORQUE MIN VALUE						Miniaction 200	Miniaction 400
Menu	Parameter	Display	Level	Condition	Type		

1.12.5	35142	-	2	-	▶▶
	Unit	Range		Default	
	mA / RPM	0 - 65535		10	
	<p>This parameter is used to set the minimum reference torque delivered when active torque control has been selected as the operating mode (parameter 35165 = 0) and the reference is received through the analogue input (parameter 35167 = 2).</p> <p>The current (synchronous motor) or slip (asynchronous motor, V/f control) set with this parameter is the torque reference associated with the offset value of the active analogue input.</p>				
SPEED MAX VALUE			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.6	35139	-	2	-	▶▶
	Unit	Range		Default	
	RPM	0 - 6000		2000	
	<p>This parameter is used to set the minimum speed imposed when active speed control has been selected as the operating mode (parameter 35165 = 1) and the reference is received through the analogue input (parameter 35167 = 2).</p> <p>The speed set with this parameter is the speed reference associated with the maximum value of the active analogue input.</p>				
SPEED MIN VALUE			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.7	35140	-	2	-	▶▶
	Unit	Range		Default	
	RPM	0 - 6000		10	
	<p>This parameter is used to set the minimum speed imposed when active speed control has been selected as the operating mode (parameter 35165 = 1) and the reference is received through the analogue input (parameter 35167 = 2).</p> <p>The speed set with this parameter is the speed reference associated with the offset value of the active analogue input.</p>				
OUT SOURCE			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.8	35105	-	2	-	▶▶
	Unit	Range		Default	
	-	0 - 3		0	
	<p>This parameter is used to select the operating mode for the 0-10 V analogue output. The following options are possible:</p> <p>0: NONE Analogue output disabled.</p> <p>1: SPEED The analogue output is associated with motor speed regardless of direction of rotation. The voltage on the analogue output reaches its maximum value when the rotation speed is equal to the value set with parameter 35106:</p> <p>2: CURRENT The analogue output is associated with current drawn by the motor regardless of the direction of rotation. The value of the analogue output reaches its maximum when the</p>				

current drawn by the motor is equal to the current set with parameter 35106. 3: MB OUT The voltage on the analogue input is set with modbus register 24. The voltage on the analogue input is set to 0V when modbus register 24 is set to 0. The voltage on the analogue input is set to 10 V when modbus register 24 is set to 10000.					
OUT MAX VALUE [rpm]			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.9	35106	17	2	-	▶▶
	Unit	Range		Default	
	RPM	1 - 20000		1000	
	As is true for the next menu, this menu is used to set parameter 35106, whose meaning depends on the value of parameter 35105. If parameter 35105 is set to 1, this menu is displayed, the analogue output is associated with motor speed, and parameter 35106 is the speed in RPM. The parameter is used to set the motor speed associated with the maximum value on the analogue input.				
OUT MAX VALUE [mA]			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.10	35106	18	2	-	▶▶
	Unit	Range		Default	
	mA	1 - 20000		1000	
	As was true for the previous menu, this menu is used to set parameter 35106, whose meaning depends on the value of parameter 35105. If parameter 35105 is set to 2, this menu is displayed, the analogue output is associated with current delivered to the motor, and parameter 35106 is the current in mA. The parameter is used to set the current associated with the maximum value on the analogue input.				
ENABLE IN LEVEL			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.11	35102 <small>Note 1</small>	-	2	-	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	This parameter is used to set the logic level of digital input 1. 0: ACT HIGH High level on active digital input. 1: ACT LOW Low level on active digital input.				
DIR/STROBE LEVEL			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.12	35102 <small>Note 1</small>	-	2	-	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	This parameter is used to set the logic level of digital input 2. 0: ACT HIGH High level on active digital input.				

1: ACT LOW Low level on active digital input.					
JOG CW/T1 LEVEL			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	
1.12.13	35102 <small>Note 1</small>	-	2	-	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	This parameter is used to set the logic level of digital input 3. 0: ACT HIGH High level on active digital input. 1: ACT LOW Low level on active digital input.				
JOG CCW/T2 LEVEL			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.14	35102 <small>Note 1</small>	-	2	-	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	This parameter is used to set the logic level of digital input 4. 0: ACT HIGH High level on active digital input. 1: ACT LOW Low level on active digital input.				
OUT 1 FUNCTION			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.15	35158 <small>Note 2</small>	-	2	-	▶▶
	Unit	Range		Default	
	-	0 - 9		1	
	This parameter is used to assign a specific function to digital input 1 according to the method described on Table C.				
OUT 1 LEVEL			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.12.16	23 <small>Note 3</small>	-	2	-	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
	This parameter is used to set the logic level of digital output 1. 0: ACT HIGH High level on output, if active. 1: ACT LOW Low level on output, if active.				

Note 1: Parameter 35102 consists of a 16 bit value. The 4 least significant bits express the logic level of the associated digital input.

The least significant bit is associated with digital input 1. It can be accessed through modbus at address 35102.

Note 2: Parameter 35158 is used to associate a specific function with a digital output on the drive. The possible options are described on **Table C** below.

Note 3: Parameter 23 consists of a 16 bit value. The least significant bit expresses the logic level associated with digital output 1.

8.11.15 MAIN MENU → PARAM → H-BRAKE

USE H BRAKE			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.13.1	32966	-	2	D	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
This parameter is used to enable the control logic for the holding brake. 0: NO Holding brake control logic disabled. 1: YES Holding brake control logic enabled.					

H BRAKE LEVEL			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.13.2	32971	-	2	D	▶▶
	Unit	Range		Default	
	-	0 - 1		0	
Used to set the logic level associated with the 24 V motor brake output. 0: ACT HIGH High level on output with brake released. 1: ACT LOW Low level on output with brake released.					

H BRAKE MODE			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.13.3	32967	-	2	D	▶▶
	Unit	Range		Default	
	-	0 - 1 - 2 - 3		2	
Used to set the logic level associated with the 24 V motor brake output. 0: SERVICE Brake release controlled from the programming keyboard with parameter 32970. 1: MODBUS Brake release controlled with modbus register 32970. 2: ENABLE Brake is released when drive is enabled. 3: RPM Brake release depends on the speed of the electric field set when the current delivered to the motor is being controlled See the description at the end of the table.					

REL DELAY [mS]			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.13.4	32968	-	2	-	▶▶
	Unit	Range		Default	
	ms	0 - 10000		0	
Used to set a delay on release of the holding brake.					

REL RPM			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.13.5	32969	25	2	-	▶▶
	Unit	Range		Default	

	RPM	0 - 1000		0	
This parameter is used to select the frequency of external brake release. See the description at the end of the table.					
LOCK RPM			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	
1.13.6	32978	25	2	-	▶▶
	Unit	Range		Default	
	RPM	0 - 1000		0	
	This parameter is used to select the frequency of external brake engagement. See the description at the end of the table.				
RELEASE CURRENT			Miniaction 200	Miniaction 400	
Menu	Parameter	Display	Level	Condition	Type
1.13.7	32979	25	2	-	▶▶
	Unit	Range		Default	
	mA	0 – 8000		0	
	This parameter is used to set the minimum motor current for releasing the mechanical brake. See the description at the end of the table.				

The digital output for holding brake control on asynchronous motors can be managed according to the frequency of the voltage delivered when the current supplied to the motor is being controlled. In this operating mode, after a start command is given, when the frequency of the voltage generated by the drive reaches the value corresponding to the motor speed in RPM set with parameter 32969, **REL RPM**, 1.13.5, the drive will check whether delivered current exceeds the value set with parameter 32979, **RELEASE CURRENT**, 1.13.7. If it does, the digital output that actuates the holding brake is enabled. When the motor is stopped, the holding brake is actuated when the frequency of generated voltage falls below the value corresponding to the motor speed in RPM set with parameter 32978, **LOCK RPM**, 1.13.6.

8.12 Table A, Display rules	
Value	Description: indicates the conditions necessary for enabling display
2	The active controller, parameter 35166, must be different from modbus = 0.
3	The derive must be equipped with hardware for managing the external resistance used for dynamic braking.
4	Vector-type motor control, parameter 32944 = 0.
5	Position transducer used, parameter 32905 > 0.
7	NTC-type motor temperature sensor used to detect motor temperature.
10	A brushless sinusoidal emf motor is connected, parameter 32944 = 2.
11	The profile specifies a type of control other than torque control
12	The profile specifies torque control
13	Position transducer used, parameter 32905 > 0.
14	Incremental encoder used as the position transducer, parameter 32905 = 1.
15	Analogue voltage input active, 35136 = 0.
16	Analogue current input active, 35136 = 1.
17	Analogue output associated with motor speed, parameter 35105 = 1.
18	Analogue output associated with current supplied, parameter 35105 = 2.
20	Holding brake controlled from programming keyboard, parameter 32967 = 0.
21	Active controller: digital inputs, parameter 35166 = 2.
22	Asynchronous motor control active: V/f with feedback
23	Synchronous motor control active: with feedback from incremental encoder
24	Synchronous motor control active
25	Holding brake release according to electrical RPM, parameter 32967 = 3.

8.13 Table B, Conditions	
Value	Description: indicates the conditions necessary for enabling display
C	Action on the parameter in question must be requested by the active controller, which is set with parameter 35166. Example: The type of position feedback, parameter 32905, can be set with the programming keyboard if modbus is not the active controller.
D	Action on the parameter in question may be applied only if the drive is disabled. Example: The type of position feedback, parameter 32905, cannot be set if the drive is enabled.

8.14 Table C, Functions that can be associated with digital outputs 1, 2, 3, 4, 5 5

Value	Wording
	Description
0	NONE
	No function associated with digital output. The output remains deactivated.
1	FAULT
	The digital output signals a fault on the drive. When the drive is in the alarm mode, the output is activated and stays active until the fault condition is resolved.
2	I TIME
	The digital output is activated if the current delivered to the motor exceeds the threshold used by the motor protection system. This threshold is set to the smallest nominal current value (parameter 111) and the nominal current on the drive (parameter 112).
4	ENABLED
	The digital output is active if the drive is enabled and ready to energise the motor.
5	CURRENT
	The digital output is activated when the current delivered to the motor is within the control window set by parameters 35144, 3514 .
6	SPEED
	The digital output is activated when motor speed (detected if feedback is used, set if no feedback is used) is within the control window set by parameters 35146, 35147 .
9	MB OUT
	The level assumed by the digital output is set with modbus register 22 and depends on the value of the relative bit. The least significant bit in modbus register 22 is associated with digital output 1. The other bits in the register are not significant.

9 COMMAND PROCEDURES

The drive offers the option of using certain command procedures to perform a sequence of operations for specific purposes. Command procedures can be requested by the user in two ways:

- Using the programming keyboard to access the relative menus.
- Requesting procedure execution by writing the appropriate modbus registers.

Command procedures are started by writing in the associated register a value within the range shown in the "Parameter for invoking procedure" field on the table below. The user view the status of execution of a procedure by reading the associated register.

The procedure is being executed as long as the value written with the procedure start command is read in the register associated with the procedure.

If the procedure was started from the programming keyboard, its status of execution is shown by the word *** WAIT *** with animated asterisks.

The procedure has concluded with an error if a negative value is read in the register associated with the procedure.

If the procedure was started from the programming keyboard, its conclusion with an error is shown by the word **FAILURE** . To exit the display of the result of the procedure and resume navigation, press key **◀**.

The procedure has concluded correctly if a positive value is read in the register associated with the procedure.

If the procedure was started from the programming keyboard, the correct conclusion of the procedure is shown by the word **DONE** . To exit the display of the result of the procedure and resume navigation, press key **◀**.

PROCEDURES			
Modbus Register	Programming menu	Parameter that invokes the procedure	Description
99	1.5.2	1	Deletes errors. If the error persists when the procedure is concluded, an active error condition will be signalled
262	Note 1	1	Resets device parameters to factory defaults
35128	1.8.7	1	Calibrates motor position transducer
		0	Ends procedure if it is in progress
35129	1.9.8	1	Loads default profiles into RAM, profiles are not saved
32785	01/01/2020	1	Resets minimum and maximum values for measurements
32811	1.2.7	1	Deletes error list
32842	2	1	Saves all parameters in non -volatile memory
32843	3	1	Saves all parameters in non-volatile memory

32913	01/03/2017	0:2; Note 2 5000: 15000	Setting of PWM frequency.
35171	1.3.1	1 – Number of asynchronous motors	Changes active asynchronous motor
35172	1.4.1	1 – Number of synchronous motors	Changes active synchronous motor
32975	1.4.1	1: V/f control 2: Synchronous control	Changes active motor control

Note 1:

This procedure can be run from the programming keyboard by holding down keys 3 and 4 when the drive starts up.

Note 2:

The PWM frequency change procedure accepts any value from 5000 to 15000 Hz.

The actual programmed value is the one closest to the 3 possible values (5000, 10000, 15000).

PWM VALUES ALLOWED		
Index	PWM frequency [Hz]	Maximum nominal current delivered [mA]
0	5000	4200
1	10000	3800
2	15000	3400

Note that as PWM frequency is increased, the current that can be continuously supplied by the drive decreases to the values shown on the table.

10 ALARMS AND MESSAGES

10.1 LEDs

The front panel of the device has two LED indicators identified by L1 (located on the left) and L2 (located on the right). These indicators inform the user about the status of the drive, the power line and the operating condition of the device.

If an error occurs, the drive flashes L1 in a specific sequence that signals the code number associated with the error.

The error signalling sequence consists of a number of amber-coloured flashes made by LED L1 (corresponding to the tens in the error number), followed by of a number of green-coloured flashes (corresponding to the units in the error number).

The sequence begins with a pause that lasts longer than the duration of the individual flashes.

For example, if a motor overtemperature error occurs, the associated error code is 36 (from here on, this condition will be described as "the drive is in error 36"), so the sequence of flashes made by L1 consists of 3 amber-coloured flashes followed by 6 green-coloured flashes, and then a pause.

If a non-recoverable error has occurred, LED L2 will light up red, and the relative error number will be signalled with the appropriate signalling sequence on L1.

The following table shows the notifications that communicate the status of the drive.

STATUS OF DRIVE		L1	L2	NOTES
Correct operation	Cannot be enabled ¹	OFF	GREEN ²	1: The drive cannot be enabled if DC bus voltage does not exceed 260 V. 2: If the drive is not in error, LED L2 briefly lights up GREEN and shuts off during modbus communication.
	Can be enabled	AMBER		
	Enabled	GREEN		
Drive in recoverable error		Error signalling sequence	OFF	The frequency of error signalling is 2 flashes per second.
Drive in non-recoverable error		Error signalling sequence	RED	The frequency of error signalling is 2 seconds for each flash.
Firmware updating		Flashing GREEN	RED	The signalling frequency of LED L1 is around 4 flashes per second.

If the drive detects an error during operation, it will be disabled, it will be disabled, and an error notification will be sent using the LEDs on the device. If the programming keyboard is installed, an error notification screen will be temporarily shown, and the error number will be added to the list of recent errors.

If an error event occurs that can interrupt the normal execution internal processes, the drive sends a fatal error notification using LEDs L1 and L2. Unlike what happens in a normal error notification, LED L2 lights up

steadily and is red during a fatal error notification.

Errors can be reset in the following ways:

- By deactivating the ENABLE input
- By starting command procedure 99 over the modbus or from TTR001 on menu 1.5.2

Errors are notified via modbus hierarchically according to the value of bits C1D and C2D in the status register with address 1.

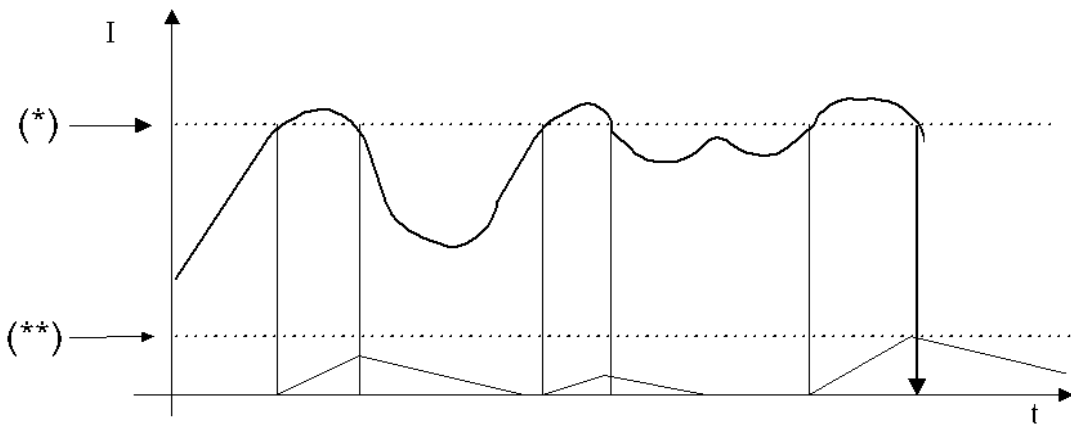
Bit C1D shows that an error has occurred. If bit C1D is set to recognize the error that has occurred, the contents of registers C1D (address 11) and C1D_2 (address 35000) must be read: their bits are associated with the various types of errors according to the masks described in the section on modbus registers. The most significant bit set to 1 shows that additional errors have occurred that are specified in their respective registers

C1D_MAN (address 129) and C1D_MAN _2 (address 35001).

Bit C2D shows that a warning has occurred. If bit C2D is set to recognize the warning that has occurred, the contents of registers C2D (address 12) and C2D_2 (address 35002) must be read: their bits are associated with the various types of warnings according to the masks described in the section on modbus registers. The most significant bit set to 1 shows that additional errors have occurred that are specified in their respective registers C2D_MAN (address 181) and C2D_MAN _2 (address 35003).

10.2 Alarm

INVERTER ERRORS			
Code no.	Name	Associated bit	Description
7	Drive temperature too high	C1D_DRIVER_TEMP_ERR OR	Internal temperature in the drive is too high (parameter 203). Provide the drive with better ventilation.
9	Supplied current exceeds maximum limit	C1DMAN_IMAX_ERROR	The instantaneous current is higher than the lowest peak current for the motor (parameter 109) or the drive (parameter 110)
10	DC BUS voltage exceeds maximum limit	C1D_MAX_VBARRA	Mains voltage is too high, or the motor has caused an overvoltage condition beyond the allowed limit during deceleration.
11	Signals from position transducer	C1DMAN_ENCODER_ERR OR	If the position sensor is the encoder type, an error is notified with a combination of hall signals, which is not permitted. If the position sensor is the resolver type, an error is notified if the amplitude of the analogue signals from the resolver is not plausible
14	DC BUS voltage is lower than minimum limit	C1D_MIN_VBARRA	Mains voltage is insufficient, or the motor is drawing too much current.
15	Corrupt data in EEPROM	C1DMAN_EEPROM_ERROR	This occurs when the EEPROM memory banks are damaged. If the memory is in good operating condition, the error can be recovered through interface TTR001 by re-initialising EEPROM with the default parameters.
16	Maximum speed exceeded	C1DMAN_VEL_ERROR	The speed detected by the drive exceeds the speed set with parameter 32954 (menu 1.4.5).
17	Internal communication error	C1DMAN_SCOM_ERROR	The device has detected a communication error in its internal modules.

18	Current time limit exceeded	C1D_I_ERROR	This error occurs when motor current exceeds its maximum limit for a period that is longer than the time set with parameter 32771 (menu 1.3.8).
<p>This error occurs when motor current exceeds its maximum limit for a period that is longer than the time set with parameter 32771:</p>  <p>When the current level exceeds the calculated maximum (*), the time on a timer is increased. When the current level then falls below the maximum level, the time on the timer is decreased. If the time on the timer exceeds a preset value (**), an error is signalled. This is a safety function provided to the user for protecting the application.</p>			
23	Overcurrent on hardware	C1D_OVERCURRENT_ER ROR	The drive has detected that the hardware stage that checks for maximum supplied current has tripped.
24	Position error	C1D_EXCESSIVE_POS_D EV_ERROR	The position detected by the drive has diverged from the reference position by a distance whose absolute value exceeds the value programmed with parameter 35155 (menu 1.3.32).
27	PWM diagnostics	C1DMAN_HWDIAGPROBL EM_ERROR	The drive has been disabled because incorrect PWM control signals have been detected.
28	Input voltage 15 V	C1DMAN_15VOLTIPM_ER ROR	The drive has detected an error in the value of the internally generated 15 V voltage.
31	D-brake piloting	C1DMAN_DIN_BRAKE_ER ROR	Error on the pilot circuit for the external braking resistance
33	Slave configuration	C1D_2_WRITEAPPAR_ER ROR	Error in configuration operations at start-up

36	Motor temperature	C1D_2_MOTOR_TEMP_ERROR	Motor temperature is too high
37	Motor temperature sensor	C1D_2_TEMPPROBE_MOTOR_ERROR	Read error on motor temperature sensor
40	Digital output diagnostics	C1D_2_DIG_OUT_DIAG_ERROR	A protection system for the digital outputs has tripped
41	Failure of check for internal errors on slave	M_READ_SLAVE_ERROR_CODE	The check for internal errors on the slave has failed
42	Internal communication error	C1D_2_MCOM_ERROR	The device has detected a communication error in its internal modules.
47	Corrupt data in EEPROM	C1D_2_EEPROM_ERROR	This occurs when the EEPROM memory banks are damaged. If the memory is in good operating condition, the error can be recovered through interface TTR001 by re-initialising EEPROM with the default parameters.

10.3 Warnings

The warnings on the device can be accessed only by reading the device status register in the modbus. They are generated to advise the user that a peculiar operating condition has occurred.

WARNINGS REGARDING THE DRIVE	
Bit	Description
C2DMAN_VEL_WARNING	Motor speed has deviated from the reference speed by a value, in absolute terms, that exceeds the speed warning threshold, parameter 32963 (menu 1.3.29)
C2DMAN__15VOLTIPM_WARNING	The internally generated 15 V voltage is lower than the minimum value
C2D_2_MOTOR_TEMP_WARNING	Motor temperature is approaching the error threshold. See the section on this subject for a description of the ways in which the error occurs
C2D_2_I_NOM_WARNING	The current supplied by the drive exceeds the protective threshold associated with error 18

11 SUMMARY OF MODBUS REGISTERS

11.1 SYSTEM REGISTERS

Address: **00000** **0x0000**

Name: Firmware version

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: 0xXXXX

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This register contains the firmware version loaded into the device.

Address: **00001** **0x0001**

Name: Status

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	x	x	x	x	x	x	x	x	Enable	C1D	C2D	Ready	x	x	x	x

Enable:	0	Drive disabled
	1	Drive enabled
Class 1 Diagnostic:	0	No error
	1	Error signalled on drive
Class 2 Diagnostic:	0	No error
	1	Warning signalled on drive
Ready	0	Drive cannot be enabled
	1	Drive can be enabled

Address: **00020** **0x0014**

Name: Control word

Access: RW
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: 0x0000

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MOTOR DIR	-	-	-	-	-	-	-	-	RESET ERROR	DIG OUT ENABLE	V ENABLE	T ENABLE	MODE		

Input V_ENABLE is exclusively controlled over the modbus field bus.

In all other cases, activating the ENABLE input activates internal enabling signals T_Enable (enables the drive) and V_Enable (enables motion).

When the drive is controlled over the field bus, the user has the option of deciding on the status of the individual enabling signals, for example to execute a stop with a deceleration ramp.

This operational capability also provides improved interoperability between the devices described in this manual and Miniaction 300/500 drives with more advanced functions.

- MOTOR DIR: 0 Rotation according to reference (modbus register 00021)
 1 Rotation opposite from reference (modbus register 00021)

- RESET ERROR: 0 No error reset command given
 1 Error reset command given

- DIG OUT ENABLE 0 Digital outputs controlled by modbus disabled
 1 Digital outputs controlled by modbus enabled

- V_ENABLE: 0 Reset speed control enable
 1 Set speed control enable

- T_ENABLE: 0 Reset torque control enable
 1 Set torque control enable

- MODE: 0 Torque control with max. speed:
 - Register 00021 Torque reference
 - Register 35116 Max. speed reference
 1 Speed control
 - Register 00021 Speed reference
 2 Control with profile, selected with registers 00025 and 00026

Address: **00021** **0x0015**

Name: Command word

Access: RW
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: 0x0000

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	COMMAND WORD															

This register contains the reference value (current or speed) used by the driver in the corresponding operating mode. Position control is obtained through the use of profiles.

Address: **00022** **0x0016**

Name: Digital Out

Access: RW
Size: 1 WORD

Min: 0
Max: 65535
Meas: N/A

Reset: 0x0000

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	OUT1

OUT n: 0 Places output n at low logic level
 1 Places output n at high logic level

If the digital outputs are set to be controlled remotely, they can be controlled according to the value set in this register, after the outputs are enabled (Bit 5, DIG OUT ENABLE, Control word 00020) The logic level (active high or active low) for each output can be modified using register 000023.

Address: **00023** **0x0017**

Name: Digital Out Level

Access: RW
Size: 1 WORD

Min: 0
Max: 31
Meas: N/A

Reset: 0x0000

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	OUT 1 LEV

OUT n LEV: 0 Digital output n active high
 1 Digital output n active low

The register is used to set the logic level (active high or active low) for each digital output.

Address: **00024** **0x0018**

Name: Analogue out

Access: RW
 Size: 1 WORD

Min: 0
 Max: N/A
 Meas: N/A

Reset: 0x0000

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ANALOGUE OUT															

This register contains the value in mV that will be assigned to the analogue output if it has been configured to perform this function.

Values exceeding 10000 are automatically assigned the value of 10000.

Address: **00025** **0x19**

Name: Profile control

Access: RW
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: 0x0000

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	EXEC	RD	WR	-	-	-	-	-	MB PROF	PROFILE NUMBER						

EXEC 0 Interrupts execution of the profile selected with MB PROF and PROFILE NUMBER
 1 Executes the profile selected with MB PROF and PROFILE NUMBER

RD:	0	No profile read request is made
	1	System is requested to read the profile selected with PROFILE NUMBER. The profile is read and copied in modbus profile 00026
RD:	0	No profile write request is made
	1	System is requested to write the profile selected with PROFILE NUMBER. The modbus profile (register 00026) is copied in into the selected profile
MB PROF	0	If a profile execute command is given, the profile is executed that has been selected with PROFILE NUMBER.
	1	If a profile execute command is given, the profile is executed that is contained in the modbus buffer,

PROFILE NUMBER Selects the profile in RAM that is to be executed, read and written.

Requests for reading and writing that are made together with the execute command for a profile are ignored until the profile is executed.

If a request is made to execute a profile and EXEC = 1, If bit MB PROF is present, the modbus profile in register 000026 is executed.

If EXEC = 0, the profile selected with the PROFILE NUMBER is executed.

The read command copies the profile selected with the PROFILE NUMBER into the modbus bus, from address 00026.

The write command copies the contents of the buffer register into the profile selected with the PROFILE NUMBER.

The read and write operations act on copies of the profiles stored in RAM. To permanently save profiles, use the save command, which updates the entire set of profiles in non-volatile memory.

Address: **00026** **0x002A**

Name: Modbus profile

Access: RW

Size: 8 WORD

Min: N/A

Max: N/A

Meas: N/A

Reset: Default profile

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	PROFILE TYPE															
	PROFILE ACCELERATION															
	PROFILE SPEED															
	PROFILE DECELERATION															
	0															
	0															
	0															
	1															

PROFILE TYPE 1 Speed
 4 Torque

PROFILE ACCELERATION Contains the value (signed short) of acceleration time prescribed for the profile. If the profile specifies torque control, the content of this register determines the programmed current or slip.

PROFILE SPEED Contains the value (signed short) of the speed prescribed for the profile.

PROFILE DECELERATION Contains the value (signed short) of deceleration time prescribed for the profile.

This set of registers constitutes the modbus buffer for profile read and write operations. The profile in the buffer can be executed by selecting it with bit MB PROF in the profile control register, 00025.

11.2 DIAGNOSTICS REGISTERS

Address: **00011** **0x000B**

Name: C1D, Class 1 Diagnostic

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	X	-	-	X	-	-	X	X	X	-	-	-	-	-	X	-

This register contains notifications of diagnostic errors. Notifications implemented:

- C1D_DRIVER_TEMP_ERROR 0x0002 Temperature on drive too high
 - C1D_I_ERROR 0x0080 Overcurrent time exceeded
 - C1D_MAX_VBARRA 0x0100 Max. voltage on DC bus
 - C1D_MIN_VBARRA 0x0100 Min. voltage on DC bus
 - C1D_OVERCURRENT_ERROR 0x1000 Max. current exceeded, hardware-based protection tripped
 - C1D_MAN_MASK 0x8000 Error in expansion word
- C1D_MAN

Address: **00129** **0x0081**

Name: C1D_MAN, Class 1 Diagnostic Manufacturer

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	X	-	-	X		-	-	X	X	X	-	X	-	X	-	X

This register contains notifications of diagnostic errors defined by the manufacturer. Notifications implemented:

- C1DMAN_SCOM_ERROR 0x0001 Internal communication error detected by slave
- C1DMAN_VEL_ERROR 0x0004 Max. allowed speed exceeded
- C1DMAN_HALL_ERROR 0x0010 Error in hall sensor signals
- C1DMAN_DIAG_ERROR 0x0040 Diagnostic error
- C1DMAN_EEPROM_ERROR 0x0080 EEPROM error
- C1DMAN_IMAX_ERROR 0x0100 Max. instantaneous current exceeded
- C1DMAN_HWDIAGPROBLEM 0x0800 Hardware-based diagnostics
- C1DMAN_15VOLTIPM_ERROR 0x1000 Error on 15 V input power
- C1DMAN_DIN_BRAKE_ERROR 0x8000 Dynamic brake circuitry

Address: **35000** **0x88B8**

Name: C1D_2, Class 1 Diagnostic 2

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	X	-	-	-	-	X	X	X	X	X	-	X	X	-	-	X

This register contains notifications of diagnostic errors. Notifications implemented:

- C1D_2_WRITEAPPAR_ERROR 0x0001 Internal initialisation error
- C1D_2_MOTOR_TEMP_ERROR 0x0008 Motor temperature too high
- C1D_2_TEMPPROBE_MOT 0x0010 Motor temperature sensor error
- C1D_2_MODBUS_TIMEOUT 0x0040 Timeout on modbus communication
- C1D_2_EEPROM_ERROR 0x0080 EEPROM error
- C1D_2_DIG_OUT_DIAG 0x0100 Digital output diagnostics
- C1D_2_READ_SLVERR_CODE 0x0200 Error on slave error control
- C1D_2_MCOM_ERROR 0x0400 Intern communication error detected by master
- C1D_2_MAN_MASK 0x8000 Error in expansion word

C1D_MAN_2

Address: **35001** **0x88B9**

Name: C1D_MAN_2 , Class 1 Diagnostic Manufacturer 2

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This register contains notifications of diagnostic errors defined by the manufacturer. No active bit.

Address: **00012** **0x000C**

Name: C2D, Class 2 Diagnostic

Access: RO
Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This register contains notifications of warnings. Notifications implemented:

C2D_MAN_MASK 0x8000 Warning in expansion word C2D_MAN

Address: **00181** **0x00B5**

Name: C2D_MAN, Class 2 Diagnostic Manufacturer

Access: RO
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	-	-	-	X	-	-	-	-	-	-	-	-	-	X	-	-

This register contains notifications of warnings defined by the manufacturer. Notifications implemented:

C2DMAN_VEL_WARNING 0x0004 Speed deviation too high
 C2DMAN__15VOLTIPM_WARNING 0x1000 Warning on internal 15 V power

Address: **35002** **0x88BA**

Name: C2D_2, Class 2 Diagnostic 2

Access: RO
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X

This register contains notifications of type-2 warnings. Masks implemented:

C2D_2_MOTOR_TEMP_WARNING 0x0001 Motor temperature too high

C2D_2_I_NOM_WARNING 0x0002 Overcurrent time threshold exceeded
 C2D_2_MAN_MASK 0x8000 Warning in expansion
 word C2D_MAN_2

Address: **35003** **0x88BB**

Name: C1D_MAN_2 , Class 2 Diagnostic Manufacturer 2

Access: RO
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

This register contains notifications of type-2 warnings. No mask defined

11.3 MEASUREMENT REGISTERS

Address: **00040** **0x0028**

Name: Speed feedback

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	SPEED FEEDBACK															

This register contains the speed feedback value in RPM.

Address: **00051** **0x0033**

Name: Position feedback

Access: RO
Size: 2 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	POSITION FEEDBACK															

This register contains the position feedback value.

Address: **00084** **0x0054**

Name: Current feedback

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	CURRENT FEEDBACK															

This register contains the current feedback value.

Address: **00380** **0x017C**

Name: VDC bus measured

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	V BUS DC															

This register contains the measured value of DC bus voltage, in volts.

Address: **00383** **0x017F**

Name: Motor temperature

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MOTOR TEMPERATURE															

This register contains the measured motor temperature. It is expressed in °C.

Address: **00384** **0x0180**

Name: Drive temperature

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DRIVE TEMPERATURE															

This register contains the measured temperature of the power module in the drive. Measurement is in °C.

Address: **32784** **0x8010**

Name: DC Bus min

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DC BUS MIN															

This register contains the measured minimum value of DC bus voltage when drive is enabled. Measurement is in volts.

If the drive has never been enabled, it contains the value of -1, which shows that this measurement has never been made. In this case, the display shows 0 volts.

Address: **32800** **0x8016**

Name: DC Bus max

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DC BUS MAX															

This register contains the measured maximum value of DC bus voltage when drive is enabled. Measurement is in volts.

Address: **32890** **0x807A**

Name: I RMS max measure

Access: RO
Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	I RMS MAX MEASURE															

This register contains the maximum measured value of RMS current supplied. Measurement is in mA.

Address: **32901** **0x8085**

Name: I Peak max measure

Access: RO
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	I PEAK MAX MEASURE															

This register contains the value of the maximum peak current supplied. Measurement is in mA.

Address: **32902** **0x8086**

Name: Motor temperature

Access: RO
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: 0

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MOTOR TEMPERATURE															

This register contains the maximum motor temperature value measured. It is expressed in °C.

Address: **32903** **0x8085**

Name: Drive temperature max

Access: RO

Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DRIVE TEMPERATURE MAX															

This register contains the max. measured temperature value for the power module in the drive. Measurement is in °C.

Address: **32926** **0x809E**

Name: Max speed

Access: RO
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MAX SPEED															

This register contains the maximum speed value measured for the drive. Measurement is in RPM.

Address: **32951** **0x80B7**

Name: Electrical frequency output

Access: RO
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ELECTRICAL FREQUENCY OUTPUT															

This register contains the frequency value of generated voltage. Measurement is in tenths of a Hz.

Address: **32952** **0x80B8**

Name: Maximum electrical frequency output

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MAXIMUM ELECTRICAL FREQUENCY OUTPUT															

This register contains the max. frequency value of generated voltage.
Measurement is in tenths of a Hz.

Address: **32958** **0x80BE**

Name: Motor voltage out

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MOTOR VOLTAGE OUT															

This register contains the measured value for generated voltage.
Measurement is in volts.

Address: **32976** **0x80D0**

Name: Applied slip

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	APPLIED SLIP															

This register contains the value of applied slip. The value is significant when active feedback control is applied to an asynchronous motor.
It is expressed in RPM.

Address: **32977**

0x80D1

Name: Applied slip max

Access: RO

Size: 1 WORD

Min: N/A

Max: N/A

Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	APPLIED SLIP MAX															

This register contains the value of maximum applied slip. The value is significant when active feedback control is applied to an asynchronous motor. It is expressed in RPM.

Address: **35005**

0x88BD

Name: Digital inputs

Access: RO

Size: 1 WORD

Min: N/A

Max: N/A

Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	IN16	IN15	IN14	IN13	IN12	IN11	IN10	IN9	IN8	IN7	IN6	IN5	IN4	IN3	IN2	IN1

This register contains the value of digital inputs that have been remapped as per the following table to make them compatible with MINIACTION 300/500 models.

The MINIACTION 2300/500 servo drive is equipped with 16 digital inputs. Their name, location and a brief description are listed on the following table:

Association of digital inputs		
Digital input	Name	Description
Digital input #1	T1_IN	Profile selection input 1
Digital input #2	T2_IN	Profile selection input 2
Digital input #3	T3_IN	Profile selection input 3
Digital input #4	T4_IN	Profile selection input 4
Digital input #5	T5_IN	Profile selection input 5
Digital input #6	T6_IN	Profile selection input 6
Digital input #7	T7_IN	Profile selection input 7

Digital input #8	T_ENABLE	Enabling input
Digital input #9	V_ENABLE	Speed enabling input
Digital input #10	JOG_CW	Clockwise jog operation input
Digital input #11	JOG_CCW	Anti-clockwise jog operation input
Digital input #12	LIMIT_SWITCH_CW	Clockwise end-of-travel input
Digital input #13	LIMIT_SWITCH_CCW	Anti-clockwise end-of-travel input
Digital input #14	STROBE	Profile execution input
Digital input #15	HOME_SW	Home position input
Digital input #16	DIR_IN	Direction input

The MiniMe configuration software uses the same convention for displaying IO -> Digital inputs.

Address: **35006** **0x88BE**

Name: Analog inputs 0-10 volt

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ANALOGUE INPUT 0-10 VOLT															

This register contains the value of the voltage measured on the 0-10 V analogue input. Measurement is in uV.

Address: **35007** **0x88BF**

Name: Analog inputs 4 - 20 mA

Access: RO
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ANALOGUE INPUT 4-20 uA															

This register contains the value of the current measured on the 4 - 20 mA. analogue input.
Measurement is in uA.

Address: **35134** **0x893E**

Name: Movement flags

Access: RO
Size: 1 WORD

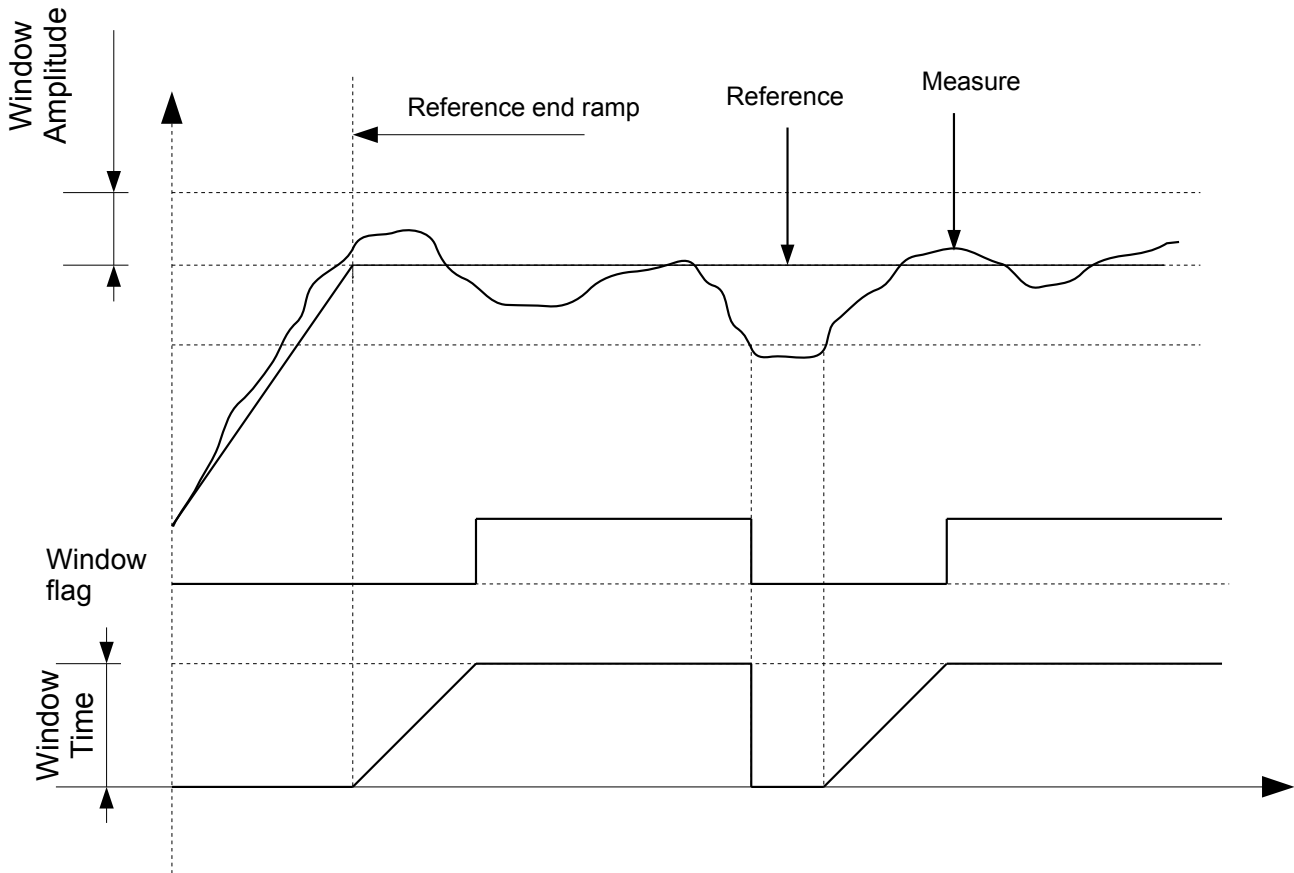
Min: N/A
Max: N/A
Meas: N/A

Reset: 0x0000

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	-	-	-	-	-	-	-	-	-	PROFILE ENDED	POSITION WINDOW OK	VELOCITY WINDOW OK	CURRENT WINDOW OK	END HOMING PROCEDURE S	END POSITION RAMP	END SPEED RAMP

- | | |
|----------------------|--|
| END SPEED RAMP | 0x0001 End of speed ramp (Reference) |
| END POSITION RAMP | 0x0002 End of position profile (Reference) |
| END HOMING PROCEDURE | 0x0004 End of homing procedure |
| CURRENT WINDOW OK | 0x0008 Current in desired window for at least the programmed time |
| VELOCITY WINDOW OK | 0x0010 Speed in desired window for at least the programmed time |
| POSITION WINDOW OK | 0x0020 Position in desired window for at least the programmed time |
| PROFILE ENDED | 0x0040 Profile has ended |

The CURRENT WINDOW OK, VELOCITY WINDOW OK, POSITION WINDOW OK flags are generated according to the following logic:



Parameters for the amplitude values for the relative windows and the minimum permanence time are set using the modbus registers at addresses beginning with 35140.

11.4 PARAMETERS

Address: **00100** **0x0064**

Name: KP velocity

Access: RW
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	KP VELOCITY															

This register sets the proportional gain for the speed loop. The value is in tens of uA / RPM. The number entered with the programming keyboard into this register using the modbus interface is automatically multiplied by 100.

Address: **00101** **0x0065**

Name: KI velocity

Access: RW
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	KI VELOCITY															

This register sets the additional gain for the speed loop. The value is in hundreds of uA / (RPM*second). The number entered with the programming keyboard into this register using the modbus interface is automatically multiplied by 10.

Address: **00106** **0x006A**

Name: KP current

Access: RW
Size: 1 WORD

Min: N/A
Max: N/A
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	KP CURRENT															

This register sets the proportional gain for the current loop.
 The value is in tens of mV / A. The number entered with the programming keyboard into this register using the modbus interface is automatically multiplied by 100.

Address: **00107** **0x006B**

Name: KI current

Access: RW
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	KI CURRENT															

This register sets the additional gain for the current loop.
 The value is in tens of V / (A*second) The number entered with the programming keyboard into this register using the modbus interface is automatically multiplied by 100.

Address: **00109** **0x006D**

Name: Motor peak current

Access: RW
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MOTOR PEAK CURRENT															

This register sets peak motor current. Measurement is in mA.

Address: **00110** **0x006E**

Name: Drive peak current

Access: RO
 Size: 1 WORD

Min: N/A

Max: N/A
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DRIVE PEAK CURRENT															

This register contains the value for peak drive current. Measurement is in mA.

Address: **00111** **0x006F**

Name: Motor rated current

Access: RW
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MOTOR RATED CURRENT															

This register sets the nominal motor current. Measurement is in mA.

Address: **00112** **0x0070**

Name: Rated current of drive

Access: RO
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	RATED CURRENT OF DRIVE															

This register contains the value for nominal drive current. Measurement is in mA.

Address: **32771** **0x8003**

Name: I limit max time

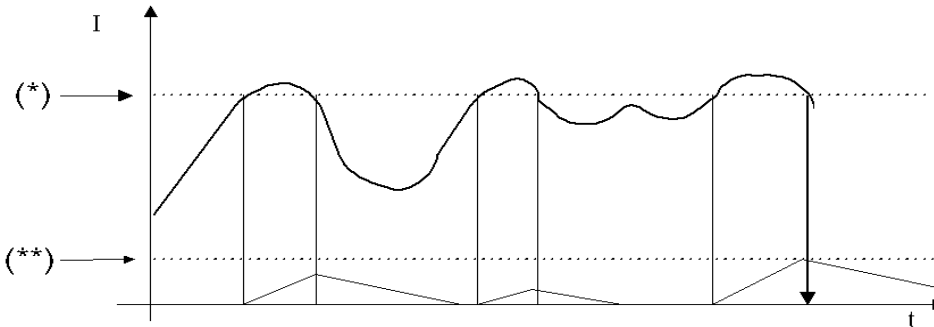
Access: RW
 Size: 1 WORD

Min: N/A
 Max: N/A
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	I LIMIT MAX TIME															

This register sets the maximum time that the current threshold can be exceeded.



When the current exceeds the calculated maximum (** the lesser value between parameters 111 and 112), the time on a timer is increased. When the current level then falls below the maximum level, the time on the timer is decreased. If the time on the timer exceeds a preset value (** = parameter 32771), an error is signalled. This is a safety function provided to the user for protecting the application. The associated flag is C1D_I_ERROR.

Address: **32827** **0x803B**

Name: External brake active

Access: RW
 Size: 1 WORD

Min: 0
 Max: 1
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	EXT BRAKE ACTIVE															

EXT BRAKE ACTIVE	0	External braking resistance disabled
	1	External braking resistance enabled

Address: **32828** **0x803C**

Name: External brake resistance

Access: RW
 Size: 1 WORD

Min: 30
 Max: 500
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	EXT BRAKE RESISTANCE															

This register sets the resistance in ohms for the external brake resistance.

Address: **32831** **0x803F**

Name: External brake power

Access: RW
 Size: 1 WORD

Min: 1
 Max: 20000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	EXT BRAKE POWER															

This register sets the maximum power that can be dissipated by the external brake resistance. Measurement is in watts.

Address: **32904** **0x8088**

Name: Feedback direction

Access: RW
 Size: 1 WORD

Min: 0
 Max: 1
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	FEEDBACK DIRECTION															

FEEDBACK DIRECTION 0 Toward positive anti-clockwise.
 1 Toward positive clockwise.

This register sets the positive direction of rotation of the position feedback sensor, whether its type is

resolver or incremental encoder.

Address: **32905** **0x8089**

Name: Feedback type

Access: RW
Size: 1 WORD

Min: 0
Max: 2
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	FEEDBACK TYPE															

FEEDBACK TYPE 0: No transducer installed, option not applicable.
 1: Incremental encoder
 2: Resolver

This register sets the type of position feedback sensor installed on the motor.

Address: **32908** **0x808C**

Name: Vrms min boost

Access: RW
Size: 1 WORD

Min: 0
Max: 100
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	VRMS MIN BOOST															

This register sets the minimum boost voltage. See description [V/f profile](#).

Address: **32909** **0x808D**

Name: Vrms nom boost

Access: RW
Size: 1 WORD

Min: 100
Max: 350
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	VRMS NOM BOOST															

This register sets the nominal boost voltage. See description [V/f profile](#).

Address: **32910** **0x808E**

Name: Freq min boost

Access: RW

Size: 1 WORD

Min: 0

Max: 128

Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	FREQ MIN BOOST															

This register sets the minimum boost frequency. See description [V/f profile](#).

Address: **32911** **0x808F**

Name: Freq nom boost

Access: RW

Size: 1 WORD

Min: 0

Max: 128

Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	FREQ NOM BOOST															

This register sets the nominal boost frequency. See description [V/f profile](#).

Address: **32914** **0x8092**

Name: Encoder resolution

Access: RW

Size: 1 WORD

Min: 1

Max: 65536

Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ENCODER RESOLUTION															

This register sets the resolution of the encoder. Expressed in pulses/revolution.

Address: **32918** **0x8096**

Name: Dc brake time

Access: RW
Size: 1 WORD

Min: 0
Max: 4000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DC BRAKE TIME															

This register sets the duration of DC braking when an asynchronous motor is stopped. Measurement is in ms.

Address: **32944** **0x80B0**

Name: Active motor control

Access: RO
Size: 1 WORD

Min: 1
Max: 2
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ACTIVE MOTOR CONTROL															

This register is used to read active motor control data.

ACTIVE MOTOR CONTROL 0 Active V/f control of asynchronous motor
 1 Vector control of synchronous motor active.

Address: **32953** **0x80B9**

Name: Pair pole number

Access: RW
 Size: 1 WORD

Min: 0
 Max: 4
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	PAIR POLE NUMBER															

This register sets the number of polar pairs on the motor.

Address: **32954** **0x80BA**

Name: Max speed

Access: RW
 Size: 1 WORD

Min: 0
 Max: 8000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MAX SPEED															

This register sets the threshold for maximum allowed speed. If the drive measures a higher speed, a C1DMAN_VEL_ERROR is signalled.

Address: **32955** **0x80BB**

Name: Motor cable direction

Access: RW
 Size: 1 WORD

Min: 0
 Max: 1
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MOTOR CABLE DIRECTION															

This register contains the direction of rotation imposed by the power wiring on the motor, as detected during calibration of the position transducer.

Address: **32956** **0x80BC**

Name: Hall direction

Access: RW
Size: 1 WORD

Min: 0
Max: 1
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	HALL DIRECTION															

This register contains the direction of rotation created by the signal sequence of the hall transducers, as detected during calibration of the motor position transducer.

Address: **32957** **0x80BD**

Name: Phase value

Access: RW
Size: 1 WORD

Min: 0
Max: 65535
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	PHASE VALUE															

This register contains the phase offset between electric angle and position transducer for the motor. The value is automatically detected during calibration of the motor position transducer.

Address: **32958** **0x80BE**

Name: V rms uot (phase to phase)

Access: RO
Size: 1 WORD

Min: 0
Max: N/A
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	V RMS OUT															

This register contains the value for RMS voltage supplied to the motor. It is not a measurement.

Address: **32959** **0x80BF**

Name: Asi speed min

Access: RW
Size: 1 WORD

Min: 0
Max: 6000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ASI SPEED MIN															

This register sets the minimum speed of an asynchronous motor

Address: **32960** **0x80C0**

Name: Asi speed max

Access: RW
Size: 1 WORD

Min: 0
Max: 6000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ASI SPEED MAX															

This register sets the maximum speed of an asynchronous motor

Address: **32961** **0x80C1**

Name: Motor direction

Access: RW
Size: 1 WORD

Min: 0
Max: 1
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MOTOR DIRECTION															

MOTOR DIRECTION 0: Rotation is clockwise with a positive speed or torque reference.
 1: Rotation is anti-clockwise with a positive speed or torque reference.

This register is used to set the direction of motor rotation.

Address: **32963** **0x80C3**

Name: Speed warning

Access: RW
 Size: 1 WORD

Min: 0
 Max: 6000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	SPEED WARNING															

If speed control is applied to the motor, and measured speed differs from programmed speed by a value exceeding the SPEED WARNING, a speed warning is generated.
 The warning is signalled by a dedicated bit in C2DMan.
 The warning is disabled by setting the SPEED WARNING value to 0 (default).

Address: **32964** **0x80C4**

Name: Speed error

Access: RW
 Size: 1 WORD

Min: 0
 Max: 6000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	SPEED ERROR															

If speed control is applied to the motor, and measured speed differs from programmed speed by a value exceeding the SPEED ERROR, a speed error is generated.
 The error is signalled by a dedicated bit in C1DMan.
 The warning is disabled by setting the SPEED ERROR value to 0 (default).

Address: **32965** **0x80C5**

Name: Feedback calibration

Access: RW
Size: 1 WORD

Min: 0
Max: 1
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	FEEDBACK CALIBRATION															

Shows and/or sets the calibration status of the position sensor.
1 shows that the position sensor has been calibrated. 0 shows that it has not been calibrated.

Address: **32966** **0x80C6**

Name: Use holding brake

Access: RW
Size: 1 WORD

Min: 0
Max: 1
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	USE HOLDING BRAKE															

This parameter is used to enable the control output for the holding brake.

- 0 Holding brake output disabled
- 1 Holding brake output enabled

Address: **32967** **0x80C7**

Name: Use holding mode

Access: RW
Size: 1 WORD

Min: 0
Max: 2
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	HOLDING BRAKE MODE															

This parameter is used to select the operating mode for the holding brake.

- 0 SERVICE Brake is locally engaged using the SERVICE menu
- 1 MODBUS Brake is engaged over the modbus by writing register 32970
- 2 ENABLE Brake is engaged when the drive is enabled
- RPM Brake engaging depends on the speed of the electric field set in the current control operating mode

Address: **32968** **0x80C8**

Name: Holding brake release time

Access: RW
Size: 1 WORD

Min: 0
Max: 10000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
HOLDING BRAKE RELEASE TIME																

Used to set a delay on the release of the holding brake, only.
Measurement is in ms.

Address: **32969** **0x80C9**

Name: Release rpm

Access: RW
Size: 1 WORD

Min: 0
Max: 1000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
RELEASE RPM																

This register sets the holding brake release speed.
It is expressed in RPM.

Address: **32970** **0x80CA**

Name: Holding brake command

Access: RW
Size: 1 WORD

Min: 0

Max: 1
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	HOLDING BRAKE COMMAND															

This register is used to activate the holding brake. The value of this register can be changed if the drive is locally controlled, the holding brake is controlled from the service menu, and the dedicated item on the service menu is used to change the activation status of the brake.

- 0 Holding brake control output disabled.
- 1 Holding brake control output enabled.

Address: **32971** **0x80CB**

Name: Holding brake logic level

Access: RW
 Size: 1 WORD

Min: 0
 Max: 1
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	HOLDING BRAKE LOGIC LEVEL															

This parameter is used to set the logic level of the stationary brake control output.

- 0 Holding brake control output active with high logic level.
- 1 Holding brake control output active with low logic level.

Address: **32972** **0x80CC**

Name: Pwm frequency

Access: RO
 Size: 1 WORD

Min: 0
 Max: 15000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	PWM VALUE															

This register is used to read the frequency of the PWM used by the drive. The PWM value can be changed by the user with procedure 32913.

Address: **32973** **0x80CD**

Name: DC brake voltage

Access: RW
Size: 1 WORD

Min: 0
Max: 120
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DC BRAKE VOLTAGE															

This register sets the DC voltage supplied to the motor during braking in order to stop an asynchronous motor.
Measurement is in volts.

Address: **32974** **0x80CE**

Name: Max slip

Access: RW
Size: 1 WORD

Min: 10
Max: 3000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MAX SLIP															

This register sets the maximum slip applied to the motor if it is asynchronous and feedback is applied. It is expressed in RPM.

Address: **32978** **0x80D2**

Name: Lock rpm

Access: RW
Size: 1 WORD

Min: 0
Max: 1000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	LOCK RPM															

This register sets the holding brake lock speed.
It is expressed in RPM.

Address: **32979** **0x80D3**

Name: Release current

Access: RW
Size: 1 WORD

Min: 0
Max: 8000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	RELEASE CURRENT															

This register sets the current threshold for holding brake release.
Measurement is in mA.

Address: **35100** **0x891C**

Name: Temperature probe type

Access: RW
Size: 1 WORD

Min: 0
Max: 3
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	TEMPERATURE PROBE TYPE															

This register sets the type of temperature sensor installed on the motor:

- TEMPERATURE PROBE TYPE> 0 None
- 1 NTC type Epcos B57227K
- 2 N.C. trip device
- 3 PTC

Address: **35101** **0x891D**

Name: Motor shut down temperature

Access: RW
Size: 1 WORD

Min: 0
Max: 155
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MOTOR SHUT DOWN TEMPERATURE																

This register sets the maximum temperature limit for motor operation.

Address: **35102** **0x891E**

Name: Digital inputs logic level

Access: RW
Size: 1 WORD

Min: 0
Max: 65535
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	-	-	-	-	-	-	-	-	-	-	-	-	LGC LEV 4	LGC LEV 3	LGC LEV 2	LGC LEV 1

LGC LEV no. 0 High logic level on active input no.
 1 Low logic level on active input no.

This register sets the logic level of the digital inputs.

Address: **35105** **0x8921**

Name: Analogue out source

Access: RW
Size: 1 WORD

Min: 0
Max: 3
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ANALOGUE OUT SOURCE																

ANALOGUE OUT SOURCE; 0 NONE

- 1 SPEED
- 2 TORQUE
- 3 MB OUT

This register sets the source associated with the analogue output.

Address: **35106** **0x8922**

Name: Analogue out max value

Access: RW
Size: 1 WORD

Min: 1
Max: 20000
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ANALOGUE OUT MAX VALUE															

This register sets the value of the measurement that controls the analogue output associated with the maximum value that can be assumed by the output (10 V).

This parameter is meaningful only if the analogue output is associated with supplied current or rotation speed.

If the analogue output is controlled remotely over the modbus bus, the value of this register is irrelevant.

Address: **35107** **0x8923**

Name: Acceleration time

Access: RW
Size: 1 WORD

Min: 5
Max: 10000
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	ACCELERATION TIME															

This register sets the acceleration time.

Address: **35108** **0x8924**

Name: Deceleration time

Access: RW

Size: 1 WORD

Min: 5
 Max: 10000
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DECELERATION TIME															

This register sets the deceleration time.

Address: **35109** **0x8925**

Name: Jog speed

Access: RW
 Size: 1 WORD

Min: 1
 Max: 6000
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	JOG SPEED															

This register sets the jog speed.

Address: **35111** **0x8927**

Name: Maximum speed

Access: RW
 Size: 1 WORD

Min: 1
 Max: 6000
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MAXIMUM SPEED															

This register sets the maximum speed.

Address: **35114** **0x892A**

Name: Jog ramps time

Access: RW
 Size: 1 WORD

Min: 5
 Max: 10000
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
JOG RAMPS TIME																

This register sets the acceleration and deceleration times for the ramps if jog operation is currently selected.

Address: **35121** **0x8931**

Name: Synchronous motor table index

Access: RO
 Size: 1 WORD

Min: 0
 Max: Number of motors implemented in firmware.
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
SYNCHRONOUS MOTOR TABLE INDEX																

This register is used to reveal which motor has been selected from the set to predefined motors. The motor is selected with dedicated procedure 35172. If 0 is read, no motor has been selected. The parameters of the selected motor are overwritten in the volatile memory of the drive. To permanently store the selection, the set of parameters must be saved with the save command.

Address: **35136** **0x8940**

Name: Analogue input selected

Access: RW
 Size: 1 WORD

Min: 0
 Max: 1
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
AN IN SELECTED																

AN IN SELECTED 0 The analogue reference is the 0-10 V input
 AN IN SELECTED 1 The analogue reference is the 4-10 mA input

Address: **35137** **0x8941**

Name: Analogue input offset 0 - 10

Access: RW
Size: 1 WORD

Min: 0
Max: 9000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	AN IN OFFSET 0 - 10															

This register contains the value of the offset that must be subtracted from the 0-10 V analogue input. Measurement is in mV.

Address: **35138** **0x8942**

Name: Analogue input offset 4 - 20

Access: RW
Size: 1 WORD

Min: 4000
Max: 19000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	AN IN OFFSET 4 - 20															

This register contains the value of the offset that must be subtracted from the 4-20 mA analogue input. Measurement is in uA.

Address: **35139** **0x8943**

Name: Analogue input max speed ref

Access: RW
Size: 1 WORD

Min: 0
Max: 6000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	AN IN MAX SPEED REF															

This register contains the speed value associated with the maximum value of the analogue input. It is expressed in RPM.

Address: **35140** **0x8944**

Name: Analogue input min speed ref

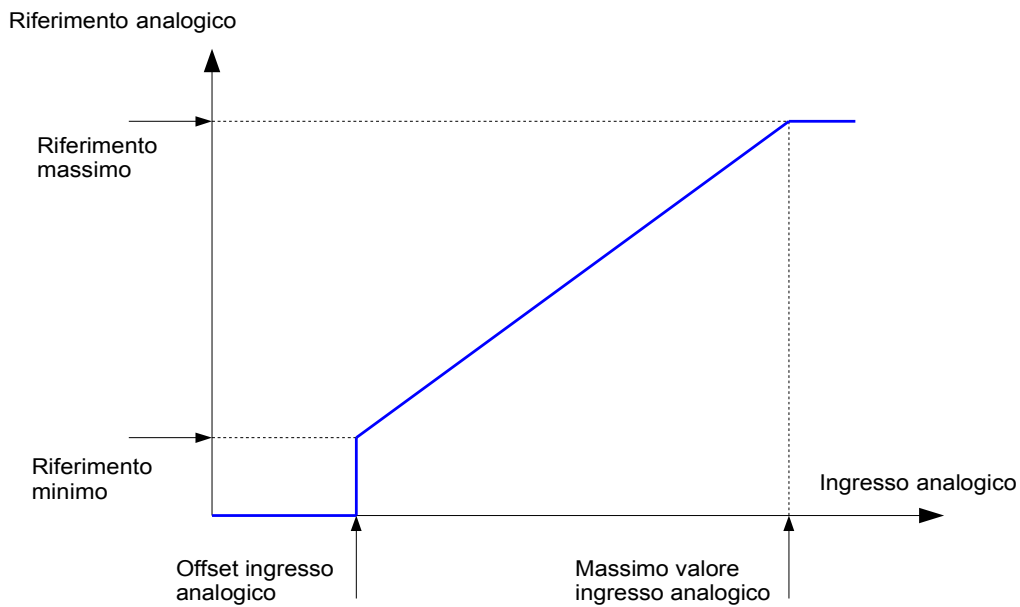
Access: RW
Size: 1 WORD

Min: 0
Max: 6000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	AN IN MIN SPEED REF															

This register contains the speed value associated with the minimum value of the analogue input. It is expressed in RPM.



Address: **35141** **0x8945**

Name: Analogue input max current reference

Access: RW
Size: 1 WORD

Min: 0
Max: 65535
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	AN IN MAX CURRENT REF															

This register contains the current value associated with the maximum value of the analogue input. Measurement is in mA.

Address: **35142** **0x8946**

Name: Analogue input min current reference

Access: RW
Size: 1 WORD

Min: 0
Max: 65535
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	AN IN MIN CURRENT REF															

This register contains the current value associated with the minimum value of the analogue input. Measurement is in mA.

Address: **35143** **0x8947**

Name: Modbus no local enable

Access: RW
Size: 1 WORD

Min: 0
Max: 1
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MB NO LOC ENABLE															

This register is used to exclude local enabling signals (V enable and V enable) when Modbus is the active controller.

MB NO LOC ENABLE 0 Enabling inputs are active
 MB NO LOC ENABLE 1 Enabling inputs are inactive

Address: **35144** **0x8948**

Name: Current window

Access: RW
 Size: 1 WORD

Min: 1
 Max: 10000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	CURRENT WINDOW															

This register is used for setting the value of the current window to generate the CURRENT WINDOW OK signal in modbus movement flags register 35134.
 Measurement is in mA.

Address: **35145** **0x8949**

Name: Current window time

Access: RW
 Size: 1 WORD

Min: 1
 Max: 65000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	CURRENT WINDOW TIME															

This register is used to set the minimum permanence time in the current window for the system to generate the CURRENT WINDOW OK signal in modbus movement flags register 35134.
 Measurement is in ms.

Address: **35146** **0x894A**

Name: Speed window

Access: RW
 Size: 1 WORD

Min: 1
 Max: 1000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	SPEED WINDOW															

This register is used for setting the value of the speed window to generate the SPEED WINDOW OK signal in modbus movement flags register 35134.
 Measurement is in RPM.

Address: **35147** **0x894B**

Name: Speed window time

Access: RW
 Size: 1 WORD

Min: 1
 Max: 65000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	SPEED WINDOW TIME															

This register is used to set the minimum permanence time in the speed window for the system to generate the SPEED WINDOW OK signal in modbus movement flags register 35134.
 Measurement is in ms.

Address: **35157** **0x8955**

Name: Speed Reference

Access: RW
 Size: 1 WORD

Min: 1
 Max: 6000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	SPEED REFERENCE															

This parameter sets the reference speed.

Address: **35158** **0x8956**

Name: Digital out function

Access: RW
Size: 1 WORD

Min: 0
Max: 9
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DIGITAL OUT FUNCTION															

These registers are used to set the function assigned to individual digital outputs.
The association between register value and function is as follows:

- 0 NONE No associated function, output is disabled
- 1 FAULT. The logic level of the output switches to high if an error occurs on the drive.
- 2 I TIME The logic level of the output switches to high when the supplied current exceeds the threshold programmed for tripping the timed current protection, according to the logic with which error 18 is generated.
- 4 ENABLED The output is active if the drive is enabled
- 5 CURRENT The output is active if the supplied current is inside the current window
- 6 SPEED The output is active if motor speed is inside the speed window
- 9 MB OUT The output is enabled according to the contents of modbus register 00022

Address: **35163** **0x895B**

Name: Quick stop time

Access: RW
Size: 1 WORD

Min: 5
Max: 10000
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	QUICK STOP TIME															

Deceleration time for tripping limit switches. Measurement is in ms.

Address: **35164** **0x895C**

Name: Asynchronous motor table index

Access: RO
Size: 1 WORD

Min: 0
 Max: No. of asynchronous motors implemented in firmware.
 Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ASYNCHRONOUS MOTOR TABLE INDEX																

This register is used to reveal which motor has been selected from the set to predefined motors. The motor is selected with dedicated procedure 35171. If 0 is read, no motor has been selected. The parameters of the selected motor are overwritten in the volatile memory of the drive. To permanently store the selection, the set of parameters must be saved with the save command.

Address: **35165** **0x895D**

Name: Motor control

Access: RW
 Size: 1 WORD

Min: 0
 Max: 2
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
MOTOR CONTROL																

MOTOR DIRECTION 0: Torque control with limitation on maximum speed is applied.
 1: Speed control is applied.
 2: The type of control specified in the specific movement profile is applied.

This register is used to set the type of motor control applied.

Address: **35166** **0x895E**

Name: Controller

Access: RW
 Size: 1 WORD

Min: 0
 Max: 2
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
CONTROLLER																

This register is used to set the active controller for the drive. The following can be selected:

CONTROLLER 0: Modbus is the active controller.

- 1: The programming keyboard is the active controller.
- 2: The digital inputs constitute the active controller.

The active controller controls motor movement and can modify parameters that can be changed only by the active controller.

Address: **35167** **0x895F**

Name: Speed ref source

Access: RW
 Size: 1 WORD

Min: 0
 Max: 2
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	SPEED REF SOURCE															

This register is used to set the source of the speed reference when speed control is applied to the motor. The following can be selected:

- SPEED REF SOURCE 0: The speed reference is fixed and assumes the value set in parameter 35157.
- 1: The speed reference is fixed and assumes the value set in parameter 35157, which can be changed with the ▲▼ keys on the programming keyboard.
- 2: The reference speed is derived from the value of the analogue input.

Address: **35168** **0x895F**

Name: Torque factor

Access: RW
 Size: 1 WORD

Min: 1
 Max: 10000
 Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	TORQUE FACTOR															

This parameter is used to set the torque constant for the motor. The parameter is used exclusively to display the torque applied to the motor. It does not affect the behaviour of the application. If torque control is being applied to the motor, the torque reference is expressed as a current. The value is in thousandths of a newton / amp.

Address: **35191** **0x8977**

Name: Device Id

Access: RW
Size: 1 WORD

Min: 1
Max: 247
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DEVICE ID															

This register is used to set the modus address of the drive.

To apply the change, all parameters must be saved using procedure 32842, and the drive must then be restarted.

Address: **35192** **0x8978**

Name: Modbus timeout

Access: RW
Size: 1 WORD

Min: 0
Max: 65535
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MODBUS TIMEOUT															

This register sets a timeout for modbus communications.
Measurement is in ms.

Address: **35193** **0x8979**

Name: Modbus baud rate index

Access: RW
Size: 1 WORD

Min: 0
Max: 5
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MODBUS BAUD RATE INDEX															

This parameter sets the speed of communication over the modbus.

- 0: 4800
- 1: 9600
- 2: 19200
- 3: 38400
- 4: 57600
- 5: 115200

To apply the change, all parameters must be saved using procedure 32842, and the drive must then be restarted.

Address: **35194** **0x897A**

Name: Modbus parity

Access: RW
Size: 1 WORD

Min: 0
Max: 2
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	MODBUS PARITY															

This register sets the parity bit for modbus communications:

- 0: NONE The parity bit is set to 0.
- 1: ODD The parity bit in odd-numbered frames is set to 1
- 2: EVEN The parity bit in even-numbered frames is set to 1

To apply the change, all parameters must be saved using procedure 32842, and the device must then be restarted.

Address: **35195** **0x897B**

Name: Display value

Access: RW
Size: 1 WORD

Min: 0
Max: 6
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DISPLAY VALUE															

This register is used to select the information provided on the standard menu:

- 0: STATUS The standard menu displays the status of the drive.
- 1: SPEED The standard menu displays the speed of the motor.
- 2: I MOT The standard menu displays the current supplied to the motor.
- 3: V MOT The standard menu displays the phase voltage supplied to the motor.
- 4: INT TEMP The standard menu displays the temperature of the drive.
- 6: PROFILE The standard menu displays the profile being run.

Address: **35196** **0x897C**

Name: Display backlight

Access: RW
Size: 1 WORD

Min: 0
Max: 1
Meas: N/A

Reset: Retentive

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	DISPLAY BACKLIGHT															

This register sets the backlight of the programming keyboard:

- 0: NO The back light in the display lights up when any key is pressed and shuts off if no command is given by the operator for 3 minutes.
- 1: YES The back light stays on.

11.5 PROCEDURES

Address: **00099** **0x0063**

Name: Reset errors

Access: WO
Size: 1 WORD

Min: 1
Max: 1
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1															

This procedure is used to reset errors on the drive by writing 1 in modbus register 00099.

Address: **00262** **0x0106**

Name: Reset to default parameter

Access: RW
Size: 1 WORD

Min: 1
Max: 1
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1															

This procedure is used to reset drive parameters to default by writing 1 in modbus register 00262.

The register can be read to discover the status of procedure execution. Possible values are:

- 1 Procedure in progress
- 0 Procedure ended correctly
- 1 Procedure ended with an error

Address: **35128** **0x8938**

Name: Tuning motor and angle

Access: RW
Size: 1 WORD

Min: 1
Max: 1
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1															

This procedure is used to reset drive parameters to default by writing 1 in modbus register 00262.

The register can be read to discover the status of procedure execution. Possible values are:

- 1 Procedure in progress
- 0 Procedure ended correctly
- 1 Procedure ended with an error

Address: **35129** **0x8939**

Name: Reset to default profile

Access: WO
Size: 1 WORD

Min: 1
Max: 1
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1															

This procedure is used to reset profile parameters to default by writing 1 in modbus register 35129.

Address: **32785** **0x8011**

Name: Reset min max

Access: WO
Size: 1 WORD

Min: 1
Max: 1
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1															

This procedure is used to reset the minimum and maximum values detected by the drive. The procedure is run by writing 1 in modbus register 32785.

Address: **32842** **0x804A**

Name: Save all parameter

Access: WO
Size: 1 WORD

Min: 1
Max: 1
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
																1

This procedure is used to save all parameters in non-volatile memory. The procedure is run by writing 1 in modbus register 32842.

Address: **32843** **0x804B**

Name: Save all profile

Access: WO
Size: 1 WORD

Min: 1
Max: 1
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
																1

This procedure is used to save all profiles in non-volatile memory. The procedure is run by writing 1 in modbus register 32843.

Address: **32913** **0x8091**

Name: Set pwm frequency

Access: WO
Size: 1 WORD

Range: 5000 to 15000, which are internally approximated to 5000; 10000; 15000
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

The PWM frequency change procedure accepts any value from 5000 to 15000.
The value is in Hz.
The actual programmed value is the one closest to the 3 possible values (5000, 10000, 15000).

The programmed PWM frequency can be read using register 32972.

Address: **35171** **0x8963**

Name: Change asynchronous motor

Access: WO
Size: 1 WORD

Min: 1
Max: No. of asynchronous motors implemented on the drive.
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

This procedure is used to change the active asynchronous motor.

Address: **35172** **0x8964**

Name: Change synchronous motor

Access: WO
Size: 1 WORD

Min: 1
Max: No. of synchronous motors implemented on the drive.
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

This procedure is used to change the active synchronous motor.

Address: **32975** **0x80CF**

Name: Change active motor control

Access: WO
Size: 1 WORD

Min: 1
Max: 2
Meas: N/A

Reset: N/A

BIT	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

This procedure is used to change the active motor control mode:

- 1: V/f control Motor control with V/f rules for asynchronous motors
- 2: Synchronous control Vector control of synchronous motors

12 TABLES OF DEFAULT PARAMETERS**12.1 Default parameters for synchronous motor**

Parameter	Description	Default value	User-programmed value
23	Logic level of individual digital outputs	0	
57	Maximum position error value for generating warning	0	
100	Proportional speed gain	0	
101	Additional speed gain	0	
106	Proportional current gain	0	
107	Additional current gain	0	
109	Peak RMS motor current (mA)	707	
110	Peak RMS drive current (mA)	15000	
111	Nominal RMS motor current (mA)	200	
112	Nominal RMS drive current (mA)	4200	
159	Maximum position error value for generating error	0	
203	Maximum drive temperature (°C)	85	
32594	Maximum speed value for generating error	100	
32771	Maximum time that current limit can be exceeded (mS)	2000	
32827	Enabling of external braking resistance	0	
32828	External braking resistance (ohms)	200	
32831	Power rating of external braking resistance (W)	1500	
32904	Encoder direction	1	
32905	Type of position sensor 0 = not installed 1 = incremental 2 = resolver	2	
32908	Minimum boost voltage	0	
32909	Nominal boost voltage	230	
32910	Minimum freq. (Hz)	0	
32911	Nominal freq. (Hz)	50	
32914	Encoder pulses	512	
32918	DC brake time (ms)	500	
32944	Type of motor control 1 = V/f asynchronous 2 = Synchronous	2	
32953	Polar pairs	2	
32955	Motor direction imposed by wiring U, V, W	0	
32956	Hall sensor direction imposed by wiring	0	

32957	Phase angle	11100	
32959	Minimum speed	0	
32960	Maximum speed	6000	
32961	Direction of rotation	0	
32963	Maximum speed deviation value for generating warning, 0=disabled	0	
32964	Maximum speed deviation value for generating error, 0=disabled	0	
32965	Transducer position tuning completed	0	
32966	Activation of holding brake	0	
32967	Operating mode of holding brake	2	
32968	Delay on release of holding brake	0	
32969	RPM for release of holding brake	0	
32971	Logic level of holding brake output	0	
32972	PWM freq. (Hz)	0	
32973	DC braking voltage (V)	30	
32974	Slip for maximum torque (RPM)	300	
32978	RPM for locking of holding brake	0	
32979	Current for release of holding brake	0	
35100	Type of motor temperature sensor 0 = not installed 1 = NTC 2 = NC switch 3 = PTC	2	
35101	Maximum motor temperature (°C)	140	
35102	Logic level of digital inputs	0	
35105	Analogue output source	0	
35106	Analogue end-of-scale output	1000	
35107	Acceleration time	2000	
35108	Deceleration time	2000	
35109	Jog speed	100	
35111	Maximum reference speed	4000	
35114	Time of acc. and dec. ramps in jog mode	20	
35121	Index of selected synchronous motor	0	
35136	Active analogue input	0	
35137	Offset on 0-10 Volt input (mV)	1000	
35138	Offset on 4-20 mA input (uA)	4000	
35139	Maximum reference speed with analogue reference speed	2000	
35140	Minimum reference speed with analogue reference speed	10	
35141	Maximum reference torque (current or RPM)	200	

	supplied with analogue reference torque		
35142	Minimum reference torque (current or RPM) supplied with analogue reference torque	10	
35143	Disabling of local enabling inputs with modbus control	0	
35144	Current window for current threshold	50	
35145	Wait time in current window (ms)	100	
35146	Speed window for speed threshold	50	
35147	Wait time in speed window (ms)	100	
35157	Programmed reference value	0	
35158	Function associated with digital output 1	1	
35163	Quick stop time	20	
35164	Index of selected asynchronous motor	0	
35165	Type of motor control applied	1	
35166	Active controller	2	
35167	Selected reference source	0	
35168	Amplified torque factor	0	
35191	Modbus ID of drive	1	
35192	Timeout on modbus bus	1500	
35193	Index of modbus baud rate table	4	
35194	Modbus parity	0	
35195	Selected display function	0	
35196	Backlight mode	0	

12.2 Default parameters for asynchronous motor

Parameter	Description	Default value	User-programmed value
23	Logic level of individual digital outputs	0	
57	Maximum position error value for generating warning	0	
100	Proportional speed gain	0	
101	Additional speed gain	0	
106	Proportional current gain	0	
107	Additional current gain	0	
109	Peak RMS motor current (mA)	1000	
110	Peak RMS drive current (mA)	15000	
111	Nominal RMS motor current (mA)	200	
112	Nominal RMS drive current (mA)	4200	

159	Maximum position error value for generating error	0	
203	Maximum drive temperature (°C)	85	
32594	Maximum speed value for generating error	100	
32771	Maximum time that current limit can be exceeded (mS)	2000	
32827	Enabling of external braking resistance	0	
32828	External braking resistance (ohms)	200	
32831	Power rating of external braking resistance (W)	1500	
32904	Encoder direction	1	
32905	Type of position sensor 0 = not installed 1 = incremental 2 = resolver	0	
32908	Minimum boost voltage	0	
32909	Nominal boost voltage	230	
32910	Minimum freq. (Hz)	0	
32911	Nominal freq. (Hz)	50	
32914	Encoder pulses	512	
32918	DC brake time (ms)	500	
32944	Type of motor control 1 = V/f, asynchronous vector 2 = Synchronous	1	
32953	Polar pairs	1	
32955	Motor direction imposed by wiring U, V, W	0	
32956	Hall sensor direction imposed by wiring	0	
32957	Phase angle	11100	
32959	Minimum speed	0	
32960	Maximum speed	6000	
32961	Direction of rotation	0	
32963	Maximum speed deviation value for generating warning, 0=disabled	0	
32964	Maximum speed deviation value for generating error, 0=disabled	0	
32965	Transducer position tuning completed	0	
32966	Activation of holding brake	0	
32967	Operating mode of holding brake	2	
32968	Delay on release of holding brake	0	
32969	RPM for release of holding brake	0	
32971	Logic level of holding brake output	0	
32972	PWM freq. (Hz)	0	
32973	DC braking voltage (V)	30	

32974	Slip for maximum torque (RPM)	300	
32978	RPM for locking of holding brake	0	
32979	Current for release of holding brake	0	
35100	Type of motor temperature sensor 0 = not installed 1 = NTC 2 = NC switch 3 = PTC	0	
35101	Maximum motor temperature (°C)	140	
35102	Logic level of digital inputs	0	
35105	Analogue output source	0	
35106	Analogue end-of-scale output	1000	
35107	Acceleration time	2000	
35108	Deceleration time	2000	
35109	Jog speed	100	
35111	Maximum reference speed	4000	
35114	Time of acc. and dec. ramps in jog mode	20	
35121	Index of selected synchronous motor	0	
35136	Active analogue input	0	
35137	Offset on 0-10 Volt input (mV)	1000	
35138	Offset on 4-20 mA input (uA)	4000	
35139	Maximum reference speed with analogue reference speed	2000	
35140	Minimum reference speed with analogue reference speed	10	
35141	Maximum reference torque (current or RPM) supplied with analogue reference torque	200	
35142	Minimum reference torque (current or RPM) supplied with analogue reference torque	10	
35143	Disabling of local enabling inputs with modbus control	0	
35144	Current window for current threshold	50	
35145	Wait time in current window (ms)	100	
35146	Speed window for speed threshold	50	
35147	Wait time in speed window (ms)	100	
35157	Programmed reference value	0	
35158	Function associated with digital output 1	1	
35163	Quick stop time	20	
35164	Index of selected asynchronous motor	0	
35165	Type of motor control applied	1	
35166	Active controller	2	
35167	Selected reference source	0	

35168	Amplified torque factor	0	
35191	Modbus ID of drive	1	
35192	Timeout on modbus bus	1500	
35193	Index of modbus baud rate table	4	
35194	Modbus parity	0	
35195	Selected display function	0	
35196	Backlight mode	0	