EtherCAT and CANopen

for TIM Integrated Motor and ZED Servo Drive

User Manual

ORIGINAL DOCUMENT
Manual Revision 1.6

Revision History

Manual Rev.	Date	Notes
Rev.1.6	17 Feb. 2026	Added trademark logos. Updated object F981; added sub-indexes 4-15
Rev.1.5	21 Dec. 2025	Added objects 2114h, 2133h.
Rev.1.4	28 May 2025	Added and modified several objects.
Rev.1.3	17 Feb. 2025	Modified headings; manual now serves as documentation for both TIM integrated motor and ZED servo drive. Moved content from Fault Word (object 2032h) and Error codes (object 603Fh) to *Warnings and Faults* in the product user manuals
Rev.1.2	14 Jan. 2025	Updated for Object Library: 21_9502_1_5a. Added objects 2038h, 2039h, 2040h.
Rev.1.1	17 April 2024	Added product photo on cover Added EtherCAT vendor-ID
Rev. 1.0	22 Feb. 2024	Preliminary release

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CANopen Vendor-ID

Vendor-ID **0513** has been registered to STXI Motion Ltd.
(specified in object 1018h sub-index 01).

EtherCAT Vendor-ID

Vendor-ID **00x00000D2B** has been registered to STXI Motion Ltd.

Contents

1 Introduction

1.1 About This Manual

This manual describes the implementation of CiA 402 and CiA 301 CANopen and CANopen over EtherCAT (CoE) protocols in the TIM integrated servo motor and ZED servo drive. This manual is not meant to replace the CANopen specifications, or to reproduce them.

This manual is intended for skilled personnel who have been trained to work with the equipment described.

1.2 Manual Format – Object Dictionary

The objects are presented and described in the following formats:

Object Index	Object index
Sub-index	**Object sub-index**
Definition	**Object short name.**
Name (GUI)	Object code name used in software interface
Description	Description of the object or object sub-index
Data Type	Boolean Integer8 | Integer16 | Integer32 Unsigned8 | Unsigned16 | Unsigned32 Real32 | Visible_String
Access	Read/Write Read and write access Read Read only Constant Read only access, value is constant
Default Value	The object's default value.
Lower Limit	The object's minimum value.
Upper Limit	The object's maximum value.
Unit	When the object value implies units of measure, these units are specified.
Category	Manufacturer/developer description
Sub-Category	Manufacturer/developer description

2 Communication Objects

1001h – Error Register

Object Index	1001h
Sub-index	**0**
Definition	**CiA 301 0x1001 Error Register**
Name (GUI)	CiA3010x1001
Description	This object has 8 bits, each for a certain error type. When an error occurs, the corresponding bit is set. Bit Meaning 0 = Generic error 1 = Current 2 = Voltage 3 = Temperature 4 = Communication error (overrun, error state) 5 = Device profile specific 6 = Reserved 7 = Manufacturer specific
Data Type	Unsigned 8
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Mandatory
Function	Not applicable

1003h – Predefined Error Field

Object Index	1003h
Sub-index	**0**
Definition	**Predefined Error Field**
Name (GUI)	CiA3010x1003S0
Description	This object holds errors that occurred in the device and were signaled via the Emergency object. It thus provides an error history. Writing 00h to sub-index 00h deletes the entire error history. Values other than 00h are not allowed.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Mandatory
Function	Not applicable
Object Index	1003h
Sub-index	**1**
Definition	**Error History Entry 1**
Name (GUI)	CiA3010x1003S1
Description	Error history entry 1
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Mandatory
Function	Not applicable

Sub-index	**2**
Definition	**Error History Entry 2**
Name (GUI)	CiA3010x1003S2
Description	Error history entry 2
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**3**
Definition	**Error History Entry 3**
Name (GUI)	CiA3010x1003S3
Description	Error history entry 3
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**4**
Definition	**Error History Entry 4**
Name (GUI)	CiA3010x1003S4
Description	Error history entry 4
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**5**
Definition	**Error History Entry 5**
Name (GUI)	CiA3010x1003S5
Description	Error history entry 5
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**6**
Definition	**Error History Entry 6**
Name (GUI)	CiA3010x1003S6
Description	Error history entry 6
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**7**
Definition	**Error History Entry 7**
Name (GUI)	CiA3010x1003S7
Description	Error history entry 7
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**8**
Definition	**Error History Entry 8**
Name (GUI)	CiA3010x1003S8
Description	Error history entry 8
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**9**
Definition	**Error History Entry 9**
Name (GUI)	CiA3010x1003S9
Description	Error history entry 9
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**10**
Definition	**Error History Entry 10**
Name (GUI)	CiA3010x1003S10
Description	Error history entry 10
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**11**
Definition	**Error History Entry 11**
Name (GUI)	CiA3010x1003S11
Description	Error history entry 11
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**12**
Definition	**Error History Entry 12**
Name (GUI)	CiA3010x1003S12
Description	Error history entry 12
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**13**
Definition	**Error History Entry 13**
Name (GUI)	CiA3010x1003S13
Description	Error history entry 13
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**14**
Definition	**Error History Entry 14**
Name (GUI)	CiA3010x1003S14
Description	Error history entry 14
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**15**
Definition	**Error History Entry 15**
Name (GUI)	CiA3010x1003S15
Description	Error history entry 15
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**16**
Definition	**Error History Entry 16**
Name (GUI)	CiA3010x1003S16
Description	Error history entry 16
Data Type	Unsigned32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

1010h – Store Parameters

Object Index	1010h
Sub-index	**0**
Definition	**Store Parameters**
Name (GUI)	CiA3010x1010S0
Description	This object controls the saving of parameters in non-volatile memory. In read access the device provides information about its saving capabilities. Sub-index 01h refers to all parameters that are stored on the device.
Data Type	Unsigned 32
Access	Read
Default Value	Profile-specific or manufacturer-specific
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**1**
Definition	**Save All Parameters**
Name (GUI)	CiA3010x1010S1
Description	Saves all parameters.
Data Type	s32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

1011h – Restore Default Parameters

Object Index	1011h
Sub-index	**0**
Definition	**Highest sub-index supported**
Name (GUI)	CiA3010x1011S0
Description	This object restores the default values of parameters according to the communication profile, device profile, and application profile. Sub-index 01h restores all parameters that may be restored.
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**1**
Definition	**Restore Parameters**
Name (GUI)	CiA3010x1011S1
Description	Restores all default parameters.
Data Type	s32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

3 Manufacturer Objects

2000h – Control Level 3 Basic Parameters

Object Index	2000h
Sub-index	**0**
Definition	**Control Level 3 Basic Parameters**
Name (GUI)	L3BasicParams
Description	The number of entries that define the basic parameters used in Control Level 3. Control levels indicate the user's capabilities: Level 1=Simple. Level 2=Advanced. Level 3=Expert.
Data Type	s16
Access	Read
Default Value	6.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**1**
Definition	**Control Level 3 Position Proportional Gain**
Name (GUI)	L3kp
Description	The proportional gain for the linear position controller in Control Level 3.
Data Type	f32
Access	Read/Write
Default Value	4.50000e+02
Lower Limit	1.00000e-03
Upper Limit	1.00000e+04
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**2**
Definition	**Control Level 3 Velocity Proportional Gain**
Name (GUI)	L3kv
Description	The proportional gain for the velocity controller in Control Level 3. For best tuning, set to a low value, such as 0.1. Increase the value until acoustical noise occurs. Then decrease by 10%
Data Type	f32
Access	Read/Write
Default Value	2.50000e-01
Lower Limit	1.00000e-03
Upper Limit	1.00000e+03
Unit	ampere/rps
Category	Control
Function	Basic Controller
Sub-index	**3**
Definition	**Control Level 3 Velocity Integral Gain**
Name (GUI)	L3ki
Description	The integral gain for the velocity controller in Control Level 3. KVI compensates for the steady state error. A higher value will cause overshoot and oscillations
Data Type	f32
Access	Read/Write
Default Value	6.00000e+01
Lower Limit	0.0
Upper Limit	1.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**4**
Definition	**Control Level 3 Speed Feedforward**
Name (GUI)	L3Vff
Description	The velocity feedforward of the position control loop in Control Level 3.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	-2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller
Sub-index	**5**
Definition	**Control Level 3 Acceleration Feedforward**
Name (GUI)	L3Aff
Description	The acceleration feedforward of the position control loop in Control Level 3.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	-2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller

Sub-index	**6**
Definition	**Control Level 3 Current Loop Acceleration Feedforward**
Name (GUI)	l3AFFC
Description	The acceleration feedforward sent directly to the current controller in Control Level 3.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	-1.00000e+03
Upper Limit	1.00000e+03
Unit	mA/rps/sec
Category	Control
Function	Basic Controller

2001h – Current Controller Command

Object Index	2001h
Sub-index	**0**
Definition	**Current Controller Command**
Name (GUI)	ICmd
Description	The current command. It is generated either directly (EtherCAT/CANopen, serial or analog reference command) or as output of the position or velocity controller.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	-5.00000e+02
Upper Limit	5.00000e+02
Unit	ampere
Category	Control
Function	Command

2002h – Trajectory Velocity Command

Object Index	2002h
Sub-index	**0**
Definition	**Trajectory Velocity Command**
Name (GUI)	VCmd
Description	The velocity command. It is generated either directly (serial or analog), or as the output of the position controller.
Data Type	f32
Access	Read
Default Value	0.0
Lower Limit	-2.50000e+02
Upper Limit	2.50000e+02
Unit	rps
Category	Control
Function	Trajectory

2003h – Trajectory Position Command

Object Index	2003h
Sub-index	**0**
Definition	**Trajectory Position Command**
Name (GUI)	PCmd
Description	The position command value. It is generated either directly (EtherCAT/CANopen or serial.??....??
Data Type	s64
Access	Read
Default Value	0.0
Lower Limit	-9.22337e+18
Upper Limit	9.22337e+18
Unit	feedback count
Category	Control
Function	Trajectory

2004h – Trajectory Acceleration Command

Object Index	2004h
Sub-index	**0**
Definition	**Trajectory Acceleration Command**
Name (GUI)	ACmd
Description	The acceleration value of the motor.
Data Type	f32
Access	Read
Default Value	1.60000e+01
Lower Limit	0.0
Upper Limit	1.00000e+06
Unit	rps/second
Category	Control
Function	Trajectory

2005h – Actual Velocity

Object Index	2005h
Sub-index	**0**
Definition	**Actual Velocity**
Name (GUI)	VAct
Description	The velocity value measured by the motor feedback device.
Data Type	f32
Access	Read
Default Value	0.0
Lower Limit	-2.50000e+02
Upper Limit	2.50000e+02
Unit	rps
Category	Control
Function	Actual Data

2006h – Current Controller Limit

Object Index	2006h
Sub-index	**0**
Definition	**Current Controller Limit**
Name (GUI)	ILim
Description	The application current limit. Allows the user to limit the drive's peak current.
Data Type	f32
Access	Read/Write
Default Value	1.11999e+01
Lower Limit	-5.00000e+02
Upper Limit	5.00000e+02
Unit	ampere
Category	Control
Function	Controller Limits

2007h – Current Feed Forward (Internal)

2008h – Actual Position

Object Index	2008h
Sub-index	**0**
Definition	**Actual Position**
Name (GUI)	Pfb
Description	The position value of the motor feedback device used by the drive’s internal position controller. It includes any offsets and error corrections that may have been added.
Data Type	s64
Access	Read/Write
Default Value	0.0
Lower Limit	-9.22337e+18
Upper Limit	9.22337e+18
Unit	feedback count
Category	Control
Function	Actual Data

2009h – Velocity Error

Object Index	2009h
Sub-index	**0**
Definition	**Velocity Error**
Name (GUI)	Ve
Description	The velocity error of the velocity loop. It is calculated as the difference between Trajectory Velocity Command (2002h) and Actual Velocity (2005h).
Data Type	f32
Access	Read
Default Value	0.0
Lower Limit	-2.50000e+02
Upper Limit	2.50000e+02
Unit	rps
Category	Control
Function	Actual Data

200Ah – Position Error

Object Index	200Ah
Sub-index	**0**
Definition	**Position Error**
Name (GUI)	Pe
Description	The value of the position error. It is calculated as the difference between Trajectory Position Command (2003h) and Actual Position (2008h).
Data Type	s64
Access	Read
Default Value	0.0
Lower Limit	-9.22337e+18
Upper Limit	9.22337e+18
Unit	feedback count
Category	Control
Function	Actual Data

200Bh – Velocity Controller Command (Internal)

200Ch – Movement Commands Parameters

Object Index	200Ch
Sub-index	**0**
Definition	**Movement Commands Parameters**
Name (GUI)	MoveCmds
Description	Number of entries that define the parameters for movement commands. The commands are applicable in position and velocity operation modes.
Data Type	s16
Access	Read
Default Value	5.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	rps/second
Category	Control
Function	Trajectory
Sub-index	**1**
Definition	**Profile Trajectory Acceleration**
Name (GUI)	MoveCmdAcc
Description	The acceleration value for position and velocity commands.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+06
Lower Limit	0.0
Upper Limit	1.00000e+06
Unit	rps/second
Category	Control
Function	Trajectory

Sub-index	**2**
Definition	**Profile Trajectory Deceleration**
Name (GUI)	MoveCmdDec
Description	The deceleration value for position and velocity commands.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+06
Lower Limit	0.0
Upper Limit	1.00000e+06
Unit	rps/second
Category	Control
Function	Trajectory
Sub-index	**3**
Definition	**Profile Trajectory Speed**
Name (GUI)	MoveCmdSpeed
Description	The speed command value in position operation mode.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+01
Lower Limit	0.0
Upper Limit	2.50000e+02
Unit	rps
Category	Control
Function	Trajectory
Sub-index	**4**
Definition	**Profile Trajectory Move Command**
Name (GUI)	MoveCmdDist
Description	The command to execute an incremental position movement according to the acceleration settings that are in effect.
Data Type	s64
Access	Read/Write
Default Value	0.0
Lower Limit	-9.22337e+18
Upper Limit	9.22337e+18
Unit	feedback count
Category	Control
Function	Trajectory

Sub-index	**5**
Definition	**Profile Trajectory Stopped Status**
Name (GUI)	MoveCmdStopped
Description	Indicates whether the Trajectory Position Command (2003h) generator is idle.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Trajectory
Sub-index	**6**
Definition	**Profile Trajectory Incremental Move Command**
Name (GUI)	MoveCmdDistRev
Description	The command to execute an incremental position movement (scaled to revolutions) according to the acceleration settings that are in effect.
Data Type	f32
Access	Write
Default Value	0.0
Lower Limit	-1.00000e+03
Upper Limit	1.00000e+03
Unit	rev
Category	Control
Function	Trajectory

Sub-index	**7**
Definition	**Profile Trajectory Moving Average Depth**
Name (GUI)	MoveCmdMADepth
Description	This command sets the moving average depth; that is, the number of samples being averaged. When enabled, all commands that go through the PTP generator will pass through the moving average (MA) filter. PCMD , VCMD and ACMD will be skewed and delayed per the MA filter depth. For example, setting MA depth to 256 (since drive sample rate is 62.5 µs) will be skewed by 256*62.5 µs = 16 ms.
Data Type	s16
Access	Read/Write
Default Value	1 (=No averaging)
Lower Limit	1
Upper Limit	1024
Unit	x 62.5us
Category	Control
Function	Trajectory

200Dh – Control Level 3 Filter Parameters

Object Index	200Dh
Sub-index	**0**
Definition	**Control Level 3 Filter Parameters**
Name (GUI)	L3Filters
Description	The number of entries that define the filters parameters used in Control Level 3. Control levels indicate the user's capabilities: Level 1=Simple. Level 2=Advanced. Level 3=Expert.
Data Type	s16
Access	Read
Default Value	2.60000e+01
Lower Limit	0.0
Upper Limit	3.00000e+01
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**1**
Definition	**Filter 1 Type**
Name (GUI)	L3Filt1Type
Description	Sets Filter 1 type. 0=None. 1=First order. 2=Complex. 3=Notch.
Data Type	s32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller
Sub-index	**2**
Definition	**Filter 1 Pole**
Name (GUI)	L3Filt1Pole
Description	Filter 1: First order frequency value (FILT1TYPE=1)
Data Type	f32
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**3**
Definition	**Filter 1 Complex Pole**
Name (GUI)	L3Filt1ComplexPoleF
Description	Filter 1: Complex pole frequency value (FILT1TYPE=2)
Data Type	f32
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**4**
Definition	**Filter 1 Complex Damping**
Name (GUI)	L3Filt1ComplexPoleXi
Description	Filter 1: Complex pole damping value (FILT1TYPE=2)
Data Type	f32
Access	Read/Write
Default Value	7.06999e-01
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller
Sub-index	**5**
Definition	**Filter 1 Notch Bandwidth**
Name (GUI)	L3Filt1NotchBw
Description	Filter 1: Notch filter bandwidth value (FILT1TYPE=3)
Data Type	f32
Access	Read/Write
Default Value	2.00000e+02
Lower Limit	1.00000e+01
Upper Limit	1.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**6**
Definition	**Filter 1 Notch Center**
Name (GUI)	L3Filt1NotchCenter
Description	Filter 1: Notch filter center value (FILT1TYPE=3)
Data Type	f32
Access	Read/Write
Default Value	1.50000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**7**
Definition	**Filter 1 Notch Phase**
Name (GUI)	L3Filt1NotchPhase
Description	Filter 1: Notch filter phase value (FILT1TYPE=3)
Data Type	f32
Access	Read/Write
Default Value	5.00000e+01
Lower Limit	1.00000e+01
Upper Limit	9.00000e+01
Unit	degree
Category	Control
Function	Basic Controller
Sub-index	**8**
Definition	**Filter 2 Type**
Name (GUI)	L3Filt2Type
Description	Sets Filter 2 type. 0=None. 1=First order. 2=Complex. 3=Notch.
Data Type	s32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller
Sub-index	**9**
Definition	**Filter 2 Pole**
Name (GUI)	L3Filt2Pole
Description	Filter 2: First order frequency value (FILT2TYPE=1)
Data Type	f32
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**10**
Definition	**Filter 2 Complex Pole**
Name (GUI)	L3Filt2ComplexPoleF
Description	Filter 2: Complex pole frequency value (FILT2TYPE=2)
Data Type	f32
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**11**
Definition	**Filter 2 Complex Damping**
Name (GUI)	L3Filt2ComplexPoleXi
Description	Filter 2: Complex pole damping value (FILT2TYPE=2)
Data Type	f32
Access	Read/Write
Default Value	7.06999e-01
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller
Sub-index	**12**
Definition	**Filter 2 Notch Bandwidth**
Name (GUI)	L3Filt2NotchBw
Description	Filter 2: Notch filter bandwidth value (FILT2TYPE=3)
Data Type	f32
Access	Read/Write
Default Value	2.00000e+02
Lower Limit	1.00000e+01
Upper Limit	1.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**13**
Definition	**Filter 2 Notch Center**
Name (GUI)	L3Filt2NotchCenter
Description	Filter 2: Notch filter center value (FILT2TYPE=3)
Data Type	f32
Access	Read/Write
Default Value	1.50000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**14**
Definition	**Filter 2 Notch Phase**
Name (GUI)	L3Filt2NotchPhase
Description	Filter 2: Notch filter phase value (FILT2TYPE=3)
Data Type	f32
Access	Read/Write
Default Value	5.00000e+01
Lower Limit	1.00000e+01
Upper Limit	9.00000e+01
Unit	degree
Category	Control
Function	Basic Controller
Sub-index	**15**
Definition	**Pre-Filter Type**
Name (GUI)	L3FiltPreType
Description	Sets the Pre-Filter type. 0=None. 1=First order. 2=Complex. 3=Notch.
Data Type	s32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	3.00000e+00
Unit	Not applicable
Category	Control
Function	Internal

Sub-index	**16**
Definition	**Pre-Filter Pole**
Name (GUI)	L3FiltPrePole
Description	Pre-Filter: First order frequency value (FILTPRETYPE=1)
Data Type	f32
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Internal
Sub-index	**17**
Definition	**Pre-Filter Complex Pole**
Name (GUI)	L3FiltPreComplexPoleF
Description	Pre-Filter: Complex pole frequency value (FILTPRETYPE=2)
Data Type	f32
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Internal
Sub-index	**18**
Definition	**Pre-Filter Complex Damping**
Name (GUI)	L3FiltPreComplexPoleXi
Description	Pre-Filter: Complex pole damping value (FILTPRETYPE=2)
Data Type	f32
Access	Read/Write
Default Value	7.06999e-01
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Internal

Sub-index	**19**
Definition	**Pre-Filter Notch Bandwidth**
Name (GUI)	L3FiltPreNotchBw
Description	Pre-Filter: Notch filter bandwidth value (FILTPRETYPE=3)
Data Type	f32
Access	Read/Write
Default Value	2.00000e+02
Lower Limit	1.00000e+01
Upper Limit	1.00000e+03
Unit	Hz
Category	Control
Function	Internal
Sub-index	**20**
Definition	**Pre-Filter Notch Center**
Name (GUI)	L3FiltPreNotchCenter
Description	Pre-Filter: Notch filter center value (FILTPRETYPE=3)
Data Type	f32
Access	Read/Write
Default Value	1.50000e+03
Lower Limit	1.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Internal
Sub-index	**21**
Definition	**Pre-Filter Notch Phase**
Name (GUI)	L3FiltPreNotchPhase
Description	Pre-Filter: Notch filter phase value (FILTPRETYPE=3)
Data Type	f32
Access	Read/Write
Default Value	5.00000e+01
Lower Limit	1.00000e+01
Upper Limit	9.00000e+01
Unit	degree
Category	Control
Function	Internal

Sub-index	**22**
Definition	**PI Filter Frequency**
Name (GUI)	L3FiltPIF
Description	Sets the frequency value for the PI filter.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+01
Upper Limit	1.00000e+03
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**23**
Definition	**PI Filter Attenuation**
Name (GUI)	L3FiltPIGain
Description	Sets the gain value for the PI filter.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	-2.00000e+01
Upper Limit	0.0
Unit	dB
Category	Control
Function	Basic Controller
Sub-index	**24**
Definition	**Actual Velocity Filter**
Name (GUI)	L3VelFilt
Description	Sets the type of filter that is used to extract a velocity signal from the position feedback. 0=No filter. 1=First order filter
Data Type	f32
Access	Read/Write
Default Value	1.20000e+03
Lower Limit	5.00000e+01
Upper Limit	1.50000e+03
Unit	Hz
Category	Control
Function	Internal

Sub-index	**25**
Definition	**Variable Gain**
Name (GUI)	L3vg
Description	Variable Gain allows changes in gain for different speeds and frequencies mostly in position mode. The default value is received from the calibration process.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Control
Function	Internal
Sub-index	**26**
Definition	**Variable Gain Filter**
Name (GUI)	L3VgFilt
Description	Variable Gain Frequency Filter allows changes in gain for different speeds and frequencies mostly in position mode. The default value is received from the calibration process.
Data Type	f32
Access	Read/Write
Default Value	2.00000e+02
Lower Limit	5.00000e+01
Upper Limit	1.00000e+03
Unit	Hz
Category	Control
Function	Internal

200Eh – Motor Parameters

Object Index	200Eh
Sub-index	**0**
Definition	**Motor Parameters**
Name (GUI)	MotorParams
Description	Number of entries used to define the motor parameters. The settings are taken and/or calculated from the motor datasheet.
Data Type	s16
Access	Read
Default Value	9.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Hz
Category	Datasheet Values
Function	Not applicable
Sub-index	**1**
Definition	**Motor Torque Constant**
Name (GUI)	MotorKt
Description	The torque constant of the motor. This value is used for current loop controller design and standard pole-placement velocity controller design.
Data Type	f32
Access	Read/Write
Default Value	1.12000e-01
Lower Limit	1.00000e-03
Upper Limit	1.00000e+01
Unit	Nm/ampere
Category	Datasheet Values
Function	Not applicable

Sub-index	**2**
Definition	**Motor Inertia**
Name (GUI)	MotorJ
Description	The rotor inertia of the motor.
Data Type	f32
Access	Read/Write
Default Value	2.55000e-06
Lower Limit	1.00000e-06
Upper Limit	1.00000e+00
Unit	kg*m^2
Category	Datasheet Values
Function	Not applicable
Sub-index	**3**
Definition	**Motor Rated Speed**
Name (GUI)	MotorSpeed
Description	The motor rated/maximum speed.
Data Type	f32
Access	Read/Write
Default Value	5.00000e+01
Lower Limit	0.0
Upper Limit	2.50000e+02
Unit	rps
Category	Datasheet Values
Function	Not applicable
Sub-index	**4**
Definition	**Motor Inductance**
Name (GUI)	MotorInductance
Description	The motor's minimum line-to-line inductance. This value is used for current loop controller design and as an input to the vector control algorithms.
Data Type	f32
Access	Read/Write
Default Value	1.55000e-03
Lower Limit	1.00000e-06
Upper Limit	1.00000e+00
Unit	henrey
Category	Datasheet Values
Function	Not applicable

Sub-index	**5**
Definition	**Motor Resistance**
Name (GUI)	MotorResistance
Description	The motor resistance.
Data Type	f32
Access	Read/Write
Default Value	1.20000e+00
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Ohm
Category	Datasheet Values
Function	Not applicable
Sub-index	**6**
Definition	**Motor Continuous Current**
Name (GUI)	MotorIRated
Description	The rated continuous current of the drive.
Data Type	f32
Access	Read/Write
Default Value	4.52500e+00
Lower Limit	0.0
Upper Limit	5.00000e+02
Unit	ampere
Category	Datasheet Values
Function	Not applicable
Sub-index	**7**
Definition	**Motor Peak Current**
Name (GUI)	MotorIPeak
Description	The rated peak current of the motor.
Data Type	f32
Access	Read/Write
Default Value	1.13130e+01
Lower Limit	0.0
Upper Limit	5.00000e+02
Unit	ampere
Category	Datasheet Values
Function	Not applicable

Sub-index	**8**
Definition	**Motor Poles**
Name (GUI)	MotorPoles
Description	The number of motor poles. This value is used for commutation control and represents the number of individual magnetic poles of the motor. For pole pairs the value is divided by 2.
Data Type	s16
Access	Read/Write
Default Value	8.00000e+00
Lower Limit	2.00000e+00
Upper Limit	3.00000e+01
Unit	Not applicable
Category	Datasheet Values
Function	Not applicable
Sub-index	**9**
Definition	**Motor feedback phase offset**
Name (GUI)	MotorPhaseOffset
Description	Sets the offset used in the feedback phase of the motor. This offset compensates for the difference between the initial feedback angle and the motor electical angle.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	6.28318e+00
Unit	rad
Category	Datasheet Values
Function	Not applicable

200Fh – Current Controller Parameters

Object Index	200Fh
Sub-index	0
Definition	Current Controller Parameters
Name (GUI)	CurrectController
Description	Number of entries that define the parameters for the current controller.
Data Type	s16
Access	Read
Default Value	1.80000e+01
Lower Limit	0.0
Upper Limit	2.00000e+01
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**1**
Definition	**Current Controller P Gain**
Name (GUI)	CCKp
Description	The current controller proportional (KP) gain.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+01
Lower Limit	1.00000e-01
Upper Limit	1.00000e+01
Unit	volt/ampere
Category	Control
Function	PI Current Controller

Sub-index	**2**
Definition	**Current Controller I Gain**
Name (GUI)	CCKi
Description	The current controller integrator (KI) gain.
Data Type	f32
Access	Read/Write
Default Value	3.00000e+02
Lower Limit	0.0
Upper Limit	1.00000e+03
Unit	Hz
Category	Control
Function	PI Current Controller
Sub-index	**3**
Definition	**Current Controller DQ Compensation**
Name (GUI)	CCKMBComp
Description	The current controller DQ axis compensation (DQ transformation).
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Control
Function	Current Controller
Sub-index	**4**
Definition	**Current Controller BEMF Gain**
Name (GUI)	CCKBemf
Description	The feedforward BEMF compensation ratio for the current control.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Control
Function	Current Controller

Sub-index	**8**
Definition	**D Axis Voltage**
Name (GUI)	CCVd
Description	The D output voltage of the current controller (DQ transformation).
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	-1.00000e+03
Upper Limit	1.00000e+03
Unit	volt
Category	Control
Function	Current Controller
Sub-index	**9**
Definition	**Q Axis Voltage**
Name (GUI)	CCVq
Description	The Q output voltage of the current controller (DQ transformation)
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	-1.00000e+03
Upper Limit	1.00000e+03
Unit	volt
Category	Control
Function	Current Controller
Sub-index	**10**
Definition	**D Axis Current**
Name (GUI)	CCId
Description	In vector control, the value perpendicular to CCIQ (DQ transformation).
Data Type	f32
Access	Read
Default Value	0.0
Lower Limit	-1.00000e+03
Upper Limit	1.00000e+03
Unit	ampere
Category	Control
Function	Current Controller

Sub-index	**11**
Definition	**Current Controller Mode**
Name (GUI)	CCMode
Description	Sets the current controller mode. 0=open loop. 1=PI. 2=MD (module based).
Data Type	s16
Access	Read/Write
Default Value	2.00000e+00
Lower Limit	0.0
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Control
Function	Current Controller
Sub-index	**12**
Definition	**Current Sensors Mode**
Name (GUI)	CCSenseMode
Description	Defines whether the current sensor used by the drive is simulated or real.
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Current Controller

2010h – Feedback Alignment Process Parameters

Object Index	2010h
Sub-index	0
Definition	Feedback Alignment Process Parameters
Name (GUI)	FBAlign
Description	Number of entries that define the parameters for the feedback alignment process that is used to find/verify motor phase alignment.
Data Type	s16
Access	Read
Default Value	4.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**1**
Definition	**Feedback Alignment Current**
Name (GUI)	FBAlignCurrent
Description	Sets the current used in the feedback alignment process.
Data Type	f32
Access	Read/Write
Default Value	4.00000e-01
Lower Limit	0.0
Upper Limit	5.00000e+02
Unit	Not applicable
Category	Feedback
Function	Not applicable

Sub-index	**2**
Definition	**Feedback Alignment Mode**
Name (GUI)	FBAlignMode
Description	Sets the feedback alignment mode. 1=Activated.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Feedback
Function	Not applicable
Sub-index	**3**
Definition	**Feedback Alignment Status**
Name (GUI)	FBAlignStatus
Description	Returns the status of the feedback alignment process. 0=Idle. 1=Setup. 2=Ready. 3=Active. 4=Process canceled. 5=Phase Calculation. 6=Done.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Feedback
Function	Not applicable

Sub-index	**4**
Definition	**Feedback Alignment Phase**
Name (GUI)	FBAlignPhase
Description	Returns the phase (in radians) that resulted from the feedback alignment process.
Data Type	f32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	rad
Category	Feedback
Function	Not applicable

2011h – Control Level 1 Basic Parameters

Object Index	2011h
Sub-index	**0**
Definition	**Control Level 1 Basic Parameters**
Name (GUI)	L1BasicParams
Description	The number of entries that define the basic parameters used in Control Level 1. Level 1 is a simplified form of the drive control loops. Control levels indicate the user's capabilities: Level 1=Simple. Level 2=Advanced. Level 3=Expert.
Data Type	s16
Access	Read
Default Value	5.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**1**
Definition	**Control Level 1 Gain**
Name (GUI)	L1Gain
Description	Sets the gain for the Control Level 1. This value acts as a global gain for the drive. It indirectly affects both velocity and position loops.
Data Type	s16
Access	Read/Write
Default Value	1.00000e+01
Lower Limit	0.0
Upper Limit	3.60000e+01
Unit	Not applicable
Category	Control
Function	Advanced Controller
Sub-index	**2**
Definition	**Control Level 1 LMJR**
Name (GUI)	L1Lmjr
Description	Sets the LMJR value used in Control Level 1 velocity and position loops. This value can be received from the calibration process.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Control
Function	Advanced Controller

Sub-index	**3**
Definition	**Control Level 1 Speed Feedforward**
Name (GUI)	L1Vff
Description	The velocity feedforward of the position control loop in Control Level 1.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	-2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Control
Function	Advanced Controller
Sub-index	**4**
Definition	**Control Level 1 Acceleration Feedforward**
Name (GUI)	L1Aff
Description	The acceleration feedforward of the position control loop in Control Level 3.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	-2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Control
Function	Advanced Controller

Sub-index	**5**
Definition	**Control Level 1 Variable Gain**
Name (GUI)	L1Vg
Description	Variable Gain allows changes in gain for different speeds and frequencies mostly in position mode. The default value is received from the calibration process.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Control
Function	Internal

2012h – Control Level 2 Basic Parameters

Object Index	2012h
Sub-index	**0**
Definition	**Control Level 2 Basic Parameters**
Name (GUI)	L2BasicParams
Description	The number of entries that define the basic parameters used in Control Level 2. Level 2 contains a simplified form of the drive velocity control loop. It also contains the same position control loop as Control Level 3. Control levels indicate the user's capabilities: Level 1=Simple. Level 2=Advanced. Level 3=Expert.
Data Type	s16
Access	Read
Default Value	1.30000e+01
Lower Limit	0.0
Upper Limit	2.00000e+01
Unit	Hz
Category	Control
Function	Basic Controller

Sub-index	**1**
Definition	**Control Level 2 Gain**
Name (GUI)	L2Gain
Description	Sets the gain for Control Level 1.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e-01
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Control
Function	Advanced Controller
Sub-index	**2**
Definition	**Control Level 2 Bandwidth**
Name (GUI)	L2Bw
Description	Sets the bandwidth for Control Level 2
Data Type	f32
Access	Read/Write
Default Value	3.00000e+01
Lower Limit	1.00000e+00
Upper Limit	5.00000e+02
Unit	Hz
Category	Control
Function	Advanced Controller
Sub-index	**3**
Definition	**Control Level 2 LMJR**
Name (GUI)	L2Lmjr
Description	Sets the LMJR value used in Control Level 2 velocity and position loops. This value can be received from the calibration process.
Data Type	f32
Access	Read/Write
Default Value	2.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Control
Function	Advanced Controller

Sub-index	**5**
Definition	**Control Level 2 Filter**
Name (GUI)	L2Filter
Description	Sets the value of the filter (between 0–100) used in Control Level 2 velocity and position loops.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+02
Lower Limit	1.50000e+01
Upper Limit	1.00000e+02
Unit	%
Category	Control
Function	Advanced Controller
Sub-index	**6**
Definition	**Control Level 2 Notch**
Name (GUI)	L2Notch
Description	Sets the value of the Notch filter used in Control Level 2 velocity and position loops.
Data Type	f32
Access	Read/Write
Default Value	1.50000e+03
Lower Limit	1.50000e+02
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Advanced Controller

Sub-index	**7**
Definition	**Control Level 2 Postion Gain**
Name (GUI)	L2Kp
Description	Sets the proportional gain for the Control Level 2 velocity and position loops.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+01
Lower Limit	0.0
Upper Limit	1.00000e+04
Unit	Hz
Category	Control
Function	Advanced Controller
Sub-index	**8**
Name (GUI)	**L2Vff**
Definition	Control Level 2 Velocity Feedforward
Description	The velocity feedforward of the position control loop in Control Level 2.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	-2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Control
Function	Advanced Controller

Sub-index	**9**
Definition	**Control Level 2 Acceleration Feedforward**
Name (GUI)	L2Aff
Description	The acceleration feedforward of the position control loop in Control Level 2.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	-2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Control
Function	Advanced Controller
Sub-index	**10**
Definition	**Control Level 2 Velocity Filter**
Name (GUI)	L2VelFilt
Description	Sets the type of filter that is used to extract a velocity signal from the position feedback. 0=No filter. 1=First order filter. Used in Control Level 2 velocity and position loops.
Data Type	f32
Access	Read/Write
Default Value	6.00000e+02
Lower Limit	0.0
Upper Limit	1.00000e+03
Unit	Hz
Category	Control
Function	Advanced Controller

Sub-index	**11**
Definition	**Control Level 2 Variable Gain**
Name (GUI)	L2Vg
Description	Variable Gain allows changes in gain for different speeds and frequencies mostly in position mode. The default value is received from the calibration process.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Control
Function	Internal
Sub-index	**12**
Definition	**Control Level 2 Variable Gain Filter**
Name (GUI)	L2VgFilt
Description	Variable Gain Frequency Filter allows changes in gain for different speeds and frequencies mostly in position mode. The default value is received from the calibration process.
Data Type	f32
Access	Read/Write
Default Value	2.00000e+02
Lower Limit	5.00000e+01
Upper Limit	2.00000e+03
Unit	Hz
Category	Control
Function	Internal

2013h – Drive Operation Mode

Object Index	2013h
Sub-index	**0**
Definition	**Drive Operation Mode**
Name (GUI)	OperationMode
Description	The drive operation mode when using serial communication. -4=Torque mode. -2=Velocity mode. -1=Position mode. The drive operation mode when using CANopen communication. 1=Profile Position mode. 3=Profile Velocity mode. 8=Cyclic Sync Position mode.
Data Type	s16
Access	Read/Write
Default Value	-4.00000e+00
Lower Limit	-1.00000e+01
Upper Limit	8.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller

2014h – Control Level Controller Gain Set

Object Index	2014h
Sub-index	**0**
Definition	**Control Level Controller Gain Set**
Name (GUI)	ControlLevel
Description	Sets the Control Level used for position and velocity loops. The levels are defined according to the user's level of expertise: 1=Level 1/Simple. 2=Level 2/Advanced. 3=Level 3/Expert.
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	3.00000e+00
Unit	Not applicable
Category	Control
Function	Not applicable

2015h – Controller Bus Voltage

Object Index	2015h
Sub-index	**0**
Definition	**Controller Bus Voltage**
Name (GUI)	Vbus
Description	The drive bus voltage. This value is used in the current controller design.
Data Type	f32
Access	Read/Write
Default Value	4.00000e+01
Lower Limit	1.00000e+01
Upper Limit	6.00000e+02
Unit	volt
Category	Datasheet Values
Function	Not applicable

2016h – Electrical Commutation Angle

Object Index	2016h
Sub-index	**0**
Definition	**Electrical Commutation Angle**
Name (GUI)	CommutationElect
Description	The electrical commutation angle of the motor.
Data Type	f32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	6.28320e+00
Unit	rad
Category	Feedback
Function	Not applicable

2017h – Forced Commutation Frequency

Object Index	2017h
Sub-index	**0**
Definition	**Forced Commutation Frequency**
Name (GUI)	ForcedCommFreq
Description	INTERNAL
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+03
Unit	Hz
Category	Feedback
Function	Not applicable

2018h – Primary Feedback Type

Object Index	2018h
Sub-index	**0**
Definition	**Primary Feedback Type**
Name (GUI)	PrimaryFeedback
Description	Defines the type of device used as the primary feedback. 0=None. 1=Simulation. 2=Encoder. 3=Tamagawa 17-bit. 4=MT6835 21-bit. 6=Broadcom 18-bit
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	6.00000e+00
Unit	Not applicable
Category	Feedback
Function	Not applicable

2019h – Feedback Counts Per Motor Revolution

Object Index	2019h
Sub-index	**0**
Definition	**Feedback Counts Per Motor Revolution**
Name (GUI)	CountsPerRev
Description	The number of feedback counts per one revolution of the motor.
Data Type	s32
Access	Read
Default Value	2.62144e+05
Lower Limit	2.56000e+02
Upper Limit	1.00000e+07
Unit	counts/rev
Category	Feedback
Function	Not applicable

201Ah – Real Time Period

Object Index	201Ah
Sub-index	**0**
Definition	**Real Time Period**
Name (GUI)	Ts
Description	Period of the real-time cycle in seconds
Data Type	f32
Access	Read
Default Value	6.25000e-05
Lower Limit	1.00000e-06
Upper Limit	1.00000e+00
Unit	second
Category	User Interface
Function	Not applicable

201Bh – Phase A Current (Internal)

201Ch – Phase C Current (Internal)

201Dh – Phase U Current Offset (Internal)

201Eh – Phase V Current Offset (Internal)

201Bh – Phase W Current Offset (Internal)

2020h – Drive Current Parameters

Object Index	2020h
Sub-index	**0**
Definition	**Drive Current**
Name (GUI)	DriveI
Description	The number of entries that define the drive current parameters used in Control Level 1.
Data Type	s16
Access	Read
Default Value	2.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Hz
Category	Control
Function	Basic Controller
Sub-index	**1**
Definition	**Drive Continuous Current**
Name (GUI)	DriveIRated
Description	The rated continuous current for the drive.
Data Type	f32
Access	Read/Write
Default Value	1.00010e+03
Lower Limit	1.00000e-01
Upper Limit	1.00000e+04
Unit	ampere
Category	Datasheet Values
Function	Not applicable

Sub-index	**2**
Definition	**Drive Peak Current**
Name (GUI)	DriveIPeak
Description	The rated peak current of the drive.
Data Type	f32
Access	Read/Write
Default Value	1.00010e+03
Lower Limit	1.00000e-01
Upper Limit	1.00000e+04
Unit	ampere
Category	Datasheet Values
Function	Not applicable

2021h – Temperature Parameters

Object Index	2021h
Sub-index	**0**
Definition	**Temperature Parameters**
Name (GUI)	Temperature
Description	The number of entries that define the temperature parameters.
Data Type	s16
Access	Read
Default Value	6.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	degree C
Category	Control
Function	Actual Data

Sub-index	**1**
Definition	**Drive Temperature**
Name (GUI)	DriveTemp
Description	Returns the current temperature of the drive.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.27000e+02
Unit	degree C
Category	Control
Function	Actual Data
Sub-index	**2**
Definition	**Drive Over-Temperature Threshold**
Name (GUI)	DriveTempThreshold
Description	The threshold value for drive over-temperature.
Data Type	s16
Access	Read/Write
Default Value	1.15000e+02
Lower Limit	0.0
Upper Limit	1.15000e+02
Unit	degree C
Category	Control
Function	Not applicable
Sub-index	**3**
Definition	**Heat Sink Temperature**
Name (GUI)	HeatSinkTemp
Description	Returns the current temperature of the heat sink.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.27000e+02
Unit	degree C
Category	Control
Function	Actual Data

Sub-index	**4**
Definition	**Heat Sink Over-Temperature Threshold**
Name (GUI)	HeatsinkTempThreshold
Description	The threshold value for heat sink over-temperature.
Data Type	s16
Access	Read/Write
Default Value	9.00000e+01
Lower Limit	0.0
Upper Limit	9.00000e+01
Unit	degree C
Category	Control
Function	Not applicable
Sub-index	**5**
Definition	**Motor Temperature**
Name (GUI)	MotorTemp
Description	Returns the current temperature of the motor.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.27000e+02
Unit	degree C
Category	Control
Function	Actual Data
Sub-index	**6**
Definition	**Motor Over-Temperature Threshold**
Name (GUI)	MotorTempThreshold
Description	The threshold value for motor over-temperature.
Data Type	s16
Access	Read/Write
Default Value	1.20000e+02
Lower Limit	0.0
Upper Limit	1.20000e+02
Unit	degree C
Category	Control
Function	Not applicable

Sub-index	7
Definition	**Motor Temperatur Sensor**
Name (GUI)	MotorTempSensor
Description	Indicates whether the motor has a temperature sensor, and the type of sensor.
Data Type	s16
Access	Read/Write
Default Value	1.20000e+02
Lower Limit	0.0
Upper Limit	1.20000e+02
Unit	degree C
Category	Control
Function	Not applicable

2022h – Overload Parameters

Object Index	2022h
Sub-index	**0**
Definition	**Overload Parameters**
Name (GUI)	Overload
Description	The number of entries that define the Overload parameters.
Data Type	s16
Access	Read
Default Value	4.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	degree C
Category	Control
Function	Actual Data

Sub-index	**1**
Definition	**Overload Mode**
Name (GUI)	OverloadMode
Description	Overload mode
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Controller Limits
Sub-index	**3**
Definition	**Motor Overload Time**
Name (GUI)	OverloadMotorTime
Description	The maximum time allowed for the motor to have a current overload. Protects the motor from damage and overheating due to excessive current.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e-03
Upper Limit	1.00000e+02
Unit	second
Category	Control
Function	Internal

Sub-index	**5**
Definition	**Drive Overload Current**
Name (GUI)	DriveOverLoadI
Description	The maximum current allowed for the drive overload. Protects the drive from damage and overheating due to excessive current.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e-03
Upper Limit	1.00000e+02
Unit	second
Category	Control
Function	Internal
Sub-index	**6**
Definition	**Motor Overload Current**
Name (GUI)	MotorOverloadI
Description	The maximum curent allowed for the motor overload. Protects the motor from damage and overheating due to excessive current.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e-03
Upper Limit	1.00000e+02
Unit	second
Category	Control
Function	Internal

2023h – Over-Speed Threshold

Object Index	2023h
Sub-index	**0**
Definition	**Over-Speed Threshold**
Name (GUI)	Overspeed
Description	The over-speed threshold value for motor. An over-speed fault is generated when the actual motor velocity exceeds this threshold.
Data Type	f32
Access	Read/Write
Default Value	6.00000e+01
Lower Limit	1.00000e+00
Upper Limit	1.20000e+02
Unit	rps
Category	Control
Function	Controller Limits

2024h – Under-Voltage Threshold

Object Index	2024h
Sub-index	**0**
Definition	**Under-Voltage Threshold**
Name (GUI)	UnderVoltageThreshold
Description	The voltage level at which an under-voltage condition is detected.
Data Type	s16
Access	Read
Default Value	2.00000e+01
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	volt
Category	Control
Function	Not applicable

2025h – Position Error Limit Command

Object Index	2025h
Sub-index	**0**
Definition	**Position Error Limit Command**
Name (GUI)	PeMax
Description	The maximum allowed position error value.
Data Type	s64
Access	Read/Write
Default Value	1.07374e+09
Lower Limit	0.0
Upper Limit	9.22337e+18
Unit	feedback count
Category	Control
Function	Trajectory

2026h – In Position Error Limit

Object Index	2026h
Sub-index	**0**
Definition	**In Position Error Limit**
Name (GUI)	InPosWindow
Description	Defines the position error limits for the In Position state.
Data Type	s64
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	9.22337e+18
Unit	feedback count
Category	Control
Function	Controller Limits

2027h – Position Target Reached Error Limit

Object Index	2027h
Sub-index	**0**
Definition	**Position Target Reached Error Limit**
Name (GUI)	PeTargetReached
Description	Indicates the actual position and target position are within the position error limit.
Data Type	s64
Access	Read/Write
Default Value	1.19304e+07
Lower Limit	0.0
Upper Limit	9.22337e+18
Unit	feedback count
Category	Control
Function	Controller Limits

2028h – Profile Trajectory Quick Stop Deceleration

Object Index	2028h
Sub-index	**0**
Definition	**Profile Trajectory Quick Stop Deceleration**
Name (GUI)	QuickStopDec
Description	The deceleration value used in the quick stop trajectory.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+01
Lower Limit	0.0
Upper Limit	1.00000e+06
Unit	rps/second
Category	Internal
Function	Trajectory

2029h – Velocity Target Reached Error Limit

Object Index	2029h
Sub-index	**0**
Definition	**Velocity Target Reached Error Limit**
Name (GUI)	VelocityTargetWindow
Description	Indicates the actual velocity and target velocity are within the velocity window limit.
Data Type	f32
Access	Read/Write
Default Value	5.00000e-01
Lower Limit	-2.50000e+02
Upper Limit	2.50000e+02
Unit	feedback count
Category	Control
Function	Not applicable

202Ah – Over-Voltage Threshold (Internal)

202Bh – Save Parameters

Object Index	202Bh
Sub-index	**0**
Definition	**Save Parameters**
Name (GUI)	SaveParams
Description	Save parameters values to the flash memory Indicates parameters values saved to flash memory. ??
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller

202Ch – Load Parameters

Object Index	202Ch
Sub-index	**0**
Definition	**Load Parameters**
Name (GUI)	LoadParams
Description	Loads parameters values from the flash memory; need to save parameters before loading.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	-2.00000e+03
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller

202Dh – Load Defaults

Object Index	202Dh
Sub-index	**0**
Definition	**Load Defaults**
Name (GUI)	LoadDefaults
Description	Loads the defaults values to all parameters.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	-2.00000e+03
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Basic Controller

2030h – Incremental Encoder Parameters

Object Index	2030h
Sub-index	**0**
Definition	**Incremental Encoder Parameters**
Name (GUI)	IncEncoder
Description	The number of entries that define the parameters for an incremental encoder.
Data Type	s16
Access	Read
Default Value	6.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	degree C
Category	Control
Function	Actual Data
Sub-index	**1**
Definition	**Incremental Encoder Type**
Name (GUI)	IncEncoderType
Description	Sets the type of incremental encoder.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Feedback
Function	Not applicable

Sub-index	**2**
Definition	**Incremental Encoder Index Search**
Name (GUI)	IncEncoderIndexSearch
Description	Starts the search for the incremental encoder index. When found, the drive captures the location. 1=Search on. 0=Abort.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Feedback
Function	Not applicable
Sub-index	**3**
Definition	**Incremental Encoder Index Preset**
Name (GUI)	IncEncoderIndexPreSet
Description	The commutation value at the index position.
Data Type	f32
Access	Read/Write
Default Value	1.20000e+02
Lower Limit	0.0
Upper Limit	3.59000e+02
Unit	rad
Category	Feedback
Function	Not applicable
Sub-index	**4**
Definition	**Incremental Encoder Index Preset Enable**
Name (GUI)	IncEncoderIndexPreSetEn
Description	Enable/disable for the update commutation according to INCENCODERINDEXPRESET when in index is identify
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Feedback
Function	Not applicable

Sub-index	**5**
Definition	**Incremental Encoder Counts Per Motor Revolution**
Name (GUI)	IncEncoderCountsPerRev
Description	The number of incremental encoder feedback counts per one revolution of the motor.
Data Type	s32
Access	Read/Write
Default Value	2.62144e+05
Lower Limit	2.56000e+02
Upper Limit	1.00000e+07
Unit	counts/rev
Category	Feedback
Function	Not applicable

2031h – Phase Advanced Parameters

Object Index	2031h
Sub-index	**0**
Definition	**Phase Advanced Parameters**
Name (GUI)	PhaseAdvSpeed
Description	The number of entries that define the Phase Advanced parameters.
Data Type	s16
Access	Read
Default Value	6.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	degree C
Category	Control
Function	Internal

Sub-index	**1**
Definition	**Phase Advanced Speed 1**
Name (GUI)	PhaseAdvSpeed1
Description	Phase Advanced Speed 1.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.50000e+02
Unit	rps
Category	Control
Function	Internal
Sub-index	**2**
Definition	**Phase Advanced Phase 1**
Name (GUI)	PhaseAdvPhase1
Description	Phase Advanced Phase 1.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.04719e+00
Unit	rad
Category	Control
Function	Internal
Sub-index	**3**
Definition	**Phase Advanced Speed 2**
Name (GUI)	PhaseAdvSpeed2
Description	Phase Advanced Speed 2.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.50000e+02
Unit	rps
Category	Control
Function	Internal

Sub-index	**4**
Definition	**Phase Advanced Phase 2**
Name (GUI)	PhaseAdvPhase2
Description	Phase Advanced Phase 2.
Data Type	f32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.04719e+00
Unit	rad
Category	Control
Function	Internal
Sub-index	**5**
Definition	**Phase Advanced Actual**
Name (GUI)	PhaseAdvAct
Description	Phase Advanced Actual
Data Type	f32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+07
Unit	rad
Category	Control
Function	Internal

2032h – Fault Word

Object Index	2032h
Sub-index	**0**
Definition	**Fault Word**
Name (GUI)	FaultWord
Description	Bitwise fault word that show each fault in the drive by unique bit. For more information about faults, refer to the section *Warnings and Faults* in the product user manual.
Data Type	s16
Access	Read
Default Value	FaultWord
Lower Limit	4.00000e+00
Upper Limit	4.00000e+00
Unit	Not applicable
Category	User Interface
Function	Not applicable
Sub-index	**1**
Definition	**Fault Word Sub1**
Name (GUI)	FaultWordSub1
Description	Bitwise fault word that show each fault in the drive by unique bit – first 32 bits (0–31).
Data Type	s32
Access	Read
Default Value	FaultWordSub1
Lower Limit	0.0
Upper Limit	4.29496e+09
Unit	Not applicable
Category	User Interface
Function	Not applicable

Sub-index	**2**
Definition	**Fault Word Sub2**
Name (GUI)	FaultWordSub2
Description	Bitwise fault word that show each fault in the drive by unique bit – second 32 bits (32–63).
Data Type	s32
Access	Read
Default Value	FaultWordSub2
Lower Limit	0.0
Upper Limit	4.29496e+09
Unit	Not applicable
Category	User Interface
Function	Not applicable
Sub-index	**3**
Definition	**Fault Word Sub3**
Name (GUI)	FaultWordSub3
Description	Bitwise fault word that show each fault in the drive by unique bit – third 32 bits (64–95).
Data Type	s32
Access	Read
Default Value	FaultWordSub3
Lower Limit	0.0
Upper Limit	4.29496e+09
Unit	Not applicable
Category	User Interface
Function	Not applicable

Sub-index	**4**
Definition	**Fault Word Sub4**
Name (GUI)	FaultWordSub4
Description	Bitwise fault word that show each fault in the drive by unique bit – fourth 32 bits (96-127)
Data Type	s32
Access	Read
Default Value	FaultWordSub4
Lower Limit	0.0
Upper Limit	4.29496e+09
Unit	Not applicable
Category	User Interface
Function	Not applicable

2033h – Serial number

Object Index	2033h
Sub-index	**0**
Definition	**Serial number**
Name (GUI)	SerialNumber
Description	Serial number
Data Type	str
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	User Interface
Function	Not applicable

2034h – Operation Mode Switch Speed Threshold

Object Index	2034h
Sub-index	**0**
Definition	**Operation Mode Switch Speed Threshold**
Name (GUI)	OperationModeSpeed
Description	Operation mode switch while drive is active Speed Limit.
Data Type	f32
Access	Read/Write
Default Value	5.00000e-01
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	rps
Category	Control
Function	Basic Controller

2035h – Digital Input and Output

Object Index	2035h
Sub-index	**0**
Definition	**Digital Input and Output subindex 0**
Name (GUI)	DigitalInputsAndOutputs
Description	Number of entries that define the Digital Inputs and Outputs
Data Type	s16
Access	Read
Default Value	1.20000e+01
Lower Limit	0.0
Upper Limit	1.20000e+01
Unit	Not applicable
Category	IOs
Function	Not applicable

Sub-index	**1**
Definition	**Digital Input 1 Functionality**
Name (GUI)	DigInput1Assign
Description	Assignes the Digital input 1 functionality:1=User,2=Positive limit,3=Negative limit, 4=Home
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	5.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**2**
Definition	**Digital Input 2 Functionality**
Name (GUI)	DigInput2Assign
Description	Assignes the Digital input 2 functionality:1=User,2=Positive limit,3=Negative limit, 4=Home
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	5.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable

Sub-index	**3**
Definition	**Digital Input 3 Functionality**
Name (GUI)	DigInput3Assign
Description	Assignes the Digital input 3 functionality:1=User,2=Positive limit,3=Negative limit, 4=Home
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	5.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**4**
Definition	**Digital Output 1 Functionality**
Name (GUI)	DigOutput1Assign
Description	Assignes the Digital output 1 functionality:0=None,1=User,2=Disable,3=Enable
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	3.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**5**
Definition	**Digital Input 1 Value**
Name (GUI)	DigInput1
Description	Digital input 1 value
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable

Sub-index	**6**
Definition	**Digital Input 2 Value**
Name (GUI)	DigInput2
Description	Digital input 2 value
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**7**
Definition	**Digital Input 3 Value**
Name (GUI)	DigInput3
Description	Digital input 3 value
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**8**
Definition	**Digital Output 1 Value**
Name (GUI)	DigOutput1
Description	Digital output 1 value
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable

Sub-index	**9**
Definition	**Digital Input 1 Polarity**
Name (GUI)	DigInput1Polarity
Description	Digital input 1 polarity
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**10**
Definition	**Digital Input 2 Polarity**
Name (GUI)	DigInput2Polarity
Description	Digital input 2 polarity
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**11**
Definition	**Digital Input 3 Polarity**
Name (GUI)	DigInput3Polarity
Description	Digital input 3 polarity
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable

Sub-index	**12**
Definition	**Digital Output 1 Polarity**
Name (GUI)	DigOutput1Polarity
Description	Digital output 1 polarity
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable

2038h – Analog Input 1

Object Index	2035h
Sub-index	**1**
Definition	Analog Input 1 Value
Name (GUI)	AnalogInput1
Description	The analog input's measured value with the addition of the offset, expressed in millivolts (mV). This value is then filtered through the deadband.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	-2.00000e+04
Upper Limit	2.00000e+04
Unit	mV
Category	IOs
Function	Not applicable

Sub-index	**2**
Definition	Analog Input 1 Offset Value
Name (GUI)	AnalogInput1Offset
Description	Analog input 1 offset value. This offset is added to the measured value.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	-1.00000e+04
Upper Limit	1.00000e+04
Unit	mV
Category	IOs
Function	Not applicable
Sub-index	**3**
Definition	Analog Input 1 Deadband Value
Name (GUI)	AnalogInput1Deadband
Description	Analog input 1 deadband value.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.00000e+04
Unit	mV
Category	IOs
Function	Not applicable
Sub-index	**4**
Definition	Analog Input 1 LPF Cutoff Frequency
Name (GUI)	AnalogInput1Lpf
Description	Analog Input 1 low pass filter cutoff frequency. This value is used to filter out higher-frequency components of the analog input signal.
Data Type	f32
Access	Read/Write
Default Value	5.00000e+03
Lower Limit	1.00000e+01
Upper Limit	5.00000e+03
Unit	Hz
Category	IOs
Function	Not applicable

2039h – ABSEncSign

Object Index	2039h
Sub-index	**0**
Definition	**Absolute Encoder Sign Extension Mode**
Name (GUI)	ABSEncSign
Description	Absolute Encoder Sign Extension Mode.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Feedback
Function	Not applicable

2040h – Motor Brake Hold Current Factor

Object Index	2040h
Sub-index	**0**
Definition	**Motor Brake Hold Current Factor**
Name (GUI)	BrakeHoldCurrentFactor
Description	The brake's hold current as factor of brake peak current. Use this factor to set the current of the brake as a percentage (up to 1) of the brake peak current. Brake holds current = Brake Peak Current * Factor.
Data Type	f32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	3.00000e-01
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Control
Function	Not applicable

2045h – Homing Parameters

Object Index	2045h
Sub-index	**0**
Definition	**Homing Parameters**
Name (GUI)	HomeParams
Description	Number of entries that define the Homing process.
Data Type	s16
Access	Read
Default Value	6.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	NA
Category	Control
Function	
Sub-index	**1**
Definition	**Homing Method**
Name (GUI)	HomeMethod
Description	Selects the Homing method to be used.
Data Type	S8
Access	Read/Write
Default Value	3.70000e+01
Lower Limit	2.00000e+00
Upper Limit	3.70000e+01
Unit	NA
Category	Control
Function	

Sub-index	**2**
Definition	**Homing Status Code**
Name (GUI)	HomeStatus
Description	Returns the homing process status code.
Data Type	S16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	NA
Category	Control
Function	
Sub-index	**3**
Definition	**Homing Speed**
Name (GUI)	HomeSpeed
Description	The velocity to be used while performing the homing process.
Data Type	F32
Access	Read/Write
Default Value	2.50000e+02
Lower Limit	1.00000e+00
Upper Limit	1.00000e-03
Unit	rps
Category	Control
Function	
Sub-index	**4**
Definition	**Homing Acceleration**
Name (GUI)	HomeAcc
Description	The acceleration to be used while performing the homing process.
Data Type	F32
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+01
Upper Limit	1.00000e+06
Unit	rps/sec
Category	Control
Function	

Sub-index	**5**
Definition	**Homing PositionOffset**
Name (GUI)	HomeOffset
Description	The position offset of the homing process, the offset between the machine zero position and the drive zero position.
Data Type	s64
Access	Read/Write
Default Value	0.0
Lower Limit	-9.22337e+18
Upper Limit	+9.22337e+18
Unit	revs
Category	Control
Function	
Sub-index	**6**
Definition	**Homing Current Limit**
Name (GUI)	HomeCurrentLimit
Description	The current limit for home on hard stop, as a percentage of the motor rated current.
Data Type	s16
Access	Read/Write
Default Value	7.50000e+01
Lower Limit	1.00000e+00
Upper Limit	3.00000e+02
Unit	NA
Category	Control
Function	

2046h – StopAndDisParams

Object Index	2046h
Sub-index	**0**
Definition	**Stop and Disable Command Parameters**
Name (GUI)	StopAndDisParams
Description	Number of entries that define the Stop and Disable command process.
Data Type	S16
Access	Read
Default Value	0.0
Lower Limit	1.00000e+01
Upper Limit	8.00000e+00
Unit	NA
Category	Control
Function	
Sub-index	**1**
Definition	**Stop Command**
Name (GUI)	StopAndDis
Description	Start Stop procedure.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	NA
Category	Control
Function	

Sub-index	**2**
Definition	**Stop Mode**
Name (GUI)	StopAndDisMode
Description	Defines when to initiate Stop.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	NA
Category	Control
Function	
Sub-index	**3**
Definition	**StopTime**
Name (GUI)	StopAndDisTime
Description	Time Speed should be below StopSpeed for disable.
Data Type	s16
Access	Read/Write
Default Value	1.00000e-01
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	NA
Category	Control
Function	
Sub-index	**4**
Definition	**StopTimeOut**
Name (GUI)	StopAndDisTimeOut
Description	Max Time from Stop Vcmd=0 to disable.
Data Type	F32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	sec
Category	Control
Function	

Sub-index	**5**
Definition	**StopSpeed**
Name (GUI)	StopAndDisSpeed
Description	if Speed is below StopSpeed for StopTime and Vcmd=0, the drive will be disabled.
Data Type	F32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	2.50000e+02
Unit	rps
Category	Control
Function	
Sub-index	**6**
Definition	**Stop Deceleration**
Name (GUI)	StopAndDisDec
Description	The deceleration used in the stop and disable process.
Data Type	F32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+06
Unit	rps/sec
Category	Control
Function	
Sub-index	**7**
Definition	**StopMode**
Name (GUI)	StopAndDisFaultReactMode
Description	Defines when to initiate Stop.
Data Type	S16
Access	Read/Write
Default Value	2.00000e+00
Lower Limit	-3.27680e+04
Upper Limit	+3.27680e+04
Unit	NA
Category	Control
Function	

Sub-index	8
Definition	**Stop Active Status**
Name (GUI)	StopAndDisStatus
Description	Stop Active Status
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.00000e+00
Unit	NA
Category	Control
Function	

2047h – SWLimtParam

Object Index	2047h
Sub-index	**0**
Definition	**Conf Revision Parameters**
Name (GUI)	SWLimitParam
Description	Number of entries that define the board's revision configuration parameters.
Data Type	S16
Access	Read
Default Value	2.00000e+00
Lower Limit	2.00000e+00
Upper Limit	2.00000e+00
Unit	NA
Category	
Function	

Sub-index	**1**
Definition	**SW Limits mode**
Name (GUI)	SWLimitsMode
Description	SW limits mode.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.00000e+00
Unit	NA
Category	Control
Function	
Sub-index	**2**
Definition	**Pos SW Limits**
Name (GUI)	PosSWLimit
Description	Positive software limit.
Data Type	S64
Access	Read/Write
Default Value	0.0
Lower Limit	-9.22337e+18
Upper Limit	+9.22337e+18
Unit	revs
Category	Control
Function	
Sub-index	**3**
Definition	**Neg SW Limits**
Name (GUI)	NegSWLimit
Description	Negative software limit.
Data Type	S64
Access	Read/Write
Default Value	0.0
Lower Limit	-9.22337e+18
Upper Limit	+9.22337e+18
Unit	revs
Category	Control
Function	

2048h – PfbOffset

Object Index	2048h
Sub-index	**0**
Definition	**Position offset**
Name (GUI)	PfbOffset
Description	Adds an offset to the position value of the motor feedback device used by the position controller (internal drive unit).
Data Type	S64
Access	Read/Write
Default Value	0.0
Lower Limit	-9.22337e+18
Upper Limit	+9.22337e+18
Unit	revs
Category	Control
Function	

2049h – PVTsMode

Object Index	2049h
Sub-index	**0**
Definition	**PVController Ts Mode**
Name (GUI)	PVTsMode
Description	PVController Ts Mode.
Data Type	S16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	2.00000e+00
Unit	NA
Category	Control
Function	

204Ah – OverVoltageTime

Object Index	204Ah
Sub-index	**0**
Definition	**Over voltage time**
Name (GUI)	OverVoltageTime
Description	Generates an over voltage fault if the fault indication persists for this length of time.
Data Type	F32
Access	Read/Write
Default Value	1.00000e-03
Lower Limit	0.0
Upper Limit	5.00000e-03
Unit	sec
Category	Control
Function	

20E0h – Serial Over Fieldbus

Object Index	20E0h
Sub-index	**0**
Definition	**Serial Over Fieldbus subindex 0**
Name (GUI)	SerialOverFbusS0
Description	Serial Over Fieldbus subindex 0.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

Sub-index	**1**
Definition	**Serial Over Fieldbus Data subindex 1**
Name (GUI)	SerialOverFbus
Description	Serial Over Fieldbus Data subindex 1
Data Type	s32
Access	Read/Write
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	Not applicable
Category	Fieldbus
Function	Not applicable
Sub-index	**2**
Definition	**Serial Over Fieldbus En subindex 2**
Name (GUI)	SerialOverFbusEn
Description	Serial Over Fieldbus En subindex 2
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Not applicable
Sub-index	**3**
Definition	**Serial Over Fieldbus En subindex 3**
Name (GUI)	SerialOverFbusStrRes
Description	Serial Over Fieldbus En subindex 3
Data Type	str
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

20F0h – Simulated Plant Parameters

Object Index	20F0h
Sub-index	**0**
Definition	**Simulated Plant Parameters**
Name (GUI)	PlantSim
Description	The number of entries that define the simulated Plant parameters.
Data Type	s16
Access	Read
Default Value	6.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Control
Function	Internal
Sub-index	**1**
Definition	**Simulated Plant Mode**
Name (GUI)	PlantSimMode
Description	Simulated Plant Mode
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Control
Function	Internal

Sub-index	**2**
Definition	**Simulated Plant LMJR**
Name (GUI)	PlantSimLmjr
Description	Simulated Plant LMJR
Data Type	f32
Access	Read/Write
Default Value	4.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Control
Function	Internal
Sub-index	**3**
Definition	**Simulated Plant Inertia**
Name (GUI)	PlantSimMj
Description	Simulated Plant Inertia
Data Type	f32
Access	Read/Write
Default Value	1.00000e-04
Lower Limit	1.00000e-06
Upper Limit	1.00000e+00
Unit	kg*m^2
Category	Control
Function	Internal
Sub-index	**4**
Definition	**Simulated Plant Mkt**
Name (GUI)	PlantSimMkt
Description	Simulated Plant Mkt
Data Type	f32
Access	Read/Write
Default Value	5.00000e-01
Lower Limit	0.0
Upper Limit	1.00000e+03
Unit	Nm/ampere
Category	Control
Function	Internal

Sub-index	**5**
Definition	**Simulated Plant Sample Rate**
Name (GUI)	PlantSimTs
Description	Simulated Plant Sample Rate
Data Type	f32
Access	Read/Write
Default Value	5.00000e-05
Lower Limit	1.00000e-06
Upper Limit	2.00000e-04
Unit	second
Category	Control
Function	Internal
Sub-index	**6**
Definition	**Simulated Plant Friction Coefficient**
Name (GUI)	PlantSimBCoef
Description	Simulated Plant Friction Coefficient
Data Type	f32
Access	Read/Write
Default Value	5.00000e-05
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Nm/rps
Category	Control
Function	Internal

20F1h – DriveReset

Object Index	20F1h
Sub-index	**0**
Definition	**DriveReset**
Name (GUI)	
Description	Resets the drive itself (with or without SMM) writing the value 3 to that object.
Data Type	UNSIGNED16
Access	Read
Default Value	0.00000e+00
Lower Limit	0.0
Upper Limit	4.00000e+00
Unit	Not applicable
Category	Control
Function	Internal

2100h – CAN Node ID

Object Index	2100h
Sub-index	**0**
Definition	**CAN Node ID**
Name (GUI)	CanNodeID
Description	CAN Node ID.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

2103h – CAN Baud Rate

Object Index	2103h
Sub-index	**0**
Definition	**CANBaudRate**
Name (GUI)	CanBaudRate
Description	CAN Baud Rate
Data Type	s16
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.25000e+02
Upper Limit	1.00000e+03
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

210Bh – PLL Information Parameters

Object Index	210Bh
Sub-index	**0**
Definition	**PLL Information**
Name (GUI)	PLLinfoS0
Description	Number of entries that define the configuration and status of phase locked loop (PLL) synchronization.
Data Type	s16
Access	Read
Default Value	1.00000e+01
Lower Limit	0.0
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Fieldbus
Function	Internal

Sub-index	**1**
Definition	**PLL Locked Status**
Name (GUI)	PLLLockedStatusS1
Description	Indicates PLL status: 1=Locked. 2=Not Locked.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Internal
Sub-index	**2**
Definition	**PLL Locked Counter**
Name (GUI)	PLLLockedCounterS2
Description	Returns the number of PLL cycles in which the PLL is locked.
Data Type	s16
Access	Read
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Internal
Sub-index	**3**
Definition	**PLL Sync Event**
Name (GUI)	PLLSyncEventS3
Description	Indicates which synchronization event is used by the PLL.
Data Type	s16
Access	Read
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Internal

Sub-index	**4**
Definition	**PLL MTS Sample Rate**
Name (GUI)	PLLMTSFieldSampleRateS4
Description	Indicates the number of MTS cycles within one fieldbus sync cycle.
Data Type	s16
Access	Read
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Internal
Sub-index	**5**
Definition	**PLL Sync Event Timing Capture**
Name (GUI)	PLLSyncTimeCaptureS5
Description	Returns the time of capture from the sync event.
Data Type	s32
Access	Read
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	Not applicable
Category	Fieldbus
Function	Internal
Sub-index	**6**
Definition	**PLL Measured Time Difference**
Name (GUI)	PLLMeasuredTimeDeltaS6
Description	Returns the measured time difference between the MTS and sync events.
Data Type	s32
Access	Read
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	Not applicable
Category	Fieldbus
Function	Internal

Sub-index	**7**
Definition	**PLL Expected Time Difference**
Name (GUI)	PLLExpectedTimeCaptureS7
Description	Returns the expected time difference between the MTS and sync events.
Data Type	s32
Access	Read
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	Not applicable
Category	Fieldbus
Function	Internal
Sub-index	**8**
Definition	**PLL Locked Window**
Name (GUI)	PLLLockWindowSizeS8
Description	The difference that indicates whether or not the PLL is locked.
Data Type	s32
Access	Read/Write
Default Value	7.81000e+02
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	Not applicable
Category	Fieldbus
Function	Internal
Sub-index	**9**
Definition	**PLL Time Difference Factor**
Name (GUI)	PLLTimeDistanceFactorS9
Description	The expected time difference in the PLL process.
Data Type	f32
Access	Read/Write
Default Value	3.12500e-02
Lower Limit	1.00000e-04
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Internal

Sub-index	**10**
Definition	**PLL Locked Counter Threshold**
Name (GUI)	PLLLockCntrThresholdS10
Description	Time distance factor sets the expected time distance of the PLL process.
Data Type	s16
Access	Read/Write
Default Value	5.00000e+02
Lower Limit	0.0
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Fieldbus
Function	Internal

210Dh – Micro Interpolation Mode

Object Index	210Dh
Sub-index	**0**
Definition	**Micro Interpolation Mode**
Name (GUI)	uIMode
Description	The Micro Interpolation mode: 0=None. 1=Linear. 2=Cubic.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

210Eh – Product FW Version

Object Index	210Eh
Sub-index	**0**
Definition	**Product FW Version**
Name (GUI)	ProductFWVersion
Description	Number of entries that define the product FW version- contains 4 fields: field 1 contains the MSB,field 4 contains the LSB
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	9.99900e+03
Unit	Not applicable
Category	User Interface
Function	Not applicable
Sub-index	**1**
Definition	**Version FW Field 1**
Name (GUI)	ProductFWVersionS1
Description	Returns the product fw version field 1.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	9.99900e+03
Unit	Not applicable
Category	User Interface
Function	Not applicable

Sub-index	**2**
Definition	**Version FW Field 2**
Name (GUI)	ProductFWVersionS2
Description	Returns the product fw version field 2.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	9.99900e+03
Unit	Not applicable
Category	User Interface
Function	Not applicable
Sub-index	**3**
Definition	**Version FW Field 3**
Name (GUI)	ProductFWVersionS3
Description	Returns the product fw version field 3.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	9.99900e+03
Unit	Not applicable
Category	User Interface
Function	Not applicable
Sub-index	**4**
Definition	**Version FW Field 4**
Name (GUI)	ProductFWVersionS4
Description	Returns the product fw version field 4.
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	9.99900e+03
Unit	Not applicable
Category	User Interface
Function	Not applicable

210Fh – Brake Support

Object Index	210Fh
Sub-index	**0**
Definition	**Brake Support**
Name (GUI)	BrakeSupport
Description	Set the brake functionality supported option. set supported=1, not supported=0.
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable

2110h – STO Filter Time

Object Index	2110h
Sub-index	**0**
Definition	**STO filter time**
Name (GUI)	StoFilterTime
Description	The time in which the firmware filter filters drops on the STO signals
Data Type	f32
Access	Read/Write
Default Value	5.00000e+00
Lower Limit	5.00000e-02
Upper Limit	2.00000e+03
Unit	millisecond
Category	IOs
Function	Not applicable

2111h – PhaseSwapVW

Object Index	2111h
Sub-index	**0**
Definition	**Swap phase V and phase W**
Name (GUI)	PhaseSwapVW
Description	Swaps phase V and phase W
Data Type	S16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	NA
Category	
Function	

2112h – ConfRevParams

Object Index	2112h
Sub-index	**0**
Definition	**Conf Revision Parameters**
Name (GUI)	ConfRevParams
Description	Number of entries that define the board's revision configuration parameters.
Data Type	S16
Access	Read
Default Value	2.00000e+00
Lower Limit	2.00000e+00
Upper Limit	2.00000e+00
Unit	NA
Category	
Function	

Sub-index	1
Definition	**Power Conf version**
Name (GUI)	PWRConfRev
Description	Power configuration version
Data Type	S16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.27670e+04
Unit	NA
Category	
Function	
Sub-index	**2**
Definition	**Digital Conf version**
Name (GUI)	DigConfRev
Description	Digital configuration version
Data Type	S16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.27670e+04
Unit	NA
Category	
Function	

2114h – Download Succeeded Flag

Object Index	2114h
Sub-index	**0**
Definition	**Indicates success of a download process (serial or fieldbus)**
Name (GUI)	DownloadSucceededFlag
Description	This object is set to 0 once a firmware download has been initiated (serial or fieldbus). The object is set to 1 after the last data in the file that was downloaded, has been stored on the flash.
Data Type	Unsigned 8
Access	Read
Default Value	Not applicable
Lower Limit	Not applicable
Upper Limit	Not applicable
Unit	Not applicable
Category	UI
Function	Download status

2133h – RGsc25MHzCnt

Object Index	2133h
Sub-index	**0**
Definition	**Free running 25[MHz] counter**
Name (GUI)	RGsc25MHzCnt
Description	This object returns a free running 25 [MHz] counter from the CPU, which means that the counter increments every 40 [ns].
Data Type	Unsigned 32
Access	Read
Default Value	Not applicable
Lower Limit	Not applicable
Upper Limit	Not applicable
Unit	40 [ns]
Category	UI
Function	

2600h – SmmStopDec

Object Index	2600h
Sub-index	**0**
Definition	**Stop Deceleration for Safety Card**
Name (GUI)	SmmStopDec
Description	The deceleration used in stop and disable process when using a safety card to stop.
Data Type	F32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+06
Unit	rps/sec
Category	Control
Function	

2700h – User012

Object Index	2700h
Sub-index	**0**
Definition	**User012**
Name (GUI)	User012S0
Description	
Data Type	s8
Access	Read
Default Value	3.00000e+00
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

Sub-index	**1**
Definition	**User012 Digital inputs object**
Name (GUI)	User012DigInS1
Description	
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**2**
Definition	**User012 Status word object**
Name (GUI)	User012StatusS2
Description	
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**3**
Definition	**User012 Control word object**
Name (GUI)	User012ControlS3
Description	
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.55000e+02
Unit	Not applicable
Category	IOs
Function	Not applicable

Sub-index	**4**
Definition	**User012 Phase U current**
Name (GUI)	User012PhaseUmAS4
Description	
Data Type	s32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.55000e+02
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**5**
Definition	**User012 Phase V current**
Name (GUI)	User012PhaseVmAS5
Description	
Data Type	s32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.55000e+02
Unit	Not applicable
Category	IOs
Function	Not applicable
Sub-index	**6**
Definition	**User012 Phase W current**
Name (GUI)	User012PhaseWmAS6
Description	
Data Type	s32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.55000e+02
Unit	Not applicable
Category	IOs
Function	Not applicable

Sub-index	**7**
Definition	**User012 Drive Temp 0.1 DegC**
Name (GUI)	User012DriveTempS7
Description	
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.55000e+02
Unit	Not applicable
Category	IOs
Function	Not applicable

27FCh – Test LEDs

Object Index	27FCh
Sub-index	**0**
Definition	**Test LEDs**
Name (GUI)	TestLeds
Description	Tests the LEDs on the drive. Briefly switches each LED on and off in sequence.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	User Interface
Function	Internal

27FEh – Dummy Read Only

Object Index	27FEh
Sub-index	**0**
Definition	**Dummy Read Only**
Name (GUI)	DummyRO
Description	INTERNAL
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

27FFh – Dummy Read Write

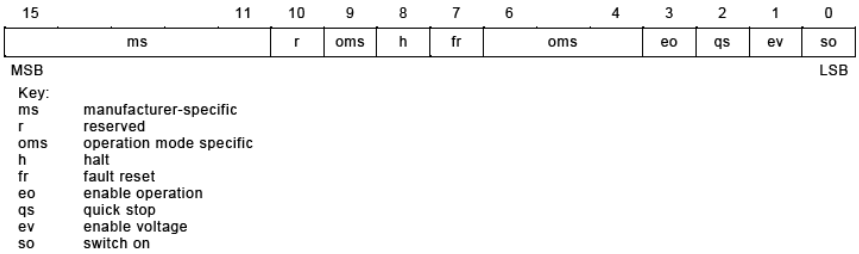
Object Index	27FFh
Sub-index	**0**
Definition	**Dummy Read Write**
Name (GUI)	DummyRead/Write
Description	INTERNAL
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

4 Device Profile (CAN Standard) Objects

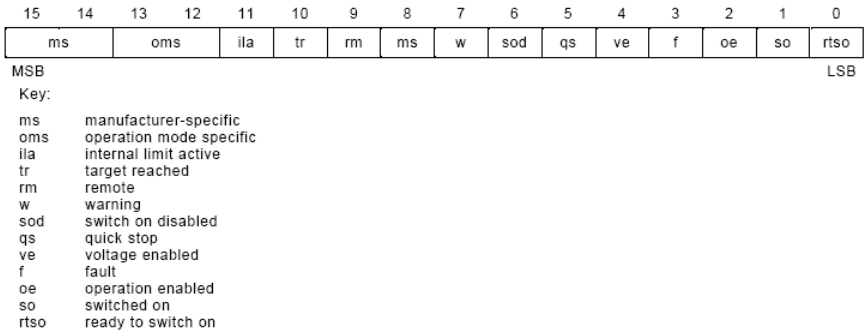
603Fh – Error Code

Object Index	603Fh
Sub-index	**0**
Definition	**Error Code**
Name (GUI)	Fbus0x603F
Description	The error code of the last error that occurred in the drive device. For more information about faults, refer to the section *Warnings and Faults* in the product user manual.
Data Type	Unsigned 16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Optional
Function	Not applicable

6040h – Controlword

Object Index	6040h
Sub-index	**0**
Definition	**Controlword**
Name (GUI)	Fbus0x6040
Description	Sets the operating states and modes of the state machine. 
Data Type	Unsigned 16
Access	Read/Write
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Mandatory
Function	Not applicable

6041h – Statusword

Object Index	6041h
Sub-index	**0**
Definition	**Statusword**
Name (GUI)	Fbus0x6041
Description	Indicates the current state of the FSA, the operation mode and manufacturer-specific entities. 
Data Type	Unsigned 16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Mandatory
Function	Not applicable

605Ah – Quick Stop Option Code

Object Index	605Ah
Sub-index	**0**
Definition	**Quick Stop Option Code**
Name (GUI)	**Fbus0x605A**
Description	The action to be performed when the quick stop function is executed. 0 = Disable drive function 1 = Slow down on slow down ramp and transit into switch on disabled 2 = Slow down on quick stop ramp and transit into switch on disabled 3 = Slow down on current limit and transit into switch on disabled 4 = Slow down on voltage limit and transit into switch on disabled 5 = Slow down on slow down ramp and stay in quick stop active 6 = Slow down on quick stop ramp and stay in quick stop active 7 = Slow down on current limit and stay in quick stop active 8 = Slow down on voltage limit and stay in quick stop active 9 to 32767 = Reserved
Data Type	Integer 16
Access	Read/Write
Default Value	2.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Optional
Function	Not applicable

605Bh – Shutdown Option Code

Object Index	605Bh
Sub-index	**0**
Definition	**Shutdown Option Code**
Name (GUI)	Fbus0x605B
Description	The action to be performed upon a transition from Operation Enabled state to the Ready To Switch On state. 0 = Disable drive function (switch-off the drive power stage) 1 = Slow down with slow down ramp; disable of the drive function -32768 to -1 = Manufacturer-specific +2 to +32767 = Reserved
Data Type	Integer 16
Access	Read/Write
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Optional
Function	Not applicable

605Ch – Disable Operation Option Code

Object Index	605Ch
Sub-index	**0**
Definition	**Fieldbus 0x605C Object**
Name (GUI)	Fbus0x605C
Description	Indicates the action to be performed upon a transition from the Operation Enabled state to the Switched On state. 0 = Disable drive function (switch-off the drive power stage) 1 = Slow down with slow down ramp; disable of the drive function -32768 to -1 = Manufacturer-specific +2 to +32767 = Reserved
Data Type	Integer 16
Access	Read/Write
Default Value	1.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Optional
Function	Not applicable

605Dh – Halt Option Code

Object Index	605Dh
Sub-index	**0**
Definition	**Fieldbus 0x605D Object**
Name (GUI)	Fbus0x605D
Description	Indicates the action to be performed upon an Halt (bit 8 in ControlWord) command.
Data Type	s16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

605Eh – Fault Reaction Option Code

Object Index	605Eh
Sub-index	**0**
Definition	**Fault Reaction Option Code**
Name (GUI)	Fbus0x605E
Description	The action to be performed when a fault (excluding communication faults) causes the drive to switch to 0 = Disable drive function, motor is free to rotate 1 = Slow down on slow down ramp 2 = Slow down on quick stop ramp 3 = Slow down on current limit 4 = Slow down on voltage limit -32768 to -1 = Manufacturer-specific +5 to +32767 = Reserved
Data Type	Integer 16
Access	Read/Write
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Optional
Function	Not applicable

6060h – Modes of Operation

Object Index	6060h
Sub-index	**0**
Definition	**Modes of Operation**
Name (GUI)	Fbus0x6060
Description	The requested operational mode. 0 = No mode change/no mode assigned 1 = Profile position mode 2 = Velocity mode 3 = Profile velocity mode 4 = Torque profile mode 5 = Reserved 6 = Homing mode 7 = Interpolated position mode 8 = Cyclic sync position mode 9 = Cyclic sync velocity mode 10 = Cyclic sync torque mode 11 = Cyclic sync torque mode with commutation angle 12 to 127 = Reserved -128 to -1 = Manufacturer-specific operation modes
Data Type	Integer 8
Access	Read/Write
Default Value	0.0
Lower Limit	-1.00000e+01
Upper Limit	1.00000e+01
Unit	Not applicable
Category	Mandatory if more than one mode of operation is supported
Function	Not applicable

6061h – Modes of Operation Display

Object Index	6061h
Sub-index	**0**
Definition	**Modes of Operation Display**
Name (GUI)	Fbus0x6061
Description	The actual operation mode. See object 6060h.
Data Type	Integer 8
Access	Read
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Not applicable
Category	Mandatory if more than one mode of operation is supported
Function	Not applicable

6062h – Position Demand Value

Object Index	6062h
Sub-index	**0**
Definition	**Position Demand Value**
Name (GUI)	Fbus0x6062
Description	The demanded position value.
Data Type	Integer 32
Access	Read
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	User-defined position units
Category	Optional
Function	Not applicable

6064h – Position Actual Value

Object Index	6064h
Sub-index	**0**
Definition	**Position Actual Value**
Name (GUI)	Fbus0x6064
Description	The actual value of the position measurement device.
Data Type	Integer 32
Access	Read
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	Internal unit
Category	Mandatory if PP, IP or CSP is supported
Function	Not applicable

6065h – Following Error Window

Object Index	6065h
Sub-index	**0**
Definition	**Following Error Window**
Name (GUI)	Fbus0x6065
Description	Maximum allowed position error without producing a fault. This object indicates the configured range of tolerated position values symmetrically to the position demand value. If the position actual value is out of the following error window, a following error occurs. A following error may occur when a drive is blocked, an unreachable profile velocity occurs, or at wrong closed-loop coefficients. If the value of the following error window is FFFF FFFFh, the following control will be switched off.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	User-defined position units
Category	Optional
Function	Not applicable

6066h – Following Error Time Out

Object Index	6066h
Sub-index	**0**
Definition	**Following Error WindowTime Out**
Name (GUI)	Fbus0x6066
Description	Indicates the configured time for a following error condition, after which bit 13 of the status word is set to 1. The reaction of the drive when a following error occurs Manufacturer-specific. The value is given in ms.
Data Type	Unsigned 16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	6.55350e+04
Unit	
Category	Optional
Function	Not applicable

6068h – Position Window Time

Object Index	6068h
Sub-index	**0**
Definition	**Position Window Time**
Name (GUI)	Fbus0x6068
Description	Configured time during which the actual position within the position window.
Data Type	u16
Access	Read/Write
Default Value	1.00000e+03
Lower Limit	1.00000e+00
Upper Limit	6.55350e+04
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

606Bh – Velocity Demand Value

Object Index	606Bh
Sub-index	**0**
Definition	**Velocity Demand Value**
Name (GUI)	Fbus0x606B
Description	The output velocity value of the trajectory generator.
Data Type	Integer 32
Access	Read
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	User-defined velocity units
Category	Optional
Function	Not applicable

606Ch – Velocity Actual Value

Object Index	606Ch
Sub-index	**0**
Definition	**Velocity Actual Value**
Name (GUI)	Fbus0x606C
Description	The actual velocity value derived either from the velocity sensor or the position sensor.
Data Type	Integer 32
Access	Read
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	User-defined velocity units
Category	Mandatory if PV or CSV is supported
Function	Not applicable

606Dh – Velocity Window

Object Index	606Dh
Sub-index	**0**
Definition	**Velocity Window**
Name (GUI)	Fbus0x606D
Description	The configured velocity window.
Data Type	Unsigned 16
Access	Read/Write
Default Value	-1.00000e+00
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	User-defined velocity units
Category	Optional
Function	Not applicable

606Eh – Velocity Window Time

Object Index	606Eh
Sub-index	**0**
Definition	**Velocity Window Time**
Name (GUI)	Fbus0x606E
Description	Indicates the configured velocity window time. The value is given in milliseconds.
Data Type	Unsigned 16
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	0.0
Upper Limit	6.55350e+04
Unit	ms
Category	Optional
Function	Not applicable

6071h – Target Torque

Object Index	6071h
Sub-index	**0**
Definition	**Target Torque**
Name (GUI)	Fbus0x6071
Description	The input value for the torque controller in profile torque mode.
Data Type	Integer 16
Access	Read/Write
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Per thousand of rated torque mNm
Category	Mandatory if TQ or CST is supported
Function	Not applicable

6073h – Maximum Current

Object Index	6073h
Sub-index	**0**
Definition	**Maximum Current**
Name (GUI)	Fbus0x6073
Description	The maximum permissible torque creating current in the motor.
Data Type	Unsigned 16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	3.27670e+04
Unit	Per thousand of rated current mA
Category	Optional
Function	Not applicable

6074h – Torque Demand Value

Object Index	6074h
Sub-index	**0**
Definition	**Torque Demand Value**
Name (GUI)	Fbus0x6074
Description	The output value of torque limit function.
Data Type	Integer 16
Access	Read
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	Per thousand of rated torque mNm
Category	Optional
Function	Not applicable

6075h – Motor Rated Current

Object Index	6075h
Sub-index	**0**
Definition	**Motor Rated Current**
Name (GUI)	Fbus0x6075
Description	The motor rated current as defined in the motor nameplate. Depending on the motor and drive technology, this current is DC, peak or r.m.s. (root-mean-square) current. All relative current data refers to this value.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	mA
Category	Optional
Function	Not applicable

6076h – Motor Rated Torque

Object Index	6076h
Sub-index	**0**
Definition	**Motor Rated Torque**
Name (GUI)	Fbus0x6076
Description	The motor rated torque as defined in the motor nameplate. All relative torque data refers to this value. For linear motors, the object name is not changed, but the motor rated force value is entered as multiples of mN (milliNewton).
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	mNm
Category	Optional
Function	Not applicable

6077h – Torque Actual Value

Object Index	6077h
Sub-index	**0**
Definition	**Torque Actual Value**
Name (GUI)	Fbus0x6077
Description	The actual value of the torque. It corresponds to the instantaneous torque in the motor. The value is given per thousand of rated torque.
Data Type	Integer 16
Access	Read
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	mNm
Category	Mandatory if CST is supported
Function	Not applicable

6078h – Current Actual Value

Object Index	6078h
Sub-index	**0**
Definition	**Current Actual Value**
Name (GUI)	Fbus0x6078
Description	The actual value of the current. It corresponds to the current in the motor. The value is given per thousand of rated current.
Data Type	Integer 16
Access	Read
Default Value	0.0
Lower Limit	-3.27680e+04
Upper Limit	3.27670e+04
Unit	mA
Category	Optional
Function	Not applicable

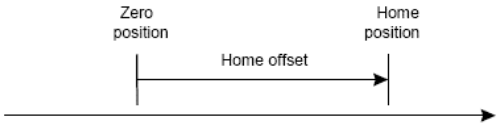
6079h – DC Link Circuit Voltage

Object Index	6079h
Sub-index	**0**
Definition	**DC Link Circuit Voltage**
Name (GUI)	Fbus0x6079
Description	The bus voltage measured by sensors on the power module of the drive device.
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	mV
Category	Optional
Function	Not applicable

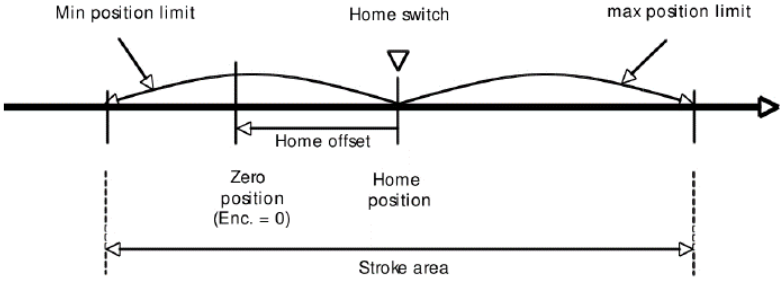
607Ah – Target Position

Object Index	607Ah
Sub-index	**0**
Definition	**Target Position**
Name (GUI)	Fbus0x607A
Description	The commanded position that the drive will move to in position profile mode using the current settings of motion control parameters such as velocity, acceleration, deceleration, motion profile type. The value of this object is interpreted as absolute or relative depending on the abs/rel flag in the controlword. The value is given in user-defined position units and is converted to position increments.
Data Type	Integer 32
Access	Read/Write
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	User-defined position units
Category	Mandatory if PP, PC or CSP is supported
Function	Not applicable

607Ch – Home Offset

Object Index	607Ch
Sub-index	**0**
Definition	**Home Offset**
Name (GUI)	Fbus0x607C
Description	The configured difference between the zero position for the application and the machine home position (found during homing). During homing, the machine home position is found and once the homing is completed, the zero position is offset from the home position by adding the home offset to the home position. The zero position is calculated by following equation: *zero position = home position + home offset* All subsequent absolute moves are taken relative to this new zero position. If this object is not implemented, then the home offset is regarded as zero.  The value of this object is given in user-defined position units. Negative values indicate the opposite direction. The activation of a new value of the object home offset is manufacturer-specific. It is recommended to apply the new value only while the drive is in homing mode.
Data Type	Integer 32
Access	Read/Write
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	User-defined position units
Category	Optional
Function	Not applicable

607Dh – Software Position Limit

Object Index	607Dh
Sub-index	**0**
Definition	**Software Position Limit**
Name (GUI)	Fbus0x607DS0
Description	This object indicates the configured maximum and minimum software position limits. These parameters define the absolute position limits for the position demand value and the position actual value. Every new target position will be checked against these limits.  To disable the software position limits, the minimum position limit (sub-index 01h) and maximum position limit (sub-index 02h) are set to 0. The position limit is given in user-defined position units (the same as target position). Supervision of software position limits requires a defined home position.
Data Type	Integer 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	User-defined position units
Category	Optional
Function	Not applicable

Sub-index	**1**
Definition	**Software Position Limit 1**
Name (GUI)	Fbus0x607DS1
Description	The minimum software position limit.
Data Type	Integer 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	User-defined position units
Category	Optional
Function	Not applicable
Sub-index	**2**
Definition	**Software Position Limit 2**
Name (GUI)	Fbus0x607DS2
Description	The maximum software position limit.
Data Type	Integer 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	User-defined position units
Category	Optional
Function	Not applicable

607Eh – Speed and position polarity

Object Index	607Eh
Sub-index	**0**
Definition	**Speed and position polarity**
Name (GUI)	Fbus0x607E
Description	Change speed and position polarity.
Data Type	s16
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+00
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

607Fh – Max Profile Velocity

Object Index	607Fh
Sub-index	**0**
Definition	**Max Profile Velocity**
Name (GUI)	Fbus0x607F
Description	The maximum velocity allowed in either direction during a profiled motion.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	Same physical units as profile velocity (6081h)
Category	Optional
Function	Not applicable

6080h – Max Motor Speed

Object Index	6080h
Sub-index	**0**
Definition	**Max Motor Speed**
Name (GUI)	Fbus0x6080
Description	The maximum speed allowed for the motor in either direction.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	rotations per minute (rpm) or user-defined velocity units
Category	Optional
Function	Not applicable

6081h – Profile Velocity in Profile Position Mode

Object Index	6081h
Sub-index	**0**
Definition	**Profile Velocity in Profile Position Mode**
Name (GUI)	Fbus0x6081
Description	The configured velocity normally attained at the end of the acceleration ramp during a profiled motion. It is valid for both directions of motion. The velocity units can depend on the user-defined position units (position units per second). The calculation of the user-defined position units is done via the factor group.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	9.00000e+07
Unit	user-defined units
Category	Mandatory if PP is supported
Function	Not applicable

6083h – Profile Acceleration

Object Index	6083h
Sub-index	**0**
Definition	**Profile Acceleration**
Name (GUI)	Fbus0x6083
Description	The configured acceleration value.
Data Type	s32
Access	Read/Write
Default Value	3.60000e+06
Lower Limit	0.0
Upper Limit	7.20000e+09
Unit	user-defined acceleration units
Category	Mandatory if PP or PV is supported
Function	Not applicable

6084h – Profile Deceleration

Object Index	6084h
Sub-index	**0**
Definition	**Profile Deceleration**
Name (GUI)	Fbus0x6084
Description	The configured deceleration value. If not defined, Profile Acceleration value is used.
Data Type	Unsigned 32
Access	Read/Write
Default Value	3.60000e+06
Lower Limit	0.0
Upper Limit	7.20000e+09
Unit	Same physical units as profile acceleration (6083h)
Category	Optional
Function	Not applicable

6085h – Quick Stop Deceleration

Object Index	6085h
Sub-index	**0**
Definition	**Quick Stop Deceleration**
Name (GUI)	Fbus0x6085
Description	The configured deceleration used to stop the motor when the quick stop function is activated and the quick stop code object (605Ah) is set to 2 or 6. The quick stop deceleration is also used if the fault reaction code object (605Eh) is 2 and the halt option code object (605Dh) is 2.
Data Type	Unsigned 32
Access	Read/Write
Default Value	3.60000e+06
Lower Limit	0.0
Upper Limit	7.20000e+09
Unit	Same physical units as profile acceleration (6083h)
Category	Optional
Function	Not applicable

6091h – Gear Ratio

Object Index	6091h
Sub-index	**0**
Definition	**Gear Ratio**
Name (GUI)	Fbus0x6091S0
Description	Number of entries that define the gear ratio. This object indicates the configured number of motor shaft revolutions and the number of driving shaft revolutions. The gear ratio is calculated by the following formula: *Gear ratio = (motor shaft revolutions) / (drive shaft revolutions)* All values are dimensionless.
Data Type	Unsigned 32
Access	Read/Write
Default Value	2.00000e+00
Lower Limit	2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**1**
Definition	**Gear Ratio – Motor Shaft Revolutions**
Name (GUI)	Fbus0x6091S1
Description	Motor shaft revolutions.
Data Type	Unsigned 32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	4.29496e+09
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**2**
Name (GUI)	**Fbus0x6091S2**
Definition	Gear Ratio – Drive Shaft Revolutions
Description	Drive shaft revolutions.
Data Type	Unsigned 32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	4.29496e+09
Unit	Not applicable
Category	Optional
Function	Not applicable

6092h – Feed Constant

Object Index	6092h
Sub-index	**0**
Definition	**Feed Constant**
Name (GUI)	Fbus0x6092S0
Description	Number of entries that define the feed constant.. This object is the configured feed constant is the measurement distance per one revolution of the driving shaft of the gearbox. The feed constant is calculated by the following formula: *Feed constant = (feed) / (drive shaft revolutions)* The feed is given in user-defined position units, and the driving shaft revolutions value is dimensionless
Data Type	s16
Access	Read/Write
Default Value	2.00000e+00
Lower Limit	2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Mandatory
Function	Not applicable
Sub-index	**1**
Definition	**Feed Constant – Feed**
Name (GUI)	Fbus0x6092S1
Description	Feed.
Data Type	Unsigned 32
Access	Read/Write
Default Value	4.09600e+03
Lower Limit	1.00000e+00
Upper Limit	4.29496e+09
Unit	Not applicable
Category	Mandatory
Function	Not applicable

Sub-index	**2**
Definition	**Feed Constant – Drive Shaft Revolutions**
Name (GUI)	Fbus0x6092S2
Description	Drive shaft revolutions.
Data Type	Unsigned 32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e+00
Upper Limit	4.29496e+09
Unit	Not applicable
Category	Mandatory
Function	Not applicable

6098h – Homing Method

Object Index	6098h
Sub-index	**0**
Definition	**Homing Method**
Name (GUI)	HomeMethod
Description	Selects the Homing method to be used 0 = No homing method assigned 1 = Method 1 will be used . . . 37 = Method 37 will be used 38 to 127 Reserved. Refer to the CiA-402 standard for the detailed description of each homing method.
Data Type	Integer 8
Access	Read/Write
Default Value	3.70000e+01
Lower Limit	2.00000e+00
Upper Limit	3.70000e+01
Unit	Not applicable
Category	Control (mandatory if HM is supported)
Function	SubGroupBUG

6099h – Homing Speed

Object Index	6099h
Sub-index	**0**
Definition	**Homing Speed**
Name (GUI)	HomeSpeed
Description	The velocity to be used while performing the homing process.
Data Type	Unsigned 32
Access	Read/Write
Default Value	1.00000e+00
Lower Limit	1.00000e-03
Upper Limit	2.50000e+02
Unit	rps
Category	Control (mandatory if HM is supported)
Function	SubGroupBUG

609Ah – Homing Acceleration

Object Index	609Ah
Sub-index	**0**
Definition	**Homing Acceleration**
Name (GUI)	HomeAcc
Description	The acceleration to be used while performing the homing process.
Data Type	Unsigned 32
Access	Read/Write
Default Value	1.00000e+01
Lower Limit	1.00000e-03
Upper Limit	1.00000e+06
Unit	rps/second
Category	Control (Optional)
Function	SubGroupBUG

60C2h – Interpolation Time Period

Object Index	60C2h
Sub-index	**0**
Definition	**Interpolation Time Period subindex 0.**
Name (GUI)	Fbus0x60C2S0
Description	Number of entries that define the interpolation cycle time. The interpolation time period (sub-index 01h) value is given in 10(interpolation time index) s(econd). The interpolation time index (sub-index 02h) is dimensionless.
Data Type	Integer 32
Access	Read/Write
Default Value	2.00000e+00
Lower Limit	2.00000e+00
Upper Limit	2.00000e+00
Unit	Not applicable
Category	Mandatory
Function	Not applicable
Sub-index	**1**
Definition	**Interpolation Time Period**
Name (GUI)	Fbus0x60C2S1
Description	Interpolation time period.
Data Type	Integer 32
Access	Read/Write
Default Value	2.00000e+01
Lower Limit	0.0
Upper Limit	2.55000e+02
Unit	Not applicable
Category	Mandatory
Function	Not applicable

Sub-index	**2**
Definition	**Interpolation Time Index**
Name (GUI)	Fbus0x60C2S2
Description	Interpolation time index.
Data Type	Integer 32
Access	Read/Write
Default Value	-4.00000e+00
Lower Limit	-1.28000e+02
Upper Limit	6.30000e+01
Unit	Not applicable
Category	Mandatory
Function	Not applicable

60C5h – Maximum Acceleration

Object Index	60C5h
Sub-index	**0**
Definition	**Maximum Acceleration**
Name (GUI)	Fbus0x60C5
Description	The configured maximum acceleration. It is used to limit the acceleration to an acceptable value in order to prevent the motor and the moved mechanics from being destroyed.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	User-defined acceleration physical units
Category	Optional
Function	Not applicable

60C6h – Maximum Deceleration

Object Index	60C6h
Sub-index	**0**
Definition	**Maximum Deceleration**
Name (GUI)	Fbus0x60C6
Description	The configured maximum deceleration. It is used to limit the deceleration to an acceptable value in order to prevent the motor and the moved mechanics from being destroyed.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	Same physical unit as the maximum acceleration (60C5h)
Category	Optional
Function	Not applicable

60E3h – Supported Home Methods

Object Index	60E3h
Sub-index	**0**
Definition	**Supported Home Methods**
Name (GUI)	Fbus0x60E3S0
Description	Provides the supported homing methods of the drive.
Data Type	Integer 8
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**1**
Definition	**Supported Home Method 17**
Name (GUI)	Fbus0x60E3S1
Description	Supported homing method: Negative limit switch
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Mandatory
Function	Not applicable
Sub-index	**2**
Definition	**Supported Home Method 18**
Name (GUI)	Fbus0x60E3S2
Description	Supported homing method: Positive limit switch
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**3**
Definition	**Supported Home Method 19**
Name (GUI)	Fbus0x60E3S3
Description	Supported homing method: Positive referance switch, negative direction
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**4**
Definition	**Supported Home Method 20**
Name (GUI)	Fbus0x60E3S4
Description	Supported homing method: Positive referance switch, positive direction
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**5**
Definition	**Supported Home Method 21**
Name (GUI)	Fbus0x60E3S5
Description	Supported homing method: Negative referance switch, positive direction
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**6**
Definition	**Supported Home Method 22**
Name (GUI)	Fbus0x60E3S6
Description	Supported homing method: Negative referance switch, negative direction
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**7**
Definition	**Supported Home Method 23**
Name (GUI)	Fbus0x60E3S7
Description	Supported homing method: Positive reference switch inactive, negative direction
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**8**
Definition	**Supported Home Method 24**
Name (GUI)	Fbus0x60E3S8
Description	Supported homing method: Negative referance switch active, positive direction
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**9**
Name (GUI)	**Fbus0x60E3S9**
Definition	Supported Home Method 27
Description	Supported homing method: Negative referance switch inactive, positive direction
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**10**
Definition	**Supported Home Method 28**
Name (GUI)	Fbus0x60E3S10
Description	Supported homing method: Positive referance switch active, negative direction
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**11**
Definition	**Supported Home Method 35**
Name (GUI)	Fbus0x60E3S11
Description	Supported homing method: Current position - obsolete
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable
Sub-index	**12**
Definition	**Supported Home Method 37**
Name (GUI)	Fbus0x60E3S12
Description	Supported homing method: Current position
Data Type	s16
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	1.00000e+02
Unit	Not applicable
Category	Optional
Function	Not applicable

60F4h – Following Error Actual Value

Object Index	60F4h
Sub-index	**0**
Definition	**Following Error Actual Value**
Name (GUI)	Fbus0x60F4
Description	The actual value of the following error.
Data Type	Integer 32
Access	Read
Default Value	0.0
Lower Limit	-2.14748e+09
Upper Limit	2.14748e+09
Unit	Not applicable
Category	Optional
Function	Not applicable

60FCh – Position Demand Internal Value

Object Index	60FCh
Sub-index	**0**
Definition	**Position Demand Internal Value**
Name (GUI)	Fbus0x60FC
Description	The output of the trajectory generator in profile position mode.
Data Type	Integer 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

60FDh – Digital Input Register

Object Index	60FDh
Sub-index	**0**
Definition	**Digital Input Register**
Name (GUI)	Fbus0x60FD
Description	The digital inputs register,see the ds402 for more specification
Data Type	u32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	4.29496e+09
Unit	Not applicable
Category	Fieldbus
Function	Not applicable

60FEh – Digital Outputs

Object Index	60FEh
Sub-index	**0**
Definition	**Digital Outputs**
Name (GUI)	Fbus0x60FES0
Description	Number of entries that define the state of the digital outputs.
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	0.0
Unit	Not applicable
Category	Optional
Function	Not applicable

Sub-index	**1**
Definition	**Physical Outputs**
Name (GUI)	Fbus0x60FES1
Description	Physical outputs.
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	4.29496e+09
Unit	Not applicable
Category	Mandatory
Function	Not applicable
Sub-index	**2**
Definition	**Bit Mask**
Name (GUI)	Fbus0x60FES2
Description	Bit mask
Data Type	Unsigned 32
Access	Read/Write
Default Value	0.0
Lower Limit	0.0
Upper Limit	4.29496e+09
Unit	Not applicable
Category	Optional
Function	Not applicable

60FFh – Target Velocity

Object Index	60FFh
Sub-index	**0**
Definition	**Target Velocity**
Name (GUI)	Fbus0x60FF
Description	The target velocity. This value is used as input for the trajectory generator.
Data Type	Integer 32
Access	Read/Write
Default Value	0.0
Lower Limit	-9.00000e+07
Upper Limit	9.00000e+07
Unit	Not applicable
Category	Mandatory if PC or CSV is supported
Function	Not applicable

6502h – Supported Drive Modes

Object Index	6502h
Sub-index	**0**
Definition	**Supported Drive Modes**
Name (GUI)	Fbus0x6502
Description	Supported drive modes. This object is organized bit-wise. The bits have the following bit meaning: 0 = Profile position mode 1 = Velocity mode 2 = Profile velocity mode 3 = Profile torque mode 4 = Reserved 5 = Homing mode 6 = Interpolated position mode 7 = Cyclic synchronous position mode 8 = Cyclic synchronous velocity mode 9 = Cyclic synchronous torque mode 10-15 = Reserved bit 16-31 = Manufacturer-specific The bit values have the following meaning: 0 = Mode is not supported 1 = Mode is supported
Data Type	Unsigned 32
Access	Read
Default Value	0.0
Lower Limit	0.0
Upper Limit	2.14748e+09
Unit	Not applicable
Category	Mandatory
Function	Not applicable

F981h – FSoE Info Data

Object Index	F981h
Sub-index	**0**
Definition	
Name (GUI)	
Description	
Data Type	
Access	
Default Value	
Lower Limit	
Upper Limit	
Unit	
Category	
Function	
Sub-index	**1**
Definition	**Reset Safety Motion Module (SMM)**
Name (GUI)	**SmmReset**
Description	The command **SmmReset** resets the SMM via a reset line signal, sent from the TIM /ZED drive to the SMM. A write access triggers the SMM reset by putting the reset line to low for the duration of the argument for this command. The argument is of type float (REAL32) and can be accessed via EtherCAT object 0xF981:0x01. SmmReset x – Sets the SMM reset line for x[s] to low and thus resets the SMM CPUs. The value of 0 can be between 0…1[s], but only a value higher than 0 triggers the SMM reset. Example for setting the reset line for 0.5[s] to low level: SmmReset 0.5
Data Type	REAL32
Access	Read/Write
Default Value	0x0
Lower Limit	0x0
Upper Limit	0x1
Unit	
Category	
Function	

Sub-index	**2**
Definition	
Name (GUI)	**SmmFsoeAddr**
Description	The FSoE address is being saved on the non-volatile memory of the drive and on the non-volatile memory of the SMM (safe motion module) integrated safety card. The SMM queries the drive during boot-up for the FSoE address, and checks whether that value matches its own FSoE address value. If so, the SMM is allowed to proceed with regular operation; otherwise the SMM remains in safe state.
Data Type	UNSIGNED16
Access	rw
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFF
Unit	
Category	
Function	
Sub-index	**3**
Definition	
Name (GUI)	**SMM FW upload counter**
Description	Increments whenever a SMM firmware upload telegram has been received. A value that increments by 1 indicates that the SMM just reads the parameters of the firmware (e.g. checksum of CPU1 and CPU2 firmware on the drive flash). A larger value that does not increment indicates that a firmware upload of the SMM was performed. A continuously incrementing value indicates an ongoing firmware upgrade of the SMM. The value can be read also via fieldbus using object 0xF981:0x03.
Data Type	Unsigned 32
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	
Category	
Function	

Sub-index	4
Definition	**SMM FW Upload Telegram Counter**
Name (GUI)	**SafetyApplInfo**
Description	Increments whenever a SMM firmware upload telegrams was received, which happens upon a reset of the SMM. The counter increments by 1 upon an regular SMM reset and indicates that the SMM just reads the parameters of the firmware (e.g., checksum of CPU1 & CPU2 firmware on the Drive flash). A continuously incrementing value while **Service SMM status** indicating the value 0x8000 indicates that a firmware upload process is ongoing by the SMM bootloader. A value (over several thousand) that does not increment while **Service SMM status** is unequal 0x8000 indicates that a firmware upload of the SMM was performed and has finished.
Data Type	Unsigned 32
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	

Sub-index	**5**
Definition	**SMM FW Version**
Name (GUI)	**SmmFwVer**
Description	A read access to this sub-index triggers a telegram to the SMM asking for its firmware version of the boot-loader firmware and application firmware of SMM CPU 1 & 2. The sub-index can be accessed from firmware version 21.xxxx.0009.0012. The sub-index responds the SMM firmware version in the following format: **Ver. A.BB/Ver. C.DD/Ver. E.FF/Ver. G.HH** Explanation: A.BB = Boot-Loader version of SMM CPU 1 C.DD = Boot-Loader version of SMM CPU 2 E.FF = Firmware version of SMM CPU 1 G.HH = Firmware version of SMM CPU 2
Data Type	String (88)
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	

Sub-index	**6**
Definition	**SMM Debug Command**
Name (GUI)	**SmmDbg**
Description	This command can be used to exchange/retrieve debug information with/from the SMM. This command exchanges ASCII strings with the SMM. Write any debug command you want to use to this object. The debug command must comply with the following rules: • There must not be any spaces within the string, such as "**MyCommand 1"**, since this would not be accepted by the serial command **SmmDbg** and would result in an error response (see below). • The maximum number of characters must not exceed 88-1[bytes] (since one zero termination byte is also required and added by the firmware to the UART telegram). A write access to thsi sub-index triggers the data exchange with the SMM. The response of the SMM is stored inside 0xF981:0x07 once command 0xF981:0x06 succeeded. Contact the STXI Motion support team for debugging commands you can send to the SMM.
Data Type	String (88)
Access	Read/Write
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	
Sub-index	**7**
Definition	**SMM Debug Response**
Name (GUI)	**SmmDbg**
Description	See Sub-Index 6
Data Type	String (88)
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	

Sub-index	**8**
Definition	**Read SMM Error Count**
Name (GUI)	**SmmErrCnt**
Description	This command triggers a telegram to the SMM asking for the number of error entries inside the fault history.
Data Type	Unsigned 16
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	
Sub-index	**9**
Definition	**Update SMM Error Log**
Name (GUI)	**SmmErrLog**
Description	This command can be used to query an entry out of the error history of the SMM. You can use first the **SmmErrCnt** command (sub-index 8) to check how many entries are stored in the error history. First you need to set the error entry you would like to read via a write access to this sub-index, such as writing the value 1 for entry number 1. You can read the error log data from sub-index 10…14 after the successful write access to this sub-index.
Data Type	Unsigned 16
Access	wo
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	

Sub-index	**10**
Definition	**SMM Error Log Index**
Name (GUI)	**SmmErrLog**
Description	Error log entry/count of the SMM. This value must match the value that was previously written to sub-index 9.
Data Type	Unsigned 16
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	
Sub-index	**11**
Definition	**SMM Error Log Timestamp**
Name (GUI)	**SmmErrLog**
Description	Time stamp of error log entry in unit [ms] after startup of the SMM.
Data Type	Unsigned 32
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	
Sub-index	**12**
Definition	**SMM Error Boot Count**
Name (GUI)	**SmmErrLog**
Description	Error log boot count of error log entry (number of SMM boot-ups when error happened
Data Type	Unsigned 16
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	

Sub-index	**13**
Definition	**SMM Error Type**
Name (GUI)	**SmmErrLog**
Description	Error type of error log entry
Data Type	Unsigned 16
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	
Sub-index	**14**
Definition	**SMM Error Code**
Name (GUI)	**SmmErrLog**
Description	Error code of error log entry
Data Type	Unsigned 32
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	

Sub-index	15
Definition	**SMM Telegram Status**
Name (GUI)	**SafetyApplInfo**
Description	This read-only object returns the status bits of the SMM, which is continuously transmitted to the servo drive and contains basic status bits for debug purposes. Bit 0 (0x0001) – Brake Disengaged 0 = brake is engaged according to the definition of the SMM (PWM duty cycle of 0 is applied, SBC is active) 1 = brake is disengaged according to the definition of the SMM (PWM duty cycle of the Drive process data is applied) Bit 1 (0x0002) – STO power applied 0 = STO power is not applied 1 = STO power is applied Bit 6 (0x0040) – Brake fault 0 = no error with brake control 1 = error with brake control Bit 7 (0x0080) – STO fault 0 = no error with STO control 1 = error with STO control Bit 10 (0x0400) – Brake Control (SMM FW version > 1.4) 0 = Brake is controlled by SMM (disengaged/closed) 1 = Brake is solely controlled by Drive and engaged/disengaged only due to Drive status Bit 15 (0x8000) – Boot loader active 0 = Normal mode 1 = Bootloader is active Other bits are used for debugging purposes…
Data Type	Unsigned 16
Access	Read
Default Value	0x0
Lower Limit	0x0
Upper Limit	0xFFFFFFFF
Unit	NA
Category	Safety
Function	