



EtherCAT CoolMUSCLE Bridge
Object Dictionary

Object Description Format

In this manual, objects are described in the following format.

•Object Description Format

<Index>	<Object name>		
Range: <Setting range>	Unit: <Unit>	Default: <Default setting>	Attribute: <Data attribute>
Size: <Size>	Access: <Access>		PDO map: <Possible/Not possible>

•Object Description Format with Subindexes

<Index>	<Object name>		
	Subindex 0h	Number of entries	
Range: <Setting range>	Unit: <Unit>	Default: <Default setting>	Attribute: <Data attribute>
Size: <Size>	Access: <Access>		PDO map: <Possible/Not possible>
	Subindex 1h	<Subindex name>	
Range: <Setting range>	Unit: <Unit>	Default: <Default setting>	Attribute: <Data attribute>
Size: <Size>	Access: <Access>		PDO map: <Possible/Not possible>
	.		
	.		
	.		
	Subindex Nh	<Subindex name>	
Range: <Setting range>	Unit: <Unit>	Default: <Default setting>	Attribute: <Data attribute>
Size: <Size>	Access: <Access>		PDO map: <Possible/Not possible>

The following values are indicated within the bracket < >.

Indexes	:	An object index given by a four-digit hexadecimal number
Object name	:	The object name
Range	:	The possible range of settings
Unit	:	Physical unit
Default	:	Default value set before product shipment
Attribute	:	The timing when a change is updated in a writable object
		A : Always enabled
		B : The change is prohibited while a motor is in operation or under the command
		The update timing is unsettled when a change is carried out while a motor is in operation or under the command
		C : Updated after the power supply is reset or after the configuration command of EtherCAT communication is executed
		R : Updated after the power supply is reset (Not updated by the configuration command of EtherCAT communication)
		- : Read only
Size	:	The object size is given in bytes
Access	:	Indicates whether the object is read only, or read and write
		RO : Read only
		RW : Read and write
PDO map	:	Indicates the PDO mapping possibility
		Possible(RxPDO) : Possible to be mapped into RxPDO
		Possible(TxPDO) : Possible to be mapped into TxPDO
		Not possible : Mapping into PDO is not possible

Data Types

This profile uses the following data types.

Data Types	Code	Description	Size (bits)	Range	
BOOLEAN	BOOL	False/True	1	False(0), True(1)	[0, 1]
INTEGER8	INT8	Short Integer	8	-128 ~ 127	[$-2^7 \dots 2^7 - 1$]
INTEGER16	INT16	Integer	16	-32768 ~ 32767	[$-2^{15} \dots 2^{15} - 1$]
INTEGER32	INT32	Double Integer	32	-2147483648 ~ 2147483647	[$-2^{31} \dots 2^{31} - 1$]
INTEGER64	LINT	Long Integer	64	-9223372036854775808 ~ 9223372036854775807	[$-2^{63} \dots 2^{63} - 1$]
UNSIGNED8	U8	Unsigned Short Integer	8	0 ~ 255	[$0 \dots 2^8 - 1$]
UNSIGNED16	U16	Unsigned Integer	16	0 ~ 65535	[$0 \dots 2^{16} - 1$]
UNSIGNED32	U32	Unsigned Double Integer	32	0 ~ 4294967295	[$0 \dots 2^{32} - 1$]
UNSIGNED64	U64	Unsigned Long Integer	64	0 ~ 18446744073709551615	[$0 \dots 2^{64} - 1$]
VISIBLE_STRING	VS	Visible String (1 octet per character)	8*n	-	

Communication Objects

1000h		Device Type					
Range :	—	Unit :	—	Default :	00040192h	Attribute :	—
Size :	4 bytes (U32)	Access :	RO	PDO map :	Not possible		

•Indicates the CoE device profile number.

Explanation of set value

Bits	Name	Description
0 – 15	Device Profile Number	402 (192h) : Drive Profile
16 – 23	Type	04 : Stepper Motor
25 – 31	Mode	0 : Manufacturer specified

1001h		Error Register					
Range :	—	Unit :	—	Default :	00h	Attribute :	—
Size :	1 byte (U8)	Access :	RO	PDO map :	Not possible		

•Indicates the error type that occurs in a slave device.

Definition of bits

Bits	Description
0	(N/A)
1	(N/A)
2	(N/A)
3	(N/A)
4	The alarm as defined in AL status cord occurs
5	(N/A)
6	(N/A)
7	The alarm as not defined in AL status cord occurs

1008h		Manufacturer Device Name					
Range :	—	Unit :	—	Default :	Differ by unit types	Attribute :	—
Size :	15 bytes (VS)	Access :	RO	PDO map :	Not possible		

•Indicates the product (Bridge) model number.

Model	Set value before product shipment
EB01	Musclicorp EB01
EB02	Musclicorp EB02
EB12	Musclicorp EB12

1009h		Manufacturer Hardware Version					
Range :	—	Unit :	—	Default :	1.0	Attribute :	—
Size :	3 bytes (VS)	Access :	RO	PDO map :	Not possible		

•Indicates the version of the product (Bridge) hardware.

100Ah		Manufacturer Software Version					
Range :	—	Unit :	—	Default :	V1.15	Attribute :	—
Size :	5 bytes (VS)	Access :	RO	PDO map :	Not possible		

•Indicates the version of the product (Bridge) software.

1018h		Identity Object					
Subindex 00h		Number of entries					
Range :	—	Unit :	—	Default :	04h	Attribute :	—
Size :	1 byte (U8)	Access :	RO	PDO map :	Not possible		
Subindex 01h		Vendor ID					
Range :	—	Unit :	—	Default :	0000AA77h	Attribute :	—
Size :	4 bytes (U32)	Access :	RO	PDO map :	Not possible		
Subindex 02h		Product Code					
Range :	—	Unit :	—	Default :	00000100h	Attribute :	—
Size :	4 bytes (U32)	Access :	RO	PDO map :	Not possible		

Object Dictionary

Subindex 03h		Revision	
Range : —	Unit : —	Default : 0000001h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 04h		Serial Number	
Range : —	Unit : —	Default : Serial number	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible

•Indicates the device information.

- Subindex 01h(Vender ID) gives the manufacturer identifier.
- Subindex 02h(Product Code) gives the value assigned to each slave unit type.
- Subindex 03h(Revision Number) gives the Device revision number.
- Subindex 04h(Serial Number) gives the product (Bridge) serial number.

10F1h		Error Setting	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Local Error Reaction	
Range : —	Unit : —	Default : 0000001h	Attribute : A
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible
Subindex 02h		Sysc Error counter Limit	
Range : —	Unit : —	Default : 0000004h	Attribute : A
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible

★For more information about this object, refer to the document “ETG1020_V1i1i0 / 19.2.2 Error Setting” by EtherCAT Technology Group.

PDO Mapping Object

Indexes 1600h to 17FFh are used for Receive PDO mapping, and indexes 1A00h to 1BFFh are used for Transmit PDO mapping. Subindexes after subindex 01h provide information about the application object being mapped.

31	16 15	8 7	0
Indexes		Sub-indexes	Bit length
MSB			LSB

- Bits 0 to 7 : Bit length of the mapped object.
(For example, for 32 bits, 20h is given)
- Bits 8 to 15 : Subindex of the mapped object.
- Bits 16 to 31 : Index of the mapped object.

** RxPDO **

1601h		ID1 csp mode RxPDO mapping)	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		ID1 6040h Controlword	
Range : —	Unit : —	Default : 60400010h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 02h		ID1 607Ah Target position	
Range : —	Unit : —	Default : 607A0020h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible

1611h		ID2 csp mode RxPDO mapping	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		ID2 6840h Controlword	
Range : —	Unit : —	Default : 68400010h	Attribute : —

Object Dictionary

Size : 4 bytes (U32)	Access : RO	PDO map : Not possible
Subindex 02h		ID2 687Ah Target position
Range : —	Unit : —	Default : 687A0020h Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible

1621h		ID3 csp mode RxPDO mapping	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		ID3 7040h Controlword	
Range : —	Unit : —	Default : 70400010h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 02h		ID3 707Ah Target position	
Range : —	Unit : —	Default : 707A0020h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

1631h		ID4 csp mode RxPDO mapping	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		ID4 7840h Controlword	
Range : —	Unit : —	Default : 78400010h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 02h		ID3 787Ah Target position	
Range : —	Unit : —	Default : 787A0020h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

**** TxPDO ****

1A01h		ID1 csp mode TxPDO mapping	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		ID1 6041h Statusword	
Range : —	Unit : —	Default : 60410010h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 02h		ID1 6064h Actual position	
Range : —	Unit : —	Default : 60640020h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

1A11h		ID2 csp mode TxPDO mapping	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		ID2 6841h Statusword	
Range : —	Unit : —	Default : 68410010h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 02h		ID2 6864h Actual position	
Range : —	Unit : —	Default : 68640020h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

1A21h		ID3 csp mode TxPDO mapping	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		ID3 7041h Statusword	
Range : —	Unit : —	Default : 70410010h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 02h		ID3 7064h Actual position	
Range : —	Unit : —	Default : 70640020h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

1A31h		ID4 csp mode TxPDO mapping	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		ID4 7841h Statusword	
Range : —	Unit : —	Default : 78410010h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 02h		ID4 7864h Actual position	
Range : —	Unit : —	Default : 78640020h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

★For more information about RxPDO and TxPDO, refer to the document “ETG1000_6 / Sync Manager PDO Assignment” by EtherCAT Technology Group.

Sync Manager Communication Object

The communication memory of EtherCAT is set by objects from 1C00h to 1C33h.

1C00h		Sync Manager Communication Type	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Mailbox Out (0x1)	
Range : —	Unit : —	Default : 01h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 02h		Mailbox In (0x2)	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 03h		Process data out (0x3)	
Range : —	Unit : —	Default : 03h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 04h		Process data in (0x4)	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	

•The sync manager has the following settings.

Set values

1	SM0	: Mailbox receive (EtherCAT master unit to slave unit)
2	SM1	: Mailbox transmit (EtherCAT slave unit to master unit)
3	SM2	: Process data output (EtherCAT master unit to slave unit)
4	SM3	: Process data input (EtherCAT slave unit to master unit)
0		(N/A)

1C12h		Sync Manager 2 PDO Assignment	
Subindex 00h		Number of assigned RxPDOs	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		ID1 1601h: csp RxPDO	
Range : —	Unit : —	Default : 1601h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 02h		ID2 1611h: csp RxPDO	
Range : —	Unit : —	Default : 1611h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 03h		ID3 1621h: csp RxPDO	
Range : —	Unit : —	Default : 1621h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 04h		ID4 1631h: csp RxPDO	
Range : —	Unit : —	Default : 1631h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	

•It indicates the RxPDOs used by this sync manager.

1C13h		Sync Manager 3 PDO Assignment	
Subindex 00h		Number of assigned TxPDOs	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		ID1 1A01h: csp TxPDO	
Range : —	Unit : —	Default : 1A01h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 02h		ID2 1A11h: csp TxPDO	
Range : —	Unit : —	Default : 1A11h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 03h		ID3 1A21h: csp TxPDO	
Range : —	Unit : —	Default : 1A21h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 04h		ID4 1A31h: csp TxPDO	
Range : —	Unit : —	Default : 1A31h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	

•It indicates the TxPDOs used by this sync manager.

1C32h		Sync Manager 2 Synchronization	
Subindex 00h		Number of synchronization parameters	
Range : —	Unit : —	Default : 20h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Synchronization type	
Range : —	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 02h		Cycle time	
Range : —	Unit : ns	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 04h		Synchronization type supported	
Range : —	Unit : —	Default : 0003Ch	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Not possible	
Subindex 05h		Minimum Cycle time	
Range : —	Unit : ns	Default : 0007A120h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 06h		Calc and Copy Time	
Range : —	Unit : ns	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 08h		Get Cycle Time	
Range : —	Unit : ns	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 09h		Delay Time	
Range : —	Unit : ns	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 0Ah		Sync0 Cycle Time	
Range : —	Unit : ns	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	
Subindex 0Bh		SM-Event Missed	
Range : —	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Not possible	
Subindex 0Ch		Cycle Time Too Small	
Range : —	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Not possible	
Subindex 20h		Sync Error	
Range : —	Unit : —	Default : 00h	Attribute : —
Size : 1 bit	Access : RO	PDO map : Not possible	

(Note) Subindexes 03h, 07h, 0Dh, 0Eh, 0Fh, 10h, 11h, 12h, 13h, 14h, 15h, 16h, 17h, 18h, 19h, 1Ah, 1Bh, 1Ch, 1Dh and 1Fh are not exist.

1C33h		Sync Manager 3 Synchronization	
Subindex 00h		Number of synchronization parameters	
Range : —	Unit : —	Default : 20h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Synchronization type	

Object Dictionary

Range : —	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 02h		Cycle time	
Range : —	Unit : ns	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 04h		Synchronization type supported	
Range : —	Unit : —	Default : 0003h	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Not possible	
Subindex 05h		Minimum Cycle time	
Range : —	Unit : ns	Default : 0007A120h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 06h		Calc and Copy Time	
Range : —	Unit : ns	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 08h		Get Cycle Time	
Range : —	Unit : ns	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RW	PDO map : Not possible	
Subindex 09h		Delay Time	
Range : —	Unit : ns	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	
Subindex 0Ah		Sync0 Cycle Time	
Range : —	Unit : ns	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	
Subindex 0Bh		SM-Event Missed	
Range : —	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Not possible	
Subindex 0Ch		Cycle Time Too Small	
Range : —	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Not possible	
Subindex 20h		Sync Error	
Range : —	Unit : —	Default : 00h	Attribute : —
Size : 1 bit	Access : RO	PDO map : Not possible	

(Note) Subindexes 03h, 07h, 0Dh, 0Eh, 0Fh, 10h, 11h, 12h, 13h, 14h, 15h, 16h, 17h, 18h, 19h, 1Ah, 1Bh, 1Ch, 1Dh and 1Fh are not exist.

★For more information about SM2/SM3 synchronization parameters, refer to the document "EtherCAT_Communication_EN.pdf" by EtherCAT Technology Group.

Drive Profile (CiA402) Object

[ID1 CiA402]

6040h	ID1 Controlword		
Range : 0000h – FFFFh	Unit : —	Default : 0000h	Attribute : A
Size : 2 bytes (U16)	Access : RW	PDO map : Possible	

- This object controls the state transition of the servo driver.
- The specific command transmission and the output state setting for Cool Muscle can be performed.
- For details, refer to main volume Chapter 6.

6041h	ID1 Statusword		
Range : 0000h – FFFFh	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Possible	

- This object indicates the current state of the servo driver.
- It indicates the information (the response to the specific command and the input state) from Cool Muscle.
- Refer to main volume Chapter 6 for the explanation of each bit.

6060h	ID1 Modes of Operation		
Range : 6 – 121	Unit : —	Default : 00000000h	Attribute : A
Size : 1 byte (U8)	Access : RW	PDO map : Not possible	

Object Dictionary

- This object is used for setting the operation mode to Cool Muscle.

6061h		ID1 Modes of Operation Display					
Range :	6 – 121	Unit :	—	Default :	00000000h	Attribute :	—
Size :	1 byte (U8)	アクセス :	RO	PDO map :	Not possible		

- This object indicates the operation mode set to Cool Muscle.

6064h		ID1 Position Actual Value					
Range :	-2147483648 to 214783647	Unit :	(pulse)	Default :	00000000h	Attribute :	—
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Possible		

- This object indicates the actual position value of Cool Muscle.

607Ah		ID1 Target Position					
Range :	-2147483648 to 214783647	Unit :	(pulse)	Default :	00000000h	Attribute :	A
Size :	4 bytes (U32)	Access :	RW	PDO map :	Possible		

- This object is used for setting the target position to Cool Muscle in Cyclic Synchronous Position Mode.

60FDh		ID1 Digital Inputs					
Range :	—	Unit :	—	Default :	00000000h	Attribute :	—
Size :	4 bytes (U32)	Access :	RO	PDO map :	Not Possible		

- This object indicates the status of Cool Muscle digital inputs.

Description about digital inputs

Bits	CM1	CM2
0	—	Input1
1	—	Input2
2	Input3	Input3
3	Input4	Input4
4	—	Input5
5	—	Input6

Cool Muscle input is off when a bit is 0.

Cool Muscle input is on when a bit is 1.

Refer to CM1 and CML User's Guide about the details of Cool Muscle input logic.

60FEh		ID1 Digital Outputs					
Subindex 00h		Number of objects					
Range :	—	Unit :	—	Default :	02h	Attribute :	—
Size :	1 byte (U8)	Access :	RO	PDO map :	Not possible		
Subindex 01h		Physical Outputs					
Range :	—	Unit :	—	Default :	00000000h	Attribute :	A
Size :	4 bytes (U32)	Access :	RW	PDO map :	Not possible		
Subindex 02h		Bit Mask					
Range :	—	Unit :	—	Default :	00000000h	Attribute :	A
Size :	4 bytes (U32)	Access :	RW	PDO map :	Not possible		

- This object is used for setting each Cool Muscle's output on/off.

Subindex: 1h Digital Outputs

Bits	CM1	CM2
0	—	Out1
1	Out2	Out2
2	—	Out3
3	—	Out4

Cool Muscle output is off when a bit is set as 0.

Cool Muscle output is on when a bit is set as 1.

Refer to CM1 and CML User's Guide about the details of Cool Muscle output logic.

Subindex: 2h Outputs Mask

Value	Description
0	Output is available
1	Output is not available

6502h	ID1 Supported Drive Modes		
Range : —	Unit : —	Default : 000000A0h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not Possible	

• This object indicates the CiA402 supported drive method on this product.

Description about bits

Bits	Value	
0	0	Profile position mode (N/A)
1	0	Velocity mode (N/A)
2	0	Profile velocity mode (N/A)
3	0	Torque profile mode (N/A)
4	0	Reserved
5	1	Homing mode (Available)
6	0	Interpolated position mode (N/A)
7	1	Cyclic synchronous position mode (Available)
8	0	Cyclic synchronous velocity mode (N/A)
9	0	Cyclic synchronous torque mode (N/A)
10	0	Cyclic synchronous torque mode with communication angle (N/A)

[ID2 CiA402]

6840h	ID2 Controlword		
Range : 0000h – FFFFh	Unit : —	Default : 0000h	Attribute : A
Size : 2 bytes (U16)	Access : RW	PDO map : Possible	

- This object controls the state transition of the servo driver.
- The specific command transmission and the output state setting for Cool Muscle can be performed.
- For details, refer to main volume Chapter 6.

6841h	ID2 Statusword		
Range : 0000h – FFFFh	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Possible	

- This object indicates the current state of the servo driver.
- It indicates the information (the response to the specific command and the input state) from Cool Muscle.
- Refer to main volume Chapter 6 for the explanation of each bit.

6860h	ID2 Modes of Operation		
Range : 6 – 121	Unit : —	Default : 00000000h	Attribute : A
Size : 1 byte (U8)	Access : RW	PDO map : Not possible	

• This object is used for setting the operation mode to Cool Muscle.

6861h	ID2 Modes of Operation Display		
Range : 6 – 121	Unit : —	Default : 00000000h	Attribute : —
Size : 1 byte (U8)	アクセス : RO	PDO map : Not possible	

• This object indicates the operation mode set to Cool Muscle.

6864h	ID2 Position Actual Value		
Range : -2147483648 to 214783647	Unit : (pulse)	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Possible	

Object Dictionary

- This object indicates the actual position value of Cool Muscle.

687Ah		ID2 Target Position			
Range :	-2147483648 to 214783647	Unit :	(pulse)	Default : 00000000h	Attribute A
Size :	4 bytes (INT32)	Access :	RW	PDO map : Possible	

- This object is used for setting the target position to Cool Muscle in Cyclic Synchronous Position Mode.

68FDh		ID2 Digital Inputs			
Range :	—	Unit :	(pulse)	Default : 00000000h	Attribute —
Size :	4 bytes (U32)	Access :	RO	PDO map : Not possible	

- This object indicates the status of Cool Muscle digital inputs.

Description about digital inputs

Bits	CM1	CM2
0	—	Input1
1	—	Input2
2	Input3	Input3
3	Input4	Input4
4	—	Input5
5	—	Input6

Cool Muscle input is off when a bit is 0.

Cool Muscle input is on when a bit is 1.

Refer to CM1 and CML User's Guide about the details of Cool Muscle input logic.

68FEh		ID2 Digital Outputs			
Subindex 00h		Number of objects			
Range :	—	Unit :	—	Default : 02h	Attribute : —
Size :	1 byte (U8)	Access :	RO	PDO map : Not possible	
Subindex 01h		Physical Outputs			
Range :	—	Unit :	—	Default : 00000000h	Attribute A
Size :	4 bytes (U32)	Access :	RW	PDO map : Not possible	
Subindex 02h		Bit Mask			
Range :	—	Unit :	—	Default : 00000000h	Attribute A
Size :	4 bytes (U32)	Access :	RW	PDO map : Not possible	

- This object is used for setting each Cool Muscle's output on/off.

Subindex: 1h Digital Outputs

Bits	CM1	CM2
0	—	Out1
1	Out2	Out2
2	—	Out3
3	—	Out4

Cool Muscle output is off when a bit is set as 0.

Cool Muscle output is on when a bit is set as 1.

Refer to CM1 and CML User's Guide about the details of Cool Muscle output logic.

Subindex: 2h Outputs Mask

Value	Description
0	Output is available
1	Output is not available

6D02h		ID2 Supported Drive Modes			
Range :	—	Unit :	—	Default : 000000A0h	Attribute : —
Size :	4 bytes (U32)	Access :	RO	PDO map : Not possible	

- This object indicates the supported drive method of CiA402 on this product.

Description about bits

Bits	Value	Description
0	0	Profile position mode (N/A)

1	0	Velocity mode (N/A)
2	0	Profile velocity mode (N/A)
3	0	Torque profile mode (N/A)
4	0	Reserved
5	1	Homing mode (Available)
6	0	Interpolated position mode (N/A)
7	1	Cyclic synchronous position mode (Available)
8	0	Cyclic synchronous velocity mode (N/A)
9	0	Cyclic synchronous torque mode (N/A)
10	0	Cyclic synchronous torque mode with communication angle (N/A)

[ID3 CiA402]

7040h	ID3 Controlword		
Range : 0000h – FFFFh	Unit : —	Default : 0000h	Attribute : A
Size : 2 bytes (U16)	Access : RW	PDO map : Possible	

- This object controls the state transition of the servo driver.
- The specific command transmission and the output state setting for Cool Muscle can be performed.
- For details, refer to main volume Chapter 6.

7041h	ID3 Statusword		
Range : 0000h – FFFFh	Unit : —	Default : 0000h	Attribute : —
Size : 2 bytes (U16)	Access : RO	PDO map : Possible	

- This object indicates the current state of the servo driver.
- It indicates the information (the response to the specific command and the input state) from Cool Muscle.
- Refer to main volume Chapter 6 for the explanation of each bit.

7060h	ID3 Modes of Operation		
Range : 6 – 121	Unit : —	Default : 00000000h	Attribute : A
Size : 1 byte (U8)	Access : RW	PDO map : Not possible	

- This object is used for setting the operation mode to Cool Muscle.

7061h	ID3 Modes of Operation Display		
Range : 6 – 121	Unit : —	Default : 00000000h	Attribute : —
Size : 1 byte (U8)	アクセス : RO	PDO map : Not possible	

- This object indicates the operation mode set to Cool Muscle.

7064h	ID3 Position Actual Value		
Range : -2147483648 to 214783647	Unit : (pulse)	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Possible	

- This object indicates the actual position value of Cool Muscle.

707Ah	ID3 Target Position		
Range : -2147483648 to 214783647	Unit : (pulse)	Default : 00000000h	Attribute : A
Size : 4 bytes (INT32)	Access : RW	PDO map : Possible	

- This object is used for setting the target position to Cool Muscle in Cyclic Synchronous Position Mode.

70FDh	ID3 Digital Inputs		
Range : —	Unit : (pulse)	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

Object Dictionary

- This object indicates the status of Cool Muscle digital inputs.

Description about digital inputs

Bits	CM1	CM2
0	–	Input1
1	–	Input2
2	Input3	Input3
3	Input4	Input4
4	–	Input5
5	–	Input6

Cool Muscle input is off when a bit is 0.

Cool Muscle input is on when a bit is 1.

Refer to CM1 and CML User's Guide about the details of Cool Muscle input logic.

70FEh		ID3 Digital Outputs	
Subindex 00h		Number of objects	
Range : –	Unit : –	Default : 02h	Attribute : –
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Physical Outputs	
Range : –	Unit : –	Default : 00000000h	Attribute A
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	
Subindex 02h		Bit Mask	
Range : –	Unit : –	Default : 00000000h	Attribute A
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	

- This object is used for setting each Cool Muscle's output on/off.

Subindex: 1h Digital Outputs

Bits	CM1	CM2
0	–	Out1
1	Out2	Out2
2	–	Out3
3	–	Out4

Cool Muscle output is off when a bit is set as 0.

Cool Muscle output is on when a bit is set as 1.

Refer to CM1 and CML User's Guide about the details of Cool Muscle output logic.

Subindex: 2h Outputs Mask

Value	Description
0	Output is available
1	Output is not available

7502h		ID3 Supported Drive Modes	
Range : –	Unit : –	Default : 00000A0h	Attribute : –
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

- This object indicates the supported drive method of CiA402 on this product.

Description about bits

Bits	Value	
0	0	Profile position mode (N/A)
1	0	Velocity mode (N/A)
2	0	Profile velocity mode (N/A)
3	0	Torque profile mode (N/A)
4	0	Reserved
5	1	Homing mode (Available)
6	0	Interpolated position mode (N/A)
7	1	Cyclic synchronous position mode (Available)
8	0	Cyclic synchronous velocity mode (N/A)
9	0	Cyclic synchronous torque mode (N/A)
10	0	Cyclic synchronous torque mode with communication angle (N/A)

Object Dictionary

7840h	ID4 Controlword		
Range : 0000h – FFFFh	Unit : –	Default : 0000h	Attribute : A
Size : 2 bytes (U16)	Access : RW	PDO map : Possible	

- This object controls the state transition of the servo driver.
- The specific command transmission and the output state setting for Cool Muscle can be performed.
- For details, refer to main volume Chapter 6.

7841h	ID4 Statusword		
Range : 0000h – FFFFh	Unit : –	Default : 0000h	Attribute : –
Size : 2 bytes (U16)	Access : RO	PDO map : Possible	

- This object indicates the current state of the servo driver.
- It indicates the information (the response to the specific command and the input state) from Cool Muscle.
- Refer to main volume Chapter 6 for the explanation of each bit.

7860h	ID4 Modes of Operation		
Range : 6 – 121	Unit : –	Default : 00000000h	Attribute : A
Size : 1 byte (U8)	Access : RW	PDO map : Not possible	

- This object is used for setting the operation mode to Cool Muscle.

7861h	ID4 Modes of Operation Display		
Range : 6 – 121	Unit : –	Default : 00000000h	Attribute : –
Size : 1 byte (U8)	アクセス : RO	PDO map : Not possible	

- This object indicates the operation mode set to Cool Muscle.

7864h	ID4 Position Actual Value		
Range : -2147483648 to 214783647	Unit : (pulse)	Default : 00000000h	Attribute : –
Size : 4 bytes (INT32)	Access : RO	PDO map : Possible	

- This object indicates the actual position value of Cool Muscle.

787Ah	ID4 Target Position		
Range : -2147483648 to 214783647	Unit : (pulse)	Default : 00000000h	Attribute : A
Size : 4 bytes (INT32)	Access : RW	PDO map : Possible	

- This object is used for setting the target position to Cool Muscle in Cyclic Synchronous Position Mode.

★ Refer to EtherCAT_Communication_EN.pdf for detailed description of Controlword, Statusword, Position Actual Value and Target Position.

78FDh	ID4 Digital Inputs		
Range : –	Unit : –	Default : 00000000h	Attribute : –
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible	

- This object indicates the status of Cool Muscle digital inputs.

Description about digital inputs

Bits	CM1	CM2
0	–	Input1
1	–	Input2
2	Input3	Input3
3	Input4	Input4
4	–	Input5
5	–	Input6

Cool Muscle input is off when a bit is 0.
Cool Muscle input is on when a bit is 1.

Refer to CM1 and CML User's Guide about the details of Cool Muscle input logic.

78FEh		ID4 Digital Outputs	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)	Access : RO		PDO map : Not possible
Subindex 01h		Physical Outputs	
Range : —	Unit : —	Default : 00000000h	Attribute : A
Size : 4 bytes (U32)	Access : RW		PDO map : Not possible
Subindex 02h		Bit Mask	
Range : —	Unit : —	Default : 00000000h	Attribute : A
Size : 4 bytes (U32)	Access : RW		PDO map : Not possible

• This object is used for setting each Cool Muscle's output on/off.

Subindex: 1h Digital Outputs

Bits	CM1	CM2
0	—	Out1
1	Out2	Out2
2	—	Out3
3	—	Out4

Cool Muscle output is off when a bit is set as 0.

Cool Muscle output is on when a bit is set as 1.

Refer to CM1 and CML User's Guide about the details of Cool Muscle output logic.

Subindex: 2h Outputs Mask

Value	Description
0	Output is available
1	Output is not available

7D02h		ID4 Supported Drive Modes	
Range : —	Unit : —	Default : 000000A0h	Attribute : —
Size : 4 bytes (U32)	Access : RO		PDO map : Not possible

• This object indicates the supported drive method in CiA402.

Description about bits

Bits	Value	Description
0	0	Profile position mode (N/A)
1	0	Velocity mode (N/A)
2	0	Profile velocity mode (N/A)
3	0	Torque profile mode (N/A)
4	0	Reserved
5	1	Homing mode (Available)
6	0	Interpolated position mode (N/A)
7	1	Cyclic synchronous position mode (Available)
8	0	Cyclic synchronous velocity mode (N/A)
9	0	Cyclic synchronous torque mode (N/A)
10	0	Cyclic synchronous torque mode with communication angle (N/A)

Homing mode (CiA402) Object

[ID1 HM CiA402]

607Ch		ID1 Home Offset	
Range : -32767 to 32767	Unit : (pulse)	Default : 00000000h	Attribute : A
Size : 4 bytes (INT32)	Access : RW		PDO map : Not possible

• This object is used for setting offset distance after homing.

Object Dictionary

6098h	ID1 Homing Method		
Range : 1 - 4	Unit : -	Default : 00000000h	Attribute A
Size : 1 byte (U8)	Access : RW	PDO map : Not possible	

• This object is used for setting homing method to Cool Muscle.

Set Values	1	Stopper CW
	2	Stopper CCW
	3	Switch CW
	4	Switch CCW

6099h	ID1 Homing Speed		
Subindex 00h		Number of entries	
Range : -	Unit : -	Default : 02h	Attribute : -
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Speed during search for switch	
Range : *1	Unit : *1	Default : *1	Attribute : -
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	
Subindex 02h		Speed during search for stopper	
Range : *1	Unit : *1	Default : *1	Attribute : -
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	

• This object is used to setting homing speed.

- Subindex01h is used for setting homing speed for switch.
- Subindex02h is used for setting homing speed for stopper.
- *1 shall be referred to the below chart.

	CM2	CM1	CM2
Range		1 - 5000	1 - 32767
Unit		100pps	100, 10 or 1
Default		100	10

609Ah	ID1 Homing Acceleration		
Range : CM1; 1 - 5000 CM2; 1 - 32767	Unit : (Kpps ²)	Default : 00000000h	Attribute A
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	

• This object is used for setting homing acceleration to Cool Muscle.

Set Valu CM1 : Homing acceleration is set to CM1 K43 parameter in the range 1 - 5000Kpps².
CM2 : Homing acceleration is set to CM2 K43 parameter in the range 1 - 32767Kpps².

60E3h	ID1 Suupported Homing Method		
Subindex 00h		Number of entries	
Range : -	Unit : -	Default : 04h	Attribute : -
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Stopper CW	
Range : -	Unit : -	Default : 00001h	Attribute : -
Size : 2 bytes (INT16)	Access : RO	PDO map : Not possible	
Subindex 02h		Stopper CCW	
Range : -	Unit : -	Default : 00002h	Attribute : -
Size : 2 bytes (INT16)	Access : RO	PDO map : Not possible	
Subindex 03h		Switch CW	
Range : -	Unit : -	Default : 00003h	Attribute : -
Size : 2 bytes (INT16)	Access : RO	PDO map : Not possible	
Subindex 04h		Switch CCW	
Range : -	Unit : -	Default : 00004h	Attribute : -
Size : 2 bytes (INT16)	Access : RO	PDO map : Not possible	

• This object indicates supported homing method on this product.

Value 1 shows supported homing method and 0 shows homing method not available.

687Ch	ID2 Home Offset		
Range : -32767 to 32767	Unit : (pulse)	Default : 00000000h	Attribute A
Size : 4 bytes (INT32)	Access : RW	PDO map : Not possible	

• This object is used for setting offset distance after homing.

6898h	ID2 Homing Method		
Range : 1 - 4	Unit : -	Default : 00000000h	Attribute A
Size : 1 byte (U8)	Access : RW	PDO map : Not possible	

• This object is used for setting homing method to Cool Muscle.

Set Values	1	Stopper CW
	2	Stopper CCW
	3	Switch CW
	4	Switch CCW

6899h	ID2 Homing Speed		
Subindex 00h		Number of entries	
Range : -	Unit : -	Default : 02h	Attribute : -
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Speed during search for switch	
Range : *1	Unit : *1	Default : *1	Attribute A
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	
Subindex 02h		Speed during search for stopper	
Range : *1	Unit : *1	Default : *1	Attribute A
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	

• This object is used to setting homing speed.

- Subindex01h is used for setting homing speed for switch.
- Subindex02h is used for setting homing speed for stopper.
- *1 shall be referred to the below chart.

	CM2	CM1	CM2
Range		1 - 5000	1 - 32767
Unit		100pps	100, 10 or 1
Default		100	10

689Ah	ID2 Homing Acceleration		
Range : CM1; 1 - 5000 CM2; 1 - 32767	Unit : (Kpps ²)	Default : 00000000h	Attribute A
Size : 4 bytes (U32)	Access : RW	PDO map : Not possible	

• This object is used for setting homing acceleration to Cool Muscle.

Set Value CM1 : Homing acceleration is set to CM1 K43 parameter in the range 1 - 5000Kpps².
CM2 : Homing acceleration is set to CM2 K43 parameter in the range 1 - 32767Kpps².

68E3h	ID2 Supported Homing Method		
Subindex 00h		Number of entries	
Range : -	Unit : -	Default : 04h	Attribute : -
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Stopper CW	
Range : -	Unit : -	Default : 00001h	Attribute : -
Size : 2 bytes (INT16)	Access : RO	PDO map : Not possible	
Subindex 02h		Stopper CCW	
Range : -	Unit : -	Default : 00002h	Attribute : -
Size : 2 bytes (INT16)	Access : RO	PDO map : Not possible	
Subindex 03h		Switch CW	
Range : -	Unit : -	Default : 00003h	Attribute : -
Size : 2 bytes (INT16)	Access : RO	PDO map : Not possible	

Object Dictionary

Subindex 04h		Switch CCW	
Range : —	Unit : —	Default : 00004h	Attribute : —
Size : 2 bytes (INT16)		Access : RO	PDO map : Not possible

- This object indicates supported homing method on this product.
Value 1 shows supported homing method and 0 shows homing method not available.

[ID3 HM CiA402]

707Ch		ID3 Home Offset	
Range : -32767 to 32767	Unit : (pulse)	Default : 00000000h	Attribute A
Size : 4 bytes (INT32)		Access : RW	PDO map : Not possible

- This object is used for setting offset distance after homing.

7098h		ID3 Homing Method	
Range : 1 - 4	Unit : —	Default : 00000000h	Attribute A
Size : 1 byte (U8)		Access : RW	PDO map : Not possible

- This object is used for setting homing method to Cool Muscle.

Set Values	1	Stopper CW
	2	Stopper CCW
	3	Switch CW
	4	Switch CCW

7099h		ID3 Homing Speed	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Speed during search for switch	
Range : *1	Unit : *1	Default : *1	Attribute A
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible
Subindex 02h		Speed during search for stopper	
Range : *1	Unit : *1	Default : *1	Attribute A
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible

- This object is used to setting homing speed.
 - Subindex01h is used for setting homing speed for switch.
 - Subindex02h is used for setting homing speed for stopper.
 - *1 shall be referred to the below chart.

	CM2	CM1	CM2
Range		1 - 5000	1 - 32767
Unit		100pps	100, 10 or 1
Default		100	10

709Ah		ID3 Homing Acceleration	
Range : CM1; 1 - 5000 CM2; 1 - 32767	Unit : (Kpps ²)	Default : 00000000h	Attribute A
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible

- This object is used for setting homing acceleration to Cool Muscle.

Set Value	CM1 : Homing acceleration is set to CM1 K43 parameter in the range 1 - 5000Kpps ² .
	CM2 : Homing acceleration is set to CM2 K43 parameter in the range 1 - 32767Kpps ² .

70E3h		ID3 Supported Homing Method	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible

Object Dictionary

Subindex 01h		Stopper CW	
Range : —	Unit : —	Default : 00001h	Attribute : —
Size : 2 bytes (INT16)		Access : RO	PDO map : Not possible
Subindex 02h		Stopper CCW	
Range : —	Unit : —	Default : 00002h	Attribute : —
Size : 2 bytes (INT16)		Access : RO	PDO map : Not possible
Subindex 03h		Switch CW	
Range : —	Unit : —	Default : 00003h	Attribute : —
Size : 2 bytes (INT16)		Access : RO	PDO map : Not possible
Subindex 04h		Switch CCW	
Range : —	Unit : —	Default : 00004h	Attribute : —
Size : 2 bytes (INT16)		Access : RO	PDO map : Not possible

- This object indicates supported homing method on this product.
Value 1 shows supported homing method and 0 shows homing method not available.

[ID4 HM CiA402]

787Ch		ID4 Home Offset	
Range : -32767 to 32767	Unit : (pulse)	Default : 00000000h	Attribute A
Size : 4 bytes (INT32)		Access : RW	PDO map : Not possible

- This object is used for setting offset distance after homing.

7898h		ID4 Homing Method	
Range : 1 – 4	Unit : —	Default : 00000000h	Attribute A
Size : 1 byte (U8)		Access : RW	PDO map : Not possible

- This object is used for setting homing method to Cool Muscle.

Set Values	1	Stopper CW
	2	Stopper CCW
	3	Switch CW
	4	Switch CCW

7899h		ID4 Homing Speed	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 02h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Speed during search for switch	
Range : *1	Unit : *1	Default : *1	Attribute A
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible
Subindex 02h		Speed during search for stopper	
Range : *1	Unit : *1	Default : *1	Attribute A
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible

- This object is used to setting homing speed.
 - Subindex01h is used for setting homing speed for switch.
 - Subindex02h is used for setting homing speed for stopper.
 - *1 shall be referred to the below chart.

	CM2	CM1	CM2
Range	1 – 5000	1 – 32767	1 – 32767
Unit	100pps	100, 10 or 1	100, 10 or 1
Default	100	100	10

789Ah		ID4 Homing Acceleration	
Range : CM1; 1 – 5000 CM2; 1 – 32767	Unit : (Kpps ²)	Default : 00000000h	Attribute A
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible

- This object is used for setting homing acceleration to Cool Muscle.

Set Valu CM1 : Homing acceleration is set to CM1 K43 parameter in the range 1 - 5000Kpps².
 CM2 : Homing acceleration is set to CM2 K43 parameter in the range 1 - 32767Kpps².

78E3h		ID4 Suupported Homing Method			
Subindex 00h		Number of entries			
Range :	—	Unit :	—	Default :	04h
Size :	1 byte (U8)	Access :	RO	PDO map :	Not possible
Subindex 01h		Stopper CW			
Range :	—	Unit :	—	Default :	00001h
Size :	2 bytes (INT16)	Access :	RO	PDO map :	Not possible
Subindex 02h		Stopper CCW			
Range :	—	Unit :	—	Default :	00002h
Size :	2 bytes (INT16)	Access :	RO	PDO map :	Not possible
Subindex 03h		Switch CW			
Range :	—	Unit :	—	Default :	00003h
Size :	2 bytes (INT16)	Access :	RO	PDO map :	Not possible
Subindex 04h		Switch CCW			
Range :	—	Unit :	—	Default :	00004h
Size :	2 bytes (INT16)	Access :	RO	PDO map :	Not possible

• This object indicates supported homing method on this product.
 Value 1 shows supported homing method and 0 shows homing method not available.

Set Parameter Object

[ID1 - ID4 Set Parameter]

60F6h		ID1 - ID4 Cool Muscle K Parameter			
Sub Index	Name	Attribute	Access	Availability	
				CM1	CM2
0h	Number of entries	1 byte (U8)	RW	Available	Available
1h	K21 Parameter	4 bytes (INT32)	RW	N/A	N/A
2h	K22 Parameter	4 bytes (INT32)	RW	N/A	N/A
3h	K23 Parameter	4 bytes (INT32)	RW	Available	Available
4h	K24 Parameter	4 bytes (INT32)	RW	Available	Available
5h	K25 Parameter	4 bytes (INT32)	RW	N/A	N/A
6h	K26 Parameter	4 bytes (INT32)	RW	Available	Available
7h	K27 Parameter	4 bytes (INT32)	RW	Available	Available
8h	K28 Parameter	4 bytes (INT32)	RW	N/A	N/A
9h	K29 Parameter	4 bytes (INT32)	RW	N/A	N/A
Ah	K30 Parameter	4 bytes (INT32)	RW	N/A	N/A
Bh	K31 Parameter	4 bytes (INT32)	RW	N/A	N/A
Ch	K32 Parameter	4 bytes (INT32)	RW	N/A	N/A
Dh	K33 Parameter	4 bytes (INT32)	RW	Available	Available
Eh	K34 Parameter	4 bytes (INT32)	RW	Available	Available
Fh	K35 Parameter	4 bytes (INT32)	RW	N/A	N/A
10h	K36 Parameter	4 bytes (INT32)	RW	N/A	N/A
11h	K37 Parameter	4 bytes (INT32)	RW	N/A	N/A
12h	K38 Parameter	4 bytes (INT32)	RW	N/A	N/A
13h	K39 Parameter	4 bytes (INT32)	RW	N/A	N/A
14h	K40 Parameter	4 bytes (INT32)	RW	N/A	N/A
15h	K41 Parameter	4 bytes (INT32)	RW	N/A	N/A
16h	K42 Parameter	4 bytes (INT32)	RW	Available	Available
17h	K43 Parameter	4 bytes (INT32)	RW	Available	Available
18h	K44 Parameter	4 bytes (INT32)	RW	N/A	N/A
19h	K45 Parameter	4 bytes (INT32)	RW	Available	Available
1Ah	K46 Parameter	4 bytes (INT32)	RW	Available	Available
1Bh	K47 Parameter	4 bytes (INT32)	RW	Available	Available
1Ch	K48 Parameter	4 bytes (INT32)	RW	Available	Available
1Dh	K49 Parameter	4 bytes (INT32)	RW	N/A	N/A
1Eh	K50 Parameter	4 bytes (INT32)	RW	N/A	N/A
1Fh	K51 Parameter	4 bytes (INT32)	RW	N/A	N/A
20h	K52 Parameter	4 bytes (INT32)	RW	Available	N/A
21h	K53 Parameter	4 bytes (INT32)	RW	Available	N/A

Object Dictionary

22h	K54 Parameter	4 bytes (INT32)	RW	Available	N/A
23h	K55 Parameter	4 bytes (INT32)	RW	N/A	N/A
24h	K56 Parameter	4 bytes (INT32)	RW	Available	Available
25h	K57 Parameter	4 bytes (INT32)	RW	Available	Available
26h	K58 Parameter	4 bytes (INT32)	RW	N/A	N/A
27h	K59 Parameter	4 bytes (INT32)	RW	N/A	N/A
28h	K60 Parameter	4 bytes (INT32)	RW	N/A	N/A
29h	K61 Parameter	4 bytes (INT32)	RW	N/A	N/A
2Ah	K62 Parameter	4 bytes (INT32)	RW	無	N/A
2Bh	K63 Parameter	4 bytes (INT32)	RW	無	N/A
2Ch	K64 Parameter	4 bytes (INT32)	RW	N/A	Available
2Dh	K65 Parameter	4 bytes (INT32)	RW	N/A	N/A
2Eh	K66 Parameter	4 bytes (INT32)	RW	-	-
2Fh	K67 Parameter	4 bytes (INT32)	RW	-	-
30h	K68 Parameter	4 bytes (INT32)	RW	-	Available
31h	K69 Parameter	4 bytes (INT32)	RW	N/A	N/A
32h	K70 Parameter	4 bytes (INT32)	RW	N/A	N/A
33h	K71 Parameter	4 bytes (INT32)	RW	Available	N/A
34h	K72 Parameter	4 bytes (INT32)	RW	Available	N/A
35h	K73 Parameter	4 bytes (INT32)	RW	N/A	N/A
36h	K74 Parameter	4 bytes (INT32)	RW	-	N/A
37h	K75 Parameter	4 bytes (INT32)	RW	-	N/A
38h	K76 Parameter	4 bytes (INT32)	RW	-	N/A
39h	K77 Parameter	4 bytes (INT32)	RW	-	N/A
3Ah	K78 Parameter	4 bytes (INT32)	RW	-	N/A
3Bh	K79 Parameter	4 bytes (INT32)	RW	-	N/A
3Ch	K80 Parameter	4 bytes (INT32)	RW	-	N/A
3Dh	K81 Parameter	4 bytes (INT32)	RW	-	N/A
3Eh	K82 Parameter	4 bytes (INT32)	RW	-	N/A
3Fh	K83 Parameter	4 bytes (INT32)	RW	-	-
40h	K84 Parameter	4 bytes (INT32)	RW	-	-
41h	K85 Parameter	4 bytes (INT32)	RW	-	-
42h	K86 Parameter	4 bytes (INT32)	RW	-	-
43h	K87 Parameter	4 bytes (INT32)	RW	-	-
44h	K88 Parameter	4 bytes (INT32)	RW	-	-
45h	K89 Parameter	4 bytes (INT32)	RW	-	-
46h	K90 Parameter	4 bytes (INT32)	RW	-	-
47h	K91 Parameter	4 bytes (INT32)	RW	-	-
48h	K92 Parameter	4 bytes (INT32)	RW	-	-
49h	K93 Parameter	4 bytes (INT32)	RW	-	-
4Ah	K94 Parameter	4 bytes (INT32)	RW	-	-
4Bh	K95 Parameter	4 bytes (INT32)	RW	-	-
4Ch	K96 Parameter	4 bytes (INT32)	RW	-	-
4Dh	K97 Parameter	4 bytes (INT32)	RW	-	-
4Eh	K98 Parameter	4 bytes (INT32)	RW	-	-
4Fh	K99 Parameter	4 bytes (INT32)	RW	-	-

- The objects 60F6, 68F6, 70F6 & 78F6 are for ID1, ID2, ID3 & ID4.
- Subindex 0h to 4Fh are used for setting Cool Muscle K Parameters.
- Refer to CM1 and CML User's Guide for details such as unit, range, default and etc.,
- All subindex is not available for PDO mapping.
- Data will be saved in Cool Muscle's EEPROM.

60FBh		Cool Muscle 2 Servo Stiffness Parameter					
Subindex 00h		Number of entries					
Range :	-	Unit :	-	Default :	0Ah	Attribute :	-
Size :	1 byte (U8)	Access :	RO	PDO map :	Not possible		
Subindex 01h		Servo Stiffness Adjustment Parameter					
Range :	20 - 100	Unit :	-	Default :	40	Attribute :	A
Size :	4 bytes (U32)	Access :	RW	PDO map :	Not possible		
Subindex 02h		(Reserved)					
Range :	-	Unit :	-	Default :	0000000h	Attribute :	-
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		
Subindex 03h		(Reserved)					
Range :	-	Unit :	-	Default :	0000000h	Attribute :	-
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		
Subindex 04h		(Reserved)					

Object Dictionary

Range :	—	Unit :	—	Default :	0000000h	Attribute :	—
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		
Subindex 05h		(Reserved)					
Range :	—	Unit :	—	Default :	0000000h	Attribute :	—
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		
Subindex 06h		(Reserved)					
Range :	—	Unit :	—	Default :	0000000h	Attribute :	—
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		
Subindex 07h		(Reserved)					
Range :	—	Unit :	—	Default :	0000000h	Attribute :	—
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		
Subindex 08h		(Reserved)					
Range :	—	Unit :	—	Default :	0000000h	Attribute :	—
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		
Subindex 09h		(Reserved)					
Range :	—	Unit :	—	Default :	0000000h	Attribute :	—
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		
Subindex 0Ah		(Reserved)					
Range :	—	Unit :	—	Default :	0000000h	Attribute :	—
Size :	4 bytes (INT32)	Access :	RO	PDO map :	Not possible		

- The objects 60FB, 68FB, 70FB & 78FB are for ID1, ID2, ID3 & ID4.
- Subindex 01h is used for setting CM2 Servo Stiffness.
- This object is available only on CM2.

Parameters belong to Device

F00h	Modular Device Profile						
Subindex 00h		Number of objects					
Range :	—	Unit :	—	Default :	02h	Attribute :	—
Size :	1 byte (U8)	Access :	RO	PDO map :	Not possible		
Subindex 01h		Module Index Distance					
Range :	—	Unit :	—	Default :	800h	Attribute :	—
Size :	2 bytes (U16)	Access :	RO	PDO map :	Not possible		
Subindex 02h		Maximum Number of Modules					
Range :	—	Unit :	—	Default :	0004h	Attribute :	—
Size :	2 bytes (U16)	Access :	RO	PDO map :	Not possible		

- This object indicates Modular Device Profile.
 - Subindex01h indicates an offset value between each module.
 - Subindex02h indicates maximum number of module.

Device means slave unit including EtherCAT Cool Muscle Bridge and Cool Muscle, Module means Cool Mus

F010h	Module Profile List						
Subindex 00h		Number of objects					
Range :	—	Unit :	—	Default :	04h	Attribute :	—
Size :	1 byte (U8)	Access :	RO	PDO map :	Not possible		
Subindex 01h		ID1 Device Profile Type (40192h)					
Range :	—	Unit :	—	Default :	00040192h	Attribute :	—
Size :	4 bytes (U32)	Access :	RO	PDO map :	Not possible		
Subindex 02h		ID2 Device Profile Type (40192h)					
Range :	—	Unit :	—	Default :	00040192h	Attribute :	—
Size :	4 bytes (U32)	Access :	RO	PDO map :	Not possible		
Subindex 03h		ID3 Device Profile Type (40192h)					
Range :	—	Unit :	—	Default :	00040192h	Attribute :	—
Size :	4 bytes (U32)	Access :	RO	PDO map :	Not possible		
Subindex 04h		ID4 Device Profile Type (40192h)					
Range :	—	Unit :	—	Default :	00040192h	Attribute :	—
Size :	4 bytes (U32)	Access :	RO	PDO map :	Not possible		

- This object indicates Module Profile List.
 - Upper words 0004h of subindex01h to 04h indicates a type (0004h stepping motor), lower word 402 (0192h) indicates CiA402 (402(0192h)) as default settings for ID1 to ID4.

F030h		Configured Modules Ident List	
Subindex 00h		Number of objects	
Range : —	Unit : —	出荷時設定 : 04h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		ID1 Configured Module Ident (219800h)	
Range : —	Unit : —	Default : 00219800h	Attribute : —
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible
Subindex 02h		ID2 Configured Module Ident (219800h)	
Range : —	Unit : —	Default : 00219800h	Attribute : —
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible
Subindex 03h		ID3 Configured Module Ident (219800h)	
Range : —	Unit : —	Default : 00219800h	Attribute : —
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible
Subindex 04h		ID4 Configured Module Ident (219800h)	
Range : —	Unit : —	Default : 00219800h	Attribute : —
Size : 4 bytes (U32)		Access : RW	PDO map : Not possible

- This object is used for setting operation mode when power is on.
Only CiA402 csp is available. The other value is not accepted.

F050h		Detected Modules Ident List	
Subindex 00h		Number of objects	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		ID1 Module Detected (219800h)	
Range : —	Unit : —	Default : 00219800h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 02h		ID2 Module Detected (219800h)	
Range : —	Unit : —	Default : 00219800h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 03h		ID3 Module Detected (219800h)	
Range : —	Unit : —	Default : 00219800h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 04h		ID4 Module Detected (219800h)	
Range : —	Unit : —	Default : 00219800h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible

- This object indicates the supported operation mode on this slave unit.
Only CiA402 csp is available.

Setting Data for Each ID

[ID1 Setting Data]

F511h		ID1 Individual Setting Data	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Type	
Range : —	Unit : —	Default : 00000001h 00000002h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 02h		Comm Speed	
Range : —	Unit : —	Default : 00000006h/8h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 03h		Comm Time	
Range : —	Unit : msec	Default : 00000001h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 04h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible

Object Dictionary

- Subindex : 1 It indicates the type of Cool Muscle connected to the port. (CM1: 1 / CM2 : 2)
 2 It indicates the serial communication speed between Bridge and Cool Muscle. (6 : 178,000 bps)
 3 It indicates the time interval of the serial communication between Bridge and Cool Muscle. (1 : 1msec)
 4 (System reserved object)

[ID2 Setting Data]

F512h		ID2 Individual Setting Data	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Type	
Range : —	Unit : —	Default : 00000001h 00000002h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 02h		Comm Speed	
Range : —	Unit : —	Default : 00000006h/8h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 03h		Comm Time	
Range : —	Unit : msec	Default : 00000001h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 04h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible

- Subindex : 1 It indicates the type of Cool Muscle connected to the port. (CM1: 1 / CM2 : 2)
 2 It indicates the serial communication speed between Bridge and Cool Muscle. (6 : 178,000 bps)
 3 It indicates the time interval of the serial communication between Bridge and Cool Muscle. (1 : 1msec)
 4 (System reserved object)

[ID3 Setting Data]

F513h		ID3 Individual Setting Data	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Type	
Range : —	Unit : —	Default : 00000001h 00000002h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 02h		Comm Speed	
Range : —	Unit : —	Default : 00000006h/8h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 03h		Comm Time	
Range : —	Unit : msec	Default : 00000001h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 04h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible

- Subindex : 1 It indicates the type of Cool Muscle connected to the port. (CM1: 1 / CM2 : 2)
 2 It indicates the serial communication speed between Bridge and Cool Muscle. (6 : 178,000 bps)
 3 It indicates the time interval of the serial communication between Bridge and Cool Muscle. (1 : 1msec)
 4 (System reserved object)

[ID4 Setting Data]

F514h		ID4 Individual Setting Data	
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Object Dictionary

Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 04h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Type	
Range : —	Unit : —	Default : 00000001h 00000002h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 02h		Comm Speed	
Range : —	Unit : —	Default : 00000006h/8h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 03h		Comm Time	
Range : —	Unit : msec	Default : 00000001h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 04h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible

- Subindex : 1 It indicates the type of Cool Muscle connected to the port. (CM1: 1 / CM2: 2)
- 2 It indicates the serial communication speed between Bridge and Cool Muscle. (6 : 178,000 bps)
- 3 It indicates the time interval of the serial communication between Bridge and Cool Muscle. (1 : 1msec)
- 4 (System reserved object)

Cool Muscle Information

F530h		CoolMuscle Information (System Info)	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 18h	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Axis1 Receive Error (ID1)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 02h		Axis2 Receive Error (ID2)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 03h		Axis3 Receive Error (ID3)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 04h		Axis4 Receive Error (ID4)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 05h		Axis1 Motor Error Code (ID1)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 06h		Axis2 Motor Error Code (ID2)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 07h		Axis3 Motor Error Code (ID3)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 08h		Axis4 Motor Error Code (ID4)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (U32)		Access : RO	PDO map : Not possible
Subindex 09h		Axis1 Serial Send Counter (ID1)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 0Ah		Axis2 Serial Send Counter (ID2)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 0Bh		Axis3 Serial Send Counter (ID3)	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 0Ch		Axis4 Serial Send Counter (ID4)	
Range : —	Unit : —	Default : 00000000h	Attribute : —

Object Dictionary

Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 0Dh		
Axis1 Serial Receive Counter (ID1)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 0Eh		
Axis2 Serial Receive Counter (ID2)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 0Fh		
Axis3 Serial Receive Counter (ID3)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 10h		
Axis4 Serial Receive Counter (ID4)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 11h		
PDO Receive Cycle : Maximum Time (PDOMaxTime)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 12h		
PDO Receive Cycle : Minimum Time (PDOMiniTime)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 13h		
PDO Receive Cycle : Number of Times over 1300µsec (PDO1300uSe)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 14h		
PDO Receive Cycle : Number of Times under 700µsec (PDO700uSec)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible
Subindex 15h		
SystemInfo1 (Debug)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible
Subindex 16h		
SystemInfo2 (Debug)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible
Subindex 17h		
SystemInfo3 (Debug)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible
Subindex 18h		
SystemInfo4 (Debug)		
Range : —	Unit : —	Default : 00000000h Attribute : —
Size : 4 bytes (U32)	Access : RO	PDO map : Not possible

- Subindex : 01h–04h They indicate the accumulative number of reception errors in the bridge side in the serial communication between Bridge and Cool Muscle. They are reset when a power supply is turned on.
- 05h–08h They indicate Cool Muscle's latest error code. Error code is cleared when powered (
- 09h–0Ch They indicate the accumulative number of transmission executed by the bridge in the serial communication between Bridge and Cool Muscle. They are reset when a power supply is turned on.
- 0Dh–10h They indicate the accumulative number of reception executed by the bridge in the serial communication between Bridge and Cool Muscle. They are reset when a power supply is turned on.
- 11h The interval time of master's PDO transmission is monitored and it's maximum value is saved in the cyclic communication between the master and the slave. They are cleared when a power is turned on.
- 12h The interval time of master's PDO transmission is monitored and it's minimum value is saved in the cyclic communication between the master and the slave. They are cleared when a power is turned on.
- 13h The interval time of master's PDO transmission is monitored and the number of times longer time than 1300 µsec occurred is saved in the cyclic communication between the master and the slave. The higher the numeric value, the communication period is unstable. They are reset when a power is turned on.
- 14h The interval time of master's PDO transmission is monitored and the number

of times shorter time than 700 μsec occurred is saved in the cyclic communication between the master and the slave.
 The higher the numeric value, the communication period is unstable.
 They are reset when a power is turned on.

15h~18h (Reserved objects)

Internal Configuration Information

F540h		構成情報 (ConfigSystem); EEPROM 保存	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 0Ch	Attribute : —
Size : 1 byte (U8)		Access : RO	PDO map : Not possible
Subindex 01h		Operation mode when power is on	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 02h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 03h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 04h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 05h		Supported Master	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 06h		Slave communication cycle	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 07h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 08h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 09h		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 0Ah		Reserved	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 0Bh		Model Code (Muscle Device Type)	
Range : —	Unit : —	Default : Differ by unit types	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible
Subindex 0Ch		Serial No. (Serial Number)	
Range : —	Unit : —	Default : Serial Number	Attribute : —
Size : 4 bytes (INT32)		Access : RO	PDO map : Not possible

Subindex : 01h This subindex indicates the set operation mode started when power is on. (ID1 – ID4 starts with the same operation mode)

Set value	Operation mode
00000000h	csp
00000010h	CPIO

Csp is set as default. Mode can be changed to CPIO by Setup Tool.

02h~04h Reserved

05h This subindex indicates the supported EtherCAT Master on this device.

Set Value	Supported Master
00000000h	Default
00000001h	Trio

Use with default value when using standard master as TwinCAT from ETG.
Supported master can be changed by Setup Tool.

06h This subindex indicates the set communication cycle on this device against Master.

Set Value	Slave communication cycle
00000000h	set the same value as the one of Master
00000001h	1msec (Fixed)

Slave communication cycle shall be 1msec when a value except "0h" is entered.
Slave communication cycle can be changed by Setup Tool.

Set "1h" to set less than 1msec to communication interval between EtherCAT master and this device.

As example, when other slave devices are connected to the same master device and PDO communication cycle is 0.5msec, set "1h".

07h~0Ah Reserved

0Bh This subindex indicates the product code.

Set Value	Product Code
1	EB01
2	EB02
3	EB12

0Ch This subindex indicates the serial number of product.

F550h		Test Command (Debug)	
Subindex 00h		Number of entries	
Range : —	Unit : —	Default : 06h	Attribute : —
Size : 1 byte (U8)	Access : RO	PDO map : Not possible	
Subindex 01h		Test Command X	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible	
Subindex 02h		Test Command Y	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible	
Subindex 03h		Test Command Z	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible	
Subindex 04h		Target Position Filter	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible	
Subindex 05h		Test Command 1	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible	
Subindex 06h		Test Command 2	
Range : —	Unit : —	Default : 00000000h	Attribute : —
Size : 4 bytes (INT32)	Access : RO	PDO map : Not possible	

• This object indicates the objects that are used by the system for its debugging.

CML Transmission Data

F581h		ID1 CML Send String (ID1 String Command)	
Range : —	Unit : —	Default : —	Attribute : —
Size : 64 bytes (VS) (Max.)	Access : RW	PDO map : Not possible	

F582h		ID2 CML Send String (ID2 String Command)	
Range : —	Unit : —	Default : —	Attribute : —
Size : 64 bytes (VS) (Max.)	Access : RW	PDO map : Not possible	

Object Dictionary

F583h	ID3 CML Send String (ID3 String Command)						
Range :	—	Unit :	—	Default :	—	Attribute :	—
Size :	64 bytes (VS) (Max.)		Access :	RW		PDO map :	Not possible

F584h	ID4 CML Send String (ID4 String Command)						
Range :	—	Unit :	—	Default :	—	Attribute :	—
Size :	64 bytes (VS) (Max.)		Access :	RW		PDO map :	Not possible

• They indicate the character strings of CML Send (Master → Slave) for ID1-ID4.

F591h	ID1 CML Receive String (ID1 String Response)						
Range :	—	Unit :	—	Default :	—	Attribute :	—
Size :	64 bytes (VS) (Max.)		Access :	RO		PDO map :	Not possible

F592h	ID2 CML Receive String (ID2 String Response)						
Range :	—	Unit :	—	Default :	—	Attribute :	—
Size :	64 bytes (VS) (Max.)		Access :	RO		PDO map :	Not possible

F593h	ID3 CML Receive String (ID3 String Response)						
Range :	—	Unit :	—	Default :	—	Attribute :	—
Size :	64 bytes (VS) (Max.)		Access :	RO		PDO map :	Not possible

F594h	ID4 CML Receive String (ID4 String Response)						
Range :	—	Unit :	—	Default :	—	Attribute :	—
Size :	64 bytes (VS) (Max.)		Access :	RO		PDO map :	Not possible

• They indicate the character strings of CML Receive (Slave → Master) for ID1-ID4.
• For details about CML transmission, refer to the related sections in main volume Chapter 7 "Objects".