



# ETS Series

## SW MANUAL

### 사용자 설명서



(주) 커미조아

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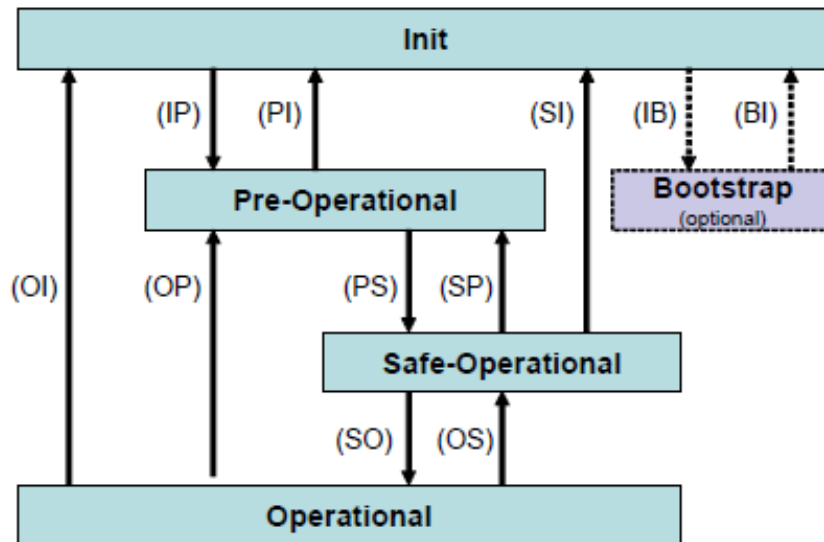
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# I. Introduction

## 1.1 EtherCAT Communication

EtherCAT 은 Ethernet for Control Automation Technology 의 약자로서, 독일의 BECKHOFF 사에서 개발된 Real-Time Ethernet 을 사용한 마스터와 슬레이브간 통신 방식을 말하며, ETG( EtherCAT Technology Group)에서 관리 되고 있습니다.

## 1.2 EtherCAT State Machine



State	Mailbox	PDO Input	PDO Output
Init	X	X	X
Pre-Operational	O	X	X
Safe-Operational	O	O	X
Operational	O	O	O

State Transition	Description
IP	메일 박스 통신을 시작합니다.
PI	메일 박스 통신을 중지합니다.
PS	PDO 입력 데이터 통신을 시작합니다.
SP	PDO 입력 데이터 통신을 중지합니다.
SO	PDO 출력 데이터 통신을 시작합니다.

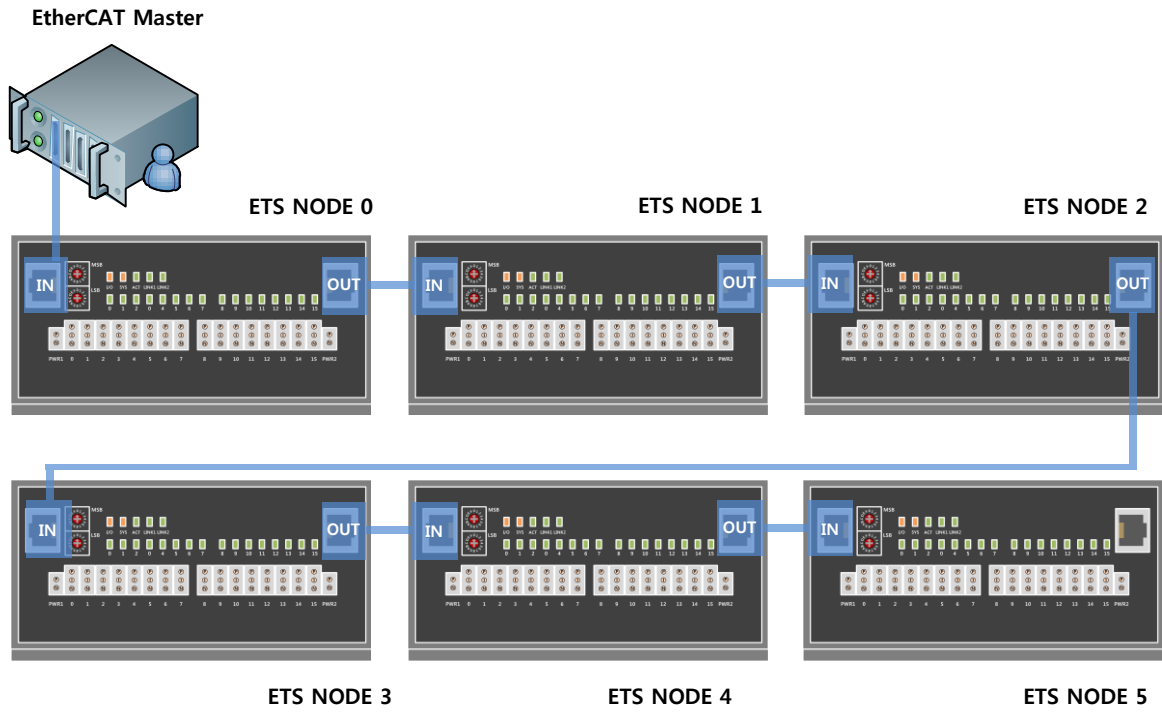
OS	PDO 출력 데이터 통신을 중지합니다.
OP	PDO 입/출력 데이터 업데이트를 중지합니다.
SI	PDO 입력 데이터 업데이트 및 메일박스 통신을 중지합니다.
OI	PDO 입/출력 데이터 업데이트 및 메일박스 통신을 모두 중지합니다.

## 2. ETS Slave

### 2.1 ETS Slave 구성

Name	Type	In/Out	Channel
ETS-D08MN	N-Type	Digital In/Out	각 8 채널 ( 총 16 채널 )
ETS-DO16N		Digital Output	16 채널
ETS-DI16N		Digital Input	16 채널
ETS-D08MP	P-Type	Digital In/Out	각 8 채널 ( 총 16 채널 )
ETS-DO16P		Digital Output	16 채널
ETS-DI16P		Digital Input	16 채널
ETS-DI32N-T		Digital Input	32 채널
ETS-DI32N-E			
ETS-DI32N-M			
ETS-DO32N-T		Digital Output	
ETS-DO32N-E			
ETS-DO32N-M			
ETS-DO04R	Relay	Digital Output	4 채널
ETS-SC08A	Serial	RS 232/422/485	8 채널

## 2.2 ETS Slave 연결 방법



# 3. Object Dictionary

## 3.1 ETS-D08MN / ETS-D08MP

### 3.1.1 PDO Mapping Objects

▶ RxPDO-Map

Index	Name	Value	Entry Name	BitLen	Data Type
0x1600	DO Ch. 0~7	0x6200 : 01	Value	8	BITARR8

▶ TxPDO-Map

Index	Name	Value	Entry Name	BitLen	Data Type
0x1A00	DI Ch. 0~7	0x6000 : 01	Value	8	BITARR8
0x1A01	Device ID	0x2000 : 01	Value	8	USINT

## 3.2 ETS-DO16N / ETS-DO16P

### 3.2.1 PDO Mapping Objects

▶ RxPDO-Map

Index	Name	Value	Entry Name	BitLen	Data Type
0x1600	DO Ch. 0~7	0x6200 : 01	Value	8	BITARR8
0x1601	DO Ch. 8~15	0x6200 : 02	Value	8	BITARR8

▶ TxPDO-Map

Index	Name	Value	Entry Name	BitLen	Data Type
0x1A00	Device ID	0x2000 : 01	Value	8	USINT



### 3.3 ETS-DI16N / ETS-DI16P

#### 3.3.1 PDO Mapping Objects

▶ TxPDO-Map

Index	Name	Value	Entry Name	BitLen	DataType
0x1A00	DI Ch. 0~7	0x6000 : 01	Value	8	BITARR8
0x1A01	DI Ch. 8~15	0x6000 : 02	Value	8	BITARR8
0x1A02	Device ID	0x2000 : 01	Value	8	USINT

## 3.4 ETS-DI32N-T / ETS-DI32N-E / ETS-DI32N-M

### 3.4.1 Common Objects

#### ► Standard Object

Index	Sub	Name	Value	Data Type	Flag
0x1000	-	Device type	0x00010191	UINT32	RO
0x1008	-	Device name	ETS-DI32N-T	STRING	RO
0x1009	-	Hardware version	-	STRING	RO
0x100A	-	Software version	-	STRING	RO
0x1018	0x0	Identity	4	UINT8	RO
	0x1	Vendor ID	0xAAAAAAAA	UINT32	RO
	0x2	Product code	0x5032D8C4	UINT32	RO
	0x3	Revision	-	UINT32	RO
	0x4	Serial number	-	UINT32	RO
0x1C00	0x0	Sync manager type	4	UINT8	RO
	0x1	SubIndex 001	0x01(1)	UINT32	RO
	0x2	SubIndex 002	0x02(2)	UINT32	RO
	0x3	SubIndex 003	0x03(3)	UINT32	RO
	0x4	SubIndex 004	0x04(4)	UINT32	RO
0x1C12	0x0	RxPDO assign	0	UINT8	RO
0x1C13	0x0	TxPDO assign	1	UINT8	RO
	0x1	SubIndex 001	0x1A00	UINT16	RO

### 3.4.2 PDO Mapping Objects

#### ► TxPDO-Map

Index	Sub	Name	Value	Data Type	Flag
0x1A00	0x0	DI TxPDO-Map	4	UINT8	RO
	0x1	DI Ch. 0~7	0x6000 : 01	BITARR8	RO
	0x2	DI Ch. 8~15	0x6000 : 02	BITARR8	RO
	0x3	DI Ch. 16~23	0x6000 : 03	BITARR8	RO
	0x4	DI Ch. 24~31	0x6000 : 04	BITARR8	RO

### 3.4.3 SDO Objects Description

▶ Digital Input Channel

Index	Sub	Name	Value	Data Type	Flag
0x6000	0	DI Inputs	0x4	UINT8	RO
	1	DI Ch.0~7 Value	0x00	BITARR8	RO
	2	DI Ch.8~15 Value	0x00	BITARR8	RO
	3	DI Ch.16~23 Value	0x00	BITARR8	RO
	4	DI Ch.24~31 Value	0x00	BITARR8	RO

**DI Ch.n Value (n = 0~31)** : 해당 모듈로 들어오는 Digital 신호값을 출력합니다.

▶ Device ID

Index	Sub	Name	Value	Data Type	Flag
0x8900	-	Device ID	0x00	UINT16	RO

**Device ID** : 해당 모듈의 물리 주소값을 출력합니다.

## 3.5 ETS-DO32N-T / ETS-DO32N-E / ETS-DO32N-M

### 3.5.1 Common Objects

#### ► Standard Object

Index	Sub	Name	Value	Data Type	Flag
0x1000	-	Device type	0x00020191	UINT32	RO
0x1008	-	Device name	ETS-DO32N-T	STRING	RO
0x1009	-	Hardware version	-	STRING	RO
0x100A	-	Software version	-	STRING	RO
0x1018	0x0	Identity	4	UINT8	RO
	0x1	Vendor ID	0xAAAAAAAA	UINT32	RO
	0x2	Product code	0x5032D9A4	UINT32	RO
	0x3	Revision	-	UINT32	RO
	0x4	Serial number	-	UINT32	RO
0x1C00	0x0	Sync manager type	4	UINT8	RO
	0x1	SubIndex 001	0x01(1)	UINT32	RO
	0x2	SubIndex 002	0x02(2)	UINT32	RO
	0x3	SubIndex 003	0x03(3)	UINT32	RO
	0x4	SubIndex 004	0x04(4)	UINT32	RO
0x1C12	0x0	RxPDO assign	1	UINT8	RO
	0x1	SubIndex 001	0x1600	UINT16	RO
0x1C13	0x0	TxPDO assign	0	UINT8	RO

### 3.5.2 PDO Mapping Objects

#### ► RxPDO-Map

Index	Sub	Name	Value	Data Type	Flag
0x1600	0x0	DO RxPDO-Map	4	UINT8	RO
	0x1	DO Ch. 0~7	0x6200:01	BITARR8	RO
	0x2	DO Ch. 8~15	0x6200:02	BITARR8	RO
	0x3	DO Ch. 16~23	0x6200:03	BITARR8	RO
	0x4	DO Ch. 24~31	0x6200:04	BITARR8	RO

### 3.5.3 SDO Objects Description

▶ Digital Output Channel

Index	Sub	Name	Value	Data Type	Flag
0x6200	0	DO Inputs	0x4	UINT8	RO
	1	DO Ch.0~7 Value	0x00	BITARR8	RO
	2	DO Ch.8~15 Value	0x00	BITARR8	RO
	3	DO Ch.16~23 Value	0x00	BITARR8	RO
	4	DO Ch.24~31 Value	0x00	BITARR8	RO

**DO Ch.n Value (n = 0~31)** : 해당 모듈이 출력하는 Digital 신호 값입니다.

▶ Device ID

Index	Sub	Name	Value	Data Type	Flag
0x8900	-	Device ID	0x00	UINT16	RO

**Device ID** : 해당 모듈의 물리 주소값을 출력합니다.

## 3.6 ETS-DO04R

### 3.6.1 PDO Mapping Objects

▶ RxPDO-Map

Index	Name	Value	Entry Name	BitLen	DataType
0x1600	Channel 1	0x6200:01	Value	1	BOOL
0x1601	Channel 2	0x6200:02	Value	1	BOOL
0x1602	Channel 3	0x6200:03	Value	1	BOOL
0x1603	Channel 4	0x6200:04	Value	1	BOOL

▶ TxPDO-Map

Index	Name	Value	Entry Name	BitLen	DataType
0x1A00	Device ID	0x2000:01	Value	8	USINT

## 3.7 ETS-AI08AH-E

### 3.7.1 Common Objects

► Standard Object

Index	Sub	Name	Value	Data Type	Flag
0x1000	-	Device type	0x00040191	UINT32	RO
0x1008	-	Device name	ETS-AI08AH-E	STRING	RO
0x1009	-	Hardware version	-	STRING	RO
0x100A	-	Software version	-	STRING	RO
0x1018	0x0	Identity	4	UINT8	RO
	0x1	Vendor ID	0xAAAAAAAA	UINT32	RO
	0x2	Product code	0x5032D2A8	UINT32	RO
	0x3	Revision	-	UINT32	RO
	0x4	Serial number	-	UINT32	RO
0x1C00	0x0	Sync manager type	4	UINT8	RO
	0x1	SubIndex 001	0x01(1)	UINT32	RO
	0x2	SubIndex 002	0x02(2)	UINT32	RO
	0x3	SubIndex 003	0x03(3)	UINT32	RO
	0x4	SubIndex 004	0x04(4)	UINT32	RO
0x1C12	0x0	RxPDO assign	0	UINT8	RO
0x1C13	0x0	TxPDO assign	8	UINT8	RO
	0x1	SubIndex 001	0x1A00	UINT16	RO
	0x2	SubIndex 002	0x1A01	UINT16	RO
	0x3	SubIndex 003	0x1A02	UINT16	RO
	0x4	SubIndex 004	0x1A03	UINT16	RO
	0x5	SubIndex 005	0x1A04	UINT16	RO
	0x6	SubIndex 006	0x1A05	UINT16	RO
	0x7	SubIndex 007	0x1A06	UINT16	RO
	0x8	SubIndex 008	0x1A07	UINT16	RO

### 3.7.2 PDO Mapping Objects

► TxPDO-Map Ch.n (n = 0~7)

Index	Sub	Name	Value	Data Type	Flag
0x1A0n	0x0	AI TxPDO-Map(n)	0x9	UINT8	RO
	0x1	SubIndex 001	0x60n0:01	UINT32	RO
	0x2	SubIndex 002	0x60n0:02	UINT32	RO
	0x3	SubIndex 003	0x60n0:03	UINT32	RO
	0x4	SubIndex 004	0x60n0:04	UINT32	RO
	0x5	SubIndex 005	0x60n0:05	UINT32	RO
	0x6	SubIndex 006	0x60n0:06	UINT32	RO
	0x7	SubIndex 007	0x60n0:07	UINT32	RO
	0x8	SubIndex 008	0x60n0:08	UINT32	RO
	0x9	SubIndex 009	0x60n0:09	UINT32	RO

### 3.5.3 SDO Objects Description

▶ Analog Input Channel n (n = 0~7 : 채널 번호)

Index	Sub	Name	Value	Data Type	Flag	
0x60n0	0x00	AI Channel. n	0x11	UINT8	RO	
	0x01	Underrange	1   설정한 최소 범위 이하	BOOL	RO	
	0x02	Overrange	1   설정한 최대 범위 이상	BOOL	RO	
	0x03	Limit 1	0	Not used	BIT2	RO
			1	AI Value > Limit 1		
			2	AI Value < Limit 1		
			3	AI Value = Limit 1		
	0x04	Limit 2	0	Not used	BIT2	RO
			1	AI Value > Limit 2		
			2	AI Value < Limit 2		
			3	AI Value = Limit 2		
	0x05	Error	1   Data Read 실패	BOOL	RO	
	0x0E	TxPDO State	AD Chip 동작 상태 반환	BOOL	RO	
	0x0F	TxPDO Toggle	Data Update 시 Toggle	BOOL	RO	
	0x11	Value	입력 받은 전압/전류 값을 표시합니다. Ex) 전압 : Value 2010 = 2.01V 전류 : Value 12340 = 12.34mA	INT16	RO	



▶ Analog Input Channel Setting (n = 0~7 : 채널 번호)

Index	Sub	Name	Value	Data Type	Flag	
0x80n0	0x00	AI Setting Ch. n	0x0B	UINT8	RO	
	0x01	Enable Limit 1	Limit 1 사용 여부	BOOL	RW	
	0x02	Enable Limit 2	Limit 2 사용 여부	BOOL	RW	
	0x03	Analog Type	0	Voltage Type	BOOL	RW
			1	Current Type		
	0x09	Range Mode	0	-10.24 ~ 10.24 (V)	BIT5	RW
			1	-5.12 ~ 5.12 (V)		
			2	-2.56 ~ 2.56 (V)		
			3	0 ~ 10.24 (V)		
			4	0 ~ 5.12 (V)		
			5	4 ~ 20 (mA)		
6			0 ~ 20 (mA)			
7			0 ~ 24 (mA)			
0x0A	Limit1 Value	Limit 1 값	INT32	RW		
0x0B	Limit2 Value	Limit 2 값	INT32	RW		

▶ Device ID

Index	Sub	Name	Value	Data Type	Flag
0x8900	-	Device ID	0x00	UINT16	RO

**Device ID** : 해당 모듈의 물리 주소값을 출력합니다.

▶ Setting Save Flag

Index	Sub	Name	Value	Data Type	Flag
0xF001	0x00	Setting Save Flag	0x0000	UINT16	RW

**Setting Save Flag** : Setting 값의 저장 유무 입니다.

Value	Meaning
0	Setting 값을 저장하지 않습니다.
1	Setting 값을 저장합니다.

## 3.8 ETS-AO04I-E

### 3.8.1 Common Objects

► Standard Object

Index	Sub	Name	Value	Data Type	Flag
0x1000	-	Device type	0x00080191	UINT32	RO
0x1008	-	Device name	ETS-AO04I-E	STRING	RO
0x1009	-	Hardware version	-	STRING	RO
0x100A	-	Software version	-	STRING	RO
0x1018	0x0	Identity	4	UINT8	RO
	0x1	Vendor ID	0xAAAAAAAA	UINT32	RO
	0x2	Product code	0x5032D344	UINT32	RO
	0x3	Revision	-	UINT32	RO
	0x4	Serial number	-	UINT32	RO
0x1C00	0x0	Sync manager type	4	UINT8	RO
	0x1	SubIndex 001	0x01(1)	UINT32	RO
	0x2	SubIndex 002	0x02(2)	UINT32	RO
	0x3	SubIndex 003	0x03(3)	UINT32	RO
	0x4	SubIndex 004	0x04(4)	UINT32	RO
0x1C12	0x0	RxPDO assign	1	UINT8	RO
	0x1	SubIndex 001	0x1600	UINT16	RO
0x1C13	0x0	TxPDO assign	0	UINT8	RO

### 3.8.2 PDO Mapping Objects

► RxPDO-Map

Index	Sub	Name	Value	Data Type	Flag
0x1600	0x0	AO RxPDO-Map	0x4	UINT8	RO
	0x1	SubIndex 001	0x6411:01	UINT32	RO
	0x2	SubIndex 002	0x6411:02	UINT32	RO
	0x3	SubIndex 003	0x6411:03	UINT32	RO
	0x4	SubIndex 004	0x6411:04	UINT32	RO

### 3.8.3 SDO Objects Description

#### ▶ Analog Output

Index	Sub	Name	Value	Data Type	Flag
0x6411	0x00	AO Channel. n	0x04	UINT8	RO
	0x01	AO Ch.0 Value	출력할 전류 값을 표시합니다. EX) Value 12340 = 12.34mA	INT16	RO
	0x02	AO Ch.1 Value		INT16	RO
	0x03	AO Ch.2 Value		INT16	RO
	0x04	AO Ch.3 Value		INT16	RO

#### ▶ Analog Output Channel Setting (n = 0~3 : 채널 번호)

Index	Sub	Name	Value	Data Type	Flag	
0x80n0	0x00	AO Setting Ch.n	0x01	UINT8	RO	
	0x01	Range Mode	0	4 ~ 20 mA	UINT32	RW
			1	0 ~ 20 mA		
			2	0 ~ 24 mA		

#### ▶ Device ID

Index	Sub	Name	Value	Data Type	Flag
0x8900	-	Device ID	0x00	UINT16	RO

**Device ID** : 해당 모듈의 물리 주소값을 출력합니다.

#### ▶ Setting Save Flag

Index	Sub	Name	Value	Data Type	Flag
0xF001	0x00	Setting Save Flag	0x0000	UINT16	RW

**Setting Save Flag** : Setting 값의 저장 유무 입니다.

Value	Meaning
0	Setting 값을 저장하지 않습니다.
1	Setting 값을 저장합니다.

## 3.9 ETS-AO04V-E

### 3.9.1 Common Objects

► Standard Object

Index	Sub	Name	Value	Data Type	Flag
0x1000	-	Device type	0x00080191	UINT32	RO
0x1008	-	Device name	ETS-AO04V-E	STRING	RO
0x1009	-	Hardware version	-	STRING	RO
0x100A	-	Software version	-	STRING	RO
0x1018	0x0	Identity	4	UINT8	RO
	0x1	Vendor ID	0xAAAAAAAA	UINT32	RO
	0x2	Product code	0x5032D304	UINT32	RO
	0x3	Revision	-	UINT32	RO
	0x4	Serial number	-	UINT32	RO
0x1C00	0x0	Sync manager type	4	UINT8	RO
	0x1	SubIndex 001	0x01(1)	UINT32	RO
	0x2	SubIndex 002	0x02(2)	UINT32	RO
	0x3	SubIndex 003	0x03(3)	UINT32	RO
	0x4	SubIndex 004	0x04(4)	UINT32	RO
0x1C12	0x0	RxPDO assign	1	UINT8	RO
	0x1	SubIndex 001	0x1600	UINT16	RO
0x1C13	0x0	TxPDO assign	0	UINT8	RO

### 3.9.2 PDO Mapping Objects

► RxPDO-Map

Index	Sub	Name	Value	Data Type	Flag
0x1600	0x0	AO RxPDO-Map	0x4	UINT8	RO
	0x1	SubIndex 001	0x6411:01	UINT32	RO
	0x2	SubIndex 002	0x6411:02	UINT32	RO
	0x3	SubIndex 003	0x6411:03	UINT32	RO
	0x4	SubIndex 004	0x6411:04	UINT32	RO

### 3.9.3 SDO Objects Description

▶ Analog Output

Index	Sub	Name	Value	Data Type	Flag
0x6411	0x00	AO Channel. n	0x04	UINT8	RO
	0x01	AO Ch.0 Value	출력할 전압 값을 표시합니다. EX) Value 2010 = 2.01 V	INT16	RO
	0x02	AO Ch.1 Value		INT16	RO
	0x03	AO Ch.2 Value		INT16	RO
	0x04	AO Ch.3 Value		INT16	RO

▶ Analog Output Channel Setting (n = 0~3 : 채널 번호)

Index	Sub	Name	Value	Data Type	Flag	
0x80n0	0x00	AO Setting Ch.n	0x01	UINT8	RO	
	0x01	Range Mode	0	0 ~ 5 V	UINT32	RW
			1	0 ~ 10 V		
			2	0 ~ 10.8 V		
			3	-5 ~ 5 V		
			4	-10 ~ 10 V		
			5	-10.8 ~ 10.8 V		

▶ Device ID

Index	Sub	Name	Value	Data Type	Flag
0x8900	-	Device ID	0x00	UINT16	RO

**Device ID** : 해당 모듈의 물리 주소값을 출력합니다.

▶ Setting Save Flag

Index	Sub	Name	Value	Data Type	Flag
0xF001	0x00	Setting Save Flag	0x0000	UINT16	RW

**Setting Save Flag** : Setting 값의 저장 유무 입니다.

Value	Meaning
0	Setting 값을 저장하지 않습니다.
1	Setting 값을 저장합니다.

## 3.10 ETS-SC08A

### 3.10.1 Common Objects

► Standard Object

Index	Sub	Name	Value	Data Type	Flag
0x1000	-	Device type	0x02581389	UINT32	RO
0x1008	-	Device name	ETS-SC08A	STRING	RO
0x1009	-	Hardware version	-	STRING	RO
0x100A	-	Software version	-	STRING	RO
0x1018	0x0	Identity	4	UINT8	RO
	0x1	Vendor ID	0xAAAAAAAA	UINT32	RO
	0x2	Product code	0x5032D9A4	UINT32	RO
	0x3	Revision	-	UINT32	RO
	0x4	Serial number	-	UINT32	RO
0x1C00	0x0	Sync manager type	4	UINT8	RO
	0x1	SubIndex 001	0x01(1)	UINT32	RO
	0x2	SubIndex 002	0x02(2)	UINT32	RO
	0x3	SubIndex 003	0x03(3)	UINT32	RO
	0x4	SubIndex 004	0x04(4)	UINT32	RO
0x1C12	0x0	RxPDO assign	8	UINT8	RO
	0x1	SubIndex 001	0x1600	UINT16	RO
	0x2	SubIndex 002	0x1601	UINT16	RO
	~	~	~	UINT16	RO
	0x7	SubIndex 007	0x1606	UINT16	RO
	0x8	SubIndex 008	0x1607	UINT16	RO
0x1C13	0x0	TxPDO assign	8	UINT8	RO
	0x1	SubIndex 001	0x1A00	UINT16	RO
	0x2	SubIndex 002	0x1A01	UINT16	RO
	~	~	~	UINT16	RO
	0x7	SubIndex 007	0x1A06	UINT16	RO
	0x8	SubIndex 008	0x1A07	UINT16	RO

### 3.10.2 PDO Mapping Objects

► COM RxPDO-Map Output Ch.n (n = 0~7)

Index	Sub	Name	Value	Data Type	Flag
0x160n	0x00	COM RxPDO-Map Outputs Ch. n	0x26	UINT8	RO
	0x01	SubIndex 001	0x70n0:01, 1	UINT32	RO
	0x02	SubIndex 002	0x70n0:02, 1	UINT32	RO
	0x03	SubIndex 003	0x70n0:03, 1	UINT32	RO
	0x04	SubIndex 004	0x70n0:04, 1	UINT32	RO
	0x05	SubIndex 005	0x0000:00, 4	UINT32	RO
	0x06	SubIndex 006	0x70n0:09, 8	UINT32	RO
	0x07	SubIndex 007	0x70n0:11, 8	UINT32	RO
	0x08	SubIndex 008	0x70n0:12, 8	UINT32	RO
	0x09	SubIndex 009	0x70n0:13, 8	UINT32	RO
	0x0A	SubIndex 010	0x70n0:14, 8	UINT32	RO
	~	~	~	UINT32	RO
	0x25	SubIndex 027	0x70n0:25, 8	UINT32	RO
	0x26	SubIndex 028	0x70n0:26, 8	UINT32	RO

► COM TxPDO-Map Input Ch.n (n = 0~7)

Index	Sub	Name	Value	Data Type	Flag
0x1A0n	0x00	COM TxPDO-Map Inputs Ch. n	0x29	UINT8	RO
	0x01	SubIndex 001	0x60n0:01, 1	UINT32	RO
	0x02	SubIndex 002	0x60n0:02, 1	UINT32	RO
	0x03	SubIndex 003	0x60n0:03, 1	UINT32	RO
	0x04	SubIndex 004	0x60n0:04, 1	UINT32	RO
	0x05	SubIndex 005	0x60n0:05, 1	UINT32	RO
	0x06	SubIndex 006	0x60n0:06, 1	UINT32	RO
	0x07	SubIndex 007	0x60n0:07, 1	UINT32	RO



0x08	SubIndex 008	0x0000:00, 1	UINT32	RO
0x09	SubIndex 009	0x60n0:09, 8	UINT32	RO
0x0A	SubIndex 010	0x60n0:11, 8	UINT32	RO
0x0B	SubIndex 011	0x60n0:12, 8	UINT32	RO
0x0C	SubIndex 012	0x60n0:13, 8	UINT32	RO
0x0D	SubIndex 013	0x60n0:14, 8	UINT32	RO
~	~	~	UINT32	RO
0x25	SubIndex 030	0x60n0:25, 8	UINT32	RO
0x26	SubIndex 031	0x60n0:26, 8	UINT32	RO

### 3.10.3 SDO Objects Description

▶ COM Inputs Ch.n (n = 0~7 : 채널 번호)

Index	Sub	Name	Value	Data Type	Flag
0x60n0	0x00	COM Inputs Ch. n	0x2A	UINT8	RO
	0x01	Transmit accepted	0x00	BOOL	RO
	0x02	Receive request	0x00	BOOL	RO
	0x03	Init accepted	0x00	BOOL	RO
	0x04	Buffer full	0x00	BOOL	RO
	0x05	Parity error	0x00	BOOL	RO
	0x06	Framing error	0x00	BOOL	RO
	0x07	Overrun error	0x00	BOOL	RO
	0x09	Input length	0x00	UINT8	RO
	0x11	Data In 0	0x00	UINT8	RO
	0x12	Data In 1	0x00	UINT8	RO
	0x13	Data In 2	0x00	UINT8	RO
	~	~	~	UINT8	RO
	0x25	Data In 20	0x00	UINT8	RO
	0x26	Data In 21	0x00	UINT8	RO

▶ COM Status Ch.n (n = 0~7 : 채널 번호)

Index	Sub	Name	Value	Data Type	Flag
0x60n1	0x00	Status Ch. n	0x01	UINT8	RO
	0x01	Status	0x0000	UINT16	RO

▶ COM Outputs Ch.n (n = 0~7 : 채널 번호)

Index	Sub	Name	Value	Data Type	Flag
0x70n0	0x00	COM Outputs Ch. n	0x2A	UINT8	RO
	0x01	Transmit request	0x00	BOOL	RO
	0x02	Receive accepted	0x00	BOOL	RO
	0x03	Init request	0x00	BOOL	RO
	0x04	Send continuous	0x00	BOOL	RO
	0x09	Output length	0x00	UINT8	RO
	0x11	Data In 0	0x00	UINT8	RO
	0x12	Data In 1	0x00	UINT8	RO
	0x13	Data In 2	0x00	UINT8	RO
	~	~	~	UINT8	RO
	0x25	Data In 20	0x00	UINT8	RO
	0x26	Data In 21	0x00	UINT8	RO

▶ COM Ctrl Ch.n (n = 0~7 : 채널 번호)

Index	Sub	Name	Value	Data Type	Flag
0x70n1	0x00	Ctrl Ch. n	0x01	UINT8	RO
	0x01	Ctrl	0x0000	UINT16	RO

## ▶ COM Setting Ch.n (n = 0~7 : 채널 번호)

Index	Sub	Name	Value		Data Type	Flag
0x80n1	0x00	COM Settings Ch. n	0x06		UINT8	RW
	0x01	Data Bit	0	7 Bit	UINT32	RW
			1	8 Bit		
	0x02	Stop Bit	0	1 Bit	UINT32	RW
			1	2 Bit		
	0x03	Parity Bit	0	No Parity	UINT32	RW
			1	Odd Parity		
			2	Even Parity		
	0x04	Baudrate	0	2,400	UINT32	RW
			1	4,800		
			2	9,600		
			3	14,400		
			4	19,200		
			5	38,400		
			6	57,600		
7			115,200			
0x05	Serial Type	0	RS 232/422	UINT32	RW	
		1	RS 485			

## ▶ Setting Save Flag

Index	Sub	Name	Value	Data Type	Flag
0xF001	0x00	Setting Save Flag	0x0000	UINT16	RW

**Setting Save Flag** : Setting 값의 저장 유무 입니다.

Value	Meaning
0	Setting 값을 저장하지 않습니다.
1	Setting 값을 저장합니다.

## 개정 이력

구분	개정일	개정 내용	작성자
초판	2015. 9. 24.	초판	유다실

2015 년 9 월 24 일 초판 인쇄

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