CA200E

CA200E EhterCAT

100W~7.5kW

EtherCAT

PID

CA200E EtherCAT CA200E

www.simphoenix.com.cn

CA200E

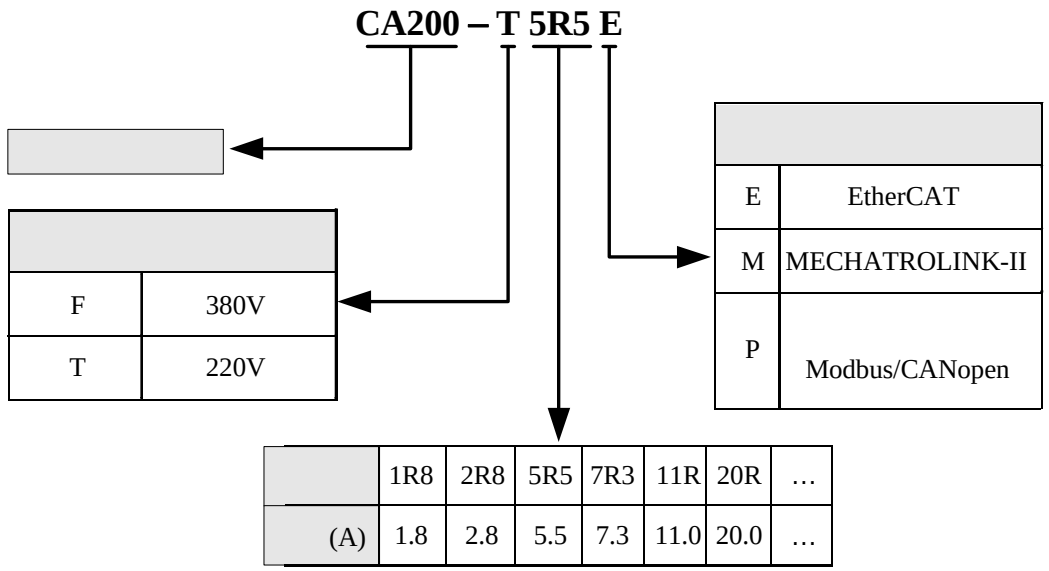
V100B00

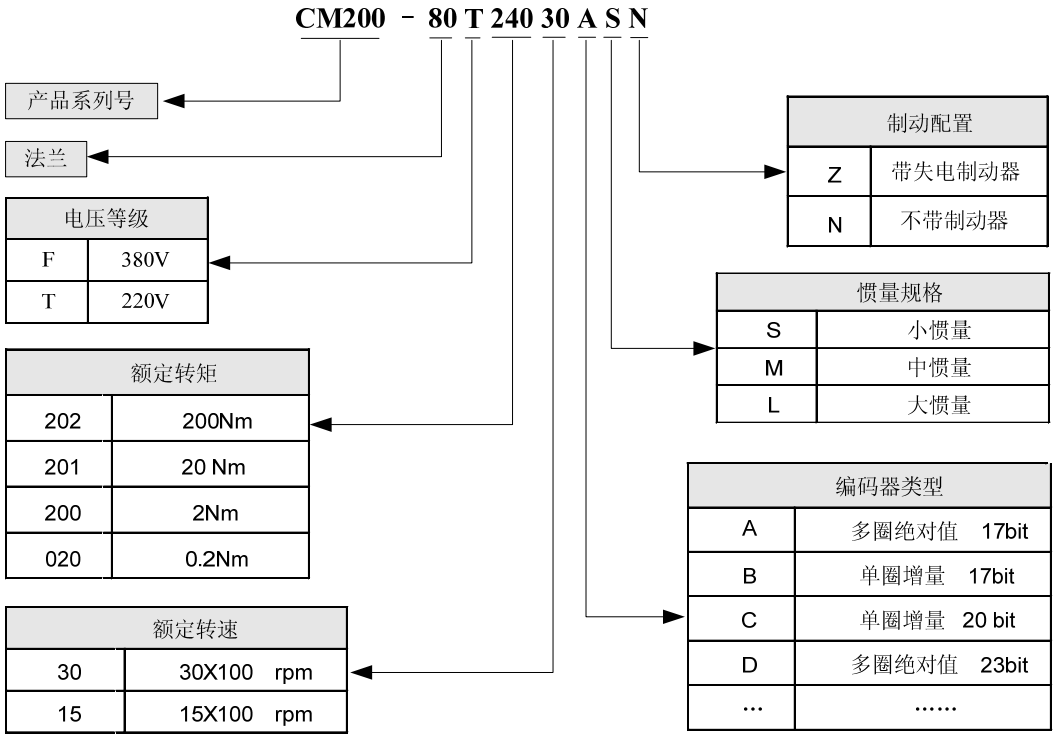
2013-3-10

1

1.1

1-1


CA200 – T 5R5 E
F 380V
T 220V
E EtherCAT
M MECHATROLINK-II
P Modbus/CANopen
1R8 2R8 5R5 7R3 11R 20R …
(A) 1.8 2.8 5.5 7.3 11.0 20.0 …

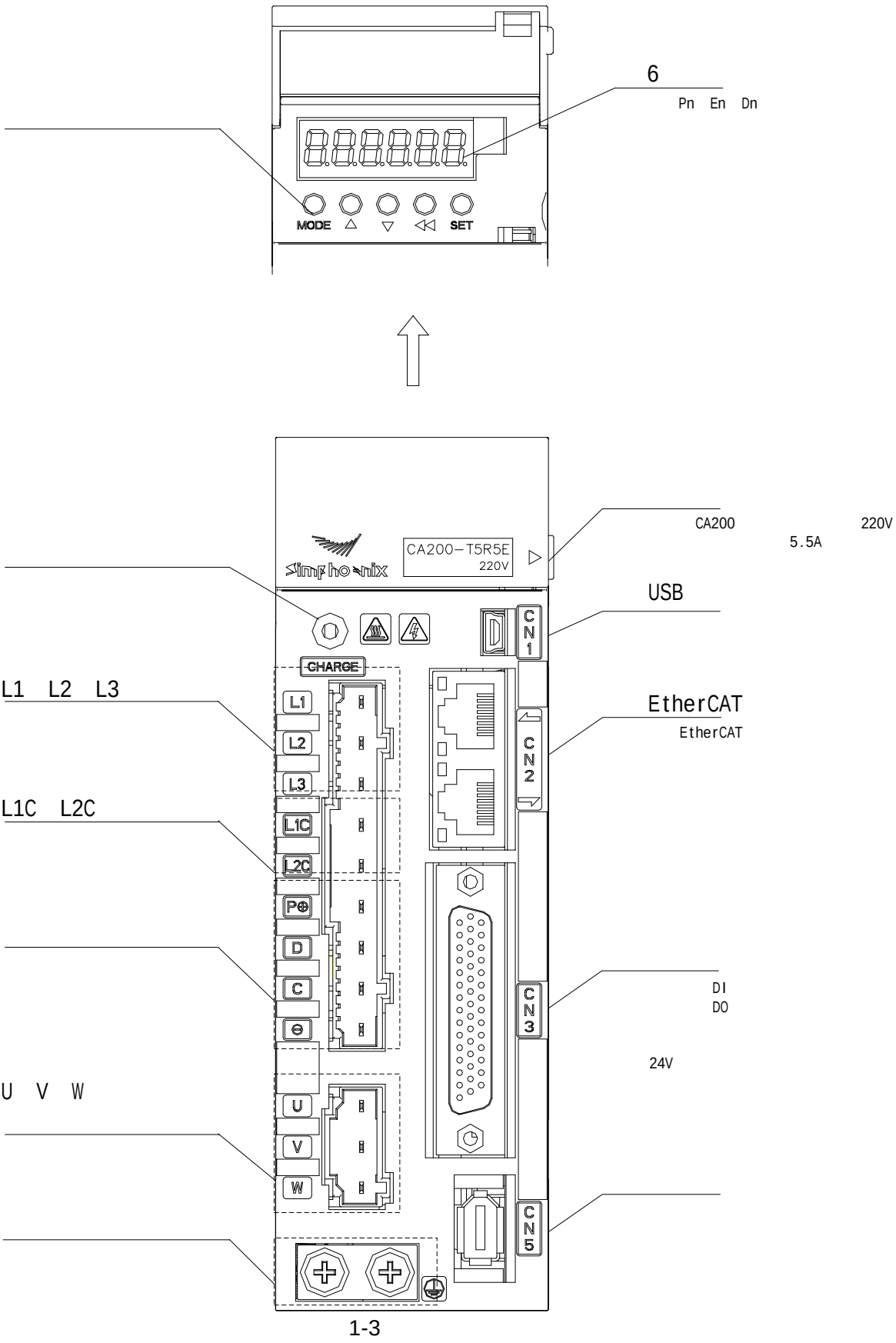

CM200 - 80 T 240 30 A S N
产品系列号
法兰
电压等级
F 380V
T 220V
额定转矩
202 200Nm
201 20 Nm
200 2Nm
020 0.2Nm
额定转速
30 30X100 rpm
15 15X100 rpm
制动配置
Z 带失电制动器
N 不带制动器
惯量规格
S 小惯量
M 中惯量
L 大惯量
编码器类型
A 多圈绝对值 17bit
B 单圈增量 17bit
C 单圈增量 20 bit
D 多圈绝对值 23bit
… ……

1-2

1.2 EtherCAT

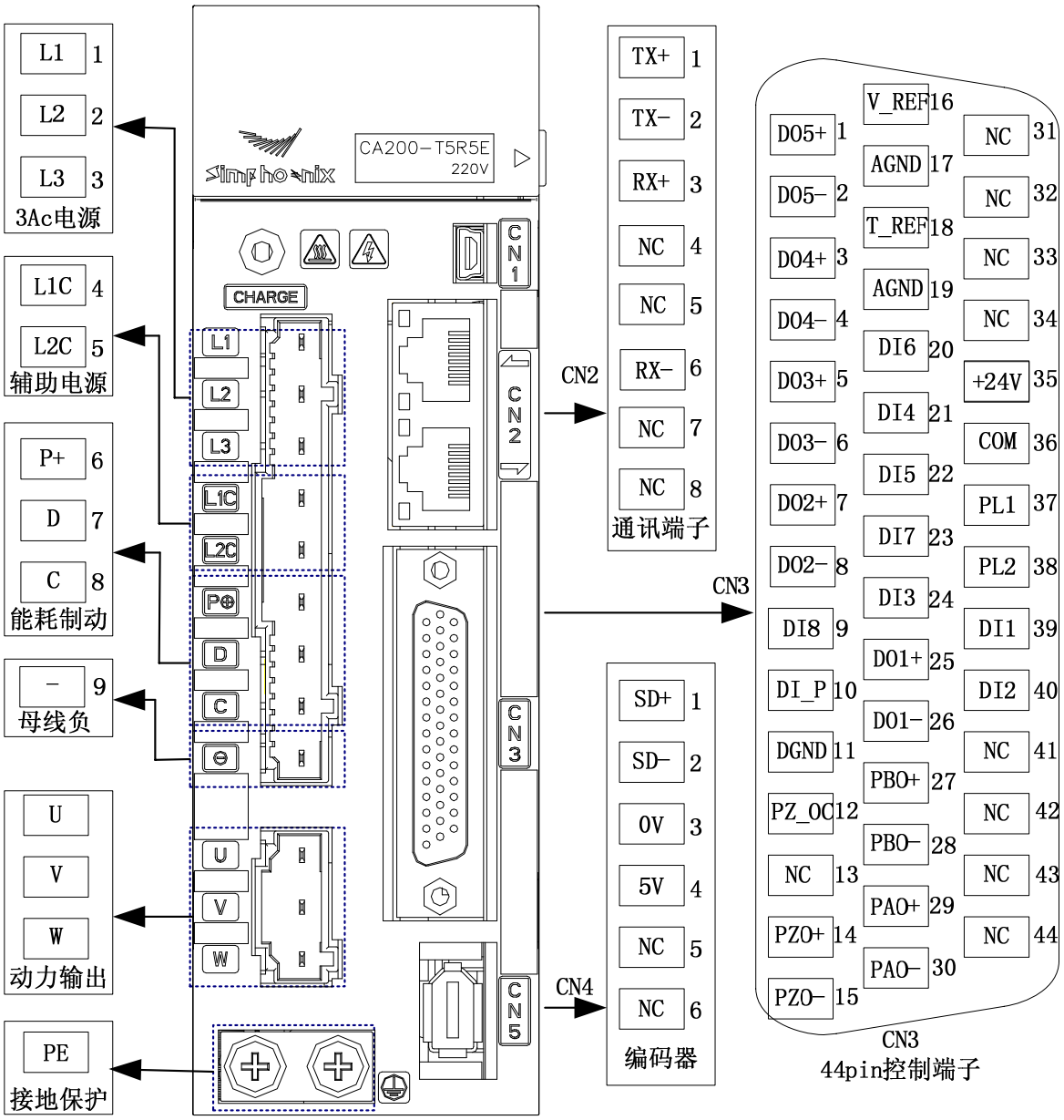
EtherCAT		100BASE-TX
		RJ45 × 2(CN2 Int CN2 Out)
		2 × 100Mbps( )
		1484
		SM0 Mailbox
		SM1 Mailbox
		SM2
		SM3
		FMMU0
		FMMU1
		FMMU2 Mailbox
		CoE(CANopen over EtherCAT)
		DC (SYNC0)
		(Free Run)
		SDO
		PDO
		EMCY
	LED	EhterCAT Error × 1
		EhterCAT Link/Activity × 2
		EtherCAT Run × 1
		IEC61800-7 CiA402 Drive Profile
	CiA	Profile Position Mode(PP)
		Profile Velocity Mode(PV)
		Profile Torque Mode(PT)
		Homing Mode(HM)
		Cyclic Synchronous Position Mode(CSP)
		Cyclic Synchronous Velocitly Mode(CSV)
		Cyclic Synchronous Torque Mode(CST)

1.3


6
Pn En Dn
MODE
SET
CA200 220V
5.5A
CA200-T5R5E
220V
USB
CHARGE
L1 L2 L3
EtherCAT
EtherCAT
L1C L2C
DI
DO
24V
U V W
CN1
CN2
CN3
CN5

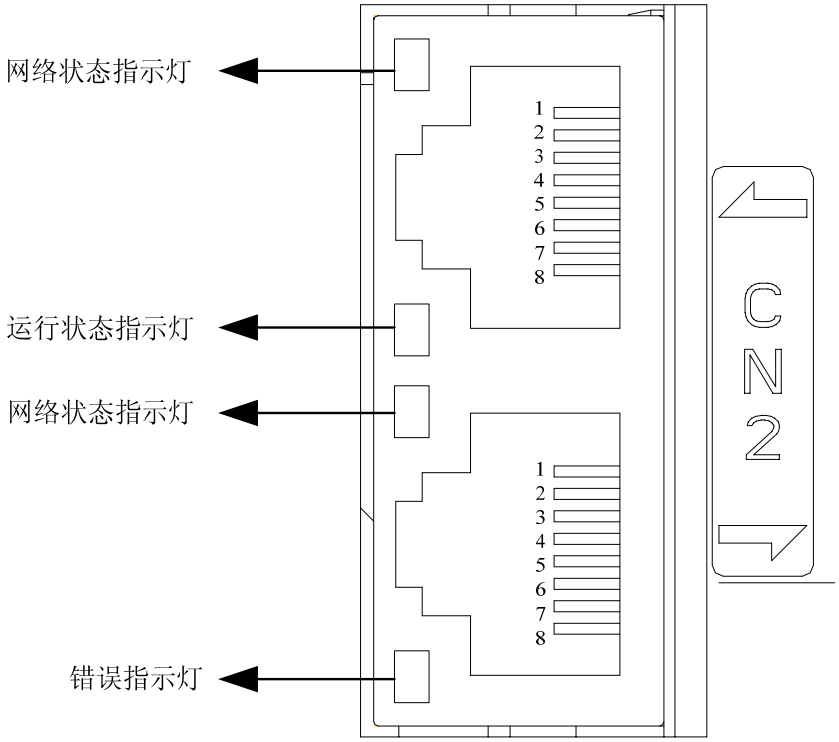
1-3

1.4


L1 1
L2 2
L3 3
3Ac电源
L1C 4
L2C 5
辅助电源
P+ 6
D 7
C 8
能耗制动
– 9
母线负
U
V
W
动力输出
PE
接地保护
CA200-T5R5E
220V
CHARGE
CN1
CN2
CN3
CN4
CN5
TX+ 1
TX– 2
RX+ 3
NC 4
NC 5
RX– 6
NC 7
NC 8
通讯端子
SD+ 1
SD– 2
0V 3
5V 4
NC 5
NC 6
编码器
DO5+ 1
DO5– 2
DO4+ 3
DO4– 4
DO3+ 5
DO3– 6
DO2+ 7
DO2– 8
DI8 9
DI_P 10
DGND 11
PZ_OC 12
NC 13
PZO+ 14
PZO– 15
V_REF 16
AGND 17
T_REF 18
AGND 19
DI6 20
DI4 21
DI5 22
DI7 23
DI3 24
DO1+ 25
DO1– 26
PBO+ 27
PBO– 28
PAO+ 29
PAO– 30
NC 31
NC 32
NC 33
NC 34
+24V 35
COM 36
PL1 37
PL2 38
DI1 39
DI2 40
NC 41
NC 42
NC 43
NC 44
CN3
44pin控制端子

1-4

1.5 EhterCAT

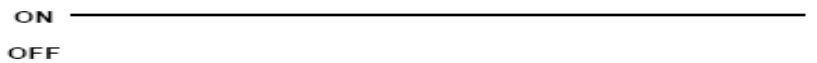
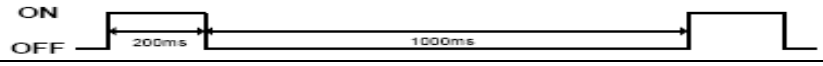
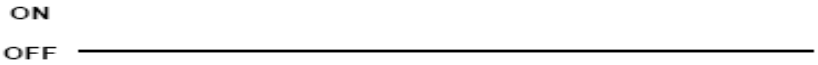


Pin NO		
1	TX+	Transmit+
2	TX-	Transmit-
3	RX+	Receive+
4	-	-
5	-	-
6	RX-	Receive-
7	-	-
8	-	-

1. 50

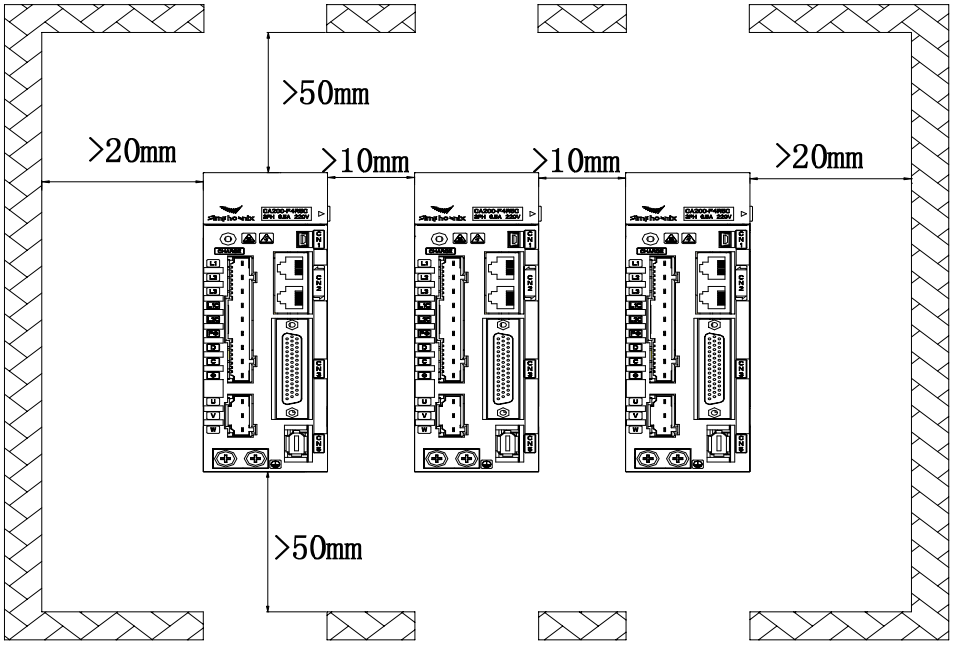
2. CAT5e STP Shielding

1.6 EhterCAT LED

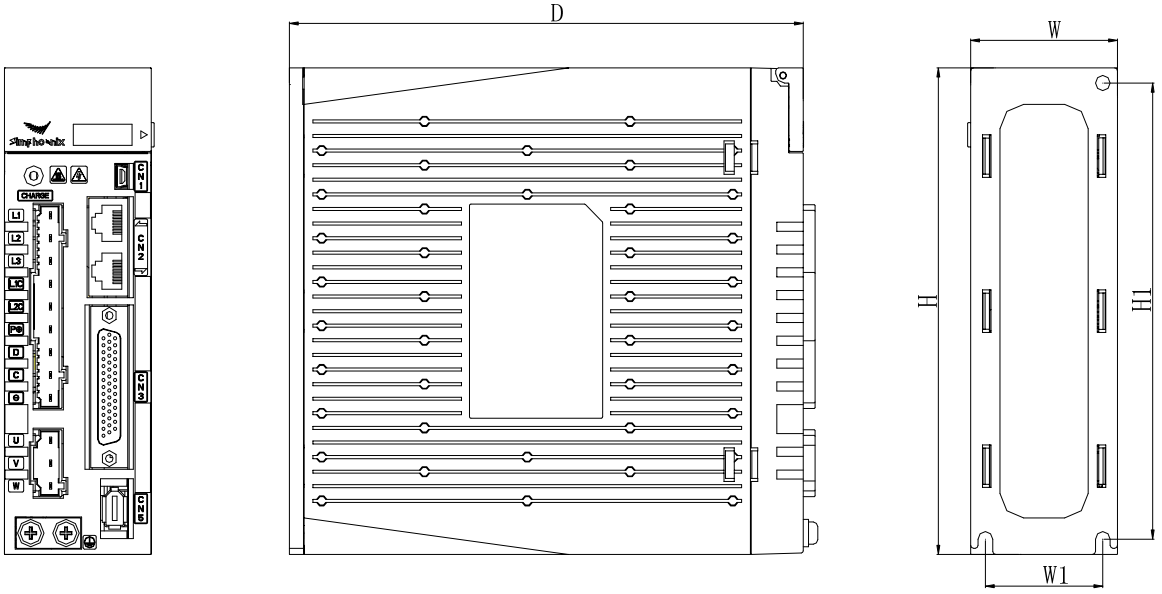
	
	
	
	

				PDI

1.7



1-5



1-6

1-1

	W(mm)	W1(mm)	H1(mm)	H(mm)	D(mm)	
T1R8/ T3R0	50	40	150	160	175	M4
T5R5/ T7R5	70	60	150	160	175	M4
T11R/ F6R0/F11R	100	89	169	180	200	M5
F20RA/ F25RA	126	80	268	278	210	M5

2

2.1 EtherCAT

CA200E CA200 CA200P

EtherCAT

Pn-100		0 1 2 3 / 4 / 5 / 6 CANopen 7 EtherCAT	1	7	■	P S T

Pn-100 7 EtherCAT CiA402

Pn-950	EtherCAT 1	**Station Alias Register(0x0012)** 0 EtherCAT EEPROM 1 Pn-900 **EtherCAT** 0 EtherCAT OP 1 EtherCAT INT		0000	• /H	P S T

Pn-950 EtherCAT

Pn-950 EtherCAT

Pn-951	EtherCAT 2	(0x60FD) 0 DI Z (0x60FD) 1 (0x60FD) (0x606C) (0x60FF) 0 0.1rpm 1 pulse/sec		0000	H	P S T

Pn-951 0x60FD

Pn-951 0x606C 0x60FD

Pn-952	EhterCAT	(0x6041) bit4 0 Servo On 1 RST (0x6041) bit10 0 CSP 1 CSP Target Reach (0x6041) bit14 0 1 (0x6041) bit15 0 1		0011	H	P S T

Pn-952 0x6041 bit

Pn-953	EtherCAT	+ +		FF04	• /H	P S T

Pn-953 EhterCAT

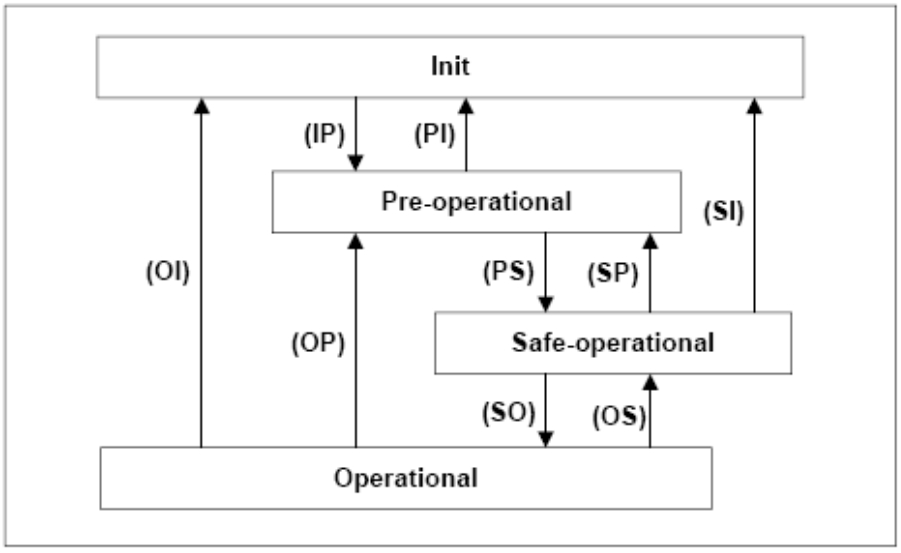
2.2 EtherCAT

EtherCAT

Init	
Pre-Operational	SDO
Safe-Operational	SDO TxPDO
Operartional	SDO PDO(TxPDO RxPDO)

2.3 EtherCAT

EtherCAT



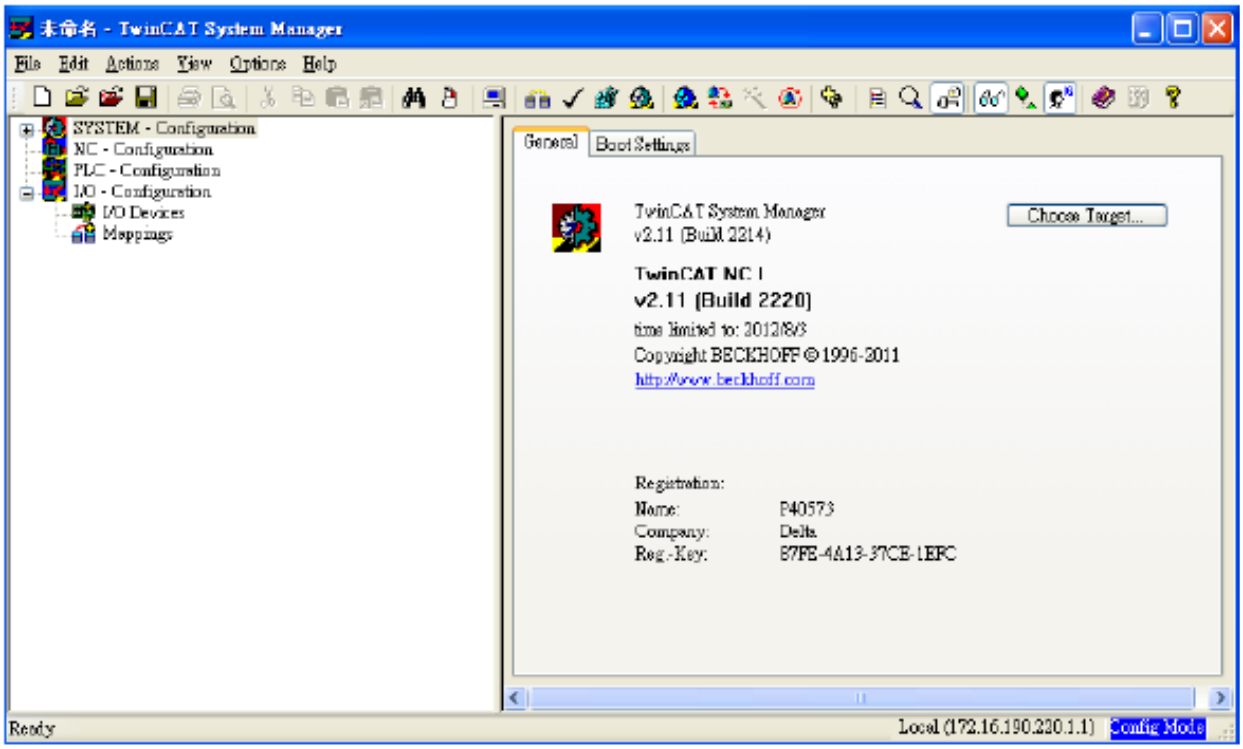
IP	• SyncManager(0/1) Mailbox • Safe-Operational
PS	• SDO PDO • FMMU SyncManager(2/3) PDO(TxPDO) • Operational
SO	• Master PDO(RxPDO) • Distributed Clock
PI/SI/OI	• SDO PDO • Init
SP/OP	• PDO • Pre-Operational
OS	• Master PDO(RxPDO) • Safe-Operational

2.4 TwinCAT

EtherCAT Beckhoff TwinCAT

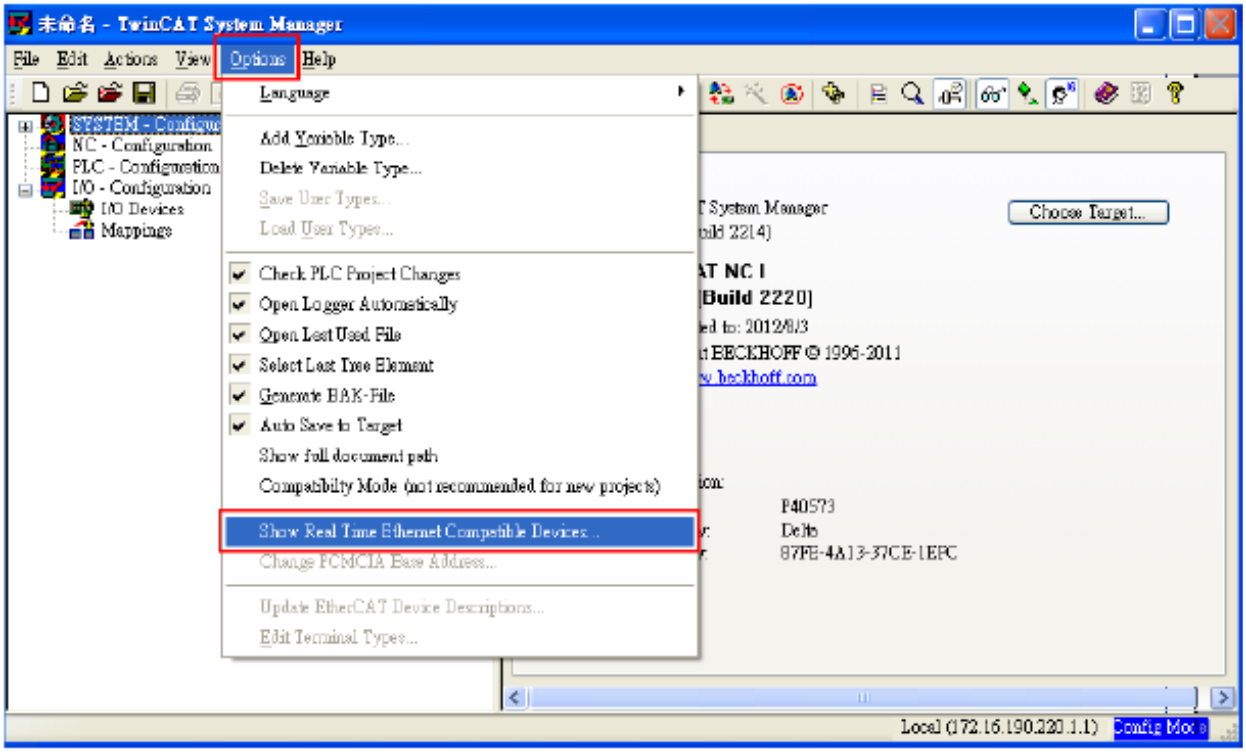
TwinCAT

1. Delta XML TwinCAT (:C:\TwinCAT\Io\EtherCAT)
2. TwinCAT
3. TwinCAT System Manager

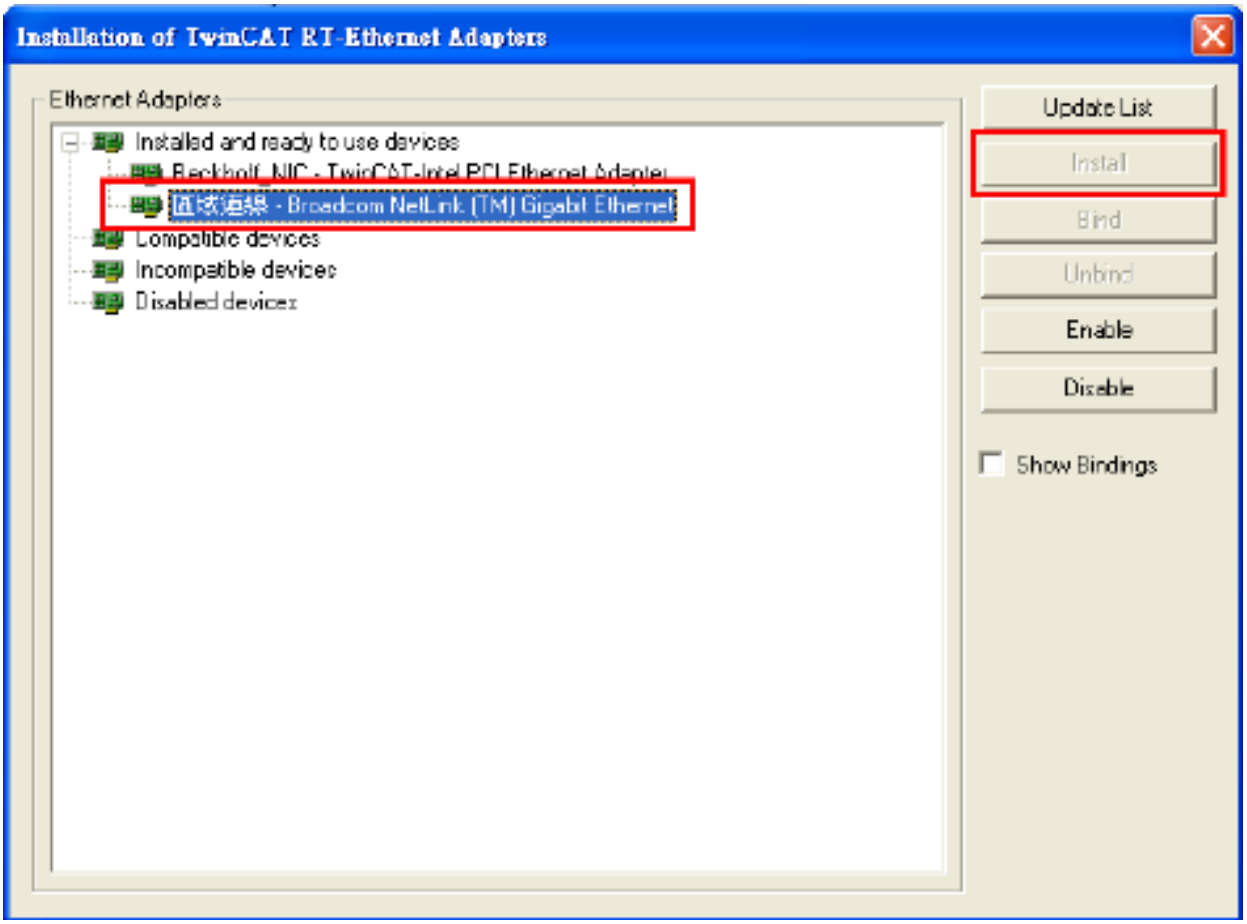


4. (NIC) EtherCAT

[Options] [Show Real Time Ethernet Compatible Devices]



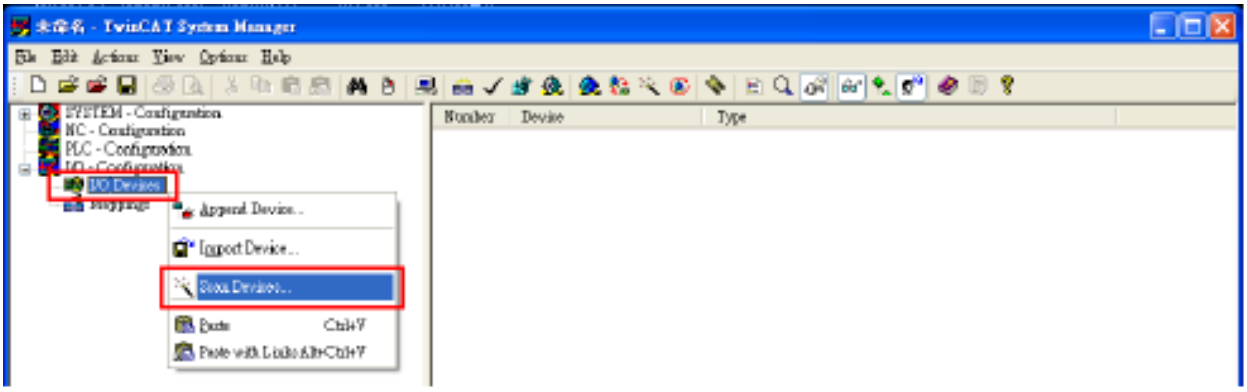
EtherCAT [Install]



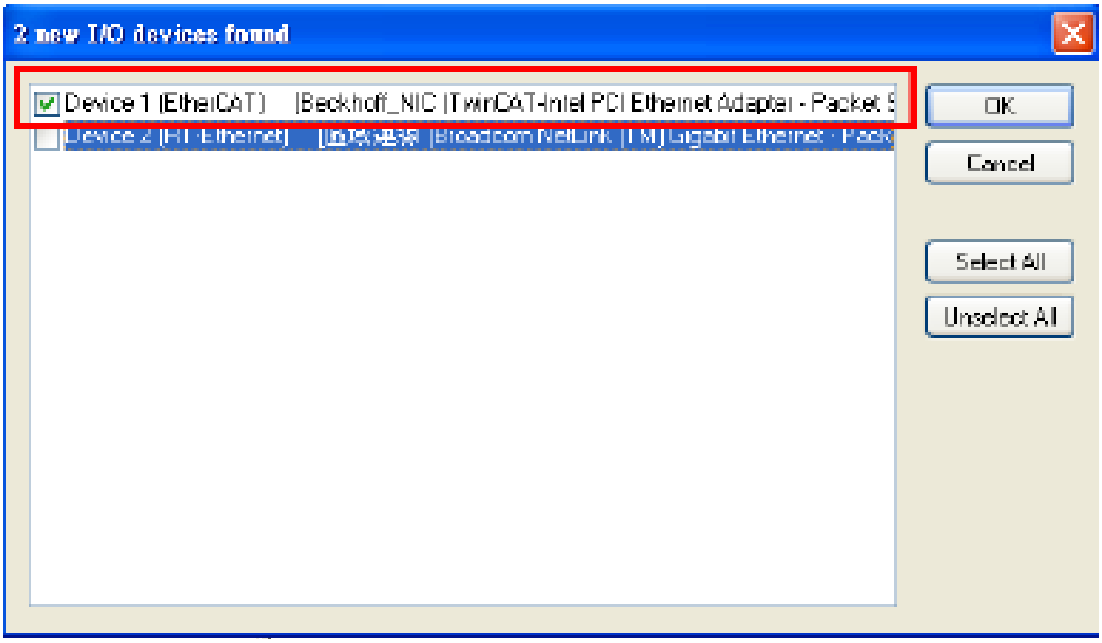
5. [File] [new]

6. [I/O Devices] [Scan Devices] [F5]

[ ]



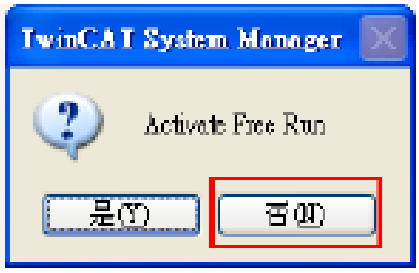
7. [Device[n](EtherCAT)] [OK]



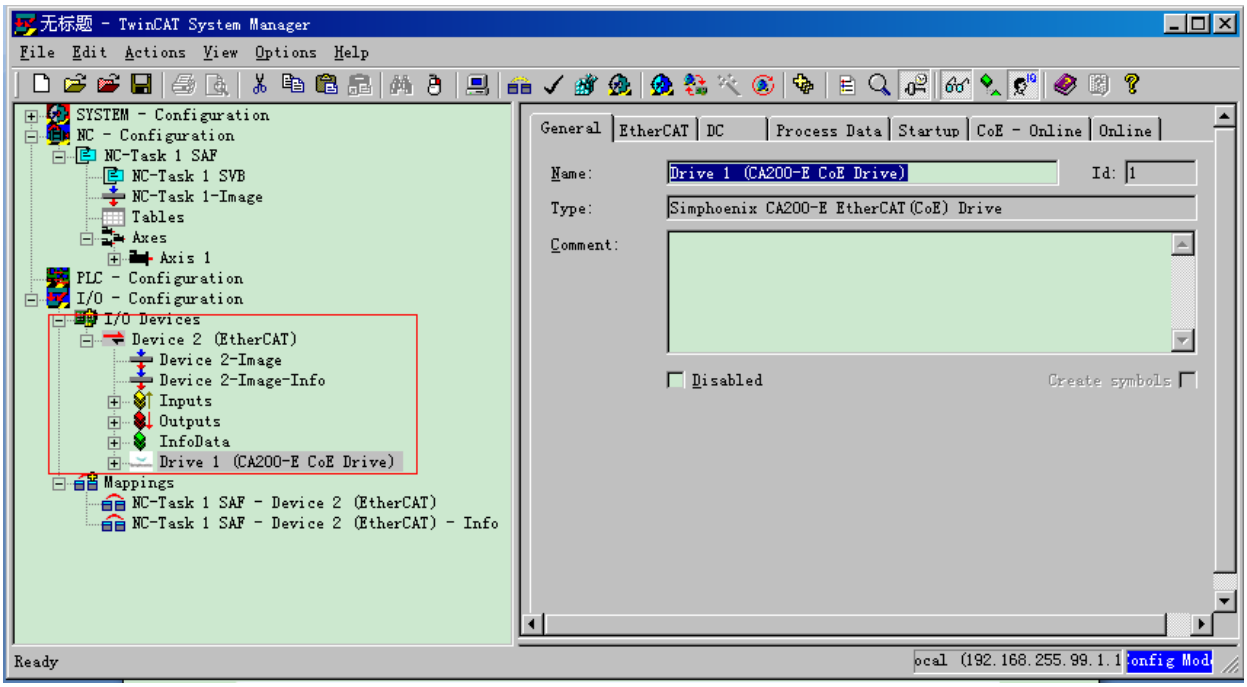
8. [Yes] EtherCAT

9. [ ] NC-Configuration

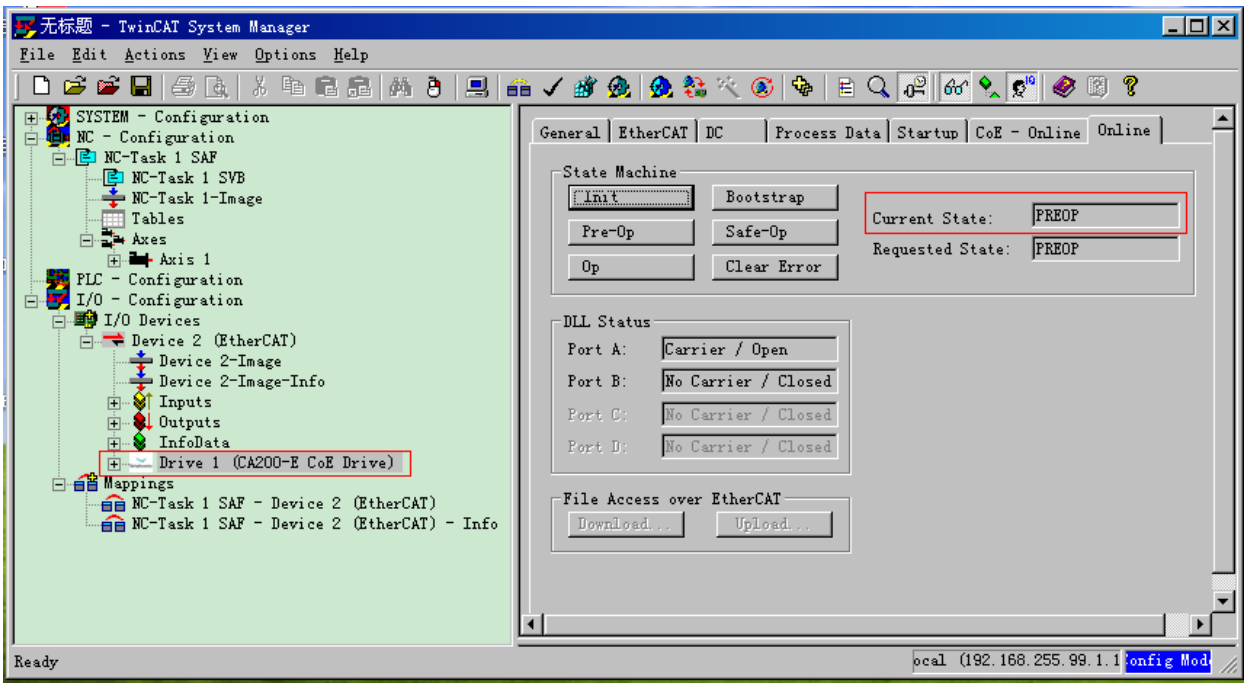
10. [ ] TwinCAT Config Mode



11. TwincAT Config Mode EtherCAT (Device 3(EtherCAT)) CA200E (Drive 1 (CA200-E CoE Drive))



12. [Drive 1 (CA200-E CoE Drive)] [Online] EtherCAT (ESM) PREOP



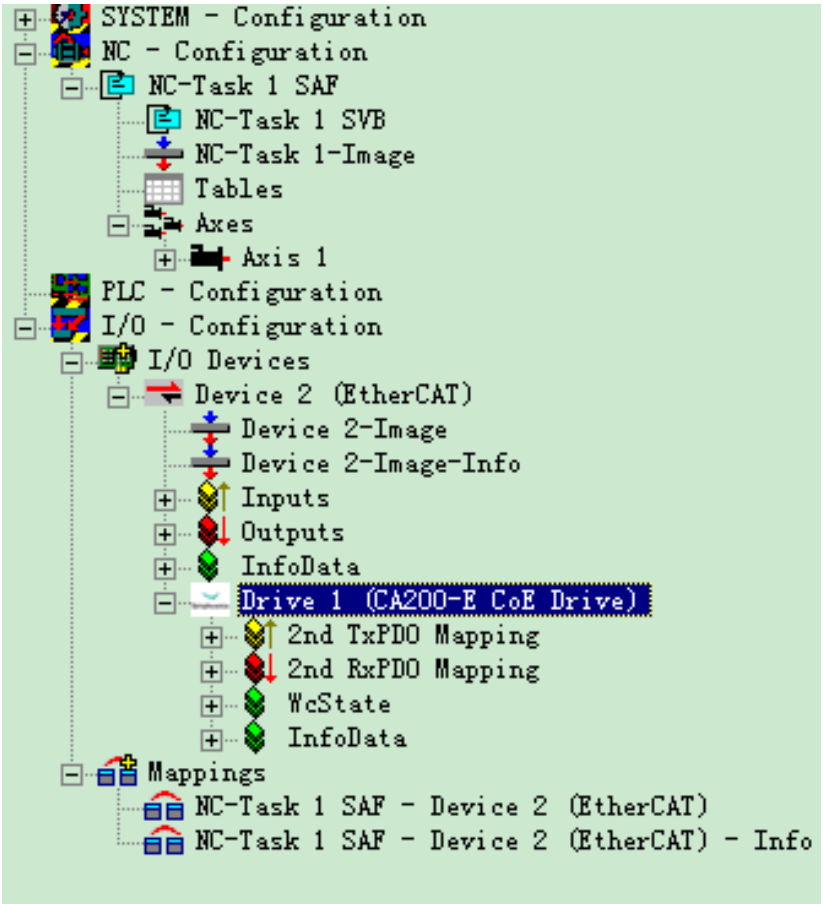
13. [Drive 1 (CA200-E CoE Drive)]

2nd TxPDO – CoE Tx PDO mapping

3rd RxPDO – CoE Rx PDO mapping

WcState

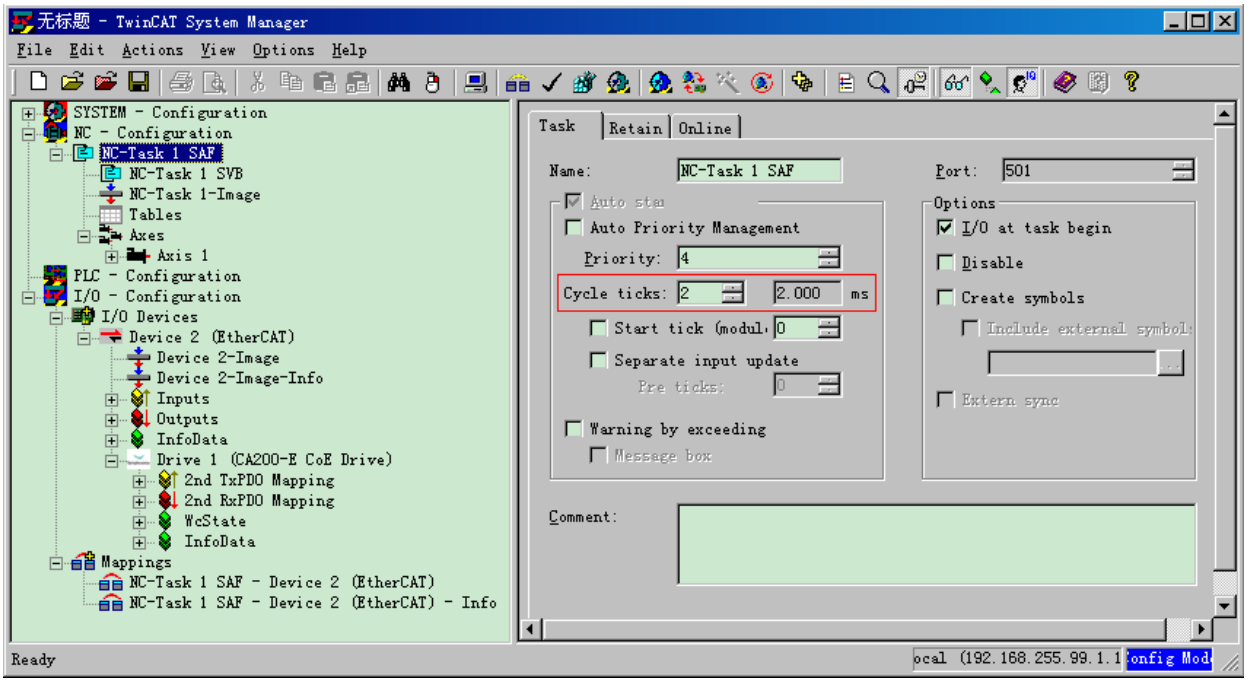
InfoData



14. (2 ms)

[NC-Task 1 SAF] Cycle ticks (

1 ms)

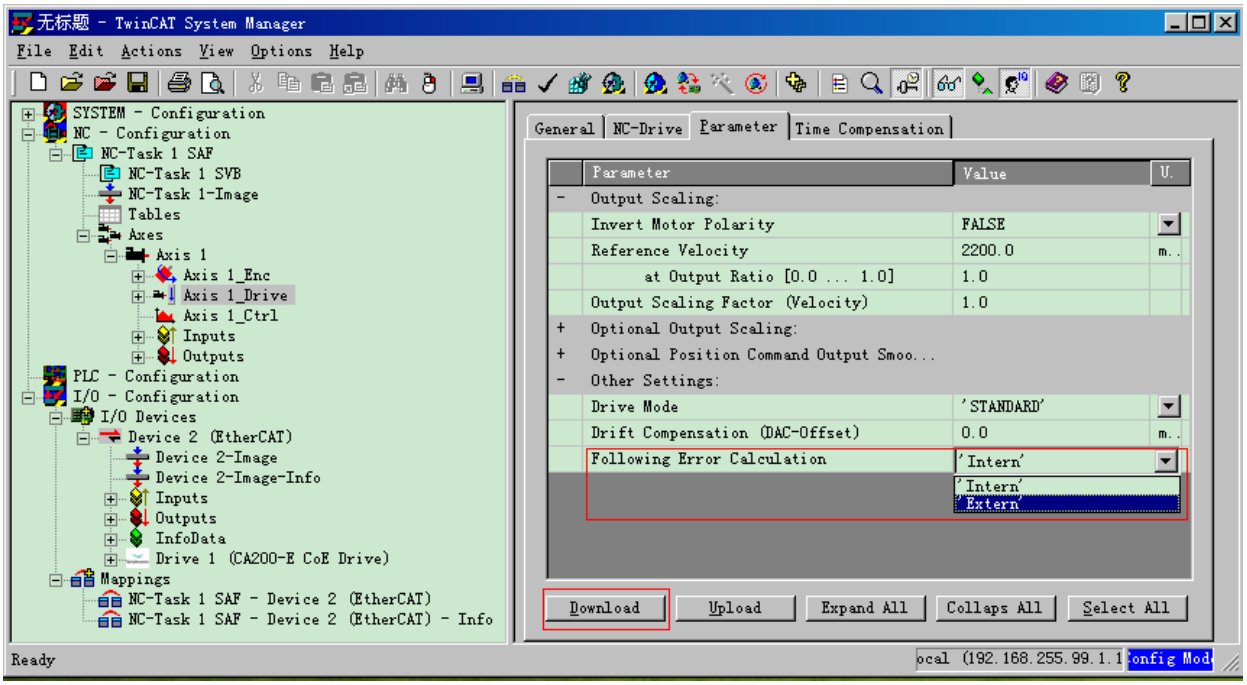


SYNCO PDO

15. Following Error Calculation [Extern]

[Axis 1_Drive] → Parameter Following Error

Calculation [Extern]→ [Download] [OK]



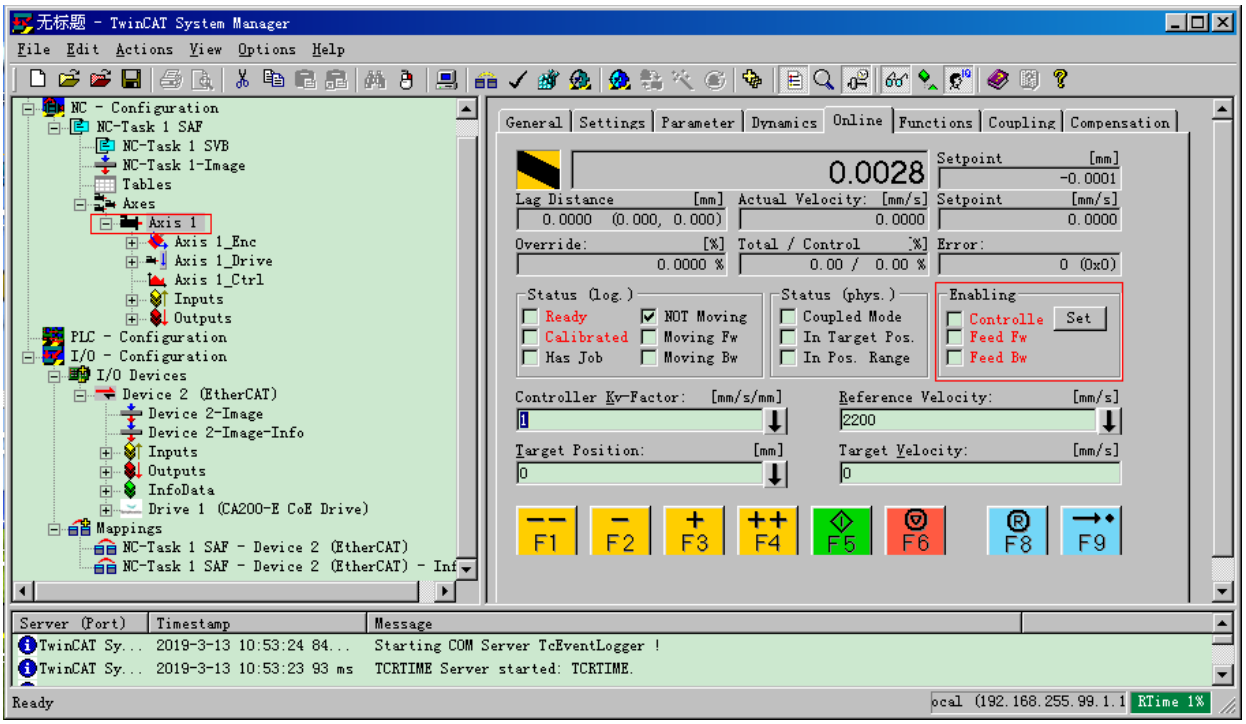
16. TwinCAT Run Mode

(Mappings) → → TwinCAT

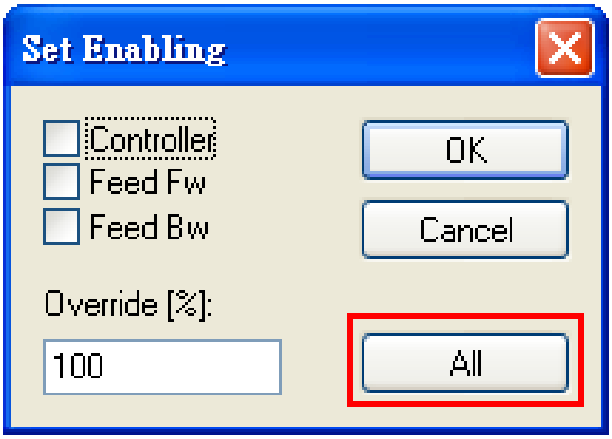
Run Mode [OK]

17. Servo On

[NC-Configuration] [Axis 1]→ Online → [Set]



[All]



18. Online

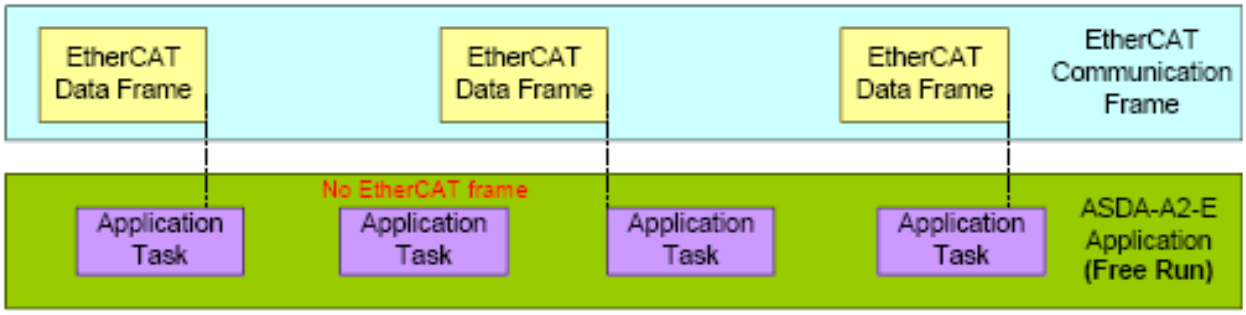
2.5

2.5.1

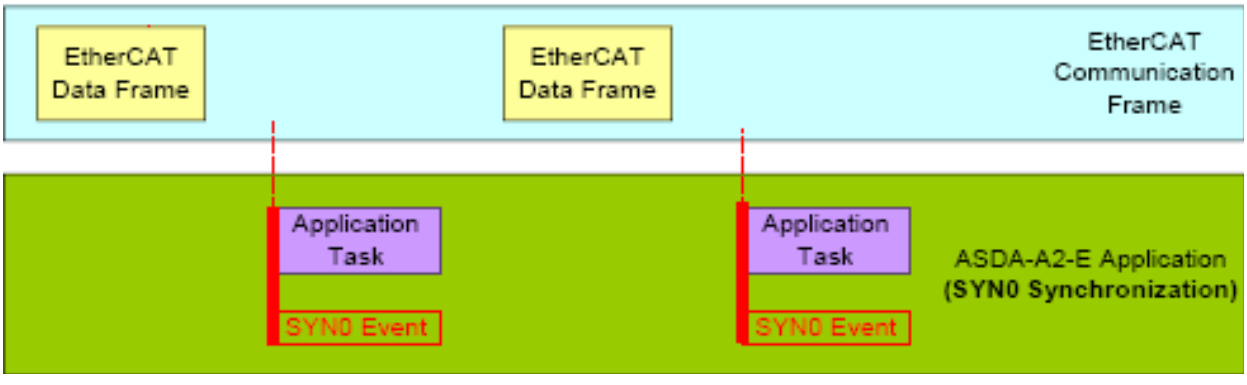
CA200E (Free Run Mode) DC (DC-Synchronous Mode) ETG EtherCAT

(Free Run Mode)( )

t1 PDO t1 t2 PDO

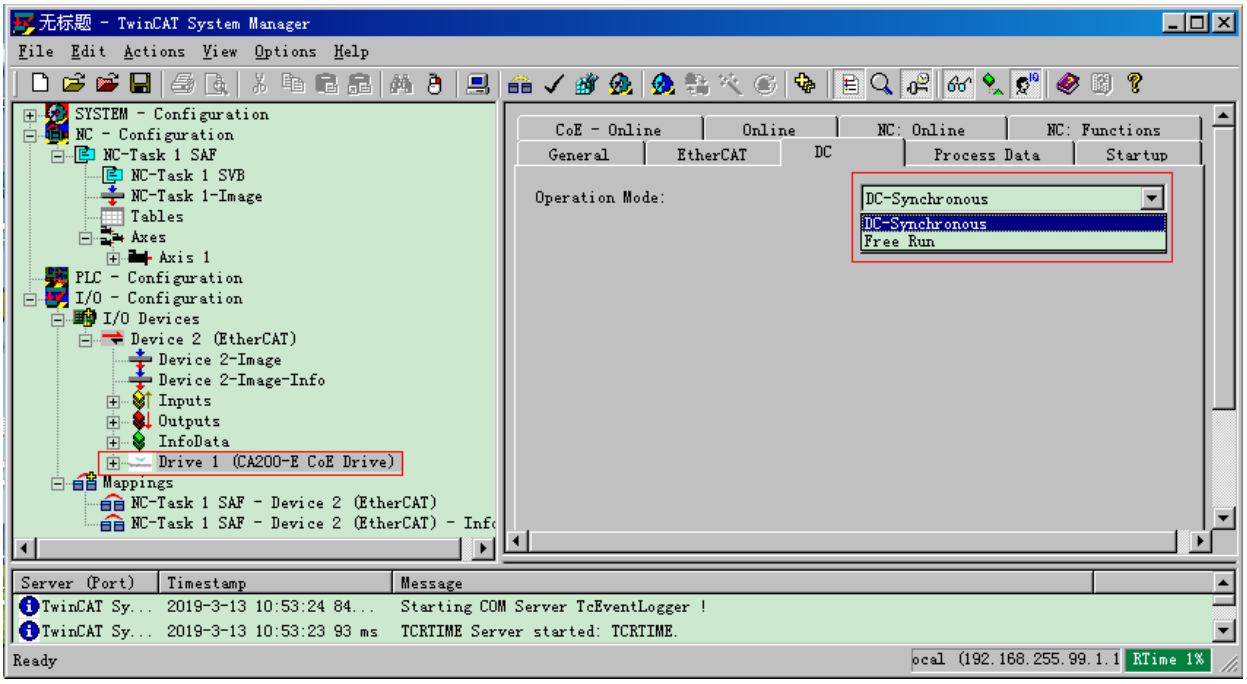


DC (DC-Synchronous Mode)(SYNC0)



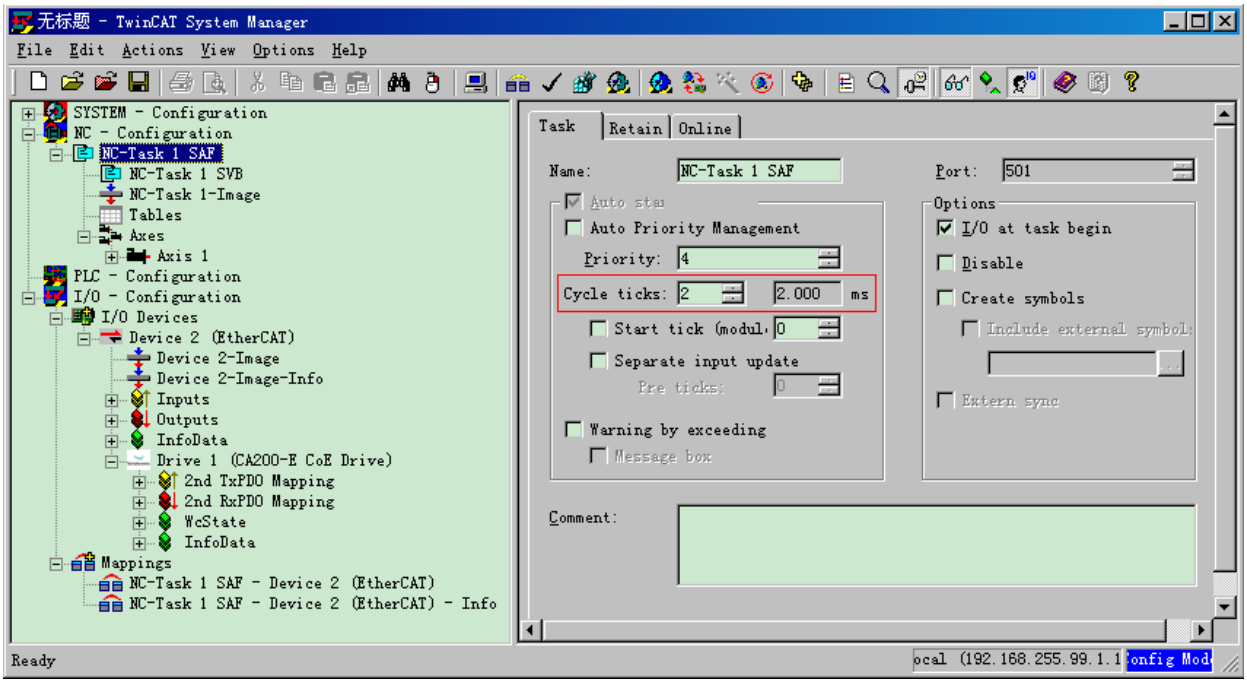
2.5.2

1. [Drive 1(CA200-E CoE Drive)]
2. DC [DC-Synchronous]( ) [Free Run]( )



2.5.3

1. [NC-Task 1 SAF]
2. Task
3. Task Cycle ticks



SYNC0	1 ms (PDO = 1 ms) 2 ms (PDO = 2 ms) 3 ms (PDO = 3 ms) ...
SYNC0 1ms SYNC0 PDO	

2.6 PDO

PDO RxPDO TxPDO (Object Dictionary) 0x1600 0x1603 0x1A00 0x1A03

2.6.1 PDO

CA200E PDO ( ) EtherCAT XML PDO

RxPDO (0x1600)	Control Word (0x6040)	Target Position (0x607A)	Target Velocity (0x60FF)	Target Torque (0x6071)	Mode of Operation (0x6060)
TxPDO (0x1A00)	Status Word (0x6041)	Actual Position (0x6064)	Actual Velocity (0x606C)	Actual Torque (0x6077)	Mode of Operation Display (0x6061)

PDO (PDO)

RxPDO (0x1600)	Control Word (0x6040)	Target Position (0x607A)
TxPDO (0x1A00)	Status Word (0x6041)	Actual Position (0x6064)

PDO

RxPDO (0x1600)	Control Word (0x6040)	Target Velocity (0x60FF)	
TxPDO (0x1A00)	Status Word (0x6041)	Actual Position (0x6064)	Actual Velocity (0x606C)

PDO

RxPDO (0x1600)	Control Word (0x6040)	Target Torque (0x6071)	
TxPDO (0x1A00)	Status Word (0x6041)	Actual Position (0x6064)	Actual Torque (0x6077)

2.6.2 PDO

1. RxPDO Assignment:0x1C12:0/ TxPDO Assignment: 0x1C13:0 0x0 PDO
2. RxPDO mapping entry: ex.0x1601:0/TxPDO mapping entry: ex.0x1A01:0 0x0 PDO
3. RxPDO mapping entry: ex.0x1601:0 - 0x1601:7/TxPDO mapping entry: ex.0x1A01:0 -

0x1A01:7

4. RxPDO mapping entry: ex.0x1601:0/TxPDO mapping entry: ex.0x1A01:0 PDO

5. RxPDO Assignment:0x1C12:1/TxPDO Assignment: 0x1C13:1 PDO

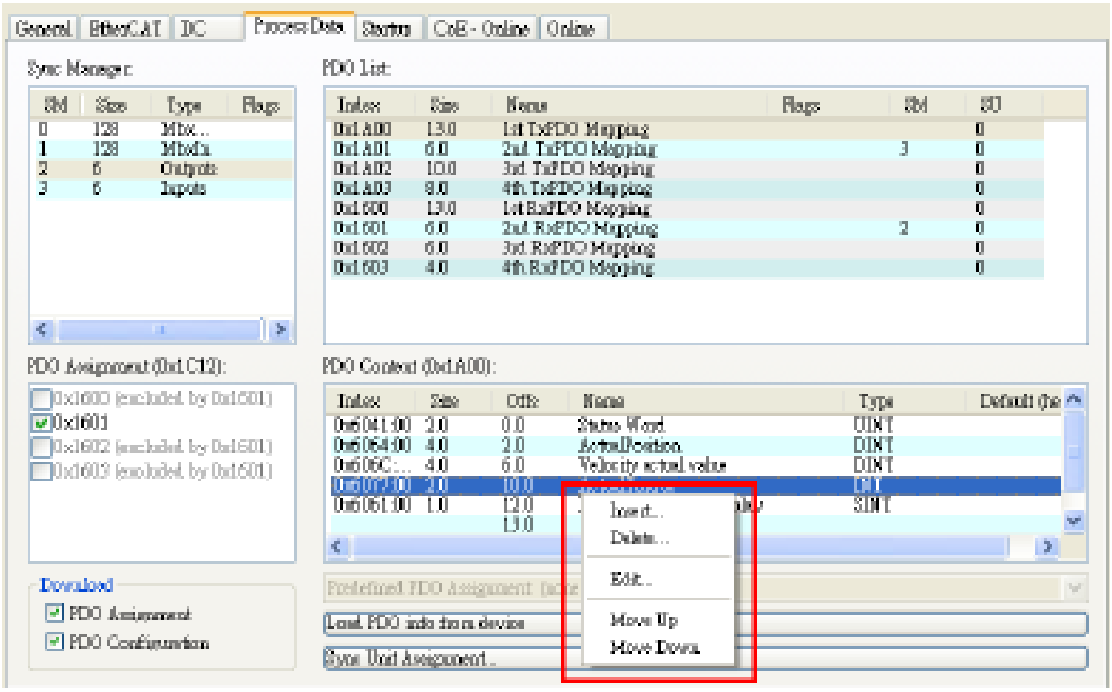
6. RxPDO Assignment:0x1C12:0/TxPDO Assignment: 0x1C13:0 0x1 PDO

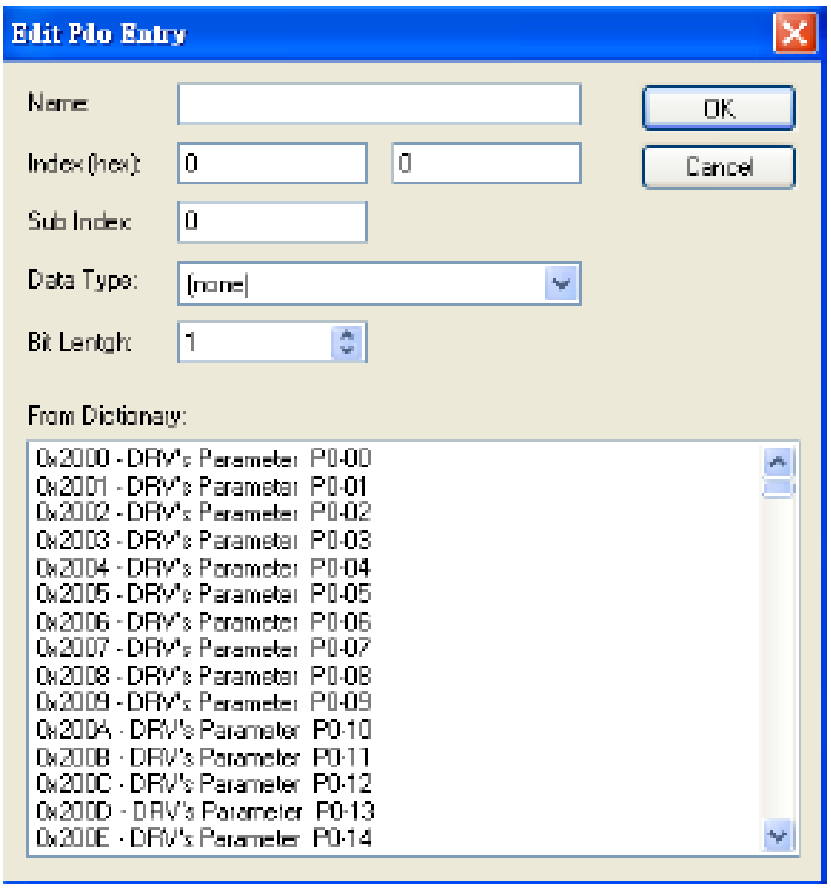
2.6.2 TwinCAT PDO

1. [Shift] [F4] TwinCAT / Config Mode([OK])

2. [Drive 1 (ASDA A2-E CoE Drive)] Process Data PDO PDO

3. PDO PDO (Insert/Delete/Edit/Move Up/Move Down)PDO (PDO 8 PDO)





4. PDO [F4] I/O ([No]

Config Mod

3

3.1 Profile Position Mode

3.1.1

( ) ( )

Pulse of User Unit (PUU) No.of PUU/Rev = (131072 × 0x6093 Sub2)/0x6093h Sub1

3.1.2

1. Mode of operations 6060h (profile position mode)(0x01)
2. Target position 607Ah (target position)(PUU)
3. Profile velocity 6081h (profile velocity) (PUU per second)
4. Profile acceleration 6083h (millisecond from 0 rpm to 3000 rpm)
5. Profile deceleration 6084h (millisecond from 0 rpm to 3000 rpm)
6. Controlword 6040h (0x06 > 0x07 > 0x0F) Servo On

7. Statusword 6064h
8. Statusword 6041h (following error)

(set-point acknowledge) (target reached)

3.1.3

1. (profile position mode)

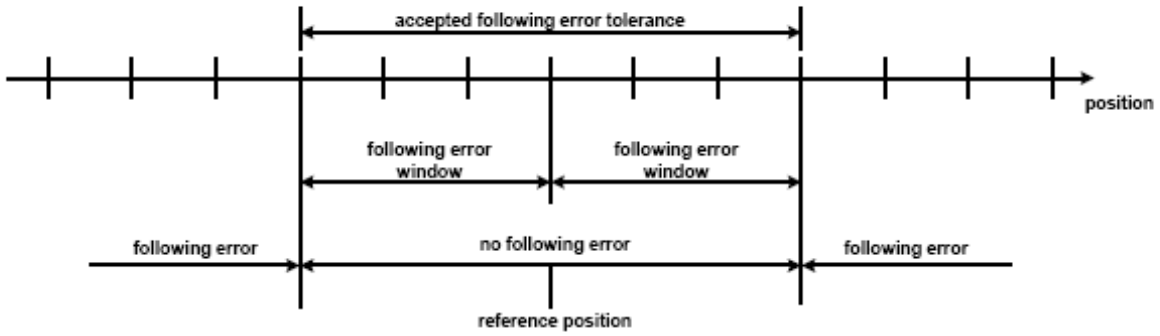
   Position demand value 6062h (PUU)

   Position actual value* 6063h (increments)

2. (Following error)

   Following error window 6065h (PUU)

   Following error actual value 60F4h (PUU)



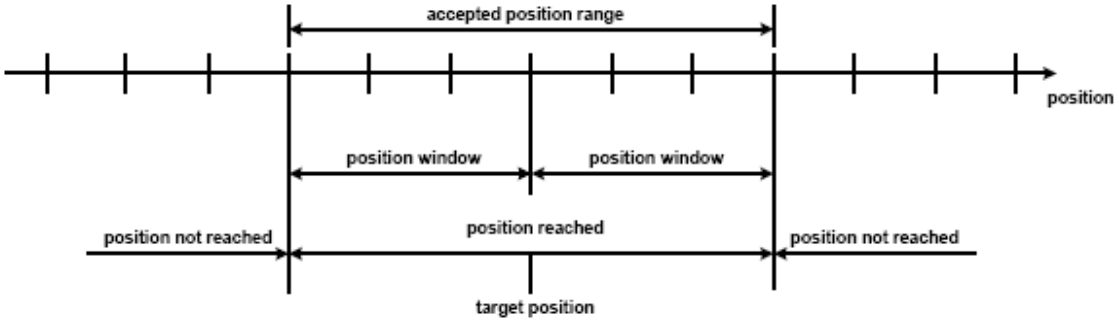
Reference position

3. Position window

Position window 6067h (PUU)

Position window time 6068h position widow

(millisecond)



Position reached

3.1.3

Index	Name	Type	Attr.
6040h	Controlword	UNSIGNED16	RW
6041h	Statusword	UNSIGNED16	RO
6060h	Modes of operation	INTEGER8	RW
6061h	Modes of operation display	INTEGER8	RO
6062h	Position demand value[PUU]	INTEGER32	RO
6063h	Position actual value[increment]	INTEGER32	RO
6064h	Position actual value	INTEGER32	RO
6065h	Following error window	UNSIGNED32	RW
6067h	Position window	UNSIGNED32	RW
6068h	Position window time	UNSIGNED16	RW
607Ah	Target position	INTEGER32	RW

6081h	Profile velocity	UNSIGNED32	RW
6083h	Profile acceleration	UNSIGNED32	RW
6084h	Profile deceleration	UNSIGNED32	RW
6093h	Position factor	UNSIGNED32	RW
60F4h	Following error actual value	INTEGER32	RO
60FCh	Position demand value	INTEGER32	RO

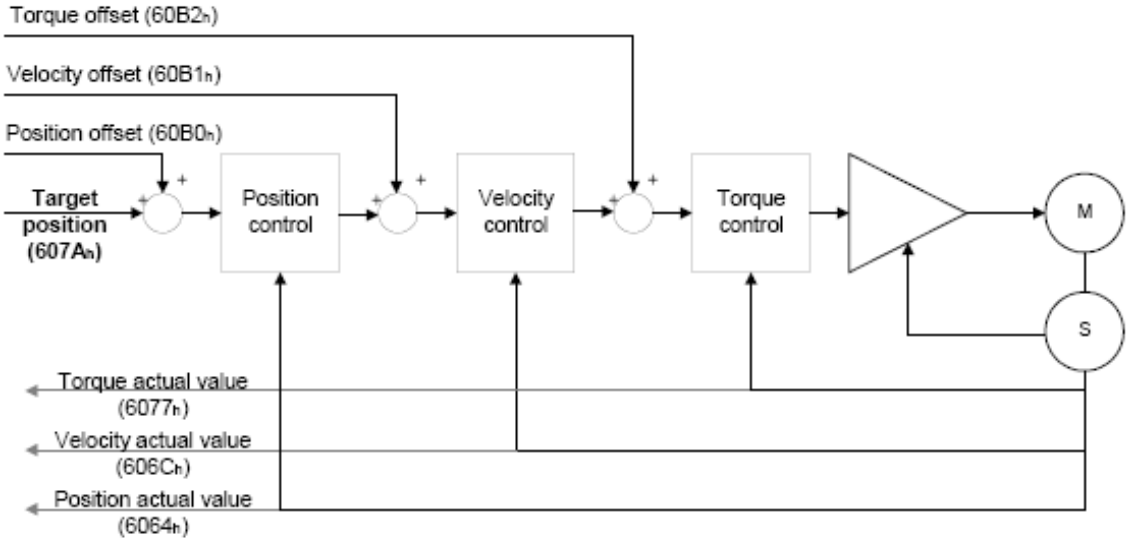
3.2 Cyclic Synchronous Position Mode

3.2.1

(Cyclic Synchronous Position Mode) PDO

PDO (target position) (controlword)

(velocity offset) (torque offset)



3.2.2

1. Mode of operations 6060h (cyclic synchronous position mode) (0x08)
2. Interpolation time period 60C2h SYNC 60C2h Sub-1 (Interpolation time units) 1ms 20 ms 60C2h Sub-2 (Interpolation time index) -3 10-3
3. Drive PDO Rx

   607Ah Target Pos Cmd(32-bit)

   6040h Sub-0 (controlword)

3.2.3

Index	Name	Type	Attr.
6040h	Controlword	UNSIGNED16	RW
6041h	Statusword	UNSIGNED16	RO
6060h	Modes of operation	INTEGER8	RW
6061h	Modes of operation display	INTEGER8	RO
607A h	Target position	INTEGER32	RW
60B0 h	Position offset	INTEGER32	RW
6064 h	Position actual value	INTEGER32	RO
60B1 h	Velocity offset	INTEGER32	RW
606Ch	Velocity actual value	INTEGER32	RO
60B2h	Torque offset	INTEGER16	RW
6077h	Torque actual value	INTEGER16	RO

3.3 Profile Velocity Mode

3.3.1

3.3.2

1. Mode of operations 6060h (profile velocity mode) (0x03)
2. Controlword 6040h (0x06 > 0x07 > 0x0F) Servo On
   (OD-60FFh)
3. Profile acceleration 6083h (millisecond from 0 rpm to 3000 rpm)
4. Profile deceleration 6084h (millisecond from 0 rpm to 3000 rpm)
5. Target velocity 60FFh 0.1 rpm (
   OD-60FFh 0 OD-6060h [Mode]
   Quick-Stop)
6. Statusword 6041h

3.3.3

1.
   Velocity demand value 606Bh (0.1rpm)
   Velocity actual value 606Ch (0.1rpm)
2.
   Velocity window 606Dh (0.1rpm)
   Velocity widnow time 606Eh velocity widow
   (millisecond)

Velocity threshold 606Fh (0.1rpm)

3.3.4

Index	Name	Type	Attr.
6040h	Controlword	UNSIGNED16	RW
6041h	Statusword	UNSIGNED16	RO
6060h	Modes of operation	INTEGER8	RW
6061h	Modes of operation display	INTEGER8	RO
606Bh	Velocity demand value	INTEGER32	RO
606Ch	Velocity actual value	INTEGER32	RO
606Dh	Velocity window	UNSIGNED16	RW
606Eh	Velocity window time	UNSIGNED16	RW
606Fh	Velocity threshold	UNSIGNED16	RW
60FFh	Target velocity	INTEGER32	RW

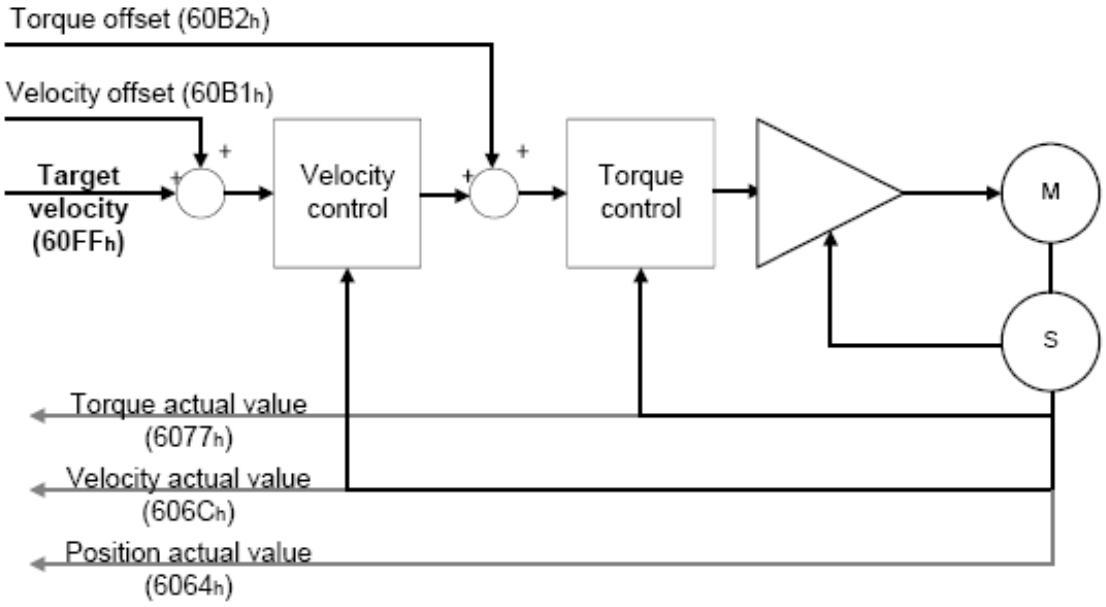
3.4 Cyclic Synchronous Velocity Mode

3.4.1

(Cyclic Synchronous Velocity Mode) PDO

PDO (target velocity) (controlword)

(velocity offset) (torque offset)



3.4.2

1. Mode of operations 6060h (Cyclic Synchronous Velocity Mode) (0x09)
2. Interpolation time period 60C2h SYNC0

60C2h Sub-1 (Interpolation time units) 1ms 20ms 60C2h Sub-2 (Interpolation time index) -3 10-3

3. Drive PDO Rx

60FFh Target Velocity Cmd(32-bit)

6040h Sub-0 (controlword)

3.4.3

Index	Name	Type	Attr.
6040h	Controlword	UNSIGNED16	RW
6041h	Statusword	UNSIGNED16	RO
6060h	Modes of operation	INTEGER8	RW
6061h	Modes of operation display	INTEGER8	RO
60FF h	Target velocity	INTEGER32	RW
60B1 h	Velocity offset	INTEGER32	RW
606Ch	Velocity actual value	INTEGER32	RO
6064 h	Position actual value	INTEGER32	RO
60B2h	Torque offset	INTEGER16	RW
6077h	Torque actual value	INTEGER16	RO

3.5 Profile Torque Mode

3.5.1

3.5.2

1. Mode of operations 6060h (profile torque mode)(6060h = 04h)
2. Controlword 6040h (0x6 > 0x7 > 0x0F) Servo On (OD-6071h)
3. Torque slope 6087h (millisecond from 0 to 100%rated torque)
4. Target torque 6071h (one rated torque in a thousand) (OD-6071h 0 OD-6060h[Mode] Quick-Stop)

3.5.3

Torque demand value 6074h (one rated torque in a thousand)

Torque rated current 6075h ( ) (multiples of milliamp)

Torque actual value 6077h (one rated torque in a thousand)

Current actual value 6078h (one rated torque in a thousand)

3.5.4

Index	Name	Type	Attr.
6040h	Controlword	UNSIGNED16	RW
6041h	Statusword	UNSIGNED16	RO
6060h	Modes of operation	INTEGER8	RW
6061h	Modes of operation display	INTEGER8	RO
6071h	Target torque	INTEGER16	RW
6074h	Torque demand value	INTEGER16	RO
6075h	Motor rated current	UNSIGNED32	RO
6077h	Torque actual value	INTEGER16	RO
6078h	Current actual value	INTEGER16	RO
6087h	Torque slope	UNSIGNED32	RW

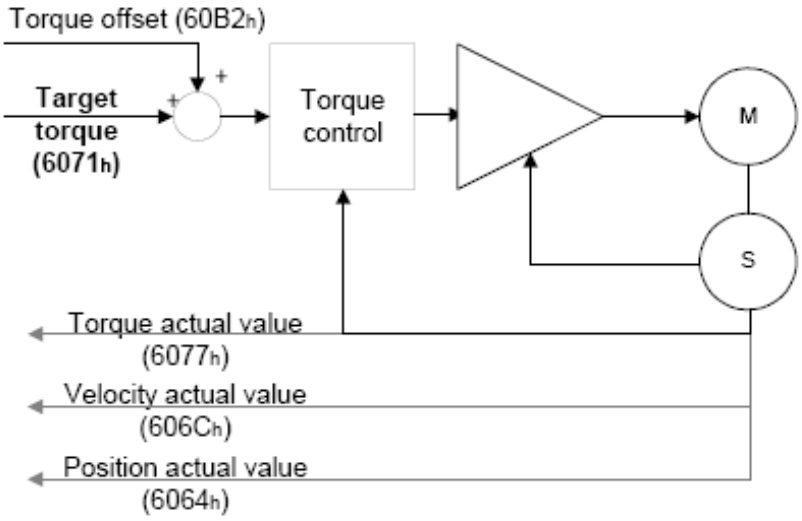
3.6 Cyclic Synchronous Torque Mode

3.6.1

(Cyclic Synchronous Torque Mode)

PDO (target torque) (controlword)

(torque offset)



3.6.2

1. Mode of operations 6060h (cyclic synchronous torque mode) (0x0A)
2. Interpolation time period 60C2h SYNC0 PDO
   60C2h Sub-1 (Interpolation time units) 1ms 20ms 60C2h Sub-2 (Interpolation time index) -3
   10-3
3. Drive PDO Rx
   6071h Target Torque Cmd (16-bit)
   6040h Sub-0 (controlword)

3.6.3

Index	Name	Type	Attr.
6040h	Controlword	UNSIGNED16	RW
6041h	Statusword	UNSIGNED16	RO
6060h	Modes of operation	INTEGER8	RW
6061h	Modes of operation display	INTEGER8	RO
6071h	Target torque	INTEGER16	RW
60B2h	Torque offset	INTEGER16	RW
6077h	Torque actual value	INTEGER16	RO
606Ch	Velocity actual value	INTEGER32	RO
6064 h	Position actual value	INTEGER32	RO

3.7 Homing Mode

3.7.1

3.7.2

1. Mode of operations 6060h (homing mode) (0x06)
2. Home offset 607Ch
3. Homing method 6098h 1 35 (OD-6098h)
4. Homing speeds 6099h Sub-1 (rpm)
5. Homing speeds 6099h Sub-2 (rpm)
6. Homing acceleration 609Ah (millisecond from 0rpm to 3000rpm)

7. Controlword 6040h (0x06 > 0x07 > 0x0F) Servo On

8. Controlword 6040h (0x0F > 0x1F) (Home Switch)

9. Statusword 6041h

3.7.3

Index	Name	Type	Attr.
6040h	Controlword	UNSIGNED16	RW
6041h	Statusword	UNSIGNED16	RO
6060h	Modes of operation	INTEGER8	RW
6061h	Modes of operation display	INTEGER8	RO
607Ch	Home offset	INTEGER32	RW
6093h	Position factor	UNSIGNED32	RW
6098h	Homing method	INTEGER8	RW
6099h	Homing speed	ARRAY	RW
609Ah	Homing acceleration	UNSIGNED32	RW

3.8 Touch Probe Function

3.8.1

CN7 DI (DI 13 DI 5 μs) Z

CN7 DI13 P2-40

OD 60B8h (Touch Probe Function)

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

位	功能	说明
Bit 0	Touch Probe 1 功能开关	0：关闭 Touch Probe 1 1： 开启 Touch Probe 1
Bit 1	Touch Probe 1 抓取次数	0：仅抓取一次 1：多次抓取
Bit 2	Touch Probe 1 抓取来源	0：来自 CN7 的 DI 13 1：来自电机的 Z 脉冲
Bit 3	保留	-
Bit 4	定义 Touch Probe 1 的上缘触发行为	0：无作用 1：上缘触发时，开始抓取。数据将储存到 OD 60BA$_h$。
Bit 5	定义 Touch Probe 1 的下缘触发行为	0：无作用 1：下缘触发时，开始抓取。数据将储存到 OD 60BB$_h$。
Bit 6 ~ 15	保留	-

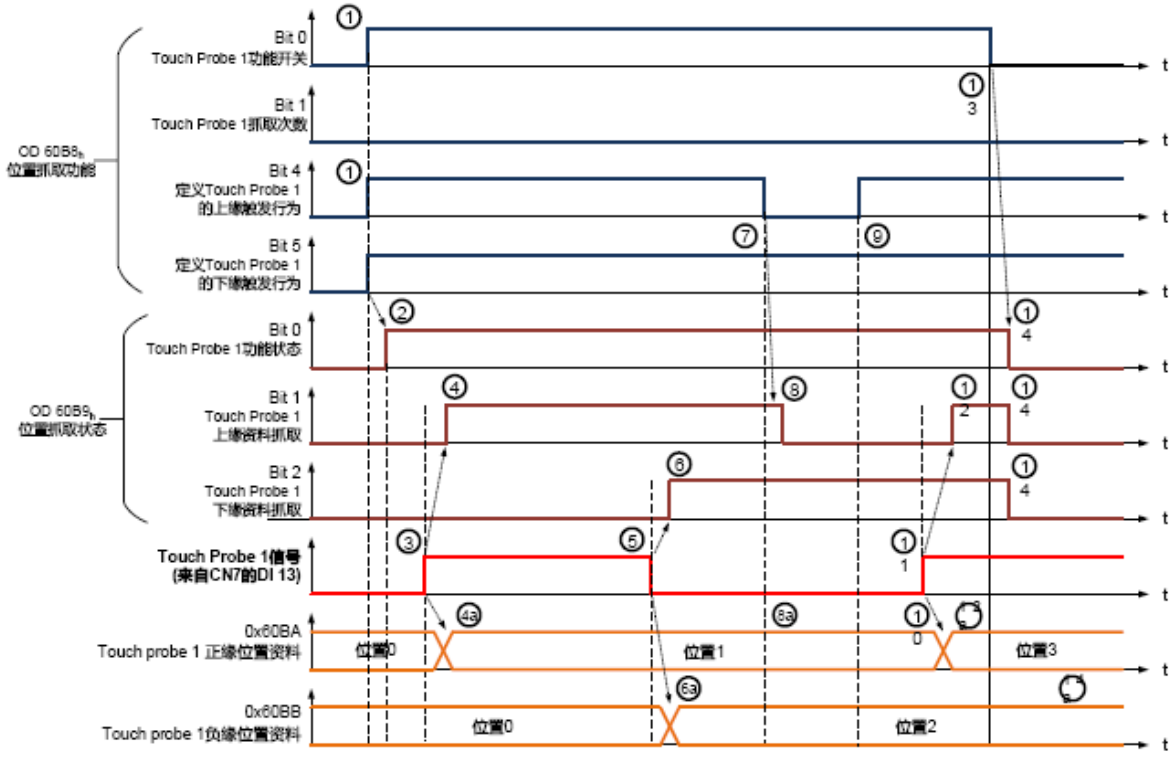
3.8.2

OD 60B9h (Touch Probe Status)

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

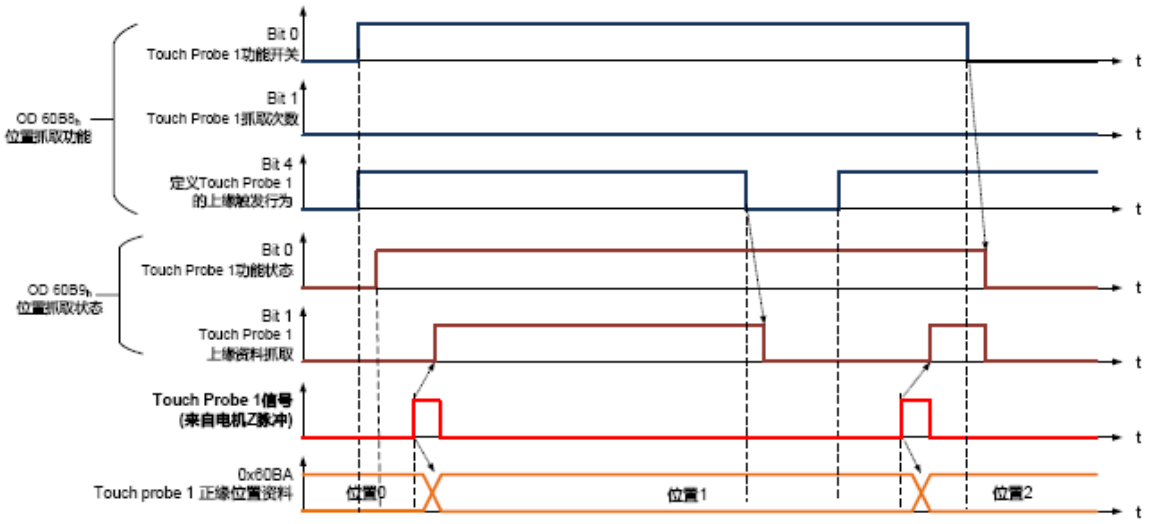
位	功能	说明
Bit 0	Touch Probe 1 功能状态	0：Touch Probe 1 功能关闭 1：Touch Probe 1 功能开启
Bit 1	Touch Probe 1 上缘资料抓取	0：尚未抓取 1：上缘触发，数据成功抓取
Bit 2	Touch Probe 1 下缘资料抓取	0：尚未抓取 1：下缘触发，数据成功抓取
Bit 3~5	保留	-
Bit 6	Touch Probe 1 抓取来源	0：来自 CN7 的 DI 13 1：来自电机的 Z 脉冲
Bit 7	Touch Probe 1 抓取讯号 (60B8 Bit1 多次抓取功能开启下作用)	0：无 1：成功抓取资料
Bit 8~15	保留	-

1 Touch Probe DI OD 60B8h Bit 4 /



状态	功能	说明
(1)	OD 60B8$_h$ Bit 0 = 1 OD 60B8$_h$ Bit 1 = 0 OD 60B8$_h$ Bit 4 = 1 OD 60B8$_h$ Bit 5 = 1	1： 开启 Touch Probe 1 0：仅抓取一次 1：上缘触发时，开始抓取 1：下缘触发时，开始抓取
(2)	OD 60B9$_h$ Bit 0 = 1	位置抓取状态：Touch Probe 1 功能开启
(3)	-	外部 Touch Probe 1 讯号上缘触发
(4)	OD 60B9$_h$ Bit 1 = 1	位置抓取状态：上缘触发，数据成功抓取
(4a)	OD 60BA$_h$	上缘触发所抓取到的信息存入到 OD 60BA$_h$
(5)	-	外部 Touch Probe 1 讯号下缘触发
(6)	OD 60B9$_h$ Bit 2 = 1	位置抓取状态：下缘触发，数据成功抓取
(6a)	OD 60BB$_h$	上缘触发所抓取到的信息存入到 OD 60BB$_h$
(7)	OD 60B8$_h$ Bit 4 = 0	关闭 Touch Probe 1 的上缘触发功能
(8)	OD 60B9$_h$ Bit 1 = 0	位置抓取状态：上缘触发重置为尚未触发
(8a)	OD 60BA$_h$	上缘数据不改变
(9)	OD 60B8$_h$ Bit 4 = 1	1：上缘触发时，开始抓取
(10)	OD 60BA$_h$	上缘数据不改变
(11)	-	外部 Touch Probe 1 讯号上缘触发
(12)	OD 60B9$_h$ Bit 1 = 1	位置抓取状态：上缘触发，数据成功抓取
(12a)	OD 60BA$_h$	上缘触发所抓取到的信息存入到 OD 60BA$_h$
(13)	OD 60B8$_h$ Bit 0 = 1	0：关闭 Touch Probe 1
(14)	OD 60B9$_h$ Bit 0 = 0 OD 60B9$_h$ Bit 1 = 0 OD 60B9$_h$ Bit 2 = 0	位置抓取状态重置
(14a)	OD 60BA$_h$,OD 60BA$_h$	上/下数据不改变

2 Touch Probe Z



3.6.3

Index	Name	Type	Attr.
60B8h	Touch probe function	UNSIGNED16	RW
60B9h	Touch probe status	UNSIGNED16	RO
60BAh	Touch probe 1	INTEGER32	RO
60BBh	Touch probe 1	INTEGER32	RO

3.9

3.9.1

Quick-Stop

Quick-Stop

3.9.2

1.

Quick-Stop Servo On

2. Controlword 6040h 0x8F( )

3. Controlword 6040h 0x1F / 0x0F( )

4.

4

4.1

VAR	UNSIGNED8 Boolean float INTEGER16
ARRAY	UNSIGNED16 Sub-index 0 UNSIGNED8
RECORD	Sub-index 0 UNSIGNED8 RECORD

4.2

CANopen Standard 301

4.3

CA200

4.4 1000h

Index	Object Type	Name	Data Type	Access	Mappable
1000h	VAR	Device Type	UNSIGNED32	RO	N
1001h	VAR	Error Register	UNSIGNED8	RO	Y
1600h~03h	RECORD	Receive PDO Mapping	UNSIGNED32	RW	N
1A00h~03h	RECORD	Transmit PDO Mapping	UNSIGNED32	RW	N

4.5 6000h

Index	Object Type	Name	Data Type	Access	Mappable
603Fh	VAR	Error Code	UNSIGNED16	RO	Y
6040h	VAR	Controlword	UNSIGNED16	RW	Y
6041h	VAR	Statusword	UNSIGNED16	RO	Y
605Bh	VAR	Stutdown Option Code	INTEGER16	RW	N
605Eh	VAR	Fault Reaction Option Code	INTEGER16	RW	N
6060h	VAR	Modes of Operation	INTEGER8	RW	Y
6061h	VAR	Modes of Operation Display	INTEGER8	RO	Y
6062h	VAR	Position Demand Value	INTEGER32	RO	Y
6063h	VAR	Position Actual Internal Value	INTEGER32	RO	Y
6064h	VAR	Position Actual Value	INTEGER32	RO	Y
6065h	VAR	Following Error Window	UNSIGNED32	RW	Y
6067h	VAR	Position Windows	UNSIGNED32	RW	Y

6068h	VAR	Position Window Time	UNSIGNED16	RW	Y
606Bh	VAR	Velocity Demand Value	INTEGER32	RO	Y
606Ch	VAR	Velocity Actual Value	INTEGER32	RO	Y
606Dh	VAR	Velocity Window	UNSIGNED16	RW	Y
606Eh	VAR	Velocity Window Time	UNSIGNED16	RW	Y
606Fh	VAR	Velocity Threshold	UNSIGNED16	RW	Y
6071h	VAR	Target Torque	INTEGER16	RW	Y
6072h	VAR	Max Torque	UNSIGNED16	RW	Y
6074h	VAR	Torque Demand Value	INTEGER16	RO	Y
6075h	VAR	Motor Rated Current	UNSIGNED32	RO	Y
6076h	VAR	Motor Rated Torque	UNSIGNED32	RO	Y
6077h	VAR	Torque Actual Value	UNSIGNED16	RO	Y
6078h	VAR	Current Actual Value	INTEGER16	RO	Y
607Ah	VAR	Target Position	INTEGER32	RW	Y
607Ch	VAR	Home Offset	INTEGER32	RW	Y
607Dh	ARRAY	Software Position Limit	INTEGER32	RW	Y
607Eh	VAR	Polarity	UNSIGNED8	RW	Y
607Fh	VAR	Max Profile Velocity	UNSIGNED32	RW	Y
6080h	VAR	Max Motor Speed	UNSIGNED32	RW	Y
6081h	VAR	Profile Velocity	UNSIGNED32	RW	Y
6083h	VAR	Profile Acceleration	UNSIGNED32	RW	Y
6084h	VAR	Profile Deceleration	UNSIGNED32	RW	Y
6085h	VAR	Quick Stop Deceleration	UNSIGNED32	RW	Y
6086h	VAR	Motor Profile Type	INTEGER16	RW	Y
6087h	VAR	Torque Slope	UNSIGNED32	RW	Y
6093h	ARRAY	Postion Factor	UNSIGNED32	RW	Y
6098h	VAR	Homing Method	INTEGER8	RW	Y
6099h	ARRAY	Homing Speeds	UNSIGNED32	RW	Y
609Ah	VAR	Homing Acceleration	UNSIGNED32	RW	Y
60B0h	VAR	Position Offset	INTEGER32	RW	Y
60B1h	VAR	Velocity Offset	INTEGER32	RW	Y
60B2h	VAR	Torque Offset	INTEGER16	RW	Y
60B8h	VAR	Touch Probe Function	UNSIGNED16	RW	Y
60B9h	VAR	Touch Probe Status	UNSIGNED16	RO	Y
60BAh	VAR	Touch Probe Pos1 Pos Value	INTEGER32	RO	Y
60BBh	VAR	Touch Probe Pos1 Neg Value	INTEGER32	RO	Y
60BCh	VAR	Touch Probe Pos2 Pos Value	INTEGER32	RO	Y
60BDh	VAR	Touch Probe Pos1 Neg Value	INTEGER32	RO	Y
60C0h	VAR	Interpolation Sub Mode Select	INTEGER16	RW	Y
60C1h	ARRAY	Interpolation Data record	UNSIGNED16/32	RW	Y
60C2h	RECORD	Interpolation Time Period	SIGNED8	RW	Y
60C5h	VAR	Max Acceleration	UNSIGNED32	RW	Y
60C6h	VAR	Max Deceleration	UNSIGNED32	RW	Y
60F2h	VAR	Positioning Option Code	UNSIGNED16	RW	Y
60F4h	VAR	Following Error Actual Value	INTEGER32	RO	Y
60FCh	VAR	Position Demand Value	INTEGER32	RO	Y
60FDh	VAR	Digital Inputs	UNSIGNED32	RO	Y
60FFh	VAR	Target Velocity	INTEGER32	RW	Y
6502h	VAR	Supported Drive Modes	UNSIGNED32	RO	Y

4.6

Object 1000h: Device Type

Index	1000h
Name	Device Type
Object Code	VAR
Data Type	UNSIGNED32
Access	RO
PDO Mapping	NO
Value Range	UNSIGNED32
Default Value	04020192h

Object 1001h: Error Register

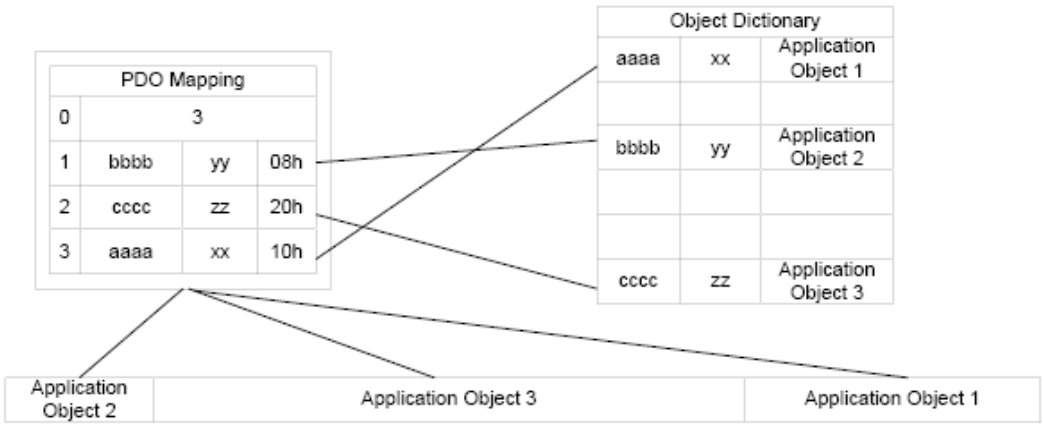
Index	1001h
Name	Error Register
Object Code	VAR
Data Type	UNSIGNED8
Access	RO
PDO Mapping	YES
Value Range	UNSIGNED8
Default Value	0

Object 1600h~1604h: Reveive PDO Mapping Parameter

Index	1600h~1603h
Name	Receive PDO Mapping
Object Code	RECORD
Data Type	PDO Mapping
Access	RW
PDO Mapping	NO

Sub-Index	0
Description	Number of mapped application objects in PDO
Data Type	UNSIGNED8
Access	RW
PDO Mapping	NO
Value Range	0:Deactivated 1~8:Activated
Default Value	0

Sub-Index	1~8
Description	PDO mapping for the application object to be mapped
Data Type	UNSIGNED32
Access	RW
PDO Mapping	NO
Value Range	UNSIGNED32
Default Value	0



Object 1A00h~1A04h: Transmit PDO Mapping Parameter

Index	1A00h~1A03h
Name	Transmit PDO Mapping
Object Code	RECORD
Data Type	PDO Mapping
Access	RW
PDO Mapping	NO

Sub-Index	0
Description	Number of mapped application objects in PDO
Data Type	UNSIGNED8
Access	RW
PDO Mapping	NO
Value Range	0:Deactivated 1~8:Activated
Default Value	0

Sub-Index	1~8
Description	PDO mapping for the application object to be mapped
Data Type	UNSIGNED32
Access	RW
PDO Mapping	NO
Value Range	UNSIGNED32
Default Value	0

Object 1C12h: RxPDO Assign

Index	1C12h
Name	RxPDO Assign
Object Code	RECORD
Data Type	PDO Mapping Assign
Access	RW
PDO Mapping	NO

Sub-Index	0
Description	Number of assigned PDO mapping

Data Type	UNSIGNED8
Access	RW
PDO Mapping	NO
Value Range	0: 1: PDO RxPDO
Default Value	1

Sub-Index	1
Description	Index of assigned PDO mapping
Data Type	UNSIGNED16
Access	RW
PDO Mapping	NO
Value Range	1600h~1603h
Default Value	1601h

Object 1C13h: TxPDO Assign

Index	1C13h
Name	TxPDO Assign
Object Code	RECORD
Data Type	PDO Mapping Assign
Access	RW
PDO Mapping	NO

Sub-Index	0
Description	Number of assigned PDO mapping
Data Type	UNSIGNED8
Access	RW
PDO Mapping	NO
Value Range	0: 1: PDO TxPDO
Default Value	1

Sub-Index	1
Description	Index of assigned PDO mapping
Data Type	UNSIGNED16
Access	RW
PDO Mapping	NO
Value Range	1A00h~1A03h
Default Value	1A01h

Object 603Fh: Error Code(Error Code Of CANopen Defined)

Index	603Fh
Name	Error Code
Object Code	VAR
Data Type	UNSIGNED16
Access	RO
PDO Mapping	YES
Value Range	UNSIGNED16
Default Value	0