A NELTA	Pro	Delta	Announ Industrial Automatio	Cemen Global Solution	Center	
Dreduct	Delta Industrial Automation Global Solution Center AMD Type VFD-C2000 Security Level ØGeneral Aby SC Author John Zuo Release Date 5					
Product	AMD	туре	VFD-C2000	No.	N/A	
Issued by	SC	Author	John Zuo	Release Date	5 th July, 2012	
Devices an Inverter: \ C2000 Opt PM motor: Dperation \$ 1. Setting neo announcer 2. Set 00-02= 3. Set 00-02= 4. Set the neo	d tools: /FD007C23A ional Card: E ECMA-C300 Steps: cessary Paran nents related to reset the cessary Paran	, 2PCS (MC-PG01U 602ES 2PC meters for C2 to C2000+P e program of e CanOpen C meters for C2	Firmware V9.0 (2PCS) EMC CS 2000+PM moto M with PG01U PLC inside C2 Configuration fo 2000 CanOpen	20 D12272) -COP01(2PC r with PG01L) 000 (Both C2 r Both C2000 Master:	S) J. (Please kindly refer to th 000).).	
Pa	rameters	De	escriptions		Value	
	09-37	Can	Open Speed		0 (1M)	
	09-45	CanOpe	n Master Funct	ion 1	(enabled)	
	09-46	CanOpe	n Master Addre	ess 10	00 (Default)	
Besides:	please go t After the pi	o PLC mode ocedures ab	e for master. bove, please re	power the ma	aster C2000.	
5. Set the neo	ameters	meters for C	2000 CanOpen	slave:	Value	

00-20	Source of the Master Frequency Command	6 (for Canopen)	
00-21	Source of the Operation Command	3 (for Canopen)	
02-13	Output Relay 1	50(for CanOpen)	
03-20	Multi-function output 1(AFM1)	20(for CanOpen)	
03-23	Multi-function output 2(AFM2)	20(for CanOpen)	
09-36	CanOpen Slave Address	1	
09-37	CanOpen Speed	0 (1M)	
09-40	CanOpen Decoding Method	1 (for DS402)	
	00-20 00-21 02-13 03-20 03-23 09-36 09-37 09-40	00-20Source of the Master Frequency Command00-21Source of the Operation Command02-13Output Relay 103-20Multi-function output 1(AFM1)03-23Multi-function output 2(AFM2)09-36CanOpen Slave Address09-37CanOpen Speed09-40CanOpen Decoding Method	00-20Source of the Master Frequency Command6 (for Canopen)00-21Source of the Operation Command3 (for Canopen)02-13Output Relay 150(for CanOpen)03-20Multi-function output 1(AFM1)20(for CanOpen)03-23Multi-function output 2(AFM2)20(for CanOpen)09-36CanOpen Slave Address109-37CanOpen Decoding Method1 (for DS402)

6. Wiring C2000 Master and Slave together based on EMC-COP01.



7. Understanding the CanOpen Master Slave Special Auxiliary Relays M.

Relays	Descriptions
M1034	Enable CanOpen Real Time Control
M1059	CanOpen Master Setting Complete
M1060	Initializing CanOpen Slave
M1061	Initializing CanOpen Slave Failed

Besides, there are many Special Registers for CanOpen Master. There is a very clear explanation in our C2000 manual. The ones from D1070~D1099 and D2000~D2799 must be set correctly, otherwise, the CanOpen Master can't be fulfilled.

Some key Registers can be introduced here:

Registers	Descriptions	Remarks
D1090	Synchronous cycle setting	D1090>=(1M/Rate)*(N/4) ^A

D1091	The station for initialization during Initializing process	Bit0~7 is the mapping for 1~8 Channel ^B
D2034	Transmission setting of slave No. n=0	For TXPDO Transmission Setting ^C
D2067	Transmission setting of slave No. n=0	For RXPDO Transmission Setting ^c

- A. Rate is the value you set in 09-37, and N is the PDO number in your loop.
- B. Channel one is D2000~D2099, Channel two is D2100~D2199...... Channel eight is D2700~D2799.
- C. D2034+n*100 is for eight channels TXPDO Transmission Setting.

D2067+n*100 is for eight channels RXPDO Transmission Setting.

They all abide by the structure as below, and the En is for enable the mode you choosing, the number is the PDO Index number (e.g. 6040H 607AH....). The difference is D2034+n*100 is to regard the TXPDO as targets, but D2067+n*100 is to regard the RXPDO as targets.

		PDO4 PDO3 PD0			PDO3 PDO2			PDO1
		Torque		Position	R	emote I/O		Speed
Bit	15	14 ~ 12	11	10 ~ 8	7	6 ~ 4	3	2 ~ 0
Definition	En	Number	En	Number	En	Number	En	Number

And the detailed indexes information for PDO1 ~ PDO4 as follows:

			TXP	DO				
PDO4 (Torq	ue Mode)	PDO3 (Posi	tion Mode)	PDO2 (R	emote I/O)	PDO1 (Speed Mode)		
Description	Special D	Description	Special D	Description	Special D	Description	Special D	
Control Word	D2008+n100	Control Word	D2008+n100	Slave MO	D2027+n100	Control Word	D2008+n100	
Tor. Target	D2017+n100	Pos. Target	D2020+n100 D2021+n100	Slave AO1	D2031+n100	Freq. Com.	D2012+n100	
Control Mode	D2010+n100	Control Mode	D2010+n100	Slave AO2	D2032+n100			

			RXP	DO			
PDO4 (Torc	ue Mode)	emote I/O)	PDO1 (Spe	ed Mode)			
Description	Special D	Description	Special D	Description	Special D	Description	Special D
Status Word	D2009+n100	Status Word	D2009+n100	Slave MI	D2026+n100	Status Word	D2009+n100
Rel. Torque	D2018+n100	Rel. Position	D2022+n100 D2023+n100	Slave Al1	D2028+n100	Freq. Com.	D2013+n100
Rel. Mode	D2011+n100	Rel. Mode	D2011+n100	Slave Al2	D2029+n100		
				Slave Al3	D2030+n100		

- 8. Programming C2000 CanOpen Master PLC.
 - Choose Communication—Edit Register Memory(T,C,D) in WPLSoft.



Click Transmit, and choose D1070~D1099 D2000~D2799, and click the "Read from PLC Device Register" for reading the D1070~D1099 D2000~D2799 from Current PLC.

	ID ID 4	1911	2.0.	9.0	0 0	2.3		-		
	3 8	12 0 1	1.100		37773	0000	E G.	U		
Communication Setting RS232 Sthemat	D Regist Data Ty @ 16 bi	ter CRe pe I ts	gister Display	C Register(32bits) 1 Transmission Set	r Register		Transmit	Clear	A11 _	Hint
J DVPEN01-SL	C 32 bi	ts (Bine +1	Read from PLC De	7	+8	+9			
B DirectLink	D0	1000	0	A THING TO I DO DET	on tradition		0	0		
Dab Ethemet	D10	0	0	Bank Area Setup			0	0		
	D20	0	0	E Bank 0	Btart 0	End 399		0	0	_
	D30	0	0		Paner D0 - D300			0	0	
	D40	0	0		Pointige DO - DOFF		0	0		
	D50	0	0	D Danki	Start 107	End 109	9	0	0	
	D60	0	0	re Dank I	Ever 100			0	0	
	D70	0	0		Range D1000 ~ D10	199	2	0	0	
	D80	0	0		-			0	0	
	D90	0	0	Bank 2	Start 200	0 End 279	9	0	0	
	D100	0	0		Range D2000 ~ D2	799		0	0	
	D110	0	0					0	0	_

When Reading complete, don't change the value of D1070~D1099 which are very less something to do with application setting. But D2000~D2799 should be set carefully based on your CanOpen Configuration. In this case, CanOpen Slave address is 1 and I choose D2000~D2099 as the operation registers. So I set D1090=8, D1091=1(Bit 0=1 for D2000~D2099), D2034=BAH (Speed mode +Remote IO mode), D2067=CAH(Speed mode +Remote IO mode). Please use "Edit Register Memory" to set these D since they are configurations, and other D can be set in your program.

😤 File Edit Commiler Comme	ste Search 1	Jieur Com	nunication	Ontione W	windo	w Help						
	no goaten		nuncation			w Trab						
		1.1	99	0	730	1 0	이 관 때					
🔠 🍱 🛱 🧉 🖄 🖽 🛛	i / 🖓 🤅) (M	· · · · · · · · · · · · · · · · · · ·) 🗢 🖫	🗐 📡 cobe		: 22 🖾 (ର୍ 🔍 🚆	<u>€</u>			
Communication Setting VRS232 Ethernet UVPEN01-SL	DRegiste Data Typ 16 bit 32 bit	r C Reg	ister C F splay Mode Decimal Hexadecim Binary	egister(32bi al	s) T Reg	ster		T	ransmit	Clear.	A11	Hint
IFD9506		+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	
- <u>■</u> DirectLink ↔ USB	D1950	0	0	0	0	0	0	0	0	0	0	
Ethemet	D1960	0	0	0	0	0	0	0	0	0	0	
	D1970	0	0	0	0	0	0	0	0	0	0	
	D1980	0	0	0	0	0	0	0	0	0	0	
	D1990	0	0	0	0	0	0	0	0	0	0	
	D2000	1	402	1	0	-28412	0	2	0	126	568	
	D2010	2	2	1000	0	0	1000	1000	0	0	0	
	D2020	0	0	0	0	10000	0	0	0	2	0	
	D2030	0	0	0	0	10	16	24640	16	24642	0	
	D2040	0	0	0	16656	8230	-24304	8230	-24048	8230	0	
	D2050	0	16	24640	32	24698	8	24672	0	0	16	
		04640	16	24690	0	24672	0	0	10	1.6	246.41	

Click Transmit, and choose D1070~D1099 D2000~D2799, and click the "Write to PLC Device Register" for writing the D1070~D1099 D2000~D2799 to Current PLC.

	DBS	1310	L Q	90	00000	2 .4			
	日 5 印	39 H	100		K I I I I I I	0 Q Q A	4.4	9	
Communication Setting V RS232 DYPEN01-SL	D Regist Data Ty © 16 bi C 32 bi	ter C Rep pe E ts () ts ()	gister lisplay Deci Hex Bina	C Register(32bits)	T Register	0K	Transmit	Clear.	All Hint
IFD9506		+0	+1	Write to PLC De	vice Register	Cancel	7	+8	+9
- DrectLink	D1950	0	0		·······································	ounter		0	0
DEthemet	D1960	0	0	Bank Area Setup					0
	D1970	0	0	E Bank 0	Start 0	End 399		0	0
	D1980	0	0		Press D0 D200		7	0	0
	D1990	0	0		romilie no ~ poss			0	0
	D2000	1	40;	D Purch 1	Start 1070	End 1099		126	568
	D2010	2	2	P Dank I	and loss	and prove		0	0
	D2020	0	0		Range:D1000 - D105	19	2	2	0
	D2030	0	0					24642	0
	D2040	0	0	🔽 Bank 2	Start 2000	End 2799	24048	8230	0
	D2050	0	16		Range D2000 ~ D279	9		0	16
	D2060	24640	16				0	16	24641

 Making the ladder steps for C2000 CanOpen Master. In this case, I realize the CanOpen Master-Slave Remote IO (with Speed mode) control, and I use D2012 for speed command, D2008 for Control word.

For any CanOpen Master application in C2000, M1059 M1060 M1061 M1034 must be used correctly, and otherwise the application can't be fulfilled.

Please refer to the CanOpen Master sample program in Remote IO Mode.

Attentions:

A. What are the channels in C2000 for Al1 Al2 Al3 and AO1 AO2? Al1 is AVI, Al2 is ACI, Al3 is AUI.

AO1 is AFM1, AO2 is AFM2.

B. Why must we set Pr02-13=50 Pr03-20=20 Pr03-23=20?

In this case, we want to control the AFM1 AFM2 MO output by CanOpen TXPDO. So Pr03-20 and Pr03-23 is set to 20 both for CanOpen control. Besides, in this case, I choose realy 1 as the MO I control, so Pr02-12 must be set to 50 for CanOpen control.

C. How can we know the MO control is successful or not?

When you finish the MO control, you can read the parameter value Pr02-51 for judging whether the value is successfully set to MO TXPDO index. And the MO bits can be follows.



D. How can we know the MI reading is successful or not?

When you finish the MI reading, you can refer to the Pr02-50 for judging whether the MI RXPDO index display is the same as the value of 02-50. And the MI bits can be follows:

