# **PISO-CAN / PEX-CAN / PCM-CAN Series**

# Quick Start User Guide

#### Introduction

This user guide introduces the user how to implement the PISO-CAN200/ 400/100U/200U/400U/800U, PEX-CAN200i, or PCM-CAN00/200 into your pc in a guick and easy way. Therefore, it only provides the basic instructions. For more detail information, please **PISO-CAN** 200/400/100U/200U/400U/800U, PEX-CAN200i. refer to the and PCM-CAN100/200 user manual in the product CD or download it from following web site: http://www.icpdas.com/products/Remote\_IO/can\_bus/piso-can100u.htm http://www.icpdas.com/products/Remote IO/can bus/piso-can200.htm http://www.icpdas.com/products/Remote IO/can bus/piso-can400.htm http://www.icpdas.com/products/Remote IO/can bus/piso-can800u.htm http://www.icpdas.com/products/Remote IO/can bus/piso-can200e.htm http://www.icpdas.com/products/Remote\_IO/can\_bus/pcm-can200.htm

#### Product Check List

Besides this guide, the package includes the following items:

- □ Hardware of PISO-CAN or PEX-CAN or PCM-CAN series CAN card
- □ ADP-9 Board (for PISO-CAN400/PISO-CAN400U only)
- □ One CA-4037W and Two CA-4002 (for PISO-CAN800U only)
- Software CD ROM
- User's manual

#### Installing Your Hardware

- 1. Shut down your computer
- 2. Remove all covers from the computer
- 3. Select an unused PCI/PCIe slot
- 4. Carefully insert your PISO-CAN or PEX-CAN or PCM-CAN series CAN card into the PCI/PCIe slot
- 5. Replace the PC cover
- 6. When the hardware installation is complete, please turn on the computer again.

# Installing Windows Driver

You can get the driver from: fieldbus\_cd:\can\pci\pcm\_piso-can\_series\driver\ or http://ftp.icpdas.com/pub/cd/fieldbus\_cd/can/pci/pcm\_piso-can\_series/driver/ The driver of PISO-CAN board can be used in 2K/XP/7 Windows environments. User can find the driver in the path of "\CAN\PCI\pcm\_piso\_can\_series\driver" in the Fieldbus\_CD. Execute the PISO-CAN.exe file to start install the driver.

### **Connector Pin Assignment**

### 5-pin screw terminal connector



5-p	5-pin screw terminal connectors									
pin assignment										
1	CAN_GND									
2	CAN_L									
3	CAN_SHLD									
4	4 CAN_H									
5	5 Reserved									

# 9-pin D-sub male connectors



	D-sub male connector pin											
assignment												
1	Reserved											
2	CAN_L											
3	CAN_GND											
4	Reserved											
5	CAN_SHLD											
6	Reserved											
7	CAN_H											
8	Reserved											
9	Reserved											

## **Getting Start**

The section will teach users how to control the I/O of CANopen slave with CANUtility step by step. But before following the steps below, users need to prepare some hardware including a PISO-CAN, and a CANopen slave device.

**Step 1:** Plugged the PISO-CAN or PEX-CAN or PCM-CAN series CAN card in PCI slot of PC and connect the CAN port of the CAN card with the CAN port of CANopen slave device. The node ID of slave device is set to 1, and the baud rate is set to 125Kbps. About the setting method of the node id and the baud rate of the CANopen slave, please refer to the slave's user\_manual.



**Step 2:** After install the PISO-CAN or PEX-CAN or PCM-CAN series CAN card driver, the folder of PISO-CAN will be installed as follows. Please execute the CANUtility.exe on PC in the path of "start manual\all programs\ICPDAS\PISO-CAN" to start the quick start demo test.



**Step 3:** Click the "Board NO." combo box to select the "Board 0" and the baud rate "125K bps". And then click the "OK" button to active the PISO-CAN board below.

Co	nfiguratio	n PISO-C	AN400U			×							
ſ	Board No. Board No. 0 : PISO-CAN400U												
Ç	Port Enable Port 1 Port 2 Port 3 Port 4												
	Port 1 Port 2 Port 3 Port 4												
	Acceptance Code Acceptance Mask Baud Rate												
	ACC 0	00	ACM 0	FF	12	25K 🔽							
	ACC 1	00	ACM 1	FF	BT 0	00							
	ACC 2	00	ACM 2	FF									
	ACC 3 00 ACM 3 FF BT 1 00												
					<	ОК							

**Step 4:** After the board 0 is activated successfully. The CANUtility main dialog is as following figure. There are 1 tag, 2 tags, 4 tags and 8 tags for one-port card (PISO-CAN100U and PCM-CAN100), two-port card (PISO-CAN200/200U, PEX-CAN200i, PCM-CAN200), four-port card (PISO-CAN400/400U) and eight-port card (PISO-CAN800U) respectively. In the bottom of the main dialog, the status bar shows five parameters, board number, port status, baud rate, acceptance code, and acceptance mask for the selected port.

S CAN Utility File Configuration	PISO-CAI	1400U											
Port 1 Port Mode	2   Port 3   ID(hex)	Port 4 RTI No	R Dle	n D	0(h) I	01(h)	D2()	1) D3	:(h) I	D4(ħ)	D5(h) D	6(h) D7(h)	Timer(ms)
No. Mode	ID	RTR	Len DO	D1	D2	D3	D4	D5	D6	D7	Timer	Status	Add Modify Delete Send
No. Mo	de ID	RTR	Len DO	D1	D2	D3	D4	D5	D6	D7	Time Star	nps(s) _	Rx Pause Clear Goto Last Scrolling

**Step 5:** Set the "ID = 0, RTR = NO, Dlen = 2, D0 = 81, D1 = 1 " (because the node of CANopen slave is set to 1). Then click the "Add" button to add the message.

5	CAN	Utility	PISO-CAR	1400T												
F	<u>File Configuration A</u> bout															
	Port 1   Port 2   Port 3   Port 4															
	1	Mode	ID(hex)	R	TR	Dlei	n D	0(h)	D1 (h)	D2()	h) D3	(h) I	04(h)	D5(h) D	6(h) D7(	h) Timer(ms)
	11-b	it ID 🗾	0	No	-	2	-	81	1							0
	No.	Mode	ID	RTR	Len	DO	D1	D2	D3	D4	D5	D6	D7	Timer	Status	Add
	No. 01	Mode 11-bit ID	ID O	R T R	Len 2	D0 81	D1 1	D2	D3	D4	D5	D6	D7	Timer 0	Status	Add
	No. 01	Mode 11-bit ID	ID O	RTR N	Len 2	D0 81	D1	D2	D3	D4	D5	D6	D7	Timer O	States	Add Modify
	No.	Mode 11-bit ID	ID O	RTR N	Len 2	D0 81	D1	D2	D3	D4	D5	D6	D7	Timer 0	States	Add Modify Delete

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Step 6: Click the "Send" button. The slave node id 1 will be successfully reset.

🍒 CAN Utility -	PISO-CAN40	υου									
File <u>C</u> onfiguration	1 <u>A</u> bout										
Port 1 Port 2	Port 3   Po	ort4									
Mode         ID(hex)         RTR         Dlen         D0(h)         D1(h)         D2(h)         D3(h)         D4(h)         D5(h)         D6(h)         D7(h)         Tin           11-bit ID         0         No         2         81         1   <											
No. Mode	ID R	RTR Len	D0 D1	D2   D3   1	D4 D5 D6	D7 Timer Status	Add				
UI 11-bit ID		N 2	81 1				Modify				
							Delete				
							Send				
No. Mode	ID B1	RTR Len	D0 D1	D2 D3 1	D4 D5 D6	D7 Time Stamps(s)  00 26895 864 34	Rx Pause				
2 11-bit	ID 701	N 1	00			26895.90666	Clear				
							Goto Last				
•				1 1		Þ	Scrolling				
oard No : 0	Port Status : Er	nable Ba	ud Rate : 125	K ACC	Code : 00,00,00	,00 ACC Mask : FF,	FF,FF,FF				

**Step 7:** Send the "ID = 0, RTR = NO, DIen = 2, D0 = 1, D1 = 1" to sets the state of the selected CANopen Slave to OPERATIONAL.

**Step 8:** For example, if users want to use the RxPDO protocol of CANopen communication, user must send PDO message by using the  $1^{st}$  RxPDO.Set the "ID = 201, RTR = NO, Dlen = 1, D0 = FF".

Port 1 Port 2 Port 3 Port 4															
h	Mode	ID(hex)	R	TR	Dlei	n D	0(h)	D1(h)	D2()	i) D3	(h) I	04(h)	D5(h) D	6(h) D7(h)	Timer(ms)
11-b	it ID 🔻	201	No	•	1	-	FF								0
No.	Mode	ID	RTR	Len	DO	D1	D2	D3	D4	D5	D6	D7	Timer	Status	Add
01	11-bit ID	201	N	1	FF								0		
															Modify
															Delete
															Send

**Step 9:** If users want to use the TxPDO protocol of CANopen communication, user must send PDO message by using the  $1^{st}$  TxPDO. Set the "ID = 181, RTR = Yes, Dlen = 1".

#### Acceptance Filtering

Four 8-bits Acceptance Code registers (AC0, AC1, AC2 and AC3) and Acceptance Mask registers (AM0, AM1, AM2 and AM3) are available for a various filtering of messages. These registers can be used for controlling a 4-byte filter, which can check the specific bits of a CAN message and decide if this message will be passed to the CAN card or not. The Acceptance Code Register is mainly used for deciding what kind of message ID the CAN card will accept. The Acceptance Mask Register is mainly used for deciding which bit of message ID will need to check by using the Acceptance Code Register. If the bit of the Acceptance Mask is set to 0, it means that the bit in the same position of message ID needs to be checked.



### Example 1

Assume that a message with a **Standard Frame** is considered. The Acceptance Code Registers (ACRn) and Acceptance Mask Registers (AMRn) is set as follows.

n		0	1 (upper 4 bits)	2		3	
ACRn	01xx	x010	XXXX	XXXX	XXXX	XXXX	XXXX
AMRn	0011	1000	1111	1111	1111	1111	1111
Accepted messages	01	v010					
(ID.28ID.18 RTR)		2010	****				

("x"=don't care, only the upper 4 bits of ACR1 and AMR1 are used)

In this case, the ACR0 and the AMR0 are used for the upper 8 bits of message ID. The upper 4 bits of the ACR1 and AMR1 are used for the lower 3 bits of the message ID and RTR bit. The lower 4 bits of the ACR1 and AMR1 are useless. The ACR2 and AMR2 are used for the first data byte of the CAN message. The ACR3 and AMR3 are used for the second data byte of the CAN message. Therefore, no matter the CAN message is remote transmit request message or not, the message ID with the format 01xx x010 xxx will be accepted. (x means "don't care").

Step 1: First of all, please connect port1 and port2.



**Step 2:** Click the "Configuration\Board Configuration" to set ACC0 "42" and ACM0 "38". Then click the "OK" to complete the setting.

File Configuration About	ion - PISO-CAN400U
Board Configuration P Data Format Software ID Mask TT-DIT ID ZZU No	No. 0 : PISO-CAN400U   IR   Dlei   nable   t1   Port 1   Port 2   Port 1   Port 2   Port 3   Port 1   Port 2   Port 3   Port 4     Port 1   Port 2   Port 4     Baud Rate   125K   BT 0   00   ACC 3   00   ACM 3   FF   BT 1   0K

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**Step 3:** Send message by using the port2. Set the "ID = 210, ID=3D7, ID = 100, ID = 211 and ID = 220".

No.	Mode	ID	RTR	Len	DO	D1	D2	D3	D4	D5	D6	D7	Timer	Status
01	11-bit ID	210	N	8	0	0	0	0	0	0	0	0	0	
02	11-bit ID	3D7	N	8	0	0	0	0	0	0	0	0	0	
03	11-bit ID	100	N	8	0	0	0	0	0	0	0	0	0	
04	11-bit ID	211	N	8	0	0	0	0	0	0	0	0	0	
05	11-bit ID	220	N	8	0	0	0	0	0	0	0	0	0	

**Step 4:** The port1 only receive these messages "ID = 210, ID=3D7, and ID = 211". The messages "ID = 100 and ID = 220" success of filtering out.

No.	Mode	ID	RTR	Len	DO	D1	D2	D3	D4	D5	D6	D7	Time Stamps(s) 🔺
1	11-bit ID	210	N	8	00	00	00	00	00	00	00	00	24173.78170
2	11-bit ID	3D7	N	8	00	00	00	00	00	00	00	00	24175.00244
3	11-bit ID	211	N	8	00	00	00	00	00	00	00	00	24270.14399
													<b>_</b>
•													•