Appendix I RS485 Communication protocol

I-1 Communication protocol

I-1-1 Communication content

This serial communication protocol defines the transmission information and use format in the series communication Including: master polling(or broadcast) format; master encoding method, and contents including: function code of action, transferring data and error checking. The response of slave also adopts the same structure, and contents including: action confirmation, returning the data and error checking etc. If slave takes place the error while it is receiving information or cannot finish the action demanded by master, it will send one fault signal to master as a response.

Application Method

The inverter will be connected into a “Single-master Multi-slave” PC/PLC control network with RS485 bus.

Bus structure

(1) Interface mode

RS485 hardware interface

(2) Transmission mode

Asynchronous series and half-duplex transmission mode. For master and slave, only one of them can send the data and the other only receives the data at the same time. In the series asynchronous communication, the data is sent out frame by frame in the form of message

(3) Topological structure

Single-master and multi-slave system. The setting range of slave address is 0 to 247, and 0 refers to broadcast communication address. The address of slave for network must be exclusive.

I-1-2 Communications connection

Installation of RS485 communication module:

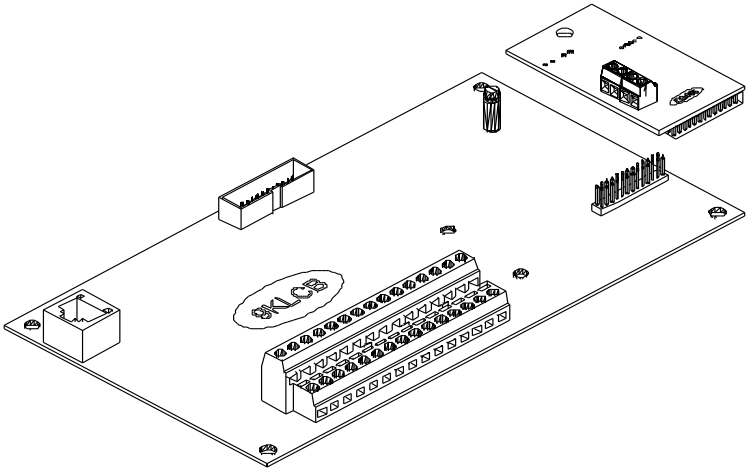

Diagram I-1：9K-RS485_S connect to 9KLCB control board

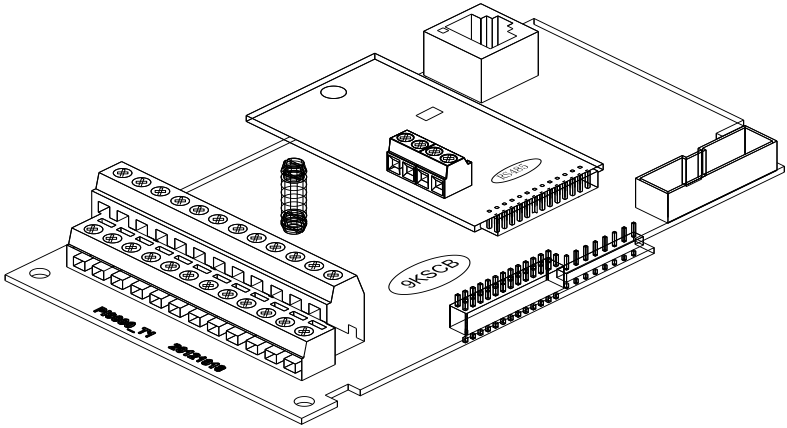

Diagram I-2：9K-RS485_S connect to 9KSCB control board

Single application：

Picture I-3 , the MODBUS wiring diagram of single inverter and PC. Generally , because PC does not carry RS485 interface, So we need to change the RS232 interface or USB interface in PC to RS485 through coverter . Connect the A terminal of RS485 to 485+ terminal on terminal board ,and connect the B terminal of RS485 to 485- terminal on terminal board. It is better to use twisted-pair cable with shield for the connection. When using the RS232-485 converter, the cable between RS232 interface on PC and RS232 interface on RS232-RS485 converter should be short, not longer than 15m.The best way is to insert the RS232-RS485 converter on the PC. When using the USB-RS485 converter, the cable should be short too.

When all cable is in right position, choose the right terminal on PC, the terminal for connecting RS232-RS485 converter, such as COM1, and set the basic parameters such as baud rate and data validation according to the inverter communication parameters.

Remark: 9KRSCB.V5/9KRLCB.V5 and above is built in with 485 card, the terminals are 485+ and 485-,converter t+ connect with 485+ terminal, T- connect with 485- terminal

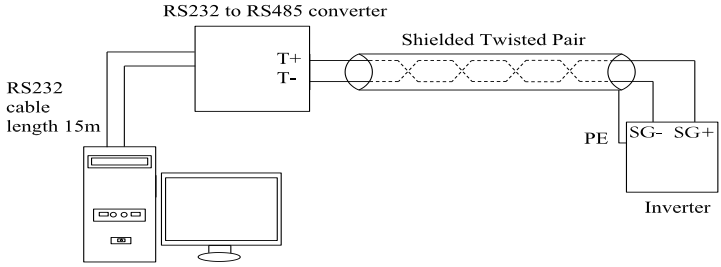

Diagram I-3：Single application schematic diagram

Multiple Applications

There are two connection ways for multiple application.

Connection 1,connect a 120Ω 1/4 W terminal resistor on both side. Shown as picture I-4

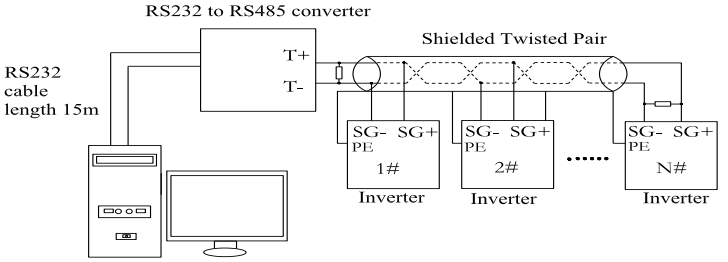

Diagram I-4：Multiple applications schematic diagram

Connection 2, connect a 120Ω 1/4W terminal resistor on two devices(5# and 8#)which are farthest from the wire.Shown as picture I-5

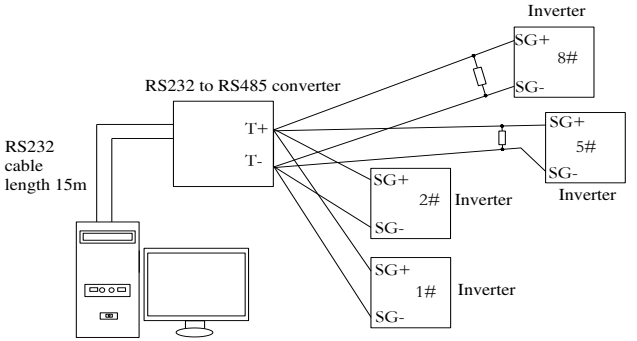

Diagram I-5：Multiple applications schematic diagram

It is better to use shield cable for the multiple application. And make the basic parameters such as baud rate and data validation connecting with RS485 consistent , do not use one address repeatedly.

I-1-3 Protocol description

PI9000 series inverter communication protocol is a asynchronous serial master-slave communication protocol, in the network, only one equipment(master) can build a protocol (known as “Inquiry/Command”). Other equipment(slave) only can response the "Inquiry/Command"of master by providing data or perform the corresponding action according to the "Inquiry/Command"of master. Here, the master refers to a Personnel Computer(PC), an industrial control device or a programmable logic controller (PLC), etc. and the slave refers to PI9000 inverter. Master can communicate with individUal slave, also send broadcasting information to all the lower slaves. For the single "Inquiry/Command"of master, slave will return a signal(that is a response) to master; for the broadcasting information sent by master, slave does not need to feedback a response to master.

Communication data structure PI9000 series inverter's Modbus protocol communication data format is as follows: in RTU mode, messages are sent at a silent interval of at least 3.5 characters. There are diverse character intervals under network baud rate,

which is easiest implemented. The first field transmitted is the device address.

The allowable characters for transmitting are hexadecimal 0 ... 9, A ... F. The networked devices continuously monitor network bus, including during the silent intervals. When the first field (the address field) is received, each device decodes it to find out if it is sent to their own. Following the last transmitted character, a silent interval of at least 3.5 characters marks the end of the message. A new message can begin after this silent interval.

The entire message frame must be transmitted as a continuous stream. If a silent interval of

more than 1.5 characters occurs before completion of the frame, the receiving device will flushes the incomplete message and assumes that the next byte will be the address field of a new message. Similarly, if a new message begins earlier than the interval of 3.5 characters following a previous message, the receiving device will consider it as a continuation of the previous message. This will result in an error, because the value in the final CRC field is not right.

RTUframe format :

Frame header START	Time interval of 3.5characters
Slave address ADR	Communication address: 1 to 247
Command code CMD	03: read slave parameters；06: write slave parameters
Data content DATA(N-1)	Data content: address of function code parameter, numbers of function code parameter, value of function code parameter, etc.
Data content DATA(N-2)	
……	
Data content DATA0	
CRC CHK high-order	Detection Value: CRC value.
CRC CHK low-order	
END	Time interval of 3.5characters

CMD (Command) and DATA (data word description)

Command code: 03H, reads N words (max.12 words), for example: for the inverter with slave address 01, its start address F0.02 continuously reads two values.

Master command information

ADR	01H
CMD	03H
Start address high-order	F0H
Start address low-order	02H
Number of registers high-order	00H
Number of registers low-order	02H
CRC CHK low-order	CRC checksum
CRC CHK high-order	

Slave responding information

When F9.05 is set to 0:

ADR	01H
CMD	03H
Byte number high-order	00H
Byte number low-order	04H
Data F002H high-order	00H
Data F002H low-order	00H
Data F003H high-order	00H
Data F003H low-order	01H
CRC CHK low-order	CRC checksum
CRC CHK high-order	

When F9.05is set to **1**:

ADR	01H
CMD	03H
Byte number	04H
Data F002H high-order	00H
Data F002H low-order	00H
Data F003H high-order	00H

Data F003H low-order	01H
CRC CHK low-order	CRC checksum
CRC CHK high-order	

Command Code: 06H, write a word. For example:Write 5000(1388H)into the address F00AH of the inverter with slave address 02H.

Master command information

ADR	02H
CMD	06H
Data address high-order	F0H
Data address low-order	13H
Data content high-order	13H
Data content low-order	88H
CRC CHK low-order	CRC checksum
CRC CHK high-order	

Slave responding information

ADR	02H
CMD	06H
Data address high-order	F0H
Data address low-order	13H
Data content high-order	13H
Data content low-order	88H
CRC CHK low-order	CRC checksum
CRC CHK high-order	

I-2 Check mode:

Check mode - CRC mode: CRC (Cyclical Redundancy Check) adopts RTU frame format, the message includes an error-checking field that is based on CRC method. The CRC field checks the whole content of message. The CRC field has two bytes containing a 16-bit binary value. The CRC value calculated by the transmitting device will be added into to the message. The receiving device recalculates the value of the received CRC, and compares the calculated value to the Actual value of the received CRC field, if the two values are not equal, then there is an error in the transmission.

The CRC firstly stores 0xFFFF and then calls for a process to deal with the successive eight-bit bytes in message and the value of the current register. Only the 8-bit data in each character is valid to the CRC, the start bit and stop bit, and parity bit are invalid.

During generation of the CRC, each eight-bit character is exclusive OR(XOR) with the register contents separately, the result moves to the direction of least significant bit(LSB), and the most significant bit(MSB) is filled with 0. LSB will be picked up for detection, if LSB is 1, the register will be XOR with the preset value separately, if LSB is 0, then no XOR takes place. The whole process is repeated eight times. After the last bit (eighth) is completed, the next eight-bit byte will be XOR with the register's current value separately again. The final value of the register is the CRC value that all the bytes of the message have been applied.

When the CRC is appended to the message, the low byte is appended firstly, followed by the high byte. CRC simple functions is as follows:

```
unsigned int crc_chk_value（unsigned char *data_value,unsigned char length）
{
    unsigned int crc_value=0xFFFF;
    int i;
    while（length--）
    {
        crc_value^=*data_value++;
```

```
        for（i=0;i<8;i++）
        {
            if（crc_value&0x0001）
            {
              crc_value=（crc_value>>1）^0xa001;
             }
            else
             {
               crc_value=crc_value>>1;
              }
         }
    }
    return（crc_value）;
}
```

I-3 Definition of communication parameter address

The section is about communication contents, it's used to control the operation, status and related parameter settings of the inverter. Read and write function-code parameters (Some functional code is not changed, only for the manufacturer use or monitoring): the rules of labeling function code parameters address:

The group number and label number of function code is used to indicate the parameter address:

High byte: F0 to Fb (F group), A0 to AF (E group), B0 to BF(B group),C0 to C7(Y group),70 to 7F (d group) low byte: 00 to FF

For example: address F3.12 indicates F30C; Note: L0 group parameters: neither read nor change; d group parameters: only read, not change.

Some parameters can not be changed during operation, but some parameters can not be changed regardless of the inverter is in what state.When changing the function code parameters, please pay attention to the scope, units, and relative instructions on the parameter.

Besides, due to EEPROM is frequently stored, it will redUce the life of EEPROM, therefore under the communication mode some function code do not need to be stored and you just change the RAM value.

If F group parameters need to achieve the function, as long as change high order F of the function code address to 0. If E group parameters need to achieve the function, as long as change high order F of the function code address to 4. The corresponding function code addresses are indicated below: high byte: 00 to 0F(F group), 40 to 4F (E group), 50 to 5F(B group),60 to 67(Y group)low byte:00 to FF

For example:

Function code F3.12 can not be stored into EEPROM, address indicates as 030C; function code E3.05 can not be stored into EEPROM, address indicates as 4305; the address indicates that only writing RAM can be done and reading can not be done, when reading, it is invalid address. For all parameters, you can also use the command code 07H to achieve the function.

Stop/Run parameters section:

Parameter address	Parameter description
1000	*Communication set value(-10000 to 10000)(Decimal)
1001	Running frequency
1002	Bus voltage
1003	Output voltage
1004	Output current

1005	Output power
1006	Output torque
1007	Operating speed
1008	DI input flag
1009	DO output flag
100A	AI1 voltage
100B	AI2 voltage
100C	AI3 voltage
100D	Count value input
100E	Length value input
100F	Load speed
1010	PID setting
1011	PID feedback
1012	PLC step
1013	High-speed pulse input frequency, unit: 0.01kHz
1014	Feedback speed, unit:0.1Hz
1015	Remaining run time
1016	AI1 voltage before correction
1017	AI2 voltage before correction
1018	AI3 voltage before correction
1019	Linear speed
101A	Current power-on time
101B	Current run time
101C	High-speed pulse input frequency, unit: 1Hz
101D	Communication set value
101E	Actual feedback speed
101F	Master frequency display
1020	Auxiliary frequency display

Note:

There is two ways to modify the settings frequencies through communication mode:

The first: Set F0.03 (main frequency source setting) as 0/1 (keyboard set frequency), and then modify the settings frequency by modifying F0.01 (keyboard set frequency). Communication mapping address of F0.01 is 0xF001 (Only need to change the RAM communication mapping address to 0x0001).

The second :Set F0.03 (main frequency source setting) as 9 (Remote communication set), and then modify the settings frequency by modifying (Communication settings). , mailing address of this parameter is 0x1000.the communication set value is the percentage of the relative value, 10000 corresponds to 100.00%, -10000 corresponds to -100.00%. For frequency dimension data, it is the percentage of the maximum frequency (F0.19); for torque dimension data, the percentage is F5.08 (torque upper limit digital setting).

Control command is input to the inverter: (write only)

Command word address	Command function
2000	0001: Forward run
	0002: Reverse run
	0003: Forward Jog
	0004: Reverse Jog
	0005: Free stop

	0006: Deceleration and stop
	0007: Fault reset

Inverter read status: (read-only)

Status word address	Status word function
3000	0001: Forward run
	0002: Reverse run
	0003: Stop

Parameter lock password verification: (If the return code is 8888H, it indicates that password verification is passed)

Password address	Enter password
C000	*****

Digital output terminal control: (write only)

Command address	Command content
2001	BIT0: SPA output control BIT1: RELAY2 output control BIT2 RELAY1 output control BIT3: Manufacturer reserves the undefined BIT4: SPB switching quantity output control

Analog output **DA1** control: (write only)

Command address	Command content
2002	0 to 7FFF indicates 0% to 100%

Analog output **DA2** control: (write only)

Command address	Command content
2003	0 to 7FFF indicates 0% to 100%

SPB high-speed pulse output control: (write only)

Command address	Command content
2004	0 to 7FFF indicates 0% to 100%

Inverter fault description:

Inverter fault address:	Inverter fault information:
8000	0000: No fault 0001: Inverter unit protection 0002: Acceleration overcurrent 0003: Deceleration overcurrent 0004: Constant speed overcurrent 0005: Acceleration overvoltage 0006: Deceleration overvoltage 0007: Constant speed overvoltage 0008: Control power failure 0009: Undervoltage fault 000A: Inverter overload 000B: Motor Overload 000C: Input phase loss 000D: Output phase loss 000E: Module overheating

	000F: External fault 0010: Communication abnormal 0011: Contactor abnormal 0012: Current detection fault 0013: Motor parameter auto tunning fault 0014:Encoder/PG card abnormal 0015: Parameter read and write abnormal 0016: Inverter hardware fault 0017: Motor short to ground fault 0018: Reserved 0019: Reserved 001A:Running time arrival 001B: Custom fault 1 001C: Custom fault 2 001D: Power-on time arrival 001E: Load drop 001F: PID feedback loss when running 0028: Fast current limiting timeout 0029: Switch motor when running fault 002A: Too large speed deviation 002B: Motor overspeed 002D: Motor overtemperature 005A: Encoder lines setting error 005B: Missed encoder 005C: Initial position error 005E: Speed feedback error

Data on communication failure information description (fault code):

Communication fault address	Fault function description
8001	0000: No fault 0001: Password error 0002: Command code error 0003: CRC check error 0004: Invalid address 0005: Invalid parameters 0006: Invalid parameter changes 0007: System locked 0008: EEPROM in operation

F9Group - Communication parameter description

F9.00	Baud rate	Default	6005
	Setting range	Units digit: MODUBUS baud rate 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS	

This parameter is used to set the data transfer rate between the host computer and the inverter. Note: the baud rate must be set to the same for the host computer and the inverter, otherwise

communication can not be achieved. The larger baud rate, the faster communication speed.

F9.01	Data format	Default	0
	Setting range	0: no parity: data format <8, N, 2> 1: even parity: data format <8, E, 1> 2: odd parity: data format <8, O, 1> 3: no parity: data format <8-N-1>	

Note: the set data for the host computer and the inverter must be the same.

F9.02	This unit address	Default	1
	Setting range	1 to 247, 0for broadcast address	

When the address of this unit is set 0, that is broadcast address, the broadcasting function for the host computer can be achieved.

The address of this unit has uniqueness (in addition to the broadcast address), which is the basis of peer-to-peer communication for the host computer and the inverter.

F9.03	Response delay	Default	2ms
	Setting range	0 to 20ms	

Response delay: it refers to the interval time from the end of the inverter receiving data to the start of it sending data to the host machine. If the response delay is less than the system processing time, then the response delay time is subject to the system processing time; If the response delay is longer than the system processing time, after the system finises the data processing, and continues to wait until the response delay time, and then sends data to the host computer.

F9.04	Reserved		

Communication time-out parameter is not valid when the function code is set to 0.0s.

Whenthe function code is set to valid, if the interval time between one communication and the next communication exceeds the communication time-out time, the system will report communication failure error (Fault ID Err.16). Generally, it is set to invalid. If the parameter can be set to monitor the communication status in continuous communication system.

F9.05	Communication protocol selection	Default	0
	Setting range	0: non-standard Modbus protocol 1: standard Modbus protocol	

F9.05=1: select standard Modbus protocol.

F9.05=0: when reading command, the number of bytes returned by slave is more 1 byte than standard Modbus protocol.

F9.06	Communication read current resolution	Default	0
	Setting range	0: 0.01A 1: 0.1A	

Used to determine the current output units when communication reads output current.

Appendix Ⅱ Description on proportion linkage function

(this function available in C2.08 and above)

Ⅱ-1.Function

Proportional linkage master:
Communication address of master =248
Proportional linkage slave:
Communication address of slave =1 to 247
If you want to use proportion linkage function, master parameters setting as follows:

F9.00	Baud rate	Same as slave
F9.01	Data format	Same as slave
F9.02	This unit address	248

Slave parameters setting as follows

F9.00	Baud rate	Same as master
F9.01	Data format	Same as master
F9.02	This unit address	1 to 247
FC.01	Proportional linkage coefficient	0.00: invalid; 0.01 to 10.00

Slave output frequency = Master setting frequency * Proportional linkage coefficient + UP/DOWN Changes.

Ⅱ-2.Examples of proportion linkage function

Functions provided by proportional linkage system:
1. Master adjusts system speed via AI1 and controls FRW/REV run by using terminals;
2. Slave runs following mater, the proportional linkage coefficient is 0.90; (when it is powered on, master displays 50Hz, and slave displays 45Hz)
3. Slave receives the running speed command from master and save it into F0.01.
4. The actual setting frequency of slave can be fine-tuned by the operation of rising and falling of keypad or terminals.
5. The actual setting frequency of slave can be fine-tuned by the analog AI2 too.
6. The actual setting frequency of slave = F0.01 + slave AI2 analog trimming + UP/DOWN Changes.

Proportional linkage master setting:

F0.11	Command source selection	1: Terminal block control
F0.03	Frequency source master setting	2: Analog AI1 setting
F1.00	DI1 input terminal function selection	1. FRW run command
F1.01	DI2 input terminal function selection	2. REV run command
F9.00	Baud rate	6005
F9.02	Communication address of this unit	Proportional linkage master 248
F9.03	Communication format	0

Proportional linkage slave setting:

F0.03	Frequency source master setting	0: keyboard set frequency
F0.04	Frequency source auxiliary setting	3: Analog AI2 setting
F0.07	Frequency overlay selection	01: master + auxiliary
F1.00	DI1 input terminal function selection	6. UP command
F1.01	DI2 input terminal function selection	7. DOWN command
F1.02	DI3 input terminal function selection	8: Free stop
F9.00	Baud rate	Same as master
F9.02	Communication address of this unit	1 to 247
F9.03	Communication format	Same as master
FC.01	Proportional linkage coefficient	0.90

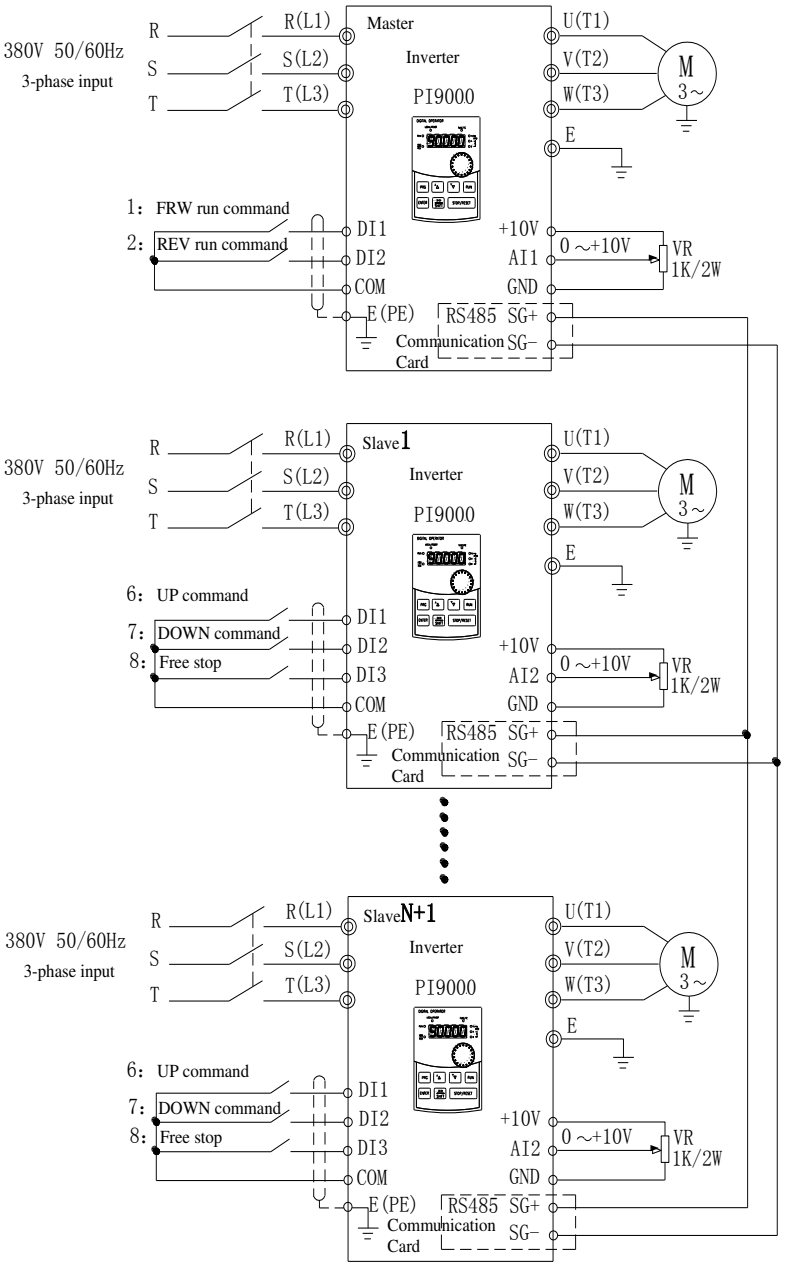

Diagram II-1 System wiring diagram

Appendix Ⅲ How to use universal encoder expansion card

(applicable for all series of Powtran frequency inverters)

Ⅲ-1 Overview

PI9000 is equipped with a variety of universal encoder expansion card (PG card), as an optional accessory, it is necessary part for the inverter closed-loop vector control, please select PG card according to the form of encoder output, the specific models are as follows:

Options	Description	Others
PI9000_PG1	ABZ incremental encoder. Differential input PG card, without frequency dividing output. OC input PG card, without frequency dividing output. 5V，12V，24V voltage is optional, please provide voltage and pulse input mode information when ordering.	Terminal wiring
PI9000_PG3	UVW incremental encoder. UVW Differential input PG card, without frequency dividing output. 5V voltage	Terminal wiring
PI9000_PG4	Rotational transformer PG card	Terminal wiring
PI9000_PG5	ABZ incremental encoder. OC input PG card, with 1:1 frequency dividing output. 5V，12V，24V voltage is optional, please provide voltage and pulse input mode information when ordering.	Terminal wiring

Ⅲ-2 Description of mechanical installation and control terminals function

The expansion card specifications and terminal signals for each encoder are defined as follows:

Table 1 Definitions of specifications and terminal signals

Differential PG card(PI9000_PG1)		
PI9000_PG1 specifications		
User interface	Terminal block	
Spacing	3.5mm	
Screw	Slotted	
Swappable	NO	
Wire gauge	16-26AWG(1.318～0.1281mm^2)	
Maximum frequency	500kHz	
Input differential signal amplitude	≤7V	
PI9000_PG1 terminal signals		
No.	Label no.	Description
1	A+	Encoder output A signal positive
2	A-	Encoder output A signal negative
3	B+	Encoder output B signal positive
4	B-	Encoder output B signal negative
5	Z+	Encoder output Z signal positive
6	Z-	Encoder output Z signal negative
7	5V	Output 5V/100mA power

8	GND	Power ground
9	PE	Shielded terminal
UVWdifferential PG card		
PI9000_PG3 specifications		
User interface	Terminal block	
Swappable	NO	
Wire gauge	>22AWG(0.3247mm^2)	
Maximum frequency	500kHz	
Input differential signal amplitude	≤7V	
PI9000_ PG3 terminal description		
No.	Label no.	Description
1	A+	Encoder output A signal positive
2	A-	Encoder output A signal negative
3	B+	Encoder output B signal positive
4	B-	Encoder output B signal negative
5	Z+	Encoder output Z signal positive
6	Z-	Encoder output Z signal negative
7	U+	Encoder output U signal positive
8	U-	Encoder output U signal negative
9	V+	Encoder output V signal positive
10	V-	Encoder output V signal negative
11	W+	Encoder output W signal positive
12	W-	Encoder output W signal negative
13	+5V	Output 5V/100mA power
14	GND	Power ground
15	-	
Rotational transformer PG card(PI9000_ PG4)		
PI9000_PG4 specifications		
User interface	Terminal block	
Swappable	NO	
Wire gauge	>22AWG(0.3247mm^2)	
Resolution	12-bit	
Excitation frequency	10kHz	
VRMS	7V	
VP-P	3.15±27%	
PI9000_PG4 terminal description		
No.	Label no.	Description
1	EXC1	Rotary transformer excitation negative
2	EXC	Rotary transformer excitation positive
3	SIN	Rotary transformer feedback SIN positive
4	SINLO	Rotary transformer feedback SIN negative
5	COS	Rotary transformer feedback COS positive
6	COSLO	Rotary transformer feedback COS negative
7	-	
8	-	
9	COSLO	Rotary transformer feedback COS negative
OC PG card(PI9000_PG5)		
PI9000_PG5 specifications		
User interface	Terminal block	
Spacing	3.5mm	
Screw	Slotted	

Swappable	NO	
Wire gauge	16-26AWG(1.318～0.1281mm^2)	
Maximum frequency	100kHz	
PI9000_PG5 terminal description		
No.	Label no.	Description
1	A	Encoder output A signal
2	B	Encoder output B signal
3	Z	Encoder output Z signal
4	15V	Output 15V/100mA power
5	GND	Power ground
6	A0	PG card 1:1 feedback output A signal
7	B0	PG card 1:1 feedback output B signal
8	Z0	PG card 1:1 feedback output Z signal
9	PE	Shielded terminal

Appendix IV CAN bus communication card use description

IV-1.Overview

CAN bus communication card is suitable for all series of PI9000 frequency inverters.Protocol details,please refer to《CAN bus communication protocol》document.

IV-2.Mechanical installation and terminal functions

IV-2-1 **Mechanical** installation modes

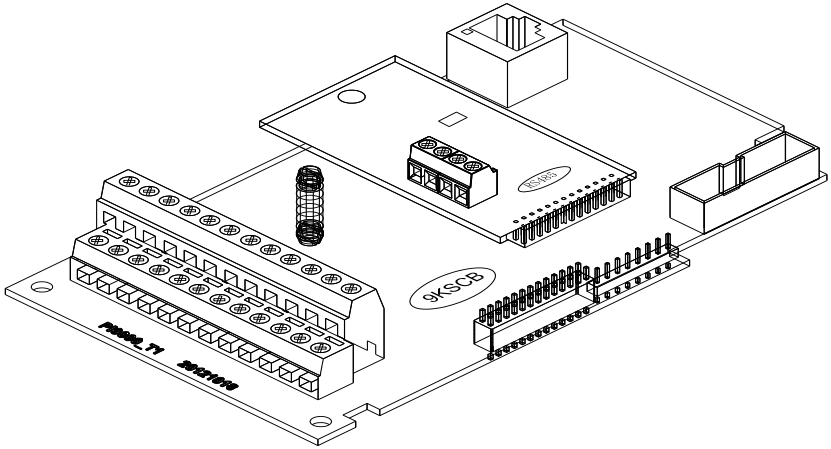

Diagram IV-1 CAN bus communication card's installation on SCB

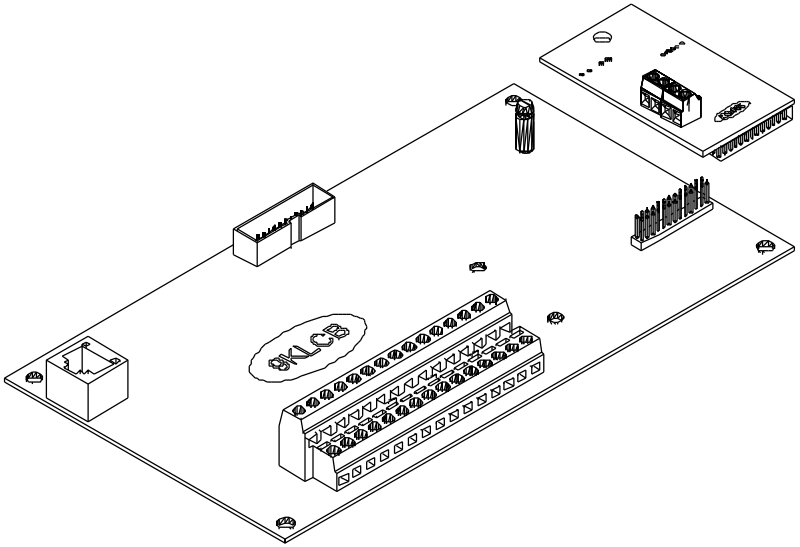

Diagram IV-2 CAN bus communication card's installation on LCB

IV-2-2 Terminal function

Class	Terminal Symbol	Terminal Name	Description
CAN communication	CANH	communication interface terminal	CANcommunication input terminal
	CANL		
	COM	CAN communication power ground	CAN card 5V power output terminal
	P5V	CAN communication output power	

Appendix V Profibus-DP communication card use description

V-1.Outline

9KDP1 meet the international standard PROFIBUS fieldbus, powtran technology 9K series inverter use it together to achieve the drive to become a part of fieldbus complete control of real fieldbus. Before using this product, please carefully read this manual

V-2.Terminal function

V-2-1.DIP switch description

DIP switch position No.	Function	instruction		
1,2	DP Card and the drive baud rate selection	Bit 1	Bit 2	Baud Rate
		OFF	OFF	115.2K
		OFF	ON	208.3K
		ON	OFF	256K
		ON	ON	512K
3-8	Profibus-DP Communication from the station address	6 Binary Consisting of 64-bit binary address, more than 64 outside the address can be set only by function code. The following lists some slave address and switch settings Address switch settings 0 00 0000 7 00 0111 20 01 0100		

Table 2.1 DIP Switch Functions

V-2-2.Terminal Function

1)external communication terminal J4-6 PIN

Terminal NO	Mark	Function
1	GND	Isolated 5V power ground
2	RTS	Request to send signal
3	TR-	Negative data line
4	TR+	Positive data line
5	+5V	Isolated 5V power supply
6	E	Ground terminals

Table 2.2 External Communication Terminal Function

2)PC communication interface SW1-8 PIN

Terminal NO	Terminal identification	Function
1	BOOT0	ARM boot select
2	GND	Digital Ground
3	VCC	Digital Power
4	Reserved	Reserved
5	PC232T	PC 232 communication transmitting end
6	PC232R	PC 232 receiving end
7	RREST	ARM Reset
8	GND	Digital Ground

Table 2.3 PC Communication Terminal Function

V-2-3.LED Indicator Functions

LED Indicator	Function Definition	Description
Green	Power Indicator	If DP card and drive interfaces connected, the inverter after power LED should be in the steady state
Red	DP Card and inverter serial connection indicator	DP Card and inverter connected to the normal state of the LED is lit, flashing indicates the connection is intermittent (for interference), and drive off when a serial connection is unsuccessful (You can check the baud rate setting)
Yellow	DP Profibus master card and the connection indicator	DP Profibus master card and connect normal state of the indicator is lit. flashing indicates the connection is intermittent (for interference), and Profibus master is off when connection is unsuccessful (you can check the slave address, data formats, and Profibus cable)

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