Quick guide of PI9000 operation

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1.The introduction of new generation of PI9000
2. The new generation of PI9000 has following feature .
3. Installation of PI9000 procedure :
4.Examples of connections between the Inverter typical peripheral devices are shown.
5.Keyboard operating instruction.
6.Trial operation follow chart
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14. Multi-speed applying with I/O interface terminal
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17. PID control for constant pressure water supply-electrical diagram (0-10V signal feedback)
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19.Application of PI9000 series inverters in crane
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1.The introduction of new generation of PI9000 of POWTRAN Technology.

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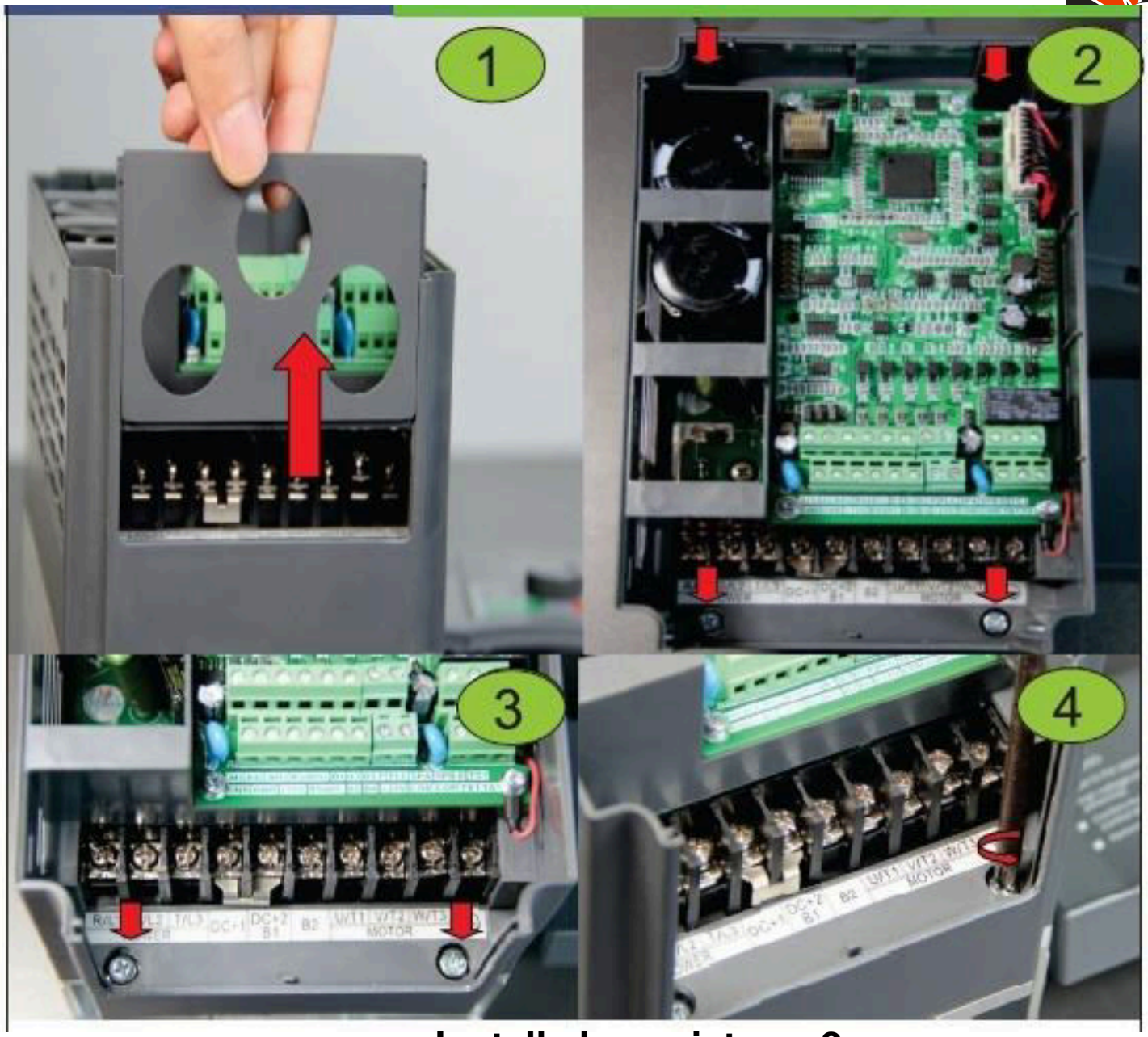
The PI9000 series inverter is high-performance motor control module and consists of V/F, sensorless vector control (SVC) and torqure control. It is mainly responsible for high performance control and overall protection of the motor, controlling the motor through sending running commands to multiple channels or performing close loop vector control through encoder interface.
which mainly ,includes most of functions of the inverter, such as PID control, MS speed, and swing frequency and so on .

2. The new generation of PI9000 has following feature .

Input/output terminal	Five digital two analog input signal, two analog output ,two high speed port and one relay
Control mode	0:V/Fz1:open loop flux vector control 2:open loop without sensor flux vector control 3:closed loop with sensor flux vector control
MS speed	Be able to realize 16S speed
PLC Simple PLC	Be able to realize 16S timing operation
Swing frequency and fixed-length control	Available
Swing frequency and	Available
Main/auxiliary setup	Available
Communication function	standard RS485 ,Modbus
PID control	Available
Protection function	It can implement power-on motor short-circuit detection, input/output phase loss protection, over current protection, over voltage protection, under voltage protection, over heat protection and overload protection. Over voltage stall protection ,current limit ….
Parameter copy	It enables the parameter copy unit to copy the parameters quickly.
Optional parts	LCD operation panel, braking components, communication card,, PG card, water supply card, etc

3. Installation of PI9000 procedure :

Install show picture -1



Install show picture -2

Power on inverter

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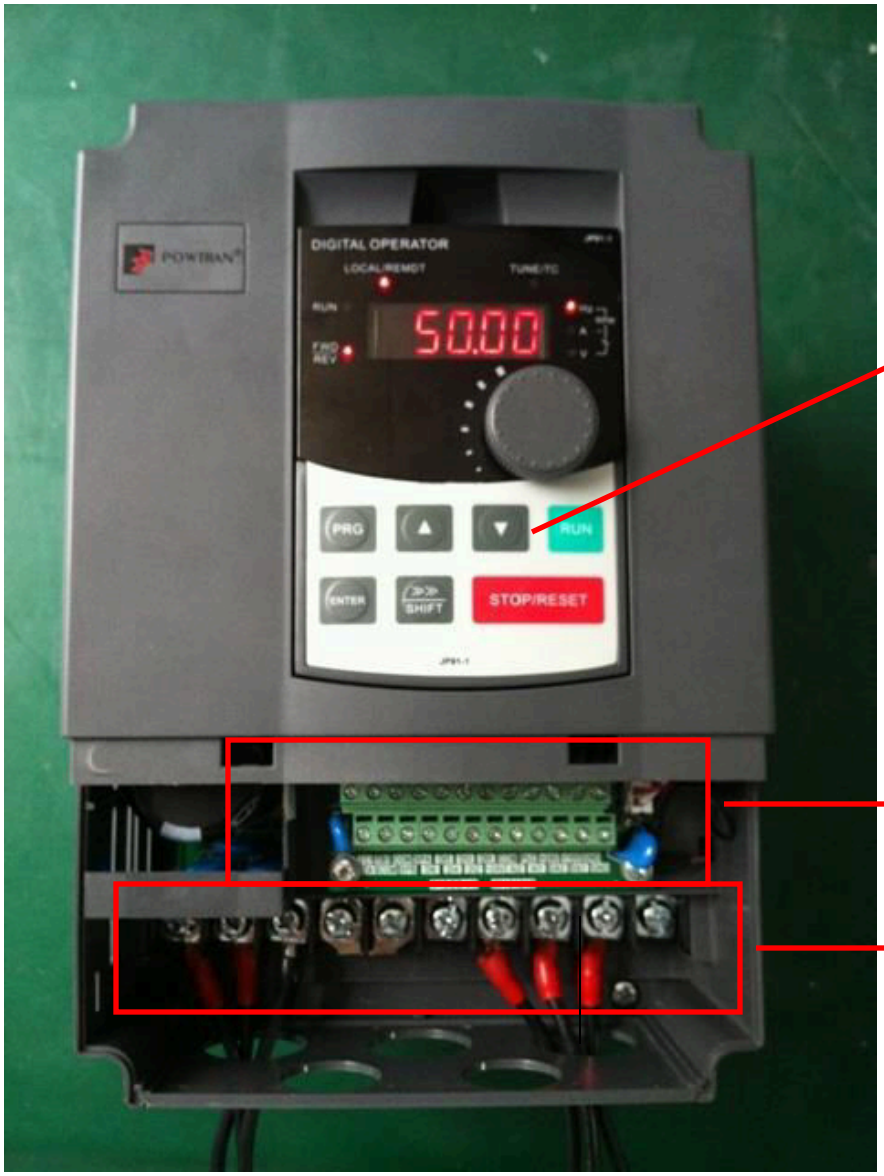


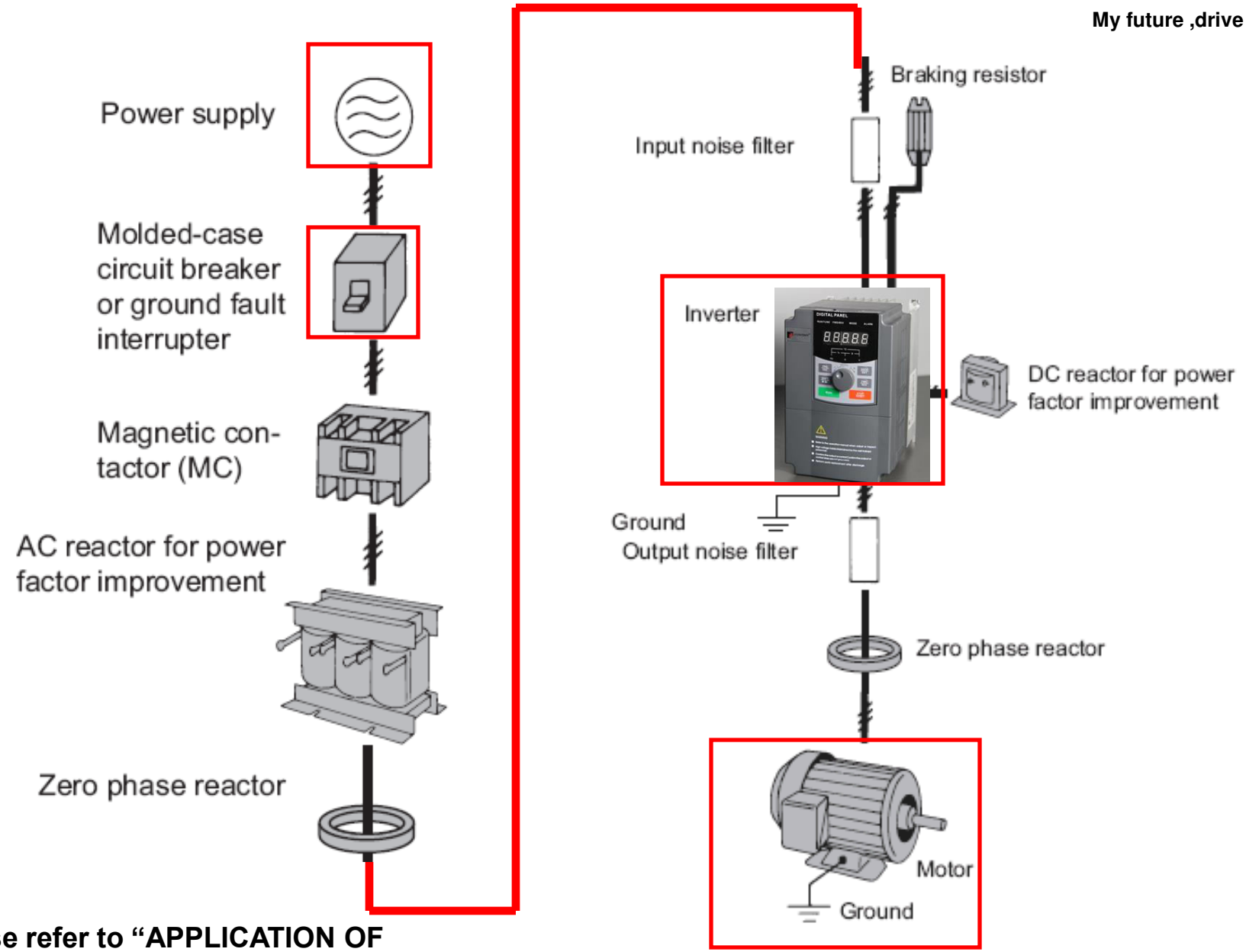
keyboard

I/O control terminal

Main Terminal cover

Front cover

4.Examples of connections between the Inverter typical peripheral devices are shown.



Please refer to "APPLICATION OF OPTIONAL EQUIPMENT ".

5.Keyboard operating instruction._1

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The operator interface provides a means for an operator to start and stop the motor and adjust the operating speed.

PRG — Escape key :enter into function parameters list or escape it .

>> >> / SHIFT — 1.Shift the data bit when do a modification .
2:shift the monitor parameters in the stop mode

▲ ▼ — Date or Function code increase/decrease

ENTER — Enters menus and parameters, and set validates parameter changes.

RUN — Starts the Inverter operation

STOP / RESET — 1.Stop inverter operation
2.Also acts as the Reset key when a fault has occurred.

1.Change the U0-UP,E0-E5 in the first Menu
2.Change the function code in the second menu
3.Change the value of function code in the third menu
4.Frequency setting in the run or stop mode.

5.Keyboard operating instruction. _2

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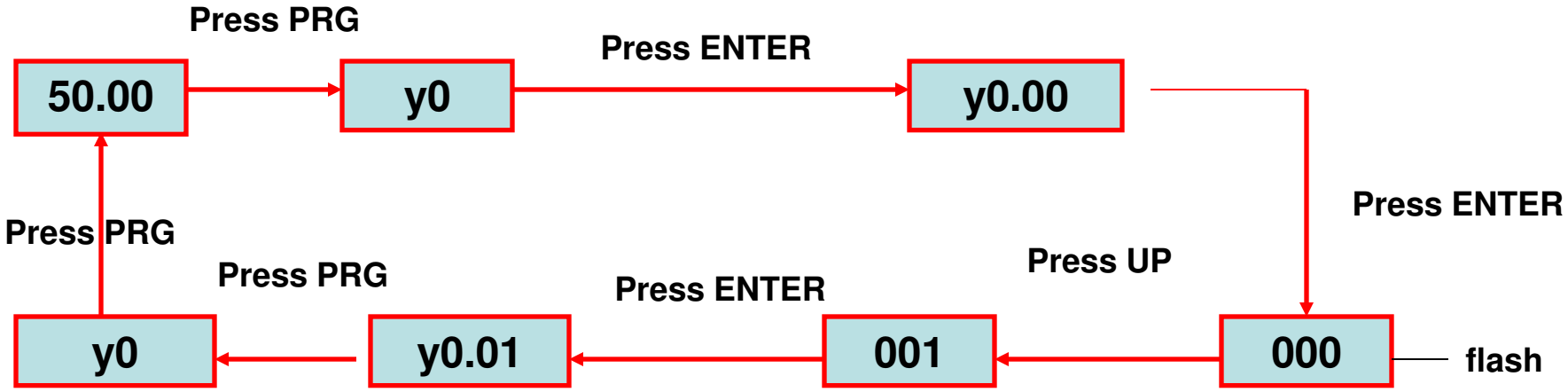
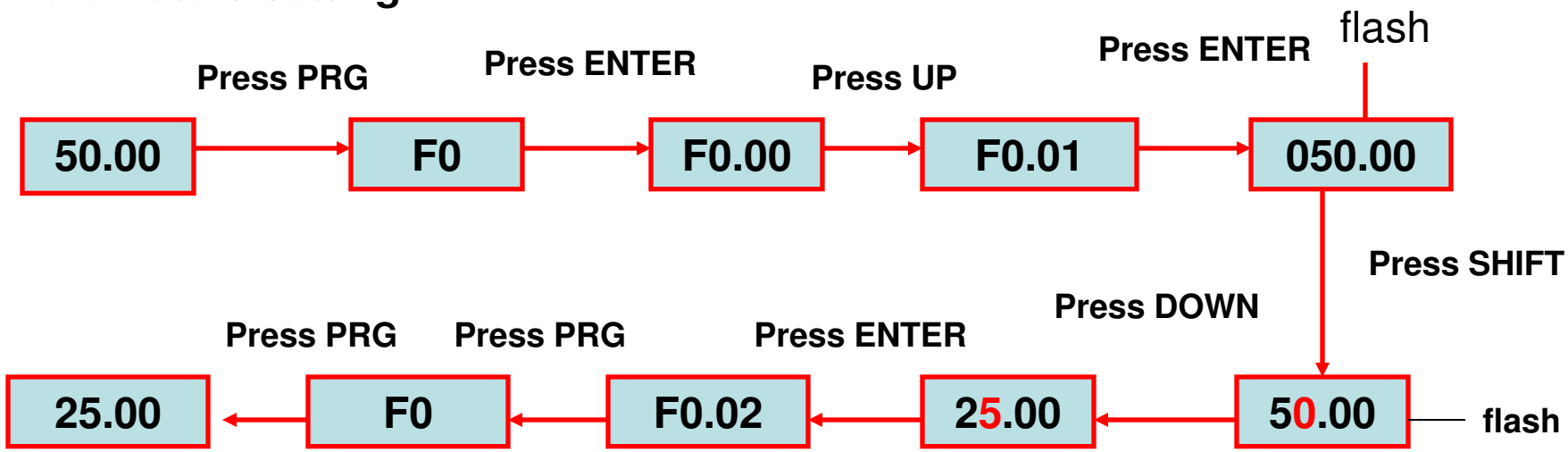
1.The first menu F0 **2.The second menu:F0.01** **3.The third menu:50.00**

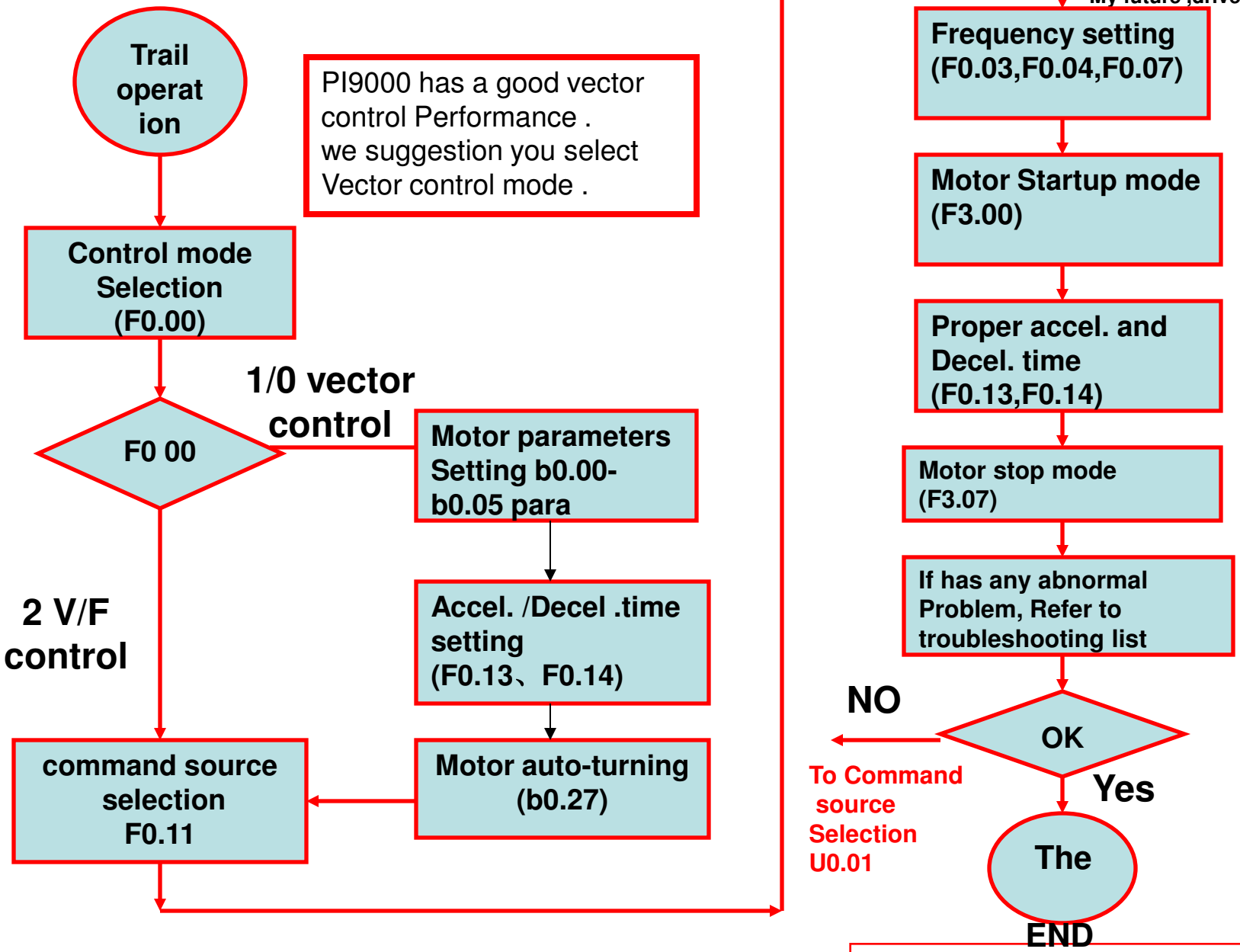
2. Reset parameters to factory setting



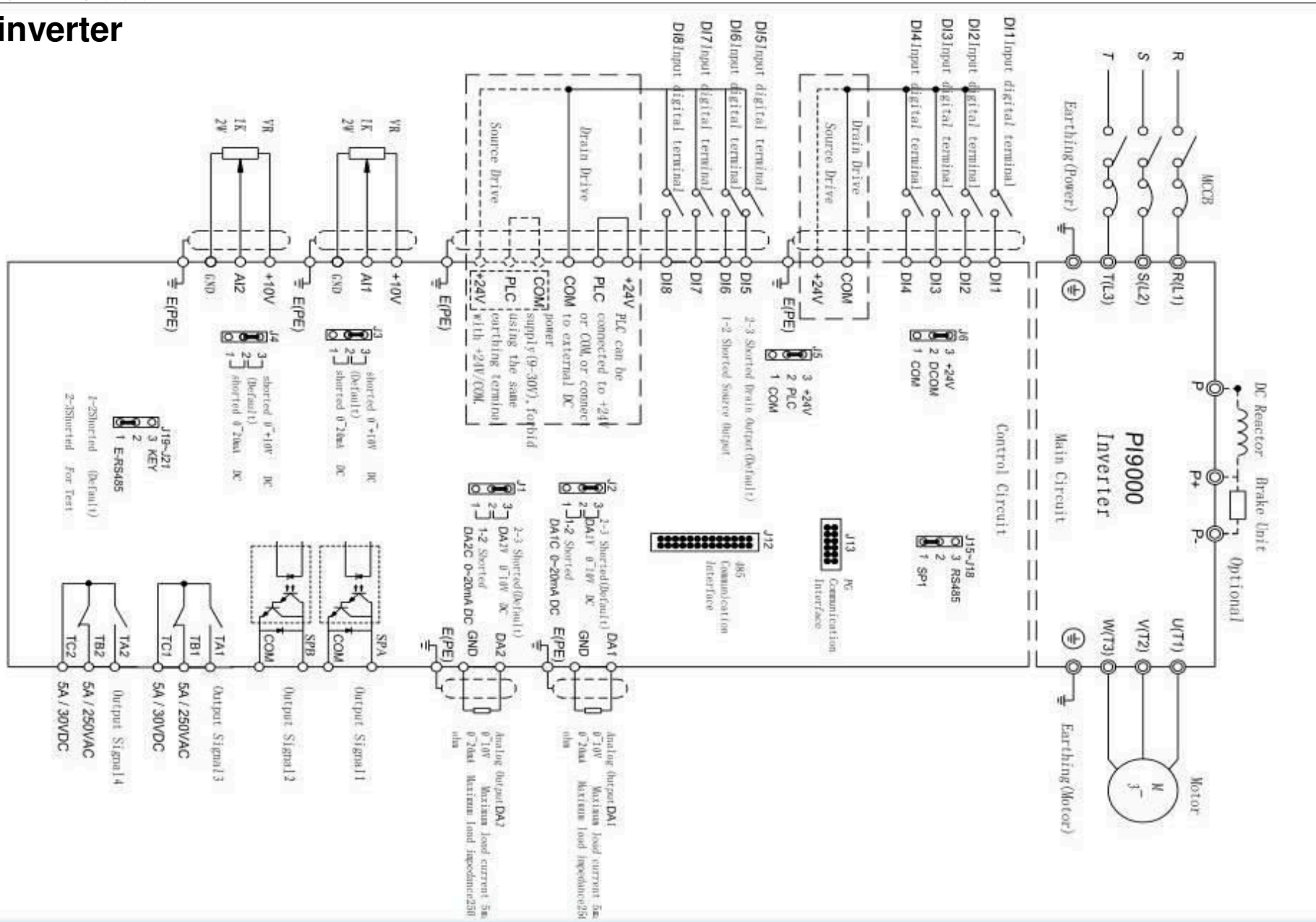
3. Parameters setting



6.Trial operation follow chart

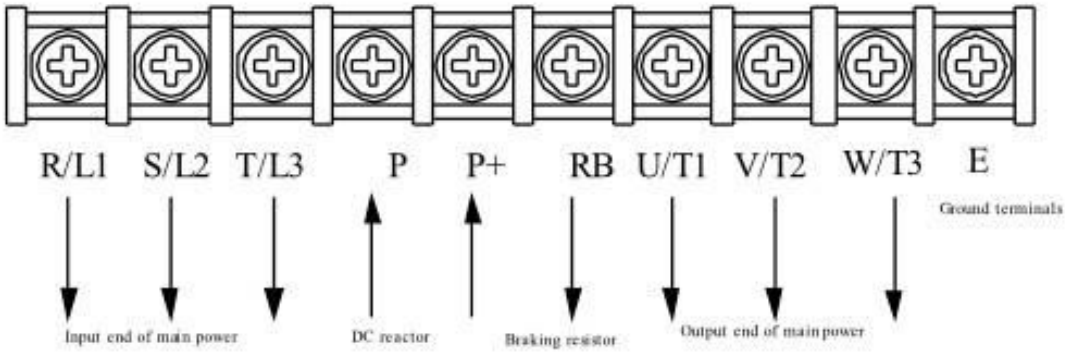


7.Wiring Of PI9000 inverter



. Main terminal

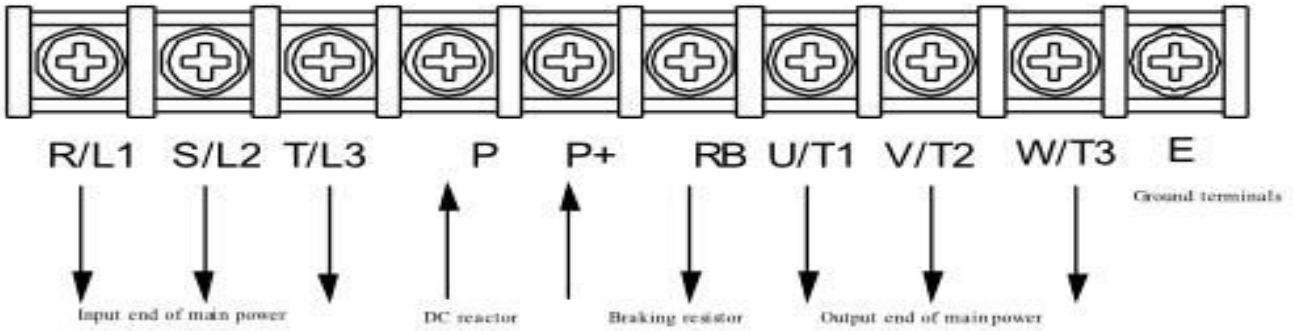
Main circuit terminal(<7.5KW, 380V):



Input power Supply | DC reactor | | Motor

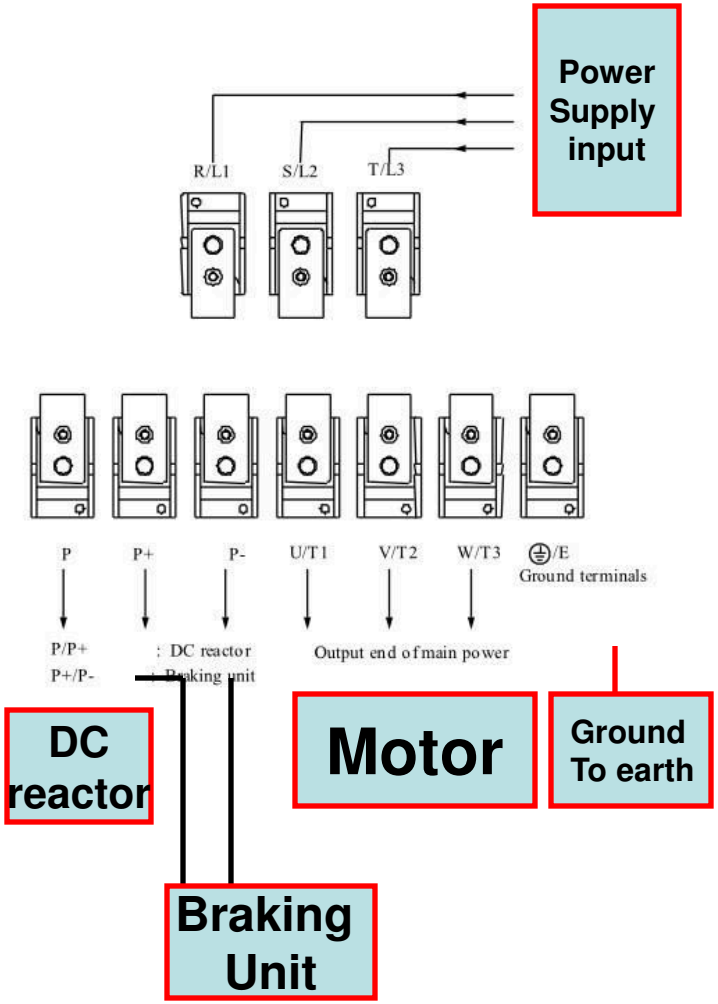
Braking resistor

Main circuit terminal(11kW to 15kW, 380V):

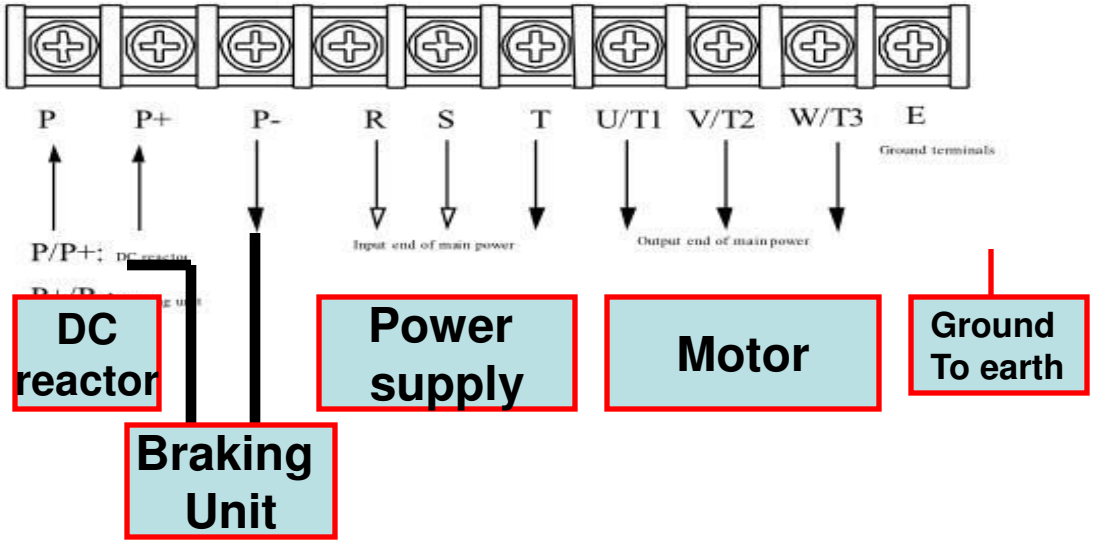


Input power Supply | DC reactor | Braking Unit | Motor

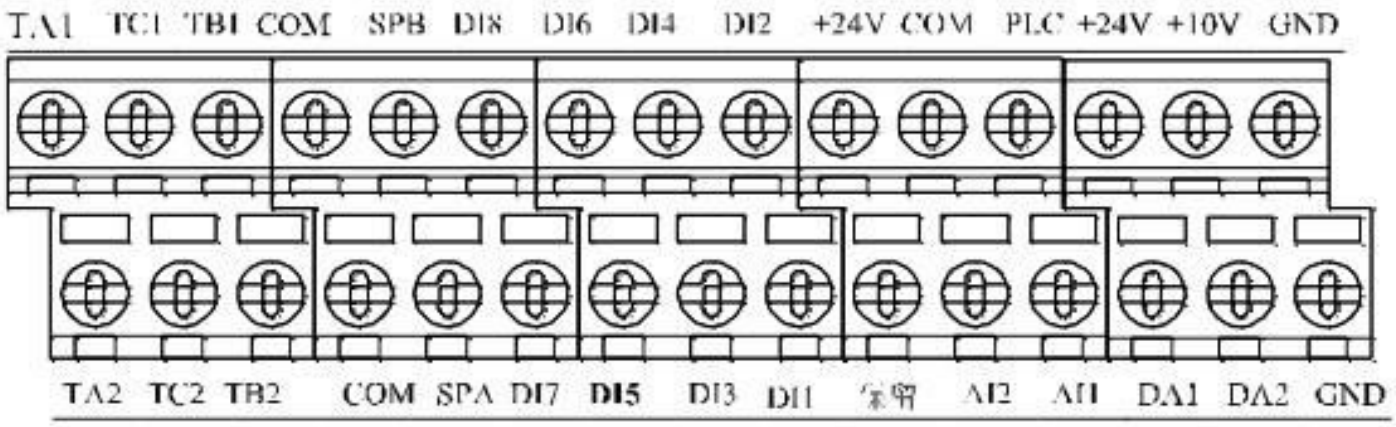
The main terminal of 45~220kW（380V）inverter



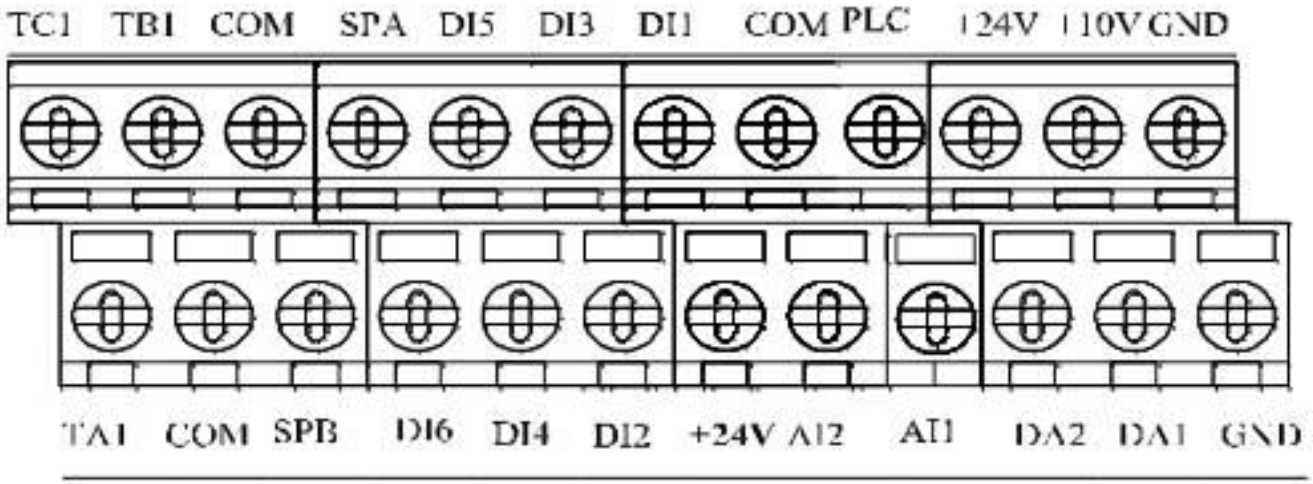
The main terminal of 18.5~355kW（380V）inverter



I/O control terminal of PI9000.
There are two type of controller board of PI9000.



The I/O terminal of 9KLCB controller board



The I/O terminal of 9KSCB controller board

8.How to perform motor auto-turning ?

Performing motor auto-turning to get the motor parameters Automatically for vector control application .

1. Set the B motor parameters according you motor .(b.00-b0.05)
2. Disconnect load from motor for performing complete Rotational auto-turning
3. Program b0.27=2 and press RUN key ,the auto-turning is going to start.

b0.00	motor type	0:General asynchronous motor 1:Asynchronous frequency conversion motor 2:permanent magnet synchronous motor
b0.01	rated power	0.1～1000.0KW
b0.04	rated frequency	0.01～F0.19 (maximum frequency)
b0.05	rated rotation speed	0～36000RPM
b0.02	rated voltage	1～2000V
b0.03	rated current	0.01A~655.35A (rated power <=55KW) 0.1A~6553.5A (rated power >55KW)
b0.27	motor auto-turning selection	0:no operation 1:complete Rotational auto-tuning 2:Stationary auto-tuning

8.Motor auto turning _1

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4. The time of auto-turning also depend on the(F0.13,F0.14) acceleration and deceleration time

5.If the load can't take from the motor ,please set b0.27 to 1 to perform stationary auto-turning .

Motor basic Parameter setting

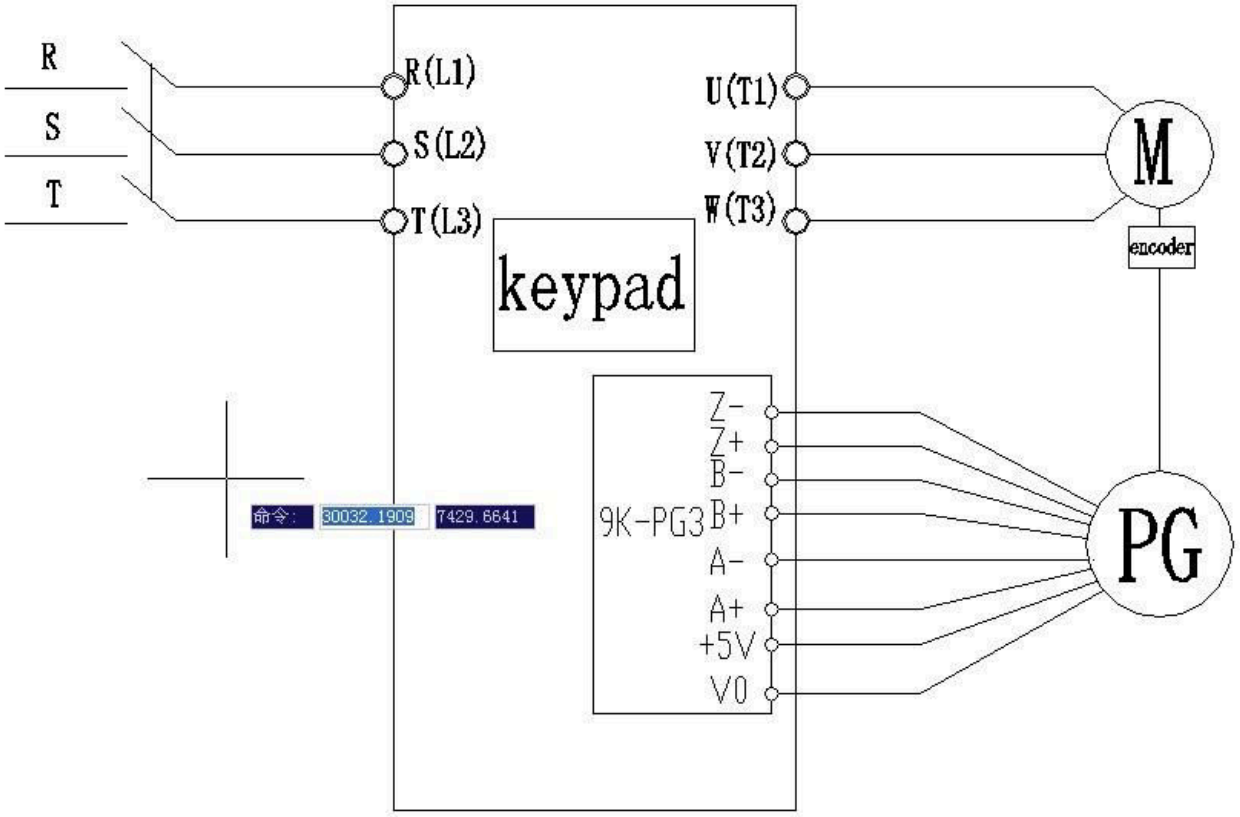
Going to Auto-turning

Auto-turning

Finish auto-turning

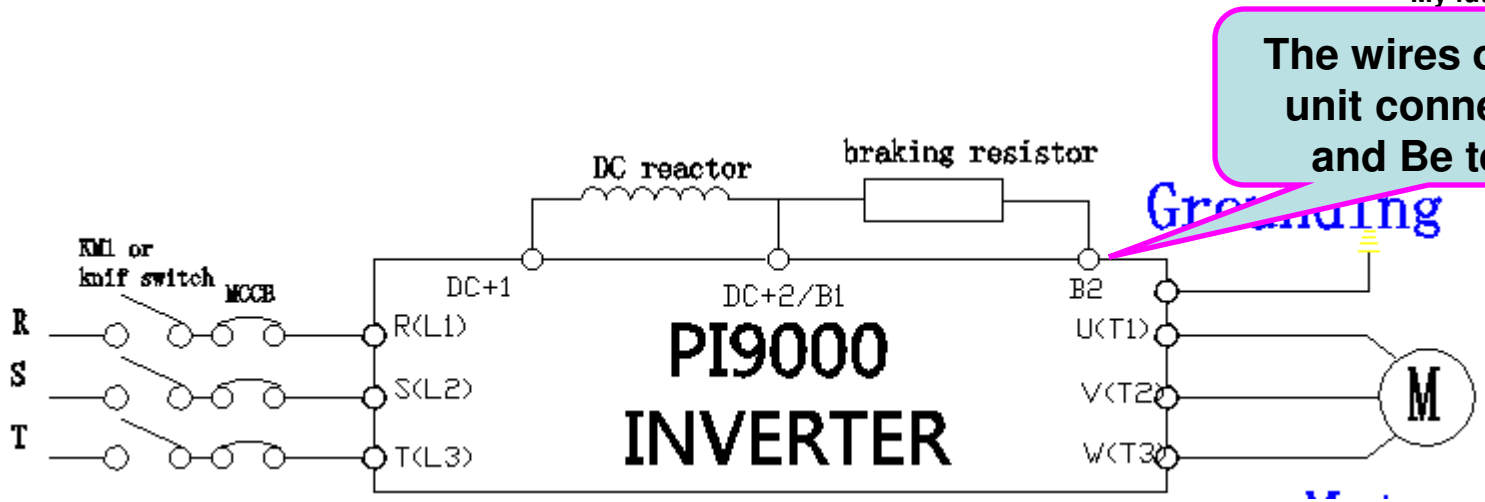
8.1 PG feedback close loc

Before use PG feedback close loop vector control, there must be a motor auto-turning , the way as above



F0.00	Control Mode	Sensor feedback close loop vector control	1
b0.27	motor auto-turning selection	0:no operation 1:complete Rotational auto-tuning 2:Stationary auto-tuning	2
b0. 29	PG Pulse	1~65535	2500
b0. 28	PG Type	ABZ incremental encoder	0
b0. 34	PG Dropped Inspection Time	0.1S-10S	0.0

9. Apply the braking unit and braking resistor .



The HP of 22kW of 220V and below and HP of 15 and it is below has built In braking unit inside of inverter ,it can provide maximum of 50% of braking Torque ,if connect to braking unit ,it can provide maximum of 150% torque .

It is no need to set any parameters for connecting the braking unit .

The braking function is activated in default ! The activated of DC braking Voltage is 130% U_{DC}

10.1. Operating the VFD with keyboard

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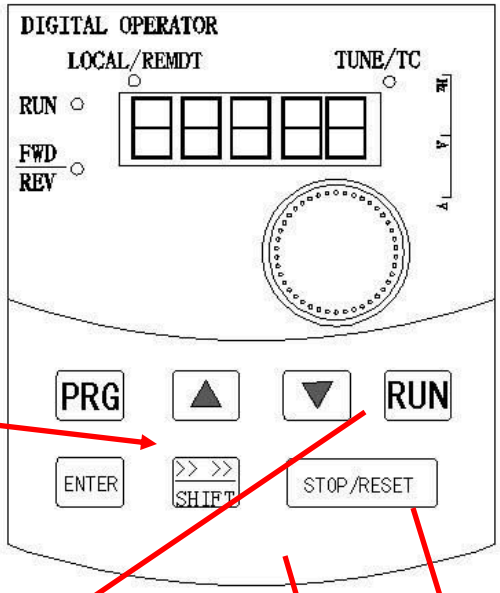


Change the Display content With SHIFT key

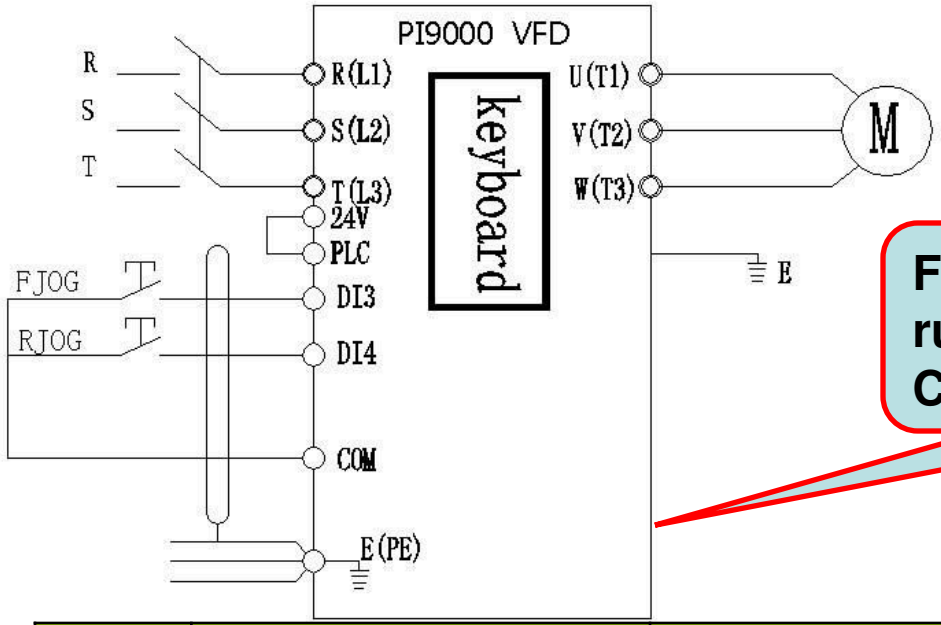
F0.24=1 For switchover FWD and REV Running direction

Run command by key board F0.11=0 ,

Stop motor F0.11=0

Frequency setting
F0.03=4 (keyboard in default)

10.2 Operating Forward and reverse terminal for JOG running

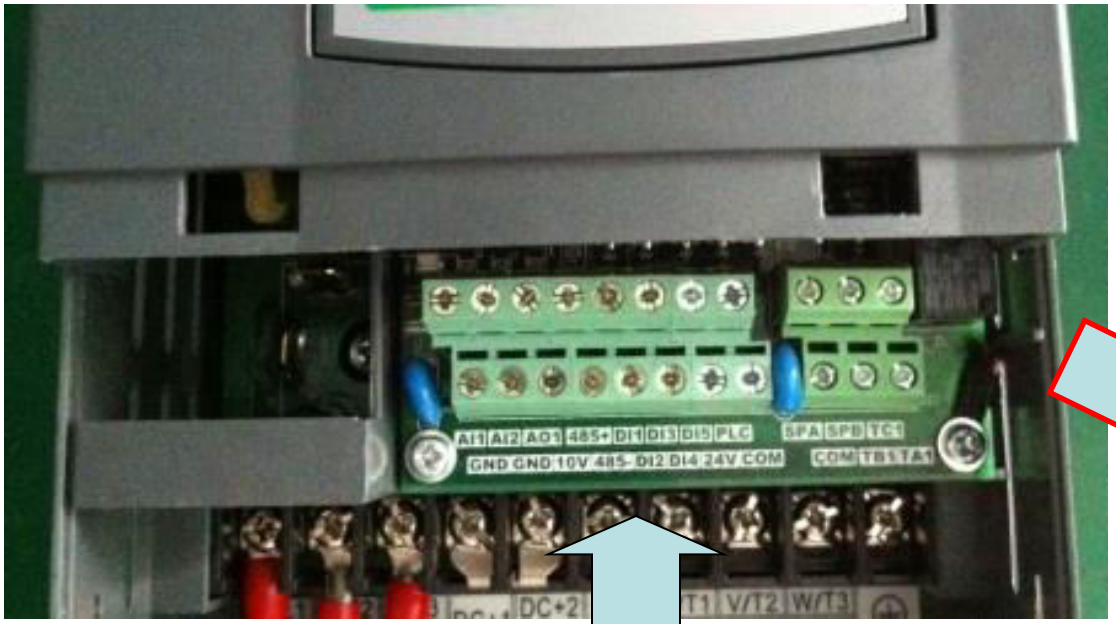


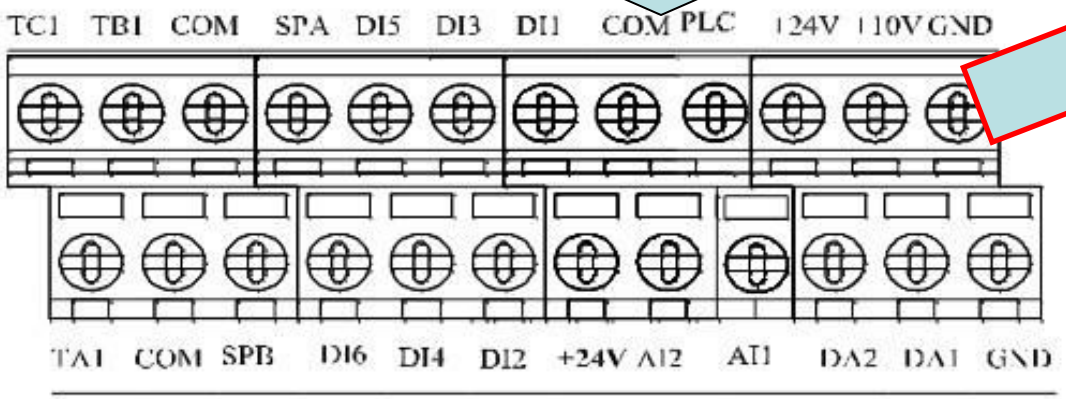
FJOG/RJOG running :DI3 ,DI4 with COM

F0.11	Running Control Mode	1:Terminal control	1
F1.02	(DI3)Input Terminal Function Selection	FWD JOG command	4
F1.03	(DI4) Input Terminal Function Selection	REV JOG command	5
F7.00	Jog running frequency	0.00～F0.19(Maximum frequency)	2.00Hz
F7.01	Jog acceleration time	0.1～3600.0S	20.0S
F7.02	Jog deceleration time	0.1～3600.0S	20.0S

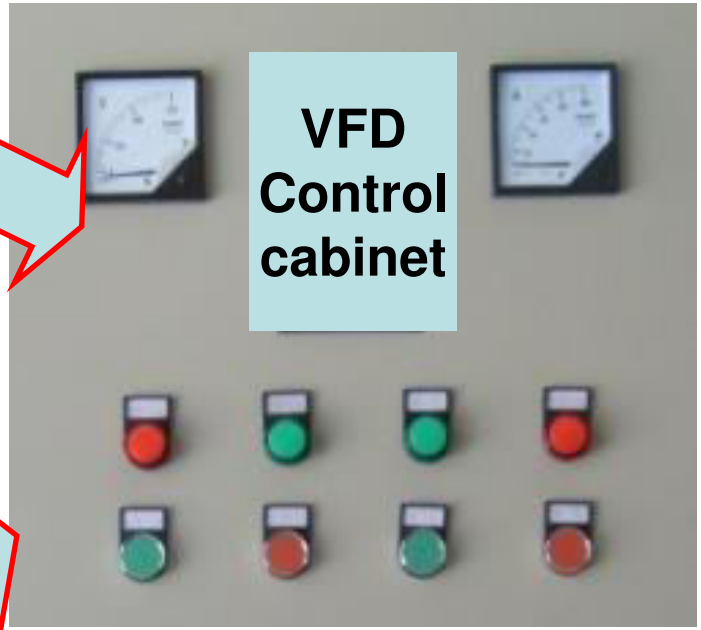
10.3.1.Operating VFD by I/O terminals board.

(I/O) terminals for connecting pushbuttons, switches and other operator interface devices or control signals.





For example: Operating this Button connecting to I/O interface for controlling the Inverter .



Operate VFD by operating panel

10.3.2. wiring of I/O interface terminal .

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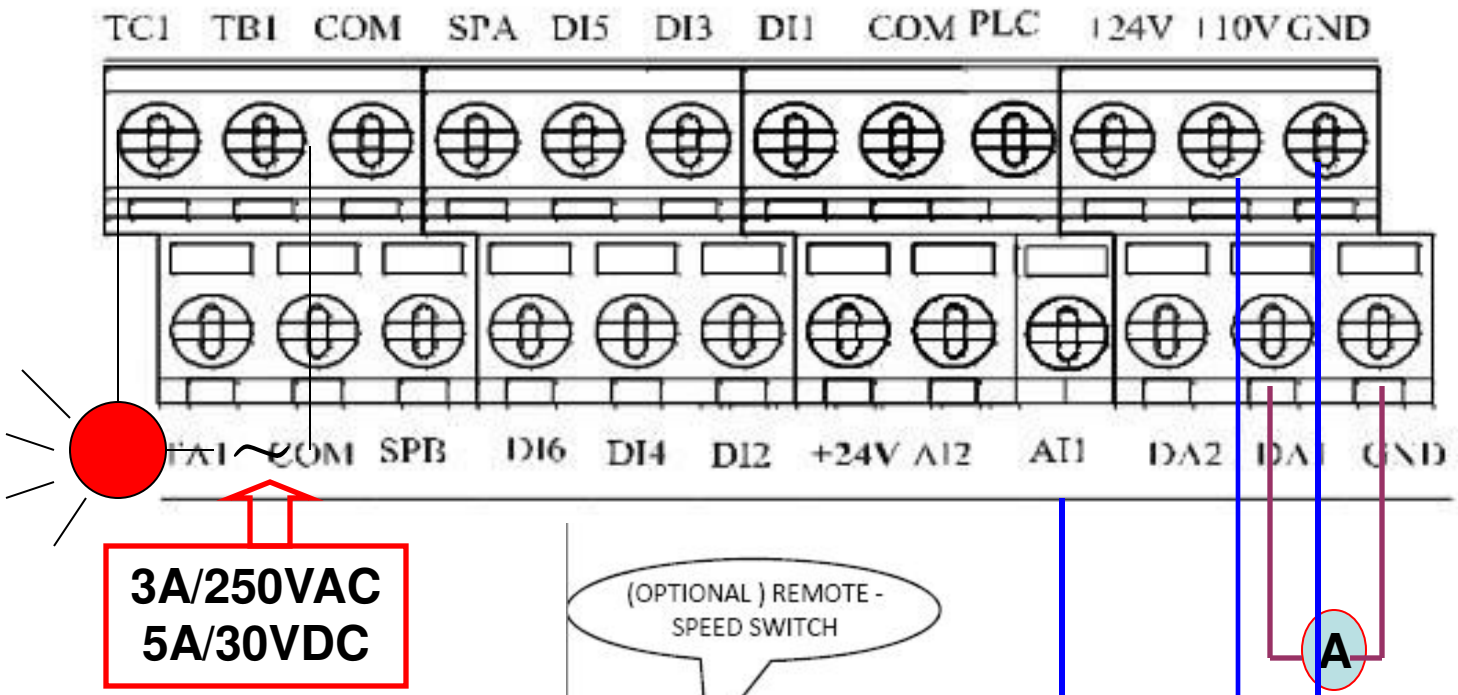
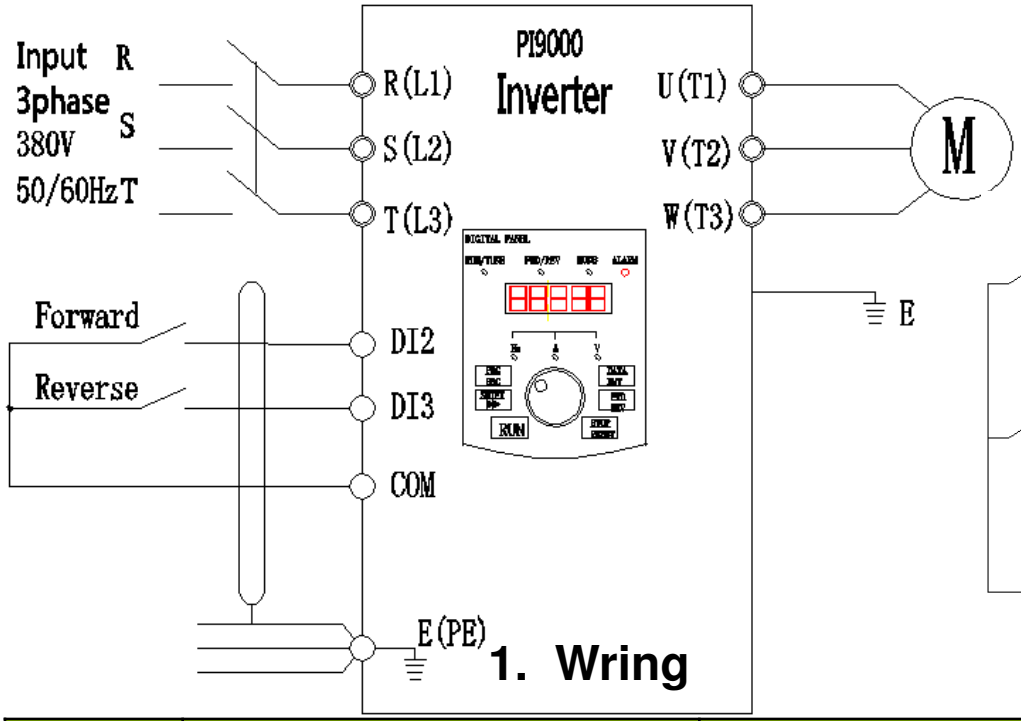


external potentiometer
for giving 0-10V input signal

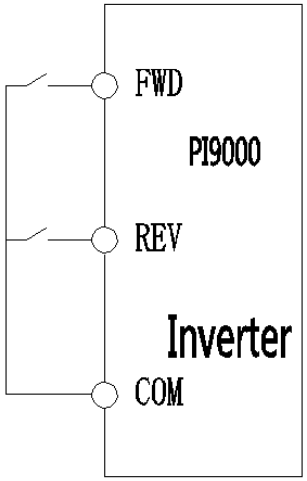
Push button

10.3.3. FWD and REV running controlled by I/O terminal .



1. Wring

The two line control mode 1

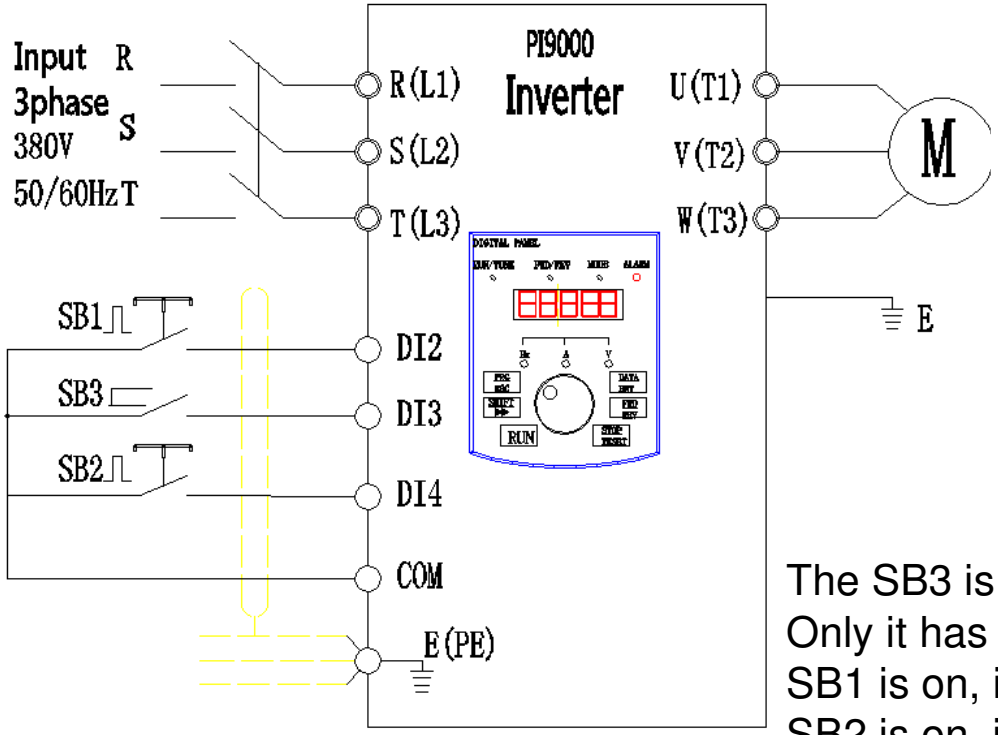


K1	K2	running command
OFF	OFF	stop
ON	OFF	forward
OFF	ON	Reverse
ON	ON	Stop

F0.11	command source selection	1:Terminal command channel (LED ON)	1
F0.24	running direction	0: Consistent direction	0
F1.01	DI2 function selection	1.Forward running direction	1
F1.02	DI3 function selection	2.Reverse running direction	2
F1.10	Terminal command mode	0.two line control mode 1	0

2.Parameters setting

10.3.5. three line control mode



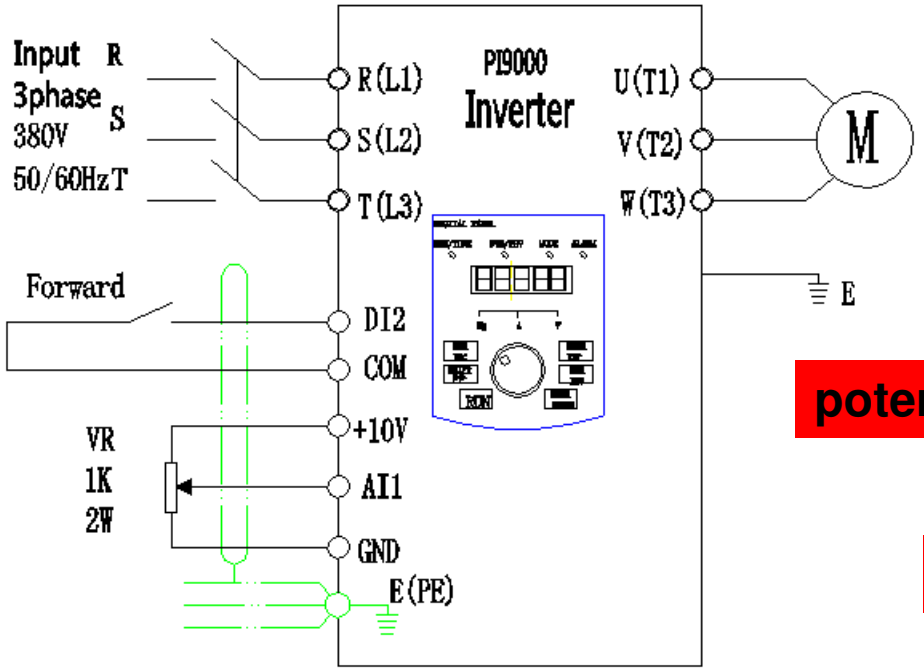
SB2	SB1	SB3	running command
ON	↑		forward
ON		↑	Reverse
OFF	X	X	Stop

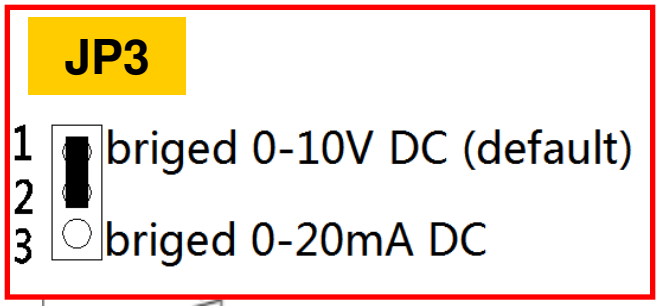
3 line control mode

The SB3 is emergency stop button,
Only it has been on ,the inverter is active .otherwise.
SB1 is on, inverter will run in forward direction;
SB2 is on ,inverter will run in Reverse direction .

F0.11	command source selection	1:Terminal command channel (LED ON)	1
F1.01	DI2 function selection	1.Forward running direction	1
F1.02	DI3 function selection	3:Three line mode running control	3
F1.03	DI4 function selection	2.Reverse running direction	2
F1.10	Terminal command mode	0. three line control mode 1	2

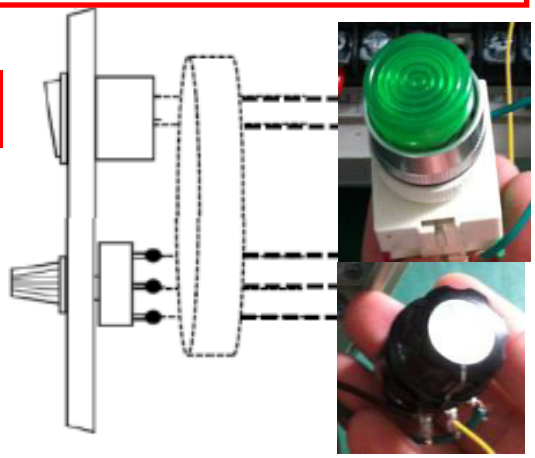
11. Frequency setting with external potentiometer (Variable resistor)





potentiometer

button



Parameters setting

F0.11	command source selection	1:Terminal command channel (LED ON)	1
F0.03	frequency setting source selection	2:AI1 analog signal input	2
F1.01	DI2 function selection	1.Forward running direction	1
F1.10	Terminal command mode	1.two line control mode 2	1

12. Frequency setting by analog current (AI2)

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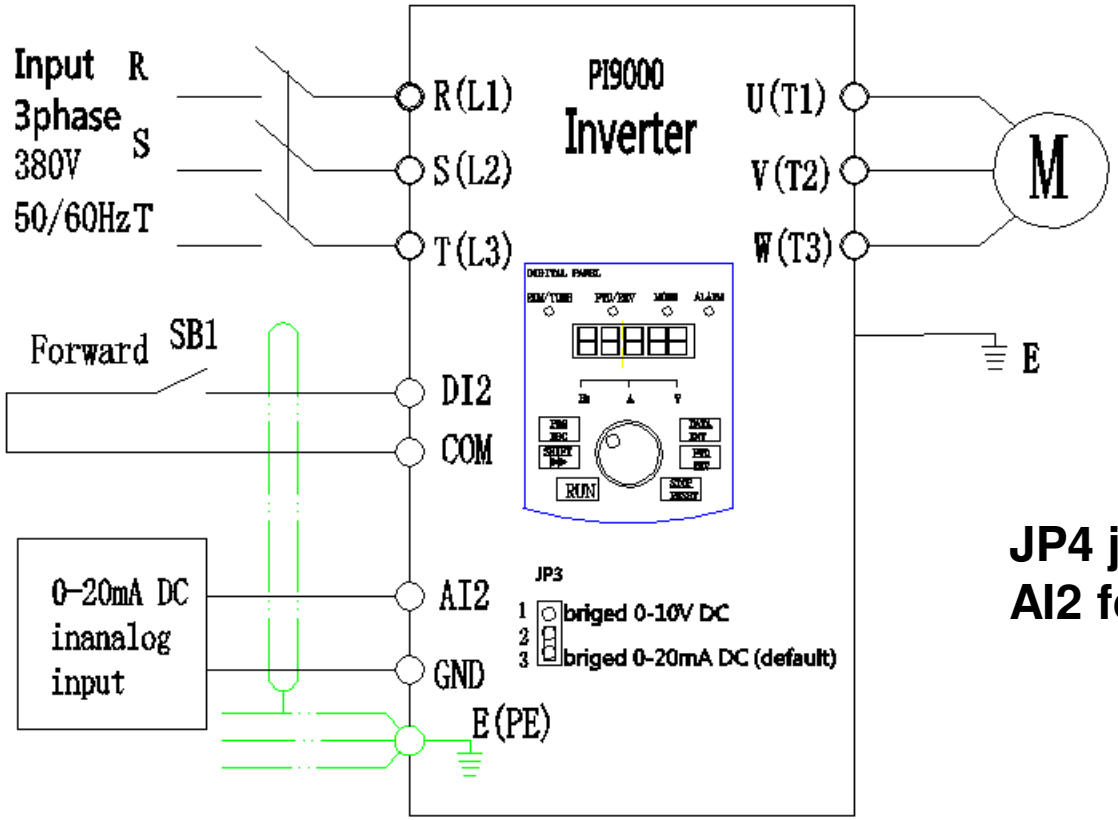

JP4 jumper setting for
AI2 for receiving input analog signal

F0.11	command source selection	1:Terminal command channel (LED ON)	1
F0.03	frequency setting source selection	2:AI2 analog signal input	3
F1.01	DI2 function selection	1.Forward running direction	1
F1.11	Terminal command mode	1.two line control mode 2	1

Parameters setting

13.Employ output analog signal for monitoring current ,frequency ,speed etc.

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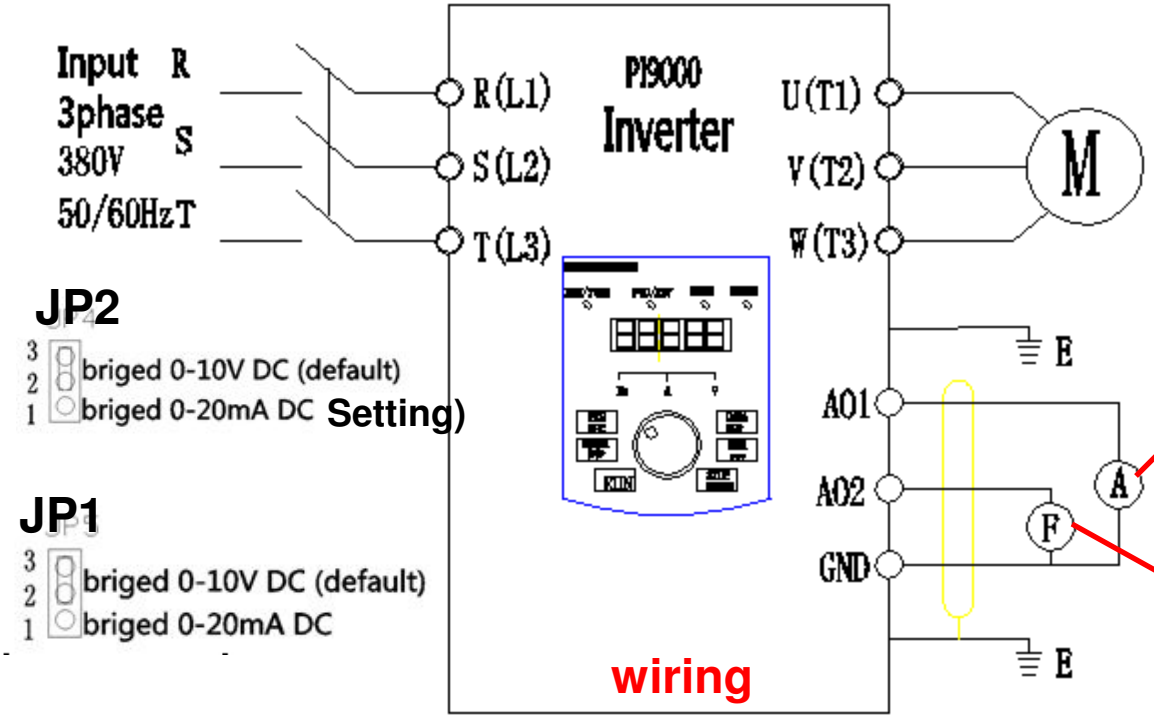

Ampere meter

frequency meter

F2. 07	DA1 Output Terminal	Actual current	2
F2. 08	DA2 Output Terminal	Actual frequency	1
F2. 16	DA1 Zero bias coefficient	-100%~+100%	0.0%
F2. 17	DA1 gain	-10. 00~+10. 00	1.00
F2. 18	DA2 Zero bias coefficient	-100.0%~+100.0%	0.00%
F2. 19	DA2 gain	-10. 00~+10. 00	1.00

The function code is generally used for correcting the zero drift of analog output and the deviation of the output amplitude. Can also be used for self-definition analog output curve.deviationdeviation.

14. Multi-speed applying with I/O interface terminal

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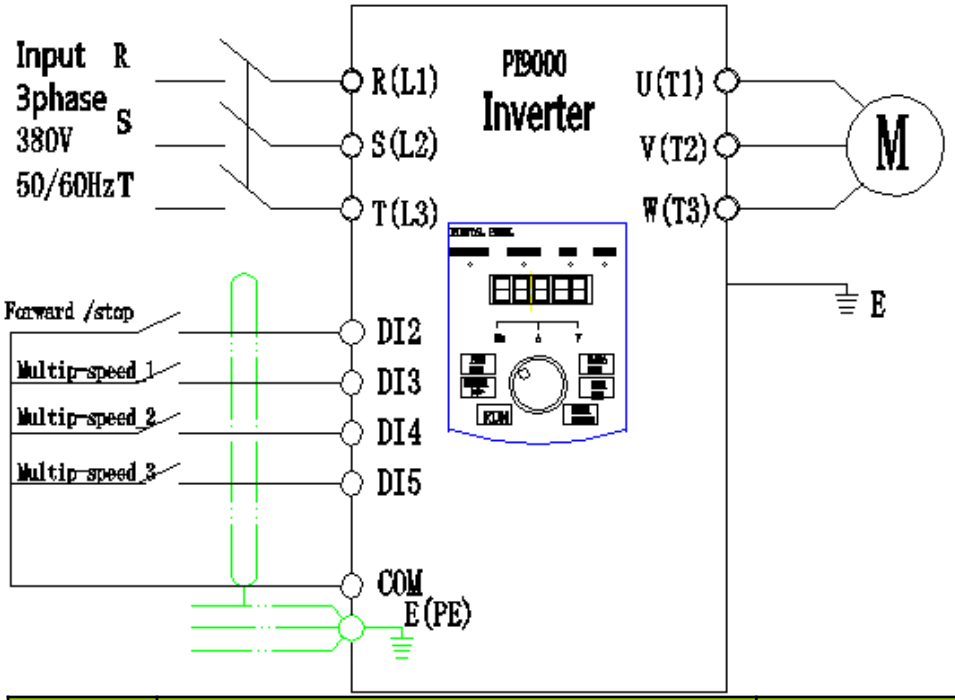


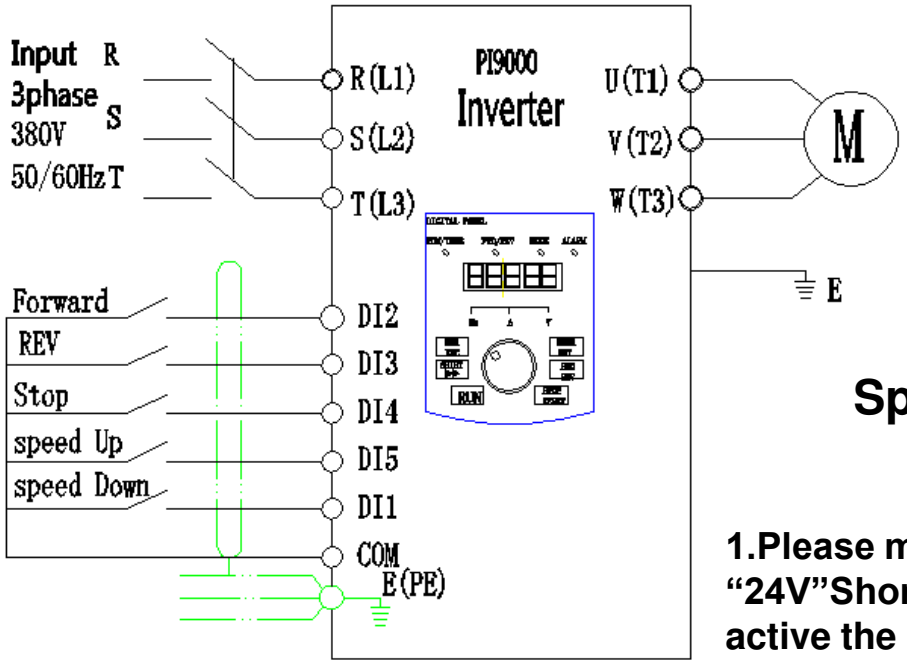
MS terminal relative to Ms speed table.

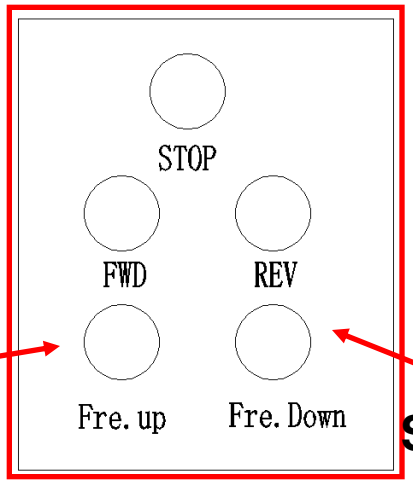
MS1	MS2	MS3	MS4
OFF	OFF	OFF	OFF
OFF	OFF	OFF	ON
OFF	OFF	ON	OFF
OFF	OFF	ON	ON
OFF	ON	OFF	OFF
OFF	ON	OFF	ON
OFF	ON	ON	OFF
OFF	ON	ON	ON
ON	OFF	OFF	OFF
ON	OFF	OFF	ON
ON	OFF	ON	OFF
ON	OFF	ON	ON
ON	ON	OFF	OFF
ON	ON	OFF	ON
ON	ON	ON	OFF
ON	ON	ON	ON

Parameters setting

CODE	Description	Range of setting	Refer. value
F0.11	command source selection	1:Terminal command channel (LED ON)	1
F0.03	frequency setting source selection	6.multiple-speed frequency setting	6
F1.01	DI2 function selection	Forward rotation	1
F1.02	DI3 function selection	MS speed terminal 1	12
F1.03	DI4 function selection	Ms speed terminal 2	13
F1.04	DI5 function selection	Ms speed terminal 3	14
E1.01	MS speed 1	-100.0～100.0%	20
E1.02	MS speed 2	-100.0～100.0%	50
E1.04	MS speed 3	-100.0～100.0%	100

15.Frequency UP and Down controlled by I/O interface terminal board





Speed up

Speed up

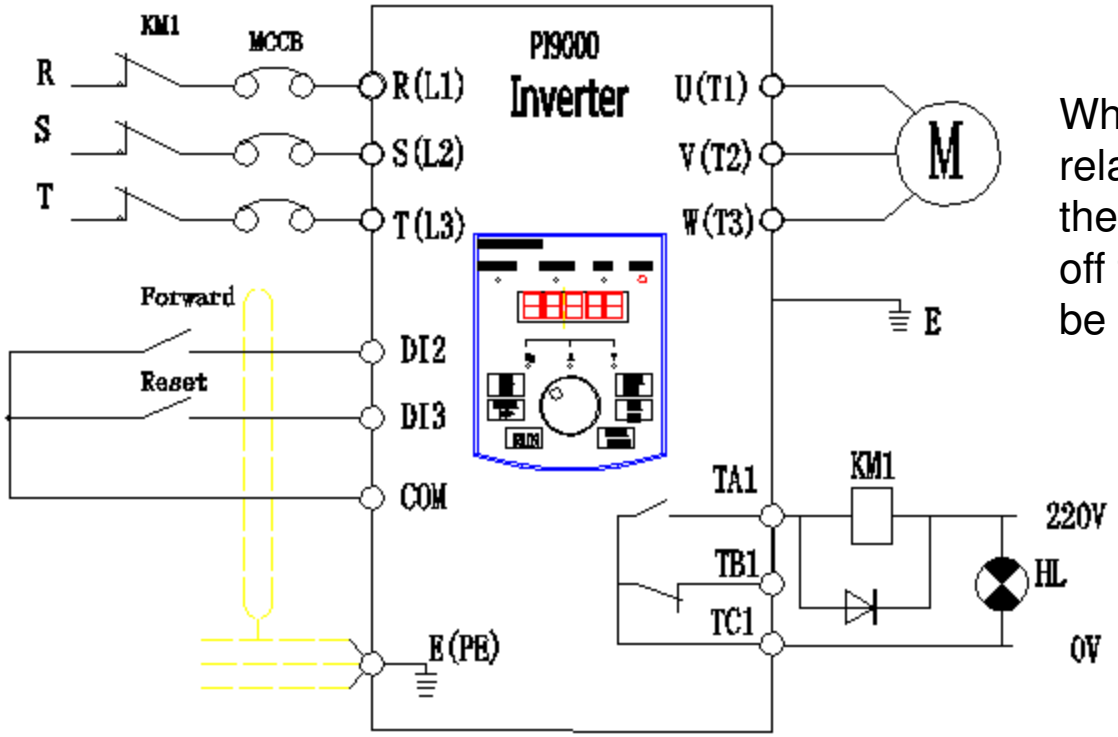
1.Please make "PLC" and "24V"Short-circuit first to active the DI1 terminal

Control panel

Parameters setting

CODE	Description	Range of setting	Refer. value
F0.11	command source selection	1:Terminal command channel (LED ON)	1
F1.01	DI2 function selection	Forward rotation	1
F1.02	DI3 function selection	Reverse rotation	2
F1.04	DI5 function selection	9:frequency UP by terminal (UF)	6
F1.00	DI1 function selection	10:frequency Down by terminal (DN)	7
F1.11	change rate of terminal up and down	0.01～100.00Hz/s	1.0Hz

16.1.Application of multi-function output .(1) alarm output



When alarm happen ,the normal open relay will close ,the KM1 will be on, the main switch will be open and cut off the main circuit .The alarm light will be on as well to show there is alarm .

5A/250VAC
5A/30VDC

Parameters setting

CODE	Description	Range of setting	Refer. value
F0.11	command source selection	1:Terminal command channel (LED ON)	1
F1.01	DI2 function selection	Forward rotation	1
F1.02	DI3 function selection	Fault reset	9
F2.02	Relay output selection	0: No output 1:motorforward running 2.Fault output 3:Frequency level detection FDT output 4:Frequency arrival 5:in Zero speed operation .6～40:Reserved	2

16.2.Application of multi-function output 2. (frequency arrival and frequency detecting)

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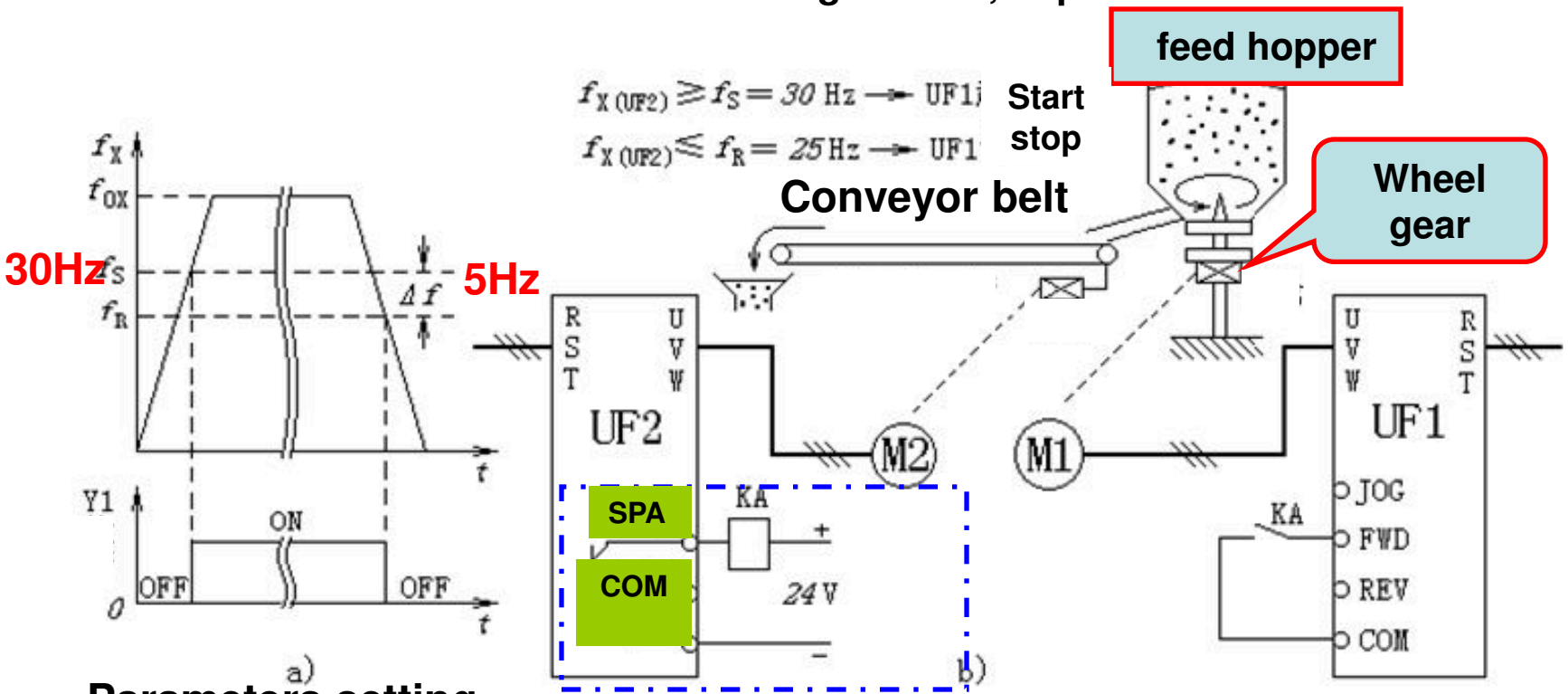
VFD 1 will start once the fre. of VF2 arriving at 30Hz,stop when fre. of VF2 limit 25Hz.



Parameters setting

CODE	Description	Range of setting	Refer. value
F0.11	command source selection	1:Terminal command channel (LED ON)	1
F1.01	DI2 function selection	Forward rotation	1
F2.02	Relay output selection	4:Frequency level detection FDT output	4
F7.23	(FDT) frequency detection value	0.00～U0.10(Maximum frequency)	35Hz
F7.24	FDT detection hysteresis	0.0%～100.0%(FDT level)	5Hz

17. 1.PID control for constant pressure water supply -electrical diagram (0-10V signal feedback)

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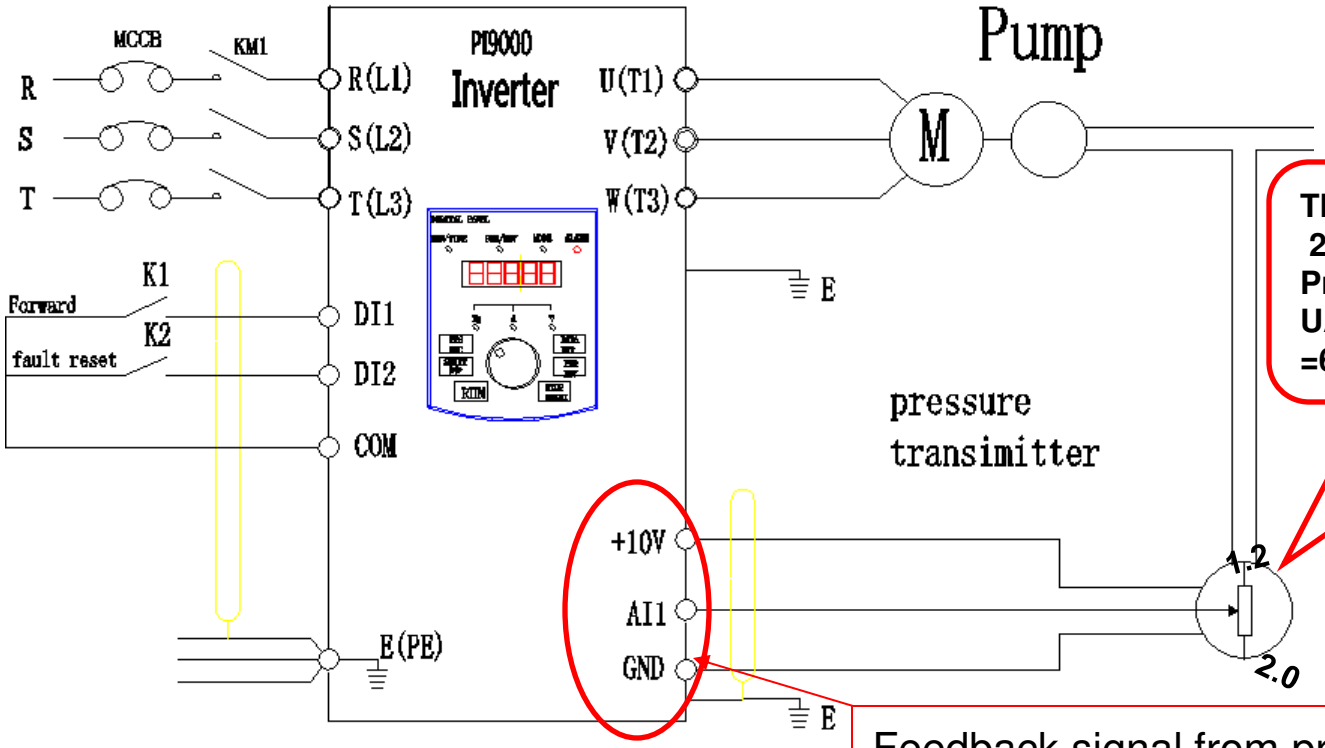
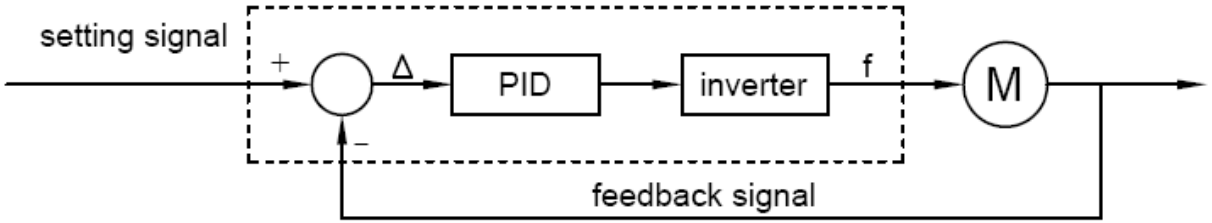


The maximum range Of meter is 2 Mbar. It is need to keep 1.2 Mbar Pressure all the time .
UA.01 should be set to1.2/2.0x100% =60%

Feedback signal from pressure transmitter

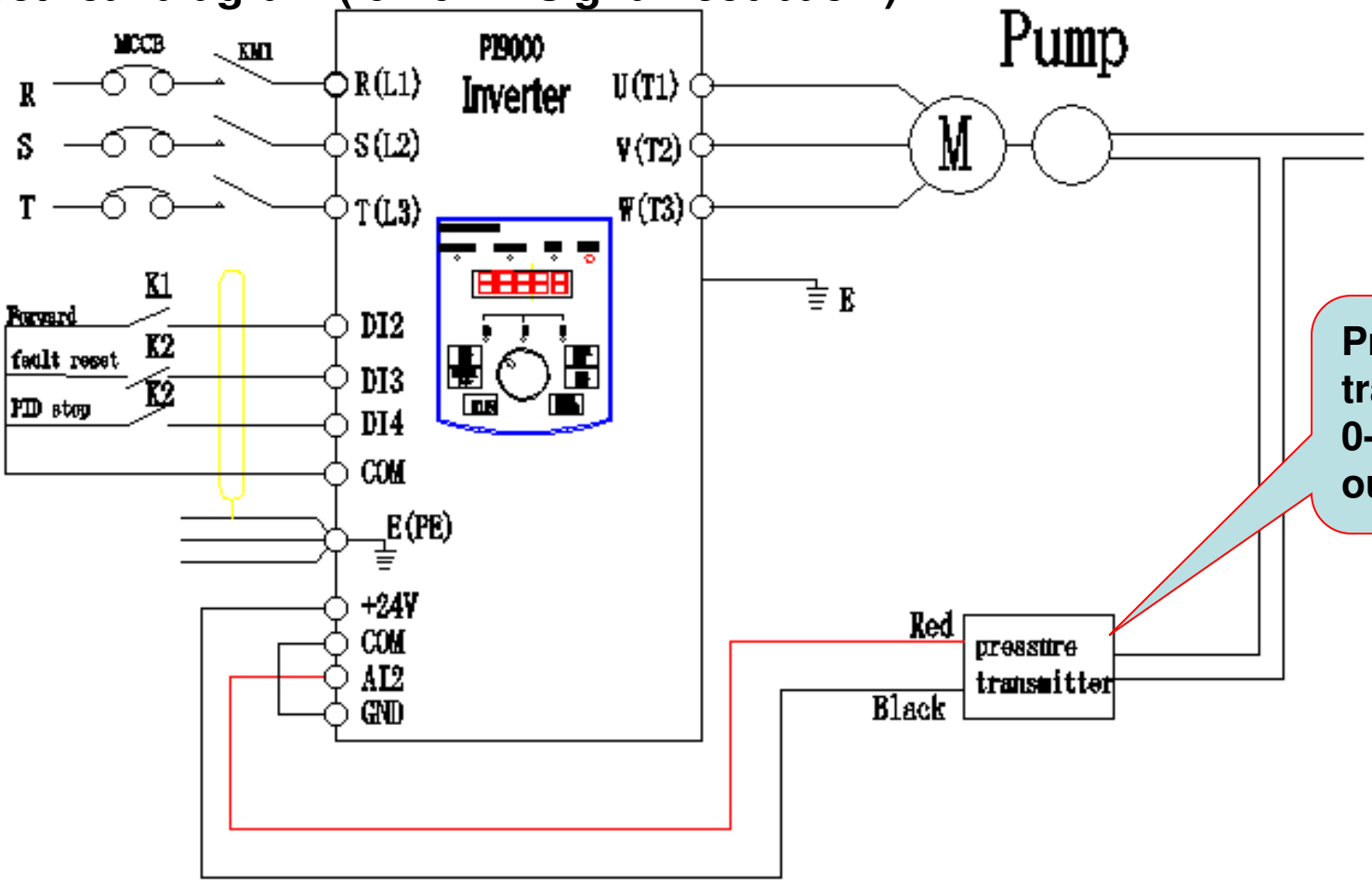


(Δ= setting signal - feedback signal)

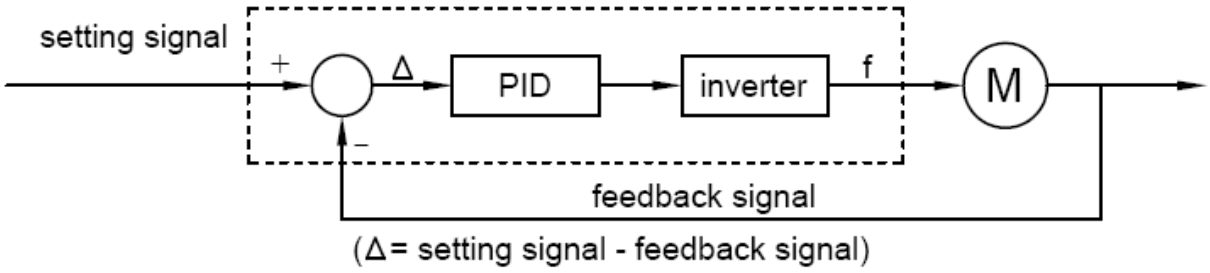
PI8000/PI8100 PID regulation

negative action, when Δ＞0 is positive, frequency rises and when Δ＜0 is negative, frequency falls. For constant Pressure water supply.

17.2.PID control for constant pressure water supply -electrical diagram (0-20mA signal feedback)



Pressure transmitter 0-20ma analog output signal



PI8000/PI8100 PID regulation

negative action, when Δ＞0 is positive, frequency rises and when Δ＜0 is negative, frequency falls. For constant Pressure water supply.

PID control for constant pressure water supply
Parameters setting

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F0.00	Control mode	2:V/F	2
F0.03	frequency setting source selection	8:PID control setting	8
F0.13	acceleration time	0.1～3600.0s	25
F0.14	deceleration time	0.1～3600.0s	25
E2.00	PID setup source	key board (E2.01)	0
E2.01	PID value set by keyboard	0.0%～100.0%	40
E2.02	PID feedback source	0:analog input feedback signal AI1 /AI2	0/1
E2.03	PID action direction	0:positive action	0
E2.04	PID setting feedback range	0 ~65535	1600
E2.05	PID inversion cutoff frequency	0 . 00 to F0.19(maximum frequency)	0.00HZ
E2.13	proportional gain (Kp)	0.00～100.00	100.00
E2.14	integration time (Ti)	0.00～100.00	0.25s
F7.46	Awakens frequency	dormancy frequency（F7.48）to maximum frequency (F0.19)	0.00Hz
F7.47	Awakens delay time	0.0s to 6500.0s	0.0s
F7.48	Dormancy frequency	0.00Hz to awakens frequency(F7.46)	0.00Hz
F7.49	Dormancy delay time	0.0s to 6500.0s	0.0s

Suggestion :

1.Check the direction of running . Press “FWD” for 1 sec ,if the direction of motor running is wrong, ,please cut off the input power supply ,and change the order of input power phase .

2. E2.01 (PID value set by keyboard),the value should be sett according the law ,
Target of pressure want to keep up (P)/ maximum pressure range of meter *100%.

3 .proportional gain (Kp) and integration time (Ti) setting method :

A, program a little value for proportional gain (Kp), and pre-set integration time (Ti) to 20～30s about .

B, Increase the Kp value gradually until oscillation happen in system ,and then make the value pre-set of Kp to it’s half .

C, Decrease Ti value gradually until oscillation happen in system ,and then set 150% or pre-set instead .

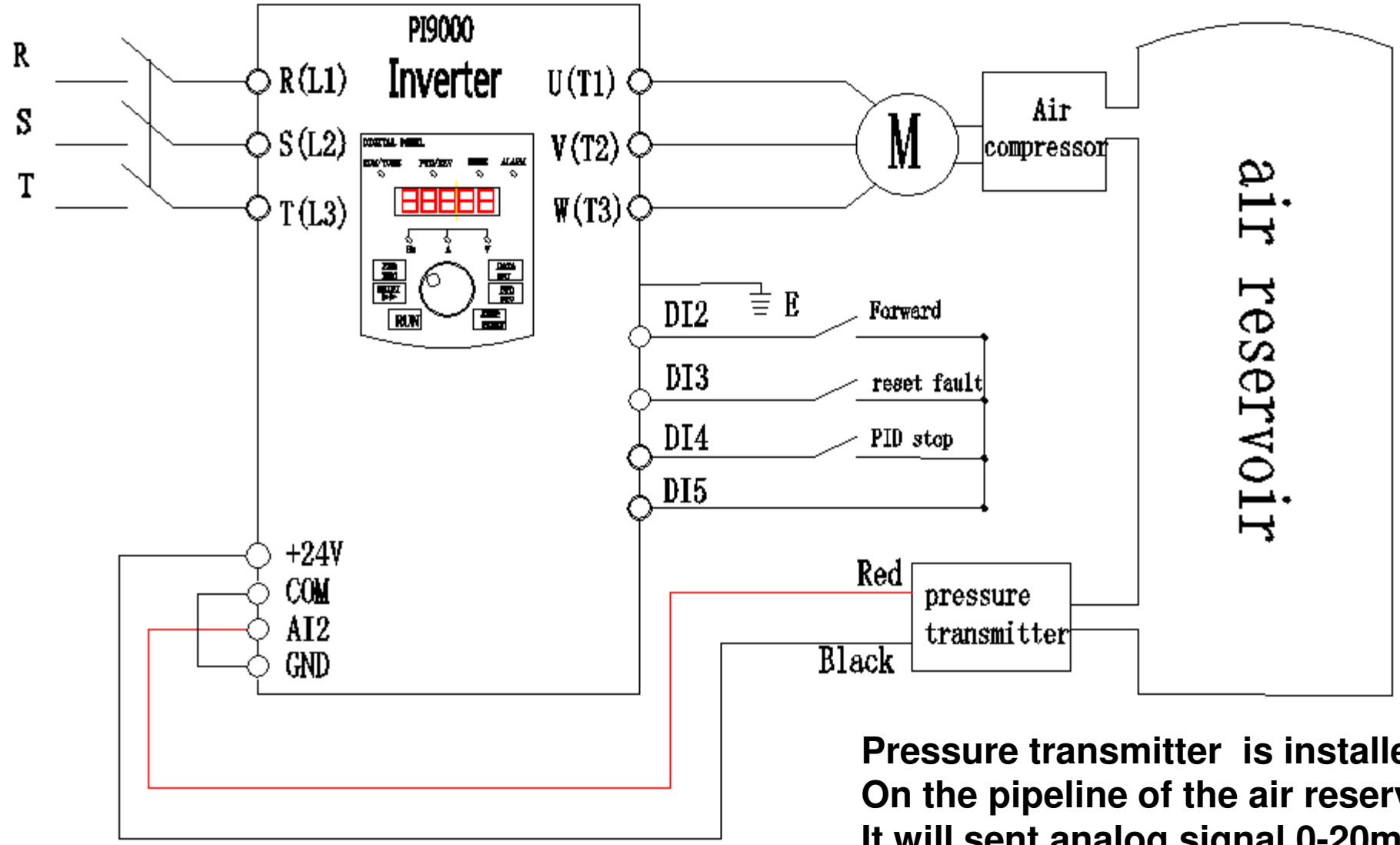
In common ,everything will ok according above mentioned setting . if a little oscillation happen ,please set Kp a little small ,or set Ti a little big ,if the system need to air restore soon after air leaking ,please set Kp a little big ,or set the Ti a little small .

.

18. PI9000 apply in air compressor retrofitting with PID control function.

The air compressor variable frequency control system is mainly composed of a frequency converter, a pressure sensor (pressure transmitter).
A pressure sensor component is first used to test the pressure in the reservoir . Next, the detection display instrument sends the output pressure analog signal to the frequency converter, which then compares to the feedback signal and the given objective signal, using the internal PID of the frequency converter to carry out automatic output frequency regulation, allowing for automatic adjustment of compressor motor speed and output power. This creates a closed-loop feedback system that maintains constant pressure and automatic control in the pipe network.

Wirings of electrical diagram with 0-20mA type of pressure transmitter



Pressure transmitter is installed On the pipeline of the air reservoir It will sent analog signal 0-20mA to inverter .

Wirings of electrical diagram with 0-10V type pressure transmitter

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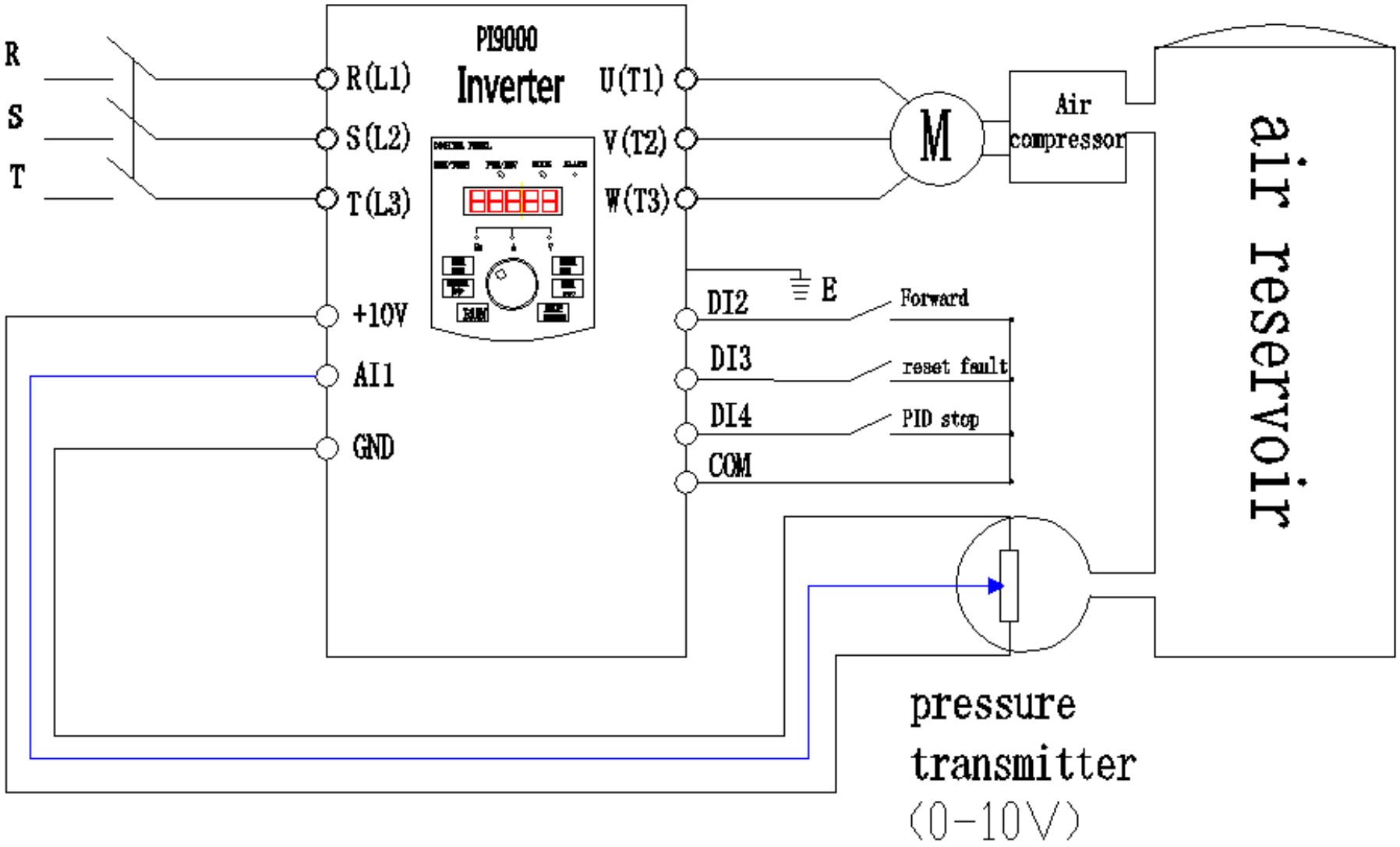

Parameters setting table

F0.00	Control mode	2:V/F	2
F0.11	command source selection	1:Terminal command channel (LED ON)	1
F0.03	frequency setting source selection	8:PID control setting	8
F0.13	acceleration time	0.1～3600.0s	25
F0.14	deceleration time	0.1～3600.0s	25
E2.00	PID setup source	key board (E2.01)	0
E2.01	PID value set by keyboard	0.0%～100.0%	50
E2.02	PID feedback source	0:analog input feedback signal AI1 /AI2	0/1
E2.03	PID action direction	0:positive action	0
E2.13	proportional gain (Kp)	0.00～100.00	1.0
E2.14	integration time (Ti)	0.00～100.00	0.10s
E2.15	Differential time (Td)	0.00～100.00	0.10s
E2.06	PID control Deviation limit	0.0～100.0%	0
E2.11	PID feedback missing detection value	0.1%-100%	0.0%
E2.12	PID feedback missing detection time	0.0S-20S	0S
F1.01	DI2 function selection	1.Forward running direction	1
F1.02	DI3 function selection	9:fault reset	9
F1.03	DI4 function selection	16.PID suspent	22

19.Application of PI9000 series inverters in crane

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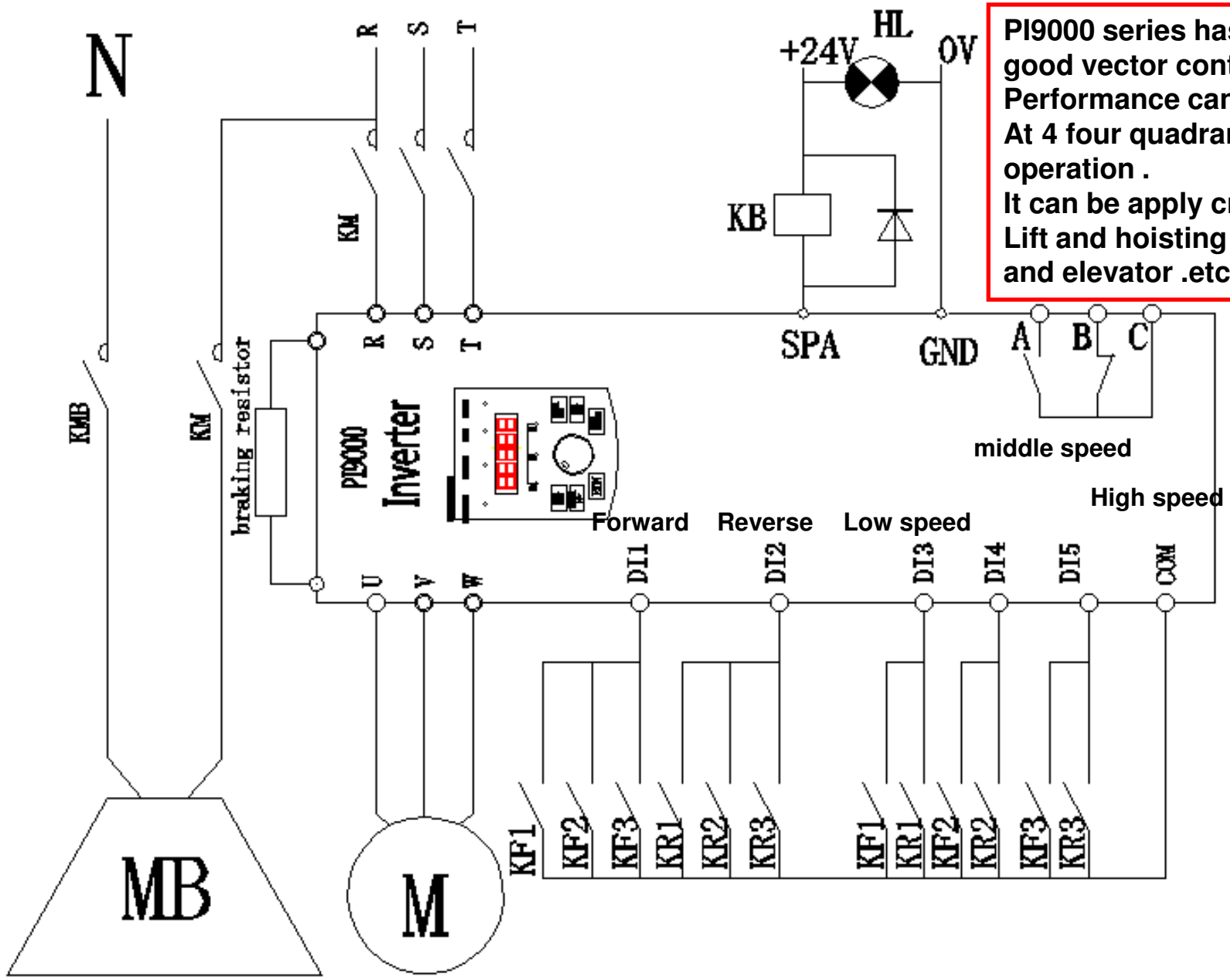
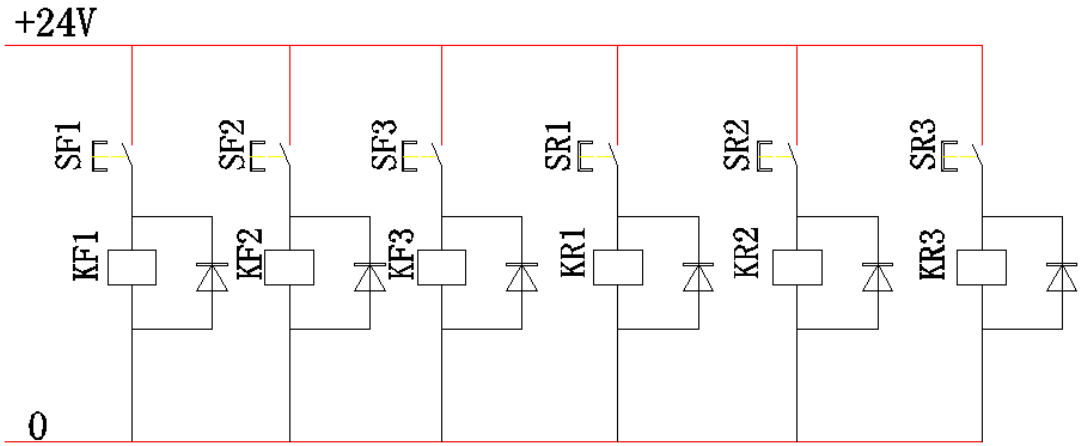
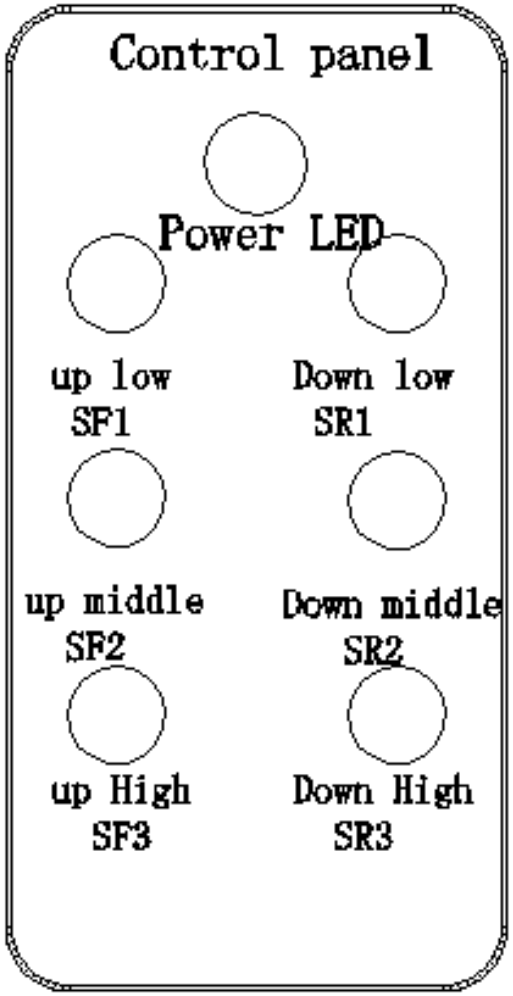


PI9000 series has good vector control Performance can run At 4 four quadrant operation . It can be apply crane Lift and hoisting machine and elevator .etc





DI1 – lift up the load
DI2 – Down the load
DI3- MSS1 for low speed running
DI4-MSS 2 for middle speed running
DI5-MSS 3 for high speed running .

We can select the DC brake function before running to hold the Motor for prolong the working life of mechanical of brake .
Also can using the DC braking function before stop to protecting From load loss suddenly . U6 parameter group

1. Must perform motor auto-turning first when apply the vector control mode

1.Disconnect the load from motor .(This is important ,otherwise can't get the Motor parameters precision ,the perform of vector can't work well)
2. put the b.01 , b0.02, b0.03, b0.04, b0.05 according nameplate of motor.
3.Put the b0.27to 2, the light of TUN will on in the keyboard ,and then press The RUN key ,motor will start auto-turning automatic .
4. It will display 'END" in the menu at the end of auto-turning .it means the auto Turning has performed successfully .

CODEb	Description of Code	Range of setting
b0.01	rated power	15.000
b0.02	rated frequency	50Hz
b0.03	rated rotation speed	1450
b0.04	rated voltage	380V
b0.05	rated current	32A
b0.37	motor auto-turning selection	2:complete Rotational auto-tuning

Parameters setting table :

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control

CODE	Description of Code	Range of setting	Refer. value
F0.00	Control mode	0:Vector control mode	0
F0.11	command source selection	1:Terminal command channel (LED ON)	1
F0.03	frequency setting source selection	4:Multiple speed setting	4
F0.13	acceleration time	0.1～3600.0s	10
F0.14	deceleration time	0.1～3600.0s	10
F1.00	DI1 function selection	1.Forward running direction	1
F1.01	DI2 function selection	2:Reverse rotation (REV)	2
F1.02	DI3 function selection	12:MS speed terminal 1	12
F1.03	DI4 function selection	13:MS speed terminal 2	13
F1.04	DI5 function selection	14:MS speed terminal 3	14
F2.04	SPA collector output selection	4:Frequency level detection FDT output	4
F3.00	Startup mode	1:star up before apply DC braking	2
F3.05	DC brake current at start	0.0～100%	60%
F3.04	DC brake keep time	0.0～50.s	1.0s
F3.03	DC brake beginning frequency at stop	0.00～F01.07	4Hz
F3.06	Dc brake time	0.0～50.s	1s
E1.01	MS speed 1	-100.0～100.0%	10
E1.02	MS speed 2	-100.0～100.0%	50
E1.04	MS speed 4	-100.0～100.0%	100

20. Fault Diagnosis

PI9000 inverter has a number of warning information and protection function. In case of abnormal fault, the protection function will be invoked, the inverter will stop output, and the faulty relay contact of the inverter will start, and the fault code will be displayed on the display panel of the inverter.

1:over current during acceleration (Err.02)
2:over current during deceleration (Err.03)
3:over current when constant speed (Err.04)
4:over voltage during acceleration (Err.05)
5:over voltage during deceleration (Err.06)
6:over Voltage when constant speed (Err.07)
7:lower voltage in DC bus (Err.09)
8.motor over load (Err.11)
9:inverter over load(Err.10)
10:input phase of power failure (Err.12)
11:output phase of power failure (Err.13)
12:over heat of IGBT(Err.14)
13:external device fault (Err.15)
14:communication fault (Err.16)
15:current detection fault (Err.18)
16:Motor auto-turning fault(Err.19)
17:EEPROM read and write fault (Err.21)
18:PID feedback has fault(Err.31)

21. VFD RS232 communication with PC

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 esponse 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.

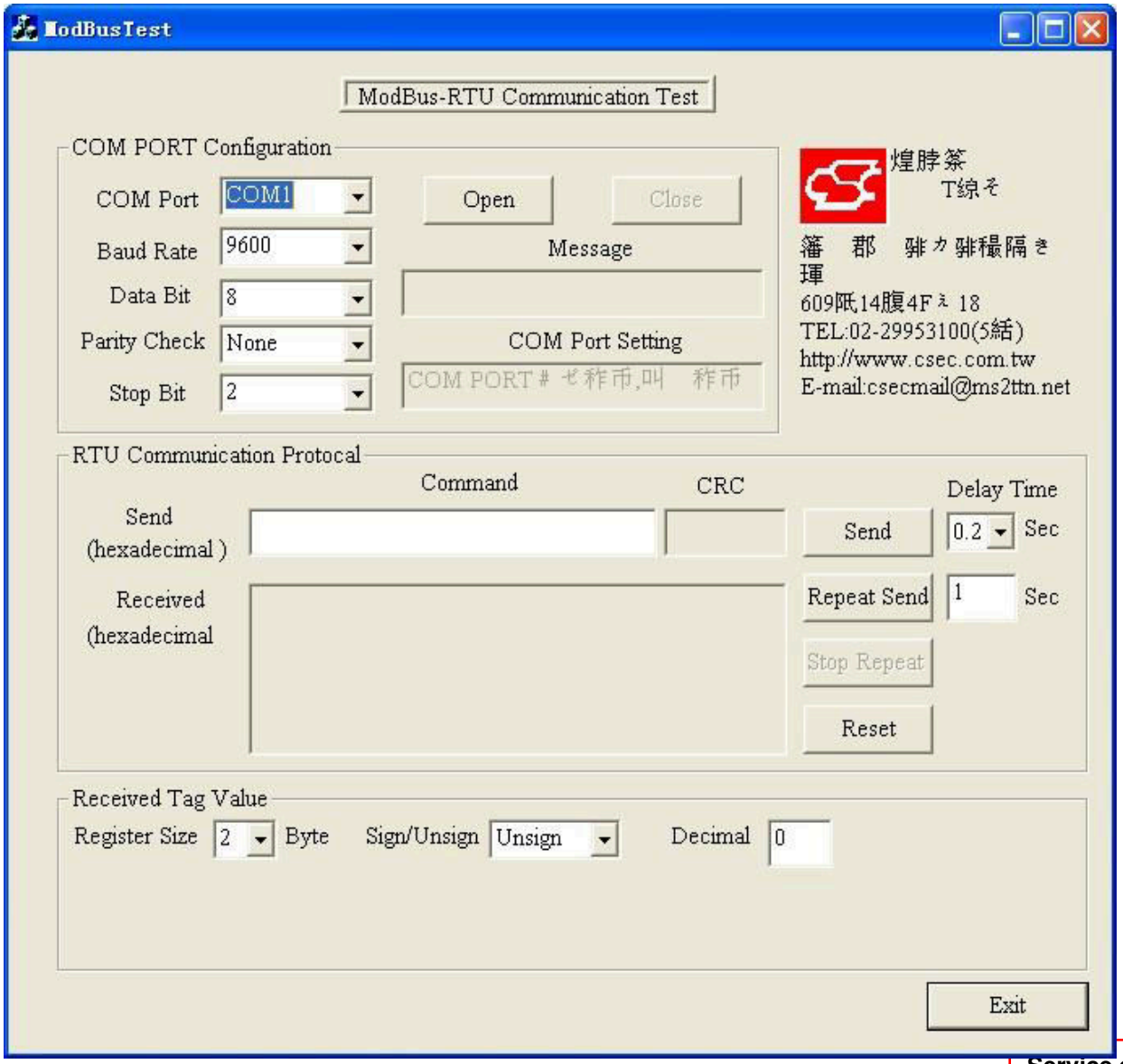
Communication data structure PI9000 series inverter's Modbus protocol communication data format is as follows: in RTU mode, messages are sent at a silent interval of at least 3.5 characters. There are diverse character intervals under network baud rate, which is easiest implemented (as shown in Figure T1-T2-T3-T4). 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 headerSTART	Time interval of 3.5characters
Slave address ADR	Communication address: 1 to 247
Command codeCMD	03: read slave parameters; 06: write slave parameters
Data contentDATA(N-1)	Data content: address of function code parameter, numbers of function code parameter, value of function code parameter, etc.
Data contentDATA(N-2)	
……	
Data contentDATA0	
CRC CHKhigh-order	Detection Value:CRC value.
CRC CHKlow-order	
END	Time interval of 3.5characters

CMD (Command) and DATA (data word description)

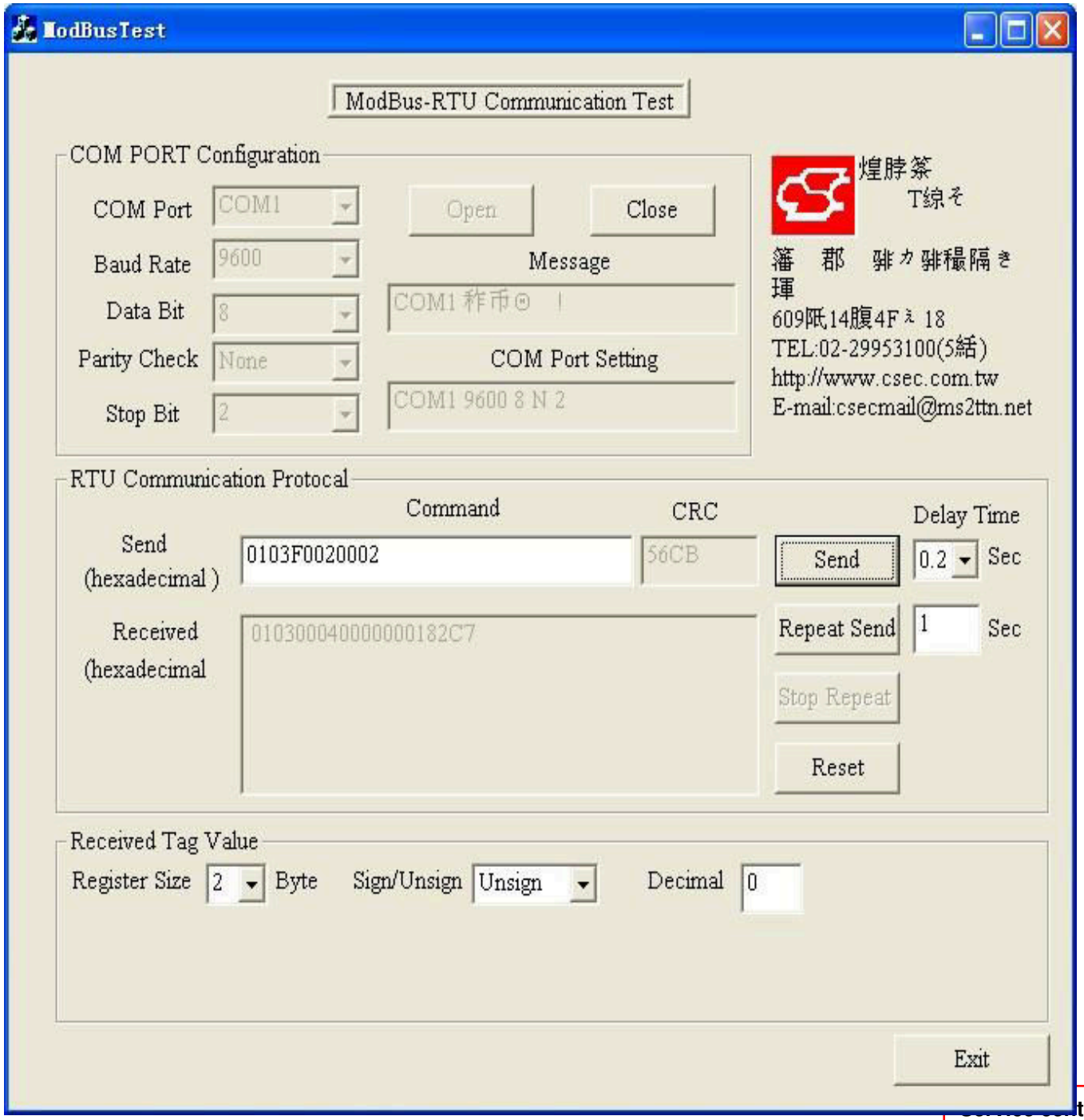
1.Soft setting: PC com port com1,inverter Baud rate 9600, Data format, no parity: data format <8, N, 2>



2.Inverter setting:

F0.11	Command source selection	2.Communications command control
F9.00	Baud rate	5: 9600BPS
F9.01	Data format	0: no parity: data format <8, N, 2>
F9.02	This unit address	1
F9.03	Response delay	2ms
F9.04	Communication	0.0S
F9.05	Communication	0
F9.06	Communication read	0

4. 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.


ModBusTest
ModBus-RTU Communication Test
COM PORT Configuration
COM Port
COM1
Open
Close
Baud Rate
9600
Message
Data Bit
8
Parity Check
None
COM Port Setting
Stop Bit
2
COM1 9600 8 N 2
609
609
TEL:02-29953100(5
E-mail:csecmail@ms2ttn.net
RTU Communication Protocal
Command
CRC
Delay Time
Send
(hexadecimal)
0103F0020002
56CB
Send
0.2
Sec
Received
(hexadecimal
Repeat Send
1
Sec
Stop Repeat
Reset
Received Tag Value
Register Size
2
Byte
Sign/Unsign
Unsign
Decimal
0
Exit

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