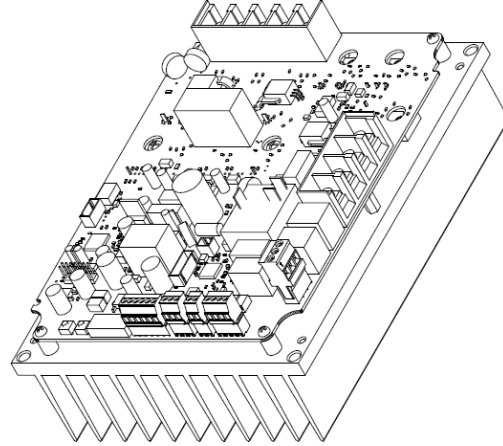# PM35A-380
Inverter Power Module

Characteristic
Without rotor position sensor
FOC(Field-oriented control)
SVPWM Sin 180°driver
Synchronized start
Stable speed control
Compressor overload protection
Programmable functions needed for DC compressor

Applications
DC compressor/motor
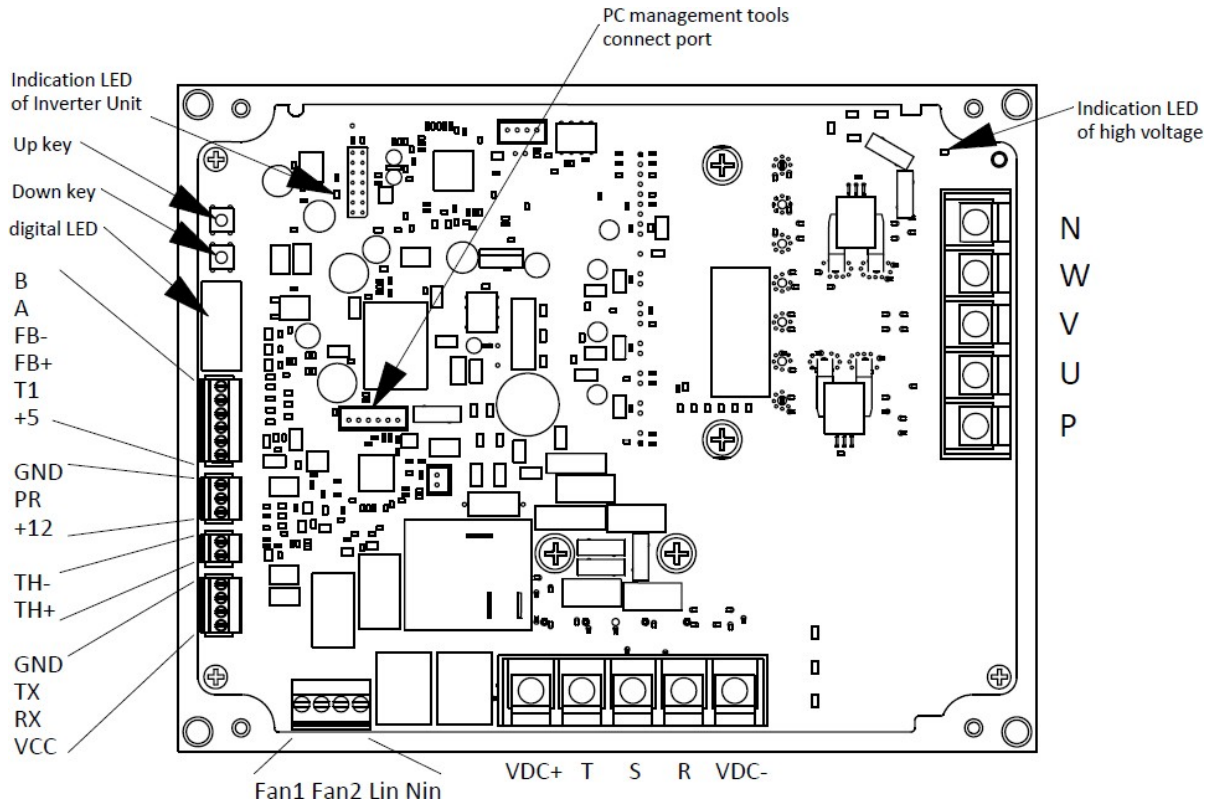Maximum Power output 8kW
Power supply: 220/240V-380/420Vac

Control method（customization available）

0～10V
PWM
Asynchronous serial communication
RS485

Output
Compressor on/off indication
Operation information
Heat sink cooling fan control

Ports Function

Symbol	Function	Description
R	3Φ380Vac Power Input for Inverter Unit	Connected with "R" of 3Φ380Vac power supply
S		Connected with "S" of 3Φ380Vac power supply
T		Connected with "T" of 3Φ380Vac power supply
Lin	2Φ220Vac Power Input for Control Unit	Connected with "L" of 2Φ220Vac power supply
Nin		Connected with "N" of 2Φ220Vac power supply
VDC+	Connected with DCin Capacitance Board	Connected with VDC+ terminal of Capacitance Board through reactor
VDC-		Connected with VDC- terminal of Capacitance Board
P	Connected with DCout Capacitance Board	Connected with VDC+ terminal of Capacitance Board
N		Connected with VDC- terminal of Capacitance Board
U	Compressor Driving Output	Connected with "U" of DC compressor
V		Connected with "V" of DC compressor
W		Connected with "W" of DC compressor
Vcc1	Asynchronous serial communication	Communication port, isolated by optocoupler. It can be directly connected with peripheral asynchronous communication circuit
Rx		
Tx		
Gnd1		
FB+	Compressor status indication output	Output the compressor running or stop status by isolated optocoupler
FB-		
+12	Target speed signal Input	Target speed signal (Linear Voltage signal or PWM signal) input to give the instruction of compressor target speed, Simultaneously supply +12V power.
PR		
Gnd		

Symbol	Function	Description
+5	Compressor discharge temperature input	Connected with compressor discharge temperature sensor.
T1		
A	RS485 Protocol input	Connected with RS485 communication bus.
B		
TH+	Compressor overheat protection input	Connected with thermal switch of compressor shell.
TH−		
Fan1	Heat sink fan output	Connected with heat sink fan.
Fan2		

Technology Characteristic

Working Conditions

Item	Symbol	Min	Type	Max	Unit	Note
working condition		-20		60	℃	
store condition		-25		75		
Environment Humidity		10		90		

Electrical Characteristic

Item	Symbol	Min	Type	Max	Unit	Note
Power Supply Voltage		304	380	456	Vac	
Power Supply Frequency		-	50	-	Hz	
Current of power supply of Inverter Unit		1.0	-	20	A	
Consumption f Inverter Unit		0.3	-	8.0	kW	
Current of power supply of Control Unit		0.1	-	1.0	A	
Consumption of Control Unit		-	-	3	W	
Thermo switch current		1	-	-	A	
PR voltage		0	-	10	Vdc	
PR input Resistance		7.8	-	10.0	kΩ	
Output current of "+12"		-	-	20	mA	
Input current of PWM		2	-	10	mA	
Input voltage of PWM		5	-	15	Vdc	
PWM carry Frequency		50	-	10k	Hz	
Heating productivity				200	W	
Overload temperature of heatsink	$T\_{heatsink\_S}$	100	110	120	℃	
Release temperature of heatsink	$T\_{heatsink\_R}$	82	85	88	℃	
DC Voltage		400	530	644	Vdc	
Shortcut current of Compressor		40		45	A	

Item	Symbol	Min	Type	Max	Unit	Note
Current for Heat Sink fan				1	A	
Iutput current of compressor running status feed back				10	mA	
Output voltage of compressor running status feed back				30	Vdc	
Carry Frequency of DC Driving			4/8		kHz	
Parameter programming and erasure endurance				10000	Times	

Peripheral Parts

Reactor   :   5mH 25A

Capacitor Board   :   PM-CAPB-1680-380

Temperature sensor   :   R0=187.25kΩ, B0/100=3979K

EMC flier   :   To be defined

Variable resistor   : 10k

Compressor   : For different type of compressor, calibrated test needed respectively.

Communication

Serial Communication

PM can communicate with central unit of system through optocoupler isolated asynchronous serial circuit. User can control the PM operate and set parameter through this port.

For protocol please refer to PM communication protocol document

Serial communication circuit in PM
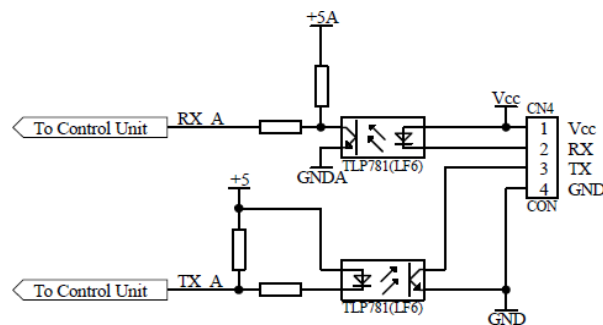
RS485 Communication

PM can communicate with central unit of system through RS485 bus. User can control the PM operate and set parameter through this port.

PM use same one serial port of Control MCU to realize the serial communication and RS485 communication. So these 2 type communication mode can't be use together at same time.

RS485 mode supports MOBUS protocol.

If needed, RS485 protocol can be developed according to user requirement.

Figure