AIR COMPRESSOR CONTROLLER
MAM6070
USER MANUAL

Guangdong Alink Energy Equipment Co.,ltd

VOTE OF THANKS

Thank you very much for choosing air compressor of Guangdong Alink Energy Equipment Co., Ltd .

We will make every effort to ensure the integrity and accuracy of the manual, but Alink Company shall reserve the rights for continuous research and improvement on its products and assume no obligation for the modification and improvement on the previously delivered products. The design of products is subject to the change without notice.

Please feel free to contact our after-sale service center if you encounter any problem with our product.

You are always welcome to make suggestions and advices!

⚠ NOTICE

⚠ **Please read all the operation manual before operating the set and keep this manual for further reference.**

⚠ **Installation of MAM*** compressor controller can be performed only by professional technicians.**

⚠ **Installation position shall be considered carefully in order to ensure good ventilation and reduce electromagnetic interference.**

⚠ **Wiring shall be performed respectively according to regulations for heavy and weak current to reduce electromagnetic interference.**

⚠ **Port connection shall be inspected carefully before power on.**

⚠ **Correct ground connection (the third ground) can help increase product capacity of resisting signal interference.**

⚠ **Set rated current of motor: the max current of motor/1.2.**

Features:

- **Multiple run mode optional**
- **In VSD mode, support any frequency convertor on the market.**
- **5 inch color screen, with key switch button and touch penal.**
- **Support real time power consumption and accumulative power consumption measurement**
- **Scheduled on/off function and scheduled pressure function optional**
- **More accurate in writing frequency to control inverter through 485 communication**
- **Free to control all inverter supporting MODBUS RTU protocol**
- **Open phase, current overload, current unbalance, over voltage, low voltage protection for motor**
- **High integration, high reliability, high cost performance**

Version update record

version	Last update	project	page	Update content
1.0	**201707**	**Initial version**		

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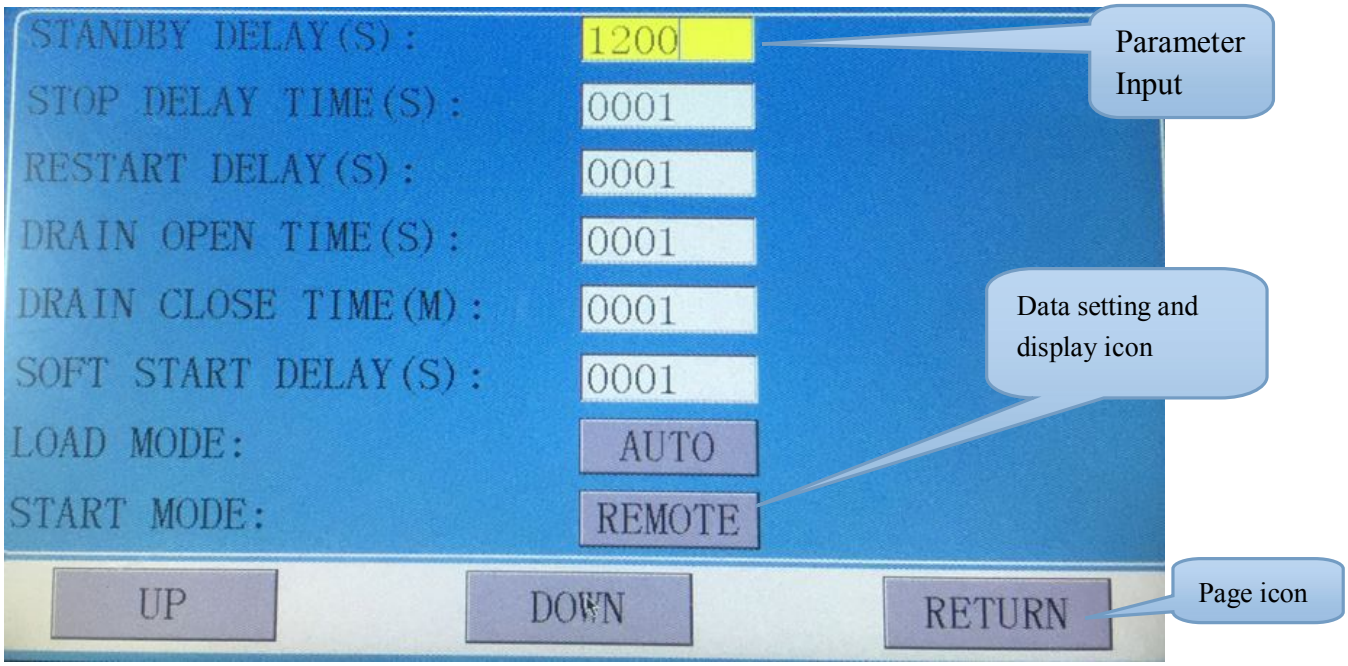
1, Basic Operation

1.1 Button Explanation

Picture 1.1.1



——Start/Stop Button:

- When compressor is at stop status, press this button to start the compressor.

When compressor is set as master (No.1) in network status, press this button to start the compressor and activate network mode function at the same time.

- When the compressor is at running status, press this button to stop the compressor.
  When compressor is set as master (No.1) in network status, press this button to stop compressor and network function as well.

1.2 Indicator Explanation

——Power: Indicator is alight when controller is powered on.

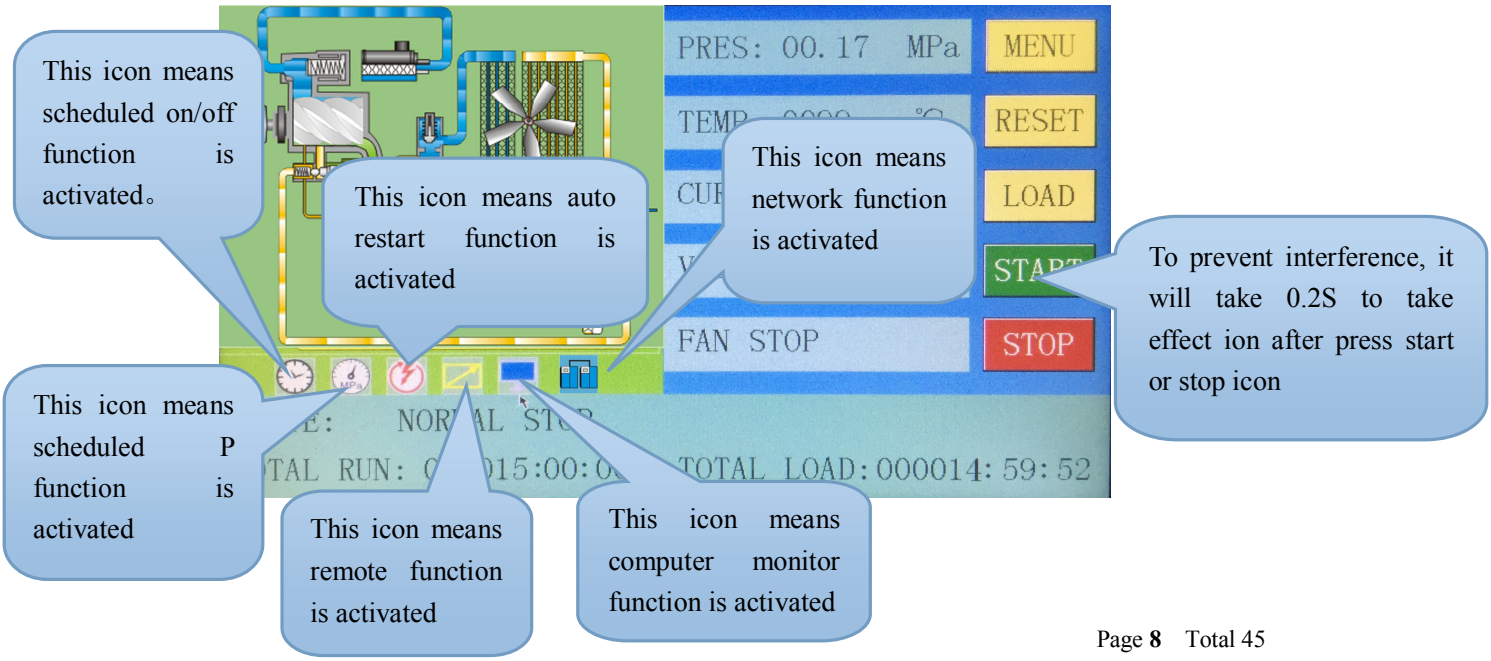
——Run: Indicator is alight when motor is running.

——Alarm: Indicator is blinking when controller is alarming;
Indicator is alight when compressor is alarm and stop;
Indicator is off after error is cleared and reset.

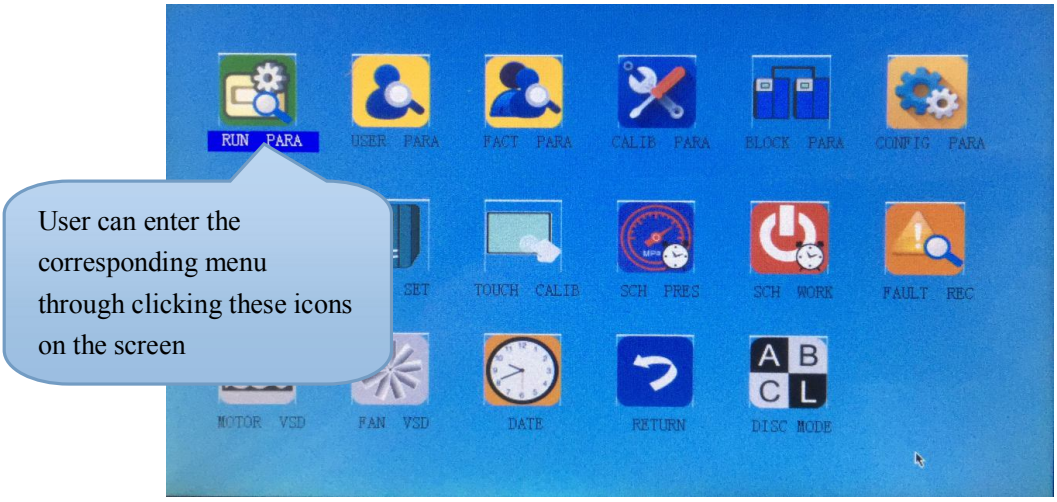
1.3 Status Display and Operation

The display screen will show as below after power on and display “MAM-6070”for a while:

After 5 seconds, the menu will switch as below:



User can enter the below menu through clicking MENU icons on the screen.



1.4 Running Parameter

Click “RUN PARAMETER” to check the relative data and setting below:

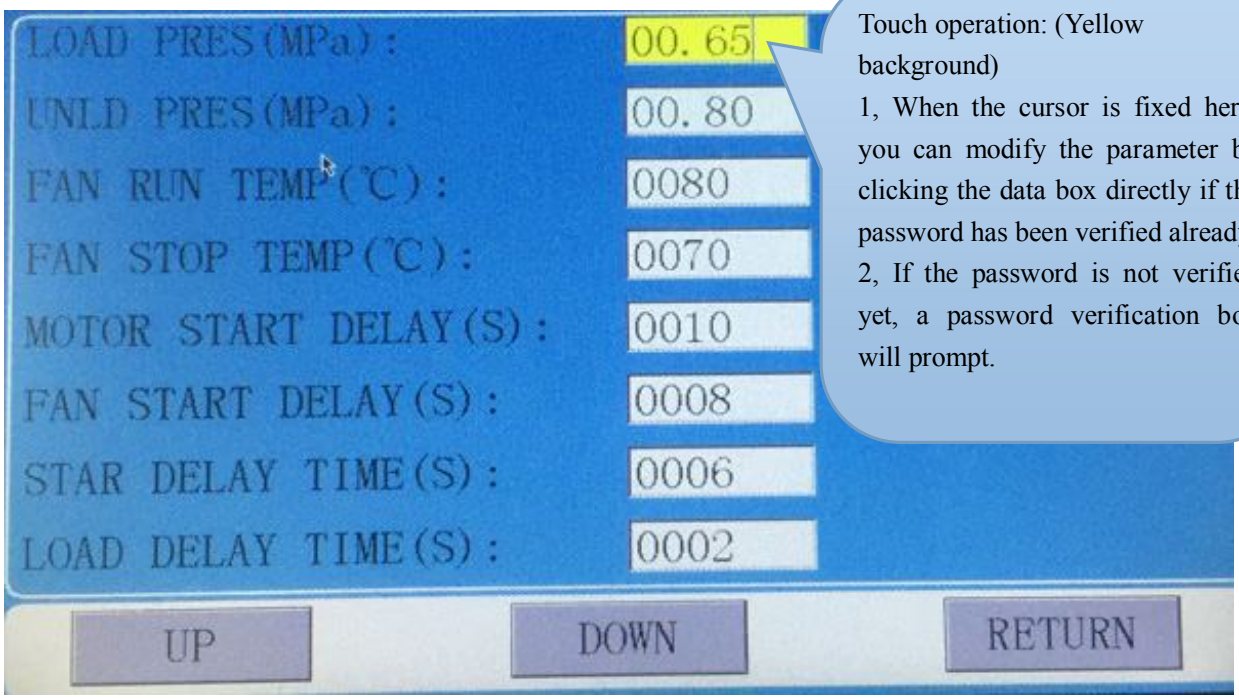
Menu	Preset Data	Function
OIL FILTER	0000H	Record total running time of oil filter.
O/A SEPERATOR	0000H	Record total running time of O/A separator.
AIR FILTER	0000H	Record total running time of air filter.
LUBE	0000H	Record total running time of lubricant
GREASE	0000H	Record total running time of grease
SERIAL NO	00000000	Display serial NO.
POWER VOLTAGE	0000V	Display power voltage.
MOTO CRURRENT	A：000.0A B：000.0A C：000.0A	Display motor current.
FAN CURRENT	A：000.0A B：000.0A C：000.0A	Display fan current
MOTOR SPEED:	0000 RPM	Display motor actual speed based on the calculation of motor frequency read
MOTOR POWER:	000.0 Hz	Display the output frequency of the main inverter.
MOTOR OUTPUT CURRENT:	000.0 A	Display the output current of the main inverter.
MOTOR VOLTAGE	000.0 V	Display the output voltage of the main inverter.
MOTOR OUTPUT POWER:	000.0 Kw	Display the real time output power of the main inverter

MOTOR THIS POWER CONSUMPTION	0000000.0Kw.H	Display the accumulative this power consumption based on the main inverter real time output power
MOTOR TOTAL POWER CONSUMPTION	0000000.0Kw.H	Display the accumulative total power consumption based on the main inverter real time output power
PRESSURE	00.00MPa	Display the current pressure.
MOTOR STATE DESCRIPTION:	0001	Display the main inverter state description, here according to the hex read by controller.
MOTOR ERROR DESCRIPTION:	0000	Display the main inverter error description, here according to the hex read by controller.
WRITE FREQUENCY:	000.0	Display output frequency send to the main inverter.
FAN SPEED	0000 RPM	Display the fan real time speed based on the fan frequency read
FAN FREQUENCY:	000.0 Hz	Display the output frequency of the fan inverter
FAN CURRENT:	000.0 A	Display the output current of the fan inverter
FAN VOLTAGE:	000.0 V	Display output voltage of the fan inverter
FAN OUTPUT POWER:	000.0 Kw	Display the real time output power based on the the fan inverter
FAN THIS POWER CONSUMPTION	0000000.0Kw.H	Display the accumulative this power consumption based on the fan inverter real time output power
FAN TOTAL POWER CONSUMPTION :	0000000.0Kw.H	Display the accumulative total power consumption based on the fan inverter real time output power
TEMPERATURE	0000℃	Display the element temperature
FAN STATE DESCRIPTION:	0203	Display fan inverter state description here according to the hex read by controller.
ERROR DESCRIPTION:	0000	Display motor error description of fan inverter here according to the hex read by controller.
WRITE FREQUENCY:	000.0	Display the fan frequency based on the PID calculation.
PRODUCTION DATE:	0000-00-00	Display production date.
THIS RUN TIME	0000:00:00	Record compressor this run time
THIS LOAD TIME:	0000:00:00	Record compressor this load time
CHECK 1:	00003FFF	Display check 1.
SOFTWARE EDITION:	CK0000M0000	Display software edition.
CHECK 2:	FFFFFFFF_1	Display check 2.

INPUT STATE:	1 2 3 4 ● ● ● ● 1: In accordance with No.1 digital input state 2: In accordance with No.2 digital input state 3: In accordance with No.3 digital input state 4: In accordance with No.4 digital input state Red circle of input state means terminal is connected; Orange circle of input state means terminal is disconnected	
OUTPUT STATE	16 15 14 13 12 11 ● ● ● ● ● ● 16: In accordance with No.16 digital output state 15: In accordance with No.15 digital output state 14: In accordance with No.14 digital output state 13: In accordance with No.13 digital output state 12: In accordance with No.12 digital output state 11: In accordance with No.11 digital output state Red circle of input state means terminal is connected Orange circle of input state means terminal is disconnected	
PF MOTORΦUI	000000.0 Kw	Display real time motor current* voltage
PF MOTOR THIS POWER CONSUMPTION	0000000.0Kw.H	Display this time power consumption according to the PF motor real time output power.
PF MOTOR TOTAL POWER CONSUMPTION	0000000.0Kw.H	Display accumulative total power consumption according to the PF motor total output power.
PF FANΦUI	000000.0 Kw	Display real time fan current* voltage
PF FAN THIS POWER CONSUMPTION:	0000000.0Kw.H	Display this time power consumption according to the PF fan motor output power.
PF FAN TOTAL POWER CONSUMPTION:	0000000.0Kw.H	Display accumulative total consumption according to the PF fan motor total output power.

1.5 User Parameter

User parameter is used to store relative data. User password is required for modification.



Main function is as below:

Menu	Preset Data	Function
LOAD P（MPa)	00.65	1,In AUTO load mode, compressor will load if pressure is below this setting data 2,In STANDBY mode, compressor will start if the pressure is below this setting data.
UNLOAD P（MPa)	00.80	1,Compressor will unload automatically if air pressure is above this setting data 2.This data should be set above LOAD P, also should be set below UNLD P LIM
FAN START T（℃）	0080	Fan will start if the element T is above this set data
FAN STOP T（℃）	0070	Fan will stop if the element T is below this set data.
MOTOR START DELAY(S):	0010	Set the MOTOR START TIME. Record time when motor is activated, controller will not start overload protection during this time to avoid impulse starting current stopping the motor.
FAN START DELAY(S):	0008	Set the FAN START TIME. Record time when fan is activated, controller will not start overload protection during this time to avoid impulse starting current stopping the fan.
STAR DELAY(S):	0006	Interval time from star start to delta start.
LOAD DELAY(S):	0002	Unloading in this set time after enter delta running
STANDBY DELAY(S):	1200	When unloading continuously, compressor will automatically stop and enter to standby status if over this set time
STOP DELAY(S):	0010	For NORMAL STOP operation, compressor will stop after it continuously unloads over this set time
RESTART DELAY(S):	0100	Machine can start only over this set time at any case(after normal stop, standby or alarm &stop)
DRAIN OPEN TIME(S)::	0002	Auto drain control, continuously drain time

DRAIN CLOSE TIME(M):	0001	Auto drain control, continuously drain interval time
SOFT START DELAY(S):	0010	Controller starts LOAD DELAY TIME after SOFT-START DELAY (this data is only available in SOFT START mode)
LOAD MODE:	MANUAL/AUTOMATIC	MANUAL : only when the pressure is above UNLD P, compressor will unload automatically .For any other case ,the Load/Unload function can only be executed by pressing “load/unload” key AUTOMATICAL: the load/unload function can be executed by the fluctuation of AIR P automatically
START MODE:	LOCAL/REMOTE	LOCAL: only the button on the controller can turn on and turn off the machine REMOTE: both the button on the controller and the remote control button can turn on and turn off the machine Note: When one input terminal is set as REMOTE START ENABLE, start mode is controlled by hardware status. It is remote when terminal is close, it is local when terminal is open In this case, the set here is not available
RUN MODE:	PF/MOTOR VSD/FAN VSD/MOTOR FAN VSD/SOFT START	Choose the corresponding compressor run mode according to customer requirement and choose the corresponding schematic diagram for reference
COM ADD:	0001	Set the communication address in COMPUTER or NETWORK mode. This address is unique for every controller in net
BACKLIGHT ADJUSTMENT:	0005	Adjust the backlight, the higher the data, the brighter the display(from level 1 to level 7)
COM MODE:	COMPUTER/BLOCK/DISABLE	DISABLE: communication function is not activated. COMPUTER: compressor can communicate with computer or DCS as slave according to MODBUS-RTU. Baud rate:9600;Data format:8E1; Parity bit: even parity check BLOCK: compressors can work in a net
PRESSURE UNIT:	MPa/PSI/BAR	MPa: Pressure unit displays as MPa PSI: Pressure unit displays as PSI BAR: Pressure unit displays as BAR
TEMPERATURE UNIT:	℃/℉	°C: Temperature unit displays as °C °F: Temperature unit is displays as °F
LANGUAGE:	CHINESE/ENGLISH	ENGLISH: Displays in English CHINESE: Displays in Chinese
USER PASSWORD:	****	User could modify the user password by old user password or factory password
SLEEP BACKLIGHT:	0000	Adjust the sleep backlight, the higher the data, the brighter the display(from level 0 to level 7) 0: Touch and button operation is closed. After 3 min, close the display.

1.6 Factory Parameter

Factory parameter is used to store relative data. Factory password is required for check and modification.

The modification of factory parameter is same with customer parameter. Main function is as below.

MENU	Preset Data	Function
MOTOR RATED CURRENT(A):	Maximum motor overload data /1.2	When the current of motor is more than 1.2 times of the set data , the unit will delay for overload feature. Warn motor overload fault.(see table 2.1.1)
FAN RATED CURRENT(A):	Maximum fan overload data/1.2	When the current of fan is more than 1.2 times than the set data , the unit will delay for overload feature. Warn fan overload delay.
ALARM T(°C):	0105	When element temperature reaches this set data, compressor will alarm
STOP T(°C):	0110	When the element temperature reaches this set data, compressor will alarm and stop
D-END BEARING ALARM (°C):	0000	When the D-end bearing temperature is higher than this set data, compressor will alarm
D-END BEARING STOP (°C):	0000	When the D-end bearing temperature is higher than this set data, compressor will alarm and stop
STOP P(MPa):	00.90	When pressure reaches this set data ,compressor will alarm and stop
SYSTEM STOP P(MPa):	00.00	When system pressure is higher than this set data, compressor will alarm and stop
UNLD P LIM(MPa):	00.80	This data is the maximum of UNLD P. The UNLD P in the customer parameter must be set no higher than this data
CURRENT UNBALANCE:	0010	When(MAX -MIN CURRENT)≥(1+ SET DATA*MIN CURRENT/10), the unbalance protection is activated, compressor will alarm and stop, reporting MOTOR CURR UNBAL If the set data ≥ 15, the unbalance protection will not be activated
OPEN PHASE PROT(S):	005.0	If OPEN PHASE protection ≥20 seconds, OPEN PHASE protection is not activated
FAULT RECORD RESET:	****	Input"8888"and press "set" button to clear all the history fault record
ALARM LONG STOP (H):	0000	When controller detects oil filter，air filter, O/A separator lubricant and grease running over the max time and alarm over the data set, compressor will alarm and stop
MAX RUN TIME(H):	0000	When the compressor is in a stop status and the TOTAL RUN TIME is over this MAX TIME set, compressor will alarm and stop, reporting USER MISTAKE
FACTORY PASSWORD 2:	****	Set a FACTORY PASSWORD which can be modified
OVER VOLTAGE(V):	0410	When voltage is detected higher than OVER VOLTAGE, the controller will alarm and stop When set as 0000, OVER VOLTAGE protection function is not activated

LOW VOLTAGE(V):	0350	When voltage is detected lower than LOW VOLTAGE, the controller will alarm and stop When set as 0000, LOW VOLTAGE protection function is not activated
COMMUNICATION OVERTIME(S):	000.5	Record time when controller sent first data, if controller failed to receive the feedback from inverter within this set time, controller is regarded overtime and will send command again
COMMUNICATION INTERRUPT(S):	0000	If controller failed to receive feedback from inverter for this set time, communication is interrupted
COMMUNICATION RESTORE:	0003	After communication is interrupted, and controller receives the correct data more than this set times, communication is regarded restored
SCHEDULED ON/OFF:	DISABLE /ENABLE	ENABLE: SCHEDULED ON/OFF is valid DISABLE: SCHEDULED ON/OFF is invalid
SCHEDULED P	DISABLE /ENABLE	ENABLE: SCHEDULED P is valid DISABLE: SCHEDULED P is invalid
TOTAL RUN TIME(H):	000000H:00 M	Revise total run time
TOTAL LOAD TIME(H):	000000H:00 M	Revise total load time
LOW TEMP PRO(°C):	-0030	2: After power on, if the temperature is detected lower than the set data, it is not allowed to turn on. 2: Two minutes after running, if the temperature is detected lower than the set data, it is reported temperature sensor fault and stop
AUTO RESTART:	DISABLE/ ENABLE	ENABLE: AUTO RESTART is valid DISABLE: AUTO RESTART is invalid
PF MOTOR POWER COEF:	0.900	Set the coefficient for the calculation of motor power
PF MOTOR POWER CONSUMPTION (Kw.H):	0000000.0	Set and modify the motor power consumption in PF mode
PF FAN POWER COEF:	0.900	Set the coefficient for the calculation of fan power
PF FAN POWER CONSUMPTION (Kw.H):	0000000.0	Set and modify the fan power consumption in PF mode
FREQ SELECT:	50HZ/60HZ	Set the compressor power frequency. Used to calculate sampled motor/fan current and voltage in PF mode.
SEPARATOR FILTER P DIFF ALARM (MPa):	00.00	When separator filter pressure difference reaches this set data, compressor will alarm
SEPARATOR FILTER P DIFF STOP(MPa):	00.00	When separator filter pressure difference reaches this set data, compressor will alarm and stop
LINE PRESSURE RESISTANCE(MPa):	00.00	When line pressure resistance reaches this set data, compressor will alarm and stop

ND-end BEARING ALARM (°C):	0000	When the ND-end bearing temperature is higher than this set data, compressor will alarm
ND-end BEARING STOP (°C):	0000	When the ND-end bearing temperature is higher than this set data, compressor will alarm and stop
SERIAL NO.:	00000000	Factory serial number
PRODUCTION DATE	0000-00-00	Factory production date

1.7 Calibration Parameter

Calibration parameter is used to store relative data. Calibration password is required for check and modification. Main function is as below.

MENU	Preset Data	Function
MOTOR A COEF:	1.008	Input the coefficient to calibrate current Controller display current=sample current*coefficient. The range of coefficient: 0.800-2.000
MOTOR B COEF:	1.005	
MOTOR C COEF:	1.019	
FAN A COEF:	1.020	
FAN B COEF:	1.035	
FAN C COEF:	1.035	
T 1 COEF:	1.014	Input the coefficient when calibrate element temperature. Controller display temperature=sample temperature*coefficient The range of coefficient: 0.800-2.000
T 2 COEF:	1.000	Note: this parameter is reserved in MAM6070
T 3 COEF:	1.000	
T 4 COEF:	1.000	
T 5 COEF:	1.000	
T 6 COEF:	1.000	
P 1 COEF:	1.025	Input the coefficient to calibrate air pressure. Controller display pressure = sample pressure*coefficient The range of coefficient:0.800-2.000
P 2 COEF:	1.000	Note :this parameter is reserved in MAM6070
VOLTAGE COEF:	1.039	Input the coefficient to calibrate voltage. Controller display voltage = sample voltage *coefficient. The range of coefficient:0.800-2.000
MOTOR CURR CYCLE:	0001	After the controller samples the setting current cycle, the average value is calculated and displayed to the user. Used to the state those current changes largely in a short time while user hope display value fluctuates slightly.
VOLT CYCLE:	0004	After the controller samples the setting voltage cycle, the average value is calculated and displayed to the user.
T 1 ZERO:	0015	Calibrate controller temperature zero. Calibrate temperature to -20°C when controller pressure sensor terminal connects the resistance in accordance with -20°C. For the calibration of temperature, it is required to calibrate T zero first and then calibrate coefficient
T 2 ZERO:	0000	Note: This parameter is reserved in MAM6070
T 3 ZERO:	0000	
T 4 ZERO:	0000	
T 5 ZERO:	0000	

T 6 ZERO:	0000	
P 1 ZERO:	0000	When AIR P is below this set value, the pressure is displayed as 0.00.It is used to avoid air pressure transmitter from increasing
P 2 ZERO:	0000	When P 2 is below this set value, the pressure is displayed as 0.00.It is used to avoid pressure zero from increasing
P1 RANGE（MPa）	01.60	Set the range of pressure 1. After the user changes the value here, need to recalibrate the corresponding pressure
P2 RANGE（MPa）	01.60	Set the range of pressure 2. After the user changes the value here, need to recalibrate the corresponding pressure
PHASE PROT(V):	000.9	If the Three phase voltage is detected lower than the data set here, controller will report PHASE WRONG If PHASE PROT = 0 second, PHASE PROT is not activated
OPEN PHASE PROT(V):	000.0	If the open phase voltage is detected lower than the data set here, controller will report PHASE WRONG If OPEN PHASE protection = 0 second, OPEN PHASE protection is not activated Note: This parameter is reserved in MAM 6070
MOTOR CURR RATIO:	020	Motor rated current/5
FAN CURR RATIO:	001	Fan rated current /2.5

1.8 Block Parameter

Block parameter is used to store relative data. Block password is required for check and modification.

Main function is as below.

Menu	Preset Data	Function
BLOCK NUMBER:	0002	Number of air compressors in block.
BLOCK LOAD P(MPa):	00.63	In BLOCK mode, one compressor will start or load when master AIR P is below this set data
BLOCK UNLOAD P(MPa):	00.78	In BLOCK mode, one compressor will stop or unload when master AIR P is above this set data
BLOCK DELAY(S):	0010	In BLOCK mode, when master sends two commands continuously, second command signal delays for this set data
TURN TIME(M):	0060	When master pressure is between BLOCK LOAD P and BLOCK UNLD P, master determines slave to work alternatively after working over this set time
BLOCK MODE:	PF-PF VSD-PF VSD-VSD	1. PF-PF: PF compressor and PF compressor work in block mode. In this mode, block air compressor schedules according to state priority and total time priority. 2. VSD-PF: VSD compressor and PF compressor work in block mode. In this mode, compressor No. 1 is VSD and prior in block . 3. VSD-VSD: VSD compressor and VSD compressor work in block mode. Scheduling way is same as “PF-PF”.

1.9 Hardware Parameter

Hardware parameter is used to set the function from 1 to 4 terminals. Main function is as below.：

Menu	Preset Data	Function
1 TERMINAL:	EMERGENCY	NO FUNCTION/EMERGENCY/REMOTE ON/REMOTE OFF/REMOTE INCHING/KEEP REMOTE / LACK WATER (N.C.)/REMOTE LOAD/REMOTE START ENABLE/REMOTE LOAD/UNLD /TANK HIGH T (N.C.)/ COIL HIGH T (N.C.)/ BEARING HIGH T (N.C.)/ ELEC FAULT (N.C.)/MOTOR OVLD (N.C.)/FAN OVLD (N.C.)/OIL (N.C.)/ OIL BLOCKING (N.O.)/ O/A BLOCKING (N.C.)/O/A BLOCKING (N.O.)/AIR FILTER BLOCKING (N.C.)/AIR FILTER BLOCKING (N.O.)/ AIR FAULT (N.C.)/DRYER FAULT (N.C.)/ MOTOR INV FAULT (N.O.)/ MOTOR INV FAULT (N.C.)/ FAN INV FAULT (N.O.)/ FAN INV FAULT (N.C.). Note: User can set different digital input function
2 TERMINAL:	O/A SEPERATOR FILTER	
3 TERMINAL:	LACK WATER	
4 TERMINAL:	REMOTE ON-OFF	

1.10 Maintenance Parameter

Maintenance parameter is used to store maintenance data. Maintenance password is required for check and modification. Main function is as below.

Menu	Preset Data	Function
OIL FILTER RUN TIME(H):	0000	Record total running time of oil filter. If changing new oil filter, the data should be reset by manual operation.
O/A SEPERATOR RUN TIME(H):	0000	Record total running time of O/A separator. If changing new O/A separator, the data should be reset by manual operation
AIR FILTER RUN TIME(H):	0000	Record total running time of air filter .If changing new air filter, the data should be reset by manual operation
LUBRICANT RUN TIME(H):	0000	Record total running time of lubricant. If changing new lubricant, the data should be reset by manual operation
GREASE RUN TIME(H):	0000	Record total running time of grease. If changing new grease, the data should be reset by manual operation
OIL FILTER MAX RUN TIME(H):	0000	1, Alarm prompt when total running time of oil filter is above the set data . 2,Set this data to “0000” , alarm function for oil filter running time is not activated
O/A SEPERATOR MAX RUN TIME(H):	0000	1, Alarm prompt when total running time of O/A separator is above the set data. 2,Set this data to “0000” ,alarm function for O/A separator running time is not activated
AIR FILTER MAX RUN TIME(H):	0000	1, Alarm prompt when total running time of air filter is above the set data. 2,Set this data to “0000” , alarm function for air filter running time is not activated
LUBRICANT MAX RUN TIME(H):	0000	1, Alarm prompt when total running time of lubricant is above the set data. 2, Set this data to “0000”, alarm function for lubricant running time is not activated.

GREASE MAX RUN TIME(H):	0000	1, Alarm prompt when total running time of grease is above the set data. 2,Set this data to “0000” , alarm function for grease running time is not activated

1.11 Inverter Set

Inverter set is used to set inverter data. Inverter password is required for check and modification. Main function is below. (The following chart is an example of Shneider inverter ATV61)

Menu	Preset Data	Function
INVERTER NAME:	ATV61	Choose inverter model.
RUN(W) ADD1:	2135	Corresponding address 1 of inverter start command
SEND VALUE:	0000	This data is inverter start data (please refer to communication chapter in inverter manual for different inverter.)
RUN(W) ADD2:	2135	Corresponding address 2 of inverter start command
SEND VALUE:	0001	This data is inverter start data (please refer to communication chapter in inverter manual for different inverter.)
STOP(W) ADD:	2135	Corresponding address of inverter stop command
SEND VALUE:	0000	This data is inverter stop data (please refer to communication chapter in inverter manual for different inverter.)
RESET(W) ADD:	2135	Corresponding address of inverter reset command
SEND VALUE:	0080	This data is inverter reset data (please refer to communication chapter in inverter manual for different inverter.)
FREQ(W) ADD:	2136	Corresponding register address of inverter running frequency source
FREQ(R) =	REC*0001÷0001	The REC value is frequency value with one decimal. Use formula to transfer to corresponding value based on different inverter and sends it to inverter. Example: 50HZ running frequency，REC value:500 For inverter with write frequency of 2 decimals, formula: REC**0001÷0010 For inverter with write frequency of 1 decimal, formula: REC**0001÷0001 For the inverter whose max output frequency is in corresponding with 10000, the formula: REC*1000÷50
STATE(R) ADD:	219B	Read inverter running status address. Use to check if inverter has run.
RUN STATE =	R AND 0004=0004	Check if inverter has run the formula (please refer to communication chapter in inverter manual)

COM FORM:	8N1-N	Set the data format of controller and inverter communication. This set should be consistent with inverter communication format 8N1-N: 1start bit,8 data bits,1 stop bit, no parity bit 8N1-E: 1start bit,8 data bits,1 stop bit, even parity bit 8N1-O: 1start bit,8 data bits,1 stop bit, odd parity bit 8N2-N: 1start bit,8 data bits,2 stop bit, no parity bit Note: Communicate with inverter, the baud rate is fixed: 9600
FREQ(R) ADD:	0C82	Read inverter frequency address(refer to inverter manual)
FREQ(R) =	REC*0001÷0001	Calculate inverter frequency formula. Controller will transfer the frequency to one decimal.
VOLT(R) ADD:	0C88	Read inverter voltage address
VOLT(R) =	REC*0010÷0001	Calculate inverter voltage formula. Controller will transfer the voltage to one decimal
CURR(R) ADD:	0C84	Read inverter current address
CURR(R) =	REC*0001÷0001	Calculate inverter current formula. Controller will transfer the current to one decimal
POWE(R) ADD:	0C8B	Read inverter power address
POWE(R):	REC*S*0001÷0100	Calculate inverter power formula. Controller will transfer the power to one decimal
ERR ADD	219B	Read inverter error address
ERR S=	E AND 0008≠0000	Whether the inverter report error formula.
EMERGENCY ADD:	2135	Corresponding add of inverter emergency stop command
SEND VALUE:	0006	This data is inverter emergency stop data (please refer to communication chapter in inverter manual for different inverters.)

1.12 Touch Calibration

Touch calibration is used to adjust touch accuracy. Touch calibration password is required for adjustment.

After entering touch calibration menu, use fingertip or other tool with sharp head to click A ,B ,C ,D in sequence. Press “S” button to restart and save the modification; If user wants to calibrate again, press reset button and reset following precious step.

1.13 Scheduled P

Scheduled P is used to set scheduled pressure. Scheduled P password is required for check and modification. Main function is below.

Menu	Preset Data	Function
LOAD P(MPa):	00.65	During Scheduled P START TIME and Scheduled P STOP TIME, compressor will load if AIR P is below this set data
UNLOAD P(MPa):	00.80	During Scheduled P START TIME and Scheduled P STOP TIME, compressor will unload if AIR P is above this set data

SCHEDULED VSD P (MPa):	00.70	During Scheduled P START TIME and Scheduled P STOP TIME, set AIR P in VSD mode to keep running stable. When pressure is fluctuated around this data, controller will adjust operating frequency of inverter to control the pressure close to this data (This data is only available in MOTOR VSD or MOTOR/FAN VSD mode)
Scheduled P START TIME:	00:00	Set this data to activate P SECTION SEL function. Set this data to "0", this function is not activated
Scheduled P STOP TIME:	00:00	Set this data to activate P SECTION SEL function. Set this data to "0",this function is not activated

1.14 Scheduled On-Off

Scheduled On-Off is used to set one week scheduled on-off time, four period is allowed to set in one day. Scheduled On-Off password is required for check and modification. Main function is below. When set to 00:00, the correspondent function is invalid

1.15 History Record

Record history fault for user to find causes and solutions.100 items are allowed to record.

1.16 Motor VSD

Motor VSD is used to set Motor VSD data. Motor VSD password is required for check and modification. Main function is below.

Menu	Preset Data	Function
VSD P(MPa):	00.70	Set AIR P in VSD mode to keep running stable. When pressure is fluctuated around this data, controller will adjust operating frequency of inverter to control the pressure close to this data (This data is only available in MOTOR VSD or MOTOR/FAN VSD mode)
MOTOR START FREQ（HZ）	060.0	After the controller sends a start command to the inverter, it sends the frequency value set here to the inverter. Control motor speed need to set frequency here. Avoid running at low frequency when the air compressor is just starting up.
MOTOR RATED POWER(KW):	022.0	Set MOTOR RATED POWER in order to calculate actual power in VSD mode (This data is only available in MOTOR VSD or MOTOR/FAN VSD mode)
MOTOR RATED SPEED(RPM):	1500	Set MOTOR RATED SPEED at 50HZ in order to calculate the actual speed in VSD mode (This data is only available in MOTOR VSD or MOTOR/FAN VSD mode)
MOTOR ACC TIME (S)	0020	Use to calculate how much HZ frequency is increased per second by the inverter when controlling the acceleration operation of the inverter. For precisely control, the value here must be equal to the inverter acceleration time.
MOTOR DEC TIME (S)	0015	Use to calculate how much HZ frequency is decreased per second by the inverter when controlling the deceleration For precisely control, the value here must be equal to the inverter deceleration time.

MOTOR VSD POWER COEF	0.900	Use to calculate total power consumption when motor VSD runs.
LOW FREQ STOP DELAY (S)	0000	When motor run time under min frequency reach the value set here, stop running automatically and display LOW FREQ STOP. After pressure is lower than the loading pressure, start automatically. When it set to 0, the function is invalid.
MOTOR PROP GAIN:	0016	Track speed of PID TARGET P, the bigger the data, the faster the track; the smaller the data, the slower the track
MOTOR INT GAIN:	0008	Track the speed of PID TARGET P and STEADY STATE ERROR, the bigger the data ,the faster the track and smaller the STEADY-STATE ERRORS; the smaller the data ,the slower the track and bigger the STEADY-STATE ERRORS
MOTOR DIFF GAIN:	0000	Track the hysteresis system (such as temperature), it is not used very often and normally set as “0000”
MOTOR MAX FREQ (HZ):	200.0HZ	The maximum operating frequency in loading status
MOTOR MIN FREQ(HZ):	080.0HZ	In the process of adjustment, The minimum operating frequency when pressure is over the LOAD P pressure and not reach the UNLD P
MOTOR UNLD FREQ(HZ):	0060.0HZ	Permitted operating frequency in UNLD MODE
MAIN INVERTER ADD:	0001	Set the INTERVER ADD and keep it consistent with COM ADD
SPEED ADJUST COEF	01.00	Use for constant pressure control. Range: 0~1.0 The larger this value is, the more significant the down-clocking effect is at a constant pressure point.
MAIN INVERTER MODEL:	ATV61	Controller can pre-store at most 10 different inverter communication address (Inverter should support MODBUS RTU protocol for communication)

MOTOR STOP MODE:	SLOW/FREE	1, Inverter start command come from communication： SLOW: When controller receives stop command, inlet valve terminals will open. Controller sends stop command to inverter to slow stop inverter FREE: When controller receives stop command, inlet valve terminals will open. Controller sends write frequency through RS485.Controller frequency will decrease and send stop command to inverter 1S before stop delay finished. QUICK: When the controller receives the stop command, send the stop command to the inverter immediately. The inverter immediately stops the output. To prevent the air compressor with the variable inlet valve over pressure. Because of the delay time is too long, during the shutdown, the pressure continues to rise. 2, Inverter start command come from terminal: SLOW: When compressor receives stop command, inlet valve terminals will open and main inverter control terminal will open. The compressor will stop according to stop delay set. FREE: When compressor receives stop command, Inlet valve will open. main inverter control terminal will keep closed to control inverter frequency decreasing and it will open until 1 s before stop delay finishes QUICK: When the controller receives the stop command, main inverter control terminal will open immediately. The inverter immediately stops the output. To prevent the air compressor with the variable inlet valve over pressure. Because of the delay time is too long, during the shutdown, the pressure continues to rise.
INVERTER START MODE:	COM / TERMINAL	COM ON-OFF: Start or stop inverter through RS485 TERMINAL ON-OFF: Start or stop inverter through digital input Note: 1, Controller set should be accordance with inverter start mode 2, When controller is set to PF/VF mode, terminal 12 functions as inverter control terminal. If use terminal on-off, stop mode need to set free stop. 3, PM VSD compressor is recommended to use terminal on-off.
INVERTER START TIMES	06	Maximum allowable times Controller sends start command to inverter with no response.
INVERTER STOP TIMES.:	30	Maximum allowable times Controller sends stop command to inverter with no response.
VSD MOTOR POWER CONSUMPTION Kw.H:	0000000.0	Set the accumulative VSD running power consumption.

MAIN INVERTER DELAY(S):	001.0	Press start button, controller sends start command to inverter after this set time.
OUTPUT OPTION	ON/OFF	Open or close output option. Related introduction please see appendix.
PRESSURE 1(MPa)	0.50	In constant power running mode, when pressure is above the data set here, Max output frequency is set as constant power frequency1
PRESSURE 2(MPa)	0.60	In constant power running mode, when pressure is above the data set here, Max output frequency is set as constant power frequency2
PRESSURE 3(MPa)	0.65	In constant power running mode, when pressure is above the data set here, Max output frequency is set as constant power frequency3
PRESSURE 4(MPa)	0.70	In constant power running mode, when pressure is above the data set here, Max output frequency is set as constant power frequency4
PRESSURE 5(MPa)	0.00	In constant power running mode, when pressure is above the data set here, Max output frequency is set as constant power frequency5
PRESSURE 6(MPa)	0.00	In constant power running mode, when pressure is above the data set here, Max output frequency is set as constant power frequency6
PRESSURE 7 (MPa)	0.00	In constant power running mode, when pressure is above the data set here, Max output frequency is set as constant power frequency7
CONSTANT POWER FREQUENCY 1(HZ):	200.0	**Set with pressure 1 above.**
CONSTANT POWER FREQUENCY 2(HZ):	180.0	**Set with pressure 2 above.**
CONSTANT POWER FREQUENCY 3(HZ):	160.0	**Set with pressure 3 above.**
CONSTANT POWER FREQUENCY 4(HZ):	150.0	**Set with pressure 4 above.**
CONSTANT POWER FREQUENCY 5(HZ):	150.0	**Set with pressure 5 above.**
CONSTANT POWER FREQUENCY 6(HZ):	150.0	**Set with pressure 6 above.**
CONSTANT POWER FREQUENCY 7(HZ):	150.0	**Set with pressure 7 above.**

Note 1: In constant power running mode

PRESSURE 1<= PRESSURE 2<= PRESSURE 3<= PRESSURE 4<= PRESSURE 5<= PRESSURE 6<= PRESSURE 7

Note 2: FREQUENCY 1>= FREQUENCY 2>= FREQUENCY 3>= FREQUENCY 4>= FREQUENCY 5>= FREQUENCY 6>= FREQUENCY 7

Note 3: Suppose M>N, When CONSTANT POWER PRESSURE N set to 00.00, CONSTANT POWER PRESSURE M and CONSTANT POWER FREQUENCY M, the set is invalid.

1.17 Fan VSD

Fan VSD is used to set Fan VSD data. Fan VSD password is required for check and modification. Main function is below:

Menu	Preset Data	Function
FAN VSD T(°C):	0082	In VSD mode, set element T to keep running stable. When element T is fluctuated around this data, controller will adjust operating frequency of fan inverter to control element T close to this data (This data is only available in FAN VSD or MAIN/FAN VSD mode)
MAX VSD T(°C):	0090	When element T is above or equal to this data, control fan inverter output frequency to FAN MAX FREQ (This data is only available in FAN VSD or MAIN/FAN VSD mode)
FAN ACC TIME:	0020	Restrict PID calculations in case the frequency increasing too fast which cause fan speeding up too fast
FAN DEC TIME:	0015	Restrict PID calculations in case the frequency decreasing too fast which cause fan slowing down too fast
FAN POWER:	002.0	Set FAN RATED POWER to calculate the actual fan power in FAN VSD mode (This data is only available in FAN VSD or MAIN/FAN VSD mode)
FAN SPEED:	1500	Set the corresponding fan speed in 50HZ to calculate actual fan speed in FAN VSD mode (This data is only available in FAN VSD or MAIN/FAN VSD mode)
VSD FAN START T(°C):	0082	VSD fan will start if element T is above this set data (This data is only available in FAN VSD or MAIN/FAN VSD mode)
VSD FAN STOP T(°C):	0075	VSD fan will stop if element T is below this set data(This data is only available in FAN VSD or MAIN/FAN VSD mode)
FAN PROP GAIN:	0120	Track speed of PID target T , the bigger the data, the faster the track and the less stable the data; the smaller the data the slower the track and the slower the adjustment
FAN INT GAIN:	0010	Track the speed of PID target T and steady state error, the bigger the data ,the faster the track and smaller the steady-state errors; the smaller the data ,the slower the track and bigger the steady-state errors
FAN DIFF GAIN:	0000	Normally set as“0000”, this function is not activated
FAN MAX FREQ(HZ):	050.0	In the process of adjustment, The maximum operating frequency when temperature is over the VSD work temperature
FAN MIN FREQ(HZ):	020.0	In the process of adjustment, The minimum operating frequency when temperature is below the VSD work temperature
VSD FAN POWER COEF:	0.900	Calculate VSD fan power coefficient.
FAN INVERTER ADD:	002	Set the FAN VSD ADD and keep it consistent with VSD COM ADD
FAN PID CYCLE(S):	000.2	Set the PID calculation interval time to adjust fan speed.
FAN INVERTER MODEL:	ATV61	Choose inverter protocol

FAN INVERTER START MODE:	COM/ TERMIN AL	Set fan inverter start mode
VSD FAN ELEC(Kw.H):	000000.00	VSD fan power consumption

1.18 Date

Check and set time

1.19Air Output

Choose output model.

1.20 Operation Authorization and Password

Controller provides multiple passwords and access management. According to different levels of passwords, controller provides different levels of operating authorization, details as following:

1.20.1 CUSTOMER PASSWORD: factory set

Permissions: Allows to modify all CUSTOMER PRAMETER.

1.20.2 FACTORY PASSWORD: fixed

Permissions: Allows to modify all CUSTOMER PRAMETER.

Permissions: Allows to modify BASIC PARAMETER, MOTOR VSD PARAMETER, FAN VSD PARAMETER in FACTORY PARAMETER

1.20.3 CALIBRATE PASSWORD: fixed

Permissions: Allows to modify all CALIBRATE PARAMETER

1.20.4 BLOCK PASSWORD

Permissions: Allows to modify all BLOCK PARAMETER

1.20.5 HARDWARE CONFIG PASSWORD: fixed

Permissions: Allows to modify all HARDWARE CONFIG

1.20.6 MAINTENANCE PARAMETER PASSWORD

Permissions: Allows to modify all MAINTENANCE PARAMETER

1.20.7 INVERTER SET PASSWORD

Permissions: Allows to modify all INVERTER SET

1.20.8 TOUCH CALIBRATION PASSWORD

Permissions: Allows to modify TOUCH ACCURACY

1.20.9 SCHEDULED P PASSWORD

Permissions: Allows to modify all SCHEDULED P PARAMETER.

1.20.10 SCHEDULED ON/OFF PASSWORD

Permissions: Allows to modify all SCHEDULED ON-OFF PARAMETER

1.20.11 MOTOR VSD PASSWORD: fixed

Permissions: Allows to modify all MOTOR VSD PARAMETER

1.20.12 FAN VSD PASSWORD: fixed

Permissions: Allows to modify all FAN VSD PARAMETER

2, Controller Function and Technical Parameter

2.1 Ambient temperature: -20°C～+60°C; Humidity: ≤98%;

2.2 Digital input& output: 4 points of digital input (function optional), 6 points of digital relay output

2.3 Analog input& output: 1 points of Pt100 temperature input. 2 groups of three phases current input (CT provided).

2.4 Input voltage of phases: 380V/ 220V.

2.5 Over voltage, low voltage protection.

2.6 Controller operation power supply: AC16-28V, 20VA

2.7 Measurement:

2.7.1 ELEMENT T:-50~350°C; Accuracy: ±1°C.

2.7.2 Running time: 0~999999H.

2.7.3 Current: 0~999.9A.

2.7.4 Pressure: 0~1.60MPa; Accuracy: 0.01Mpa.

2.9 Motor protection: This controller provides open phase, unbalance and overload protection to motor, and also, provides overload protection to fan.

2.9.1, Open phase protection：When any phase opens, the response time equals to set time；This function is not activated when open phase protection time is set over 20s;

2.9.2, Unbalance protection: when MAX-MIN current >= SET DATA *MIN current/10 ,respond time is 5s;

2.9.3, Protection features of overload (time unit: second), please see following table (table 2.9.3.1) for your reference. Multiple＝Iactual / Iset ,response time is shown in following table (table 2.9.3.1) according to overload multiples from 1.2 times and 3.0 times;

Iactual/Iset Time parameter	≥1.2	≥1.3	≥1.5	≥1.6	≥2.0	≥3.0
Response time (S)	60	48	24	8	5	1

Table 2.9.3.1 curve table for protection of motor

2.10 Temperature protection: when actual temperature measured is higher than temperature set; response time≤2s;

2.11 Contact capacity of output relay: 250V,5A；Contact endurance: 500000 times;

2.12 Current error is less than 1.0%;

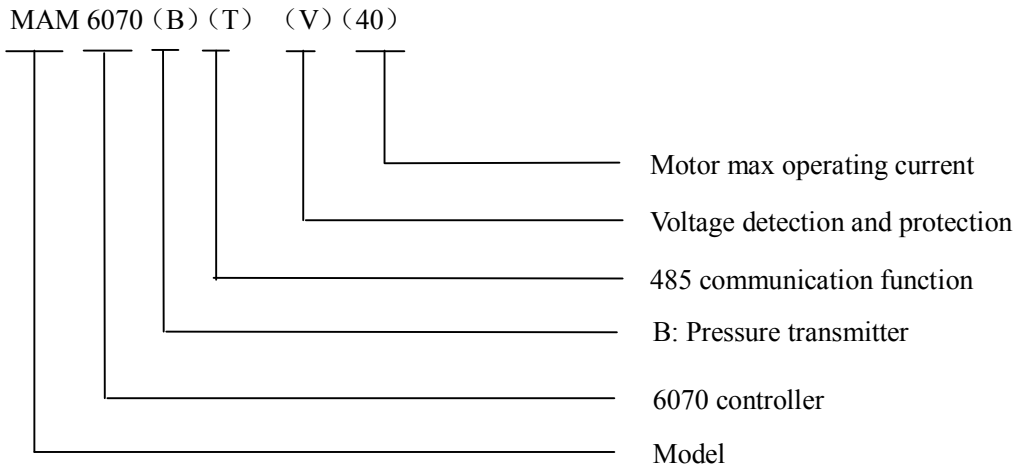
2.13 Two RS485communication port. 1 port is for block mode or computer communication;

The other port is for inverter communication like reading inverter run parameter, controlling inverter on-off or adjusting inverter frequency;

2.14 Remote control compressor: When set as REMOTE, user can remotely control the compressor.

3, Model and Specification

3.1 Model Explanation



3.2 Power Specification Sheet for Corresponding Motor

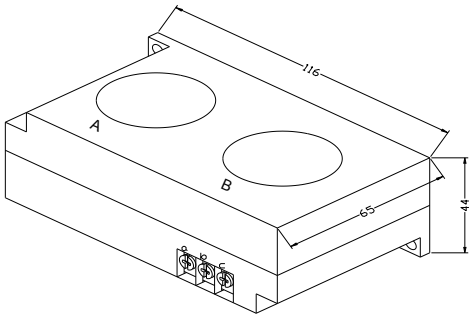
Specification	Current Range (A)	Corresponding Main Motor Power (KW)	Remark	Description
MAM6090 (20)	8~20	Below 11		Fan has three levels of current, such as 0.2-2.5A, 1-5A and 4-10A, determined-by current of motor
MAM6090 (40)	16~40	11-18.5		
MAM6090 (100)	100	22-45		
MAM6090 (200)	200	55-90		
MAM6090 (400)	400	110		
MAM6090 (600/5)	600/5	200-250	With CT	

Table 3.2.1 Power specification sheet for corresponding motor

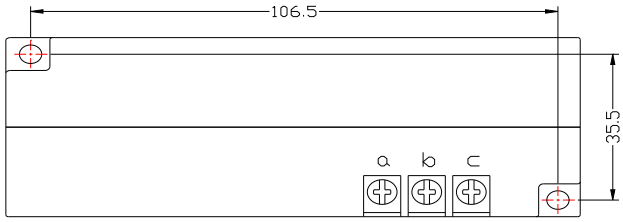
4, Installation

4.1 Current transfomer Installation

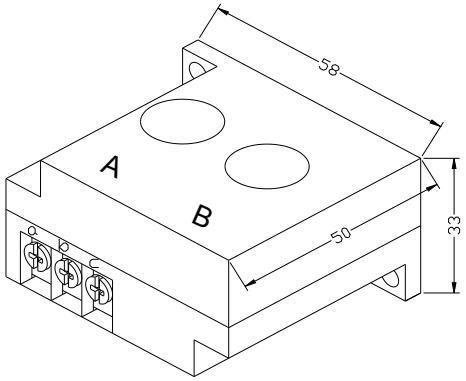
The CT shall be installed at a place where the current of motor cable can be measured, thus, controller can be set according to instructions on motor nameplate, and the detailed dimension is shown as below:



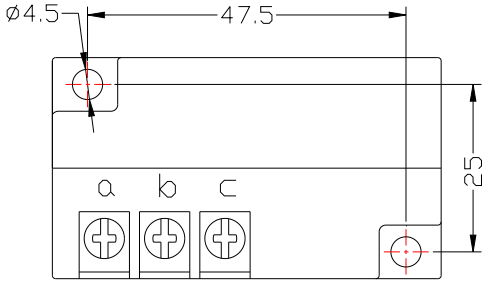
Picture 4.1.1 Structural dimension of CT1（ϕ36hole）



Picture 4.1.2 Installation dimension of CT1



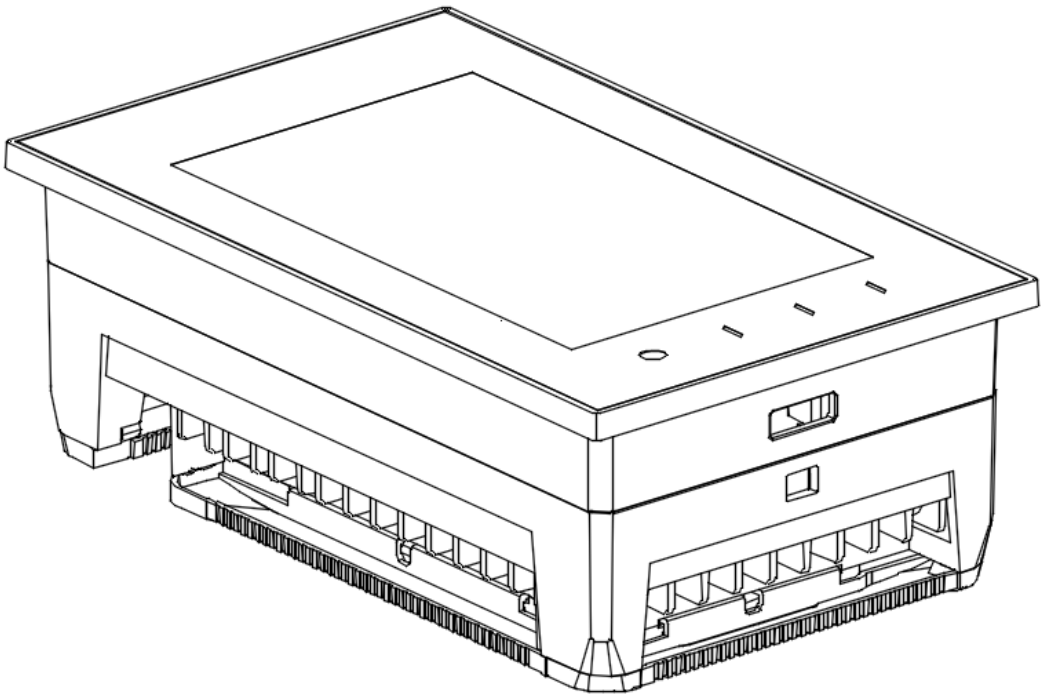
Picture 4.1.3 Structural dimension of CT2（ϕ10hole）

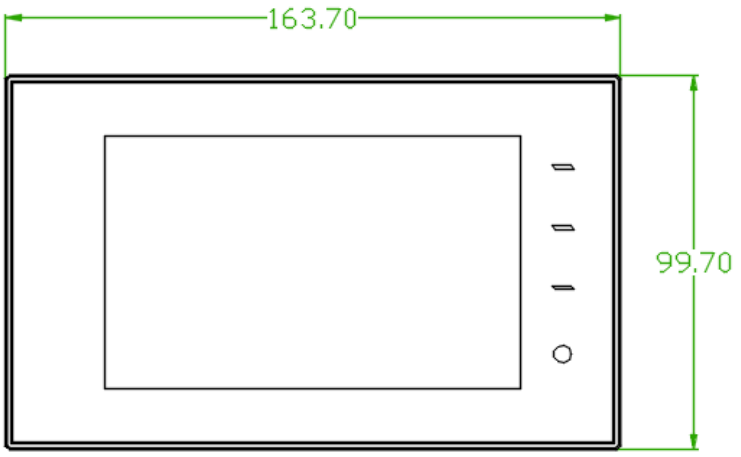


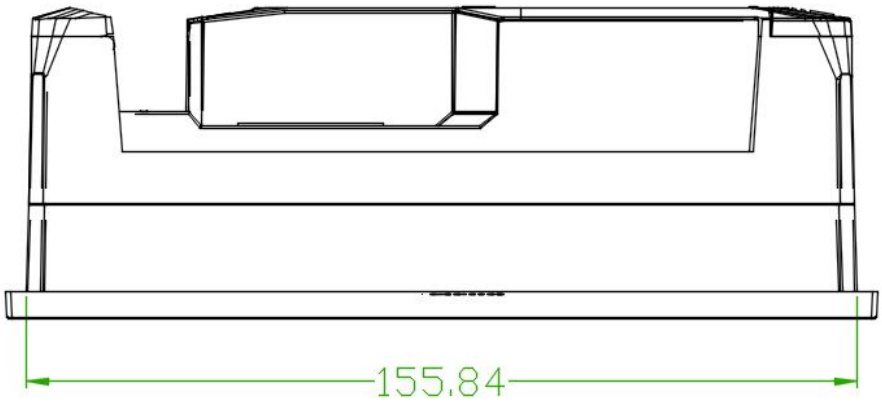
Picture 4. 1.4 Installation dimension of CT2

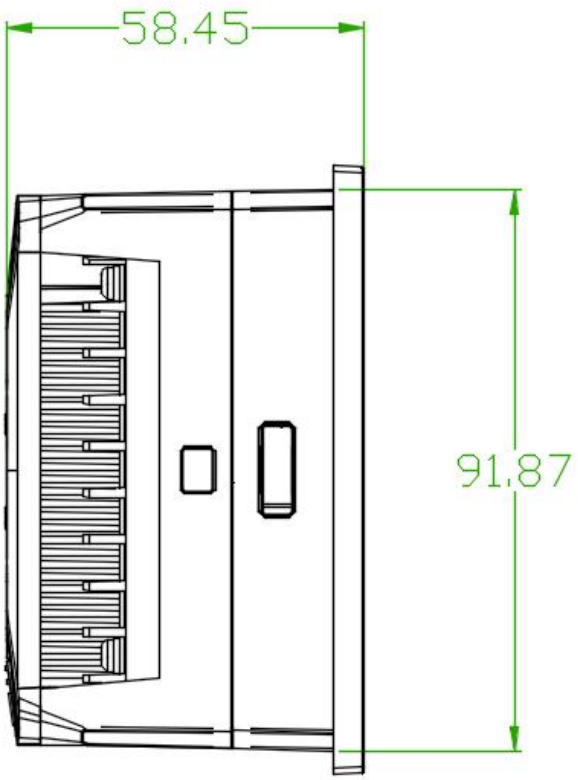
4.2 Controller installation

When install the controller, space should be left around controller for wiring. The specific dimension is shown as below:

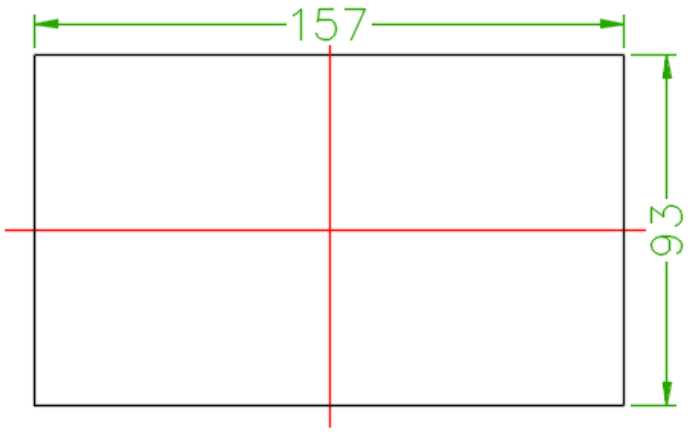



163.70
99.70


155.84



4. 2.1 Controller structure dimension



Picture 4.2.3 Hole size

5, Alarm Function

5.1 Air Filter Alarm

① Air filter blocking check. (In hardware configuration, there is air check function set in digital input terminal)

The monitor displays air filter blocking by checking pressure differential switch close.

② Air filter running time alarm

The text displays air time end when running time of the air filter is exhausted.

5.2 Oil Filter Alarm

① Oil filter blocking check. (In HARDWARE configuration, there is oil check function set in digital input terminal)
The monitor displays OIL blocking by checking pressure differential switch close.
② Oil filter running time alarm
The text displays OILTIME END when running time of the oil filter is exhausted.

5.3 O/A Separator filter Alarm

① O/A separator filters blocking check. (In HARDWARE configuration, there is O/A check function set in digital input terminal)
The monitor displays O/A blocking by checking pressure differential switch close.
② O/A separator filter running time alarm
The text displays O/A TIME END when running time of the separator filter is exhausted.

5.4 Lubricant Alarm

The text displays LUBE TIME END when running time of the lubricant is exhausted.

5.5 Grease Alarm

The text displays GREASE TIME END when running time of the grease is exhausted.

5.6 Element Over Temperature Alarm

The text displays ELEMENT OVER T when ELEMENT T is higher than ALARM ELEMENT T set in FACTORY PARAMETER.

6, Controller Protection

6.1 Motor Protection

MAM6070 compressor controller provides overload, open phase, unbalance, high voltage, low voltage protection to motor and overload protection to fan.

Electronic Failure	Failure Display	Reason
Overload	Display ":MOTOR/FAN CURR OVLD"	Overload, bearing wear and other mechanical failure
Open phase	Display "MOTOR CUR OPEN PHASE"	Power supply, contactor and open phase of motor
Current Unbalance	Display "MOTOR CURR UNBAL"	Poor contact of contactor, inside open loop of motor
Over Voltage	Display "OVER VOLTAGE"	Motor voltage high
Low Voltage	Display "LOW VOLTAGE"	Motor voltage low

6.2 Protection of Element Temperature High

When ELEMENT T is above the STOP ELEMENT T, the controller will alarm and stop the machine. THIS FAULT displays ELEMENT OVER T

6.3 Protection of Air Compressor wrong rotation

When compressor is at stop status and three phases sequence is not in order, this fault displays phase wrong 1, and the controller cannot start the motor. Change the position of any arbitrary two phase power lines and check the rotation of motor.

6.4 Protection of Air compressor Open Phase

When compressor is at stop status and open phase is detected, this fault displays phase wrong2, and the controller cannot start the compressor. Check the three phase.

6.5 Protection of Air Pressure Over

When the AIR P is above the MAX LIM P, the controller will alarm and stop the machine. This fault displays over P.

6.6 Protection of Sensor Fault

When pressure sensor or temperature sensor is disconnected, the controller will alarm and stop the machine. “This fault displays **sensor fault”.

7, Trouble Shooting

Failure	Reason	Solution
Element over temperature	Bad vent condition, Oil shortage etc.	Check the vent condition and lubricant amount etc.
Temperature Sensor Failure	Cable broken or PT100 failure	Check the wiring and PT100
Over Pressure	Pressure too high or the pressure sensor failure	Check the pressure and the pressure sensor
Pressure Sensor Failure	Cable broken, Sensor failure or the cables connect reversely	Check the wiring and pressure transmitter
Open Phase	Power open phase or the contactor failure	Check the power and contactors

Overload	Voltage too low, tubes block, bearing wear off or other mechanical failure or wrong set data etc.	Check the set data, voltage, bearings, tubes and other mechanical system.
Unbalance	Current unbalance, contactor failure or the internal open loop of the motor	Check the power, contactor and the motor
Wrong Phase Sequence	Phase sequence reversal or open phase	Check the wiring
Motor overload during start	Master start time set to less than the star delta delay time	Reset the master start time longer than star delay + 2 seconds
Main Contactor shakes frequently	The emergency stop button is loose or controller is reset by interference	Check if the coil of contactor connects with RC snubber or not
Inverter Communication Fault	Wrong set of relatively parameter of controller and inverter; Communication cable loose	Check the set data; Check the cable

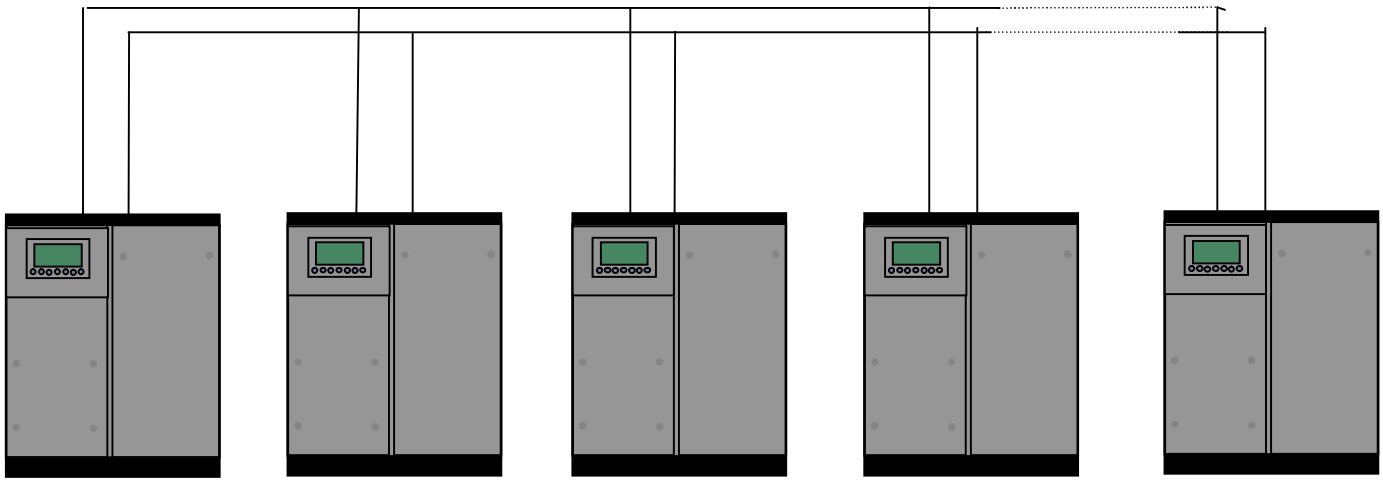
8, Block control and Network communication

8.1 Block Control：

MAM6070 controller can work in block mode with MAM series compressor (with communication function).16 pieces compressors can work together in a net at most. Block mode can be set as VSD –VSD,PF-PF or VSD- PF .The cable connection for block mode control is as below....1,2 terminals (RS485 terminal) are used for block mode.

In BLOCK PARAMETER SET menu, set as VSD-VSD or PF-PF, master chooses compressor to work according to the TOTAL RUN TIME. Compressor with shorter running time is chosen to start and compressor with longer running time is chosen to stop with priority.

In BLOCK PARAMETER SET menu,, set as VSD-PF, master works first, other compressors work according to the TOTAL RUN TIME. Compressor with shorter running time is chosen to start and compressor with longer running time is chosen to stop with priority.



No.1 No.2 No.3 No.4 No.N

Compressor with COM ADD 0001 is master, others are slave. Any one MAM series compressor can be set as master or slave

8.1.1 Network Control Set:

8.1.2.1 Set as Master:

Set the COM ADD in USER PARAMTER to 001

According to user requirement, set com mode, block number, turn time, block load p, block UNLD p, block delay, block mode .after set, and controller needs to be powered off and restart to save setting.

8.1.2.2 Set as Slave:

When MAM6070 controller serves as slave, it is only necessary to set COM MODE as BLOCK, COM ADD can be set from2-16 in sequence according to the quantity of compressors, .BLOCK STATUS set as SLAVE.

8.1.2 Start, Stop Block mode:

Make sure block cables connect correctly; also the parameter of compressor in block mode is set correctly. Activate master, master controls the compressor in net automatically according to the AIR P detected. When manually stop the master, block control stops at the same time, thus, master will no longer send command to compressors in net.

8.2 Network Communication

MAM6070 controller supports MODBUS RTU protocol and can serve as slave when connects with other equipment .It is supports 03, 06, 16 MODBUS command. Communication baud rate: 9600BPS, 1 start bit, 8 data bits, 1 stop bits and even parity. For MODBUS register address, please see MODBUS communication manual.

9, Inverter Control

485 communication control

There is one spare port for RS485 to communicate with inverter. User can start or stop controller through RS485,it transfers the output frequency based on PID calculation to inverter through 485 port. This is how to adjust inverter output frequency and realize constant pressure and temperature. The baud rate is fixed as 9600BPS when RS485 control inverter. Different inverter data format can be set in INVERTER SET in FACTORY PARAMETER. MOTOR INVERTER is suggested to be set as 0001, FAN INVERTER is 0002.

In order to be compatible with different inverter, set the item such as CURR(R) ADD, VOLT(R) ADD, FREQ(R) ADD, POWE(R) ADD, RUN (W) ADD, ERR STATE(R) ADD, FREQ(W) , RESET(W) ADD. For different inverter, amplification of current, voltage, frequency, power is different. Write a formula to every parameter to transfer current, voltage, frequency, power of inverter to one digit data.

Relative parameter introduction is as below, please take the Schneider 67, 71 inverter as example

Item	Data Set	Explanation
INVERTER NAME	0ATV61	Set inverter name
RUN(W) ADD1	2135	Corresponding address 1 of inverter start command
RUN VALUE	0001	This data is inverter start data (please refer to communication chapter in inverter manual for different inverter.)
RUN(W) ADD2	2135	Corresponding address 2 of inverter start command
RUN VALUE	0001	This data is inverter start data (please refer to communication chapter in inverter manual for different inverter.)
STOP(W) ADD	2135	Corresponding address of inverter stop command

RUN VALUE	0001	This data is inverter start data (please refer to communication chapter in inverter manual for different inverter.)
RESET(W) ADD	2135	Corresponding address of inverter reset command
RUN VALUE	0001	This data is inverter start data (please refer to communication chapter in inverter manual for different inverter.)
FREQ(W) ADD	2136	Corresponding register address of inverter running frequency source
FREQ(R) =	REC*0001÷0001	The REC value is frequency value with one decimal. Use formula to transfer to corresponding value based on different inverter and
STATE(R) ADD	2135	Read inverter running status address
RUN S =	R AND 0001=0001	Check if inverter has run the formula(please refer to communication chapter in inverter manual)
COM FORM	8N1-N	Set the data format of controller and inverter communication. This set should be consistent with inverter communication format
FREQ(R) ADD	0C82	Read inverter frequency address(refer to inverter manual)
FREQ(R) =	REC*0001÷0001	Calculate inverter frequency formula. Controller will transfer the frequency to one decimal.
VOLT(R) ADD	0C88	Read inverter voltage address
VOLT(R) =	REC*0001÷0001	Calculate inverter voltage formula. Controller will transfer the voltage to one decimal
CURR(R) ADD	0C84	Read inverter current address
CURR(R) =	REC*0001÷0001	Calculate inverter current formula. Controller will transfer the current to one decimal
POWE(R) ADD	0C8B	Read inverter power address
ERR S =	R AND 0000≠0000	Inverter reports error formula or not
EMERGENCY ADD	2135	Corresponding add of inverter emergency stop command
RUN VALUE	0001	This data is inverter free stop data (please refer to communication chapter in inverter manual for different inverter.)

Firstly, controller sends 0 to corresponding register of"STATE(R) ADD" through inverter. After delay for a while, sends 1 to corresponding register of "RUN1(W) ADD". After another delay, reads" RUN S"register, and judges if the inverter is running based on the set formula. Calculate the output frequency based on the comparison of pressure detected and pressure set and send this value to corresponding address of "FREQ(R) ADD" through formula operation.

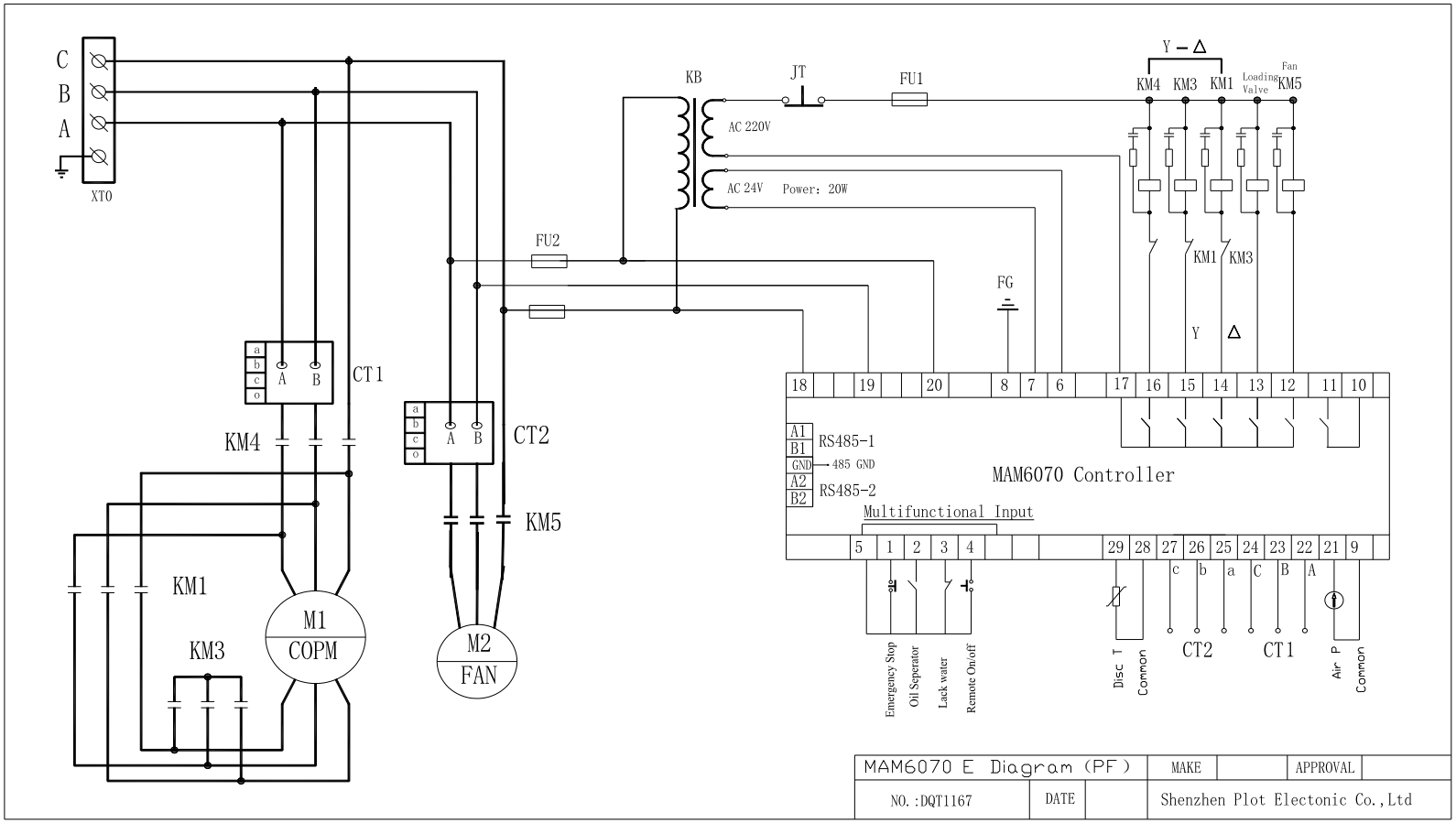
Schneidel inverter parameter set:

1、CON |AD2-
|AD1-|ADD :1
|EBr :96
|EFO :8N1
|EEO :15
CTL- | Fr1 :ndb
|rln
|PST

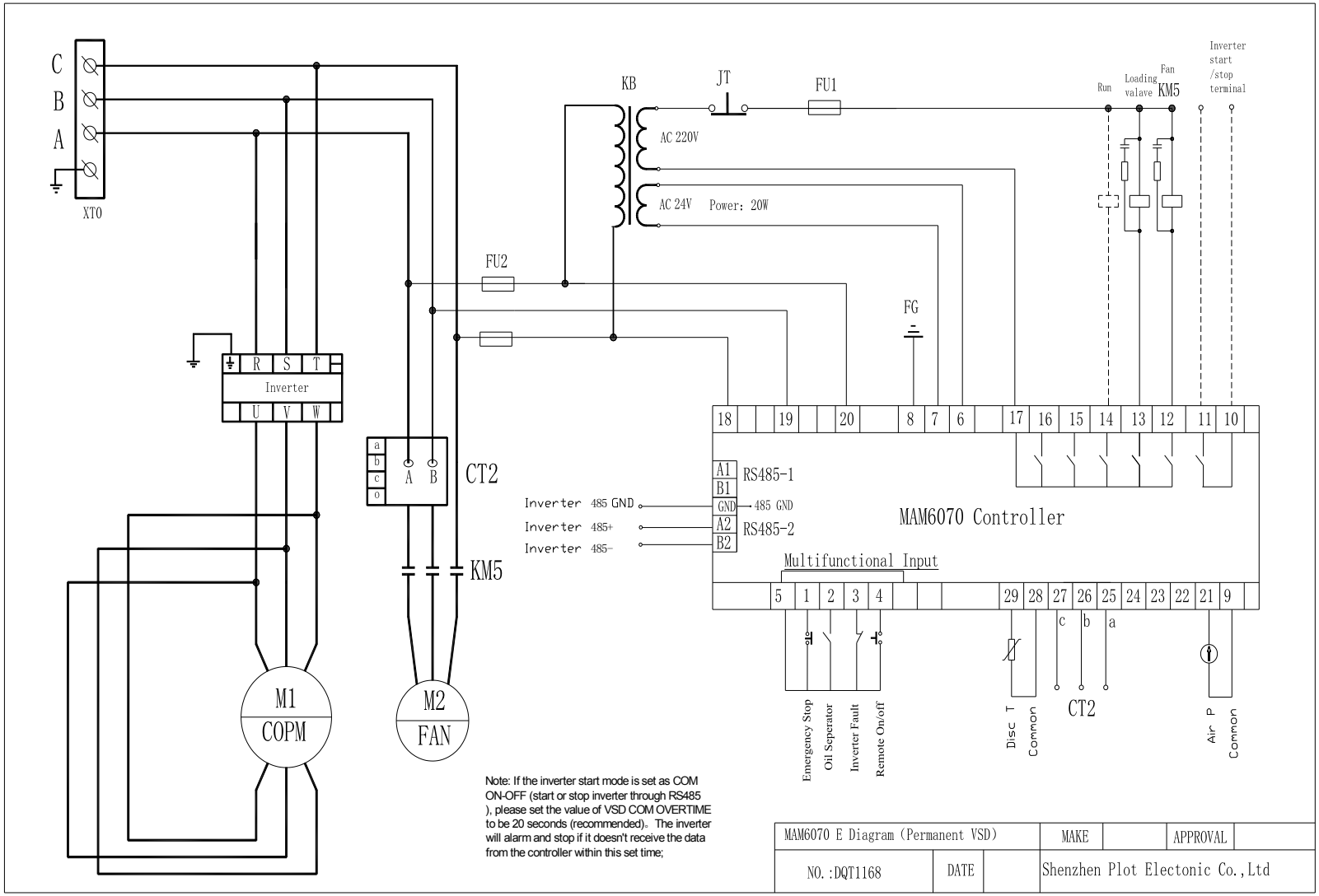
|CHCF :IO
|CD1 ： ndb
Flt- | PTC-
|rST- | rSF :C107

10, Schematic Diagram

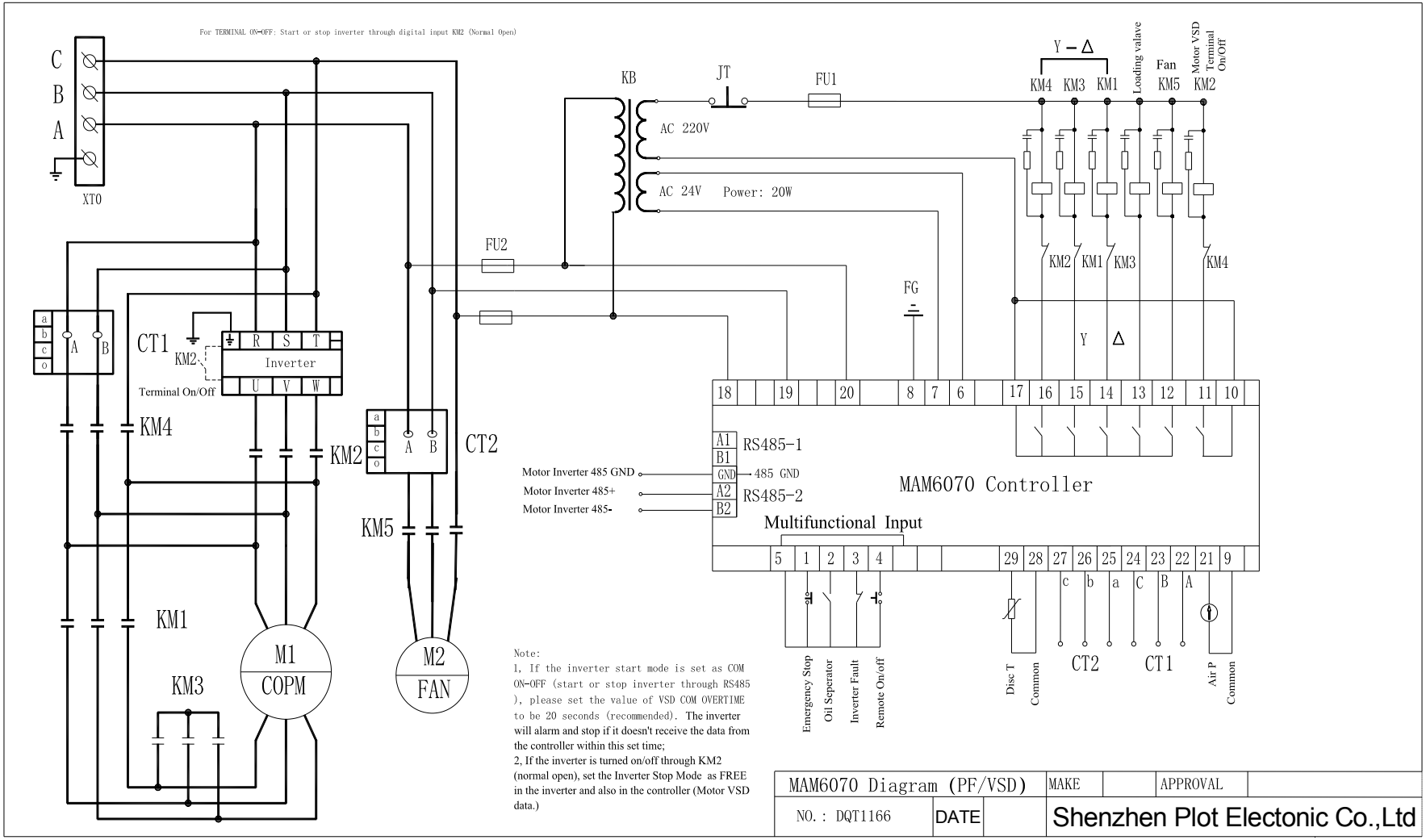
10.1 PF



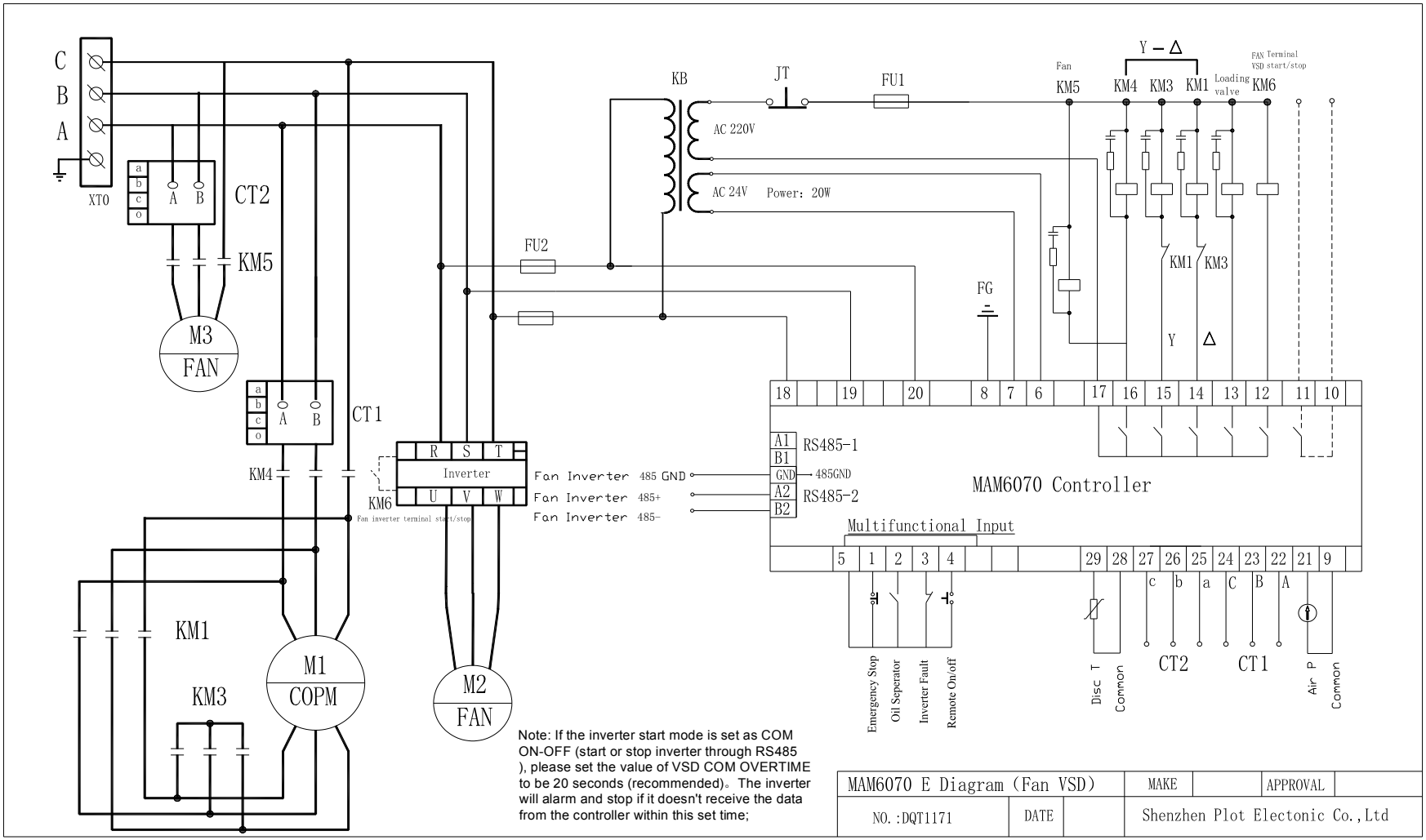
10.2 PM/MOTOR VSD



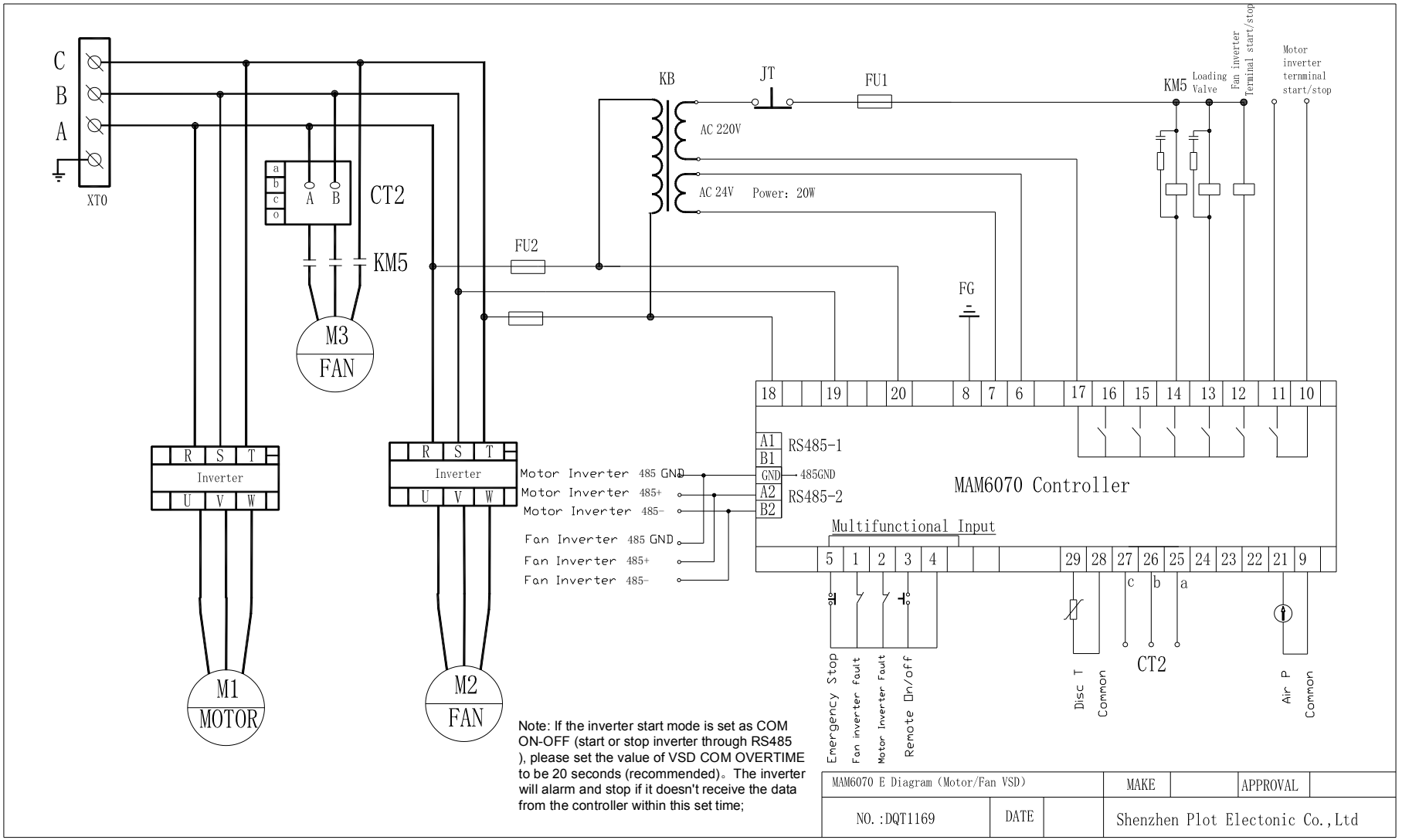
10.3 PF/VSD


For TERMINAL ON-OFF: Start or stop inverter through digital input KM2 (Normal Open)
C
B
A
XT0
KB
JT
FU1
AC 220V
AC 24V Power: 20W
FU2
FG
Y－Δ
KM4 KM3 KM1
Loading valave
Fan KM5
Motor VSD Terminal On/Off KM2
KM2 KM1 KM3 KM4
Y Δ
CT1
KM2
Inverter
R S T
U V W
Terminal On/Off
KM4
KM2
KM5
CT2
KM1
KM3
M1 COPM
M2 FAN
18 19 20 8 7 6 17 16 15 14 13 12 11 10
A1 RS485-1
B1
GND 485 GND
A2 RS485-2
B2
Motor Inverter 485 GND
Motor Inverter 485+
Motor Inverter 485-
MAM6070 Controller
Multifunctional Input
5 1 2 3 4 29 28 27 26 25 24 23 22 21 9
c b a C B A
Emergency Stop
Oil Seperator
Inverter Fault
Remote On/off
Disc T
Common
CT2
CT1
Air P
Common
Note:
1, If the inverter start mode is set as COM ON-OFF (start or stop inverter through RS485), please set the value of VSD COM OVERTIME to be 20 seconds (recommended). The inverter will alarm and stop if it doesn't receive the data from the controller within this set time;
2, If the inverter is turned on/off through KM2 (normal open), set the Inverter Stop Mode as FREE in the inverter and also in the controller (Motor VSD data.)
MAM6070 Diagram (PF/VSD)
MAKE
APPROVAL
NO.: DQT1166
DATE
Shenzhen Plot Electonic Co.,Ltd

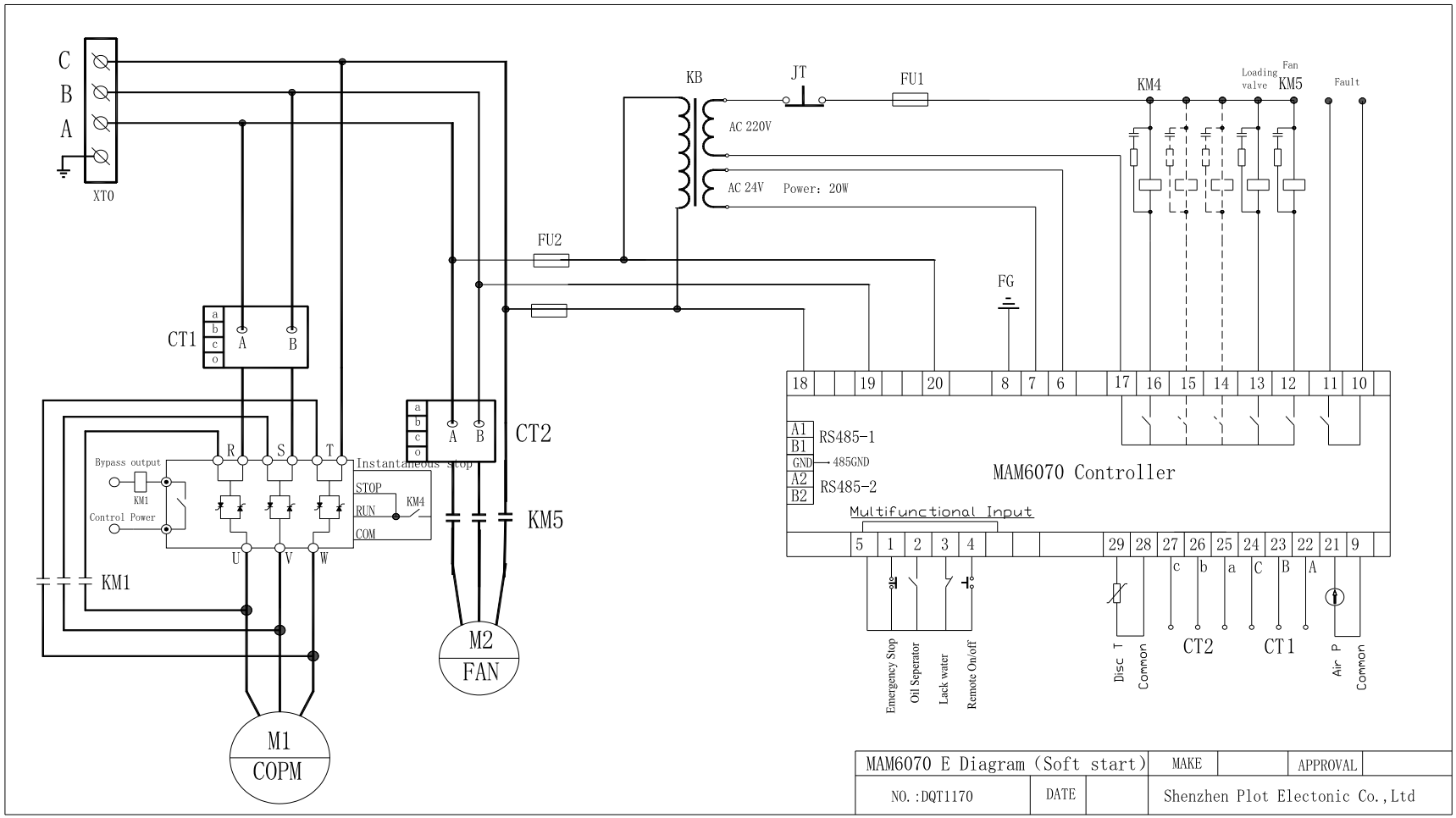
10.4 FAN VSD


C
B
A
XT0
CT2
KM5
M3
FAN
CT1
KM4
KM6
Inverter
R S T
U V W
Fan inverter terminal start/stop
KM1
KM3
M1
COPM
M2
FAN
FU2
KB
JT
FU1
AC 220V
AC 24V Power: 20W
FG
Fan
KM5
KM4 KM3 KM1
Loading valve
KM6
FAN Terminal VSD start/stop
Y – Δ
KM1 KM3
Y Δ
18 19 20 8 7 6 17 16 15 14 13 12 11 10
A1 RS485-1
B1
GND 485GND
A2 RS485-2
B2
Fan Inverter 485 GND
Fan Inverter 485+
Fan Inverter 485-
MAM6070 Controller
Multifunctional Input
5 1 2 3 4 29 28 27 26 25 24 23 22 21 9
c b a C B A
Emergency Stop
Oil Seperator
Inverter Fault
Remote On/off
Disc T
Common
CT2
CT1
Air P
Common
Note: If the inverter start mode is set as COM ON-OFF (start or stop inverter through RS485), please set the value of VSD COM OVERTIME to be 20 seconds (recommended)。The inverter will alarm and stop if it doesn't receive the data from the controller within this set time;
MAM6070 E Diagram (Fan VSD)
MAKE
APPROVAL
NO.:DQT1171
DATE
Shenzhen Plot Electonic Co.,Ltd

10.5 MOTOR/FAN VSD



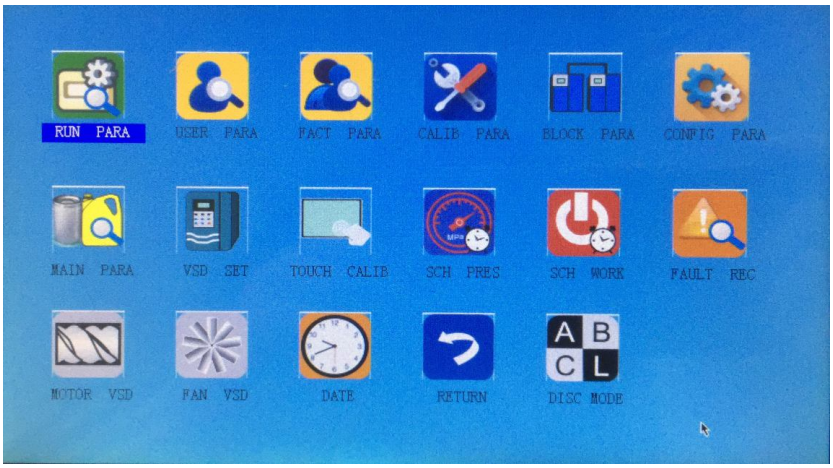
10.6 SOFT START



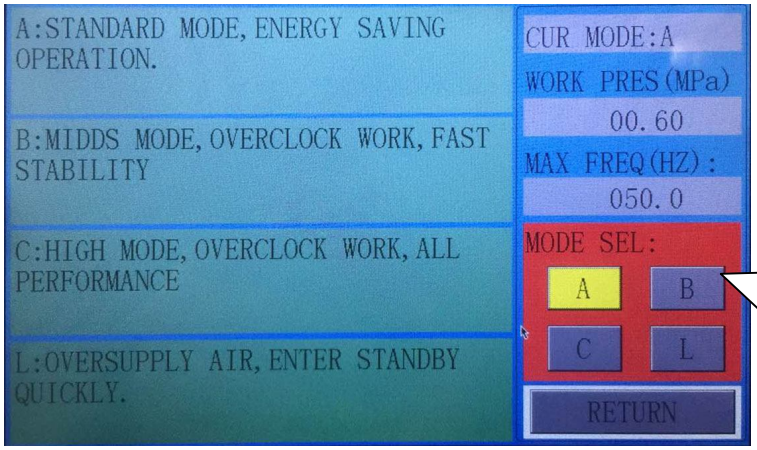
Appendix：Output Mode Introduction:

We add 4 control mode options to controller 6080、6090、6070. User can choose to open or close this function. The introduction is shown as below:

Turn on “output option” in motor VSD parameter, than menu selection interface will increase “output option”. Shown as below:



Click “output option” and enter the interface as shown in the below. Users can choose the proper speed adjustment mode according to their needs.



When the “Mode” is closed here, need to open “output option” in motor VSD parameter

- Mode A: In this mode, the motor is speeded up to motor rated frequency according to inverter maximum acceleration performance after start. After running for some time, pressure is close to constant pressure, then to judge whether brake intelligently according to pressure rise speed, and stabilize pressure to a constant pressure point in one time. (the old version software adopts the model)
- Mode B: (Overclocking operation) In this mode, the motor is speeded up to the corresponding frequency value according to constant power pressure point set by users after start. After running for some time, pressure is close to constant pressure, then to judge whether brake intelligently

according to pressure rise speed, and stabilize pressure to a constant pressure point in one time. (New mode 1)

- Mode C :(Overclocking and high speed operation). In this mode, the motor is speeded up to the corresponding frequency value according to constant power pressure point set by users after start. Make fastest air output. This mode will take full advantage of the air compressor. (New mode 2)
- Mode L: This mode, based on the mode A, to reduces the running time in low frequency and to achieve the best energy saving effect. (New mode 3)