Universal Intelligent Controller

UIC-DX330 Series
Screw Air Compressor Controller

2005-Dec rev. 1

Firmware v2.7b R071116

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DOTECH, INC

※ Read this direction for safety first..

▣ Direction for safety

This direction is for using the product correctly so that you could be safe from danger or incident.

Please carefully keep this all direction.

- Please use with being attached to a dual safety device in case of using for controlling instruments which could be effective to human life or property (eg: controlling atomic energy, medical instruments, cars, trains, flights, burners, amusement instruments or safety machinery).
- Please use with panel, there is a possibility getting an electric shock.
- **Do not inspect or test with connecting power.**
- **Please connect after checking the terminal number when connecting power.**
- Do not reorganize except mechanic from 『Dotech』.
- Do not use outdoor. It would be a cause making the product life shorter.
- When connecting wires, please give a good screw on terminal. There is a possibility causing a fire with bad connection.
- Please use in the proper performance zone. If you don't, there is a possibility making the product life shorter or, causing a fire accident.
- Do not use a load which is exceeded proper value of opening and shutting capacity of a relay contact. This will cause bad insulation, bad contact and bad connection.
- When cleaning, water or liquid including oil are prohibited, only clean with soft and dried cloth.
- Do not use in the place where there is inflammability gas, explosiveness gas, moisture, a direct ray of light, radiation, vibration and a shock.
- Please prevent from getting a dirt or leftover wire inside of this product.

When connecting a sensor, please connect correctly after checking the polarity.

Some of the setting, size etc. on this manual could be changed without an advance notice.

. Warranty Information

This is the warranty below for customer who has a license or product from 『Dotech』.

condition of warranty

The warranty period for 『Dotech』 products is a year so that it is provided support of the product during the warranty period.

『Dotech』 does not have a responsibility for problems of product under the circumstance below.

In the case of using without concerning the proper form mentioned on the manual.

In the case of problems caused from both external artificial and environmental factors.

Please contact 『Dotech』 in advance if there is any problem of product caused during the warranty period.

If the problem of product is informed from customer in the warranty period, it will be checked up in the customer area or sent to 『Dotech』 to check and conduct repair of exchange services directly. If the product is over the warranty period or that is on the condition that it is not mentioned on manual, customer would be suggested to pay the cost of repair, exchange and delivery.

On the condition that suggestions for 'Warranty Condition Performance' below are not against the law, 『Dotech』 is not responsible for any compensation and guarantee caused by losses or damages by business interruption, loss, return.

Warranty Condition Performance

Dotech is not responsible for any loss, damages, expenses insisted by customer, delegate, contractor except for customer claims caused by the condition of warranty above.

The condition of warranty mentioned above is the exclusive customer's right. Dotech refuses any conditions of warranty for special purpose except for the condition of warranty.

Warranty Condition Performance does not apply any trouble caused by not following exact direction. It is responsibility for customer to decide usage or product.

All the conditions of warranty are actually applied and Nobody has authority to modify or extend.

Revision Information

Nov. 17, 2007: Revision #1 (F/W Rev 2.7b R071116)

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※ Please check the product to the model ordering before usage.

Model	Suffix Code	Description
DX330		UIC for Screw Air-Compressor
Type	- L	Basic Model
	- M	Multi-Function Model
	- V	VSD Model
Language	-	Korean
	- E	English
	- C	Chinese
	- A	Customer Language

※ Related Product Information.

Exclusive Temp. Sensor (DPR-TH02-06D100L) : Delivery Temp., Oil Reclaimer Temp.

Exclusive Temp. Sensor (DPR-TH1-ET) : Ambient Temp. Sensor

Pressure Sensor (DP500 Series) : Delivery Pressure, Oil Reclaimer Pressure

DX330 Exclusive Transformer : AC220V / AC24V

DX380 : Equipment Number Control Unit – Max. 8 units

DA-32 : Equipment Number Control System (Touch Screen Type), Max. 32 units

DA-100 : DX330 Monitoring & Trend System (Free of Charge)

※ Related Product Information

DX330 MODBUS RTU PROTOCOL MANUAL (PDF)

Pressure Sensor Data (PDF)

Temp. Sensor Data (PDF)

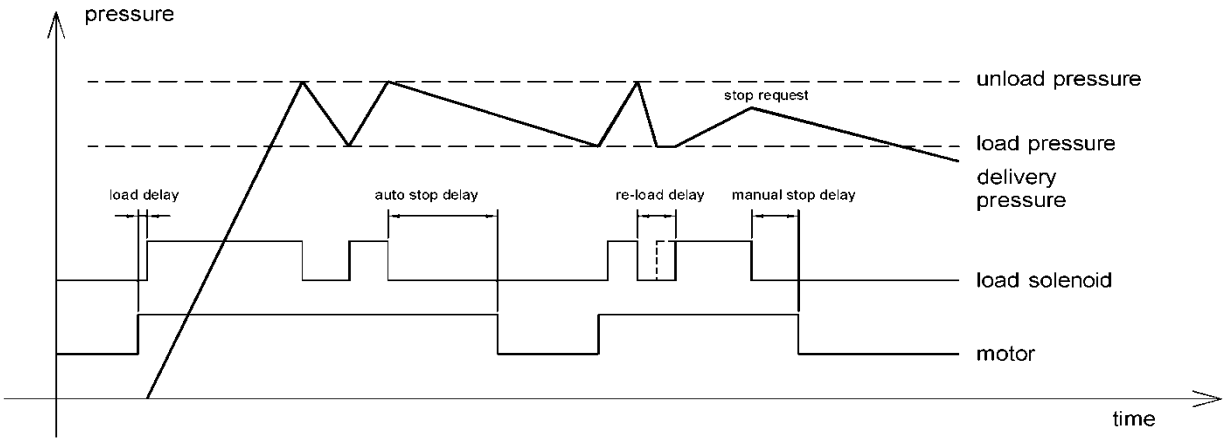
Wiring Diagram (PDF,DWG)

1. OUTLINE

UIC-DX330 is based on Micro Processor and the most advanced equipment for controlling electricity conducting efficient operation of a screw air compressor. UIC-DX330 is a system managing the compressor's operation intensively, saving energy through controlling of timing for capacity adjustment, preventing problems in advance with alarming system and informing the required preventative and maintenance schedule. In the other word, UIC-DX330 conducts the best operation (control) according to the condition set up and operating circumstance.

Additionally, UIC-DX330 has VSD and PID function together as an option, so it is possible to reduce more than maximum 30% of energy cost.

- High reliability **RISC MICOM**
- Big size graphic LCD which is available for Korean/English/Chinese/Japanese
- Max 160 events of running log storable (Non-volatile) – Easy preventative & maintenance and analysis for trouble
- Automatic calculation and notice function for preventative & maintenance, consumable parts exchange information and expected schedule
- Automation of economical operation by embedded weekly timer
- Various analogue outputs. (Inverter speed control, dispatch pressure transmission, delivery temperature transmission)



Unload pressure : Pressure value under unload operation with closing intake valve on compressor

Load pressure : Pressure value under load operation with opening intake valve on compressor

Load delay : Delay time when compressor starts load operation from starting

Re-load delay : Minimum delay time when compressor start load operation from unload operation

Auto stop delay : Compressor is stopped in case of continuous operation at unload operation during auto stop delay time.

Manual stop delay : Compressor is stopped after unload operation during manual stop delay time.

1) Special Advantages

UIC-DX330 is a stable electronic control unit for screw air compressor which can provide users with multi-language (currently Korean, English, Chinese and Japanese) display and running log for integral control and management of the equipments. It adopts the method of digital process by high efficiency RISC type microprocessor and occupies enough installation space and stability by unifying display module and control module. It provides convenience to let users know a status of operation at once through display.

1-1) Noise Solution

It is inevitable to figure for noise as an industrial controller. The digital input and output signal of UIC-DX330 is isolated, so it can not be allowed to flow external signal into the main board inside. Also, CPU on main board mounts HARDWARE WATCHDOG TIMER which can automatically recover from CPU down occurred by noise per 32msec, and BROWN-OUT function embedded in CPU inside supervises control power in real-time.

1-2) **RISC TYPE MICOM**

An assembler instruction in CPU can perform 7.3728Mbps, and logic for controlling written in CPU inside needs about 1 msec based on 1 cycle. In this regard, sampling rate is about 10 times faster than the existing controllers, so it has less probability of malfunction and more precise control.

1-3) Black Box : A recorder of operation status

It is possible for UIC-DX330 to store maximum until 160 events of running log, so it is easy for preventative & maintenance and trouble-shooting. Additionally, it is possible to verify the operation data at site when trip occurs, so it is helpful for users to know the reason of trouble and the status of equipment in real-time.

1-4) Display for operation status and/or maintenance information (trip computer)

UIC-DX330 has the display function for operation status, delay time and ready time by counting reversely, so users can recognize the status of compressor at a glance. Also, it has the basic function to notify parts and oil checking and exchanging schedule by calculating it automatically according to the information of operation.

1-5) Big Size Graphic LCD (Wide Temperature Range Type : -20 ~ +70℃)

Display part of UIC-DX330 adopts big size graphic LCD for user's easy operation and recognition. (Currently applicable for Korean, English, Chinese and Japanese)

1-6) Minimization

It is possible to minimize compressor by occupying a small space due to unifying design of control part and display part.

1-7) Scalability

It provides users with RS485 port, MODBUS RTU standard protocol and MMI software and automatic interface.

2) Basic Specification

2-1) General Specification

Power Conditions	Input Power	AC24V 50/60Hz, DC24V
	Power Consumption	Max. 20VA

2-2) CPU & LCD

CPU, LCD	C P U	AT mega 128, 16MHz
	L C D	240 X 128 pixel, LED Backlight

2-3) Digital Input & Output

Digital Input	Input Type	Opto-Isolation
	Number of Input	10Points (5 X 2 Common)
	Signal Power	AC24V or DC24V
Digital Output	Output Type	Relay Contact
	Number of Output	12Points (4 X 3 Common)
	Relay Contact Type	250V, 10A

2-4) Analogue Input & Output

Analog Input	Temp. Sensor	NTC 3 Points
	4~20mAdc	2 Points (Internal Sensor Power 24V)
	Correction of Deviation	Software
Analog Output	Number of Channel	3 Channels
	Output Type	4~20mA
	Setup Type	Software

2-5) Communication Specification

Communication	Type	RS485(Half-Duplex), 1 Channel (Modbus RTU)
	Speed	4800, 9600, 19200, 38400 BPS (default 9600) Parity None, Data 8bit, Stop 1bit
	Distance	Max. 1.2Km
	Recommended Cable	BELDEN 9842 or 8761

2-6) Installation Circumstance

Installation Circumstance	Place	Indoor
	Operation Temp.	-10 ~ 60 ℃
	Storage Temp.	-30 ~ 80 ℃
	Operation Humidity	5~95% (No condensation)

2. Input / Output Specification

1) Digital Input Signal

Pin	Name	Function	Active state
J13.1	ID1	Emergency Stop S/W Signal	Fault (open)
J13.2	ID2	Overload Fan Motor Signal	Fault (open)
J13.3	ID3	Overload Main Motor Signal	Fault (open)
J13.4	ID4	Reverse Phase Unit Signal	Fault (open)
J13.5	ID5	Reserved Input Signal	
J13.6	IDC1	Input Common Terminal 1	

Pin	Name	Function	Active state
J14.1	ID6	Oil-Filter High DP Alarm Signal	Alarm (closed)
J14.2	ID7	Air-Filter High DP Alarm Signal	Alarm (closed)
J14.3	ID8	Oil Reclaimer DP Alarm Signal	Alarm (closed)
J14.4	ID9	Remote Load/Unload Control	Remote (closed)
J14.5	ID10	Remote Start/Stop Control	Run (closed)
J14.6	IDC2	Input Common Terminal 2	

2) Digital Output Signal

Pin	Name	Function	Active state
J21.1	N1	-	
J21.2	N2	-	
J21.3	N3	-	
J21.4	N4	Load Solenoid Control	ON
J21.5	C1	Output Common Terminal 1	

Pin	Name	Function	Active state
J22.1	N5	Main Magnetic Contactor	ON
J22.2	N6	Star Magnetic Contactor	ON
J22.3	N7	Delta Magnetic Contactor	ON
J22.4	N8	-	
J22.5	C2	Output Common Terminal 2	

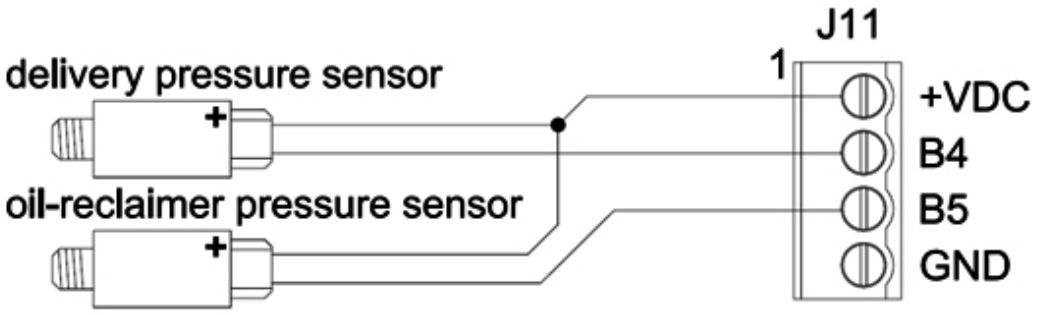
Pin	Name	Function	Active state
J23.1	N9	Multi Function Port N9	
J23.2	N10	Multi Function Port N10	
J23.3	N11	Multi Function Port N11	
J23.4	N12	Multi Function Port N12	
J23.5	C3	Output Common Terminal 3	

※ N9~N12 Functions are applicable from "M" models.

3) Analogue Input Signal

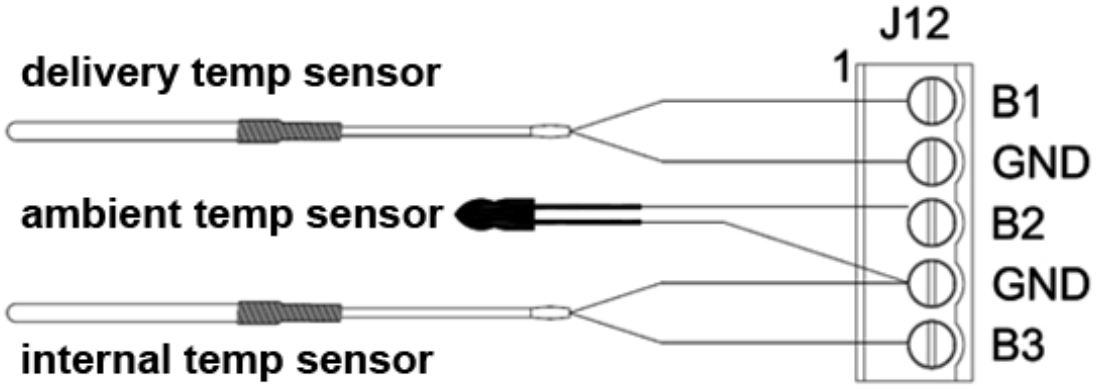
Pin	Name	Function	Type	Range
J11.1	+VDC	Sensor Power (+V Common)		
J11.2	B4	Delivery Press. Sensor Input	4~20mA	Settable
J11.3	B5	Oil Reclaimer Press. Sensor Input	4~20mA	Settable
J11.4	GND	0V Common (Earthing of Shield Wire)		

➔ **Oil reclaimer sensor input is applicable from "M" models.**



Pin	Name	Function	Type	Range
J12.1	B1	Delivery Temp. Sensor Input	NTC 10K	-30 ~ 200 ℃
J12.2	GND	0V Common		
J12.3	B2	Ambient Temp. Sensor Input	NTC 5K	-30 ~ 200 ℃
J12.4	GND	0V Common		
J12.5	B3	Oil Reclaimer Temp. Sensor Input	NTC 10K	-30 ~ 200 ℃

➔ **Oil reclaimer temp. sensor input and ambient temp. sensor input are applicable from "M" model.**



4) Analogue Output Signal

Pin	Name	Function	Type
J6.1	Y1	Inverter Speed Output Signal (in case of VSD Control)	4 ~ 20mA
J6.2	YG1	Inverter Speed Control Output Common	(0 ~ 100%)
J6.3	Y2	Delivery Press. Transmission Signal	4 ~ 20mA
J6.4	YG2	Delivery Press. Transmission Signal Common	※ (Range Setup)
J6.5	Y3	Delivery Temp. Transmission Signal	4 ~ 20mA
J6.6	YG3	Delivery Temp. Transmission Signal Common	(-10 ~ 150℃)

➔ **Analogue output signal is application from "V" model.**

※ Discharge air press. transmission signal outputs retransmission signal (4~20mA) as the input range of [configuration, discharge press. low, discharge press. high].

5) Communication Signal

5-1) SYSTEM BUS

Pin	Name	Function	Type
TB1.1	SG	-	RS-485
TB1.2	B	SYSTEM BUS TRX-	
TB1.3	A	SYSTEM BUS TRX+	

5-2) LOCAL BUS

Pin	Name	Function	Type
TB2.1	SG	-	RS-485
TB2.2	B	LOCAL BUS TRX-	
TB2.3	A	LOCAL BUS TRX+	

※ Communication Signal (System Bus, Local Bus Common)

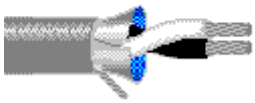
① Communication Type : RS-485

② Communication Speed : 4800, 9600, 19200, 384000 BPS, N, 8, 1, default 9600bps

③ Communication Protocol : MODBUS RTU MODE

④ Recommended Communication Cable : BELDEN 9842 or 8761

(9842)



(8761)

BELDEN 9842 Paired- Low Capacitance EIA RS-485

⊙ Number of Pairs: 2

⊙ Total Number of Conductors: 4

⊙ AWG: 24

⊙ Stranding: 7x32

⊙ Conductor Material: TC - Tinned Copper

⊙ Insulation Material: PE - Polyethylene

⊙ Outer Shield Material Trade Name: Beldfoil®

⊙ Outer Shield Material: Aluminum Foil-Polyester Tape/TC –

⊙ Tinned Copper

⊙ Outer Jacket Material: PVC - Polyvinyl Chloride

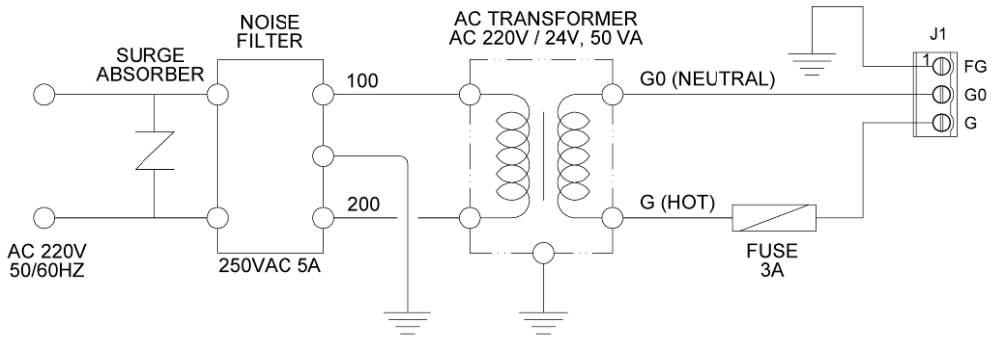
⊙ Plenum (Y/N): N ⊙Plenum Number: 82842

⊙ Applications: Computer Cables, Low Capacitance EIA RS-485

※ BELDEN 9842 standard cable is recommendable.

6) Control Power Input

Pin	Name	Function	Type
J1.1	FG	FIELD GROUND (CASE SHIELD)	
J1.2	G0	AC24V(-) or DC24V(-)	
J1.3	G	AC24V(+) or DC24V(+)	



(Power Input Wiring Diagram)

3. Constitution

1) Operation and Display Part

1-1) Basic Constitution

Display Part Specification : 240 X 128 Graphic LCD (LED BACKLIGHT), LED Green 1EA, Red 1EA

Keyboard : Membrane Keypad Switch (8EA)

1-2) Operation Part

Start Switch : Start

Stop Switch : Stop

Reset : Reset when trip occurred

Green Ramp 1 : Ramp showing status of operation

Red Ramp 2 : Ramp showing trip or warning

1-3) Program Setup Part

Select Switch : Selection of setup program or value

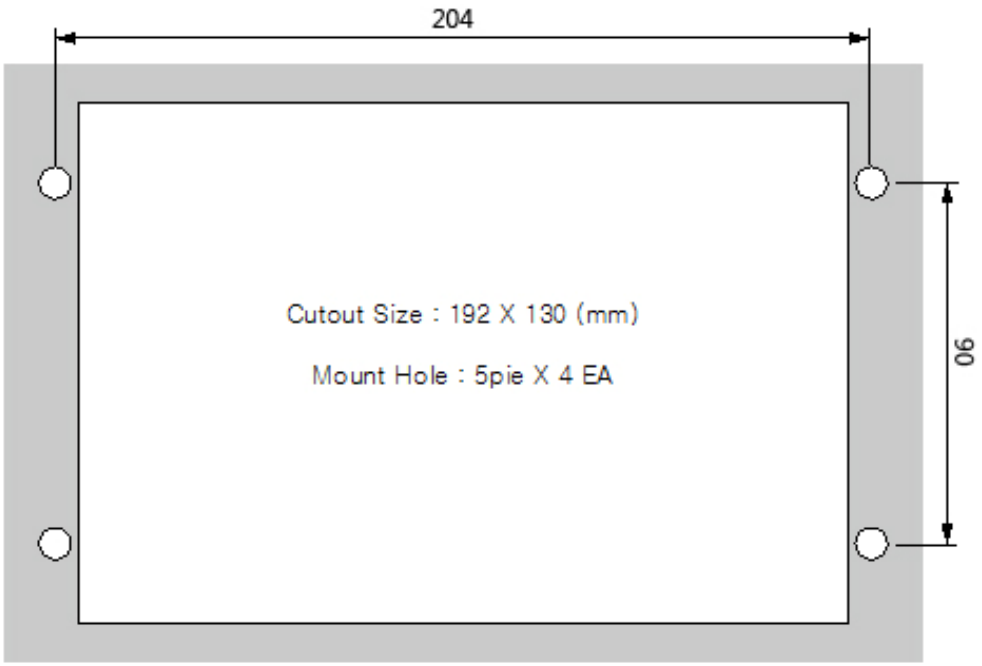
Downward Switch : Moving down to setup program or value

Upward Switch : Moving up to setup program or value

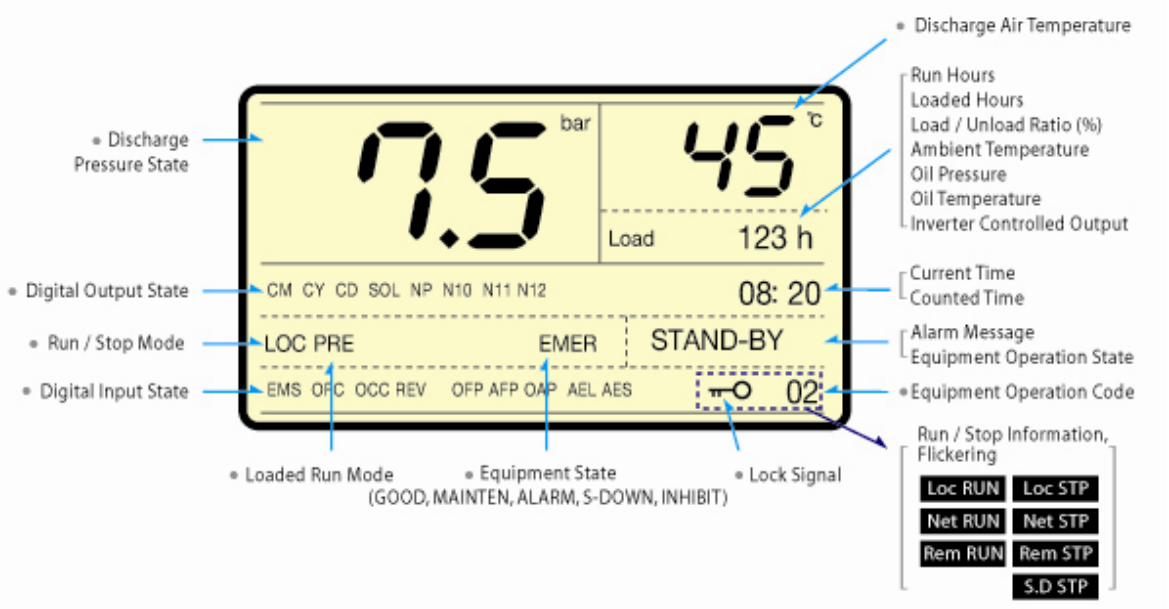
Menu Switch : Opening menu for setup

Reset Switch : Returning to the previous menu or initial screen]

2) Measurements and Mount Information



3) Display for Operation Status



If you push "ENTER", it is displayed operation time, loading time, ratio of loading/unloading duty, ambient temp., oil reclaimer temp, oil reclamier press. Inverter output and frequency respectively.

4) Operation Button Function

Start / Stop		Select Start / Stop The equipment starts when pushing start button (Green). The equipment stops when pushing stop button (Red).
Reset		Reset when trip The trip reset automatically doesn't need to push reset button.
Menu		It returns to setup and status menu when pushing menu button
Enter		Choice and storage
Up / Down		Upward (Increase) and/or Downward (Decrease)
Cancel		Return to the previous menu or initial screen

5) Status Display Ramp

Operation Status	**Green**	ON / OFF according to operation status
Alarm Status	**Red**	ON / OFF according to alarm status

ON : LED is always on.

Low speed flickering : On for 0.5 sec./ Off for 0.5 sec.

High speed flickering : On for 0.1 sec./ Off for 0.1 sec.

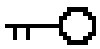
Spot flickering : On for 0.1 sec. / Off for 4 sec.

OFF : LED is always off.

No.	Status	Operation Status Ramp	Alarm Status Ramp
00	Initialization	OFF	Normal : OFF Trip : High Speed Flickering Alarm : Low Speed Flickering Maintenance : Spot Flickering Start Inhibit : Spot Flickering
01	Operation Inhibit	OFF	
02	Operation Ready	OFF	
03	Start Delay (Blowdown check)	Spot Flickering Load Operation Request Status : High Speed Flickering	
04	Start Ready	Spot Flickering	
06	During Operation (Y/D transfer delay)	Spot Flickering Load Operation Request Status : High Speed Flickering	
07	Load Operation Delay	Spot Flickering Load Operation Request Status : High Speed Flickering	
08	Load Operation	ON	
09	Reload Delay	Spot Flickering Load Operation Request Status : High Speed Flickering	
10	Auto-stop Delay	Spot Flickering	
11	Manual-stop Delay	Low Speed Flickering	
99	Shut-down	OFF	

6) Symbol Explanation

6-1) Equipment Status Display

LOC NET REM SCH	**Start / Stop Mode Status Display** LOC : Start /Stop using start / stop key on the equipment NET : Start / Stop from PC or remote device using protocol REM : Start / Stop remotely using digital input port on the equipment SCH : Start / Stop according to setup schedule of [Schedule] menu
LOC NET REM	**Load Operation Mode Display** LOC : Load / Unload operation by press. value of sensor on the equipment NET : Load / Unload operation from PC or remote device using protocol REM : Load / Unload operation remotely using digital input port on the equipment
LOC STOP REM STOP NET STOP SCH STOP S.D STOP	**Stop Status Display** Display during equipment's stop LOC STOP : Stop by stop button on the equipment REM STOP : Stop by digital input NET STOP : Stop by communication function SCH STOP : Stop by setup time on [Schedule] menu S.D STOP : Stop when trip occurred
LOC RUN REM RUN NET RUN SCH RUN	**Operation Status Display** Display during equipment's operation LOC RUN : Operate by start button on the equipment REM RUN : Operate by digital input NET RUN : Operate by communication function SCH RUN :Operate by setup time on [Schedule] menu
GOOD MAIN TEN ALARM S-DOWN INHIBIT	**Equipment Status Display** GOOD : Normal status MAINTEN : Required maintenance ALARM : Alarm status S-DOWN : Sensing fault INHIBIT : Start inhibit
	**System Lock Signal**

6-2) Digital Input Signal

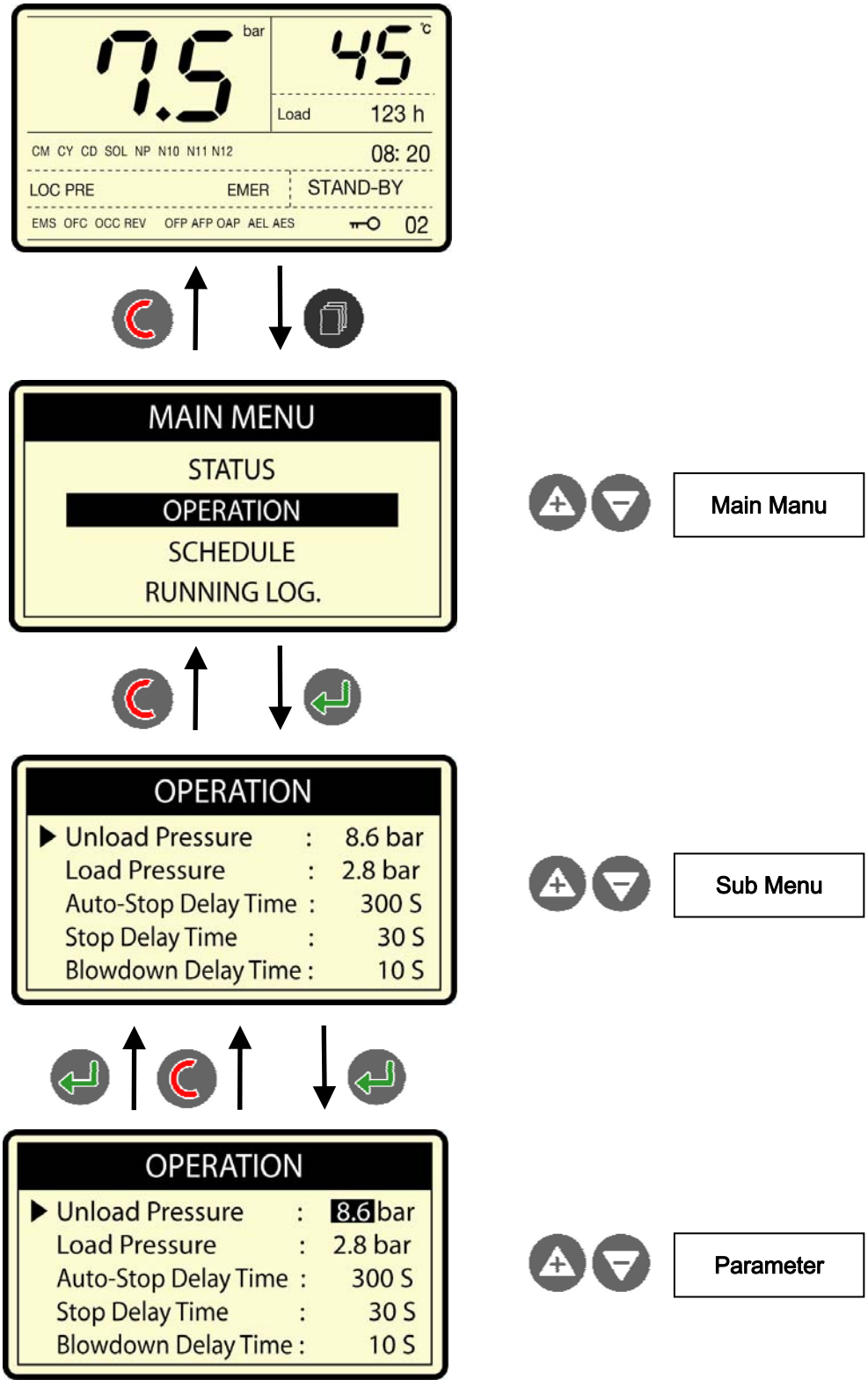
Symbol	Description	Symbol	Description
EMS	Emergency Stop S/W Fault Signal	OFP	Oil-Filter High DP Alarm Signal
OCF	Overload Fan Motor Fault Signal	AFP	Air-Filter High DP Alarm Signal
OCC	Overload Main Motor Fault Signal	OAP	Oil Reclaimer DP Alarm Signal
REV	Reverse Phase Unit Fault Signal	AEL	Remote Load/Unload Control
IDS	Spare Input Port	AES	Remote Start/Stop Control

6-3) Digital Output Signal

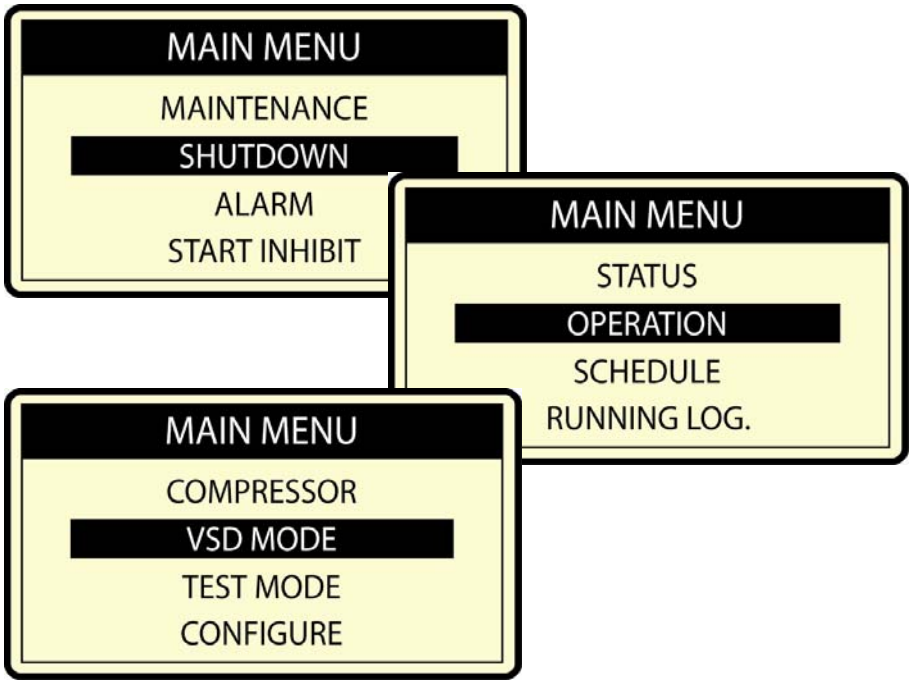
Symbol	Description	Symbol	Description
CM	Main Magnetic Contactor	N9	Multi Function Port N9
CY	Star Magnetic Contactor	N10	Multi Function Port N10
CD	Delta Magnetic Contactor	N11	Multi Function Port N11
SOL	Load Solenoid Control	N12	Multi Function Port N12

4. Menu Constitution

1) Menu Constitution Type

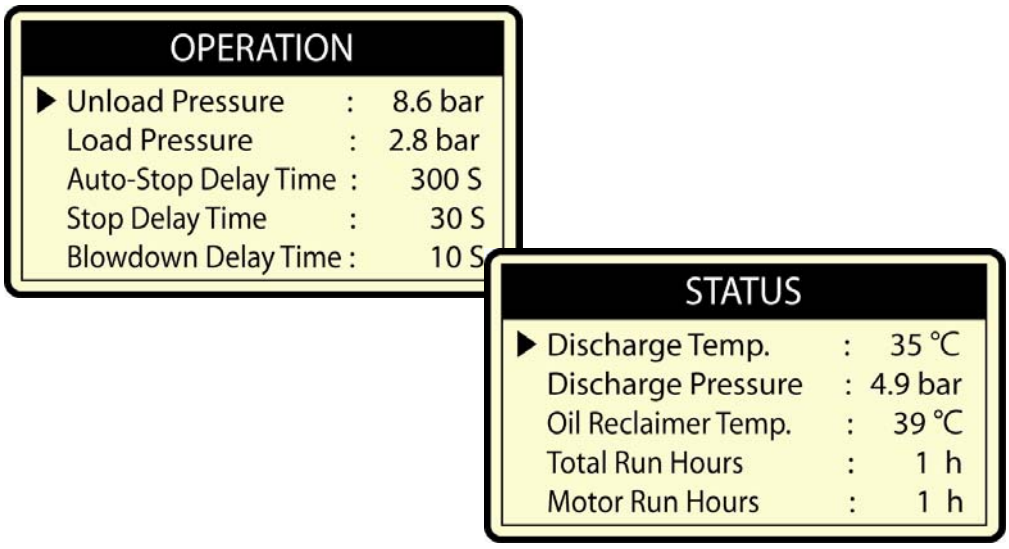


2) Main Menu Constitution (Example)



※ Showing menu might be slightly different from "V" model.

3) Sub Menu Constitution (Example)



4) Menu Construction

(Based on 'M' model)

* mark is applicable for ' V ' model only.

STATUS

- 00: Discharge Temp.
- 01: Discharge Press.
- 02: *Ambient Temp.**
- 03: Oil Reclaimer Press.
- 04: Oil Reclaimer Temp.*
- 05: Differential Press.
- 06: Total Run Hours
- 07: Motor Run Hours
- 08: Motor On/Off Times
- 09: Loaded Hours
- 10: Loaded On/Off Times
- 11: *Inverter Control**
- 12: *Discharge Press . Retrans. **
- 13: *Discharge Temp. Retrans.**

START INHIBIT

- 00: Discharge Temp Low
- 01: Oil Reclaimer Press High

OPERATION

- 00: Unload Pressure
- 01: Load Pressure
- 02: Auto-Stop Delay Time
- 03: Stop Delay Time
- 04: Blowdown Delay Time
- 05: *Drain Time [On]*
- 06: *Drain Interval [Off]*
- 07:*Cooling Fan Run Temp**
- 08: *Cooling Fan Stop Temp**
- 09: LCD Backlight Mode

COMPRESSOR

- 00: Y-DELTA Transfer Time
- 01: Load Delay Time
- 02: Reload Delay Time
- 03: Diff. Press Detect Delay
- 04: Load Command Mode
- 05: Starting Command Mode
- 06: Power Return Restart
- 07: Network ID
- 08: Network BPS

SCHEDULE

- 00: Sun : Start ~ Stop
- 01: Mon : Start ~ Stop
- 02: Tue : Start ~ Stop
- 03: Wed : Start ~ Stop
- 04: Thu : Start ~ Stop
- 05: Fri : Start ~ Stop
- 06: Sat : Start ~ Stop

*VSD MODE **

- 00: VSD Control Mode
- 01: Maximum Speed
- 02: Minimum Speed
- 03: Optimum Speed
- 04: Unloaded Speed
- 05: Speed Command(Hz)
- 06: Speed Command(mA)
- 07: Proportional Band(P)
- 08: Integral Time (I)
- 09: Dead Band
- 10: Jerk Control Ratio
- 11: Max. Inverter RPM
- 12: Max. Inverter Frequency

RUNNING LOG.

- 00:Event #1
- 01:Event #2
- 02:Event #3
- |
- 03:Event #160

TEST MODE

- 00: Manual Test Mode
- 01: Main Motor MAIN
- 02: Main Motor STAR
- 03: Main Motor DELTA
- 04: Load SOL. Valve
- 05: Multi Function N9
- 06: Multi Function N10
- 07: Multi Function N11
- 08: Multi Function N12
- 09: *Inverter Control**
- 10: *Discharge Press Retrans.**
- 11: *Discharge Temp Retrans**

MAINTENANCE

- 00: Dust Filter Cleaning
- 01: Suction Filter Change
- 02: Oil Filter Change
- 03: Lub. Oil Change
- 04: Cooler Cleaning
- 05: Overhaul

CONFIGURE

- 00: Master Password Setup
- 01: Trip/Alarm History Delete
- 02: Operation History Delete
- 03: Ambient Temp Sensor Use
- 04: Oil Press. Use
- 05: Oil Temp. Use
- 06: Discharge Press Correct
- 07: Oil Press. Correction
- 08: *Ambient Temp. Correction**
- 09: Discharge Temp. Correct
- 10: *Oil Temp. Correction**
- 11: Discharge Press Min
- 12: Discharge Press Max
- 13: Min. Oil Press.
- 14: Max. Oil Press.
- 15: Multi Function N9
- 16: Multi Function N10
- 17: Multi Function N11
- 18: Multi Function N12

SHUTDOWN

- 00: Discharge Temp High
- 01: Discharge Press High
- 02: *Oil Reclaimer Temp High**
- 03: *Oil Reclaimer Press High**
- 04: Diff-Pressure High

DIAGNOSTIC

- 00: SELF TEST
- 01: B1 Input
- 02: B2 Input
- 03: B3 Input
- 04: B4 Input
- 05: B5 Input
- 06: B4 4mA
- 07: B4 20mA
- 08: B5 4mA
- 09: B5 20mA
- 10: *Y1 4mA**
- 11: *Y1 20mA**
- 12: *Y2 4mA**
- 13: *Y2 20mA**
- 14: *Y3 4mA**
- 15: *Y3 20mA**
- 16: ADC F/T
- 17: DAC F/T

ALARM MODE

- 00: Discharge Temp High
- 01: Discharge Press High
- 02: *Oil Reclaimer Temp High**
- 03: Oil Reclaimer Press High
- 04: Diff- Pressure High
- 05: *Ambient Temp High**

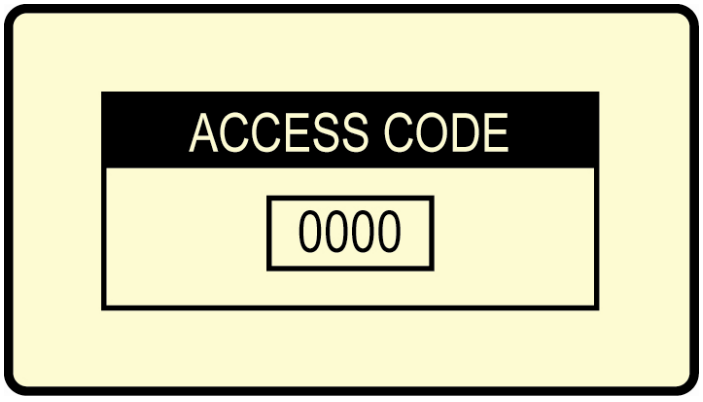
5) Menu Access Level

Access Level	USER (CODE = 0009)	SERVICE1 (CODE = 0100)	SERVICE2 (CODE = 0119)	SERVICE3 (CODE = ****)
Accessible Menu	1.STATUS 2.OPERATION 3.RUNNING LOG 4.MAINTENANCE 5.SHUTDOWN 6.ALARM MODE 7.START INHIBIT	1.STATUS 2.OPERATION 3.RUNNING LOG 4.MAINTENANCE 5.SHUTDOWN 6.ALARM MODE 7.START INHIBIT 8.COMPRESSOR 9.VSD MODE* 10.TEST MODE 11.CONFIGURE	1.STATUS 2.OPERATION 3.SCHEDULE 4.RUNNING LOG 5.MAINTENANCE 6.SHUTDOWN 7.ALARM MODE 8.START INHIBIT 9.COMPRESSOR 10.VSD MODE* 11.TEST MODE 12.CONFIGURE 13.DIAGNOSTIC	1.STATUS 2.OPERATION 3.SCHEDULE 4.RUNNING LOG 5.MAINTENANCE 6.SHUTDOWN 7.ALARM MODE 8.START INHIBIT 9.COMPRESSOR 10.VSD MODE* 11.TEST MODE 12.CONFIGURE 13.DIAGNOSTIC
Lasting Time	1 min.	10 min.	30 min.	1 hr.

When changing Access Level Mode, make locked by putting [Cancel] button for 3 seconds.

① If putting [Menu] on operating display, it shows access code input display below.
(If putting [Menu] during supporting time, it does not ask Access Code.)

② After input Access Code by [Upward]/[Downward] key, put [Enter] and then, convert to Menu display.



<Display of Access Code Input>

③ If Access Level is under [Service] level 1, [Set expanded operation] parameter does not change.

④ When changing lock mode before lasting time, please push [Cancel] button for 3 seconds.

6) STATUS

Item	Description	Units	Step	Min	Max	Default
000	Discharge Temp.	℃	View Only			
001	Discharge Press.	Bar				
002	Ambient Temp.***	℃				
003	Oil Reclaimer Press.**	Bar				
004	Oil Reclaimer Temp.**	℃				
005	Differential Press.**	Bar				
006	Total Run Hours*	H	1	0	99999	
007	Motor Run Hours*	H	1	0	99999	
008	Motor On/Off Times*	T	1	0	99999	
009	Loaded Hours*	H	1	0	99999	
010	Loaded On/Off Times*	T	1	0	99999	
011	Inverter Control	mA	View Only			
012	Discharge Press. Retrans.	mA				
013	Discharge Temp. Retrans.	mA				

* *Times and Hours are automatically initialized and counted from "0" in case of over "99999".*

* *Times and Hours are changeable over [Service 2]level.*

** *Oil Reclaimer Pressure and Temperature are displayed only in case of setting [Use]of related item on Menu.*

*** *Ambient Temperature is displayed only in case of setting [On] on [CONFIGURE:Ambient Temp. Sensor].*

** *Differential Pressure = Oil Reclaimer Pressure – Discharge Pressure*

7) OPERATION

Item	Description	Units	Step	Min	Max	Default	View	Access
100	Unload Pressure	bar	0.1	4.0	70.0	8.6 bar	USER1	SVC1
101	Load Pressure	bar	0.1	3.8	65.0	6.5 bar	USER1	SVC1
102	Auto-Stop Delay Time	S	1	1	3600	300 S	USER1	SVC1
103	Stop Delay Time	S	1	1	60	30 S	USER1	SVC1
104	Blowdown Delay Time	S	1	1	600	10 S	USER1	SVC1
105	Drain Time [On]**	S	1	1	30	5 S	USER1	SVC1
106	Drain Inteval**	S	1	1	3600	60 S	USER1	SVC1
107	Cooling Fan Run Temp***	℃	1	0	200	80 ℃	USER1	SVC1
108	Cooling Fan Stop Temp ***	℃	1	0	200	70 ℃	USER1	SVC1

** *It is displayed only in case of setting [Use]of drain function on [CONFIGURE : Multi Function].*

*** *It is displayed only in case of setting [Use]of cooling fan function on [CONFIGURE : Multi Function].*

① **Unload Pressure :**

- **It cannot be set under +0.2bar of loaded pressure value.**
- **It cannot be set over -0.2bar of alarm pressure value.**

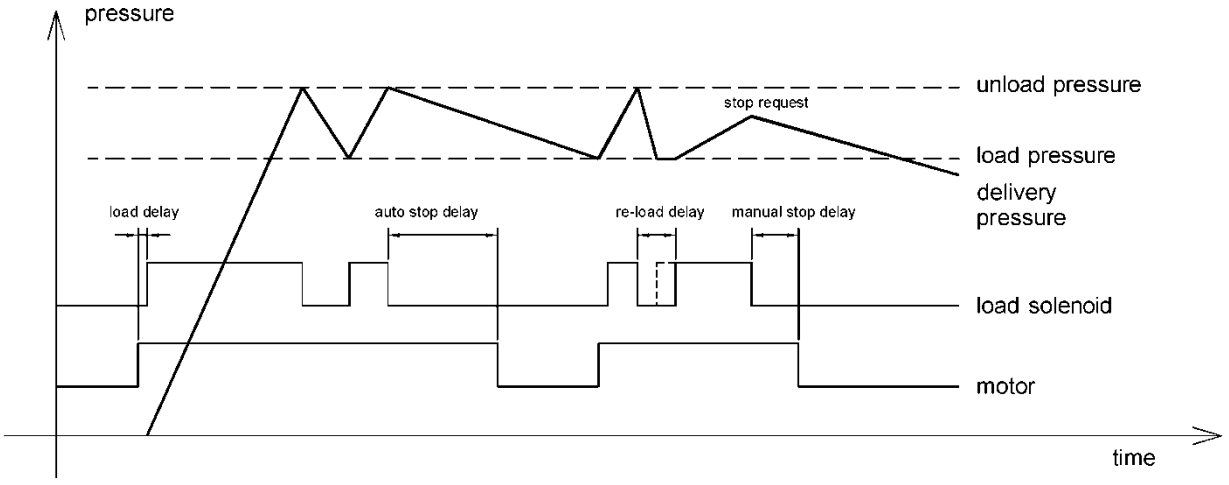
② **Load Pressure : It cannot be set over -0.2 bar of unload pressure value.**

③ Temperature Sensing Capacity : Control(0.01℃), Display(0.1℃)

④ Pressure Sensing Capacity : Control(0.01bar), Display(0.1bar)

⑤ Cooling Fan Run Temp. : Temperature when cooling fan is under operation. (It is recommended to be set more than 2℃ than cooling fan stop temperature)

⑥ Cooling Fan Stop Temp. : Temperature when cooling fan stops. (It is recommended to be set less than 2℃ than cooling fan run temperature.)



8) SCHEDULE

Item	Description	RUN ~ STOP
400	SUN	00 : 00 ~ 00 : 00
401	MON	08 : 30 ~ 18 : 30
402	TUE	08 : 30 ~ 18 : 30
403	WED	08 : 30 ~ 18 : 30
404	THU	08 : 30 ~ 18 : 30
405	FRI	08 : 30 ~ 18 : 30
406	SAT	08 : 30 ~ 12 : 30

※ It is applied and displayed only in case of setting of [Schedule Operation] on [Extend Operation] menu.

※ It is applicable over 'M' model.

① It is used in case of start and stop at indicated time.

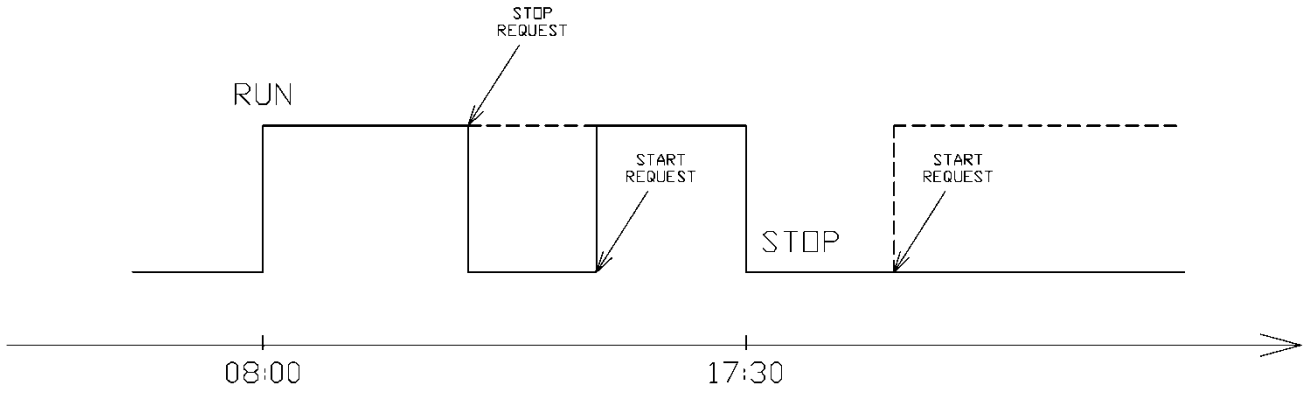
② The equipment is automatically operated at run time and stopped at stop time.

③ In case of no operation on specific day, run time and stop time are set the same.

④ If run time is after stop time, the equipment shall not be operated.

⑤ It is possible to run & stop by pushing [Run] and [Stop] button during schedule operation. (See the following picture)

⑥ The equipment shall not be operated after stop time, although pushing [Run] button. (See the following picture).



9) RUNNING LOG

Item	Date	Time	Occur / Reset	Event
1	Y Y / M M / D D	H H : M M	(X)	Event #1
2	Y Y / M M / D D	H H : M M	(X)	Event #2
3	Y Y / M M / D D	H H : M M	(X)	Event #3
4	Y Y / M M / D D	H H : M M	(X)	Event #4
5	Y Y / M M / D D	H H : M M	(X)	Event #5
|	|	|	|	|
160	Y Y / M M / D D	H H : M M	(X)	Event #160

※ It is impossible to modify and/or delete the contents of event at the option.

① When trip alarm occurs (resets), date and history of event are stored at non volatile memory.

② The maximum number of storable event is 160EA and it is deleted the earliest event and stored the lastest one in case of over 160EA.

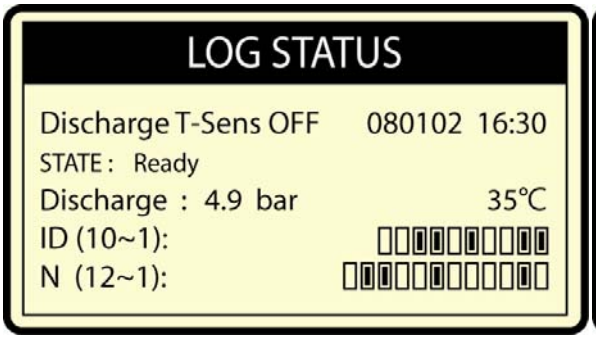
③ When trip alarm is occurred, [Date, Time and Event] is recorded. Also, when trip alarm is reset, "X" mark is showed next to [Time].

④ When pushing [Enter] button, you can see operation status code, discharge pressure, discharge temperature and ambient temperature when trip alarm occurs.

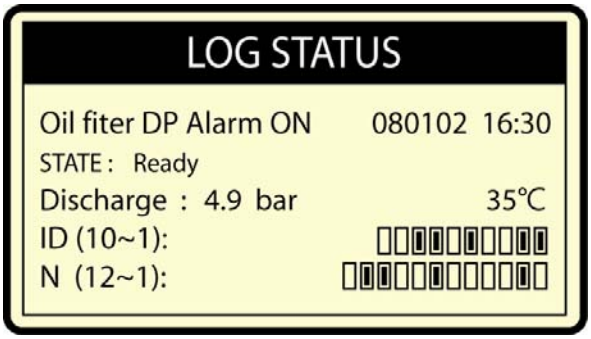
(Screen for Trip Alarm Status)

If pushing [MENU] button, you can see the latest alarm history on screen for [Trip Alarm Status].

Discharge Air Status + Whole Status



Oil Reclaimer Status + Whole Status



If pushing [MENU] button, you can see the status of discharge air and oil reclaimer in shifts.

(In case of installation of sensor for oil reclamier pressure or temperature)

9-1) Trip Message

Item	Description	Detect condition
1	System Fault	In case of unexpected change of the value of parameter
2	Emergency Stop	Sensing [Digital Signal Input : Emergency Stop] : ON Reset [Digital Signal Input : Emergency Stop] : OFF
3	Fan Motor O.L.	Sensing [Digital Signal Input : Fan Motor O.L] : ON Reset [Digital Signal Input : Fan Motor O.L] : OFF
4	Main Motor O.L	Sensing [Digital Signal Input : Main Motor O.L : ON Reset [Digital Signal Input : Main Motor O.L : OFF
5	Reverse Phase	Sensing [Digital Signal Input : Reverse Phase] : ON Reset [Digital Signal Input : Reverse Phase] : OFF
6	Discharge Press. High	Sensing Discharge Press. ≥ [Alarm Mode : Discharge Press. High] Reset Discharge Press. < [Alarm Mode : Discharge Press. High] - 0.5bar
7	Discharge Temp. High	Sensing Discharge Temp. ≥ [Alarm Mode : Discharge Temp. High] Reset Discharge Temp. < [Alarm Mode : Discharge Temp. High] - 5℃
8	Oil Reclaimer Press. High	Sensing Oil Reclaimer Press. ≥ [Alarm Mode : Oil Reclaimer Press. High] Reset Oil Reclaimer Press. < [Alarm Mode : Oil Reclaimer Press. High] – 0.5bar
9	Oil Reclaimer Temp. High	Sensing Oil Reclaimer Temp. ≥ [Alarm Mode : Oil Reclaimer Temp. High] Reset Oil Reclaimer Temp. < [Alarm Mode : Oil Reclaimer Temp. High] - 5℃
10	Diff. Press. High	Sensing (Oil Reclaimer Press.–Discharge Press.) ≥ [Alarm Mode:Diff. Press. High] & Discharge Air Temp. > 50℃ Reset (Oil Reclaimer Press.–Discharge Press.) < [Alarm Mode:Diff.Press.High] - 0.1bar
11	Browdown Time Over	Oil Reclaimer Press. > [Start Inhibit : Oil Reclaimer Press. High] in case of exceeding of [Operation : Blowdown Delay Time] during browdown check sequenc.
12	Discharge P-Sensor	Sensing In case of occurrence of error on discharge press. sensor (disconnection / short) Reset In case of normal condition of discharge press. sensor
13	Discharge T-Sensor	Sensing In case of occurrence of error on discharge temp. sensor (disconnection / short) Reset In case of normal condition of discharge temp. sensor
14	Oil P-Sensor Fault	Sensing In case of occurrence of error on oil reclaimer press. sensor (disconnection / short) Reset In case of normal condition of oil reclaimer press. sensor
15	Oil T-Sensor Fault	Sensing In case of occurrence of error on oil reclaimer temp. sensor (disconnection / short) Reset In case of normal condition of oil reclaimer temp. sensor
16	Ambient T-Sensor	Sensing In case of occurrence of error on ambient temp. sensor (disconnection / short) Reset In case of normal condition of ambient temp. sensor

※ Fault message occurred is reset by pushing [Reset] button after solving related reason.

9-2) Alarm Message

Item	Description	Detect condition
1	Oil Filter Diff. Press.	Sensing [Digital Signal Input : Oil Filter Diff. Press] : ON Reset [Digital Signal Input : Oil Filter Diff. Press] : OFF
2	Air Filter Diff. Press.	Sensing [Digital Signal Input : Air Filter Diff. Press] : ON Reset [Digital Signal Input : Air Filter Diff. Press] : OFF
3	Oil Reclaimer Diff. Press.	Sensing [Digital Signal Input : Oil Reclaimer Diff. Press] : ON Reset [Digital Signal Input : Oil Reclaimer Diff. Press] : OFF
4	Discharge Press. High	Sensing Discharge Press ≥ [Alarm Mode : Discharge Press. High] Reset Discharge Press < [Alarm Mode : Discharge Press. High]-0.5bar
5	Discharge Temp. High	Sensing Discharge Temp. ≥ [Alarm Mode : Discharge Temp. High] Reset Discharge Temp. < [Alarm Mode : Discharge Temp. High]-5℃
6	Oil Reclaimer Press. High	Sensing Oil Reclaimer Press ≥ [Alarm Mode : Oil Reclaimer Press. High] Reset Oil Reclaimer Press < [Alarm Mode : Oil Reclaimer Press. High]-0.5bar
7	Oil Reclaimer Temp. High	Sensing Oil Reclaimer Temp. ≥ [Alarm Mode : Oil Reclamier Temp. High] Reset Oil Reclaimer Temp. < [Alarm Mode : Oil Reclaimer Temp. High]-5℃
8	Differential Press	Sensing (Oil Reclaimer Press–Discharge Press) ≥ [Alarm Mode:Diff. Press High] & Discharge Gas Temp. > 50℃ Reset (Oil Reclaimer Press-Discharge Press) < [Alarm Mode:Diff Press. High]-0.1bar
9	Ambient Temp. High	Sensing Ambient Temp. ≥ [Alarm Mode : Ambient Temp. High] Reset Ambient Temp. < [Alarm Mode : Ambient Temp. High]-5℃
10	RTC Function Incapacity	Sensing RTC is not working, (Sensible during scheduled operation) Reset RTC is in ordinary operation, (necessary to reset the time)

※ Occurred alarm message is automatically reset in case of reset condition.

9-3) Start Inhibit Message

Item	Description	Detect condition
1	Discharge Temp. Low	Sensing Discharge Temp. < [Start Inhibit-Discharge Temp. Low] Reset Discharge Temp. > [Start Inhibit-Discharge Temp. Low]
2	Oil Reclaimer Press High	Sensing Oil Reclaimer Press > [Start Inhibit-Oil Reclaimer Press High] Reset Oil Reclaimer Press < [Start Inhibit-Oil Reclaimer Press High]

※ The equipment doesn't operate when start inhibit alarm occurs, and it automatically starts when the alarm is reset..

9-4) Running Log Message

Item	Description	Detect condition
1	Initial Power Input	Initial Power Input Time (It cannot be deleted.)
2	Main Power Input	Power Input Time, (In case of system recovery by WATCH DOG timer)
3	Operation Start	Operation Start Time
4	Operation Stop	Operation Stop Time

※ It is recorded in Running Log.

9-5) Maintenance Message

Item	Description	Detect condition
1	Dust Filter Cleaning	In case of exceeding dust filter cleaning cycle
2	Suction Filter Change	In case of exceeding suction filter change cycle
3	Oil Filter Change	In case of exceeding oil filter change cycle
4	Lub. Oil Change	In case of exceeding lub. oil change cycle
5	Cooler Cleaning	In case of exceeding cooler cleaning cycle
6	Overhaul	In case of exceeding overhaul cycle

10) MAINTENANCE

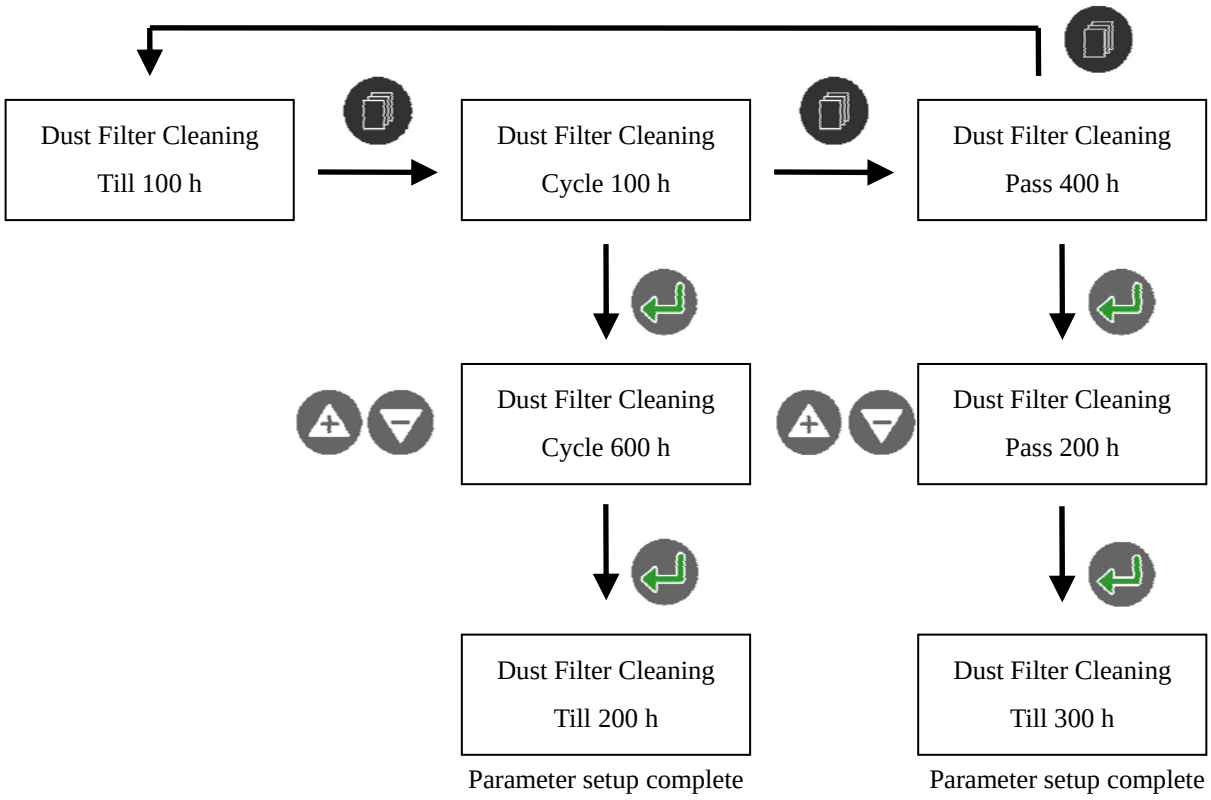
Item	Description	Units	Step	Min	Max	Default	View	Access
400	Dust Filter Cleaning (Till, Cycle, Pass, Exceed)	h	1	0	32000	500 h	USER1	SVC1
401	Suction Filter Change (Till, Cycle, Pass, Exceed)	h	1	0	32000	4000 h	USER1	SVC1
402	Oil Filter Change (Till, Cycle, Pass, Exceed)	h	1	0	32000	8000 h	USER1	SVC1
403	Lub. Oil Change (Till, Cycle, Pass, Exceed)	h	1	0	32000	8000 h	USER1	SVC1
404	Cooler Cleaning (Till, Cycle, Pass, Exceed)	h	1	0	32000	6000 h	USER1	SVC1
405	Overhaul (Till, Cycle, Pass, Exceed)	h	1	0	32000	9000 h	USER1	SVC1

▣ In case of not using some items, please put cursor on the item and push [RESET] button at cycle mode.

▣ In case of resetting some items, please put cursor on the item and push [RESET] button at till·exceed, pass mode.

▣ You can see cycle, till·exceed, pass mode in order in case of pushing [Menu] button.

How to setup (Example : Dust Filter Cleaning)



11) SHUTDOWN

Item	Description	Units	Step	Min	Max	Default	View	Access
500	Discharge Temp. High	℃	1	80	130	120 ℃	USER1	SVC1
501	Discharge Press. High	bar	0.1	1.2	100.0	8.0 bar	USER1	SVC1
502	*Oil Reclamier Temp. High*[*]	℃	1	80	130	120 ℃	USER1	SVC1
503	*Oil Reclaimer Press High*[**]	bar	0.1	1.2	100.0	9.0 bar	USER1	SVC1
504	*Diff-Pressure High*[**]	bar	0.1	0.4	5.0	1.0 bar	USER1	SVC1

[*] *It is only displayed in case of setting ON at [Alarm Mode-Oil Reclaimer Temp. Use].*

[**] *It is only displayed in case of setting ON at [Alarm Mode-Oil Reclaimer Press. Use].*

※ Trip press. value cannot be set over the maximum value of pressure sensor.

12) ALARM MODE

Item	Description	Units	Step	Min	Max	Default	View	Access
600	Discharge Temp. High	℃	1	80	130	110 ℃	USER1	USER2
601	Discharge Press. High	bar	0.1	1.2	100.0	7.6 bar	USER1	USER2
602	*Oil Reclaimer Temp. High*[*]	℃	1	80	130	110 ℃	USER1	USER2
603	*Oil Reclaimer Press High*[**]	bar	0.1	1.2	100.0	8.6 bar	USER1	USER2
604	*Diff-Pressure High*[**]	bar	0.1	0.4	5.0	0.8 bar	USER1	USER2
605	Ambient Temp. High	℃	1	35	60	40 ℃	USER1	USER2

[*] *It is only displayed in case of setting ON at [Alarm Mode-Oil Reclaimer Temp. Use].*

[**] *It is only displayed in case of setting ON at [Alarm Mode-Oil Reclaimer Press. Use]..*

※ Alarm press. value cannot be set over -0.2bar of trip press. value or under +0.2bar of unload operation press.

※ Alarm temp. value cannot be set over -2℃ of trip temp. value.

13) START INHIBIT

Item	Description	Units	Step	Min	Max	Default	View	Access
700	Discharge Temp. Low	℃	1	-10	10	1 ℃	USER1	USER2
701	*Oil Reclaimer Press. High*[**]	bar	0.1	0.1	5.0	0.5 bar	USER1	USER2

[**] *It is only displayed in case of setting ON at [Alarm Mode-Oil Reclaimer Press. Use].*

※ Oil reclaimer press high value cannot be set over the maximum value of oil reclaimer press. sensor.

14) COMPRESSOR

Item	Description	Units	Step	Min	Max	Default	View	Access
800	Y-DELTA Transfer Time	Sec	0.1	0.0	30.0	6.0 Sec	USER1	SVC2
801	Load Delay Time	Sec	1	5	300	10 Sec	USER1	SVC2
802	Reload Delay Time	Sec	1	5	300	10 Sec	USER1	SVC2
803	Diff. Press Detect Delay	Sec	1	1	600	10 Sec	USER1	SVC2
804	Load Command Mode	-	Local / Network / Remote			Local	USER1	SVC2
805	Starting Command Mode	-	Local / Network / Remote / Schedule			Local	USER1	SVC2
806	Power Return Restart	-	ON/OFF			ON	USER1	SVC2
807	*Network ID***	-	1	1	127	1	USER1	SVC2
808	*Network BPS***	-	4800, 9600, 19200, 38400			9600	USER1	SVC2

** *It is only displayed in case of installing communication port option.*

14-1) Starting Command Mode (Setup of control source for equipment run/stop)

① Local : Run/Stop using keypad on controller itself.

② Network : Run/Stop using system network.

③ Remote : [Stop : Digital Input Signal (ID10) : OFF → ON], [Run : Digital Input Signal : ON→OFF], Edge Detection Method (It is possbile to run or stop by network or keypad)

④ Schedule : Operation during the setup time on [Schedule] menu
(It is possible to run or stop by network or keypad)

14-2) Load Command Mode (Setup of control source of equipment load run)

① Local : Using press. value from press. sensor.

② Network : Run/Stop using system network

③ Remote : [Load Run : Digital Input Signal (ID9) : ON], [Unload Run : Digital Input Signal : OFF]

14-3) Power Return Restart [Run/Stop Command in case of power return after mains failure

① Power Return Function : ON
- Mains failure during operation → Power return : Run
- Mains failure during stop → Power return : Stop

② Power Return Function : OFF.
- Mains failure during operation : Power return : Stop
- Mains failure during stop : Power return : Stop

14-4) If Y-DELTA transfer time is set as '0.0'sec., the equipment operates direct start mode.

15) VSD MODE (Variable Speed Drive Control) – V Model

Item	Description	Units	Step	Min	Max	Default	View	Access
900	VSD Control Mode	-	OFF / FIX / VSD			OFF	USER1	SVC2
901	Maximum Speed	rpm	10	0	9990	3600	USER1	SVC2
902	Minimum Speed	rpm	10	0	9990	1500	USER1	SVC2
903	Optimum Speed	rpm	10	0	9990	2700	USER1	SVC2
904	Unloaded Speed	rpm	10	0	9990	1800	USER1	SVC2
905	Speed Command(Hz)	Hz	View only				USER1	LOCK
906	Speed Command(mA)	mA	View only				USER1	LOCK
907	Proportional Band (P)	%	0.1	0.0	99.9	10.0	USER1	SVC2
908	Integral Time (I)	Sec	1	0	3600	10	USER1	SVC2
909	Dead Band (DBand)	%	0.1	0.0	20.0	0.7	USER1	SVC2
910	Jerk Control Ratio	%	0.1	0.1	99.9	10.0	USER1	SVC2
911	Max Inverter RPM	rpm	10	0	9990	3600	USER1	SVC2
912	Max Inverter Frequency	Hz	1	0	120	60	USER1	SVC2

VSD controls the speed of main motor according to the change of discharge pressure, so it can maintain stable required pressure..
Control algorism uses PI control out of PID control.

① VSD Control Mode :

OFF : VSD not used.

FIX : Control in optimum load operation speed

VSD : Various speed control according to discharge pressure. [Target press. : (Operation : Load Pressure)]

② Maximum Speed : Put in the speed which limits maximum speed of motor

③ Minimum Speed : Put in the speed which limits minimum speed of motor (Put in 20% of speed range)

④ Optimum Speed : Put in optimum load speed of motor (Put in 70% of speed range)

⑤ Unloaded Speed : Speed of unload operation, In case of error in discharge press. in [Operation:Unload Pressure]

⑥ Proportional Band (P) : Put in 'P' value out of PID invariable number

⑦ Integral Time (I) : Put in 'I' value out of PID invariable number

⑧ Dead Band (D.Band) : Dull control of speed change if the difference between discharge press. and target press. is in dead band

⑨ Jerk Control Ratio : Limit value of motor speed variation. (Jerk Control)

⑩ Max. Inverter RPM : Put in motor speed from inverter when 100% operation.

⑪ Max. Inverter Frequency : Put in maximum operation frequency setting in inverter

.

16) TEST MODE

Item	Description	Units	Step	Min	Max	Default	View	Access
1000	Manual Test Mode***	-	ON / OFF			OFF	USER1	SVC1
1001	Main Motor MAIN	-	ON / OFF			OFF	USER1	SVC1
1002	Main Motor STAR	-	ON / OFF			OFF	USER1	SVC1
1003	Main Motor DELTA	-	ON / OFF			OFF	USER1	SVC1
1004	Load SOL. Valve	-	ON / OFF			OFF	USER1	SVC1
1005	Multi Function N9	-	ON / OFF			OFF	USER1	SVC1
1006	Multi Function N10	-	ON / OFF			OFF	USER1	SVC1
1007	Multi Function N11	-	ON / OFF			OFF	USER1	SVC1
1008	Multi Function N12	-	ON / OFF			OFF	USER1	SVC1
1009	*Inverter Control**	mA	0.1	4.0	20.0	4.0mA	USER1	SVC1
1010	*Discharge Press. Retrans**	mA	0.1	4.0	20.0	4.0mA	USER1	SVC1
1011	*Discharge Temp. Retrans.**	mA	0.1	4.0	20.0	4.0mA	USER1	SVC1

*** *Manual test is available when [Manual Test Mode] is ON only.*
* *It is only displayed in case of installing analogue output option.*

① Manual Test is available when the equipment is stopped only..

② Main Motor STAR (Star Magnet) and Main Motor DELTA(Delta Magnet) cannot be turned on at the same time.

③ Manual Test Mode is automatically released after 2 minutes from the final performance of manual test.

17) CONFIGURE

Item	Description	Units	Step	Min	Max	Default	View	Access
1100	Master Password Setup	-	1	0	9999	119	SVC3	SVC3
1101	Trip/Alarm History Delete	-	NO / YES			NO	USER1	SVC2
1102	Operation History Delete	-	NO / YES			NO	USER1	SVC2
1103	Ambient Temp. Sensor Use	-	ON / OFF			ON	USER1	SVC2
1104	Oil Reclaimer Press. Use	-	ON / OFF			ON	USER1	SVC2
1105	Oil Reclaimer Temp. Use	-	ON / OFF			ON	USER1	SVC2
1106	Discharge Press. Correction	bar	0.1	-10.0	+10.0	0.0 bar	USER1	SVC1
1107	Oil Press. Correction	bar	0.1	-10.0	+10.0	0.0 bar	USER1	SVC1
1108	Ambient Temp. Correction	℃	0.1	-10.0	+10.0	0.0 ℃	USER1	SVC1
1109	Discharge Temp. Correction	℃	0.1	-10.0	+10.0	0.0 ℃	USER1	SVC1
1110	Oil Temp. Correction	℃	0.1	-10.0	+10.0	0.0 ℃	USER1	SVC1
1111	Discharge Press. Low	bar	0	-10	120	0 bar	USER1	SVC2
1112	Discharge Press. High	bar	0	-10	120	16 bar	USER1	SVC2
1113	Min. Oil Press	bar	0	-10	120	0 bar	USER1	SVC2
1114	Max. Oil Press	bar	0	-10	120	16 bar	USER1	SVC2
1115	Multi Function N9	-	1 choice out of 12 functions			Cooling	USER1	SVC1
1116	Multi Function N10	-	1 choice out of 12 functions			OFF	USER1	SVC1
1117	Multi Function N11	-	1 choice out of 12 functions			OFF	USER1	SVC1
1118	Multi Function N12	-	1 choice out of 12 functions			OFF	USER1	SVC1

※ Function list of multi function output port is supported over 'M' model.

Item	Function	Description	
1	OFF	No Use	
2	Alarm Output	Output ON : Alarm	
3	Trip Output	Output ON : Trip	
4	Total Alarm	Output ON : Trip, Alarm, Maintenance, Start Inhibit	
5	Maintenance	Output ON : Maintenance	
6	Standby	Output ON : Standby	
7	Stop	Output ON : Operation, Output OFF : Stop	
8	Motor Run	Output ON : Motor Run	
9	Load Operation	Output ON : Load Operation	
10	Cooling Fan	ON : [Operation:Cooling Fan Run Temp.] >= Discharge Temp. OFF : [Start Inhibit:Cooling Fan Stop Temp.] <= Discharge Temp.	
11	Heater	ON : [Start Inhibit:Discharge Temp. Low]+ 5℃ <Discharge Temp. OFF : [Start Inhibit:Discharge Temp. Low]+10℃ >Discharge Temp.	
12	Drain	ON during [Operation:Drain Interval] as [Operation:Drain Time] while motor runs	

18) DIAGNISTIC

※ It is our initial setup value when shipped out, so you are kindly required to understand it first and then change the value.

Item	Description	Units	Step	Min	Max	Default	View	Access
900	Self Test	-	NO / YES			NO	SVC2	SVC3
901	B1 Input	-	Only View			997	SVC2	-
902	B2 Input	-				280	SVC2	-
903	B3 Input	-				997	SVC2	-
904	B4 Input	-				280	SVC2	-
905	B5 Input	-				997	SVC2	-
906	B4 4mA	-	1	0	1023	85	SVC2	SVC3
907	B4 20mA	-				1008	SVC2	SVC3
908	B5 4mA	-				255	SVC2	SVC3
909	B5 20mA	-				1008	SVC2	SVC3
910	Y1 4mA	-	1	0	9999	820	SVC2	SVC3
911	Y1 20mA	-				3510	SVC2	SVC3
912	Y2 4mA	-				820	SVC2	SVC3
913	Y2 20mA	-				3510	SVC2	SVC3
914	Y3 4mA	-				820	SVC2	SVC3
915	Y3 20mA	-				3510	SVC2	SVC3
916	ADC F/T	-	1	1	256	4	SVC2	SVC3
917	DAC F/T	-	1	1	256	1	SVC2	SVC3

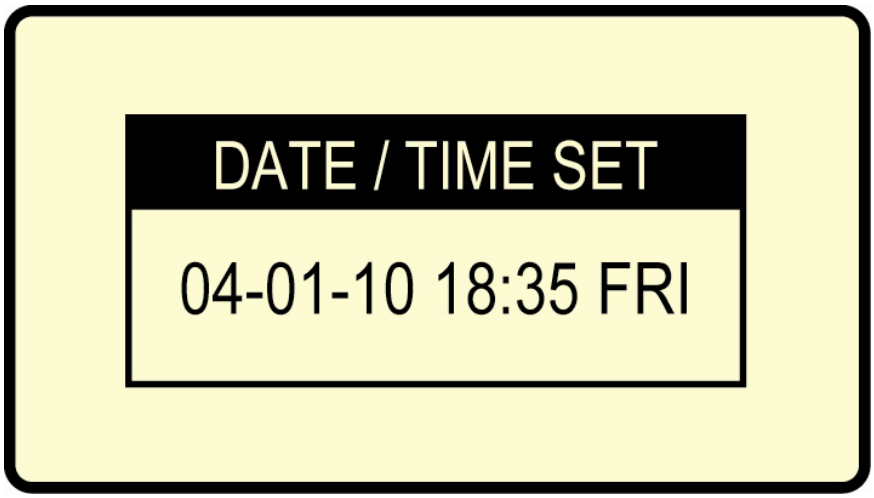
This product has automatic self test function and digital calibration function for digital input / output. This menu is for improving accuracy of hardware and software of our product, when we ship it out. Therefore if you want to change any contents of this menu, please contact us.

① Self Test: ON when shipping out
② Trip/Alarm History Delete : Use when deleting trip/alarm history
③ Operation History Delete : Use when deleting operation history
④ Bn 4mA : Analogue Input (4mA)
⑤ Bn 20mA : Analogue Input (20mA)
⑥ Yn 4mA: A variable number for changing of quantization of analogue output signal (4mA)
⑦ Yn 20mA: A variable number for changing of quantization of analogue output signal (20mA)
⑧ ADC F/T : Input filter for analogue input data (Temperature, Pressure)
⑨ DAC F/T : Output filter for analogue output data (Inverter speed control signal, Transmission Signal)

19) SYSTEM DATE / TIME

Date / Time is used for a point of reference to record system information such as trip/alarm history, operation history and scheduled operation. It is inevitable when any troubles in equipment occur, so please set it up exactly.

① When you push [MENU] button once at operation screen, access code input window is displayed.
② When you push [MENU] button once again, the following window for setting date/time appears.
③ Please set up date / time by using [ENTER] and [Upward] / [Downward] button, and then return to operation screen by pushing [CANCEL] button.
④ A day of the week is automatically set.
⑤ If ":" between hour and minute is not flickered per a second, please set it up once again.



<DATA / TIME SETUP WINDOW>

5. HOW TO INSTALL

1) Installed Place

Please install this controller in the following place in the same way with other general industrial electronic devices.

⊙ No variable temperature change & normal temperature
⊙ No corrosive gas
⊙ Low or high humidity
⊙ Little mechanical vibration
⊙ Little dust and smoke
⊙ Little effect of electric noise
⊙ No effect of strong magnetic filed

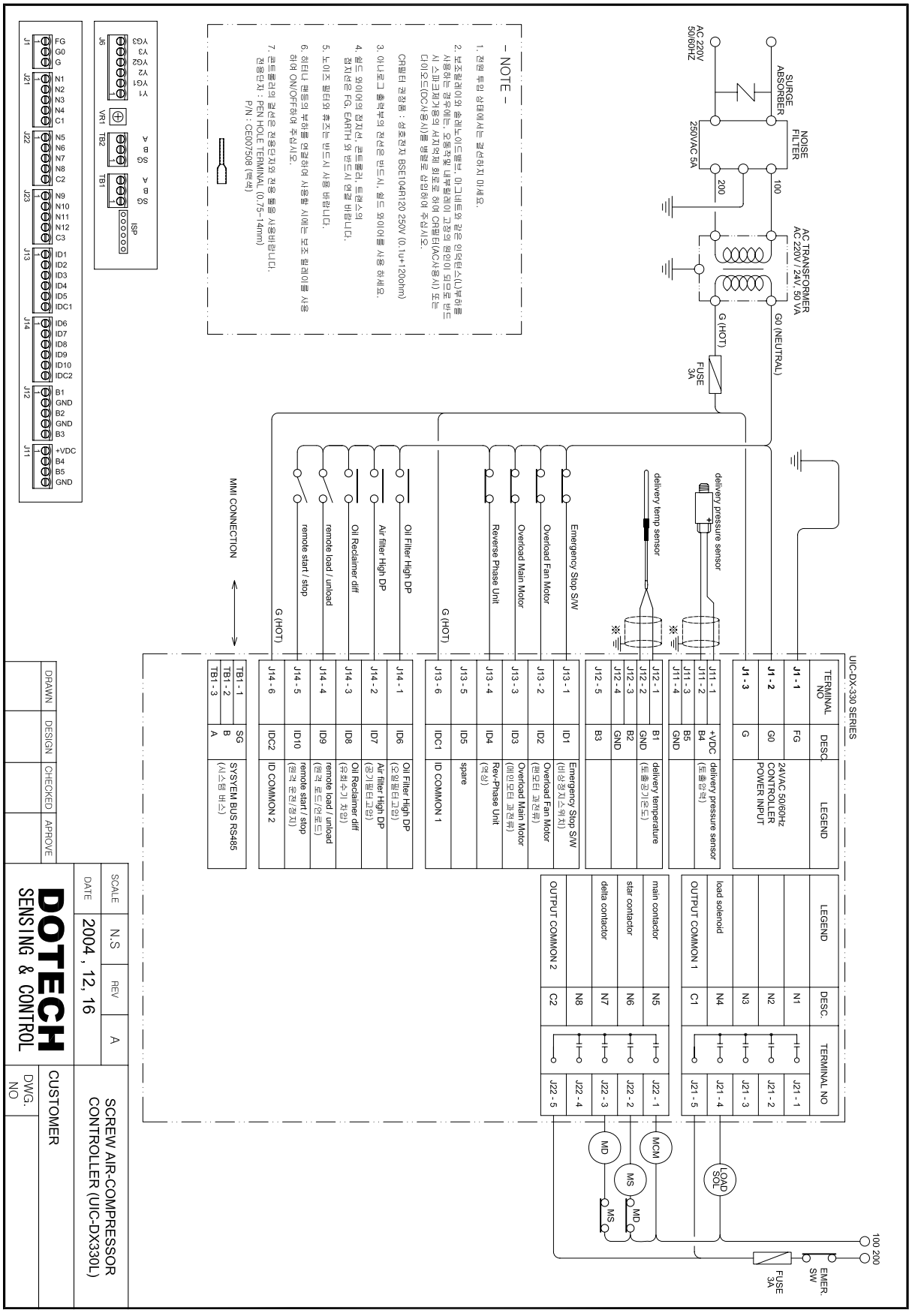
2) Installation Method

⊙ Installed angle should be within 15 degrees of slope from horizontal location.
⊙ Please use more than 2mm thickness of steel plate for sticking panel.
⊙ Do not set up by force.
⊙ Please fasten 4 directions of display with enclosed screws.

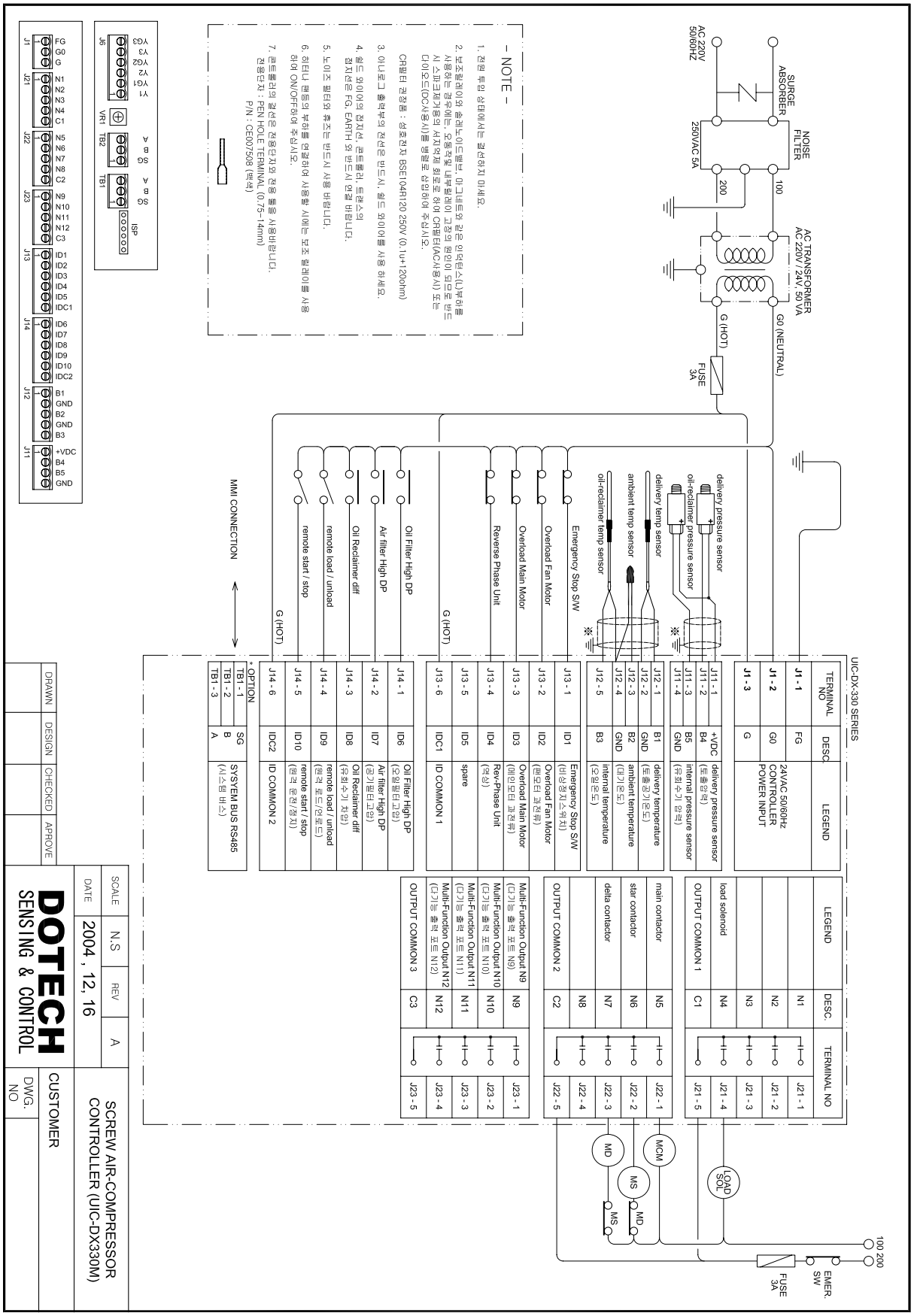
3) Caution for Wiring

⊙ Please use shield cable between display part and main board in order to avoid noise.
⊙ Please keep input/output signal line away more than 30cm from power line and do not put at the same lines together.
⊙ Please install fuse additionally in order to protect controller from overvoltage..
⊙ Please wire surge absorber at magnet control coil in parallel in order to improve stability of controller.
⊙ Please install noise filter in order to improve the stability of controller.
⊙ Please use AWG No. 12~28 and fasten terminal screw at 0.3~0.4N•m torque when wiring.
⊙ Please use terminal connected with controller as pen hole terminal (CE007508 standard).

6. WIRING DIAGRAM – DX330L



7. WIRING DIAGRAM – DX330M



8. WIRING DIAGRAM – DX330V