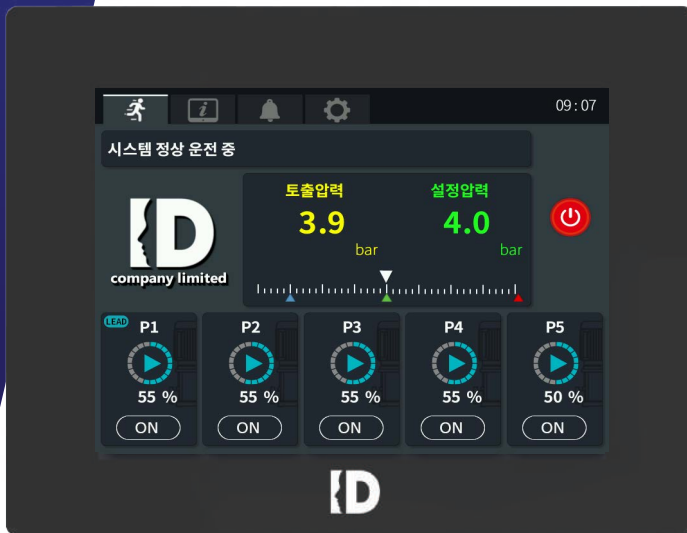


IDC-50

User Manual



Preface

Important information

※NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates an imminently hazardous situation, which, if not avoided, **will result** in death or serious injury.

WARNING

WARNING indicates potentially hazardous situation, which if not avoided, **can result** in death, serious injury or equipment damage.

CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, can result in injury or equipment damage.

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel

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Chapter 2

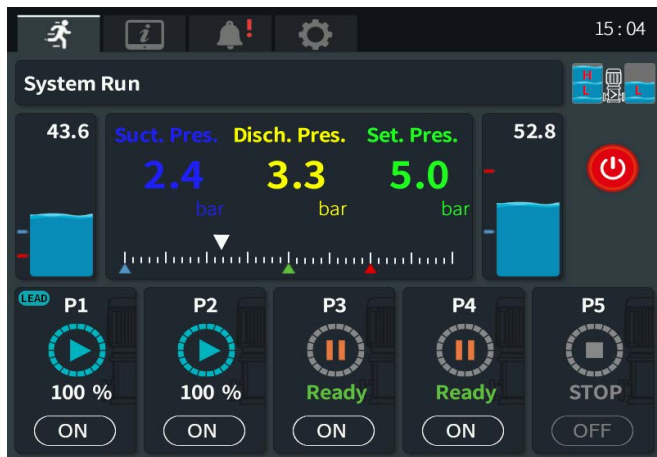
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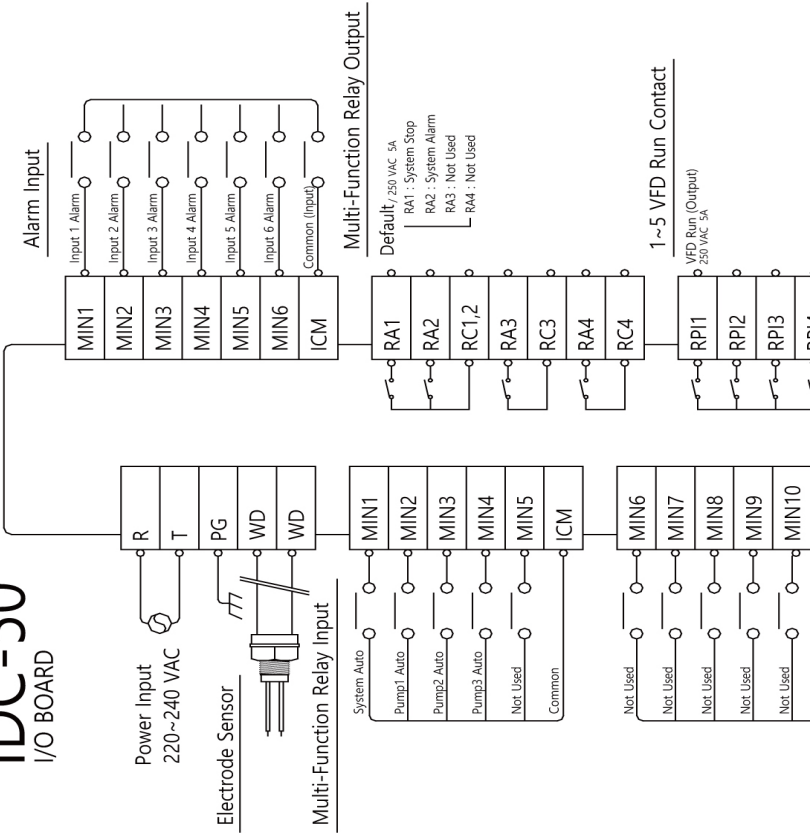
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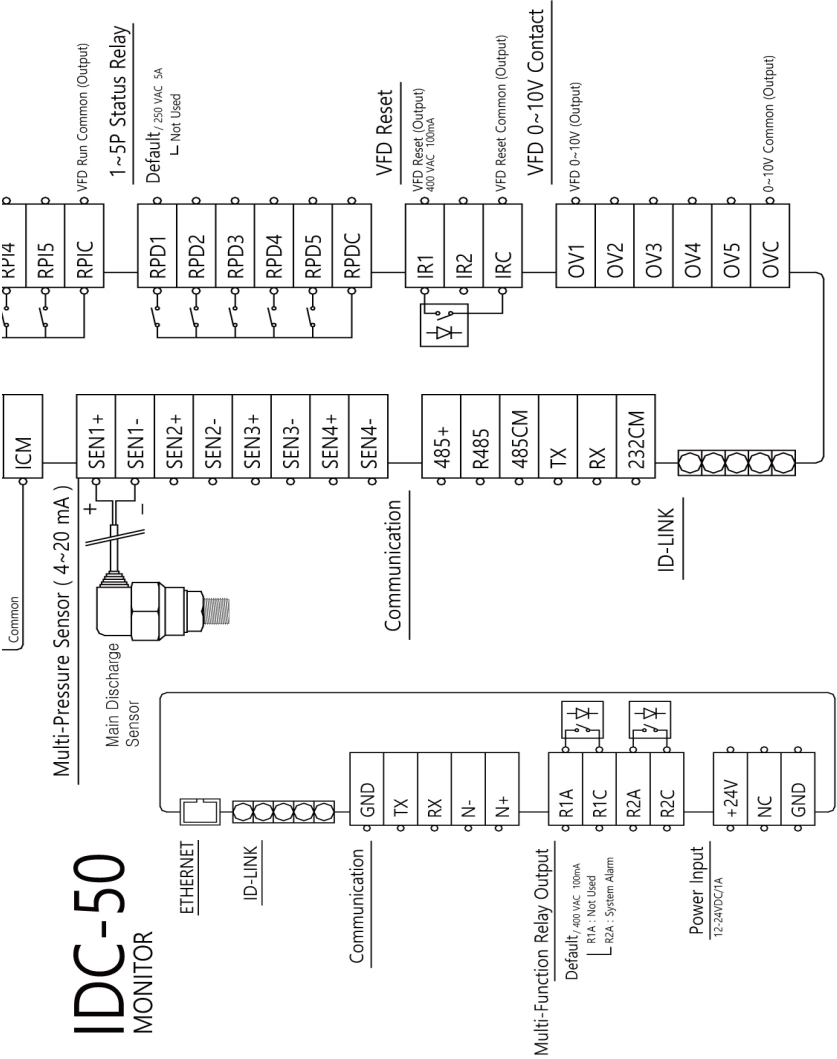


-  **Easy Installation**
-  **User-Friendly**
-  **Auto-Play**
-  **Constant Pressure**

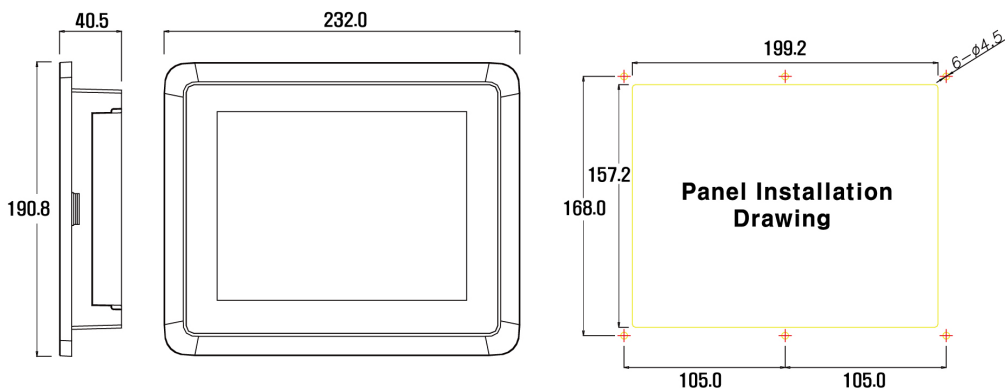
Contents	Description
Operation Method	Individual Inverter Operation (Up to 5 pumps)
Display	8" TFT LCD/ Touch Screen
Languages	Korean / English / Chinese
Input Voltage	220 ~ 240 V
Multi-Function Input / Output	4 inputs / 10 outputs
Temperature & Humidity	-10~40°C / 90%
Run History	Records and displays the operation history
Alarm History	Records and displays the alarm history
Other Functions	Freezing protection, Suction operation, Level contact operation, Schedule operation, Multiple discharge sensors and etc..

IDC-50
I/O BOARD

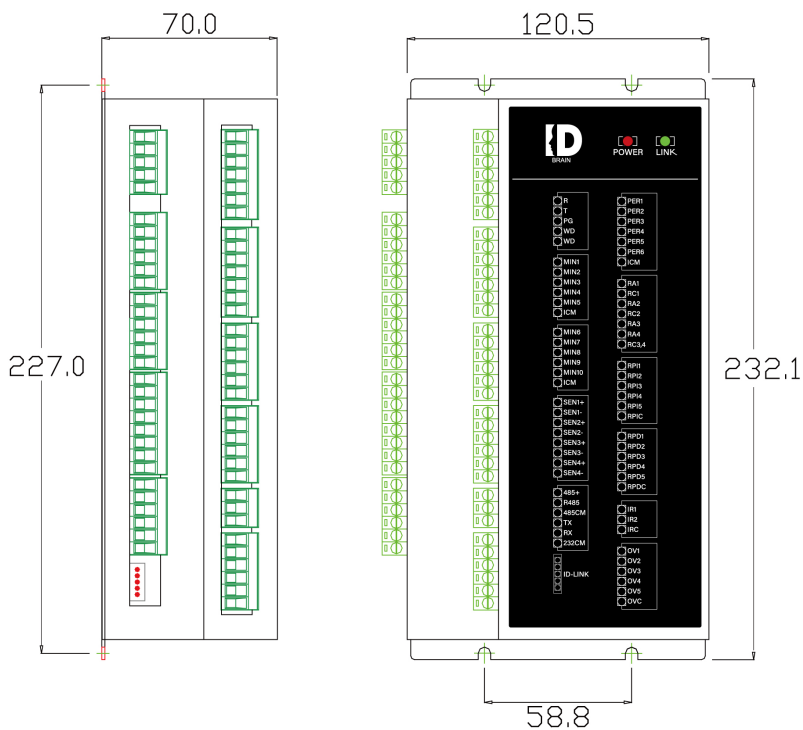


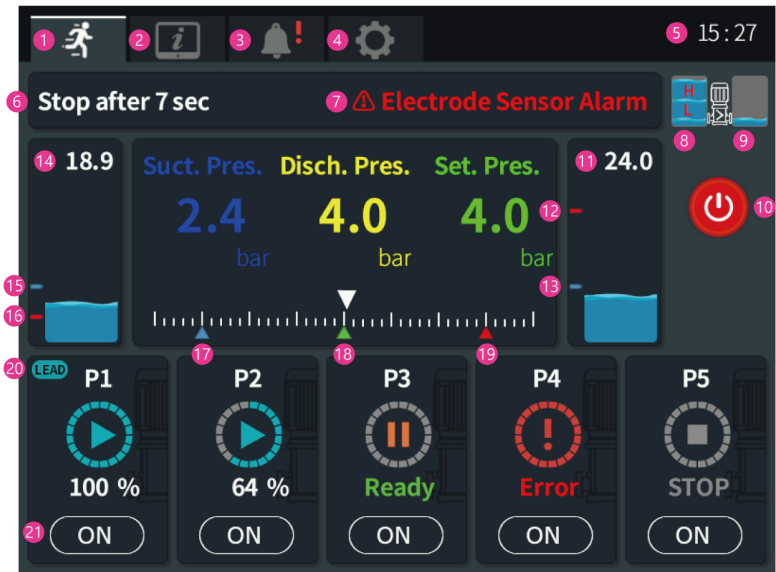


< Monitor >



< I/OBoard >





Interface Description

- | | |
|-----------------------------|--------------------------------|
| 1 Main Interface | 11 Discharge Level (Sensor) |
| 2 Device Information | 12 Stop Level (Discharge) |
| 3 Alarm | 13 Operation Level (Discharge) |
| 4 Setting | 14 Suction Level (Sensor) |
| 5 Current Time | 15 Operation Level (Suction) |
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| 7 Current Alarm | 17 Low Pressure |
| 8 Suction Level (Contact) | 18 Set Pressure |
| 9 Discharge Level (Contact) | 19 High Pressure |
| 10 Main Switch | 20 Main Pump Indicator |
| | 21 Pump Switch |

The screenshot displays a control interface for a pump system. At the top, there is a navigation bar with icons for a person, information, alerts, and settings, along with a clock showing 16:00. Below this, a header section contains the company logo 'ID company limited' and system details: 'IDC - 50' (labeled 1), 'Ver.: 1.00' (labeled 2), 'Controller Ver.: 102' (labeled 2), and 'desc.: Multi VFD Operation' (labeled 3). The main area features a table with pump status data. The table has four columns: 'Sortation', 'Operation status', 'No. of starts', and 'Run time'. It lists five pumps: PUMP 1 (running at 80.5), PUMP 2 (Ready), PUMP 3 (Ready), PUMP 4 (Error), and PUMP 5 (STOP). Each row includes a trash icon (labeled 4) for deletion. The interface is dark-themed with white and green text for status indicators.

Sortation	Operation status	No. of starts	Run time
PUMP 1	▶ 80.5	86	11:22:55
PUMP 2	Ready	64	12:14:39
PUMP 3	Ready	44	8:09:31
PUMP 4	! Error	50	10:08:55
PUMP 5	■ STOP	26	2:00:55

Interface Description

- 1 Device Name
- 2 Device Version
- 3 Panel Description
- 4 Information Reset

Alarm Interface Description

The screenshot shows an alarm log interface. The top navigation bar includes icons for a person, information, alerts, and settings, with a clock showing 15:10. The main area is a table with three columns: 'date' (labeled 2), 'time' (labeled 3), and 'alarm' (labeled 3). It lists nine alarm events, all dated 03. Nov. 21, involving 'Electrode Sensor Alarm Stop', 'Electrode Sensor Alarm', and 'Disch. Low Pressure Stop/Alarm'. A trash icon (labeled 1) is located to the right of the table. On the far right, there are two large buttons with upward and downward arrows for navigating through the alarm list.

date	time	alarm
1. 03. Nov. 21	15:05:50	Electrode Sensor Alarm Stop
2. 03. Nov. 21	15:05:40	Electrode Sensor Alarm
3. 03. Nov. 21	15:04:17	Disch. Low Pressure Stop
4. 03. Nov. 21	15:04:08	Disch. Low Pressure Alarm
5. 03. Nov. 21	15:03:15	Disch. Low Pressure Stop
6. 03. Nov. 21	15:03:06	Disch. Low Pressure Alarm
7. 03. Nov. 21	15:02:55	Disch. Low Pressure Alarm
8. 03. Nov. 21	15:02:31	Disch. Low Pressure Stop
9. 03. Nov. 21	15:02:22	Disch. Low Pressure Alarm

Interface Description

- 1 Alarm Reset
- 2 Alarm Date
- 3 Alarm Time
- 4 Alarm Description

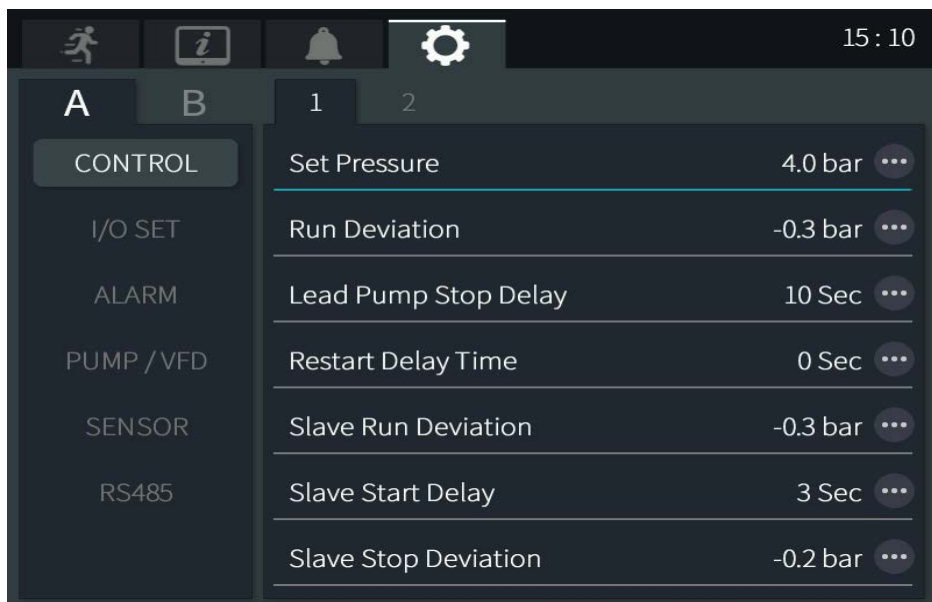
● A Group Parameters

Content	Description
Control Setting	Setting the set pressure, run-deviation, delay time, PID value, alternation time
I/O Setting	Setting the different relay functions and input functions
Alarm Setting	Setting the high pressure, low pressure, system stop, system restart
Pump/VFD Setting	Setting the VFD auto restart, VFD min. output, VFD output stop, VFD feedback, VFD output signal
Sensor Setting	Setting the different sensor ranges, offset, level sensor
RS485 Setting	Setting the speed, stop bit, parity

● B Group Parameters

Content	Description
ENET(Internet) Setting	Available upon request
Schedule Setting	Setting the time, date, day to operate on a certain pressure
Date/Time Setting	Setting the current date and time
System Setting	Setting the password, languages, screen saver time, manual mode

● Control Settings



Content	Input Range	Unit	Default
Set pressure	1.0 ~ 50.0	bar	4.0
Run deviation	-5.0 ~ -0.1	bar	-0.3
Lead pump stop delay	1 ~ 999	Sec	10
Restart delay time	0 ~ 999	Sec	3
Slave run deviation	-5.0 ~ -0.1	bar	-0.3
Slave start delay	1 ~ 999	Sec	3
Slave stop deviation	-5.0 ~ -0.1	bar	-5.0

● Control Settings

Content	Input Range	Unit	Default
Slave stop delay	1 ~ 999	Sec	3
Alternation operation time	1 ~ 999	Hr	3
P	1 ~ 200		25
I	1 ~ 200		40
D	1 ~ 200		40
Friction Compensation	1 ~ 200	bar	0
Operation type	Booster operation, Half pump operation, Circulation operation		Booster

-
- Set pressure Refers to the operating set pressure.
 - Run deviation Refers to the run deviation in which the operation of the system starts.
 - Lead pump stop delay Refers to the stop delay time of the lead pump.
 - Restart delay time Refers to the restart delay time of the system.
 - Slave run deviation Refers to the run deviation of the slave pumps which the slave pumps start operation.

- Slave stop delay Refers to the stop delay time of the slave pumps.
- Alternation operating time Refers to the operating time which is specified by the user to switch operation from the current operating pump to the next pump in line.
- P It is relevant to "P"(Proportional constant) out of the PID control.
- I It is relevant to "I"(Integral constant) out of the PID control.
- D It is relevant to "D"(Differential constant) out of the PID control.
- Friction compensation Refers to the proportional pressure function used for friction loss compensation in large pipe grids.
- Operation type Refers to the type of operation that the user desires.

● I/O Settings



Content	Input Range	Unit	Default
RELAY 1	[Not Used] [System Stop] [System Run] [System Alarm] [Pump Run] [Pump Alarm] [Buzzer] [LVL H Flag] [LVL L Flag]		System Stop
RELAY 2			System Alarm
RELAY 3			Not Used
RELAY 4			Not Used
Pump Status RELAY	[Not Used] [Pump Stop] [Pump Run/Ready] [Pump Run] [Pump Alarm]		Not Used

● I/O Settings

Content	Input Range	Unit	Default
INPUT 1			System RUN
INPUT 2	[Not Used] [System RUN]		Pump 1Run
INPUT 3	[Pump 1 RUN] [Pump 2 RUN]		Pump 2 RUN
INPUT 4	[Pump 3 RUN] [Pump 4 RUN]		Pump 3 RUN
INPUT 5	[Pump 5 RUN] [Buzzer Stop]		Not Used
INPUT 6	[Independent Operation] [User Alarm 1]		Not Used
INPUT 7	[User Alarm 2] [Discharge Level H]		Not Used
INPUT 8	[Discharge Level L] [Suction Level H]		Not Used
INPUT 9	[Suction Level L] [Anti-Freeze]		Not Used
INPUT 10			Not Used

- System Stop
Refers to stopping the whole system. Function can only be activated if there is a transducer installed on the discharge.
- System Run
Refers to activating the contact when the system is in operation or is installed on the discharge pipeline.
- System Alarm
Refers to activating the contact(close) when an alarm occurs with an exception of an inverter alarm.
- Pump Run
Refers to activating the contact (close) when the pump is in operating. Contact will open once the pump is in standby.

- Pump Alarm Refers to activating the contact(close) when an alarm occurs either on the inverter or the pump. Excludes the system alarm.
- Buzzer Refers to activating the buzzer alarm once an alarm occurs either on the inveter, pump, or the booster system.
- LVL H Flag Refers to sending a signal to an external system. A level sensor is needed on the discharge tank in order to activate this function.
- LVL L Flag Refers to sending a signal to an external system. A level sensor is needed on the suction tank in order to activate this function.
- Buzzer Auto Stop After 1 min., after 5 min., after 30 min., after 1 hr., after 3 hrs., after 10 hrs.. Once the Buzzer auto stop has been enabled for the specified time, the buzzer will disable.
- System Run Refers to activating the external remote contact or the main switch from an external location.
- Pump 1/2/3/4/5 Run Refers to activating the switch to operate the pumps.
- Anti-Freeze (option) Refers to the anti-freeze protection function to protect the pumps from any damages that may occur due to low temperatures.
- Independent Operation Refers to operating the I/O independently once the IDC-50 8" monitor disfunctions. Ex.: on input 6, set this as independent operation. Once this is set, during operation once the IDC-50 8" monitor either disfunctions or occurs damage, the I/O board inside the panel is self operate according the pre-set parameters that was previously inputed.
MIN6 contact and ICM contact needs to COM(common) in order to activate independent operation

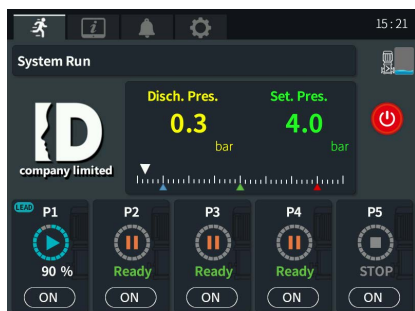
Level Contact Operation

3-1-2

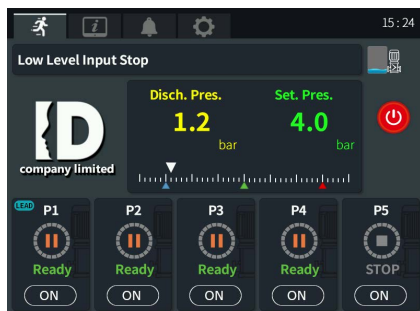
- Discharge and Suction LVL operation can be activated via the INPUT setting.

Content	Input Range	Unit	Default
INPUT 1 ~ 10	[Discharge LVL. H] [Discharge LVL. L] [Suction LVL. H] [Suction LVL. L]		[Discharge LVL. H/L] or [흡입 수위 H/L]

* 토출 수위 설정 시



* 흡입 수위 설정 시

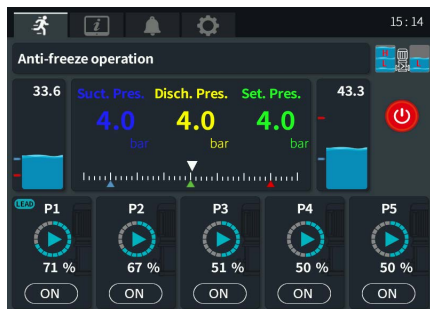


Anti-Freeze(Optional)

3-1-2

Anti-freeze prevention function can be used via a temperature sensor (optional) and utilizing the INPUT setting..

Content	Input Range	Unit	Default
INPUT 1 ~ 10	[Anti-Freeze]		[Anti-Freeze]



All pumps operate with minimal output to prevent damage caused by low temperature..

● Alarm Settings



Content	Input Range	Unit	Default
High Pressure	[Not Used] [Used]		Used
High Pressure	3.0 ~ 50.0	bar	10.0
Low Pressure	[Not Used] [Used]		Used
Low Pressure	0.0 ~ 50.0	bar	1.0
System Stop	0 ~ 999	Sec	10.0
System Restart	0 ~ 999	Sec	0
No. Of Restarts	0 ~ 99	Sec	5
Electrode Sensor	[Not Used] [Used]	Sec	Not Used

- High Pressure Once the operating pressure exceeds the high pressure limit, alarm will occur.
- Low Pressure Once the operating pressure decreases to the low pressure limit, alarm will occur.
- System Stop(Low Pres.) The time in which the system will stop operation when the low pressure occurs.
- System Restart(Low Pres.) The duration(time) of each restart cycle once the low pressure alarm occurs.
- No. Of Restarts(Low Pres.) The number of cycles the system will try to restart once the low pressure alarm occurs.
- Electrode Sensor Refers to the external electrode sensor if used.

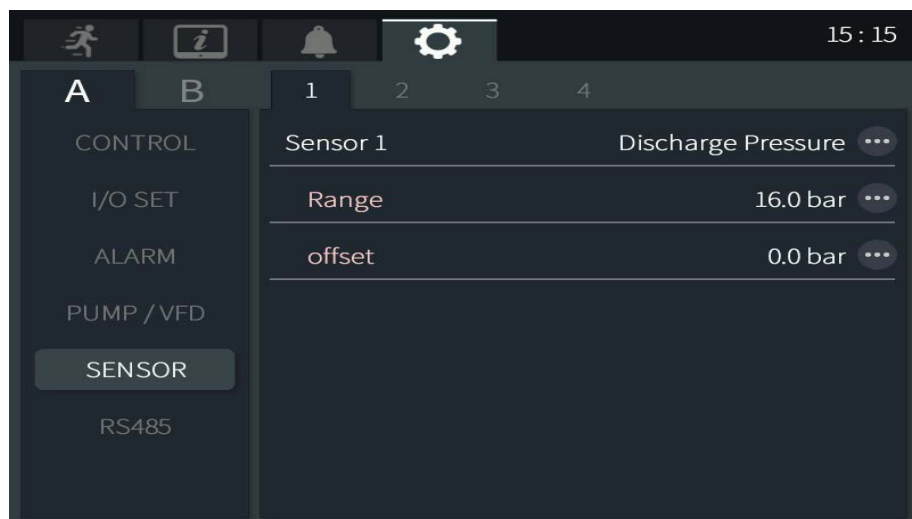
● Pump/VFD Settings



Content	Input Range	Unit	Default
VFD Auto Reset	0 ~ 20	Cycles	5
Pump 1	[Not Used] [Used]		Used
Pump 2	[Not Used] [Used]		Used
Pump 3	[Not Used] [Used]		Used
Pump 4	[Not Used] [Used]		Used
Pump 5	[Not Used] [Used]		Used
VFD Min. Output	30.0 ~ 70.0	%	50.0
VFD Stop Output	30.0 ~ 95.0	%	65.0
VFD Output Signal	4.0 ~ 12.0	VDC	10.00

- VFD Auto Reset Refers to the number of cycles the VFD will operate once an alarm or error occurs before stopping the system.
- Pump 1~5 Refers to the number of pumps that are being utilized within the system. The pumps should be set on used.
- VFD Minimum Output Refers to the minimum output of the VFD.
- VFD Stop Output Refers to the stop output of the VFD.
- VFD Output Signal Refers to the output signal of the VFD.

● Sensor Settings



Content	Input Range	Unit	Default
Sensor 1	[Not Used] [Discharge pressure]		Dis. Pressure
Sensor 2	[Not Used] [Discharge Pres.] [Suction Pres.] [Discharge Lvl.] [Suction Lvl.]		Not Used
Sensor 3	[Not Used] [Discharge Pres.] [Suction Pres.] [Discharge Lvl.] [Suction Lvl.]		Not Used
Sensor 4	[Not Used] [Discharge Pres.] [Suction Pres.] [Discharge Lvl.] [Suction Lvl.]		Not Used
Discharge Pressure: Discharge pressure settings			
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ 1.0	bar	0
Suction Pressure: Suction pressure settings			
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ 1.0	bar	0
Operating Level	[Monitoring] [Control]		Monitoring

Discharge Sensor parameters

- Range To set up the rated capacity of the pressure sensor used.
- Offset To correct the variation between the value of the pressure sensor and the actual pressure value.

Suction pressure parameters

- Monitoring User has the ability to monitor the system and does not have the ability to control the suction pressure.
- Control If the value falls below the stop pressure value, the user has the ability to stop the system. This only applies on the suction pressure.
- Operating Pressure If the pressure falls below the set value, the system will stop all operation. If the pressure value exceeds to the set suction pressure value, the operation of the system will resume.
- Range To set up the rated capacity of the pressure sensor used.
- Offset To correct the variation between the value of the pressure sensor and the actual pressure value.

● Discharge Sensor Settings

Up to 4 discharge sensors can be connected in parallel.

Content	Input Range	Unit	Default
Sensor 1	[Note Used] [Discharge Pressure]		Dis. Pres.
Sensor 2	[Not Used] [Discharge Pres.] [Suction Pres.][Discharge Lvl.] [Suction Lvl.]		Dis. Pres.
Sensor 3	[Not Used] [Discharge Pres.] [Suction Pres.][Discharge Lvl.] [Suction Lvl.]		Dis. Pres.
Sensor 4	[Not Used] [Discharge Pres.] [Suction Pres.][Discharge Lvl.] [Suction Lvl.]		Dis. Pres.
Discharge Pressure: Discharge pressure settings			
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ 1.0	bar	0

Suction Pressure Monitoring/Control

● Suction Pressure Monitoring/Control

The suction pressure value can be monitored and controlled through the settings below

Content	Input Range	Unit	Default
Sensor 2	[Not Used] [Discharge Pres.] [Suction Pres.][Discharge Lvl.] [Suction Lvl.]		Suction Pressure
Sensor 3			
Sensor 4			
Suction Pressure: Suction pressure settings			
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ 1.0	bar	0
Operation Level	[Monitoring] [Control]		Monitoring

● Discharge Level

The water level value can be monitored and controlled through the settings below;

Content	Input Range	Unit	Default
	[Not Used] [Discharge Pres.] [Suction Pres.][Discharge Lvl.] [Suction Lvl.]		Discharge Pressure
Sensor 3			
Sensor 4			
Discharge Level Pressure: Discharge level pressure settings			
4mA value	0.0 ~ 100		0.0
20mA value	1.0 ~ 100		100.0
Stop Level	0.0 ~ 100		80.0
Operation Level	1.0 ~ 100		50.0
LVL H Flag ON	1.0 ~ 100		50.0
LVL H Flag OFF	1.0 ~ 100		20.0

<Operation Screen>

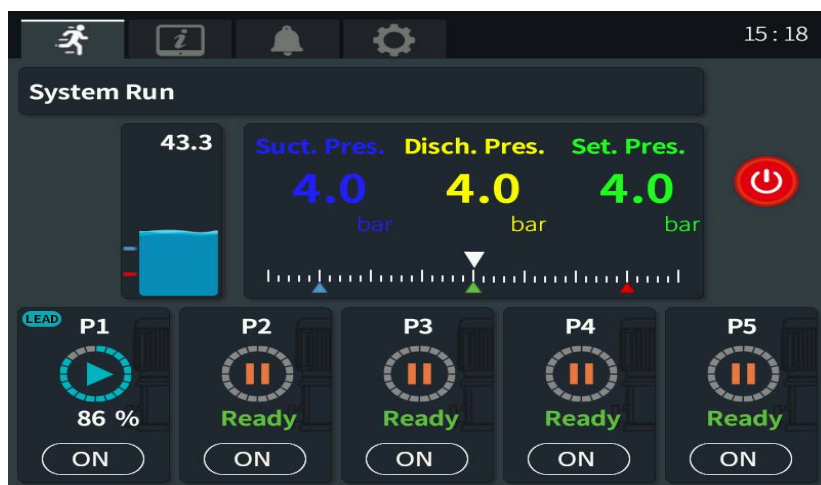


● Suction Level

The water level value can be monitored and controlled through the settings below;

Content	Input Range	Unit	Default
	[Not Used] [Discharge Pres.] [Suction Pres.][Discharge Lvl.] [Suction Lvl.]		Suction Level
Sensor 3			
Sensor 4			
Suction Level Pressure: Suction level pressure settings			
4mA value	0.0 ~ 100		0.0
20mA value	1.0 ~ 100		100.0
Stop Level	0.0 ~ 100		10.0
Operation Level	1.0 ~ 100		30.0
LVL L Flag ON	1.0 ~ 100		30.0
LVL L Flag OFF	1.0 ~ 100		50.0

< Operation Screen >



● LVL L Flag ON / OFF

- LVL L Flag ON / OFF : This function prevents dry-run to the system, and sends a

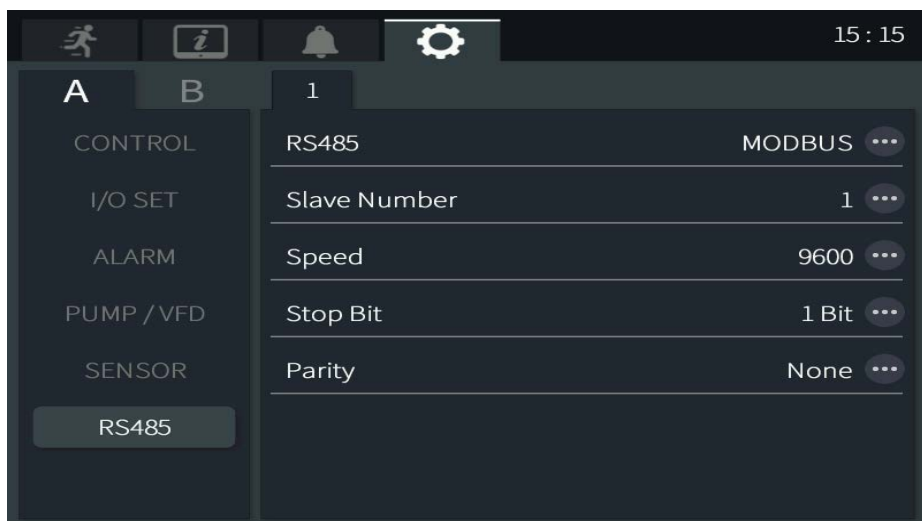
Level High Flag ON/OFF

- LVL H Flag ON
When setting the discharge level control pressure sensor and setting the RELAY 3 on LVL H FLAG, when the discharge level value exceeds the FLAG ON setting value, the RELAY 3 contacts RA3 and RC3 are closed.
- LVL L Flag OFF
When setting the discharge level control pressure sensor and setting the RELAY 3 on LVL H FLAG, when the discharge level is less than the FLAG OFF setting value, the RELAY 3 contacts RA3 and RC3 are opened.

Level Low Flag ON/OFF

- LVL L Flag ON
When setting the suction level control pressure sensor and setting the RELAY 3 on LVL L FLAG, when the suction level value exceeds the FLAG ON setting value, the RELAY 3 contacts RA3 and RC3 are closed.
- LVL L Flag OFF
When setting the suction level control pressure sensor and setting the RELAY 3 on LVL L FLAG, when the suction level is less than the FLAG OFF setting value, the RELAY 3 contacts RA3 and RC3 are opened.

● RS485 Settings

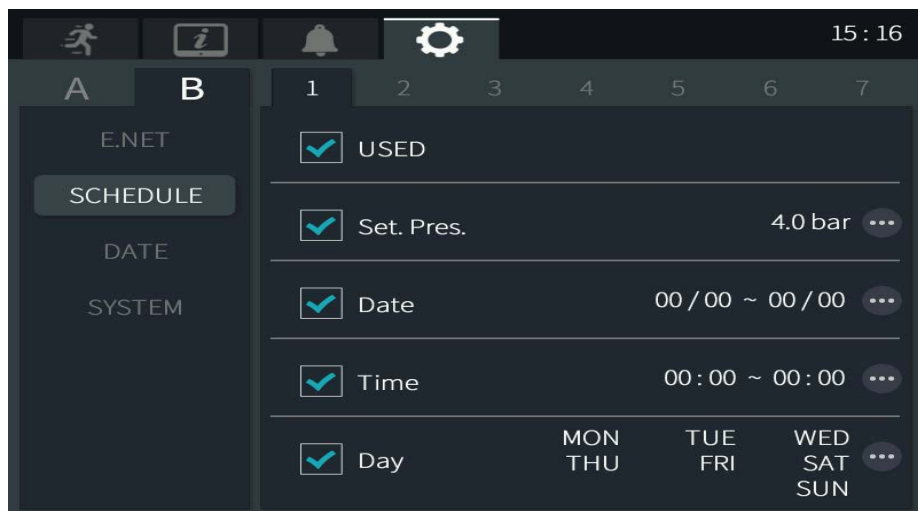


Content	Input Range	Unit	Default
RS485	[Close] [Modbus]		Close
Slave Number	1 ~ 32		1
Speed	[4800] [9600] [14400] [19200] [38400] [57600] [76800] [115200]		9600
Stop Bit	[1 Bit] [2 Bit]		1 Bit
Parity	[None] [Odd] [Even]		None

● Internet Settings

Content	Input Range	Unit	Default
S/N	0 ~ 1000000		0
DHCP	[Disable] [Enable]		Disable
IP Address	Using the virtual keypad		192.168.000.010
Mask			255.255.255.0
Gate Way			192.168.000.001
DNS			203.248.252.002
Protocol			TCP SERVER
	[TCP SERVER] [TCP CLIENT] [UDP SERVER] [UDP CLIENT]		
Local Port	0 ~ 65535		9998
Security	[Disable] [AES] [DES3]		Disable
Data Format	[NONE] [MODBUS RTU]		NONE

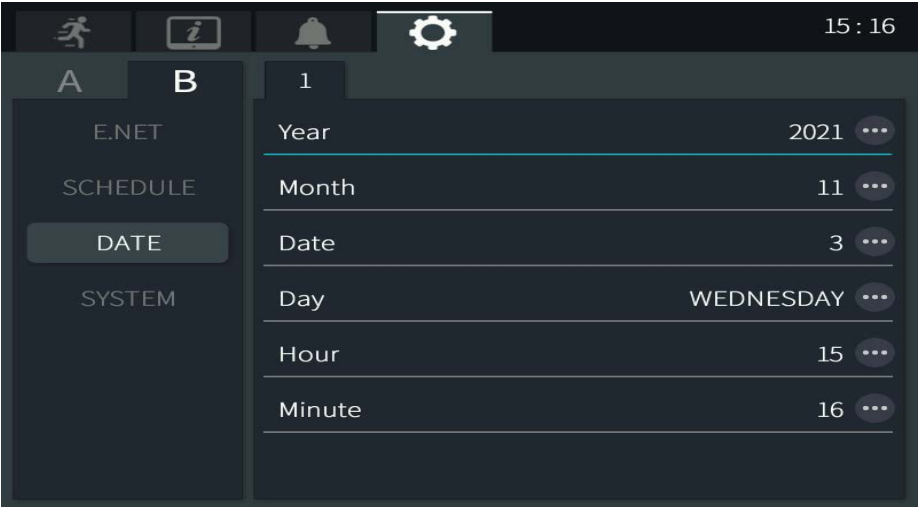
● Schedule Operation



Content	Input Range	Unit	Default
USED	Click on the USED icon		
Set Pressure	0.0 ~ 100.0	Bar	4.0
Date	00 / 00 ~ 00 / 00	00 / 00	100.0
Time	00 : 00 ~ 00 : 00	00 : 00	10.0
Day	[Monday] [Tuesday] [Wednesday] [Thursday] [Friday] [Saturday][Sunday]	Day	30.0

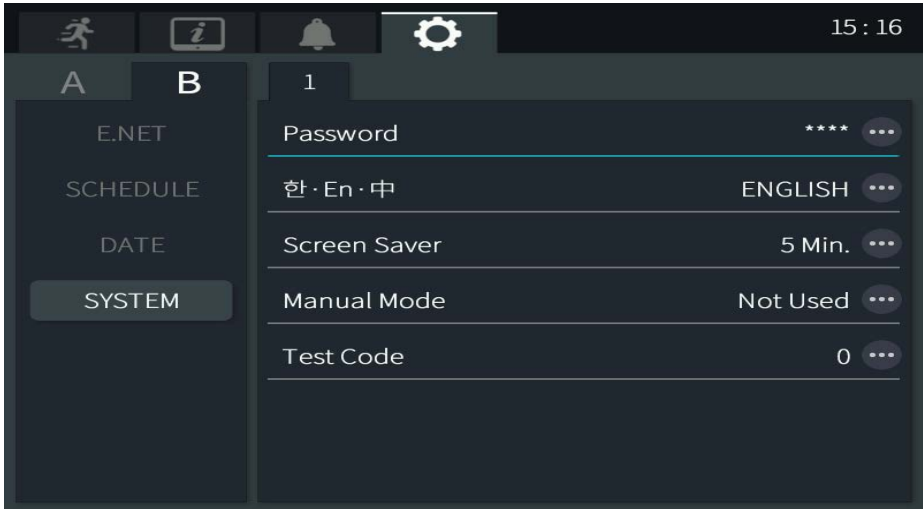
Up to 7 schedules can be set within the schedule operation settings.

● Date/Time



Content	Input Range	Unit	Default
Year	0 ~ 9999		Current year
Month	1 ~ 12		Current month
Day	1 ~ 31		Current Day
Day Of The Week	[Monday] [Tuesday] [Wednesday][Thursday] [Friday] [Saturday][Sunday]		Current day of the week
Hour	0 ~ 23		Current time
Minute	0 ~ 59		Current time

● System Settings



Content	Input Range	Unit	Default
Password	0 ~ 9999		
Languages	[Korean] [English] [Chinese]		English
Screen Saver	[After 1 Min.] [After 5 Mins.] [After 30 Mins.] [After 1 Hrs.] [After 3 Hrs.] [After 10 Hrs.][Not Used]		5 Min.
Manual Mode	[Used] / [Not Used]		Not Used
Test Code	0 ~ 99999		

Alarm	Cause	Corrective Action
Discharge Sensor Fail	<ul style="list-style-type: none"> - Sensor is damaged - Incorrect connection of the sensor wiring 	<ul style="list-style-type: none"> - Check the electrical connection - Replace the sensor
Suction Sensor Fail		
Level Sensor Fail		
High Pressure Alarm	<ul style="list-style-type: none"> - Incorrect value inputted within the high pressure parameter 	<ul style="list-style-type: none"> - Check the value in the high pressure parameter and change this value
Low Pressure Alarm	<ul style="list-style-type: none"> - Air bubbles may have formed within the pump or the pipeline - Incorrect value inputted within the low pressure parameter 	<ul style="list-style-type: none"> - Release the air from the air vent - Check the value in the low pressure parameter and change this value
Low Pressure Stop	<ul style="list-style-type: none"> - Broken pipe or large leak detected within the system 	<ul style="list-style-type: none"> - Check the system for large leak or pipe break - Restart of the system can be set so once the alarm sounds, the system will auto. Restart the system
Electrode Sensor Alarm	<ul style="list-style-type: none"> - Low water level within the pipeline 	<ul style="list-style-type: none"> - Check the condition of the level sensor and the water level within the pipeline
Electrode Sensor Alarm	<ul style="list-style-type: none"> - Broken water level sensor 	
Inverter 1 error	<ul style="list-style-type: none"> - An error has occurred on the selected inverter 	<ul style="list-style-type: none"> - If the VFD auto restart is set, the inverter will automatically restart within the set cycles. Within the set cycles, if the error is not resolved, the inverter with the error will be skipped. After 24 hours within the set cycles, the cycle will be reset to zero
Inverter 2 error		
Inverter 3 error		
Inverter 4 error		
Inverter 5 error		

Alarm	Cause	Corrective Action
User Alarm 1	- User alarm 1 has occurred	- If the multi input (INPUT1-10) is utilized by the user, the alarm will occur.
User Alarm 1 Stop	- An error has occurred on the selected inverter	- The system will stop if this alarm occurs, however if the INPUT 1-10 is disabled, the system will Auto. Restart.
User Alarm 2	- An error has occurred on the selected inverter	- If the multi input (INPUT1-10) is utilized by the user, the alarm will occur.
User Alarm 2 Stop	- An error has occurred on the selected inverter	- The system will stop if this alarm occurs, however if the INPUT 1-10 is disabled, the system will Auto. Restart.

Warrenty

ID Company guarantee the quality of the product authorized and passed all of the required QC procedure. Warranty periods and warranty services are varied in accordance with the region where the customer purchased the product. The period applies from the date of the purchase by the first customer. The warranty only covers manufacturing defects.

Product	PID Controller	Warranty	
Model	IDC-50	Date from	
Place		Agent	

The cost of repair and/or replacement of the product under warranty.

The warranty is invalidated if the defect is caused (howsoever) by misuse, neglect, and tampering or incorrect adjustment.

It is invalidated if unauthorized persons carry out any alterations and/or repairs.

Also, the warranty is invalidated in the following cases:

- For repair due to incorrect installation by customer's discretion
- For repair to any product where the serial number has been removed

To obtain technical assistance or to book a service/repair to your product under warranty, please contact our customer care centre.

To assist our customer service team, please have your model number, serial number and date of purchase ready when calling.



company limited

ID COMPANY LIMITED

ADDRESS: Ga-dong, 10-3, Hwanggogae-ro 346beon-gil, Siheung-si, Gyeonggi-do, Republic of Korea

Tel: +82-031-431-8640 Fax: +82-031-431-8641

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