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 warm 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 in 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.

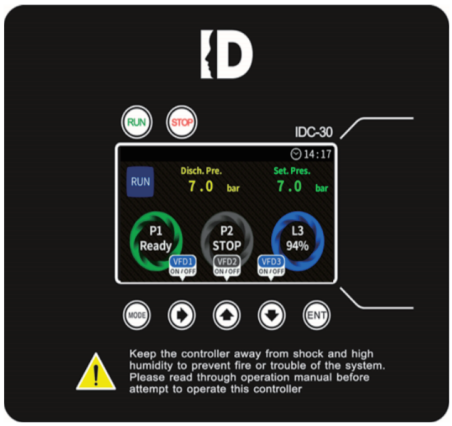
⚠ CAUTION

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

IDC-30 | User Manual

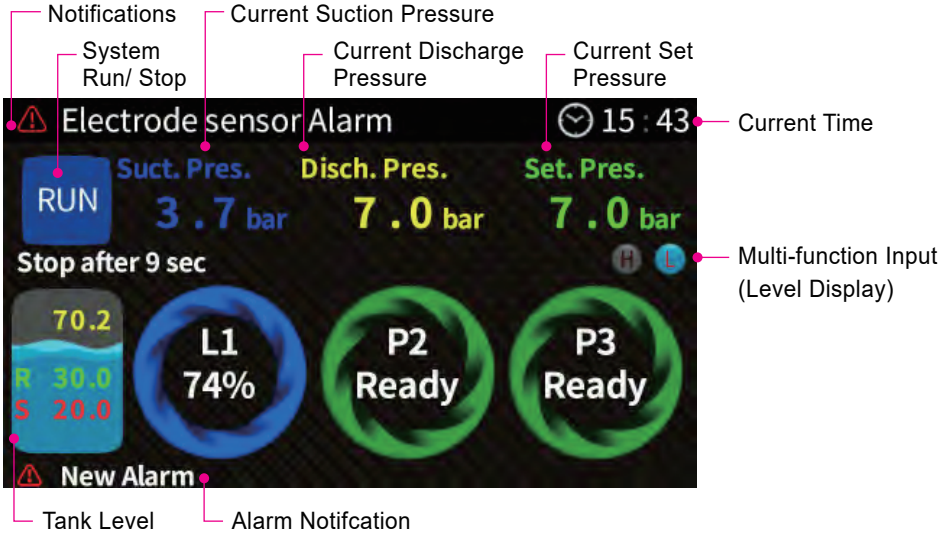
CONTENTS



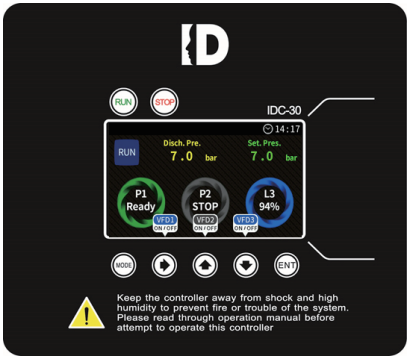
- **Easy Installation**
- **User-Friendly**
- **Auto Play**
- **Constant Pressure**

Contents	Description
Operation Method	Individual Inverter Operation (Up to 3 pumps)
Display	4.3" TFT LCD w/ keypad
Languages	Korean / English / Chinese
Input Voltage	220 ~ 240 V
Multi-Function Input / Output	7 inputs / 3 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, Multiple discharge sensors and etc..

Main Screen Description

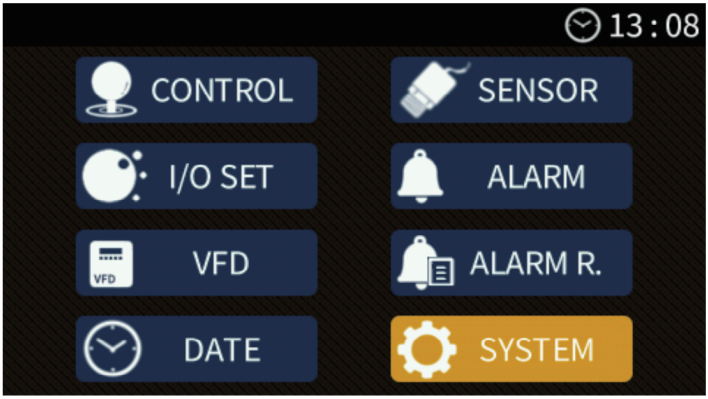


Keypad Description



Icon	Description
RUN	System Run
STOP	System Stop
MODE	Entering into the different parameters/ functions
◀ ▲ ▼	Right/Up/Down buttons to navigate through the settings
ENT	To confirm the settings

company limited



Category	Contents
CONTROL	Setting the set pressure, run-deviation, delay time, PID value, alternation time
SENSOR	Setting the different sensor ranges, offset, level sensor
I/0 SET	Setting the different relay functions and input functions
ALARM	Setting the high pressure, low pressure, system stop, system restart
VFD	Setting the VFD auto restart, VFD min. output, VFD output stop, VFD feedback, VFD output signal
ALARM R.	Different alarm history
DATE	Setting the current date and time
SYSTEM	Setting the languages, screen saver time, password, keypad on/off

On the main menu, click on CONTROL SETTING and click on the enter key to enter the menu.

● Operation Setting

Content	Input Range	Unit	Default
Set Pressure	1.0 ~ 50.0	bar	4.0
Run Deviation	-5.0 ~ -0.1	bar	-0.3
Restart Delay Time	0 ~ 999	Sec	0
Slave Start Delay	1 ~ 999	Sec	3
Slave Run Deviation	-5.0 ~ -0.1	bar	-0.3
Slave Stop Delay	1 ~ 999	Sec	3
Alternate Operation Time	1 ~ 999	Hours	3
P	1 ~ 200		25
I	1 ~ 200		40
D	1 ~ 200		40

- Set Pressure — Refers to the operating set pressure.
- Run Deviation — Refers to the run deviation in which the operation of the system starts.
- Restart Delay Time — Refers to the restart delay time of the system. This is to avoid any unneccessary operation of the system.
- Slave Run Deviation — Refers to the run deviation of the slave pumps which the slave pumps will start operation.
- Slave Stop Delay — Refers to the stop delay time of the slave pumps.
- Alternate Operation Time — Refers to the operation time which is specified by the user to swtich the operation from one pump to the next pump in line.
- P — It is relevant to 'P'(Propotional Constant) out of the PID control parameters.
- I — It is relevant to 'I'(Integral Constant) out of the PID control parameters.
- D — It is relevant to 'D'(Differential Constant) out of the PID control parameters.

On the main menu, click on SENSOR SETTING and click on the enter key to enter the menu.

● Sensor Setting

Content	Input Range	Unit	Default
Sensor 1	[Not Used] [Discharge Pressure]		Discharge Pressure
Sensor 2	[Not Used] [Discharge Pressure] [Suction Pressure]		Not Used
Sensor 3	[Not Used] [Discharge Pressure] [Suction Pressure] [Level Sensor]		Not Used
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ 1.0	bar	0
Operation Method	[Monitoring] [Control]		
Stop Pressure	0.1 ~ 50.0	bar	1.0
Operation Pressure	1.0 ~ 50.0	bar	2.0
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ 1.0	bar	0
4mA	0.0 ~ 100		0.0
20mA	1.0 ~ 100		100.0
Stop Level	0.0 ~ 100		10.0
Operation Level	1.0 ~ 100		30.0

- 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.
- 4mA ~ 20mA — Refers to 4-20mA level sensor that would typically be used to measure the depth of a water tank. Where 0m is represented by 4mA and the max meter is represented by 20mA.
- Stop Level — Refers to the set level when the system stops operation.
- Operation Level — Refers to the set level when the system starts operation.

Multiple Discharge Sensors Setting Method

2-3-1

Multiple discharge sensors can be connected by setting the parameters as follows;

● Multiple Discharge Sensor

Content	Input Range	Unit	Setting
Sensor 1	[Not Used] [Discharge Pressure]		Discharge Pressure
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ 1.0	bar	0
Sensor 2	[Not Used] [Discharge Pressure] [Suction Pressure]		Not Used
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ -1.0	bar	0
Sensor 3	[Not Used] [Discharge Pressure] [Suction Pressure] [Level Sensor]		Suction Pressure
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ -1.0	bar	0

Suction Pressure Monit./Oper. Setting Method

2-3-2

Suction pressure can be monitored and operated within the IDC-30 by setting the parameters as follows;

● Suction Sensor

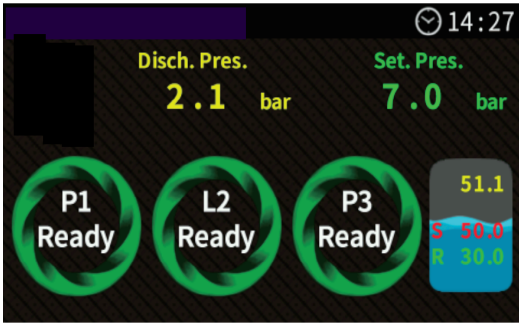
Content	Input Range	Unit	Setting
Sensor 2	[Not Used] [Discharge Pressure] [Suction Pressure]		Suction Pressure
Sensor 3	[Not Used] [Discharge Pressure] [Suction Pressure] [Level Sensor]		Suction Pressure
Operation Method	[Monitoring] [Control]		Control
Stop Pressure	0.1 ~ 50.0	bar	1.0
Operation Pressure	1.0 ~ 50.0	bar	2.0
Range	2.0 ~ 50.0	bar	16.0
Offset	-1.0 ~ -1	bar	0

Water level sensor can be connected unto the IDC-30 to indicate the water level by setting the parameters as follows;

● Sensor Setting

Content	Input Range	Unit	Setting
Sensor 3	[Not Used] [Discharge Pressure] [Suction Pressure] [Level Sensor]		Level Sensor
4mA	0.0 ~ 100		0.0
20mA	1.0 ~ 100		100.0
Stop Level	0.0 ~ 100		10.0
Operation Level	1.0 ~ 100		30.0

Change the sensor 3 to level sensor to utilize the water level sensor. Once this is set, a level icon should appear on the main operation screen.



※ Note: If the value of the stop level is greater than the value of the operation level, the system will operate on discharge level and vice versa. With this said, the level icon will change from left to right depending on the setting.

On the main menu, click on I/O SETTING and click on the enter key to enter the menu.

● I/O Setting

Content		Input Range	Unit	Default
	Relay 1	[Not Used] [System Stop] [System Run] [System Alarm] [Pump Run] [Pump Alarm] [Buzzer]		System Stop
	Relay 2			System Alarm
	Relay 3			Not Used
Buzzer	Buzzer Auto Stop	[After 1 Min.] [After 5 Min.] [After 30 Min.] [After 1 Hr.] [After 3 Hr.] [After 10 Hr.] [Not Used]		After 1 Min.
	INPUT 1	[Not Used] [System Run]		System Run
	INPUT 2	[Not Used] [Pump 1 Run]		Pump 1 Run
	INPUT 3	[Not Used] [Pump 2 Run]		Pump 2 Run
	INPUT 4	[Not Used] [Pump 3 Run]		Pump 3 Run
	INPUT 5	[Not Used] [Anti-freeze]		Not Used
	INPUT 6	[Not Used] [User Alarm 1] [Disch. Level H] [Suct. Level H]		Not Used
	INPUT 7	[Not Used] [User Alarm 2] [Disch. Level L] [Suct. Level L]		Not Used
User Alarm 1/2	System Stop	2.0 ~ 50.0		10.0
	System Restart	-1.0 ~ -1.0		10.0
Discharge H / Suction H	System Stop	2.0 ~ 50.0		10.0
	System Restart	-1.0 ~ -1.0		10.0

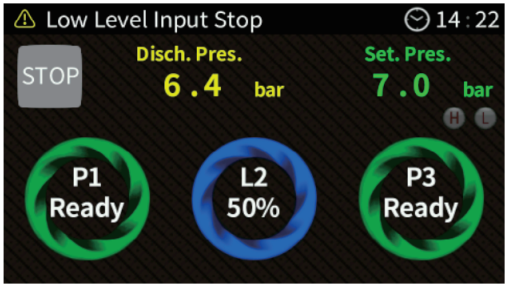
- Relay 1,2,3 — Refers to the system output function that the user desires.
- Auto Buzzer Stop — Refers to the time when the buzzer stop will stop.
- INPUT 1~7 — Refers to the system input function that the user desires.
- User Alarm 1/2 — Refers to system input alarm set by the user when the system stops and restarts.
- Discharge High/ Suction High — Refers to system input for the discharge high level and suction high level when the system stops and restarts.

Level Contact Operation

2-4-1

A water level sensor can be connected unto the IDC-30 by utilizing the INPUT 6 and INPUT 7 and by changing the parameters as follows;

Content		Input Range	Unit	Default
	INPUT 6	[Not Used] [User Alarm 1] [Disch. Level H] [Suct. Level H]		Not Used
	INPUT 7	[Not Used] [User Alarm 2] [Disch. Level L] [Suct. Level L]		Not Used
User Alarm 1/2	System Stop	2.0 ~ 50.0		10.0
	System Restart	-1.0 ~ -1.0		10.0
Discharge H / Suction H	System Stop	2.0 ~ 50.0		10.0
	System Restart	-1.0 ~ -1.0		10.0



In order to detect the low water level in the suction pipeline, change the INPUT 6 to suction lvl H and INPUT 7 to suction lvl L. To measure the discharge water level, change the INPUT 6 to discharge lvl H and INPUT 7 to discharge lvl L.

※ Note: Two icons will appear on the right hand side indicating H and L once the level contact is activated.

Anti-freeze Protection

2-4-2

Anti-freeze protection for the pumps can be set within the IDC-30 by changing the parameters as follows;

Content	Input Range	Unit	Setting
INPUT 5	[Not Used] [Anti-freeze]		Anti-freeze

On INPUT 5, change this to Anti-freeze protection. This prevents the pump from any damages that it may occur due to low temperature. Connect the temperature sensor to the terminal input 5. Once the Anti-freeze function is enabled, a caution display will appear on notification and all of the pumps will operate at minimum output.

On the main menu, click on ALARM SETTING and click on the enter key to enter the menu.

● Alarm Setting

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 Restart	0 ~ 99	Cycle	5
Electrode Level	[Not Used] [Used]		Not Used
System Stop	0 ~ 999	Sec	10.0
System Restart	0 ~ 999	Sec	0

- 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 — Refers to the time the system stops all operation after the set time.
- System Restart — Refers to the duration(time) of each cycle of restarts.
- Number of Restart — Refers to the number of cycles the system will try to restart the system once an alarm occurs.
- Electrode Level — Refers to an external electrode level.
- System Stop — Refers to the system stoppage time if a electrode level is utilized within the system.
- System Restart — Refers to the restart time of the system if a electrode level is utilized within the system.

On the main menu, click on VFD SETTING and click on the enter key to enter the menu.

● VFD Setting

Content	Input Range	Unit	Default
VFD Auto Restart	0 ~ 20	Cycle	5
VFD 1	[Not Used] [Used]		Not Used
VFD 2	[Not Used] [Used]		Not Used
VFD 3	[Not Used] [Used]		Not Used
VFD Min. Output	30.0 ~ 70.0	%	50.0
VFD Stop. Output	30.0 ~ 95.0	%	65.0
VFD Feedback	[Not Used] [Used]		Not Used
VFD Output Signal	4.0 ~ 12.0	VDC	10.0

- VFD Auto Restart — Refers to the number of cycles the VFD will operate once an alarm or error has occured before stopping the system.
- VFD 1,2,3 — If the VFD input is being ultizied, the default should be changed to use.
- VFD Min. Output — Refers to the minimum output.
- VFD Stop Output — Refers to the stop output.
- VFD Feeback — Refers to if the user is wanting feedback from the VFD to the IDC-30.
- VFD Output Signal — Refers to the output signal

Date / Time

2-7

On the main menu, click on DATE/TIME SETTING and click on the enter key to enter the menu.

● Date / Time Setting

Content	Input Range	Unit	Default
Year	0000 ~ 9000		Current Date
Month	01 ~ 12		Current Date
Date	01 ~ 31		Current Date
Hour	00 ~ 23		Current Date
Minute	00 ~ 59		Current Date

System

2-8

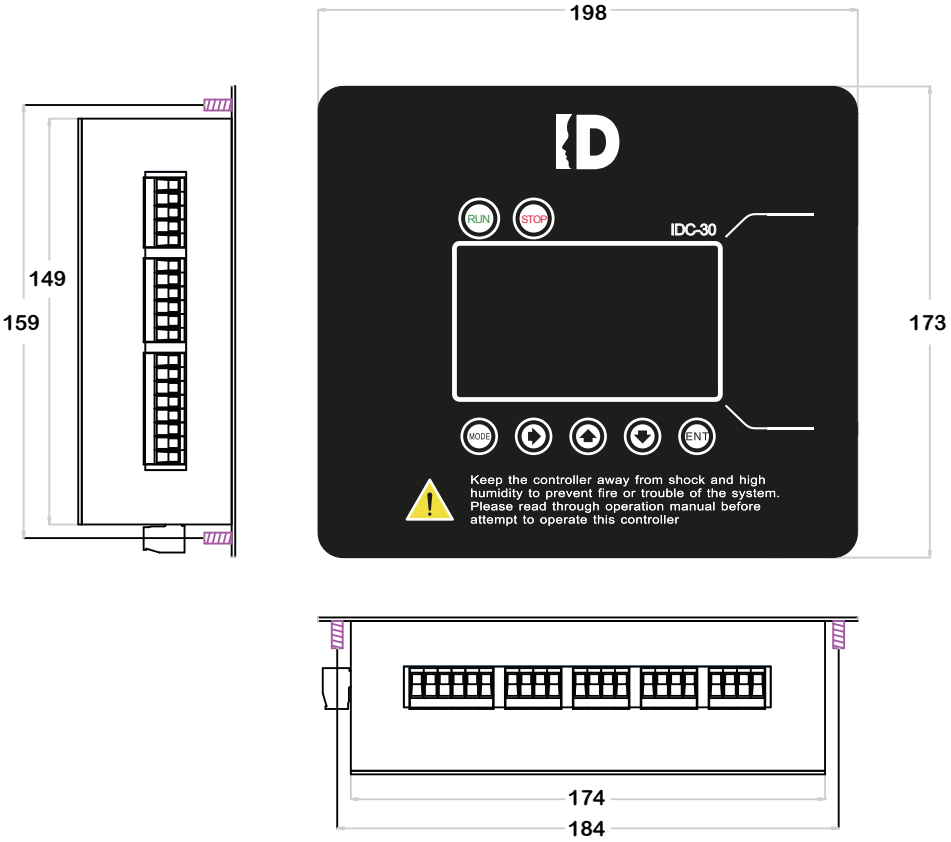
On the main menu, click on SYSTEM SETTING and click on the enter key to enter the menu.

● System Setting

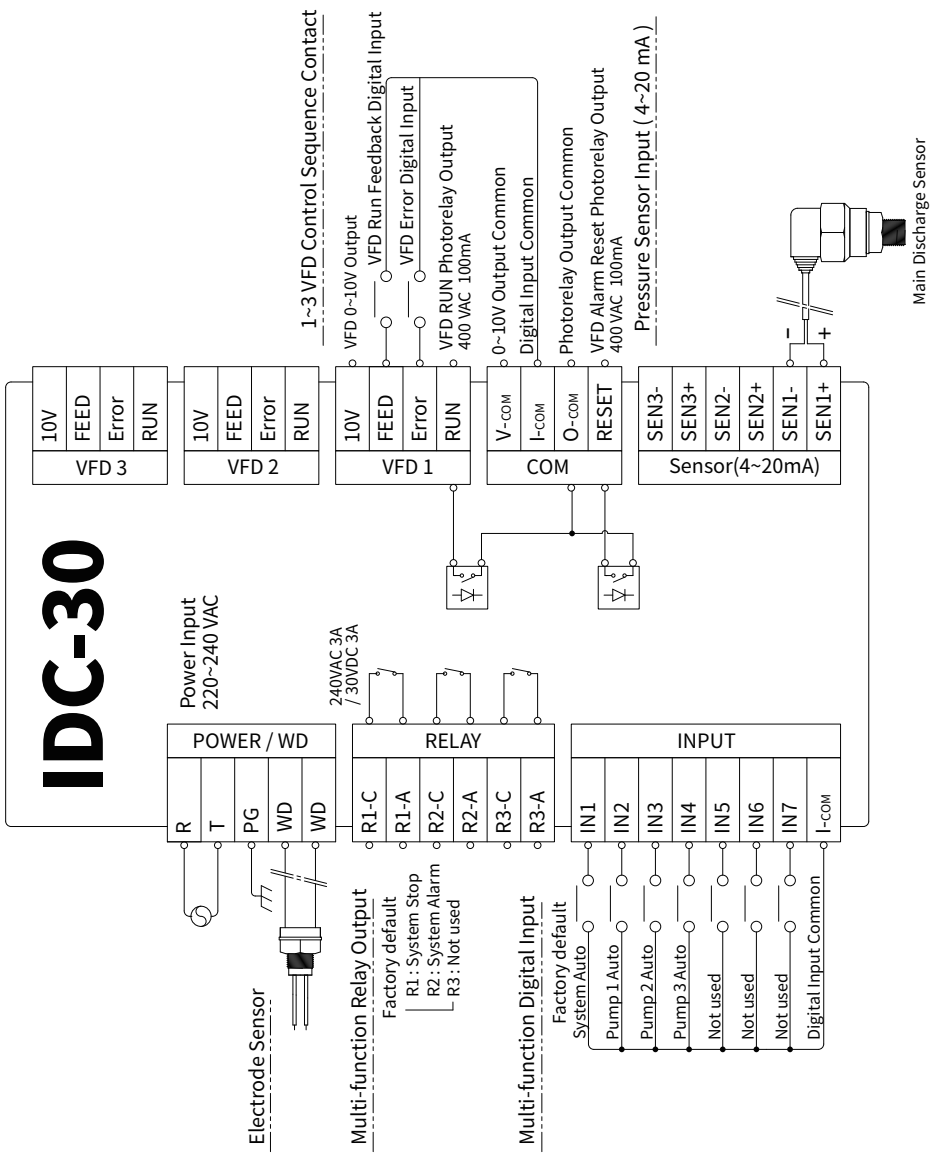
Content	Input Range	Unit	Default
Language	[English] [Korean] [Chinese]		English
Screen Saver	[1 Min] [5 Min] [30 Min] [1 Hours.] [3 Hours.] [10 Hours.] [Not Used]		5 Min.
Password	0 ~ 9999		0000
VFD Keypad On	[Not Used] [Used]		Not Used
Test Code			

Alarm	Cause	Corrective Action
Discharge Sensor Fail	- Sensor is damaged - Incorrect connection of the sensor wiring	- Check the electrical connection - Replace the sensor
Suction Sensor Fail		
Level Sensor Fail		
High Pressure Alarm	- Incorrect value inputed within the high pressure parameter	- Check the value in the high pressure parameter and change this value
Low Pressure Alarm	- Air bubbles may have formed within the pump or the pipeline - Incorrect value inputed within the low pressure parameter	- Release the air from the air vent - Check the value in the low pressure parameter and change this value
Low Pressure Stop	- Broken pipe or large leak detected within the system	- 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	- Low water level within the pipeline	- Check the condition of the level sensor and the water level within the pipeline
Electrode Sensor Alarm	- Broken water level sensor	
Inverter 1 error	- An error has occured on the selected inverter	- 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 1 error feedback		
Inverter 2 error feedback		
Inverter 3 error feedback		

Alarm	Cause	Corrective Action
User Alarm 1	- User alarm 1 has occured	- If the multi input (INPUT 6) is utilized by the user, the alarm will occur.
User Alarm 1 Stop	- An error has occured on the selected inverter	- The system will stop if this alarm occurs, however if the INPUT 6 is disabled, the system will Auto. Restart.
User Alarm 2	- An error has occured on the selected inverter	- If the multi input (INPUT 7) is utilized by the user, the alarm will occur.
User Alarm 2 Stop	- An error has occured on the selected inverter	- The system will stop if this alarm occurs, however if the INPUT 7 is disabled, the system will Auto. Restart.



ITEMS	Contents
NET WEIGHT(kg)	
GROSS WEIGHT (kg)	
DIMENSION (mm)	


IDC-30
Power Input
220~240 VAC
POWER / WD
R
T
PG
WD
WD
Electrode Sensor
240VAC 3A
/ 30VDC 3A
RELAY
R1-C
R1-A
R2-C
R2-A
R3-C
R3-A
Multi-function Relay Output
Factory default
R1 : System Stop
R2 : System Alarm
R3 : Not used
INPUT
IN1
IN2
IN3
IN4
IN5
IN6
IN7
I-COM
Multi-function Digital Input
Factory default
System Auto
Pump 1 Auto
Pump 2 Auto
Pump 3 Auto
Not used
Not used
Not used
Digital Input Common
1~3 VFD Control Sequence Contact
VFD 0~10V Output
VFD Run Feedback Digital Input
VFD Error Digital Input
VFD RUN Photorelay Output
400 VAC 100mA
0~10V Output Common
Digital Input Common
Photorelay Output Common
VFD Alarm Reset Photorelay Output
400 VAC 100mA
Pressure Sensor Input (4~20 mA)
10V
FEED
Error
RUN
VFD 3
VFD 2
VFD 1
V-COM
I-COM
O-COM
RESET
COM
SEN3-
SEN3+
SEN2-
SEN2+
SEN1-
SEN1+
Sensor(4~20mA)
Main Discharge Sensor