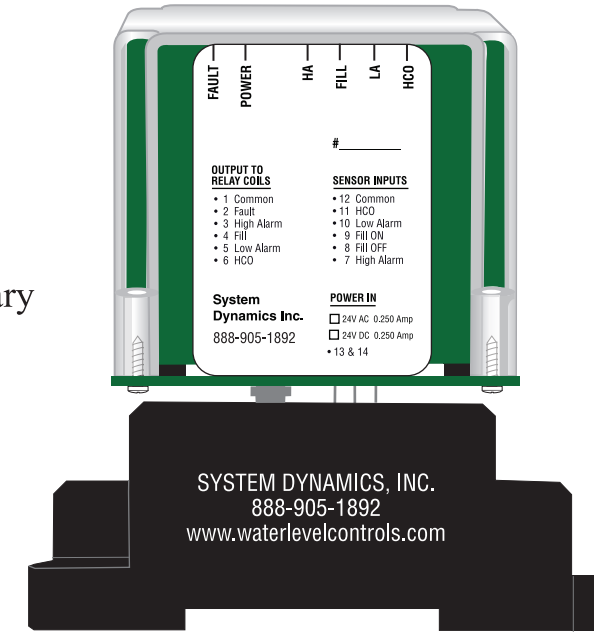
INSTALLATION INSTRUCTIONS

FILL & DRAIN MODELS

NINA™ Liquid Level Controls is the optimum choice for any situation requiring the precise control of a water level. It is ideal for automatically maintaining the correct level in liquid environment using the correct sensor style and type including but not limited to towers, storage tanks, or process water applications.

NINA™ Liquid Level Controls may look like the competition but the unit is revolutionary in its design. The **NINA™** is perfect in any application where water level management is important. It uses a microprocessor that monitors all probes for correct operation and then provides the corresponding outputs to drive the dry contacts. By using a very low voltage and current, **NINA** probes never foul or degrade whenever using solid state sensors like the ones we offer.



WARNING: Make sure you power the module as it was factory set, otherwise it will be destroyed and not warranted (24V AC or 24V DC) factory set.

IMPORTANT SAFETY INSTRUCTIONS

1. Call the factory with any questions. 1-888-905-1892 or write to: System Dynamics,Inc., P.O. BOX 12544, Scottsdale, AZ 85260
2. Read and follow all instructions.
3. Only qualified personnel should install this unit or replace the "replaceable" parts.
4. Only factory supplied parts should be used whenever a replaceable part is needed.
5. The manufacture will not be liable for any injury or damage that may arise from the misuse of this unit or from failure to follow all of these instructions.
6. Save these instructions and provide them to the end user.
7. Use copper (CU) wire only for all connections.

#1 - Fill Only

FAULT POWER | FILL

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 4 Fill

SENSOR INPUTS
- 12 Common
- 9 Fill ON
- 8 Fill OFF

POWER IN
13 & 14

#2 - Fill with Low Alarm

FAULT POWER | FILL LA

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 4 Fill
- 5 Low Alarm

SENSOR INPUTS
- 12 Common
- 10 Low Alarm
- 9 Fill ON
- 8 Fill OFF

POWER IN
13 & 14

#3 - Fill with High Alarm

FAULT POWER | HA FILL

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Fill

SENSOR INPUTS
- 12 Common
- 9 Fill ON
- 8 Fill OFF
- 7 High Alarm

POWER IN
13 & 14

#4 - Fill with High & Low Alarm

FAULT POWER | HA FILL LA

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Fill
- 5 Low Alarm

SENSOR INPUTS
- 12 Common
- 10 LA
- 9 Fill ON
- 8 Fill OFF
- 7 High Alarm

POWER IN
13 & 14

#5 - Fill with HCO & Low Alarm

FAULT POWER | FILL LA HCO

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 4 Fill
- 5 Low Alarm
- 6 HCO

SENSOR INPUTS
- 12 Common
- 11 HCO
- 10 Low Alarm
- 9 Fill ON
- 8 Fill OFF

POWER IN
13 & 14

#6 - Fill with HCO, HA & LA

FAULT POWER | HA FILL LA HCO

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Fill
- 5 Low Alarm
- 6 HCO

SENSOR INPUTS
- 12 Common
- 11 HCO
- 10 Low Alarm
- 9 Fill ON
- 8 Fill OFF
- 7 High Alarm

POWER IN
13 & 14

#7 - Dual Fill

FAULT POWER | FILL 2 FILL 1

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 Fill
- 4 Fill 2

SENSOR INPUTS
- 12 Common
- 10 Fill 2 ON
- 9 Fill 2 OFF
- 8 Fill 1 ON
- 7 Fill 2 OFF

POWER IN
13 & 14

#8 - Dual Fill with Low Alarm

FAULT POWER | FILL 2 FILL 1 LA

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 Fill 1
- 4 Fill 2
- 5 Low Alarm

SENSOR INPUTS
- 12 Common
- 11 Low Alarm
- 10 Fill 2 ON
- 9 Fill 2 OFF
- 8 Fill 1 ON
- 7 Fill 2 OFF

POWER IN
13 & 14

#9 - Dual Fill (Alternating)

FAULT POWER | FILL 2 FILL 1

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 Fill 1
- 4 Fill 2

SENSOR INPUTS
- 12 Common
- 10 Fill 2 ON
- 9 Fill 1 ON
- 8 Fill 1 & 2 OFF

POWER IN
13 & 14

#10 - Dual Fill (Alternating) & LA

FAULT POWER | FILL 2 FILL 1 LA

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 Fill 1
- 4 Fill 2
- 6 Low Alarm

SENSOR INPUTS
- 12 Common
- 11 Low Alarm
- 10 Fill 2 ON
- 9 Fill 1 ON
- 8 Fill 1 & 2 OFF

POWER IN
13 & 14

#11 -Dual Fill (Alternating) & HA

FAULT POWER | HA FILL 2 FILL 1

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Fill 1
- 5 Fill 2
- 6 Low Alarm

SENSOR INPUTS
- 12 Common
- 11 Low Alarm
- 10 Fill 2 ON
- 9 Fill 1 ON
- 8 Fill 1 & 2 OFF
- 7 High Alarm

POWER IN
13 & 14

#12 - Dual Fill (Alternating) & LA & HA

FAULT POWER | HA FILL 2 FILL 1 LA

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Fill 1
- 5 Fill 2
- 6 Low Alarm

SENSOR INPUTS
- 12 Common
- 11 Low Alarm
- 10 Fill 2 ON
- 9 Fill 1 ON
- 8 Fill 1 & 2 OFF
- 7 High Alarm

POWER IN
13 & 14

#13 -Dual Fill (All OFF) and LA and HA-A

FAULT POWER | HA FILL 2 FILL 1 LA

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Fill 1
- 5 Fill 2
- 6 Low Alarm

SENSOR INPUTS
- 12 Common
- 11 Low Alarm
- 10 Fill 2 ON
- 9 Fill 1 ON
- 8 Fill 1 & 2 OFF
- 7 High Alarm

POWER IN
13 & 14

#14- Dual Fill (Separate OFF) & LA & HA-B

FAULT POWER | HA FILL 2 FILL 1 LA

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Fill 1
- 5 Fill 2
- 6 Low Alarm

SENSOR INPUTS
- 12 Common
- 11 Low Alarm
- 10 Fill 2 ON
- 9 Fill 1 ON
- 8 Fill 1 & 2 OFF
- 7 High Alarm

POWER IN
13 & 14

#15 - Pump Down

FAULT POWER | PUMP

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 4 Pump

SENSOR INPUTS
- 12 Common
- 9 Pump ON
- 8 Pump OFF

POWER IN
13 & 14

#16 -Pump Down with High Alarm

FAULT POWER | HA PUMP

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Drain

SENSOR INPUTS
- 12 Common
- 9 Pump OFF
- 8 Pump ON
- 7 High Alarm

POWER IN
13 & 14

#17 - Dual Pump Down

FAULT POWER | PUMP 2 PUMP 1

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 4 Drain 1
- 5 Drain 2

SENSOR INPUTS
- 12 Common
- 11 Pump 2 OFF
- 10 Pump 2 ON
- 9 Pump 1 OFF
- 8 Pump 1 ON

POWER IN
13 & 14

#18 - Dual Pump Down w/ High Alarm

FAULT POWER | HA PUMP 2 PUMP 1

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Pump 1
- 5 Pump 2

SENSOR INPUTS
- 12 Common
- 11 Pump 2 OFF
- 10 Pump 2 ON
- 9 Pump 1 OFF
- 8 Pump 1 ON
- 7 High Alarm

POWER IN
13 & 14

#19 - Dual Pump Down (Alternating)

FAULT POWER | PUMP 2 PUMP 1

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 4 Pump 1
- 5 Pump 2

SENSOR INPUTS
- 12 Common
- 11 Pump 2 OFF
- 10 Pump 2 ON
- 9 Pump 1 OFF
- 8 Pump 1 ON

POWER IN
13 & 14

#20 -Pump Down (Alternating) & HA

FAULT POWER | HA PUMP 2 PUMP 1

OUTPUT TO RELAY COILS
- 1 Common
- 2 Fault
- 3 High Alarm
- 4 Pump 1
- 5 Pump 2

SENSOR INPUTS
- 12 Common
- 11 Pump 2 OFF
- 10 Pump 2 ON
- 9 Pump 1 OFF
- 8 Pump 1 ON
- 7 High Alarm

POWER IN
13 & 14

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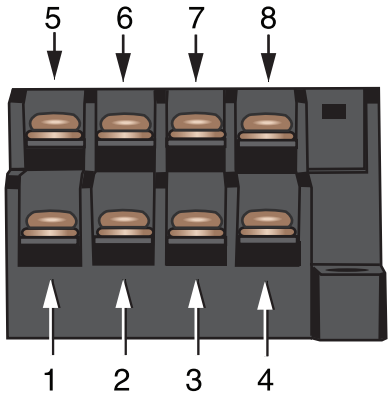
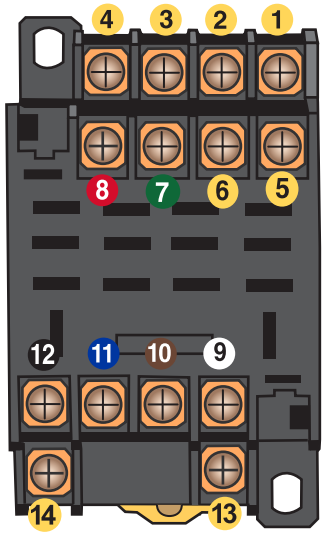
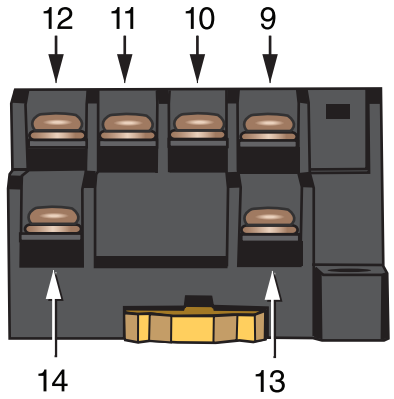
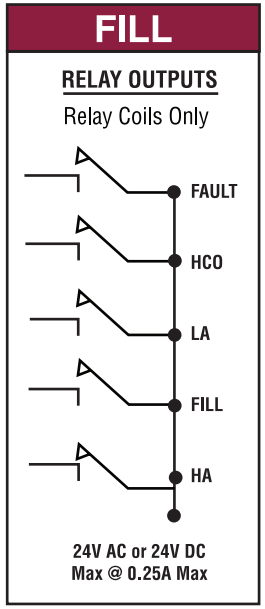
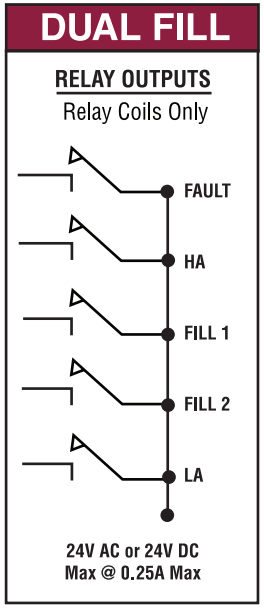


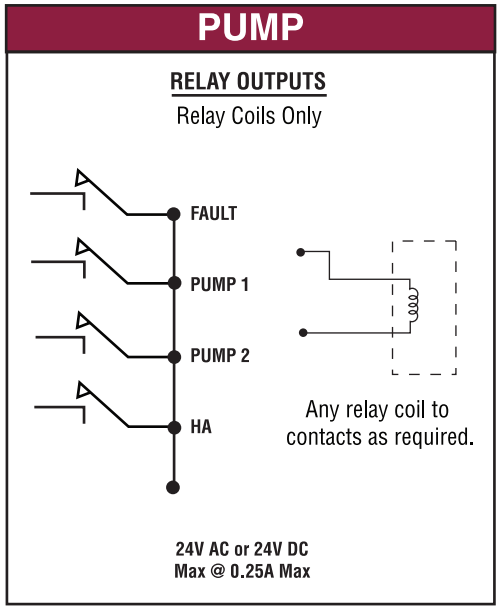




SOCKET	FILL	DUAL FILL	PUMP	SENSOR COLOR
1	Relay Common(s)	Relay Common(s)	Relay Common(s)	
2	Fault Relay	Fault Relay	Fault Relay	
3	High Alarm Relay	High Alarm Relay	High Alarm Relay	
4	Fill Relay	Fill 1 Relay	Drain 1 Relay	
5	Low Alarm Relay	Fill 2 Relay	Drain 2 Relay	
6	HCO Relay	Low Alarm Relay	Not used.	
7	High Alarm Sensor	High Alarm Sensor	High Alarm Sensor	Green
8	Fill OFF Sensor	Fill 1 & 2 OFF Sensor	Pump 1 ON Sensor	Red
9	Fill ON Sensor	Fill 1 ON Sensor	Pump 1 OFF Sensor	White
10	Low Alarm Sensor	Fill 2 ON Sensor	Pump 2 ON Sensor	Brown
11	HCO Sensor	Low Alarm	Pump2 OFF Sensor	Blue
12	Common Sensor	Common Sensor	Common Sensor	Black
13	Power In	Power In	Power In	
14	Power In	Power In	Power In	







THESE ARE DRY CONTACTS

- It is okay to use the same power source for dry relays to drive external relay coils.
- The Sensor colors are related to our standard sensor colors.

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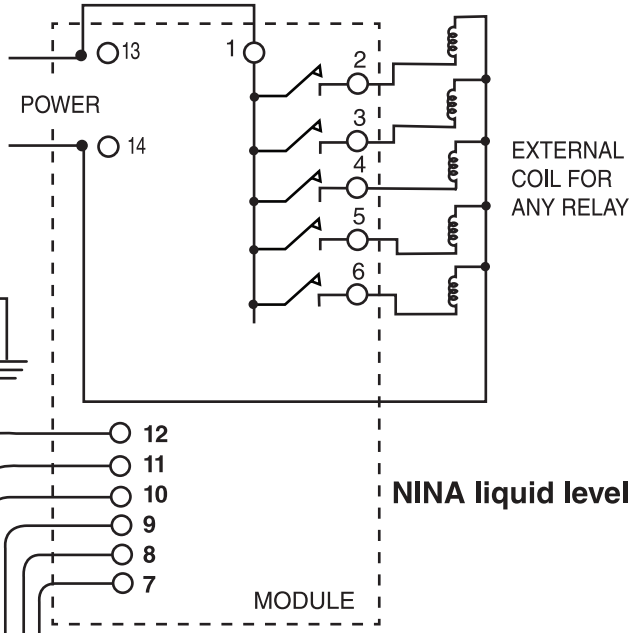
SAME POWER SOURCE



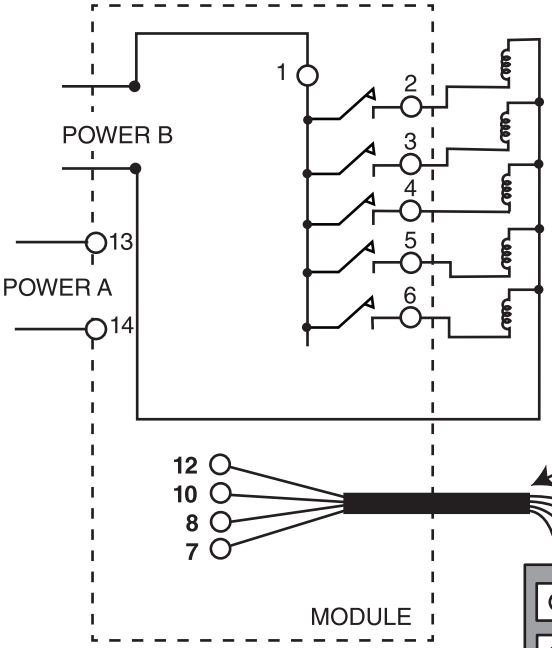
NINA liquid level controls

Shielded Wire

2" or 3"

Solid state sensor from any manufacturer.

SEPARATE POWER SOURCE



Shield from Sensor wire

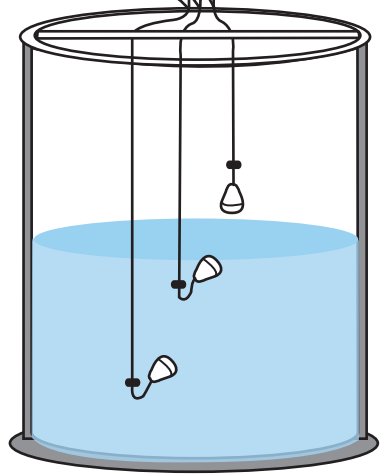
Sensor Wire Shield

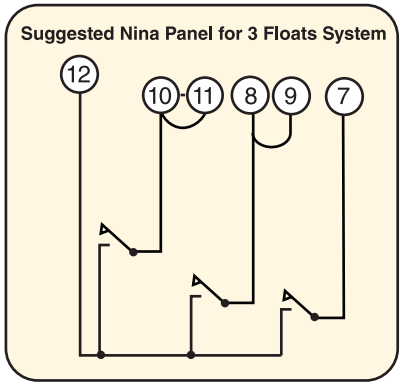
Multiconductor Shielded Wire (or Water Level wire or Beldon Shielded)

Do not connect wire shield on this end.

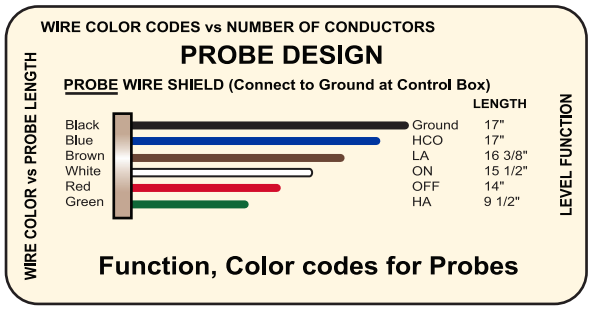
NEMA 4

Common Leg (12)





Float Switch Options



See Sensor Guide for correct selection for your application.

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