

SYSTEM INTERFACE UNIT MONITOR (SIU)

A3470

The System Interface Unit Monitor (SIU) allows the user to interface with up to 34 digital signals (DC discrete inputs) to the OctoPlex® system for status and monitoring purposes. The SIU can be configured to perform Discrete I/O Functions, in conjunction with the AC and DC Distribution units.



Product Highlights:

- ◆ 34 digital Signal Interface
- ◆ Discrete I/O Functions
 - Control AC Breakers
 - Control DC Breakers
 - DC Light Dimming Control
 - Time Interval On/Off
- ◆ Active high and active low states
- ◆ Can activate alarms



Configuration

Signal Input

Each SIU input signal can be configured to perform a function based on the input level. When an input goes to the “Active” state, the configured function will be performed. The table below describes the “Active” states that any SIU input can be configured for:

Low Input	Configured function will be Active when the input Signal is to ground (VDC -ve)
High Input	Configured function will be Active when the input signal is above 8 VDC (VDC +ve)
Both	Configured functions will be Active when either a high or low input is detected

* Note: Both (either) State is the Default setting

* Note: Pins 39 & 40 can only be set to Both

Output Message

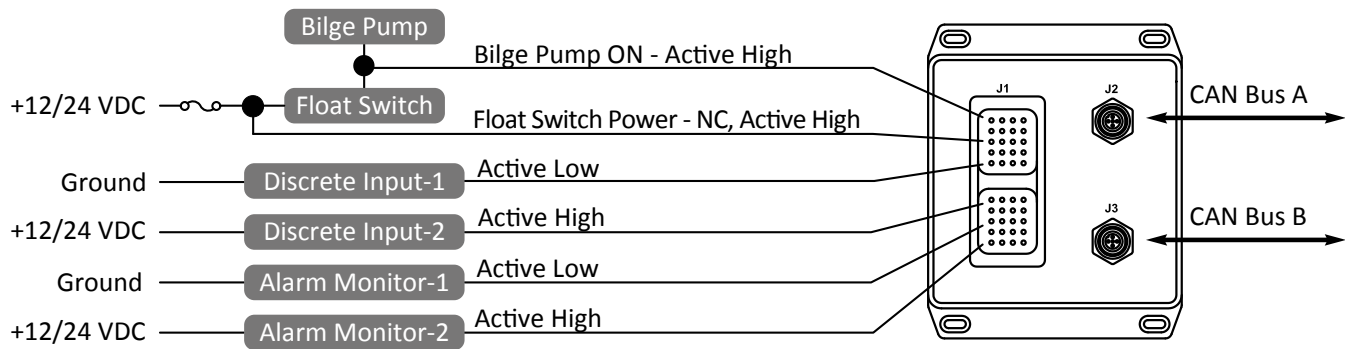
The SIU broadcasts a NMEA 2000 PGN to the OctoPlex network when the SIU receives a state change on a configured input. This information can be received and processed by any NMEA 2000 device designed to process the Binary Switch Bank Status PGN. All OctoPlex AC, DC and Multi-function Display devices allow processing of SIU signals through Discrete I/O handlers. Each Output Message has a “Normal State” and an “Abnormal State” associated with it. For example, an input could be set up such that the “Normal State” is low and the “Abnormal State” is high. When the input goes high, the Multi-function Display could be configured to provide an indication to the user that a change in the device state has been detected. In some configurations it is required to “Arm” the State/Alarm. For example, a pump inline Flow Sensor, with no flow (pump off) the sensor would be in the Normally Open/Abnormal State. The Alarm would only be activated if the sensor goes Open (Abnormal State), while the pump is running. In this example, the SIU is configured to Arm the Alarm with appropriate Signal State Stimulus.

Signal State Stimulus	Description
State to Active	Set Alarm state Off when Signal goes Active
State to Inactive	Set Alarm state On when Signal goes Inactive

Signal Examples

Input	Status	Description
High Water Alarm	NO	Normal OFF, Circuit closes Abnormal ON - Alarm on State to Active
Float Switch Power	NC	Normal ON, Circuit Opens Abnormal OFF - Alarm on State to Inactive
Engine Temperature Alarm	NO	Normal OFF, Circuit Closes Abnormal ON - Alarm on State to Active
Water Flow Alarm	NC	Normal OFF (Closed when Pump On), Circuit Opens Abnormal ON - Alarm on State Inactive
Light Switch	NO	Normal Off, Circuit Closes Abnormal ON - trigger DIO for ECB control while ON maintained
Tank Empty	NO	Trigger a Discrete I/O to Turn OFF the associated pump breaker(s)
Holding Tank Full	NO	Trigger a Discrete I/O to Turn OFF head flush breaker(s)

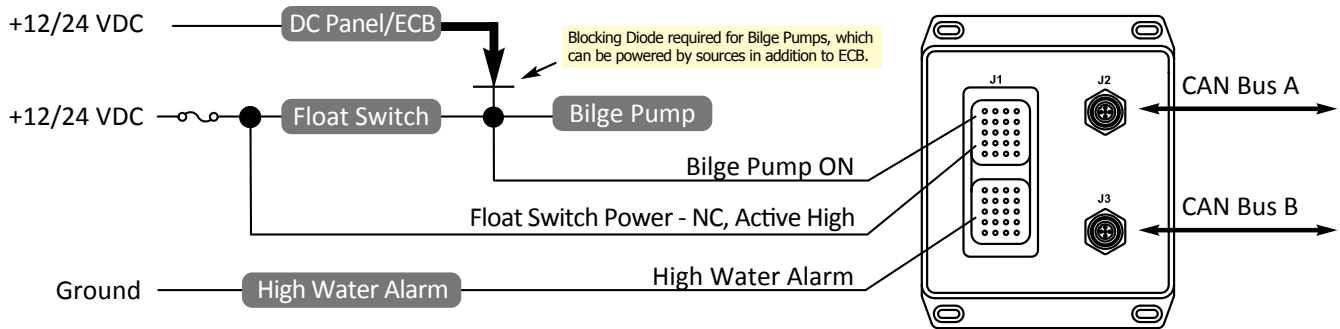
Application Example:



Use of Blocking Diodes

In applications where a load, controlled by an Electronic Circuit Breaker (ECB), within a DC Power Distribution Unit, can also be turned on by a float switch or another switch outside of the OctoPlex system, a blocking diode must be placed between the ECB output and the load it is controlling. Failure to install the blocking diode will result in hardware malfunction in situations where the float switch is turning the load/pump ON while the ECB for the load is OFF (ECB error of Abnormal High/Back feed). This may be applicable for sump pumps as well.

Blocking Diodes Example:



Part Number	Diodes per Unit	Notes
A1935	2	Standard Unit
A1945	4	Special Order
A1940	10	Special Order



Blocking diodes to prevent back feed of power to the ECB are available from Carling and are rated at 15 Amps, 32 VDC.

Installation

The SIU is designed to be installed in a protected, non-explosive area of the vessel. Take precautions to install the SIU in an area that will be away from direct exposure to the weather and combustible fumes.

Connections

The terminals available for use in the Deutsch DRC16-40S connectors are:

Wire Gauge	Contact Type	Deutsch Part Number
14 to 18	Solid	0462-201-16141
14 to 18	Stamped/Formed	1062-16-0122
14 to 18	Stamped/Formed	1062-16-0144

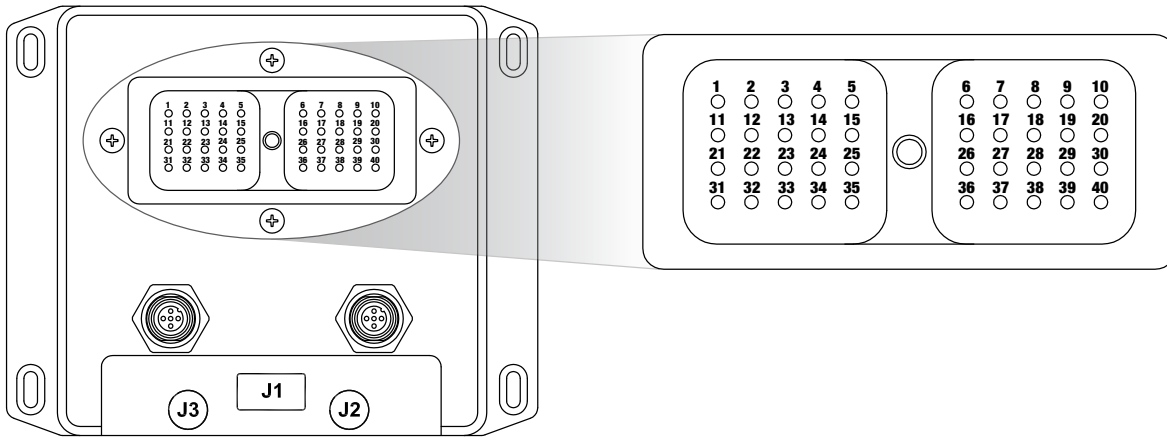


Recommended wire gauge is 16. Limit wire length to 50 feet. Deutsch recommends a torque of 25 to 28 in/lbs be applied to the center mounting screw during assembly.

Connections (continued)

The SIU can be powered using one power input pin; the SIU allows for up to three (3) different power input pins for redundancy purposes:

Connector Pin Number	+ 12 VDC (5A Fuse)	+ 24 VDC (5A Fuse)	DC Return	Discrete Inputs
1, 2, 3	YES	YES	N/A	N/A
8, 9 ,10	N/A	N/A	YES	N/A
4-7, 11-40	N/A	N/A	N/A	YES



CAN Connections

Two male Micro-C connectors are provided to the right side of the System Interface Unit Monitor for connection to the primary and secondary CAN bus via drop cables.



NOTE

Use the shortest drop length possible when connecting the System Interface Unit Monitor to the CAN backbone. NMEA 2000 spec is maximum 6 meters for drop cables.

Operation

Standard System Interface Unit Monitor (SIU) Screen Layout

The SIU screen shows the 34 Discrete I/O indicators that are being monitored by the SIU. These indicators can not be acknowledged by the user; up to Qty. 10 also appear on the bottom of most pages.



NOTE

This page can vary between installations, as format is determined and/or customizable by the boat builder or owner.

Maintenance

The System Interface Unit Monitor was designed to require no maintenance. Any service or repair issues should be handled by a factory authorized technician.

General Specifications

Electrical

Power Input	10 VDC – 32 VDC
Power Consumption	100 mA Max (@ 28 VDC)
DC Signal Input	Ground; 12 VDC; 24 VDC for each input
CAN Bus Voltage	+15 VDC (± 0.5)
Load Equivalence Number (LEN)	1

Certifications

NMEA 2000	Category B
Lloyd's Register	Lloyd's Type Approved, Test Specification #1, Env 2
CE	IEC 60533 Electrical and Electronic Installations in Ships IEC 60945 Maritime Navigation and Radio Communication Equipment and Systems

Environmental

Radiated, RF Field Immunity	IEC-61000-4-3
Electrical Fast Transient/Burst Immunity	IEC 61000-4-4
Voltage Surge Immunity	IEC 61000-4-5
Conducted, Immunity	IEC 61000-4-6
Conducted Emissions	IEC 60945
Voltage Variation Immunity	IEC 61000-4-11
Conducted LF Immunity	IEC 61000-4-16
ESD Immunity	IEC-61000-4-2
Insulation Resistance	IEC-60092-504
Operating Temperature	-40°C to +70°C
Storage Temperature	-40°C to +85°C
Vibration	IEC-60068-2-6 Test Fc
Temperature Cycle	IEC 60945
Humidity	IEC-60068-2-30 Test Db
Corrosion	IEC 60945
Weight	1.6 lbs (0.73 kg) nominal

Mechanical

Dimensions	5.89" X 4.74" X 2.95"
CAN Bus Connectors	Two (2) Micro-C Male
Mounting	4 each 4 x 0.16 #6 hardware
Orientation	N/A

Dimensional Specifications: in [mm]

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Connector, Signal / Power Input, 40 Pin, Deutsch PN DRC 10-40P

