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:

<table>
<thead>
<tr>
<th>Input Mode</th>
<th>Configured Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Input</td>
<td>Configured function will be Active when the input Signal is to ground (VDC –ve)</td>
</tr>
<tr>
<td>High Input</td>
<td>Configured function will be Active when the input signal is above 8 VDC (VDC +ve)</td>
</tr>
<tr>
<td>Both</td>
<td>Configured functions will be Active when either a high or low input is detected</td>
</tr>
</tbody>
</table>

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

*Note: Pins 39 & 40 can only be set to Both*
System Interface Unit Monitor (A1470-CE) - Configuration

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.

<table>
<thead>
<tr>
<th>Signal State Stimulus</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>State to Active</td>
<td>Set Alarm state Off when Signal goes Active</td>
</tr>
<tr>
<td>State to Inactive</td>
<td>Set Alarm state On when Signal goes Inactive</td>
</tr>
</tbody>
</table>

Signal Examples

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

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:

```
+12/24 VDC
DC Panel/ECB

+12/24 VDC
Float Switch

Ground
High Water Alarm

Bilge Pump

Bilge Pump ON

Float Switch Power - NC, Active High

CAN Bus A

CAN Bus B
```

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

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**NOTE**

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

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### 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:

<table>
<thead>
<tr>
<th>Wire Gauge</th>
<th>Contact Type</th>
<th>Deutsch Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 to 18</td>
<td>Solid</td>
<td>0462-201-16141</td>
</tr>
<tr>
<td>14 to 18</td>
<td>Stamped/Formed</td>
<td>1062-16-0122</td>
</tr>
<tr>
<td>14 to 18</td>
<td>Stamped/Formed</td>
<td>1062-16-0144</td>
</tr>
</tbody>
</table>

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**CAUTION!**

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:

<table>
<thead>
<tr>
<th>Connector Pin Number</th>
<th>+ 12 VDC (5A Fuse)</th>
<th>+ 24 VDC (5A Fuse)</th>
<th>DC Return</th>
<th>Discrete Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3</td>
<td>YES</td>
<td>YES</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>8, 9, 10</td>
<td>N/A</td>
<td>N/A</td>
<td>YES</td>
<td>N/A</td>
</tr>
<tr>
<td>4-7, 11-40</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>YES</td>
</tr>
</tbody>
</table>

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.

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

**Environmental**
- Radiated, RF Field Immunity: IEC-61000-4-3
- Electrical Fast: IEC 61000-4-4
- Transient/Burst Immunity: IEC 61000-4-5
- Voltage Surge Immunity: IEC 61000-4-6
- Conducted, Immunity: IEC 60945
- 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

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**Dimensional Specifications: in [mm]**

**System Interface Unit Monitor (SIU)**

*A1470-CE*

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

- PIN 1
- J1
- J2
- J3

- 0.265 [6.731]
- 0.16 Wide Slot for #6 Screw

Mounting Surface

- 0.16 [4.06]
- 4.64 [117.85]
- 2.32 [58.92]
- 2.95 [74.93]