

### Description

The Holjeron Digital I/O Interface provides the user with the ability to use industry standard digital inputs and output modules in a Smart Distributed System network. A Digital I/O Interface uses a single System address while providing up to sixteen inputs and/or outputs.

Inputs and outputs can be mixed in any order, and can be of varying signal types and voltages.

### Warranty/Remedy

Seller warrants its products to be free from defects in design, material and workmanship under normal use and service. Seller will repair or replace without charge any such products it finds to be so defective on its return to Seller within 18 months after date of shipment by Seller. **The foregoing is in lieu of all other expressed or implied warranties (except title), including those of merchantability and fitness for a particular purpose.** The foregoing is also purchaser's sole remedy and is in lieu of all other guarantees, obligations, or liabilities or any consequences incidental, or punitive damages attributable to negligence or strict liability, all by way of example.

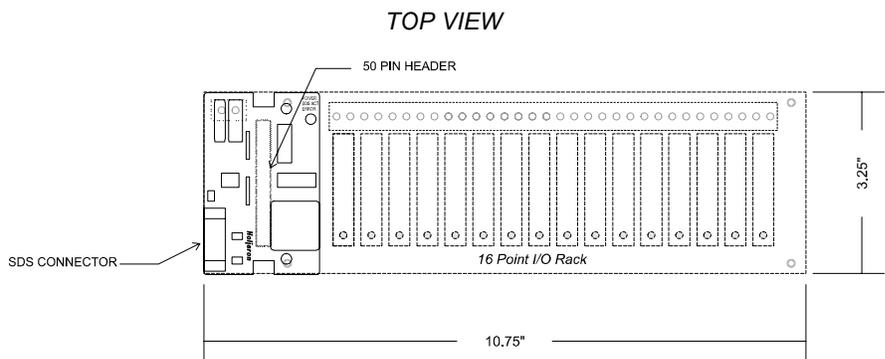
While Holjeron provides application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

All information contained herein, including illustrations, specifications and dimensions, is believed to be reliable as of the date of publication, but is subject to change without notice.

### Specifications

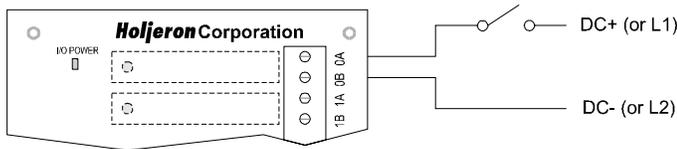
Part Numbers	Digital I/O Interface for SDS	
I/O Racks	8 Point	IOB-DIG200
	16 Point	IOB-G4PB8H
I/O Modules	Input, 10-32 VDC	IOB-G4PB16H
	Input, 90-140 VAC	IOB-G4IDC5
	Input, 180-280 VAC	IOB-G4IAC5
	Output, 5-60 VDC	IOB-G4IAC5A
	Output, 12-140 VAC	IOB-G4ODC5
	Output, 24-280 VAC	IOB-G4OAC5
		IOB-G4OAC5A
	<i>Other modules available. Call for information</i>	
<b>Electrical</b>	SDS Voltage Range	11-25 VDC
	Current Consumption	50 mA plus modules
	Data Rates	125, 250, 500 and 1000 kbps
<b>I/O</b>	Connection	50 pin header
	Number	Up to sixteen (16)
	Voltage Range	Dependent on module
	Maximum Current	Dependent on module
	Isolation	4000 Vrms
<b>Environmental</b>	Temperature	Storage: -30° to 70° C (-22° to 158° F) Operating: 0° to 60° C (32° to 140° F)
	Humidity	5-95% RH, non-condensing
	Vibration	2G at 10 to 500 Hz
	Shock	10G
<b>Physical</b>	Dimensions	1.75" H x 3.25" W x 10.75" D (16 point)
	Weight	12 oz
	Mounting	Panel stand-offs
	Terminations	Plug-in Header, 3.81 mm
	Indication	SDS: Green Power: Red Error: Red SDS: Green I/O: Green Dependent on module

### Dimensions

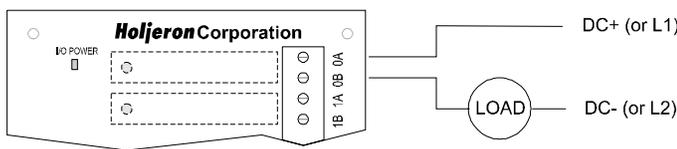


### Wiring

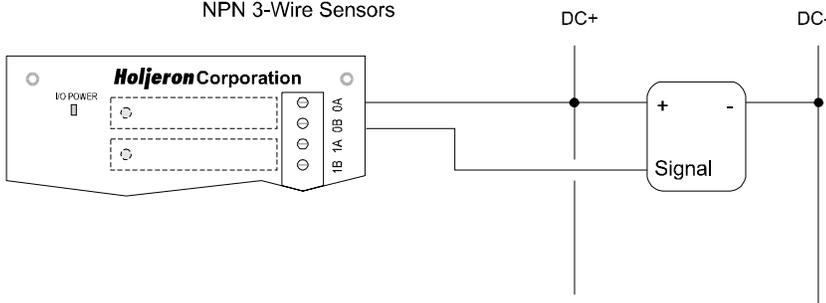
Input Module Wiring  
2-Wire Sensors and Switches



Output Module Wiring



Input Module Wiring  
NPN 3-Wire Sensors



### Configuration

The Digital I/O Interface for SDS can be configured using several tools. The information below summarizes the configuration tools available and hardware requirements for each tool.

#### Honeywell hand-held activator

The Honeywell activator does not supply enough power by itself. The SDS bus must have external power applied.

#### PC Control/Network Manager

Requires a Honeywell PC Interface Card with separate bus power.

#### Holjeron Device Manager for SDS

Requires an HSIM Portable (RS-232 to CAN converter) that connects to the serial port of a personal computer. The bus OR the HSIM Portable must have power.

### Quick Start

*The following steps are the minimum steps to configure a Digital I/O Interface. Default values are shown in bold typeface.*

#### I/O Mapping Mode

The Digital I/O Interface can map I/O using two different methods. The default is to have all inputs and outputs be mapped into 16-point input and output variables in one SDS address. The second method is for each I/O module to have its own SDS address with one bit input and output variables.

The mapping method is selected through the **Address Mode (attribute 59)**. A value of 0 means the device is a single address with 16-bit I/O variables. A value of 1 sets the Digital I/O Interface to use multiple single bit addresses.

**After the Address Mode is changed the power must be cycled before the new setting takes effect.**

If the multiple single bit address mode is used then the **Number of Slots (attribute 58)** is set to disable unused slots. Valid entries are 1 to 16, with used slots beginning at slot 0 on the I/O rack.

#### Address(es)

Set the address of the device. All units are shipped from the factory as **address 126**. If the Address Mode is set to multiple addresses, then slot 0 is address 126, slot 1 is 125, continuing to decrement until all used slots have a default address.

**Note: Set the address before attaching a Digital I/O Interface for SDS to a complete bus. Otherwise, other devices may exist on the bus at the default address of 126.**

#### Output Locations

The Digital I/O Interface must be configured to know whether a slot contains an output module. This is done setting a bit in the **Output Mask (attribute 62)** to a value of 1. The bits are numbered in correspondence with the I/O rack locations (0-15 for a 16 point rack. When multiple address mode is used then only the first bit is set to define the slot as containing an output module.

### Configuration Options

#### Event Mode

Most systems will require a Digital I/O Interface for SDS to generate an event whenever one or more inputs change state. This requires the **Unsolicit Mode (attribute 6)** be enabled by setting its value to **1**. Other options are to disable change of value events (Unsolicit Mode = 0) or use the **Cyclic Timer (Attribute 10)** by setting it to some non-zero value. The Cyclic Timer will transmit the input variable on an interval equal to the value in the Cyclic Timer attribute times 10 milliseconds (0.01 seconds).

If a bit is set to 1 in the **Input NO/NC register (attribute 60)** then the state reported in the input variable is inverse to the physical input state.

In single address mode, each bit in the Input NO/NC attribute directly corresponds with a module on the I/O rack. In multiple address mode there is only one bit in the input variable.

#### Output Watchdog

Another I/O function that might be important is the **Output Watchdog Timer (attribute 50)**. When set to some value other than **0** the Output Watchdog Timer will cause the physical output to be set to a normalized state if there are no SDS messages to the Digital I/O Interface for SDS in the time allotted (value in Attribute 50 times 10 milliseconds). The normal state is defined by **Input NO/NC (attribute 61)**, where **0** in a bit location represents a default state of off and a value of 1 represents a default state of on.

In single address mode, each bit in the Input NO/NC attribute directly corresponds with a module on the I/O rack. In multiple address mode there is only one bit in the input variable.

#### Baud Rate

Verify the **Baud Rate (attribute 1)** is configured correctly for the application. Usually the default value (autobaud) will provide the desired results.

The baud rate setting can be changed using Action 10. The following are the possible values for the baud rate:

*Baud Rate (Attribute 1)*

Value	Baud Rate
0	Autobaud
1	1 megabaud
2	500 kilobaud
3	250 kilobaud
4	125 kilobaud

#### Tag Name

**Tag Name (attribute 56)** is a 32-character string that the user can enter to describe the functionality and/or location of the Digital I/O Interface for SDS.

### Operation

#### Input Variable

Attribute 18 functions as the input attribute for the Digital I/O Interface for SDS. Whenever an event is generated that reports the state of inputs, the data in attribute 18 will be passed.

In single address mode, each bit in the input variable directly corresponds with a module on the I/O rack. In multiple address mode there is only one bit in the input variable.

#### Output Variable

Attribute 34 contains the information for the outputs. The host controller writes output information to this attribute to change the state of outputs.

Only those points configured as outputs in the Output Mask (attribute 63) will actually change state if their corresponding bit in attribute 34 is changed.

In single address mode, each output bit directly relates to a module in the I/O rack. In multiple address mode there is only one bit in the output variable.

### Diagnostics

The Diagnostics Register (attribute 9) is 2 bytes. In addition to the minimum diagnostics required for the Smart Distributed System, the second byte provides diagnostics specific to the Digital I/O Interface.

*Diagnostic Register Bit Definitions*

Bit	Name	Description
0	CHKSUM	ROM checksum error
1	WDOG	Output watchdog timer
2	BUSOFF	Off Bus error
3	DEVERR	Fatal component error
4	NODE	Missing node detected
5	RSVD	Reserved
6	RSVD	Reserved
7	EPRM	EEPROM error detected
8	RSVD	Reserved
9	RSVD	Reserved
10	IOERR	Error with I/O Processor
11	RSVD	Reserved
12	RSVD	Reserved
13	RSVD	Reserved
14	RSVD	Reserved
15	RSVD	Reserved

## Attributes

ID	Description	R/W	Data Type	Size	Count	Default
0	Network Data Descriptor	R	Unsigned	Byte	6	
1	Baud Rate	R	Unsigned	Byte	1	0 [autobaud]
2	Object Model	R	Unsigned	Byte	4	
3	Vendor Id	R	Unsigned	Word	1	9 [Holjeron]
4	Logical Address	R	Unsigned	Word	1/16	125 (124, 123...)
6	Unsolicit Mode	W	Boolean	Undef	1/16	1 [enabled]
7	Software Version	R	Character	Undef	12	
8	Diagnostic Counter	R	Unsigned	Byte	1	
9	Diagnostic Register	W	Unsigned	Byte	2	
10	Cyclic Timer	W	Unsigned	Word	1	0 [disabled]
11	Serial Number	R	Unsigned	Long	1	
12	Date Code	R	Character	Undef	4	
13	Catalog Listing	R	Character	Undef	32	IOB-DIG200
14	Vendor	R	Character	Undef	32	Holjeron
15	Description	W	Character	Undef	32	Digital I/O Interface
18	Input Variable	R	Boolean	Undef	1/16	Depending on mode
34	Output Variable	W	Boolean	Undef	1/16	Depending on mode
50	Output Watchdog Timer	W	Unsigned	Word	1	0 [disabled]
55	Manufacturing Codes	R	Unsigned	Byte	1	
56	Tag Name	W	Character	Undef	32	
58	Number of Slots	W	Unsigned	Byte	1	16
59	Address Mode	W	Boolean	Undef	1	0 (single address mode)
60	Input NO/NC	W	Boolean	Undef	1/16	0000h (N.O.)
62	Output Mask	W	Boolean	Undef	1/16	0000h (All Inputs)

## Actions

ID	Description	Request Data	Response Data
0	NOOP	---	---
1	Change Address	New logical address	
2	Self Test	---	---
6	Clear All Errors	---	---
8	Enroll Logical Device	Address	Vendor Id, Serial Number
10	Change Baud Rate	New baud rate (0...4)	
51	Force State	Input variable value	
52	Unforce States		
53	Read Attribute Descriptor	Attribute Id	Attribute ID, Attribute Descriptor
57	Password	Password	
60	Reset Factory Defaults		

## Events

ID	Description	Event Data
0	Diagnostic Event	Number of enabled diagnostic bits in attribute 9
3	End-Of-Timer	Attribute, Input variable
6	Change of Value	Attribute, Input variable
7	NOOP	---