BusBlock Sensor Input Module

for the Smart Distributed System

BBK-4080-1 0104

TECHNICAL DATA

Description

The Holjeron BusBlock Sensor Input Module is designed to interface up to eight (8) sensors as one address in a Smart Distributed System installation.

The BusBlock Sensor Input Module is designed to accept NPN and PNP sensors, and provides full support for diagnostic signals available with many of today's sensors. The Sensor Input Module also detects whether a sensor is connected to a port.

Sensor connectors are industry standard M12.

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.

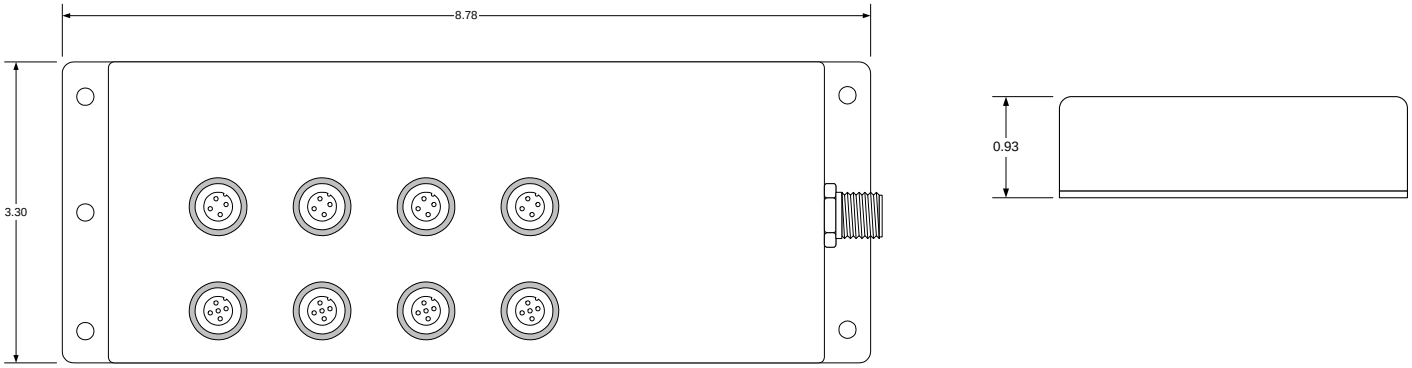
While Holjeron provides application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

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

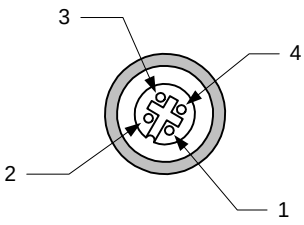
Part Number	8 Port Sensor Input Module		BBK-SDS408
SDS Interface	Termination		4 pin M12 connector, Male
	SDS Voltage Range		11-25 VDC
	Current Consumption		60 mA plus sensors
	Data Rates		125, 250, 500 and 1000 kbps
Sensor Interface	Type		Autosense (NPN or PNP)
	Number		Eight (8)
	Termination		4-pin M12, Female
	Voltage Range		11-25 VDC (SDS power)
	Maximum Current		20 mA
Environmental	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
Physical	Dimensions		8.78H x 3.30W x 0.93D
	Weight		14 oz
	Mounting		Tab Mount
	Indication	Power	Green
		Error	Red
		SDS	Green

Dimensions



Wiring

Sensor Connector



1	DC + (SDS Power)
2	Sensor Diagnostic
3	DC Common (SDS Power)
4	Sensor Signal

Configuration Tools

A BusBlock module can be configured using several tools. The information below summarizes the configuration tools available and hardware requirements for each tool.

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.

Honeywell hand-held activator

The Honeywell activator may not supply enough power by itself. The SDS bus might require external power to be applied.

Think & Do Software

Requires a Honeywell PC Interface Card with separate bus power. Follow the instructions for installing the SDS Driver in I/O View.

Quick Start

The following steps are the minimum steps to configure BusBlock module. Default values are shown in bold typeface.

Set Device Address

Using one of the tools described above, change the device address from the default. All units are shipped from the factory as **address 126**.

Note

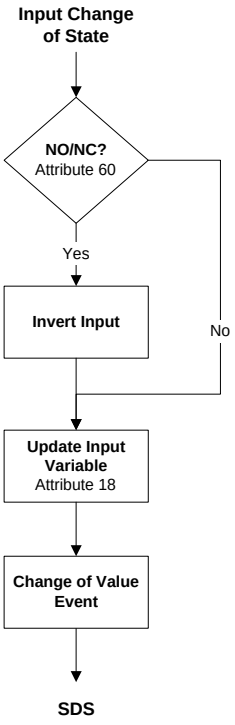
Set the address before attaching any component to a complete bus. This will help prevent duplicate addresses on a bus.

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 BusBlock Sensor Input Module.

Operation

The BusBlock Sensor Input module reads inputs using the processes defined below.



Input NO/NC

The BusBlock Sensor Input Module can be configured to invert the state of an incoming input point by turning on a bit in **Input NO/NC (attribute 60)**.

Input Variable

Attribute 18 functions as the input attribute for the BusBlock Sensor Input Module. Whenever an event is generated that reports the state of inputs, the data in attribute 18 will be passed.

Note

When using a packaged control system, such as Think & Do Software, it is not necessary to explicitly read input and output variables. The SDS I/O Driver and Interface Card perform this function. All that is required is to map inputs and outputs as described in the software user manual.

Input Event Mode

Most systems will require a BusBlock I/O Module 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 the Unsolicit Mode is enabled, then the use can select which sensor inputs can cause an event to be transmitted by enabling bits in the **Input Trigger (attribute 61)**. For example, if the sensor attached to input 0 is used to sense the presence of an object and other sensors provide data about the object, sensor 0 could be configured as the only one that could cause an event to be transmitted by setting the value of the input trigger to 01h.

Diagnostics

The Diagnostics Register (**attribute 9**) is four bytes and contains the minimum diagnostics required for the Smart Distributed System, plus diagnostics specific to the BusBlock Sensor Input module.

Diagnostic Register Bit Definitions Byte 0

Bit	Name	Description
0	CHKSUM	ROM checksum error
1	WDOG	Output watchdog timer expired
2	BUSOFF	Off us communications error
3	DEVERR	Fatal component error
4	NODE	Missing node detected
5	RSVD	Reserved
6	RSVD	Reserved
7	EPRM	EEPROM error detected

Diagnostic Register Bit Definitions Byte 1

Bit	Name	Description
0	RSVD	Reserved
1	RSVD	Reserved
2	RSVD	Reserved
3	RSVD	Reserved
4	RSVD	Reserved
5	RSVD	Reserved
6	RSVD	Reserved
7	RSVD	Reserved

Diagnostic Register Bit Definitions Byte 2

Bit	Name	Description
0	MISSEN0	Missing Sensor-Port 1
1	MISSEN1	Missing Sensor-Port 2
2	MISSEN2	Missing Sensor-Port 3
3	MISSEN3	Missing Sensor-Port 4
4	MISSEN4	Missing Sensor-Port 5
5	MISSEN5	Missing Sensor-Port 6
6	MISSEN6	Missing Sensor-Port 7
7	MISSEN7	Missing Sensor-Port 8

Diagnostic Register Bit Definitions Byte 3

Bit	Name	Description
0	LOGAIN0	Low Gain-Port 1
1	LOGAIN1	Low Gain-Port 2
2	LOGAIN2	Low Gain-Port 3
3	LOGAIN3	Low Gain-Port 4
4	LOGAIN4	Low Gain-Port 5
5	LOGAIN5	Low Gain-Port 6
6	LOGAIN6	Low Gain-Port 7
7	LOGAIN7	Low Gain-Port 8

SDS host controllers are equipped to receive a diagnostic event, then automatically obtain the information from the **Diagnostic Register (attribute 9)**. Consult the documentation for the host controller being used to determine how errors are handled.

CHKSUM

A ROM checksum error is generated on power up if there is a memory error test.

WDOG

The WDOG diagnostic is applicable only to products with outputs.

BUSOFF

The CAN controller on the BusBlock module counts error messages. Every error message increments a counter by 8, every good message decrements the counter by 1. If the counter reaches 128 then the module will go BUSOFF. The BusBlock will reset itself and go back online.

DEVERR

The DEVERR diagnostic bit will be set if a fatal error is detected within the component.

NODE

The host controller will report the node is missing using the NODE bit.

EPRM

The EPRM error will occur when the microprocessor on the BusBlock module is unable to read or write EEPROM.

MISSEN(0-7)

Each sensor input has circuitry to detect whether the sensor is drawing power. If a zone is enabled and the sensor is not drawing power, a missing sensor error will be generated. This feature can be controlled using **Enable Missing Sensor (attribute 83)**.

LOGAIN(0-7)

Some sensors are equipped with diagnostic signals to detect when there is not enough light returning for the sensor to function consistently. The Sensor Input Module has three attributes that are used to take advantage of this sensor diagnostic signal.

First, the Powered Roller Controller needs to know whether a sensor has a diagnostic signal. This is done in **Enable Sensor Diagnostics (attribute 85)**. A value of 1 in a bit position for a given sensor port enables the marginal gain function for that sensor.

The second attribute for sensor diagnostics is **Sensor Type (attribute 84)**. This sets whether the sensor is operating in dark operate or light operate mode (0 = light operate, 1 = dark operate).

The last attribute to be configured is the **Sensor Diagnostic Limit (attribute 86)**. Each time a marginal gain error is received an internal counter is incremented by 8. Each good read decrements the counter by 1. The value entered in the Sensor Diagnostic Limit is the count value that must be reached before a Low Gain error is generated. This acts as a filter that limits diagnostic events from being generated every time a sensor might have a low gain situation.

Attributes

ID	Description	R/W	Data Type	*Size*	*Count*	Default
0	Network Data Descriptor	R	Unsigned	Byte	3	12h,01h,07h
1	Baud Rate	R	Unsigned	Byte	1	0 [autobaud]
2	Object Model	R	Unsigned	Byte	5	1, 5, 7, 1, 1
3	Vendor Id	R	Unsigned	Word	1	9 [Holjeron]
4	Logical Address	R	Unsigned	Byte	1	125
6	Un/solicited Mode	W	Boolean	Undef	1	1
7	Software Version	R	Character	Undef	12	122.3.0
8	Diagnostic Counter	R	Unsigned	Byte	1	
9	Diagnostic Register	W	Unsigned	Byte	4	
10	Cyclic Timer	W	Unsigned	Word	1	0
11	Serial Number	R	Unsigned	Long	1	
12	Date Code	R	Character	Undef	4	
13	Catalog Listing	R	Character	Undef	32	BBK-SDS408
14	Vendor	R	Character	Undef	32	Holjeron
15	Description	W	Character	Undef	32	Sensor Input Module
18	Input Variable	R	Boolean	Undef	8	
53	Reset Count	R	Unsigned	Word	1	
54	Service Time	R	Unsigned	Word	1	
55	Manufacturing Codes	R	Unsigned	Byte	1	0
56	Tag Name	W	Character	Undef	32	
60	NO/NC	W	Boolean	Undef	8	00h
61	Input Trigger	W	Boolean	Undef	8	FFh
83	Enable Missing Sensor	W	Boolean	Undef	8	00h
84	Sensor Type	W	Boolean	Undef	8	00h
85	Enable Sensor Diagnostics	W	Boolean	Undef	8	00h
86	Sensor Diagnostic Limit	W	Unsigned	Byte	1	96

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	---	Vendor Id, Serial Number
10	Change Baud Rate	New baud rate (0…4)	
51	Force State	Input Variable	
52	Unforce State	---	---
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 diagnostic bits set in Attribute 9
3	End of Timer	Attribute, Input Variable
6	Change of Value	Attribute, Input Variable
7	NOOP	---