

Description

The Holjeron BusBlock Analog Output Module is designed to handle small amounts of analog outputs in a limited amount of space. The BusBlock Analog Output Module has four channels, with each channel using bus power. Each output can be either a separate SDS address, or can be configured to be four embedded objects within a single SDS address. Field terminations are captive screw terminals.

Other BusBlock products include an 8 point configurable digital module as well as analog input and frequency modules..



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.

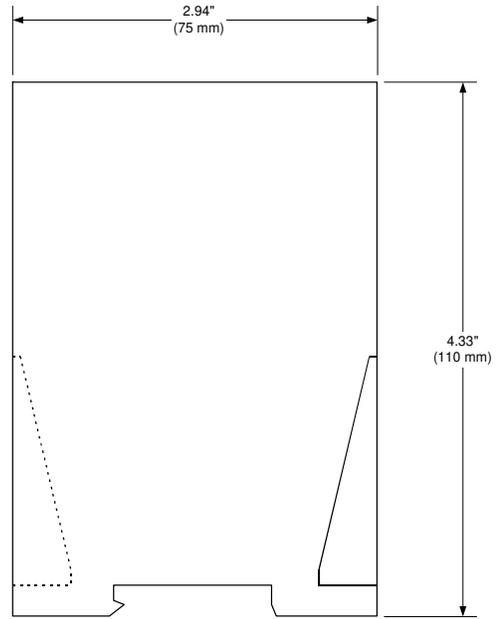
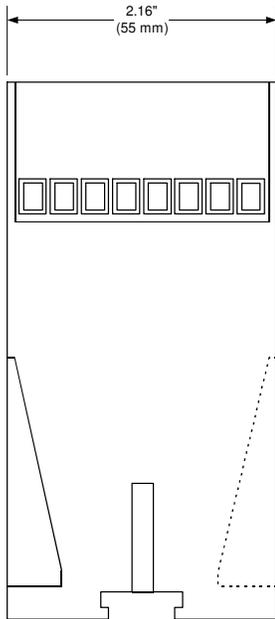
While Holjeron provides application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

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.

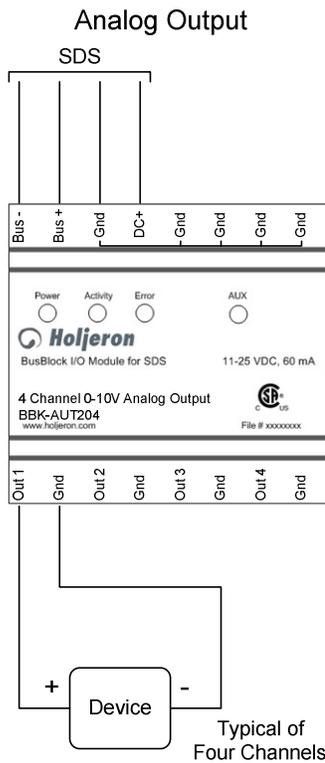
Specifications

Part Number	4 Channel Current Output	BBK-AUT104		
Electrical	SDS Voltage Range	11-25 VDC		
	Current Consumption	30 mA @24VDC + analog loop power		
	Data Rates	125, 250, 500 and 1000 kbps		
Outputs	Type	See Mode Table		
	Number	Four (4)		
Environmental	Temperature	Storage	-40° to 85° C (-40° to 185° F)	
		Operating	-25° to 70° C (-13° to 158° F)	
	Humidity		5-95% RH, non-condensing	
	Vibration		2G at 10 to 500 Hz	
	Shock		10G	
Physical	Dimensions		2.95" H x 2.17" W x 4.33" D	
	Weight		8 oz	
	Color		Bone Gray	
	Case Material		Polycarbonate	
	Mounting		DIN Rail or foot mount	
	Terminations		Cage Clamp Screw Terminal	
	Indication <small>(details on page 4)</small>	Power		Red-Green LED
		Activity		Red-Green LED
Error			Red-Green LED	
AUX (I/O Power)			Red-Green LED	
Certifications	CSA		C22.2 N0. 14-10	
	UL		508 (17 th Edition)	

Dimensions



Wiring



Configuration Tools

Holjeron ZTC-F64 Multi-Config Tool (ZTC-F64-DOTS)

Holjeron offers a configuration tool that connects to the USB port of a personal computer and 24V power, either from the Bus or a dedicated power supply. This tool can be used to configure or master an SDS Network, a ViaBus network, or Holjeron's Zonelink.S serial communication for multi-zone MDR Controls.

Legacy Configuration Tools:

These tools below (and others) can be used for configuration, but are no longer sold or supported:

Holjeron HSM Portable Configuration Tool for SDS (HSM-PTB101)

Honeywell hand-held activator

Honeywell Think & Do Software using Holjeron's PCI Interface Card to communicate with a PC.

Quick Start

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

Baud Rate

Baud rate selections are as follows:

0 = Autobaud

1 = 1000 kbps

2 = 500 kbps

3 = 250 kbps

4 = 125 kbps

Set Device Address

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

Using a configuration tool, change the device address from the default. All units are shipped from the factory as **address 126**.

Channel Configuration

If using less than four channels, set the **Number of Channels (attribute 58)** to the appropriate value. Legal entries are 1, 2, 3 and 4.

Each channel can also be configured as an embedded object within a single SDS address. This requires an SDS master that understands how to communicate with embedded objects.

Enable Objects (attribute 59), when set to a value of 1, each channel is configured as an embedded object within a single SDS address.

Note

Changes to attributes 58 or 59 require power to be cycled to the module before changes take effect.

Tag Name

Tag Name (attribute 56) is a 32-character string that the user can enter to describe the functionality and/or location of each channel of the BusBlock Analog Output Module.

LED Diagnostic Indicator Patterns

Current (Third) Generation (Rev 6+)

- Third Generation modules have Red-Green LEDs for all indicators.

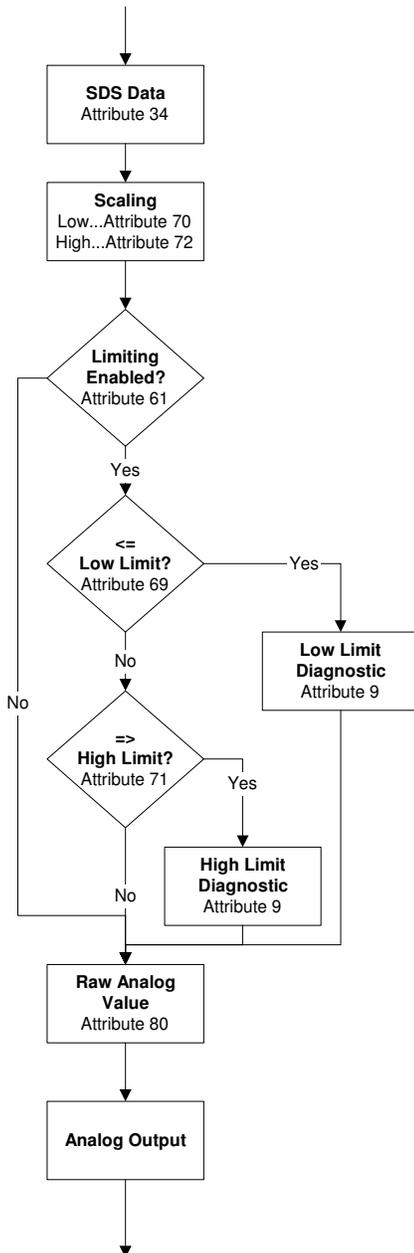
PWR	SDS	ERR	AUX	Indication
OFF	OFF	OFF	OFF	OFF (DC+ is less than 8 volts)
SG	SG	SG	SG	1st LED Test Pattern (Third Gen) (All Green segments ON)
SR	SR	SR	SR	2nd LED Test Pattern (Third Gen) (All Red segments ON)
* SR	SR	SR	OFF	* Waiting for DC+ to reach SDS minimum of 11V (User never sees if normal start-up)
* SR	SR	OFF	OFF	* Waiting for valid EEPROM access (User never sees if normal start-up)
SG	OFF	FG	OFF	Waiting to Autobaud (Third Gen) (Not seen if fixed rate is used.)
SG	OFF	SG	I/O*	NORMAL CONDITION - Nothing to transmit on the CAN bus
SG	IG	SG	I/O*	NORMAL CONDITION - Trying to transmit on the CAN bus
SG	OFF	FR	I/O*	Nothing to transmit on the CAN bus and minor diagnostic bit(s) set
SG	IG	FR	I/O*	Trying to transmit on the CAN bus and minor diagnostic bit(s) set
SG	OFF	SR	I/O*	Not transmitting on the CAN bus and MAJOR diagnostic bit(s) set
SG	IG	SR	I/O*	Trying to transmit on the CAN bus and MAJOR diagnostic bit(s) set
* SG	SFR	SR	I/O*	* BUS OFF Condition (SDS LED solid or flashing red only <i>during</i> BUS OFF condition)

- * These patterns available on units manufactured after June 2015, as identified by Serial Number (2015182X or higher)

OFF = LED is OFF
 SG = Solid Green
 SR = Solid Red
 FG = Flashing Green
 FR = Flashing Red
 SFR = Solid OR Flashing Red
 IG = Intermittent Green
 FR = Flashing Red
 I/O = If AUX is Solid Green indicates that Power for I/O is Present

Operation

The BusBlock Analog Output module converts analog signals using the process defined below.



Output Variable

Attribute 19 functions as the output attribute for the BusBlock Analog Output Module.

Note

When using a packaged control system, such as Think & Do Software, it is not necessary to explicitly read or write 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.

Scaling

The **Low Scale (attribute 70)** is the value sent by the host controller that will generate an analog signal of 0 mA or 0 VDC and, conversely, the **High Scale (attribute 72)** is the value to be sent by the host controller to generate an analog signal at its highest value (10 VDC or 20 mA). Any value sent by the host controller will then be linearized to the low and high scale values.

The default value for low scale is 0. The default value for high scale is 4095.

Limiting

When **Enable Limits (attribute 61)** is set to 1 then the analog output signal will never be below the **Low Limit (attribute 69)** or above the **High Limit (attribute 71)**. If the actual value falls outside the bounds of the limits then a diagnostic bit is set and an event reported.

The default value for low limit is 0. The default value for high limit is 4095.

Output Modes

Output Modes are defined in **Attribute 68** per the table below:

Mode	Output Specifications
0	0-22mA (Historical mode)*
1	4-20mA
2	0-20mA
3	0-24mA
4	0-5V
5	0-10V
6	-5 - +5V
7	-10 - +10V
8	0-6V
9	0-12V
10	-6 - +6V
11	-12 - +12V

* Only Mode 0 is Calibrated

Diagnostics

The Diagnostics Register (**attribute 9**) is two bytes and contains the minimum diagnostics required for the Smart Distributed System, plus additional diagnostics specific to the BusBlock Analog Output module.

Diagnostic Register Bit Definitions Byte 0

Bit	Name	Description
0		Reserved
1	WDOG	Output watchdog timer expired
2	BUSOFF	Off us communications error
3		Reserved
4		Reserved
5		Reserved
6		Reserved
7	EPRM	EEPROM error detected

Diagnostic Register Bit Definitions Byte 1

Bit	Name	Description
0	SRVLIFE	Service Life exceeded
1		Reserved
2	IOERR	I/O Power
3	SDSPWR	SDS Supply Voltage Out of Range (11-27V)
4	LOLIM	Low Limit
5	HILIM	High Limit
6	CANOVN	CAN Overrun
7		Reserved

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.

WDOG

The WDOG diagnostic occurs whenever the **Output Watchdog Timer (attribute 10)** times out.

The Output Watchdog Timer is reset whenever the BusBlock module receives a message over SDS. If a message is not received in the time entered the analog output will be set to the value in the **Default Output (attribute 66)**. The analog output will ramp to the default value based on the **Output Ramp Rate (attribute 67)**.

The Output Watchdog Timer is entered in increments of 10 milliseconds (0.01 seconds). For example, a value of 100 equals 1 second.

The value entered in the Default Output attribute should be based on the same scale used for the output variable, meaning it is prior to being scaled and/or limited.

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, and will need to be reset by the host controller.

EPRM

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

SRVLIFE

BusBlock modules are equipped with two attribute settings for managing the service life of the module. The first, **Service Time (attribute 63)** is the number of hours the module has been in operation. The second, **Service Life (attribute 64)** is set by the user, and is the number of service hours before the unit requires maintenance and/or replacement. When the Service Time value reaches the Service Life setting then an SRVLIFE diagnostic is transmitted.

IOERR

The IOERR diagnostic is enabled when the microprocessor on the BusBlock detects that I/O power is not present.

SDSPWR

This diagnostic is set when SDS bus voltage falls below the required level of 11 VDC.

LOLIM

A LOLIM diagnostic is generated when the scaled output value is at or below the Low Limit set in attribute 69.

HILIM

A HILIM diagnostic is generated when the scaled output value is at or above the High Limit set in attribute 71.

CANOVN

The CAN Overrun error is generated when the buffer is overloaded. Check the SDS bus for bad devices or poor connections.

Attribute 54 – CAN Error Status Codes

- 0 No error
- 1 Stuff error
- 2 Form error
- 3 Acknowledgement error
- 4 Bit recessive error
- 5 Bit dominant error
- 6 CRC error
- 7 reserved

Attributes

ID	Description	R/W	Data Type	Size	Count	Default
0	Network Data Descriptor	R	Unsigned	Byte	3	19,84h,40h
1	Baud Rate	R	Unsigned	Byte	1	0 [autobaud]
2	Object Model	R	Unsigned	Byte	5	1, 4, 5, 1, 2
3	Vendor Id	R	Unsigned	Word	1	9 [Holjeron]
4	Logical Address	R	Unsigned	Byte	4	125, 124, 123, 122
7	Software Version	R	Character	Undef	12	
8	Diagnostic Counter	R	Unsigned	Byte	1	
9	Diagnostic Register	W	Unsigned	Byte	2	
10	Output Watchdog 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	BBK-AUT104/204
14	Vendor	R	Character	Undef	32	Holjeron
15	Description	W	Character	Undef	32	4-Channel Analog Output
19	Output Variable	W	Signed	Word	1	
52	Factory Calibration Use Only					
53	Factory Calibration Use Only					
54	CAN Error Status Code	R	Unsigned	Byte	1	
55	Manufacturing Codes	R	Unsigned	Byte	1	0
56	Tag Name	W	Character	Undef	32	
58	Number of Channels Used	W	Unsigned	Byte	1	4
59	Enable Object Mode	W	Boolean	Undef	1	0
61	Enable Limiting	W	Boolean	Undef	1	0
63	Service Time	R	Unsigned	Word	1	
64	Service Life	W	Unsigned	Word	1	5000
66	Default Output	W	Signed	Word	1	0
67	Output Ramp Rate	W	Unsigned	Word	1	0 [disabled]
68	Output Mode	R/W	Unsigned	Byte	1	0 [see Mode Table]
69	Output Low Limit	W	Signed	Word	1	0
70	Output Low Scale	W	Signed	Word	1	0
71	Output High Limit	W	Signed	Word	1	4095
72	Output High Scale	W	Signed	Word	1	4095
80	Raw Analog Data	R	Unsigned	Word	1	

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)	
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
7	NOOP	---

Legacy LED Diagnostic Indicator Patterns

Second Generation (Rev 3 – Rev 5)

- Second Generation modules have Red-Green LEDs for all indicators.

PWR	SDS	ERR	AUX	Indication
OFF	OFF	OFF	OFF	OFF (DC+ is less than 8 volts)
SG	SG	SG	I/O*	1st LED Test Pattern (Second Gen)
SG	SR	SR	I/O*	2nd LED Test Pattern (Second Gen)
SG	OFF	FG	I/O*	Waiting to Autobaud (Second Gen) (Not seen if fixed rate is used.)
SG	OFF	SG	I/O*	NORMAL CONDITION - Nothing to transmit on the CAN bus
SG	IG	SG	I/O*	NORMAL CONDITION - Trying to transmit on the CAN bus
SG	OFF	FR	I/O*	Nothing to transmit on the CAN bus and minor diagnostic bit(s) set
SG	IG	FR	I/O*	Trying to transmit on the CAN bus and minor diagnostic bit(s) set
SG	OFF	SR	I/O*	Not transmitting on the CAN bus and MAJOR diagnostic bit(s) set
SG	IG	SR	I/O*	Trying to transmit on the CAN bus and MAJOR diagnostic bit(s) set

OFF = LED is OFF

SG = Solid Green

SR = Solid Red

FG = Flashing Green

FR = Flashing Red

SFR = Solid OR Flashing Red

IG = Intermittent Green

FR = Flashing Red

I/O = If AUX is Solid Green indicates that Power for I/O is Present

Legacy LED Diagnostic Indicator Patterns

First Generation – (Rev 0 - Rev 2)

- First Generation modules have Green LEDs for PWR, SDS, and AUX and Red LED's for ERR indication.

PWR	SDS	ERR	AUX*	Indication
OFF	OFF	OFF	OFF	OFF (DC+ is less than 8 volts)
SG	OFF	OFF	I/O*	NORMAL CONDITION - Not trying to transmit on the CAN bus
SG	IG	OFF	I/O*	NORMAL CONDITION - Trying to transmit on the CAN bus
SG	IG	SR	I/O*	Trying to transmit on the CAN bus and diagnostic bit(s) set
SG	OFF	SR	I/O*	Not transmitting on the CAN bus and diagnostic bit(s) set
SG	SG	SR	I/O*	BUS OFF fault condition
SG	OFF	FR	I/O*	Nothing to transmit on the CAN bus and major diagnostic bit(s) set

OFF = LED is OFF

SG = Solid Green

SR = Solid Red

FG = Flashing Green

FR = Flashing Red

IG = Intermittent Green

FR = Flashing Red

I/O = If AUX is Solid Green indicates that Power for I/O is Present