

Description

The Holjeron Remote Serial Port for the Smart Distributed System provides a convenient method to interface with serial I/O devices in a System installation.

This Remote Serial Port can store up to 32 ASCII strings, with each string being up to 32 characters in length. A string can be transmitted by enabling an output bit within the Remote Serial Port. The first 8 stored strings are non-retentive (data is lost when power is cycled). The last 24 are retentive and will remain in the memory of the Remote Serial Port when power is cycled.



Specifications

Warranty/Remedy

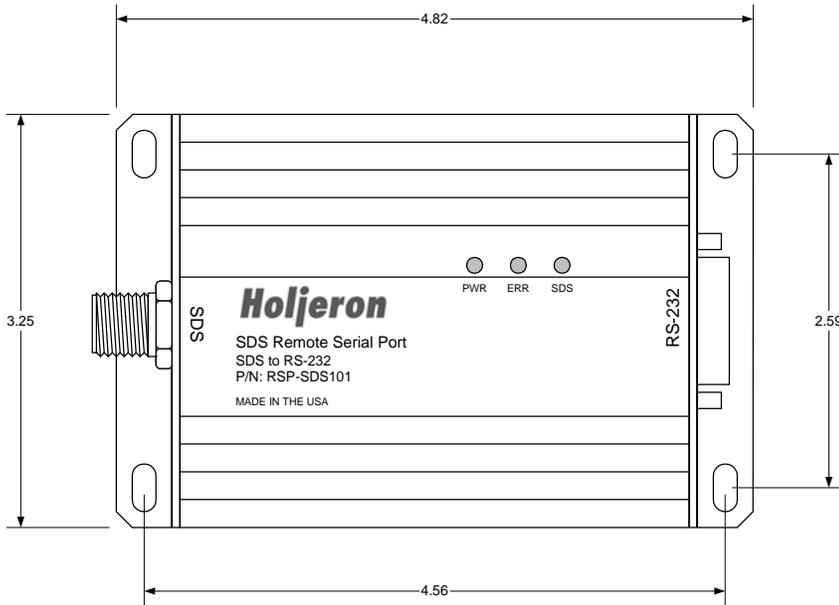
Seller warrants its products to be free from defects in design, material and workmanship under normal use and service. Seller will repair or replace without charge any such products it finds to be so defective on its return to Seller within 18 months after date of shipment by Seller. **The foregoing 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.

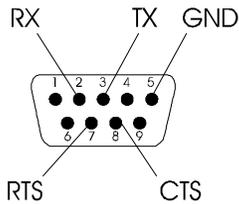
All information contained herein, including illustrations, specifications and dimensions, is believed to be reliable as of the date of publication, but is subject to change without notice.

Part Number	Remote Serial Port for SDS		RSP-SDS101	
Electrical	SDS Voltage Range		11-25 VDC	
	Current Consumption		80 mA	
	Data Rates		125, 250, 500 and 1000 kbps	
Serial Port	Type		RS-232	
	Number		One (1)	
	Baud Rates		300, 600, 1200, 2400, 4800, 9600, 19.2k, 38.4k	
	Parity		Even, Odd, Space, Mark, None	
	Data Bits		5, 6, 7, 8	
	Stop Bits		1 or 2	
	Flow Control		None or RTS/CTS	
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		3.82" H x 3.25" W x 0.89" D	
	Weight		12 oz	
	Color		Black	
	Case Material		Extruded Aluminum, Anodized	
	Mounting		Back panel mount	
	Terminations	SDS		Micro Connector, Male
		Serial		DB-9
	Indication	Power		Green
Error			Red	
SDS			Green	

Dimensions



Serial Port Connection



Configuration

A Remote Serial Port 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 Remote Serial Port. Default values are shown in bold type-face.

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.

Serial Port Configuration

The configuration of the serial port is done through attributes 65 through 69, with entries described in the tables below:

Serial Baud Rate (Attribute 65)

Value	Baud Rate
0	300
1	600
2	1200
3	2400
4	4800
5	9600 [default]
6	19200
7	38400

Parity (Attribute 66)

Value	Parity
0	Even
1	Odd
2	Space
3	Mark
4	None [default]

Data Bits (Attribute 67)

Valid data bit entries are 5 through 8, with **8** being the default.

Stop Bits (Attribute 68)

Valid stop bit entries are 1 or 2, with **1** being the default.

Flow Control (Attribute 69)

Value	Flow Control
0	None [default]
1	RTS/CTS

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 Remote Serial Port.

Operation

The Remote Serial Port reads and writes ASCII strings. The status of the string handling is presented as bits in the input and output variables of the Remote Serial Port.

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 Buffer

The Remote Serial Port has an input buffer that can hold up to sixteen (16) messages. A message can be no longer than 32 characters, and may be less depending on the message format. If a serial device transmits a message that is longer than 32 characters then the Remote Serial Port will store the string in multiple messages.

The input buffer operates in a first-in, first out mode. The next message to be read is available in the **Input Buffer (attribute 90)**. The attribute is cleared after it has been read by the host controller.

The **Buffer Status Variable (attribute 18)** depicts whether there is any data in the buffer to be read (see *Input Variable*). Note that any defined message delimiters will already be removed from the string before it is placed in the input buffer.

Output Buffer

The output buffer on the Remote Serial Port supports 240 messages of up to 32 characters each. Turning on a bit in the **Output Variable (attribute 34)** causes a message to be placed in the output buffer, and transmitted out the serial port.

Messages are transmitted in the order they are submitted to the output buffer. If more than one bit is enabled when the output variable is written by the host controller then the messages will be queued from low order bit to high order bit.

Note

Output bits do NOT have to be turned off before their associated message can be re-transmitted. If the output variable is written by the host controller with the same message enabled, that message will be transmitted again.

Messages that are common to an application can be stored as **Retentive Messages (attributes 108-131)**. Dynamic data for an application can be stored in **Non-Retentive Messages (attributes 100-107)**.

Message Format

The serial device that is connected to the Remote Serial Port may require a message header and footer. For example, an incoming message may be terminated with a carriage return (ASCII character 0Dh).

The characters used for message formatting are defined in the attributes listed below.

Message Headers/Terminators

Attr	Message Delimiter
70	Incoming Message Header
71	Incoming Message Terminator
72	Outgoing Message Header
73	Outgoing Message Terminator

Note

Message delimiters are entered as the ASCII value of the character represented. For example, carriage return is a value of 0Dh. All four bytes must be entered, with unused characters having a value of 0.

Buffer Status Variable

Attribute 18 functions as the input attribute for the Remote Serial Port. Whenever an event is generated that reports the state of inputs, the data in attribute 18 will be passed.

Byte	Bit	Description
0	0	Message(s) Available
	1	Input Buffer Half Full
	2	Messages in Output Buffer
	3	Reserved
	4	Reserved
	5	Reserved
	6	Reserved
	7	Reserved

Input Event Mode

Most systems will require a BusBlock I/O Module to generate an event whenever one or more input bits 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).

The Remote Serial Port can be configured to invert the state of status bits by turning on the corresponding bit in **Input NO/NC (attribute 60)**. For example, turning on bit 0 (01h) in attribute 60 will cause the first bit in the input variable to have a value of 1 when the input buffer is empty.

Message(s) Available

When the Message Available bit is enabled then there is data in the Input Buffer (attribute 90) to be read. If, after the host controller reads the data, the input buffer is empty then the Message Available bit will have a value of 0.

Input Buffer Half Full

If more than eight (8) messages are in the input buffer then the Input Buffer Half Full bit will be on to notify the host controller of the condition.

Messages in Output Buffer

If there are any messages in the output buffer waiting to be transmitted then the Message in Output Buffer bit will be on. The control program can monitor this bit to know when a message has been transmitted.

Output Variable

Attribute 34 functions as the output attribute for the Remote Serial Port. Whenever the host controller changes the state of an output it is writing to attribute 34.

Byte	Bit	Description
0	0	Transmit String in Attr 100
	1	Transmit String in Attr 101
	2	Transmit String in Attr 102
	3	Transmit String in Attr 103
	4	Transmit String in Attr 104
	5	Transmit String in Attr 105
	6	Transmit String in Attr 106
	7	Transmit String in Attr 107
1	0	Transmit String in Attr 108
	1	Transmit String in Attr 109
	2	Transmit String in Attr 110
	3	Transmit String in Attr 111
	4	Transmit String in Attr 112
	5	Transmit String in Attr 113
	6	Transmit String in Attr 114
	7	Transmit String in Attr 115
2	0	Transmit String in Attr 116
	1	Transmit String in Attr 117
	2	Transmit String in Attr 118
	3	Transmit String in Attr 119
	4	Transmit String in Attr 120
	5	Transmit String in Attr 121
	6	Transmit String in Attr 122
	7	Transmit String in Attr 123
3	0	Transmit String in Attr 124
	1	Transmit String in Attr 125
	2	Transmit String in Attr 126
	3	Transmit String in Attr 127
	4	Transmit String in Attr 128
	5	Transmit String in Attr 129
	6	Transmit String in Attr 130
	7	Transmit String in Attr 131

Non-Retentive Messages

The strings that are stored in attributes 100-107 are non-retentive, meaning the data in them will be lost if power is removed.

Retentive Messages

The strings that are stored in attributes 108-131 are retentive. If power is removed from the Remote Serial Port, the data will not be lost.

Output Watchdog Timer

When set to some value other than 0, the **Output Watchdog Timer (attribute 50)** will cause the physical output to be set to a normalized state if there are no SDS messages to the Remote Serial Port in the time allotted (value in attribute 50 times 10 milliseconds).

The normal state of the output variable is defined by the **Default Output (attribute 51)**, where 0 in a bit location represents a default state of off and a value of 1 represents a default state of on. This can be used to transmit a message if the SDS bus is not running.

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 Remote Serial Port.

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	OBFULL	Output Buffer Full
1	IBFULL	Input Buffer Full
2	RSVD	Reserved
3	RSVD	Reserved
4	OVERRUN	Overrun Error
5	PARITY	Parity Error
6	FRAMING	Framing Error
7	BREAK	Serial Break

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 occurs whenever the **Output Watchdog Timer (attribute 50)** times out.

The Output Watchdog Timer is reset whenever the Remote Serial Port receives a message over SDS. If a message is not received in the time entered any point configured as an output will be set to the state for that bit in the **NO/NC (attribute 60)**.

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

BUSOFF

The CAN controller on the Remote Serial Port 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.

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 Remote Serial Port is unable to read or write EEPROM.

OBFULL

If the output buffer is full and the host controller instructs the Remote Serial Port to transmit another message then an Output Buffer Full error will be generated.

IBFULL

If all input buffers are full when another message is received at the serial port then an Input Buffer Full error is transmitted.

OVERRUN

The serial controller detected an overrun error.

PARITY

A parity error was detected by the serial controller.

FRAMING

The serial controller detected a serial framing error.

BREAK

The serial controller received a bread command.

Other Diagnostic Functions

Remote Serial Ports are equipped with two attributes that aid in maintaining a system.

The first is **Number of Resets (attribute 53)**. This is the total number of times the products has been reset. If one product on a bus is being reset more often than others, then there is a likely problem with the bus cabling to that product.

The second attribute is **Service Life (attribute 54)**. This is the total number of hours the product has been powered. This attribute can be monitored and used to trigger preventative maintenance on a system.

Attributes

ID	Description	R/W	Data Type	Size	Count	Default
0	Network Data Descriptor	R	Unsigned	Byte	3	12h,01h,02h,22h,81h,1Fh
1	Baud Rate	R	Unsigned	Byte	1	0 [autobaud]
2	Object Model	R	Unsigned	Byte	5	1, 41, 5, 7, 6
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	
8	Diagnostic Counter	R	Unsigned	Byte	1	
9	Diagnostic Register	W	Unsigned	Byte	2	
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	RSP-SDS101
14	Vendor	R	Character	Undef	32	Holjeron
15	Description	W	Character	Undef	32	Remote Serial Port
18	Input Variable	R	Boolean	Undef	3	
34	Output Variable	W	Boolean	Undef	32	
50	Output Watchdog Timer	W	Unsigned	Word	1	0 [disabled]
51	Default Output	W	Boolean	Undef	3	0h
53	Number of Resets	R	Unsigned	Long	1	
54	Service Time	R	Unsigned	Long	1	
55	Manufacturing Codes	R	Unsigned	Byte	1	0
56	Tag Name	W	Character	Undef	32	
60	Input NO/NC	W	Boolean	Undef	3	0h
65	Serial Baud Rate	W	Unsigned	Byte	1	5 [9600]
66	Parity	W	Unsigned	Byte	1	4 [None]
67	Data Bits	W	Unsigned	Byte	1	8
68	Stop Bits	W	Unsigned	Byte	1	1
69	Flow Control	W	Unsigned	Byte	1	0 [None]
70	Incoming Start Delimiter	W	Unsigned	Byte	4	0D 00 00 00 h [CR]
71	Incoming Stop Delimiter	W	Unsigned	Byte	4	
72	Outgoing Start Delimiter	W	Unsigned	Byte	4	0D 00 00 00 h [CR]
73	Outgoing Stop Delimiter	W	Unsigned	Byte	4	
90	Serial Input Buffer	R	Character	Undef	32	
100-107	Non-Retentive Messages	W	Character	Undef	32	
108-131	Retentive Messages	W	Character	Undef	32	

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	---