



LT900SERIES

1xN
Multi-Channel Switch
Operation Manual

For RS-232 Control with 16-pin Connector

Table of Contents

General Information	1
General Specifications	2
Interface Connectors	3
RS232 Communication Parameters and Pin Assignments	4
RS-232 Commands & Messages	5
Operating Instructions	6
Housing Drawing	7

General Information

The LT900 Series 1xN optical switch module utilizes a high precision stepping motor to create a small multi-channel switch with low insertion loss and excellent repeatability. All LIGHTech switches feature our patented reflective optics technology, offering excellent optical performance and reliability from 0 to 50 °C.



Features

- Low insertion loss < 1.0 dB
- Repeatability of < ± 0.02 dB
- Available with 16-pin TTL, 26-pin TTL, or RS-232 control
- Co-positioning of all fibers and control connections on same end of module facilitate fiber management and maximize flexibility in board placement

Applications

- Wavelength monitoring
- Optical system monitoring
- Optical test access
- OEM network test systems
- Network monitoring
- Network restoration
- Protection
- Optical Signal Switching

General Specifications

Parameter	Typical	Maximum
Insertion Loss ^{1, 2}	0.6 dB	1.0 dB
Back Reflection	< -60 dB	< -55 dB
Polarization Dependent Loss	< 0.06 dB	< 0.08 dB
Repeatability	±0.01 dB	±0.02 dB
Crosstalk	< -80 dB	< -70 dB
Input Power		300mW
Switching Speed		65ms + 10ms / channel
Operating Temperature	0 to +50 °C	
Storage Temperature	-40 to +70 °C	
Operating Voltage	5.0 VDC ± 0.25 VDC	6.0 VDC
Number of Channels		26
Housing Dimension (HxWxL)	27.3 × 79 × 140 mm	
Housing Weight	470 g	500 g
Power consumption	1.0 W	3.5 W
Control Interface (All I/O pins are ESD protected)	16-pin TTL 26-pin TTL RS-232	

Note:

All specifications referenced without connectors

All optical measurements taken after temperature has been stabilized at 23 ± 3 °C

All specifications applied for bi-directional transmission

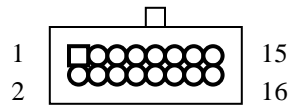
1. Add 0.7 dB for two connectors

2. Over the operating wavelength range. Add 0.3 dB typical for variations over temperature.

Interface Connectors

16 pin connector

A 16 pin, 0.1” spacing dual row connector serves as the interface to all the electrical connections to the LT900 switch. The connector is attached to the switch through a 16 wire ribbon cable.



This section is for the custom design RS-232 serial interface control with 16-pin connector.

RS232 Communication Parameters and Pin Assignments

RS232 communication parameters

Baud Rate	9600
Word Length	8
Stop Bits	1
Parity	N
Termination	0xD

RS-232 Pin Assignments For 16-pin Connector

Pin No.	Definitions
1	No connection
2	Connect to pin 7
3	Transmit data
4	CTS
5	Receive data
6	RTS
7	Connect to pin 2
8	No connection
9	Signal ground
10	Power ground
11	Power ground
12	Power ground
13	Power ground
14	+5VDC
15	+5VDC
16	+5VDC

This section is for the custom design RS-232 serial interface control with 16-pin connector.

RS-232 Commands & Messages

Command Format	Description	Example		Note
		Command	Response	
*IDN?←	Instrument identification query <u>Response:</u> <i>M Vx</i> ← <i>M</i> : model name <i>x</i> : firmware version	*IDN?←	LT900 V1.0.0←	Model Name: LT900 Firmware Version: 1.0.0
MAX#?←	Maximum optical channels query. <u>Response:</u> <i>n</i> ← <i>n</i> : 1 ~ N	MAX#?←	17←	Maximum # of optical channels is 17
*RST←	Reset system command. Switches input to the off (reset) position and executes internal test. <u>Response:</u> <i>0,OK</i> ← internal test passed <i>ERR3</i> ← internal test fail	*RST←	0,OK←	Internal test passed
SWITCH:0←	Switches input to the off (reset) position <u>Response:</u> <i>00,OK</i> ←	SWITCH:0←	00,OK←	
SWITCH: <i>n</i> ←	Switches input to optical channel <i>n</i> <u>Response:</u> <i>n,OK</i> ← <i>n</i> : 00 ~ N <i>ERR2</i> ← <i>n</i> > N	SWITCH:6←	06,OK←	Switch input to optical channel 6
SWITCH?←	Queries what optical channel number the LT900 switch is currently at <u>Response:</u> <i>n</i> ← <i>n</i> : 1 ~ N	SWITCH?←	12←	Switch is currently at optical channel number 12

←: ASCII character 13 (hex D)

N: maximum # of optical channels

Error Message	Description	Cause
ERR1←	Command format not recognized	Misspelled / unrecognized command
ERR2←	Switch channel beyond range	Using the SWITCH: <i>n</i> command with an optical channel number <i>n</i> greater than the maximum number of optical channels for the switch
ERR3←	Internal error	Misconnection, product failure

←: ASCII character 13 (hex D)

Operating Instructions

RS-232 Operating Instructions

Initialization:

1. Use an RS-232 cable to connect the LT900 switch to an RS-232 port
2. Configure the serial port as follows:

Baud Rate	9600
Word Length	8
Stop Bits	1
Parity	N
Termination	←

←: ASCII character 13 (hex D)

Note: The initial optical channel after power-up of the LT900 switch is the off (reset) position, optical channel 0.

To change an optical channel:

1. "SWITCH:*n*←" where *n* is the optical channel number to switch to.
2. Read the response from the RS-232 port. If the command executed successfully, the response will be "*n*,OK←" where *n* is the optical channel number specified in (1).

NOTE: If *n* is greater than the maximum optical channels for the switch the response will be "ERR2".

To reset or turn off (optically) the switch:

1. "SWITCH:0←" or "*RST←"
2. Read the response from the RS-232 port. Successful command execution results in a response of "00,OK←" for the SWITCH:0 command and "0,OK" for the *RST command.

To verify switch position:

Soft verification

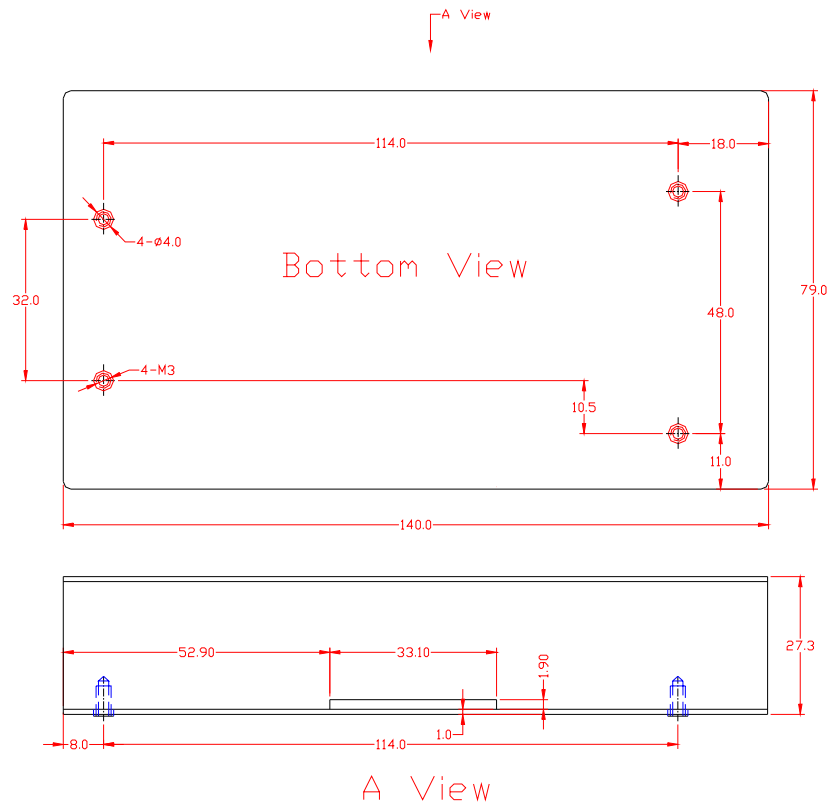
1. "SWITCH?←"
2. Read optical channel response from the RS-232 port. The data format will be "*n*←" where *n* is the current optical channel number.

Hard verification

1. Note current optical channel number
2. "*RST←"
3. Verify response of "0,OK"
4. "SWITCH:*n*←" where *n* is the optical channel number in (1)
5. Verify response of "*n*,OK"
6. "SWITCH?←"
7. Read optical channel response from the RS-232 port. The data format will be "*n*←" where *n* is the current optical channel number.

Housing Drawing

LT900 SERIES



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