

Technical Specification

For

0.1~4 Gbps SFP Checker

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1. General Description

The 0.1~4Gbps SFP Checker is an instrument which combines the Serial Pattern Generator, Bit Error Rate Analyzer, and Optical Power Meter within a compact size for both optical telecommunication and data communication. It provides common transmission rate for **OC-3, OC-12, 1GFC, 1GbE, 2GFC, OC-48 and 4GFC**. The optical power can be measured by plugging in an optional optical sensor module.



The 0.1~4Gbps SFP Checker can be a help you to read the internal memory EEPROM of the SFP and displays details contents registered into such as the Part Number, Vendor Name , wavelength, description, and range.

With a SFP that is with digital diagnostics, the SFP Checker can be used to monitor the all DDM information. With Meter Module, you can measure the real output power of SFP.

The friendly graphic user interface (GUI) provides clear monitoring for bit error rate, bit error counter, timer, SFP status, optical power from the sensor module and selection of data rate and PRBS.

2. Features

- Pocket size design.
- No warm up time required.
- Connects to a standard PC / laptop with Windows OS via USB connection
- 2 port for duplex LC SFP or AOC.
- SFP Plug-In Module with SC/PC connector for optical power measurement.
- Full function GUI
- Popular USB connection.

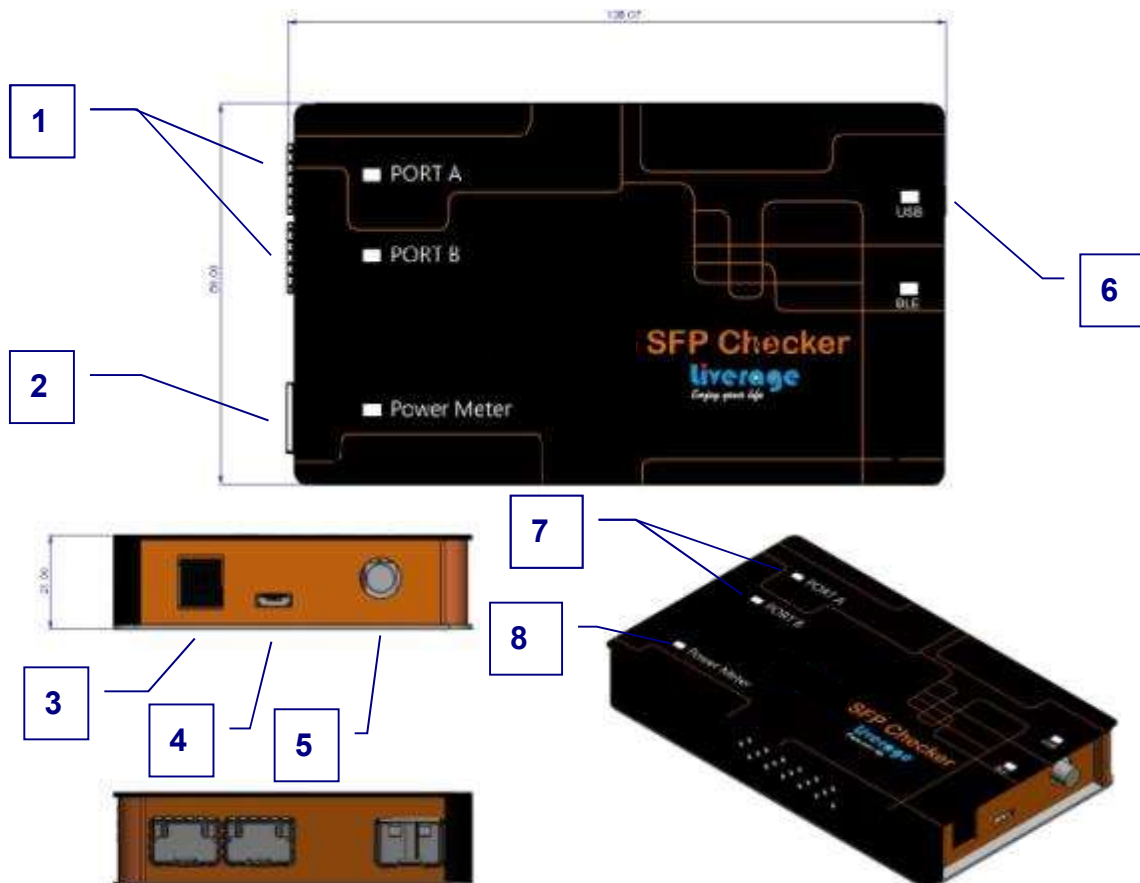
3. Applications

- SFP transceiver or AOC qualification to verify correct SFP
- To confirm proper transmit and receive signal levels
- Optical transmitting power measurement.
- Optical reference signal.
- Bit error rate test.
- To verify proper encoding during the manufacturing

4. Specification

Main Frame	
SFP ports	Standard SFP 20pin with Cage
Operating Temp.	0°C ~ 50°C
Storage Temp.	-10°C ~ 70°C
Transmission rate	0.1Gbps~4Gbps
Power Supply	5V / 5A
Weight	0.5 Kg
Optical Power Meter	
Input Wavelength	850nm, 1270nm~1610nm
Optical Power Range	-50 dBm ~ +5 dBm
Resolution	0.01 dB
Accuracy	±0.3dB under calibrated condition

5. Elements & Operating Instructions



■ Elements:

1. SFP Plug-In Cage (port A & B) : SFP Plug-In port, for bit error rate test.
2. Power Meter Cage : Optical power measurement.
3. Power Input : DC power input 5V / 5A.
4. Micro USB : USB port. Connect to host via a standard USB cable.
5. Clock Output : Clock output for Eye Diagram Scope's trigger.
6. LED Status for USB : LED Status for USB Connection to Computer.
7. LED Status for SFP : LED Status for Plug in SFP module, RX LOS or Bit error rate.
8. LED Status for Meter : LED Status for Plug in Power Meter module.

■ Operating Instructions:

1. Connect the SFP Checker to the PC by connecting the USB interface.
2. Plug in the SFP Transceiver Module.
3. Select "Data Rate" and "Pattern".
4. Click "STAR" to start bit error rate test function.
5. Click "STOP" to stop the bit error rate test.
6. Plug a Power Meter to measure optical power. Click "POWER METER" the optical power measurement.
7. Click "ID" to show A0h table information
8. Click "Clear" to Clear the command interface

6. Command List

Item	Command	Remark	Note
Read Data Rate	?DATA_RATE	Respond aa aa : 00 = Not Set 01 = Fast Ethernet (125Mbps) 02 = OC-3 (155.52Mbps) 03 = OC-12 (622.08Mbps) 04 = 1GFC (1.0625Gbps) 05 = 1GBE (1.25Gbps) 06 = 2GFC (2.125Gbps) 07 = OC-48 (2.48832Gbps) 08 = 2GbE (2.5Gbps) 09 = 4GFC (4.25Gbps) 10 = OC-24 (1.244Gbps)	

SFP Checker

Set Data Rate	DATA_RATE_AA (Next page)	AA : 00 = Not Set 01 = Fast Ethernet (125Mbps) 02 = OC-3 (155.52Mbps) 03 = OC-12 (622.08Mbps) 04 = 1GFC (1.0625Gbps) 05 = 1GBE (1.25Gbps) 06 = 2GFC (2.125Gbps) 07 = OC-48 (2.48832Gbps) 08 = 2GbE (2.5Gbps) 09 = 4GFC (4.25Gbps) 10 = OC-24 (1.244Gbps)	
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SFP Checker

Set Data Rate	DATA_RATE_AA	Respond aa aa 00 = Not Set 01 = Fast Ethernet (125Mbps) 02 = OC-3 (155.52Mbps) 03 = OC-12 (622.08Mbps) 04 = 1GFC (1.0625Gbps) 05 = 1GBE (1.25Gbps) 06 = 2GFC (2.125Gbps) 07 = OC-48 (2.48832Gbps) 08 = 2GbE (2.5Gbps) 09 = 4GFC (4.25Gbps) 10 = OC-24 (1.244Gbps)	
Read PRBS Pattern	?PATTERN	Respond aa aa : 00 = Not Set 01 = PRBS7 02 = PRBS23 03 = PRBS31	

SFP Checker

Set PRBS Pattern	PATTERN_AA	AA : 00 = Not Set 01 = PRBS7 02 = PRBS23 03 = PRBS31 Respond aa aa : 00 = Not Set 01 = PRBS7 02 = PRBS23 03 = PRBS31	
Read Port A BERT Status	?PA_BERT_ENA	Respond : aa aa :	
Read Port B BERT Status	?PB_BERT_ENA	00 = Disable BERT 01 = Enable BERT	

SFP Checker

Set BERT Status for Port A	PA_BERT_ENA_AA	AA : 00 = Disable BERT 01 = Enable BERT Respond : aa	
Set BERT Status for Port B	PB_BERT_ENA_AA	aa : 00 = Disable BERT 01 = Enable BERT	
Read Port A BER Status and Error Count	?PA_BERT	Respond : aa_bbbbbbbb aa : 00 = BER not locked , Error exceeds threshold 01 = BER locked bbbbbbbb : Error Count (HEX)	
Read Port B BER Status and Error Count	?PB_BERT		
Read AOC BERT Status	?AOC_BERT_ENA	Respond : aa_bb aa : 00 = Port A BERT Disabled 01 = Port A BERT Enabled bb : 00 = Port B BERT Disabled 01 = Port B BERT Enabled	

SFP Checker

Set BERT Status for AOC	AOC_BERT_ENA_AA	AA 00 = AOC BERT Disabled 01 = AOC BERT Enabled Respond : aa_bb aa : 00 = Port A BERT Disabled 01 = Port A BERT Enabled bb : 00 = Port B BERT Disabled 01 = Port B BERT Enabled	
Read AOC BER Status and Error Count	?AOC_BERT	Respond : aa_bbbbbbbb_cc_dddddddd aa : 00 = Port A BER not locked , Error exceeds threshold 01 = Port A BER locked bbbbbbbb : Port A Error Count (HEX) cc : 00 = Port B BER not locked , Error exceeds threshold 01 = Port B BER locked dddddddd : Port B Error Count (HEX)	

SFP Checker

Read Port A SFP I/O Status	?PA_SFP_IO	Respond : aa_bb_cc_dd aa : ABS = 00 or 01 bb : Tx Fault = 00 or 01 cc : Tx Disable = 00 or 01 dd : Rx Los = 00 or 01
Read Port B SFP I/O Status	?PB_SFP_IO	
Set Port A Tx Disable Status	PA_SFP_DIS_AA	AA : Tx Disable = 00 or 01 Respond : aa aa : Tx Disable = 00 or 01
Set Port B Tx Disable Status	PB_SFP_DIS_AA	
Read Port A SFP RS0 / RS1 Status	?PA_SFP_RS	Respond : aa_bb aa : RS0 = 00 or 01 bb : RS1 = 00 or 01
Read Port B SFP RS0 / RS1 Status	?PB_SFP_RS	

SFP Checker

Set Port A SFP RS0 / RS1 Status	PA_SFP_RS_AA_BB	AA : RS0 = 00 or 01 BB : RS1 = 00 or 01 Respond : aa_bb	
Set Port B SFP RS0 / RS1 Status	PB_SFP_RS_AA_BB	aa : RS0 = 00 or 01 bb : RS1 = 00 or 01	
Read Port A SFP A0h Data	Mode 1. ?PA_SFP_A0_AA_BB Mode 2. ?PA_SFP_A0_AA_BB _BB_BB_BB_BB_BB _BB_BB_BB_BB_BB _BB_BB_BB_BB_BB Mode 3. ?PA_SFP_A0	Mode 1. & Mode 2. AA : Data Address (Start address in HEX) BB : Data(HEX) — from start address to end address, up to 16 bytes Respond : aa_aa_aa_.....aa (Data from start address to end address, with a maximum of 16 bytes.) aa : Data (HEX) Mode 3. Respond : aa_aa_aa_.....aa(Data Address 0x00 ~ 0xFF) aa : Data (HEX)	

SFP Checker

Read Port B SFP A0h Data	Mode 1. ?PB_SFP_A0_AA_BB Mode 2. ?PB_SFP_A0_AA_BB _BB_BB_BB_BB_BB _BB_BB_BB_BB_BB _BB_BB_BB_BB_BB Mode 3. ?PB_SFP_A0	Mode 1. & Mode 2. AA : Data Address (Start address in HEX) BB : Data(HEX) — from start address to end address, up to 16 bytes Respond : aa_aa_aa_.....aa (Data from start address to end address, with a maximum of 16 bytes.) aa : Data (HEX) Mode 3. Respond : aa_aa_aa_.....aa(Data Address 0x00 ~ 0xFF) aa : Data (HEX)	
Read Port A SFP A2h Data	Mode 1. ?PA_SFP_A2_AA_BB Mode 2. ?PA_SFP_A2_AA_BB _BB_BB_BB_BB_BB _BB_BB_BB_BB_BB _BB_BB_BB_BB_BB Mode 3. ?PA_SFP_A2		

SFP Checker

Read Port B SFP A2h Data	Mode 1. ?PB_SFP_A2_AA_BB Mode 2. ?PB_SFP_A2_AA_BB _BB_BB_BB_BB_BB _BB_BB_BB_BB_BB _BB_BB_BB_BB_BB Mode 3. ?PB_SFP_A2	Mode 1. & Mode 2. AA : Data Address (Start address in HEX) BB : Data(HEX) — from start address to end address, up to 16 bytes Respond : aa_aa_aa_.....aa (Data from start address to end address, with a maximum of 16 bytes.) aa : Data (HEX) Mode 3. Respond : aa_aa_aa_.....aa(Data Address 0x00 ~ 0xFF) aa : Data (HEX)	
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SFP Checker

Set Port A SFP A0h Data	Mode 1. PA_SFP_A0_AA_BB Mode 2. PA_SFP_A0_AA_BB_ BB_BB_BB_BB_BB_ BB_BB_BB_BB_BB_ BB_BB_BB_BB_BB	AA : Data Address (Start address in HEX) BB : Data(HEX) — from start address to end address, up to 16 bytes Respond : aa_aa_aa_.....aa (Data Address 0x00 ~ 0xFF) aa : Data (HEX)	
Set Port B SFP A0h Data	Mode 1. PB_SFP_A0_AA_BB Mode 2. PB_SFP_A0_AA_BB_ BB_BB_BB_BB_BB_ BB_BB_BB_BB_BB_ BB_BB_BB_BB_BB		

SFP Checker

Set Port A SFP A2h Data	Mode 1. PA_SFP_A2_AA_BB Mode 2. PA_SFP_A2_AA_BB_ BB_BB_BB_BB_BB_ BB_BB_BB_BB_BB_ BB_BB_BB_BB_BB	AA : Data Address (Start address in HEX)) BB : Data(HEX) — from start address to end address, up to 16bytes	
Set Port B SFP A2h Data	Mode 1. PB_SFP_A2_AA_BB Mode 2. PB_SFP_A2_AA_BB_ BB_BB_BB_BB_BB_ BB_BB_BB_BB_BB_ BB_BB_BB_BB_BB		
Read Power Meter Status, Wavelength, and Measurement Value	?METER	Respond aa_bbbb_ccccc aa : Power Meter Module Presence 00 = No Power Meter module inserted 01 = Power Meter module inserted bbbb : 0850 / 1310 / 1490 / 1550 etc. ccccc : +99.99 (HI) / -99.99 (LO) / +05.00 ~ -40.00	

SFP Checker

Set Power Meter Wavelength	METER_WAVE_AA	AA : 0850nm = 01 / 1270nm = 02 / 1290nm = 03 1310nm = 04 / 1330nm = 05 / 1350nm = 06 1370nm = 07 / 1390nm = 08 / 1410nm = 09 1430nm = 10 / 1450nm = 11 / 1470nm = 12 1490nm = 13 / 1510nm = 14 / 1530nm = 15 1550nm = 16 / 1570nm = 17 / 1590nm = 18 1610nm = 19 Respond : aa aa : 0850nm = 01 / 1270nm = 02 / 1290nm = 03 1310nm = 04 / 1330nm = 05 / 1350nm = 06 1370nm = 07 / 1390nm = 08 / 1410nm = 09 1430nm = 10 / 1450nm = 11 / 1470nm = 12 1490nm = 13 / 1510nm = 14 / 1530nm = 15 1550nm = 16 / 1570nm = 17 / 1590nm = 18 1610nm = 19	
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7. Maintenance

Like any other type of electronic equipment, this SFP checker should be kept away from water, high humidity, dust, electricity, and environments of extreme temperatures. Do not drop this tool on any hard surface. Internal modification of any of the SFP checker components can cause a malfunction and will invalidate the manufacturer's warranty.

8. Warranty

The manufacturer warrants this product to be free of defects in workmanship and materials for a period of 1 year after purchase. This warranty is solely limited to the repair or replacement of the original parts. All other costs are the sole responsibility of the owner. This warranty does not cover any defects, damage, or deterioration due to misuse, alteration, or negligence.

9. Ordering Information

Part Number	Media	Description
S20071009999	SFP Checker Main Frame	0.1Gbps ~4Gbps With 100~220VAC to 5VDC adaptor

SFP Checker Optical Sensor Module				
Part Number	Connector	Wavelength	Range	Accuracy
S20125328	SM/MM SC	850 / 1310 / 1490 / 1550 nm	-50 ~ +5 dBm	SM : +/- 0.3 dB MM : +/- 0.5 dB
S20125329	SM/MM SC	850 / CWDM 1270~1610 nm	-50 ~ +5 dBm	SM : +/- 0.3 dB MM : +/- 0.5 dB
S20125126	SM SC	CWDM 1270~1610 nm	-50 ~ +5 dBm	+/- 0.3 dB

10. Service Contacts

Please contact us:

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11. Record of Revisions

Record of Revisions		
Rev.	Date	Description of Change
VER A	2020-06-08	Primary
VER B	2020-07-17	Modify Optical Meter Range 1. -60 ~ +5 dBm → -50 ~ +5 dBm Modify Optical Meter Module P/N 1. S20125238 → S20125328 2. Add S20125329
VER C	2020-09-11	Delete LED Status for Bluetooth
VER D	2025-06-18	Add “Command List”