



# **BF7264B SD 3.0 / SDIO 3.0 analyzer**

## **Index**

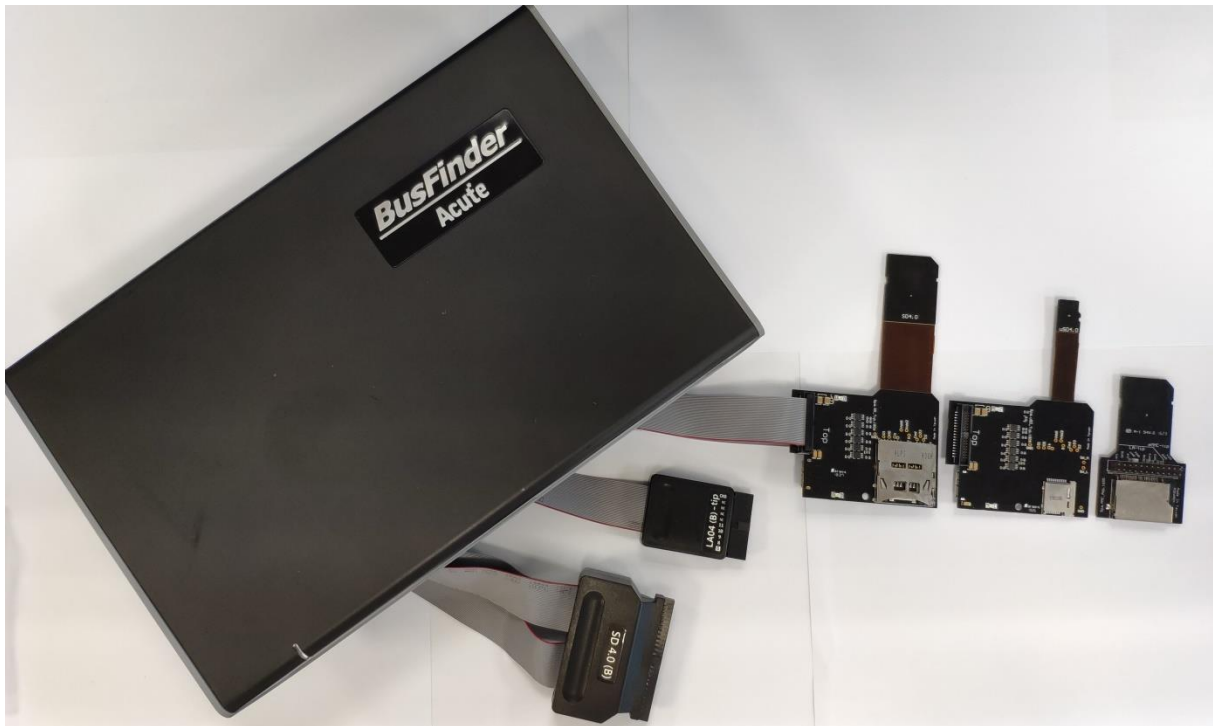
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## Feature

This option is supported in BF6264B, BF7264B, and BF7264B+ ◦

Specifications:

### 1. BF7264B, 32Gb RAM, SD 4.0 / SD 3.0 probe



### 2. Supports SD 3.0 SDR104 / SD6.0 Legacy mode SDR104, DDR200/ SDIO 3.0

Pin Layout				
Bus Interface	High Speed	UHS-I High Speed	UHS-II UHS-I High Speed	UHS-III <sup>New</sup> UHS-II UHS-I High Speed
Capacity (file system)	2TB (exFAT) 32GB (FAT32) 2GB (FAT12/16)	SD <sup>TM</sup> XC I SD <sup>TM</sup> XC I SD <sup>TM</sup> XC I	SD <sup>TM</sup> XC II SD <sup>TM</sup> XC II SD <sup>TM</sup> XC II	SD <sup>TM</sup> XC III SD <sup>TM</sup> XC III SD <sup>TM</sup> XC III
	25MB/sec	104MB/sec	312MB/sec	624MB/sec
	Bus Speed			

### 3. Can display SD 3.0 protocol packet data in tabular form, including command parsing

Timestamp (h:m:s.ms.us.ns dur)	Event	Data	Information	Error message Bus	Clock	CMD DuraticData Durati
596 17:35:59.687.190.429 606.5...	ACMD06 SET_BUS_WIDTH	46 00 00 00 02 CB		232.451 K	Nrc: 94	202.196us
597 17:35:59.687.444.247 253.8...	Resp6 R1	06 00 00 09 20 B9			Nrc: 11	202.196us
598 17:35:59.688.052.980 608.7...	CMD16 SET_BLOCKLEN	50 00 00 02 00 15		232.446 K	Nrc: 94	202.196us
599 17:35:59.688.306.798 253.8...	Resp16 R1	10 00 00 09 00 0B			Nrc: 11	202.196us
600 17:35:59.688.554.350 647.5...	CMD55 APP_CMD	77 AA AA 00 00 2B		14.8622 M	Nrc: 6618	3.15968us
601 17:35:59.688.558.316 3.56us	Resp55 R1	37 00 00 09 20 33			Nrc: 11	3.15968us
602 17:35:59.689.247.424 289.1...	ACMD51 SEND_SCR	73 00 00 00 00 C7		14.8622 M	Nrc: 4249	3.15968us
603 17:35:59.689.251.390 3.56us	Resp51 R1	33 00 00 09 20 91			Nrc: 12	3.15968us
604 17:35:59.689.398.795 147.4...	Read, 16 bytes	02 35 84 03 00 00 00 00...	SC=1 WaitTime:144.246us	4bit	Nac: 2147	2.22311us
605 17:35:59.690.344.700 945.8...	CMD06 SWITCH_FUNC	46 00 FF FF FF E3		14.8622 M	Nrc: 11	3.15968us
606 17:35:59.690.348.937 4.23us	Resp6 R1	06 00 00 09 00 DD			Nrc: 16	3.15968us
607 17:35:59.691.364.272 1.01ms	Read, 64 bytes	00 64 80 01 80 01 80 0F...	SC=1 WaitTime:1.01218ms	4bit	Nac: 15066	9.74902us
608 17:35:59.692.145.894 781.6...	CMD06 SWITCH_FUNC	46 00 FF FF FF 3B		14.8852 M	Nrc: 15	3.15968us
609 17:35:59.692.150.127 4.23us	Resp6 R1	06 00 00 09 00 DD			Nrc: 15	3.15968us
610 17:35:59.692.198.052 47.92...	Read, 64 bytes	00 FA 80 01 80 01 80 0F...	SC=1 WaitTime:44.7655us	4bit	Nac: 666	9.74902us
611 17:35:59.692.896.862 698.8...	CMD06 SWITCH_FUNC	46 80 FF FF FF 0D		14.8852 M	Nrc: 15	3.15635us
612 17:35:59.692.901.095 4.23us	Resp6 R1	06 00 00 09 00 DD			Nrc: 15	3.15968us
613 17:35:59.694.732.735 1.83ms	Read, 64 bytes	00 C8 80 01 80 01 80 0F...	SC=1 WaitTime:1.82848ms	4bit	Nac: 27175	9.74902us
614 17:35:59.695.628.089 895.3...	CMD06 SWITCH_FUNC	46 00 FF 3F FF 9F		14.8852 M	Nrc: 33	3.15968us
615 17:35:59.695.633.468 5.37us	Resp6 R1	06 00 00 09 00 DD			Nrc: 33	3.15968us
616 17:35:59.695.917.396 283.9...	Read, 64 bytes	00 FA 80 01 80 01 80 0F...	SC=1 WaitTime:280.769us	4bit	Nac: 4179	9.74902us
617 17:35:59.696.604.911 687.5...	CMD06 SWITCH_FUNC	46 80 FF 3F FF A9		14.8622 M	Nrc: 33	3.15968us
618 17:35:59.696.610.291 5.37us	Resp6 R1	06 00 00 09 00 DD			Nrc: 33	3.15968us
619 17:35:59.696.610.340 307.0...	Read, 64 bytes	00 FA 80 01 80 01 80 0F...	SC=1 WaitTime:303.89us	4bit	Nac: 4523	9.75236us
620 17:35:59.701.159.949 4.24ms	CMD13 SEND STATUS	4D AA AA 00 00 43		204.276 M	Nrc: 33	229.977ns
621 17:35:59.701.160.339 389.9...	Resp13 R1	0D 00 00 09 00 3F			Nrc: 33	226.644ns
622 17:35:59.701.831.008 670.6...	CMD13 SEND STATUS	4D AA AA 00 00 43		204.276 M	Nrc: Over	229.977ns
623 17:35:59.701.831.398 389.9...	Resp13 R1	0D 00 00 09 00 3F			Nrc: 32	229.977ns
624 17:35:59.702.396.852 565.4...	CMD13 SEND STATUS	4D AA AA 00 00 43		204.276 M	Nrc: Over	229.977ns
625 17:35:59.702.397.245 393.2...	Resp13 R1	0D 00 00 09 00 3F			Nrc: 33	229.977ns
626 17:35:59.702.963.368 566.1...	CMD13 SEND STATUS	4D AA AA 00 00 43		204.276 M	Nrc: Over	226.644ns
627 17:35:59.702.963.758 389.9...	Resp13 R1	0D 00 00 09 00 3F			Nrc: 33	229.977ns
628 17:35:59.703.530.462 566.7...	CMD13 SEND STATUS	4D AA AA 00 00 43		204.276 M	Nrc: Over	229.977ns
629 17:35:59.703.530.852 389.9...	Resp13 R1	0D 00 00 09 00 3F			Nrc: 32	229.977ns
630 17:35:59.704.098.232 567.3...	CMD13 SEND STATUS	4D AA AA 00 00 43		204.276 M	Nrc: Over	229.977ns
631 17:35:59.704.098.622 389.9...	Resp13 R1	0D 00 00 09 00 3F			Nrc: 32	229.977ns
632 17:35:59.704.666.881 567.9...	CMD13 SEND STATUS	4D AA AA 00 00 43		204.276 M	Nrc: Over	229.977ns
633 17:35:59.704.666.975 393.2...	Resp13 R1	0D 00 00 09 00 3F			Nrc: 33	229.977ns
634 17:35:59.705.235.615 568.6...	CMD13 SEND STATUS	4D AA AA 00 00 43		204.276 M	Nrc: Over	229.977ns
635 17:35:59.705.236.008 393.2...	Resp13 R1	0D 00 00 09 00 3F			Nrc: 33	229.977ns

4. Use 32Gb RAM as the buffer to stream all SD 3.0 data into the SSD HD in order to record all data flow from Low Power Mode to High Speed Mode.

5. “Data Filter” filters unwanted data to save memory.

6. “Search” searches specific data.

7. “CRC Packet” displays and counts CRC

8. SD 3.0 command statistics include numbers of packets, individual command, different data length, and errors

Navigator			Statistics	
Discription	Txns	Bytes	Txns	Bytes
CMD	489		CMD00	8
ACMD	84		CMD08	8
DATA	16533	8397134	CMD55	84
Write SC of CMD24	0	0	CMD11	3
Write SC of CMD25	2	8212	CMD02	5
Read SC of CMD17	5	2560	CMD03	5
Read SC of CMD18	58	8391632	CMD09	5
ERROR	28		CMD07	5
			CMD13	119
			CMD16	5
			CMD06	17
			CMD17	5
			CMD18	58
			CMD12	60
			CMD36	1
			CMD45	2
			CMD39	1
			CMD19	96
			CMD25	2

## 9. SD 3.0 command trigger

- a. Trigger parameters include commands and data in order to cover all kinds of packets.
- b. Command or 16 byte Data.
- c. CRC7, CRC16, End Bit Error.
- d. CRC Status timeout, CRC Status pattern.
- e. VCC drop, VCCQ2 drop.
- f. The Trigger-Out port is to trigger a DSO to capture waveforms

Trigger on

CMD/DATA

CMD

DATA

VDD Drop

End bit error

CRC7 error

CRC16 error

CRC status Positive

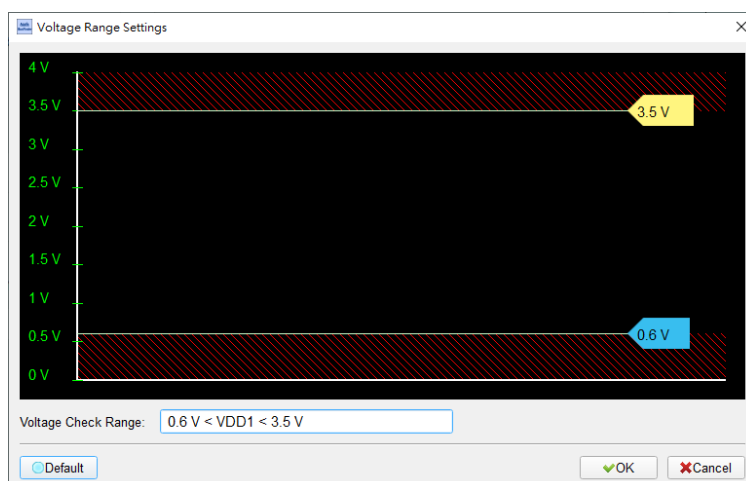
CRC status timeout 1 ns

Trigger Setting

Any Command

S	T	Command	(Description)
0	1	XXh	
		Stuff Bits[31:24]	
		XXh	
		Stuff Bits[23:16]	
		XXh	
		Stuff Bits[15:8]	
		XXh	
		Stuff Bits[7:0]	
		XXh	
		CRC	E
		XXh	1

Default OK Cancel



## 10. Report area

Statistics list: Quickly categorize and track the location of data with statistical functions

Timestamp (hh:mm:ss.ms.us dnr)	Event	Data	Information	Error message	Bus	Clock	CMD Duratio	Data Durati
17:35:59.687.190.429 606.5...	ACMD06 SET_BUS_WIDTH	46 00 00 00 02 CB			232.451 K...	Nrc: 94	202.196us	
17:35:59.687.444.247 253.8...	Resp6 RI	06 00 00 09 20 B9				Nrc: 11	202.196us	
17:35:59.689.052.980 608.7...	CMD16 SET_BLOCKLEN	50 00 00 02 00 15			232.446 K...	Nrc: 94	202.196us	
17:35:59.689.306.798 253.8...	Resp16 RI	10 00 00 09 00 0B				Nrc: 11	202.196us	
17:35:59.689.854.350 647.5...	CMD55 AFE_CMD	77 AA AA 00 00 2B			14.8622 M...	Nrc: 6618	3.15968us	
17:35:59.689.899.316 9.96us	Resp55 RI	37 00 00 09 20 33				Nrc: 11	3.15968us	
17:35:59.689.247.424 289.1...	ACMD51 SEND_SCR	73 00 00 00 00 C7			14.8622 M...	Nrc: 4249	3.15968us	
17:35:59.689.251.350 3.96us	Resp51 RI	33 00 00 09 20 91				Nrc: 12	3.15968us	
17:35:59.689.399.755 147.4...	Read, 16 bytes	02 35 94 03 00 00 00...	SC=1 WaitTime:144.246us		4bit	Nrc: 2147		2.22311us
17:35:59.690.344.700 945.9...	CMD06 SWITCH_FUNC	46 00 FF FF FF E3			14.8622 M...	Nrc: 15	3.15968us	
17:35:59.690.348.937 4.23us	Resp6 RI	06 00 00 09 00 DD				Nrc: 16	3.15968us	
17:35:59.692.145.894 781.6...	CMD06 SWITCH_FUNC	46 00 FF FF F3 3B	SC=2 WaitTime:11.0210ms		14.8852 M...	Nrc: 13066	3.15968us	9.74902us
17:35:59.692.150.127 4.23us	Resp6 RI	06 00 00 09 00 DD				Nrc: 15	3.15968us	
17:35:59.692.198.052 47.92...	Read, 64 bytes	00 FA 80 01 80 01 80 OF...	SC=1 WaitTime:44.7655us		4bit	Nrc: 666		9.74902us
17:35:59.692.896.862 698.8...	CMD06 SWITCH_FUNC	46 80 FF FF F3 0D			14.8852 M...	Nrc: 15	3.15635us	
17:35:59.692.901.095 4.23us	Resp6 RI	06 00 00 09 00 DD				Nrc: 15	3.15968us	
17:35:59.694.732.735 1.83ms	Read, 64 bytes	00 C8 80 01 80 01 80 OF...	SC=1 WaitTime:1.82848ms		4bit	Nrc: 27175		9.74902us
17:35:59.695.628.089 895.3...	CMD06 SWITCH_FUNC	46 00 FF 3F FF 9F			14.8852 M...	Nrc: 33	3.15968us	
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17:35:59.696.604.911 687.5...	CMD06 SWITCH_FUNC	46 80 FF 3F FF A9			14.8622 M...	Nrc: 33	3.15968us	
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17:35:59.701.159.949 4.24ms	CMD13 SEND STATUS	4D AA AA 00 00 43			204.276 M...	Nrc: Over.	229.977ns	
17:35:59.701.160.339 389.9...	Resp13 RI	0D 00 00 09 00 3F				Nrc: 33	226.644ns	
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17:35:59.701.831.398 389.9...	Resp13 RI	0D 00 00 09 00 3F				Nrc: 32	229.977ns	

Navigation	Txns	Bytes
ACMD	489	
DATA	16533	8397134
Write SC of CMD24	0	0
Write SC of CMD25	2	8212
Read SC of CMD17	5	2560
Read SC of CMD16	58	8391632
ERROR	28	

Statistics	Txns	Bytes
CMD08	8	
CMD05	84	
CMD11	3	
CMD02	5	
CMD03	5	
CMD09	5	
CMD07	5	
CMD13	119	
CMD16	5	
CMD06	17	
CMD17	5	
CMD18	58	
CMD12	60	
CMD36	1	
CMD45	2	
CMP104	1	

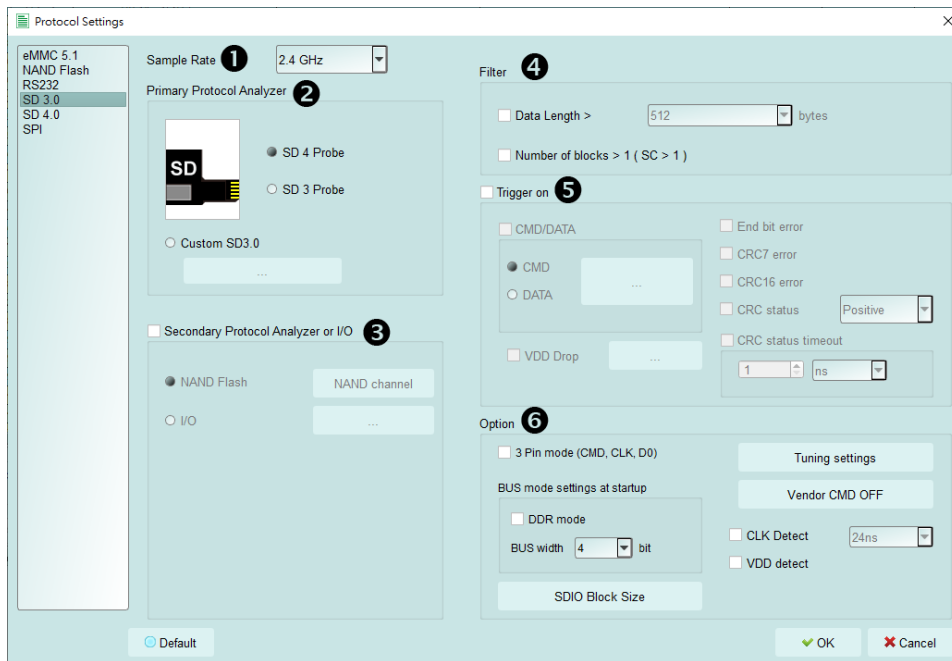
  

Search List Trigger List Statistics List Bookmark List

Statistics List

Line No.	Timestamp (hh:mm:ss.ms.us dnr)	Event	Data	Information	Error message	Bus	Clock	CMD Duration	Data Duration
462	17:35:59.692.145.894 781.6...	CMD06 SWITCH_FUNC	46 80 FF FF F1 29			14.8622 M...		3.15968us	
608	17:35:59.692.148.894 781.62us	CMD06 SWITCH_FUNC	46 00 FF FF F3 3B			14.8852 M...		3.15968us	
611	17:35:59.692.896.862 698.82us	CMD06 SWITCH_FUNC	46 80 FF FF F3 0D			14.8852 M...		3.15635us	
614	17:35:59.695.628.089 895.35us	CMD06 SWITCH_FUNC	46 00 FF 3F FF 9F			14.8852 M...		3.15968us	

## 11. SD 3.0 settings



1. **Sample Rate:** Choose the sampling rate to use. To enable the Secondary Protocol Analyzer – NAND Flash option, the sampling rate must be set below 1GHz,
2. **Primary Protocol Analyzer:** Choose to use the probe type, and set the channel / trigger level,
3. **Secondary Protocol Analyzer or I/O:** An additional set of specified logic analysis can be opened to analyze the remaining available pins at the same time,
4. **Filter:** Each Data Frame can specify the size of the collection, and data larger than the set value will not be recorded
5. **Trigger on:** CMD, DATA, ERROR, Voltage, Timeout, CRC Status trigger conditions can be set
6. **Option:**
  - a. **3 Pin mode:** After connecting CLK, CMD, D0, the protocol flow and status agreement can be analyzed,
  - b. **Startup:** It needs to be set to the mode of the current acquisition, the mode of the test object is running, and has the Tuning function.
  - c. **Tuning setting:** Adjust channel phase.
  - d. **Vendor CMD:** Can change the name of the command group by itself, with or without data,
  - e. **CLK Detect:** Can detect whether CLK has action,
  - f. **Two sets of voltage detection function**

## FAQ

### 1. What SD version is supported?

A : Support SD3.0 SDR104, SD6.0 Legacy mode SDR104 / DDR200.

### 2. Will the signal quality be affected during measurement?

A: The measurement of the external instrument will inevitably have some load effect. We use the active probe to reduce the interference of the object to be measured and improve the signal quality.

### 3. Is Tx supported?

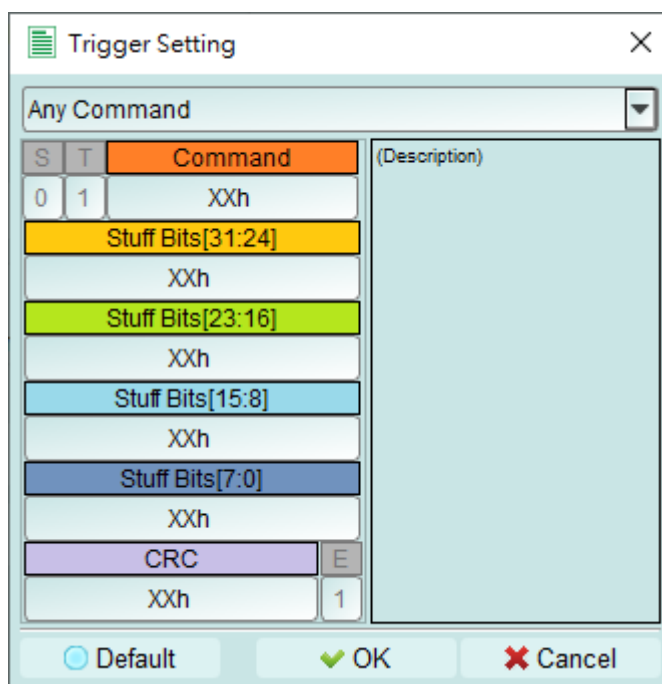
A: No

### 4. Precautions during measurement

Please make sure to connection according to the “Probe and test object connection” on page 9.

### 5. Can I specify an SD packet as the trigger point function?

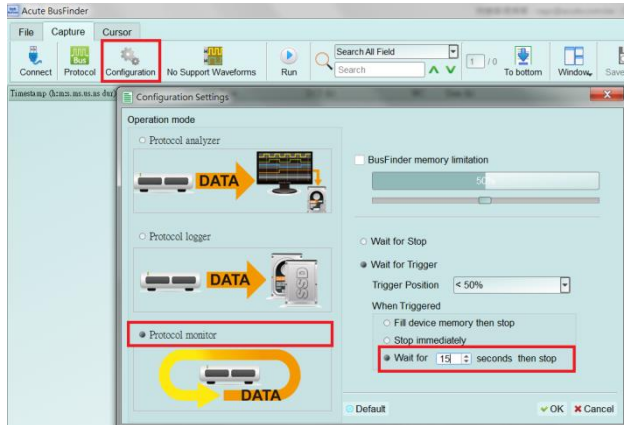
A: You can specify specific SD packet or Error to trigger.



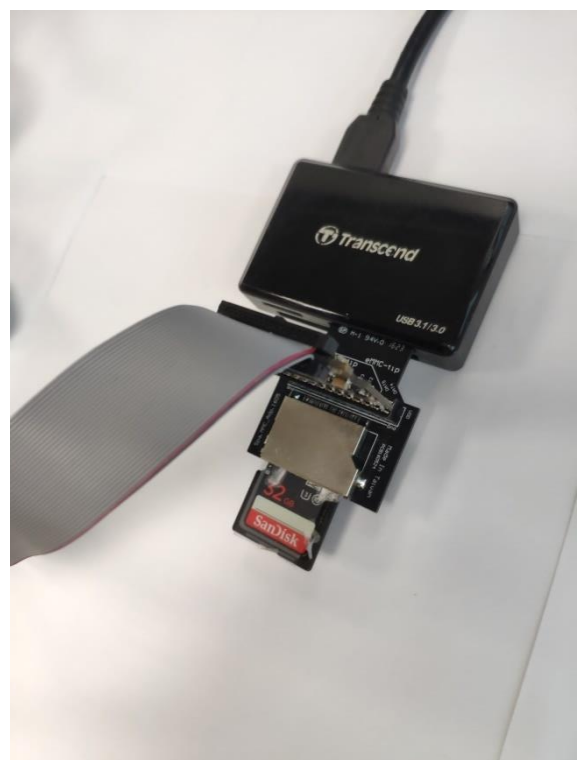


**6. Is it possible to set an SD starting point, and specify how much time to capture Data?**

A: You can set the starting condition to the trigger item and adjust to the data monitor mode in the working mode menu. And specify the length of acquisition time.



## Probe and test object connection



## SD4.0 adapter board test point:

When to use:

- a. When you need to use the oscilloscope to view the waveform at the same time
- b. When the flexible circuit of the transfer board can be checked whether it is normal, the electric meter can measure whether the golden finger of the front end is connected to the measuring point.

