

LINEEYE

LE-3500 SPI communication

The 2nd Edition

1 Overview

LE-3500 of version 1.03 or above can measure the SPI communication.

(With OP-SB5G or OP-SB5GL)

2 Setting of Communication Condition

SPI condition can be set at "CONFIG."

< SPI Setting >

<CONFIGURATION>	*SELECT*
PROTOCOL : SPI	0:ASYNC
R-SPEED : 1M	1:SYNC-BSC
CODE : HEX	2:HDL-C-SDLC
CPOL : 1	3:ASYNC(PPP)
CPHA : 1	4:1-DA
SIM MODE : MASTER	5:12C
	6:SPI
	7:BURST

PROTOCOL

Set to "SPI".

SPEED

Set the speed up to 2.048Mbps for Simulation mode (Master mode).

It is not necessary to set for Monitor mode.

CPOL

Select the clock polarity.

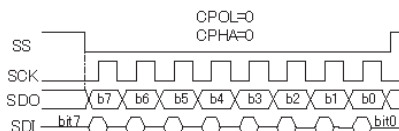
CPHA

Select the clock phase.

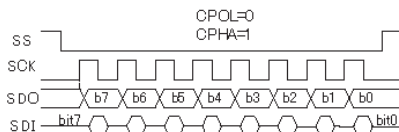
SIM MODE

Select "Master" or "Slave" for Simulation mode.

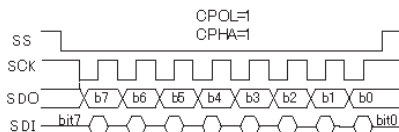
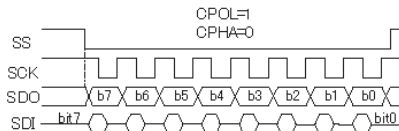
It is not necessary to set for Monitor mode.



The relationship between Clock and Data is changed by CPOL and CPHA setting.



SPI considers as one frame between the SS falling edge and SS raising edge.



3 Connection

When measuring SPI communication, the analyzer is connected to DUT as below.

SPI

Probe Pod	I/O direction * 1		Color of the lead wire	Measuring Object
	MONITOR	SIMULATION		
SD	I	O*3	BROWN	MOSI
RD	I	I*3	RED	MISO
RS	I	I/O*2	ORANGE	SS
SD_CLK	I	I/O*2	BLUE	SCK
GND	-	-	BLACK	Signal Ground

*1

I : Input to the analyzer.

O : Output from the analyzer

*2

It is different by the simulation mode.

O:Master

I:Slave

*3

The direction of outputting is fixed.

Arrange the connection without any collision.

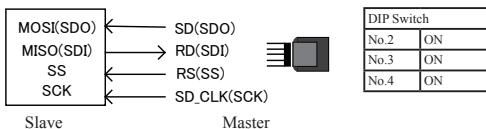
<Simulation>

The direction of the ports is the following.

Master Mode

Set No.2, No.3, No.4 DIP switch ON.

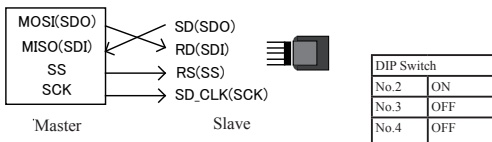
Connect SD to MOSI, RD to MISO, RS to SS, and SD_CLK to SCK.



Slave Mode

Set No.2 DIP switch ON.

Connect SD to MISO, RD to MOSI, RS to SS, and SD_CLK to SCK.



4 Simulation

On SPI communication, MANUAL mode and some commands in PROGRAM mode are available. Another modes of SIMULATION cannot be used.

Master Mode

Start simulation and then press the registered table number key. It makes SS(RS) active and start data transmission/reception. When it finishes data transmission, it makes SS non-active.

Slave Mode

Start simulation and then press the registered table number key for data transmission/reception. Transmit data following SS and SCK(SD_CLK) from the Master.

• Steps of Master Mode and Slave Mode

1. Press [RUN]
2. Press registered table number key.
3. Go back to "2." if repeating transmission/reception.
4. Press [STOP] to end the simulation.

5 Explanation of LCD Display

While measuring SPI, it is possible to change normal data display to "Frame Diaplay" by pressing [DISPLAY] button.

```
→ TMSP 000 TMSP TMSP 00 TMSP TMSP 020000001 →
← 452945 0000 452975 452902 453002 453002 200000000 ←
00304005060708090a0b0c0d0e0f101112131415161718191a1b1c1d ←
000000000000000000000000000000000000000000000000 ←
1E1F202122232425262728292a2b2c2d2E2F30313233343536373839 ←
000000000000000000000000000000000000000000000000 ←
I ■ I HEX PRINT PAGE I
```

```
- TM - DATA -----
← 452945 0000
← 452975 00
← 452975 00
← 453002 02000000102030405060708090a0b0c0d0e0f1011121314
← 453002 0000000000000000000000000000000000000000
← 453032 0300000000000000000000000000000000000000
I ■ I -SPI- D 2.048M/2.048M
```

LINEEYE CO., LTD.

●Head Office/Sales Office

: Marufuku Bldg. 5G, 39-1Karahashi Nishihiragaki-cho, Minami-ku,
Kyoto, 601-8468 Japan

Phone: 81-75-693-0161 Fax: 81-75-693-0163

●Technical Center

: 8-49 Koen-cho, Nagahama, Shiga, 526-0065 Japan

Phone: 81-749-63-7762 Fax: 81-749-63-4489

URL: <http://www.lineeye.com>

This instruction manual is used recycled paper.

Printed In Japan