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Furthermore, there are no changes to the documents relating to our products other than
the company name, the company trademark, logo, etc.

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ROHM Co., Ltd.
April 1, 2024

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ML86112 Evaluation Board User's Manual

CVBS – MIPI CSI2 / LVTTL conversion LSI

■ General Description

This User's Manual describes the evaluation board(MLEB8360) of the display controller ML86112 for conversion analog video signal(NTSC,PAL) to MIPI-CSI2 or LVTTL.
camera.

■ Specification

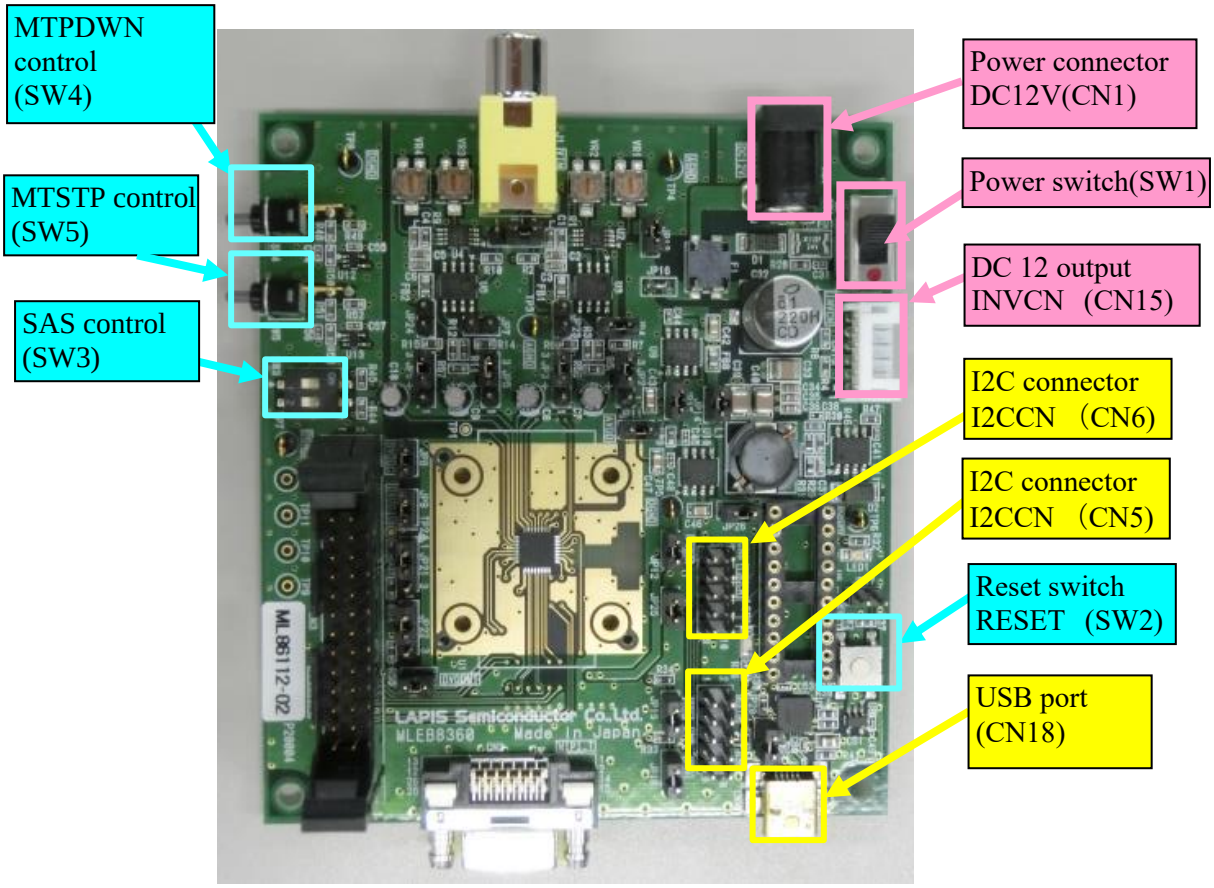
Name	MLEB8360
Mounted device	ML86112
Input power	12V DC
Dimenseion	(W)133mm × (D)133mm × (H)18mm Including connector and switch Board dimension 120mm × 120mm t=1.6mm
Features	・MLEB8360 is evaluation for ML86112 function. ・This board includes analog input and digital output connectors. ・This board includes mini USB Type-B connector for control via PC.



MLEB8360 Evaluation Board

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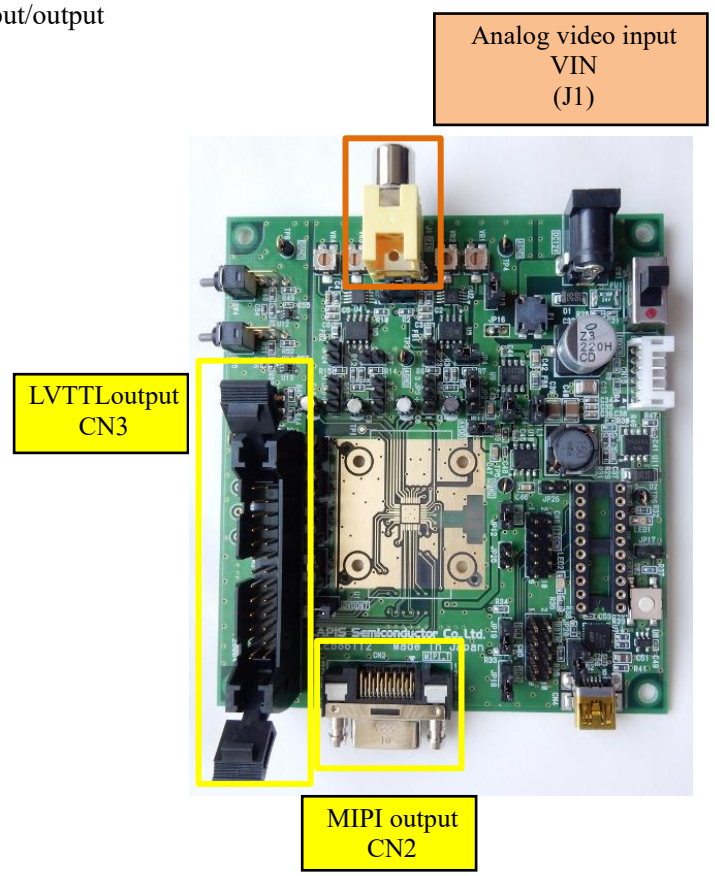
■ Power and switch

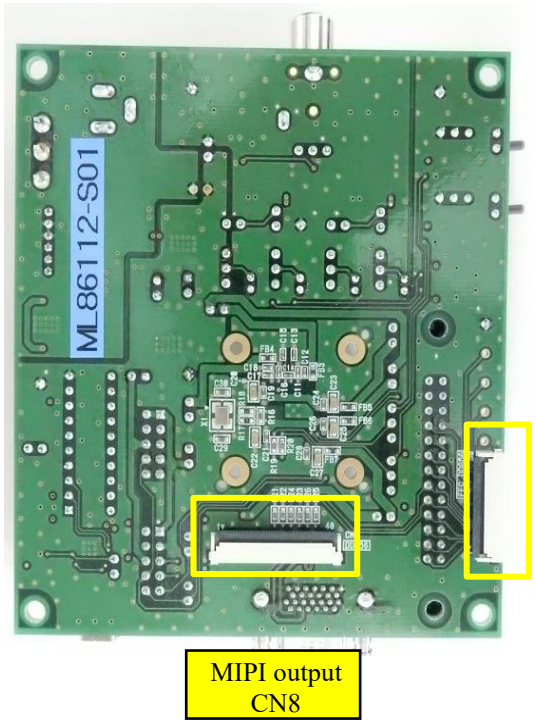


Item	Name	Function	Description
CN1	DC12V	Power input connector	Connect DC12V. The port supplyes power for evaluation board.
CN15	INVCN	Power output connector	The port outputs CN1 power(DC12V). The port is available power for peripheral items for evaluation.
CN18	—	USBport	Connect USB port of PC. Control ML86112 by I2C communication.
SW1	—	Power switch	MLEB8360 power switch.
SW2	RESET	Reset switch	All devices reset when the switch is pressed.
SW3	—	SAS control switch	Control ML86112 slave address. OFF =82h / ON =80h
SW4	—	MTPWDN control switch	Control MTPWDN pin. Up : "L" input Down:"H" input
SW5	—	MTSTP control switch	Control MTSTP pin Up : "L" input Down:"H" input

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■ Video input/output

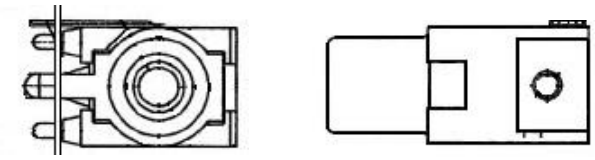




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Input

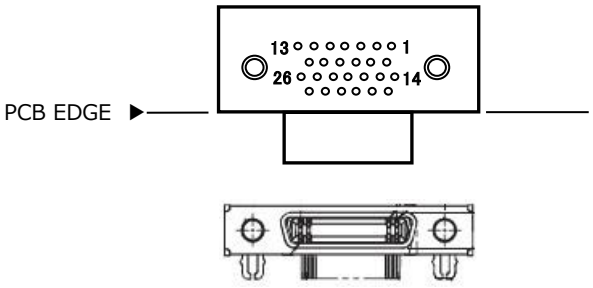
J1
MR-551LN (RCA-JACK,Right-angle) MARUSHIN ELECTRIC MFG. CO., LTD.



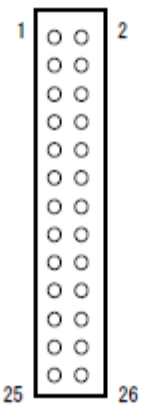
Output

CN2			
12226-5150-00FR (SDR,26pins,Right-angle) 3M Company			
Functions	Pin	Pin	Functions
NC	1	2	MTD0P
NC	3	4	MTCKP
NC	5	6	NC
NC	7	8	NC
NC	9	10	NC
NC	11	12	NC
DGND	13	14	DGND
MTD0N	15	16	NC
MTCKN	17	18	NC
NC	19	20	NC
NC	21	22	NC
NC	23	24	NC
NC	25	26	NC

PCB parts side



CN3			
XG4A-2631 (Connector,26pins_straight-heade) OMRON Corporation			
Functions	Pin	Pin	Functions
DGND	1	2	NC
DGND	3	4	NC
DGND	5	6	NC
DGND	7	8	DCLK
DGND	9	10	NC
DGND	11	12	DY7
DGND	13	14	DY6
DGND	15	16	DY5
DGND	17	18	DY4
DGND	19	20	DY3
DGND	21	22	DY2
DGND	23	24	DY1
DGND	25	26	DY0

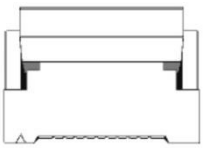


Pin diagram

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CN7	
XF2M-3015-1A (FFC_30pin) OMRON Corporation	
30	NC
29	NC
28	NC
27	NC
26	DGND
25	NC
24	NC
23	DGND
22	DCLK
21	DGND
20	NC
19	NC
18	NC
17	NC
16	DGND
15	NC
14	NC
13	NC
12	NC
11	DGND
10	DY7
9	DY6
8	DY5
7	DY4
6	DGND
5	DY3
4	DY2
3	DY1
2	DY0
1	DGND

PCB side

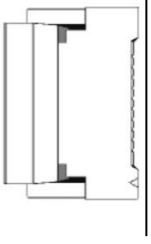


PCB EDGE ▶

CN8	
XF2M-4015-1A (FFC_40pin) OMRON Corporation	
40	NC
39	NC
38	NC
37	NC
36	NC
35	DGND
34	MTD0N
33	MTD0P
32	DGND
31	NC
30	NC
29	DGND
28	MTCKN
27	MTCKP
26	DGND
25	NC
24	NC
23	DGND
22	NC
21	NC
20	DGND
19	NC
18	NC
17	DGND
16	NC
15	NC
14	DGND
13	NC
12	NC
11	DGND
10	NC
9	NC
8	DGND
7	NC
6	NC
5	DGND
4	NC
3	NC
2	NC
1	NC

PCB EDGE ▼

PCB side



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■ Jumper pin settings

Item	Default	Function
JP1	2-3 short	1-2pin short: Analog input VIN3,VIN4 setting 2-3pin short: Analog input VIN1,VIN2 setting
JP2	2-3 short	1-2pin short: Differential (+) input 2-3pin short: Single VIN1 input
JP3	2-3 short	1-2pin short: Differential (-) input 2-3pin short: Single VIN2 input
JP4	Short	Single VIN1 connection
JP5	2-3 short	1-2pin short: Differential (+) input 2-3pin short: Single VIN3 input
JP6	2-3 short	1-2pin short: Differential (-) input 2-3pin short: Single VIN4 input
JP7	Open	Single VIN3 connection
JP8	Short	Power supply for digital core(1.2V) DVDD_C
JP9	Short	Power supply for digital IO (3.3V) DVDD_IO
JP10	Short	Power supply for MIPI-Tx(1.2V) DVDD_MT
JP11	Short	Power supply for analog(3.3V) AVDD
JP12	Short	Power supply for PLL(1.2V) PVDD
JP13	Short	Connect AGND and DGND
JP14	Short	Generate DC+5V from DC+12V
JP15	Short	Generate DC+3.3Vfrom DC+5V
JP16	Short	Connect PGND and DGND
JP17	Open	―
JP18	Short	SDA
JP19	Short	SCL
JP20	Short	RSTN signal
JP21	1-2 short	MTPWDN/DY0 signal Short 2-3 pin when LVTTLoutput
JP22	1-2 short	MTSTP/DY1 signal Short 2-3 pin when LVTTLoutput
JP23	Open	Single VIN2 connection
JP24	Open	Single VIN4 connection
JP25	Short	Power supply +5V
JP26	Short	Power supply +3.3V

■ Monitor pin

Item	Monitor signal
TP1	STATUS
TP2	DCLK
TP3,TP4	AGND
TP5,TP6,TP7,TP8	DGND
TP9,TP10,TP11,TP12	NC

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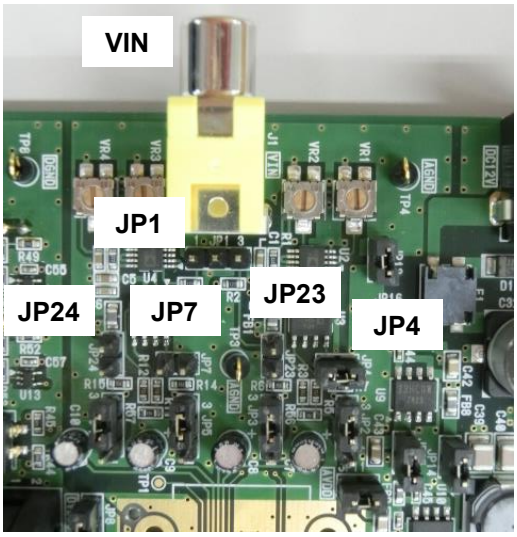
■ Analog video input

MLEB8630 can evaluate analog input (1) single end input (2) pseudo differential input (3) differential input as ML86112analog input format

Refer datasheet(PJDL86112) for register settings.

（1） single end input

ML86112		Connection
Name	No.	
VIN1	31	Short JP1 2-3 pin Short JP4 Open JP23 Input analog video singal via VIN connector
VIN2	32	Short JP1 2-3 pin Open JP4 Short JP23 Input analog video singal via VIN connector
VIN3	1	Short JP1 1-2 pin Short JP7 Open JP24 Input analog video singal via VIN connector
VIN4	2	Short JP1 1-2 pin Open JP7 Short JP24 Input analog video singal via VIN connector



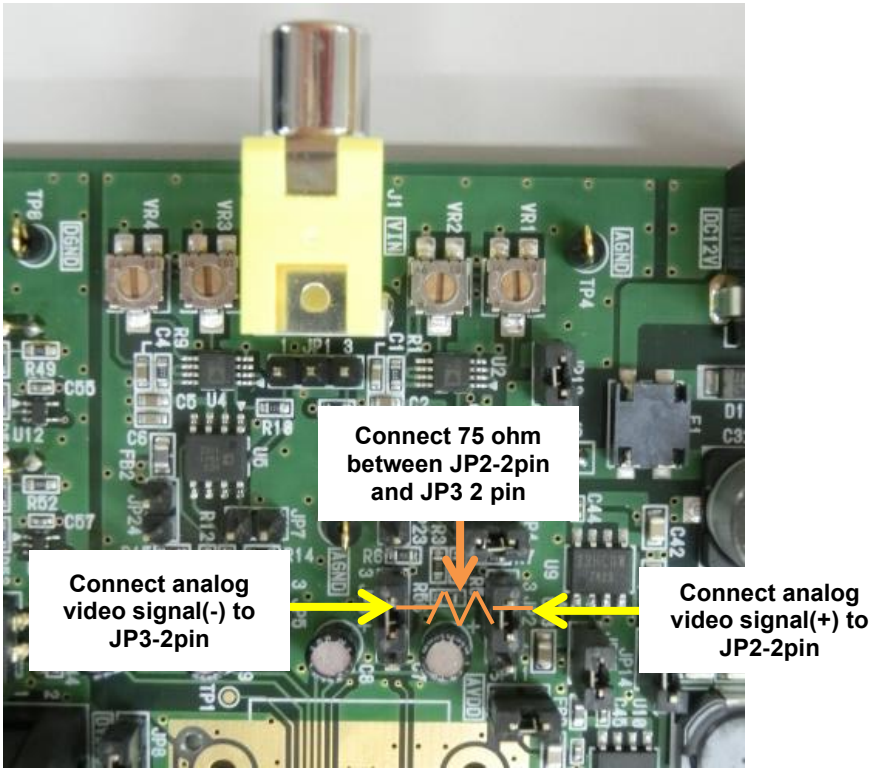
Allocation of jumper pin

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(2) Pseudo differential input

ML86112		Connection
Name	No.	
VIN1	31	Connect 75ohm between JP2-2pin and JP3-2pin Connect analog video signal(+) to JP2-2pin
VIN2	32	Connect analog video signal(-) to JP3-2pin

ML86112		Connection
Name	No.	
VIN3	1	Connect 75ohm between JP5-2pin and JP6-2pin Connect analog video signal(+) to JP5-2pin
VIN4	2	Connect analog video signal(-) to JP6-2pin



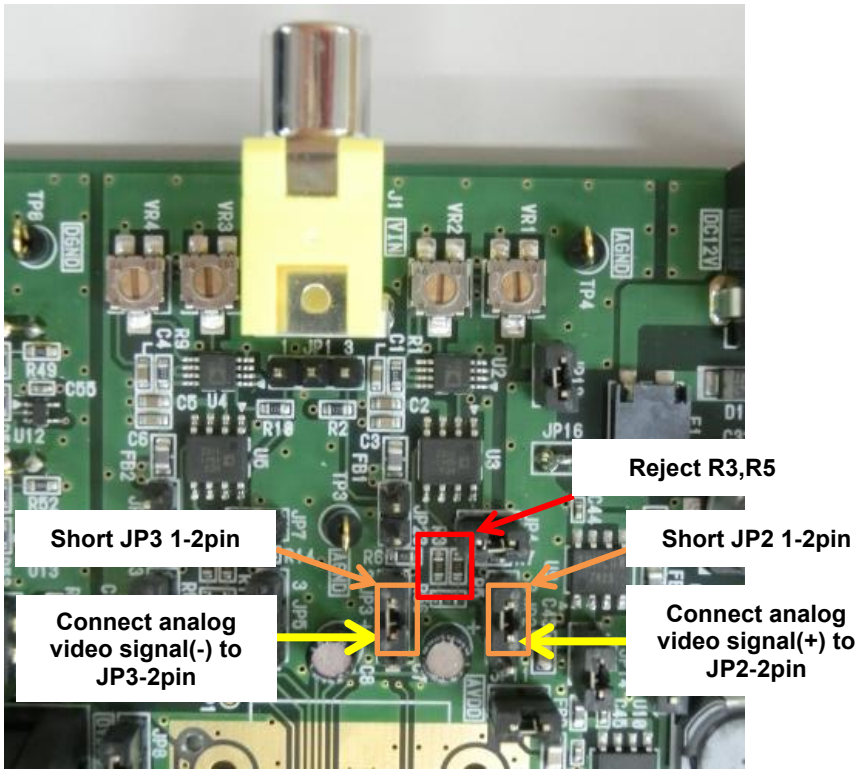
Connection for Pseudo differential video signal input to VIN1-VIN2

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(3) Differential input

ML86112		Connection
Name	No.	
VIN1	31	Short JP2 1-2pin Reject R5 Connect analog video signal(+) to JP2-2pin
VIN2	32	Short JP3 1-2pin Reject R3 Connect analog video signal(-) to JP3-2pin

ML86112		Connection
Name	No.	
VIN3	1	Short JP5 1-2pin Reject R11 Connect analog video signal(+) to JP2-2pin
VIN4	2	Short JP6 1-2pin Reject R12 Connect analog video signal(-) to JP3-2pin

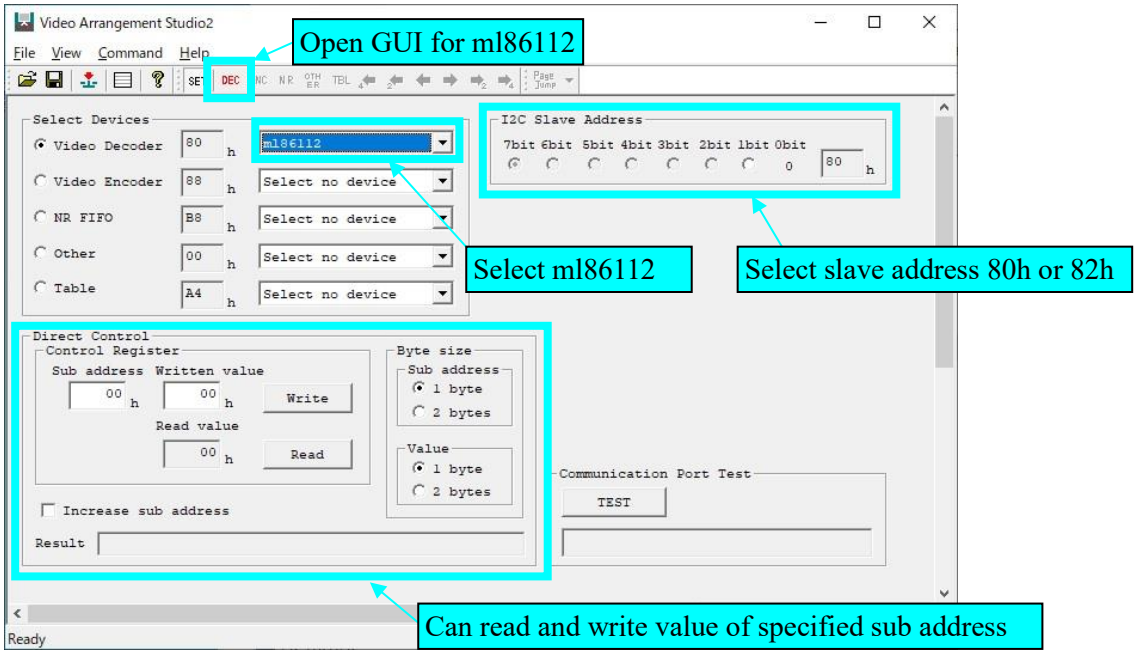


Connection for differential video signal input to VIN1-VIN2

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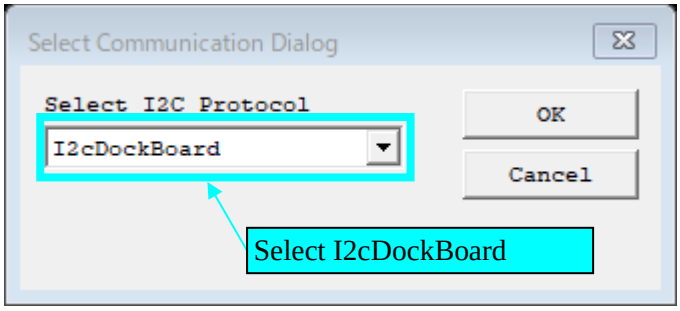
■ Video Arrangement Studio2

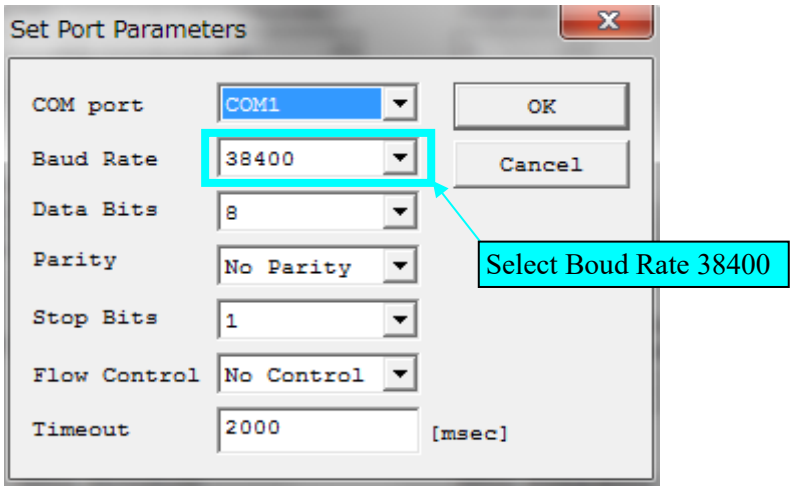
・Main window



・Port parameter setting

File → Set Port Parameters





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[Notes in Use]
The analog input section of ML86112 is developed based on the standard video signal. We have improved it to obtain a stable behavior for nonstandard video signals as well. However, a stable behavior for every signal is not guaranteed, since there are various situations in the signal condition and usage environment such as airwave signals received in light electric field areas, VTR playback signals, video signals with switching signal sources, noise contamination signals, and simplified video signals of various cameras and game machines.
Please thoroughly evaluate and examine the product in assumed signal conditions and usage environments before you adopt it.

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Revision history

Document No.	Issue Date	Page		Description
		Previous Edition	New Edition	
FEBL86112-01	2020.08.03	—	13	First edition issued
FEBL86112-02	2024.03.13	13	13	No change
FEBL86112-03	2024.03.13	13	13	P13: Updated “Notice”

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LAPIS Technology Co.,Ltd.
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