国立智能
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SID-DVI

NETWORK VIDEO CONVERTER (TYPE B)

TECHNICAL INSTRUCTION

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SID-DVI NETWORK VIDEO CONVERTER(TYPE B)

1．General

1.1 Application

SID-DVI network video converter(TYPE B)（hereinafter, DVI(B) device）is a video supervising equipment of our company's automatic synchronizers, it can display the synchronization process of the generating units and the live running state of synchronizers on the remote monitor screens by animation, to help users objectively know the whole process of the automatic synchronization operation in real time. Device is connected with synchronizing device through the RS485 or Ethernet, and the acquired information is reflected to the output of the video picture in real time.

1.2 Device frame character

☆ All industrial and military for IC, the device possesses high stability and reliability.

☆ High speed industrial RISC processor for main control CPU, the main frequency reaches 200MHz.

☆ The software based on the embedded RTOS and the TCP/IP protocol, is of stability and credibility, easily expanded.

☆ Strong communication function, supporting Ethernet, RS485 to perform

data communication.

2. Technique index

2.1 Rated data

☆ Power supply 85～265 V AC / 100～360V DC

2.2 Power consumption

☆ Power supply < 15 W

2.3 Environment condition

☆ Work temperature: -20℃~+ 55℃.

☆ Store condition: In house whose temperature is -30℃~+80℃, the relative humidity not larger than 80%, surrounding air does not contain acidic, alkaline or other caustic, volatile gas, and the house is rain and snow prevented; under high-point, if no excitation, no irreversible change, the device can working normally when temperature restore.

☆ Relative humidity: The month average of maximal relative humidity of the most humid month is 90%, and the month average of minimal temperature is 25℃ and no dew appears. The highest temperature is +40℃, the maximal average humidity does not exceed 50%.

2.4 Electrical-interference performance

☆ Static discharge test

The device can endure static discharge test whose inclemency grade is 3 as stated in GB/T14598.14.

☆ Fast transient interference test

The device can endure fast transient interference test whose inclemency grade is B as stated in GB/T14598.10.

☆ Radiant electromagnetic field interference test

The device can endure radiant electromagnetic field interference test whose inclemency grade is 2 as stated in GB/T14598.9.

☆ Surge (impact) immunity test

The device can endure surge (impact) immunity test whose inclemency grade is 3 as stated in GB/T14598.18.

2.5 Insulated performance

☆ Insulation resistance

Impose 500V open circuit voltage of test instrument on each electric conducting circuit to ground (namely enclosure or uncharged metal part), AC loop to DC loop, AC current loop to AC voltage loop, and the insulation resistance tested should not lower than 100 MΩ.

☆ Dielectric strength

It can endure AC voltage of 50 Hz, 2 KV(effective value) on each

electric conducting circuit to ground (namely enclosure or uncharged metal part), AC loop to DC loop, AC current loop to AC voltage loop, lasting for 1 min, no breakdown and flashover phenomenon.

☆ Impulse voltage

It can endure 5 KV (peak value) standard lightning surge test on each electric conducting circuit to ground (namely enclosure or uncharged metal part), AC loop to DC loop, AC current loop to AC voltage loop.

2.6 Mechanical performance

☆ The device can endure vibration response test whose inclemency grade is Ⅰ as stated in 4.2.1 of GB/T11287.

☆ The device can endure impact response test whose inclemency grade is Ⅰ as stated in 4.2.1 of GB/T14537.

☆ The device can endure vibration endure test whose inclemency grade is Ⅰ as stated in 4.2.2 of GB/T11287.

☆ The device can endure impact endure test whose inclemency grade is Ⅰ as stated in 4.2.2 of GB/T14537.

☆ The device can endure collision test whose inclemency grade is Ⅰ as stated in 4.3 of GB/T14537.

3．Device description

3.1 Trunk configuration

It is designed for resisting strong vibration, strong interference. Ensure high reliability even on wicked spot. It is no need adding AC or DC anti-interference module no matter packaged or install separately. The device is trapped rail style installation .The outline size is shown in figure below.

Figure 1 Outline picture

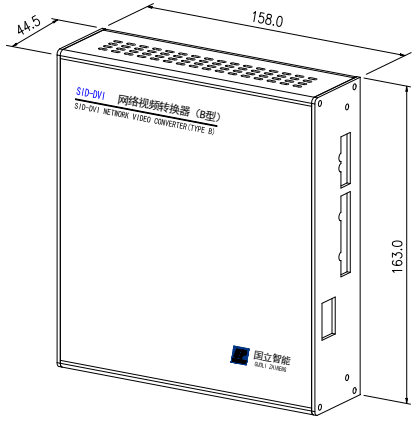

Figure 2　Configuration picture(Unit: mm)

3.2　Side panels configuration

The main interfaces of DVI(B) are distributed on the left and right side panels. There are one VGA terminal, one USB interface, two Network terminals on the left. One power terminal, one 6-pins terminal, one 3-pins terminal on the right. The 6-pins terminal has two RS485 serial ports, and the 3-pins terminal is the power terminal.

- ✧ VGA terminal

  VGA signal output interface. Information can be displayed as the interface is connected to monitor directly through VGA signal cable. It can also connect to VGA to AV conversion module to output AV signal.

✧ USB interface

USB interface only provides 5V DC voltage, no data communication function, to supply power for VGA to AV transfer module.

✧ Network terminals and serial port

To be connected with the synchronizing device and access real-time data. Two communication interfaces can be individually or simultaneously connected, when both connected, Ethernet-based, RS485 to spare. The device automatically switches according to the communication situation.

✧ Power terminal: support 100~265V AC voltage input，terminal 1 is the positive power supply and terminal 2 is negative. Terminal 3 is the power ground.

✧ Power switch

Supply control switch on the box, after connecting to power, device would run until the switch is set to "ON".

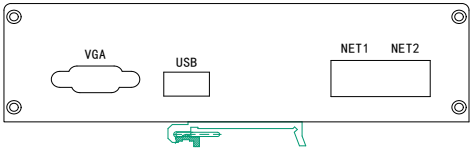

Figure 3 Left side trepanning picture

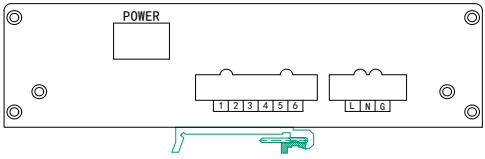

Figure 4 Right side trepanning picture

1	2	3	4	5	6
485A1	485B1	Null	485A2	485B2	Null

Figure 5 Serial terminals definition

L	N	G
Supply+	Supply-	Power ground

Figure 6 Power terminals definition

3.3 Video image

Video interface is shown in following picture. Two pictures are respectively the interface of LOGO and Form style.

Figure 7 Interface of LOGO style

Figure 8 Interface of Form style

The following described the main interface in the order from top to bottom, and left to right.

✧ Voltage difference indicating column and the frequency difference indicating column:

The cylinder range from -2* allowable value to 2* allowable value, for example, allowable voltage difference is 5%, then the column allowable voltage difference range of -10%～10%. Color of negative territory gradual changes from yellow to green, and the positive is yellow to red. As shown in Figure 7,allowable voltage difference is 5.1%,and frequency difference is 0.2Hz.

✧ Acceleration, deceleration, step-up, step-down arrow

When the synchronizing device is emitting a step-up signal (when the synchronizing device issue the step-up signal can reference the corresponding specification), the video image will display an upward stretch and shrink step-up arrow on the left of the video image, as shown in Figure 7. This animation represents that synchronizing device is transmitting a step-up signal. When the synchronizing device is emitting a step-down signal, the video image will display a downward stretch and shrink step-down arrow.

Upward stretch and shrink step-up arrow on the right is the acceleration signal, which represents the synchronizing device is transmitting an acceleration order. And the downward arrow on the right is deceleration signal, representing a deceleration order.

Note: 2AF/2AS device which output synchronization video signal through

DVI(B) will not display acceleration, deceleration, step-up, step-down arrow.

✧ The synchronizing table below shows the device current voltage difference, phase angle, frequency difference information, etc.

✧ Status, alarm information

Displaying synchronizing device running status. All information is displayed cyclically.

Note: When synchronizer SID-2FY connected with DVI(B) is in test mode, only display "Test Mode", no other information. When synchronizer SID-2AS/F connected with DVI(B) works is in setting state, only display "Setup Mode", no other information; when in test mode, only display "Calibration Mode", no other information.

4. Operating instructions

4.1 Wiring methods

DVI(B) wiring mainly includes power cord, communication lines, VGA cable, conversion module connection, etc.

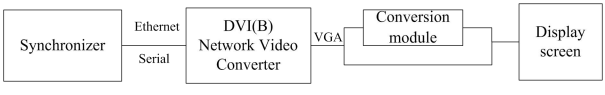

Figure 9 Connection topological graph

DVI(B) can be connected to display screen directly through VGA video cable, alternatively, through conversion module.

4.1.1 Communication connection

DVI(B)'s communication lines interfaces include serial port and network port, and both network ports can be used to communicate with synchronizer. IP address of network port1 is fixed that cannot be changed (default:192.0.100.120).Serial communication adopts RS485 protocol, which can transmit data within 1km. Network communication implements data transmission in a local area network via TCP\IP. Transmission distance depends on LAN scale of the field. When using network communication， synchronizer can be connected to DVI(B) directly. Communication lines is the link for data communication between synchronizer and DVI(B).The supported communication modes of different synchronizers of our company are listed below:

communication modes / Synchronizer type	Network port	Serial port
SID-2AF	NO	YES
SID-2AS	NO	YES
SID-2FY	YES	YES
SID-2FYB	YES	NO

4.1.1.1 Network connection

Firstly ensure SID-DVI and synchronizing device in the network link is achievable, for example, in the same router, or the same local area network, and in the 4.4 section should set “the IP of the synchronizing device to be connected to” the same as the synchronizer’s corresponding network port parameter.

4.1.1.2 Serial connection

When connected with SID-2FY, the parameters about the synchronization device corresponding serial must ensure to be set meeting the following requirements.

Address (device number):	[1,100]
Communication protocol:	Modbus
Baud rate:	9600pbs/19200pbs
Parity:	No parity

When connected with SID-2AF or SID-2AS, the parameters should meet the following requirements.

Address (device number):	[1,99]
Communication protocol:	Modbus
Baud rate:	38400pbs
Parity:	Odd parity

Note 1: Connected with SID-2FY , if using the network and serial port at the

same time, the device will update the video image based on the parameters obtained by the network communication first to update the video image.

Note 2: When using serial port to connect , pay attention to check the A and B transmission line of the RS485 whether it is correct or not.

Note 3: Connected with SID-2AS,SID-2AF, please use the serial port.

4.1.2 Select signal format

DVI(B) supports HD VGA signal and AV format signal video output. Choosing which signal format mainly depends on the distance between DVI(B) and display devices.VGA video signal is clearer, but transmission distance is shorter, usually in the range of 10 meters; AV signal is less clear, but it can perform remote transmission within 1km via coaxial-cable. We recommend choosing VGA signal to output. Choose different communication modes to shorten the distance between DVI(B) and display device. Or extend the distance between synchronizer and DVI(B) to solve the situation that synchronization cubicles and display devices are a greater distance apart.

4.1.3 VGA video signal output

If user wants to select the VGA signal to output, in precondition of satisfying the requirement of distance between DVI(B) and display device, just connect the

VGA output of DVI(B) and VGA input of display device via VGA signal cable.

If there is a long distance between DVI(B) and display device, for synchronizer that supports serial communication， realize real-time data interaction by serial port mode; for synchronizer that supports network communication, synchronizer and DVI(B) access the LAN at the same time, and realize real-time data interaction through network transmission.

4.1.4 AV output

4.1.4.1 VGA to AV conversion module

If user wants to select the AV signal to output, need to use VGA to AV conversion module(hereinafter referred to as" conversion module") to convert the VGA signal to an AV signal, and then transmit it to the display device via coaxial-cable.

The input of conversion module is VGA signal, and output could be AV signal, S-Video signal, VGA signal, etc. Here is using VGA to AV function, and ensure that dial of conversion module is "ON".

This product's input VGA signal is on 16:9 video ratio, but AV signal is in 4:3 ratio, so when connecting to the screen, set the display scale to a 16:9 aspect ratio, and use auto-adjust function to restore video on 16:9 aspect ratio.

If the video display can't fill the entire screen after connecting to the

conversion module，or some pictures failed to fully display, you need to adjust the conversion module which could set by keypad.

4.1.4.2 Keypad definition of VGA to AV conversion module

Keypad function of conversion module is shown in the table below.

Keypad	Function description
ZOOMx4	Four times local amplification.
ZOOM	Switch between normal display or zoomed image.
MENU	Display/Close OSD main menu
UP	When OSD main menu is closed，adjust this key to move up the display image. When OSD main menu is displayed, adjust this key to move up to the menu item needs for adjusting
DOWN	When OSD main menu is closed，adjust this key to move down the display image. When OSD main menu is displayed, adjust this key to move down to the menu item needs for adjusting
RIGHT	When OSD main menu is closed，adjust this key to move up the display image. When OSD main menu is displayed, adjust this key to increase the parameter value of the selected menu item.
LEFT	When OSD main menu is closed，adjust this key to move up the display image. When OSD main menu is displayed, adjust this key to reduce the parameter value of the selected menu item.

4.1.4.3 AV output wiring

Power supply voltage of conversion module is 5V，powered by USB of DVI(B) through USB cable.DVI(B)'s VGA signal cable is connected to the input of the conversion module, and then conversion module's BNC output links to display device via coaxial cable.

4.2 Create configuration projects

Make sure that the DVI (B)'s connection is correct (wiring instructions, please refer to section 4.1), then to work normally it still needs to be correctly configured. This section introduces the creation method of configuration project briefly.

Use upper-computer softwareSID-Monitor-B.exe(hereinafter referred to as" upper computer software") to configure the corresponding parameters. Upper-computer software is used on Windows system. PC communicates with DVI(B) through a network cable. Here is the process of parameter settings below.

Set the local IP of the PC which used the upper computer software on the same network segment with static IP of DVI(B) , but not the same. If the PC can ping DVI(B)'s IP , it represents that the physical connection and IP settings of PC and DVI(B) are correct. Open the software on PC, and create a SID-DVI(B) project.

As shown in Figure 10, default IP address of network port 1is 192.0.100.120, and ensure that IP is on the same network segment with upper computer.

Figure 10 Create project in upper computer

4.3 Configure communication point table

Display information on the status bar of DVI(B) video interface is determined by configuring the communication point table. Before the correct configuration of the communication point table, DVI(B) can't work normally. This section will introduce the configuration.

After creating the project, user enters the configuration interface which could configure the point table for communication between DVI(B) and synchronizer. Be

in the "point table" on the menu bar, then the drop-down icon become "download and solidify point table", and click it then would pop up a point table configuration dialog.

Figure 11 Point table configuration dialog

Click the "Select updated table" drop-down icon， it pops up the current supported connection. Select the point table to match the current synchronizer.

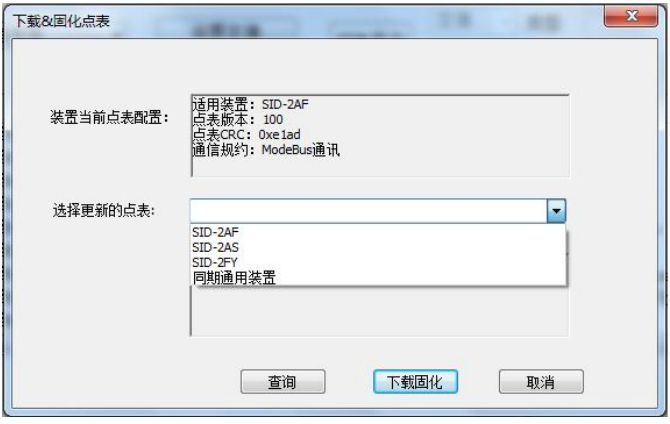

Figure 12 Select updated table

Candidate explanation is shown in the following table：

Point table	Explanation
SID-2AF	Coordinate with SID-2AF
SID-2AS	Coordinate with SID-2AS
SID-2FY	Coordinate with SID-2FY
General synchronizer	Coordinate with synchronizer that support communication with DIV(B) via synchronization protocol

Click" Download and solidify ",and after inputting a correct password, it pops up successfully solidify. Click query button to see the current active point table information on the "Current-configuration of point table" bar. Click the close icon to return to the main interface. The configuration of the point table is complete now,

but display device still can't receive and display the information from synchronizer. We are required to configure the communication parameters of DVI(B) and synchronizer.

4.4 Configure communication parameter

Network parameters of both synchronizer and DVI(B) should be correctly configured. The configuration of synchronizer please reference the corresponding specification. This section will introduce how to configure the communication parameters of DVI(B).

Click the "set point "on the project list, and the set point configuration interface is shown as follows.

编号	类型	名称	数据	范围
0	System information	Verson	V1.00	V1.00
1	System information	FPGA Info	f8cdc	f8cdc
2	System information	CRC Check	ca5ffa08	ca5ffa08
3	System information	Device Name	SID-2AF	SID-2AF
4	System Para	Language	Foreign	中文、Foreign
5	System Para	Style	Logo	Logo、Form
6	System Para	485 PORT	485 Port 1	485 Port 1、485 Port 2
7	System Para	Baund rate	38400bps	300bps、600bps、1200bps、2400bps、4800bps、
8	System Para	Com Parity	Odd Parity	No Check、Odd Parity、Even Parity
9	System Para	ModBus Number	1	1——100
10	System Para	Connecting Dev IP	192.2.100.51	
11	System Para	Net1 IP Addr	192.0.100.120	192.0.100.120
12	System Para	IP2 Addr	192.2.100.121	
13	System Para	IP2 mask	255.255.255.0	
14	System Para	IP2 gateway	192.2.100.1	

Figure 13 Configuration interface

In setting and parameter view，it displays a list of corresponding settings and parameters. Set point includes system information and system setting. System information is read-only, and only the data of the system setting can be changed. Configure the parameters according to the connection of DVI(B) and synchronizer (Ethernet or RS485).

Parameter explanation is shown in the following table：

Parameter	Explanation
Version	Version of CPU program
FPGA Info	Information of FPGA program
CRC Check	CRC correcting code of CPU program
Device Name	Type of corresponding synchronizer
Language	Select display language
Style	Select display style. Display LOGO, or type and channel number of current synchronizer.
485 PORT	Select the serial port
Baud rate	Select baud rate for serial port communication
Com Parity	Select parity mode for serial port communication
ModBus number	Configure device number for serial port communication.

Connecting Dev IP	Configure IP address of target synchronizer.
Net1 IP Addr	Set the IP address of network port 1.
IP2 Addr	Set the IP address of network port 2.
IP2 mask	Mask of network port 2.
IP2 gateway	Gateway of network port 2.

When use network port, need to configure the IP2 address and IP of synchronizer. Synchronizer's IP must be consistent with the IP of synchronizer network port which is used for connection. Set the IP2 address on the same network segment with the synchronizer's IP (except 192.0.100.xxx) then it can communicate normally.

When use RS485 to communicate, the serial port baud rate and parity mode should be consistent with synchronizer.

4.5 Program update

Using our company's platform software to update the DVI(B). Connect upper computer through network port 1. Start platform software in upper computer and choose the right download path, then set the IP address for 192.0.100.120. Check the current configuration then start downloading. When the update have successfully completed, re-energizing the device. If you require the platform software and details of program update operation, please contact our company for

technical support.

5. Site debug and commissioning

5.1 Preparatory work

1. Check device type, version number and the power parameter whether is consistent with the order or not.

2. Check screen cabinet every terminals whether is properly connected or not.

3.Power on according to the requirements.

4.In accordance with the requirements to tune device communication parameters.

5. According to corresponding communication methods, configure the network or serial communication parameters for synchronization device.

5.2 Debug and commissioning

1、Video image output check

Device is power on and check the display device whether can display an image as shown in Figure 7 or Figure 8. If it is able to display, the video cable is proved to be properly connected.

2、Check for successful communication

If status bar displays "DVI Communication Abnormal", it expresses the device can't communicate with synchronization device. Please refer to detail of section 4.2, 4.3, 4.4, etc, to check whether the DVI(B) and synchronization device communication

parameters are correct. If it does not show the "DVI Communication Abnormal", and it appears synchronization device current conditions, which represent the smooth communication.

3、Check the display information

After the normal display, do the synchronization debugging, and check the information shown on display device is consistent with the current condition of the synchronization device, such as the analog information of the synchronizing voltage, frequency, synchronization table direction and so on, and the export information of voltage, speed, closing, alarm etc.

6. Storage and maintain

- ✧ Product storage temperature range: -30℃~+80℃, relative humidity less than 80%, the room can defend rain and snow and atmosphere all round not include components as acidity, alkalescency, causticity or explosiveness; Device will not be permanent damaged when energized under extreme condition. If temperature back to normal, device will work well.
- ✧ Device is only warranty in one year if you transport, install, storage and use absolutely abide the instruction.

7. Whole set supplied

- **The document goes with device**
- A product certification.
- A packing list.
- **The accessories go with product**
- According to the need of product construction that provides the supply of annex.

8 . Decommissioning and disposal

8.1 Decommissioning

8.1.1 Turn off the power supply

Turn off the device power supply: turn off the external power switch.

8.1.2 Disconnect all cables

Disconnect all cables connected to the device.

DANGER: Before disconnecting the power cable connected to the power module of the device, you should make sure that the external power switch is turned off to prevent any danger from occurring.

DANGER: Before disconnecting the power cable connected to the AC module of the device, you should make sure that the

equipment that corresponds to the input AC is out of operation so that no danger may occur.

8.1.3 Remove from the cabinet

After completing the above steps, loosen the screws and remove the device from the cabinet.

Danger: when other adjacent devices are running, you must strictly confirm the safe distance between the dismantled device and other operating devices, especially for an unskilled professional.

8.2 Disposal

When disposing of the decommissioning device, please follow the relevant regulations about disposal of electronic products in the country where the product is used.

Note: The relevant regulations regarding the disposal of electronic products in the country where the product is used must be strictly observed.