G&D DiSign system

Installation and Configuration

About this manual

This manual has been carefully compiled and examined to the state-of-the-art.

G&D neither explicitly nor implicitly takes guarantee or responsibility for the quality, efficiency and marketability of the product when used for a certain purpose that differs from the scope of service covered by this manual.

For damages which directly or indirectly result from the use of this manual as well as for incidental damages or consequential damages, G&D is liable only in cases of intent or gross negligence.

Caveat Emptor

G&D will not provide warranty for devices that:

- Are not used as intended.
- Are repaired or modified by unauthorized personnel.
- Show severe external damages that was not reported on the receipt of goods.
- Have been damaged by non G&D accessories.

G&D will not be liable for any consequential damages that could occur from using the products.

Proof of trademark

All product and company names mentioned in this manual, and other documents you have received alongside your G&D product, are trademarks or registered trademarks of the holder of rights.

Safety instructions

Please read the following safety instructions carefully before you start operating the G&D product. The instructions well help in avoiding damages to the product and in preventing possible injuries.

Keep this manual handy for all persons who will be using this product.

Follow all warnings or operating instructions which are on the device or stated in this user manual.

⚠ **Beware of electric shocks**

To avoid the risk of electric shock, do not open the device or remove the covers. If service is required, please contact our technicians.

⚠ **Disconnect the main power plug or the power supply before installation**

Before installation, ensure that the device has been disconnected from the power source. Disconnect the main power plug or the power supply of the device.

⚠ **Ensure constant access to the power plugs**

During the installation of the devices, ensure that the power plugs remain accessible.

⚠ **Avoid the risk of tripping over cables**

Ensure that there is no risk of tripping over cables.

⚠ **Only use a grounded voltage source**

Operate this device by using a grounded voltage source.

⚠ **Use only the provided G&D power pack**

Operate this device with the provided G&D power pack or with the power pack listed in the manual.

⚠ **Operate the device only in designated areas.**

The devices are designed for indoor use. Avoid exposure to extreme cold, heat or humidity.

Contents

1 Overview

DiSign system

The *DiSign* system extends and distributes incoming video and audio signals from one computer to multiple displays and the appropriate audio devices.

The system consists of three components:

- **Computer module:** The computer module is connected to the computer whose video and audio signals are to be extended and distributed. The computer module processes the signals and transmits them via twisted pair cabling.

- **Splitter:** The *DiSign*-Splitter distributes the signals of a connected computer module to eight outputs. A display module can be connected to each output.

- **Display module:** The display module receives the signals that are transmitted by the computer module. These signals are processed and output at the connected displays and the appropriate audio devices.

Overview of this manual

This manual is divided into three chapters that provide a quick overview on how to apply the components:

- **Chapter 1:** Overview and description of the different system components

- **Chapter 2:** Installation of the components

- **Chapter 3:** Information regarding scope of delivery, status displays and configuration settings (if available) of the different components

2 Installation

Installing the DiSign system

Computer module

The *CATpro2-Audio-USB* computer module is connected to the computer whose video and audio signals are to be extended and distributed. The computer module processes the signals and transmits them via twisted pair cabling.

Connecting the computer (video and audio source)
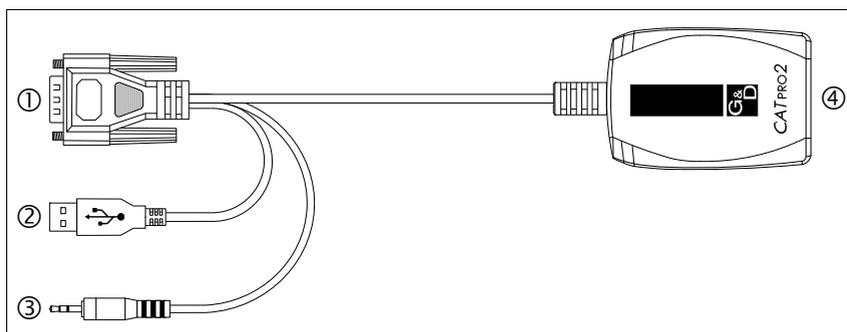
Figure 1: Legend of the *CATpro2-Audio-USB* computer module

① **Monitor:** Connect the 15-pin D-Sub HD plug to the VGA interface of the computer.

② **USB:** Connect the USB-A plug to an available USB interface of the computer.

③ **Speaker:** Connect the jack plug to the *Speaker* interface of the computer.

Connection to splitter

④ **Transmission:** Connect this interface to the *Signal In* interface of the DiSign-Splitter.

> **NOTE:** If the video and audio signals are distributed to only one display module, it is not necessary to apply a *DiSign*-Splitter.
>
> In that case, connect the *Transmission* interfaces of the computer module and the display module.

Use a category 5 (or better) twisted pair cabling for that purpose.

Display modules

The display modules of the *DiSign* series are available in two different variants. Each variant is provided for different cable distances between the computer module and the display module:

- **DiSign-CPU-AV2-sd:** Distances up to 50 meters
- **DiSign-CON-AV2-ld:** Distances up to 300 meters

> **NOTE:** The display modules of *both* variants are installed as described in the following.

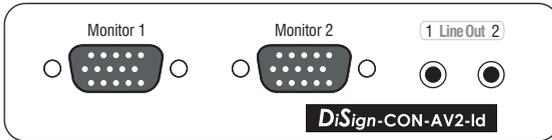## Connecting the interfaces at the front panel

Figure 2: Front view of a display module

Monitor 1: Connect the *first* display.

Monitor 2: Connect the *second* display.

Line Out 1: Connect the audio device of the *first* display.

Line Out 2: Connect the audio device of the *second* display.

Connecting the interfaces at the back panel
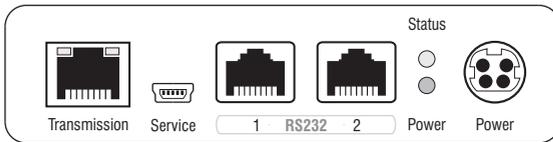
Figure 3: Back view of a display module

Transmission: Connect this interface to a *Transmission* interface of the *DiSign*-Splitter.

> **NOTE:** If the video and audio signals are distributed to only one display module, it is not necessary to apply the *DiSign*-Splitter.
>
> In that case, connect the *Transmission* interfaces of computer module and display module.

Use a category 5 (or better) twisted pair cabling for that purpose.

Service: If desired, connect the service cable (*USB-Service-2*).

Use the service cable to access the setup menu (see page 10) of the display module with a terminal emulator.

> **IMPORTANT:** If the service cable (*USB-Service-2*) is plugged in while the display module is switched on, *no* images will be shown on the displays!

RS232 1: *This interface is currently not used*.

RS232 2: *This interface is currently not used*.

Power: Plug the cable of the provided power pack into this interface. Then connect the power cable to the power pack and an AC outlet.

DiSign-Splitter

The *DiSign*-Splitter multiplies the signals of a connected computer module to eight outputs. A display module can be connected to each output.
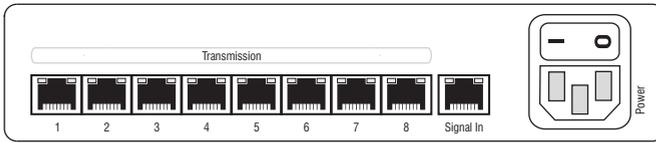
Figure 4: Back view of the *DiSign*-Splitter

Connecting the computer module

Signal In: Use a category 5 (or better) twisted pair cable to connect the *Transmission* interface of the computer module to this interface.

Connecting the display modules

Transmission x: Use a category 5 (or better) twisted pair cable to connect the *Transmission* interfaces of the different display modules with one of these interfaces of the *DiSign*-Splitter.

Establishing the power supply

Power: Connect the provided power cable (*PowerCable-2 Standard*) to the *Power* socket.

Initiation

- Turn on the computer that is connected to the computer module as well as the button above the *Power* socket of the *DiSign*-Splitter.

  After a few seconds the *DiSign* system is ready for operation.

ADVICE: If you use the »long distance« variant (*DiSign-CON-AV2-ld*) with the automatic *Video Tuning* function, you can manually adjust the image.

Detailed descriptions regarding this function are provided on page 12.

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3 Components

»CATpro2-Audio-USB« computer module

Scope of delivery

▪ 1 × *CATpro2-Audio-USB* computer module

Status displays

The blinking *Transmission* LED signals the following operating states:

Status	Transmission LED			
Time in seconds	0	1	2	3
No connection to splitter. Check if the computer module is properly connected to the splitter.	■ ■ ■ ■ ■ ■ ■ ■			
The connection to the splitter has been successfully established.	■	■		■

Technical Data

»CATPRO2-AUDIO-USB« COMPUTER MODULE		
Video	Signal type:	analog video
	Resolution:	max. 1920 × 1200 @ 60 Hz
	Video bandwidth:	max. 250 MHz
	Horizontal frequency:	50 - 180 Hz
	Vertical frequency:	30 - 130 kHz
Audio	Resolution:	24 bit
	Sampling rate:	48 kHz
	Bandwidth:	20 kHz
Interfaces	USB:	1 × USB-A
	VGA:	1 × D-Sub HD 15
	Audio:	1 × jack plug
	Transmission:	1 × RJ45 socket
Total length	Computer module:	0,3 meters (incl. cable)
Power supply	Type:	via USB interface of the computer
	Connection:	USB
	Voltage:	+5VDC
Casing	Material:	plastics
	Dimensions (W × H × D):	45 × 20,7 × 70 mm
	Weight:	ca. 120 g
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHs

Display modules of the DiSign series

The display modules of the *DiSign* series are available in two different variants. Each variant is provided for different cable distances between the computer module and the display module:

- **DiSign-CPU-AV2-sd:** Distances up to 50 meters
- **DiSign-CON-AV2-ld:** Distances up to 300 meters

NOTE: The »long distance« variant (*DiSign-CON-AV2-ld*) provides an automatic *Video Tuning* function that automatically detects the different parameters of a cable connection and uses them to create a video profile.

The video profile ensures that the video image is displayed at all displays in the best-possible quality.

Additionally, the user can optimise the video profile manually.

Scope of delivery

- 1 × »DiSign-CPU-AV2-sd« or »DiSign-CON-AV2-ld« display module
- 1 × power pack (*Power-Set 12-Typ 3*)
- 1 × power cable (*PowerCable-2 Standard)*
- 1 × service cable (*USB-Service-2*)

Status displays
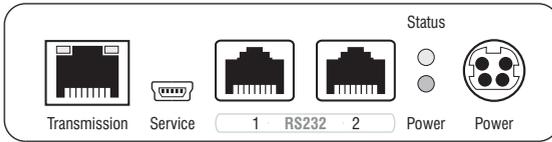
Figure 1: Back view of a display module

The LEDs at the back panel of the device enable you to control the operating status at all times:

Section	LED	Status	Meaning
Front panel	**Status**	blinking	Device is ready for operation.
		fast blinking	The »basic video settings« are missing
	Power	on	The power pack provides the required voltage.
		off	The power pack is not connected to the device and/or an AC outlet.
Trans- mission	**yellow**	on	The communication with the computer module has been successfully established.
		off	The communication with the computer module could not be established.
	green	on	The communication with the computer module has been successfully established.
		off	The communication with the computer module could not be established.

Setup menu

The setup menu of a display module of the *DiSign-CON-AV2* series enables you to adjust the video tuning of the module and retrieve information about the firmware versions.

To use the setup menu, connect the *service* interface of the display module to an USB interface of an computer with an installed terminal emulator (such as *HyperTerminal* or *PuTTY*).

After setting up and establishing a connection to the display module, the setup menu is displayed in the terminal emulator:

```
 Setup Menu for DiSign CON
▸Show System Info             ...◂
 IVT                          ...
 Set System Defaults          ...
 'Space': Toggle      'S': Save
```

Creating a new session profile in the terminal emulator

How to create a new session profile in the terminal emulator:

> **NOTE:** Before establishing the connection in the terminal emulator, install the *CP210x to UART Bridge VCP* device driver.
>
> This driver provides the *Service* port of the display module as virtual serial interface (COM port). Afterwards, the virtual interface can be selected in the terminal emulator to establish the connection.
>
> The driver can be downloaded at **www.gdsys.de** under **Downloads > Driver**.

- Start any terminal emulator(for example *HyperTerminal* or *PuTTY*).
- Create a new connection and enter the following connection settings:
  - Bits per second: 115.200
  - Data bits: 8
  - Parity: None
  - Stop bits: 1
  - Flow control: None
- Use the provided data cable to connect the computer to the *Service* port on the back of the display module.

Starting the setup menu in the terminal emulator

How to start the setup menu:

1. Start the terminal emulator.

2. Load the session profile of the setup menu and establish the connection.

3. Press the `R` key in the terminal emulator.

   As soon as the connection has been successfully established, the setup menu (see below) is displayed in the terminal emulator.

> **NOTE:** It is *not* required to close the setup menu.

Operating the setup menu

The setup menu lists all settings of the display module in tabular form:

```
Setup Menu for DiSign CON
▶Show System Info                  ...◀
 IVT                               ...
 Set System Defaults              ...
 'Space': Toggle          'S': Save
```

How to operate the setup menu:

1. Select an menu item with the arrow keys (`up`/`down`).

   The active row is marked with angular ▶ arrows◀.

2. Press the `Enter` key to open the submenu.

Configuration settings

Retrieving the firmware versions of the display module

Use the setup menu to retrieve information about the installed firmware versions.

How to retrieve the firmware versions of the display module:

1. Start the terminal emulator.

2. Load the session profile of the setup menu and establish the connection.

3. Press the R key in the terminal emulator.

4. Use the arrow keys (up/down) to select the menu item **Show System Info**.

5. Press the Enter key to display the firmware versions of the display module.

6. Press the Q key to return to the main menu.

Automatic and manual video tuning

> **IMPORTANT:** The *Video Tuning* function of the »short distance« variant of the display module (*DiSign-CPU-AV2-sd*) only detects and adjusts the video amplification!

After the display module has been put into operation for the first time, a video profile has been created.

This video profile stores information about different cable parameters. This information ensures that the video image is perfectly displayed at the displays.

The video profile can be automatically updated or manually adjusted by the user.

> **NOTE:** If the cable length between the computer module and display module is changed, the image quality is influenced.
>
> After the cabling has been changed, it is recommended to carry out the automatic video tuning (see below).

How to carry out the automatic video tuning:

> **IMPORTANT:** The *Video Tuning* function of the »short distance« variant of the display module (*DiSign-CPU-AV2-sd*) only detects and adjusts the video amplification!

1. Start the terminal emulator.

2. Load the session profile of the setup menu and establish the connection.

3. Press the **R** key in the terminal emulator.

4. Use the arrow keys (**up/down**) to select the menu item **IVT**.

5. Press the **Enter** key to open the submenu.

6. Press the **A** key to automatically detect the parameters of the cable connection and to update the video profile.

7. Press the **S** key to save the updated video profile.

How to operate the video tuning manually:

> **IMPORTANT:** The *Video Tuning* function of the »short distance« variant of the display module (*DiSign-CPU-AV2-sd*) only detects and adjusts the video amplification!

1. Start the terminal emulator.

2. Load the session profile of the setup menu and establish the connection.

3. Press the **R** key in the terminal emulator.

4. Use the arrow keys (**up/down**) to select the menu item **IVT**.

5. Press the **Enter** key to open the submenu.

6. Use the arrow keys (**up/down**) to select one of the following menu items:

Boost:	sets video boost
Finetuning:	removes colour shadow
NoiseFilter:	sets noise filter
Delay R(ed):	sets delay compensation (red colour signal)
Delay G(reen):	sets delay compensation (green colour signal)
Delay B(lue):	sets delay compensation (blue colour signal)

7. Use the arrow keys (**left/right**) to reduce or increase the displayed value.

8. Repeat steps 6 and 7 to edit further settings.

9. Press the **S** key to save the updated video profile or the **Q** key to restore the original settings and return to the main menu.

Resetting the default settings

This function can be used to restore the default settings of the display module.

> **IMPORTANT:** All settings are reset and the parameters of the cable connection are automatically detected.

How to reset the default settings:

1. Start the terminal emulator.

2. Load the session profile of the setup menu and establish the connection.

3. Press the `R` key in the terminal emulator.

4. Use the arrow keys (`up`/`down`) to select the menu item **Set System Defaults**.

5. Press the `Enter` key to restore the default settings or press the `Q` key to cancel the process.

Technical Data

»DISIGN-CPU-AV2-SD« DISPLAY MODULE		
Video	Signal type::	analog video (VGA)
	Video resolution:	max. 1920 x 1200 @ 60 Hz
	Video bandwidth:	180 MHz
	Horizontal frequency:	50 - 180 Hz
	Vertical frequency:	30 - 130 kHz
Audio	Type:	analog
	Sampling rate:	48 kHz
	Resolution:	24 bit
	Bandwidth:	22 kHz
Interfaces	Monitor:	2 × VGA socket
	Line Out:	2 × 3,5-mm jack plug
	Transmission:	1 × RJ45 socket
	Service:	1 × mini USB port (type B)
	RS232: ‣ currently not used	2 × RJ11 port
	Power:	1 × mini DIN 4 port
Transmission length	computer module to display module:	max. 50 meters
Power Supply	Type:	power pack
	Connection:	mini DIN 4 port
	Current consumption: ‣ max.	400 mA@12 VDC
Casing	Material:	anodised aluminium
	Dimensions (W × H × D):	105 × 26 × 160 mm
Operational environ- ment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHs

»DISIGN–CPU–AV2–LD« DISPLAY MODULE		
Video	Signal type::	analog video (VGA)
	Video resolution:	max. 1920 x 1200 @ 60 Hz
	Video bandwidth:	180 MHz
	Horizontal frequency:	50 - 180 Hz
	Vertical frequency:	30 - 130 kHz
Audio	Type:	analog
	Sampling rate:	48 kHz
	Resolution:	24 bit
	Bandwidth:	22 kHz
Interfaces	Monitor:	2 × VGA socket
	Line Out:	2 × 3,5-mm jack plug
	Transmission:	1 × RJ45 socket
	Service:	1 × mini USB port (type B)
	RS232: ‣ currently not used	2 × RJ11 port
	Power:	1 × mini DIN 4 port
Transmission length	computer module to display module:	max. 300 meters
Power Supply	Type:	power pack
	Connection:	mini DIN 4 port
	Current consumption (max):	400 mA@12 VDC
Power consumption	Standby:	1,6 W@12 VDC
	Operation (max.):	4,2 W@12 VDC
Casing	Material:	anodised aluminium
	Dimensions (W × H × D):	105 × 26 × 160 mm
Operational environ-ment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHs

DiSign-Splitter-1AV8

Scope of delivery

- 1 × DiSign-Splitter-1AV8
- 1 × power cable (*PowerCable-2 Standard*)

Status displays

The LEDs at the front panel of the device enable you to control the operating status at all times:
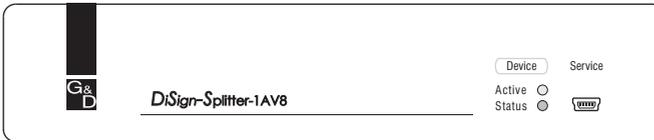

Figure 2: Status displays at the front panel of the *DiSign*-Splitter

The following table lists the meanings of the different LEDs:

LED	Status	Meaning
Active		This LED is currently not used!
Status	lighting	The connection to the display module has been successfully established.
	blinking	No connection to display module. Check the cable connection.

Table 1: Meaning of the different LEDs

Technical Data

DISIGN-SPLITTER-1AV8		
Video	Signal type::	analog video (VGA)
	Video resolution:	max. 1920 x 1200 @ 60 Hz
	Video bandwidth:	180 MHz
	Horizontal frequency:	50 - 180 Hz
	Vertical frequency:	30 - 130 kHz
Audio	Mode:	digital forwarding of incoming data
Interfaces	to display modules:	8 × RJ45 socket
	to computer module:	1 × RJ45 socket
	Service socket:	1 × mini USB socket (type B)
Power supply	Type:	internal power pack
	Connection:	IEC plug (IEC-320 C14)
	Voltage:	100-240VAC/60-50Hz
	Current consumption (max.):	100 mA@240VAC; 200 mA@100VAC
	Power consumption (max.):	7,6W@240VAC; 6,9W@100VAC
Casing	Material:	anodised aluminium
	Dimensions (W × H × D):	210 × 44 × 210 mm
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHs

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