User Manual

1x4 Splitter 4K HDMI over HDBaseT

Model PT-SP-HD14BT

Designed in Germany

Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different model layouts and specifications are subject to the physical product.

This manual is for operation instructions only, not for any maintenance usage.

In the constant effort to improve our product, we reserve the right to make changes in functions or parameters without prior notice or obligation.

Trademarks

Product model and logo are trademarks. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without the prior written consent.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

FC

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REACH | 1907/2006/EU

ROHS | 2011/65/EU

PureLink hereby declares that this product **PureTools PT-SP-HD14BT** complies with Directives 1907/2006/EU und 2011/65/EU.

EMC / LVD (Electro Magnetic Compatibility / Low Voltage Directive)

PureLink GmbH hereby declares that this product **PureTools PT-SP-HD14BT** complies with Directives 2014/30/EU and 2014/35/EU. The full text of the EU Declaration of Conformity is available at the following Internet address:

http://www.purelink.de/ce/4251364709030_CE.pdf

$C\epsilon$

SAFETY PRECAUTIONS

To insure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

Contents

1. Product Introduction

Thanks for choosing this HDBaseT 1x4 Splitter Kit! This device accepts a single HDMI input and splits it into four HDBaseT outputs. The splitter is designed with an HDMI loop out which is intended to cascade to additional units. It supports video resolutions up to 4K@60Hz and all HDMI audio formats. It can extend 1080p signals on each output to distance up to 70 meters and 4K signals to distance up to 40 meters over a single Ethernet cable. It supports Power over HDBaseT (PoH), which allows the compatible receivers to be powered from the splitter over standard Ethernet cables. It supports bidirectional IR and RS232 pass-through and loop output.

1.1 Features

- Splits a single HDMI input to four HDBaseT outputs and one HDMI loop output.
- Supports video resolutions up to 4K@60Hz 4:2:0.
- Extends 1080p signals on each output to distance up to 70 meters and 4K signals to distance up to 40 meters over a CATx Ethernet cable.
- Supports Power over HDBaseT (PoH), allowing compatible HDBaseT receivers to be powered by the splitter over standard Ethernet cables.
- Supports bidirectional IR and RS232 pass-through and loop out.
- Smart EDID management. Features DIP switch to select the output resolution to match the connected displays.
- Fully compliant with the HDMI 1.4 specification.
- Supports HDCP pass-through management.
- Supports firmware update.
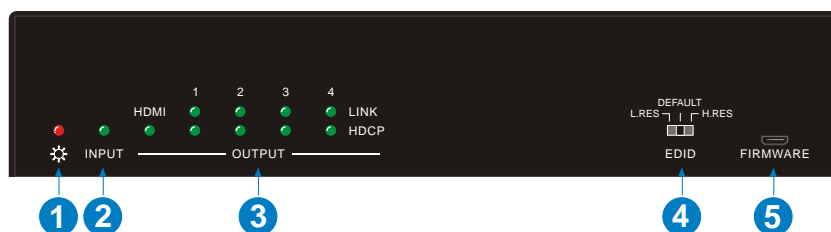- Intuitive indicator for connection status.

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1.2 Package List

- 1x HDBaseT 1x4 Splitter
- 2x Mounting Ears with 4 Screws
- 4x Circular Plastic Cushions
- 1x 3-pin to 3-pin RS232 Cable (for RS232 loop out cascading)
- 1x 3.5mm Audio Cable (for IR loop out cascading)
- 4x IR Receivers
- 1x IR Emitter
- 1x Power Adaptor (24V DC 2.71A)
- 1x User Manual

Note: Please contact your distributor immediately if any damage or defect in the components is found.
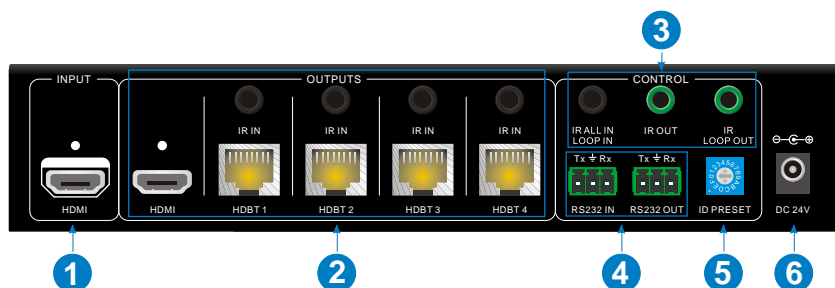
2. Panel Description

2.1 HDBaseT Splitter Front Panel

No.	Name	Description
①	Power LED	The LED illuminates red when power is applied.
②	Input LED	The LED illuminates green when there is a HDMI source input.
③	OUTPUT LEDs	• HDMI: The LED illuminates green when there is a HDMI output. • LINK: Each LINK LED illuminates green when there is a valid connection between the splitter and each of the four receivers. • HDCP: Each HDCP LED illuminates green when the corresponding receiver supports HDCP and blinks green when the corresponding receiver does not support HDCP. Each LED is off when there is no connected corresponding receiver.
④	EDID	DIP switch for the Extended Display Identification Data (EDID) value setting.
⑤	FIRMWARE	USB port for firmware upgrading.

2.2 HDBaseT Splitter Rear Panel

No.	Name	Description
①	HDMI IN	HDMI port for connecting the HDMI source device (Blu-ray Disc™ or DVD player, gaming console, etc.).
②	OUTPUTS	• HDMI: HDMI loop output port for connecting a local display. • HDBT1~4: Four HDBaseT RJ45 jacks with PoH support for connecting four HDBaseT receivers. • IR IN: Four 3.5mm IR input jacks for connecting the four IR receivers.
③	IR Control	• IR ALL IN/LOOP IN: 3.5mm IR IN jack for connecting an IR receiver or cascading to previous device. • IR OUT: 3.5mm IR OUT jack for connecting an IR emitter. • IR LOOP OUT: A 3.5mm IR LOOP output jack for cascading to next device.

| No.	Name	Description
④	RS232 Control	• RS232 IN: 3-pin RS232 connector. Connect to the PC by a 3-pin to DB9 cable. • RS232 OUT: If cascading multiple units, use the 3-pin to 3-pin cable to connect the output to the RS232 IN on the next device in the chain.
⑤	ID PRESET	Assigns a single digit ID to the splitter when cascading multiple splitters and using RS232 control, each splitter must have a unique ID. Use a small, flathead screwdriver to set the ID. There are sixteen positions, with **0** at the fully counterclockwise position and **F** at the fully clockwise position. After setting the ID, the device must be restarted for the new ID to take effect.
⑥	DC 24V	DC barrel connector for the included AC power adapter.

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3. System Connection

3.1 Usage Precautions

- Verify all components and accessories included before installation.

- System should be installed in a clean environment with proper temperature and humidity (see page 22 for limits).

- All of the power switches, plugs, sockets and power cords should be insulated and safe.

- All devices should be connected before power on.

3.2 System Diagram

The following diagram illustrates typical input and output connections that can be utilized with splitter:
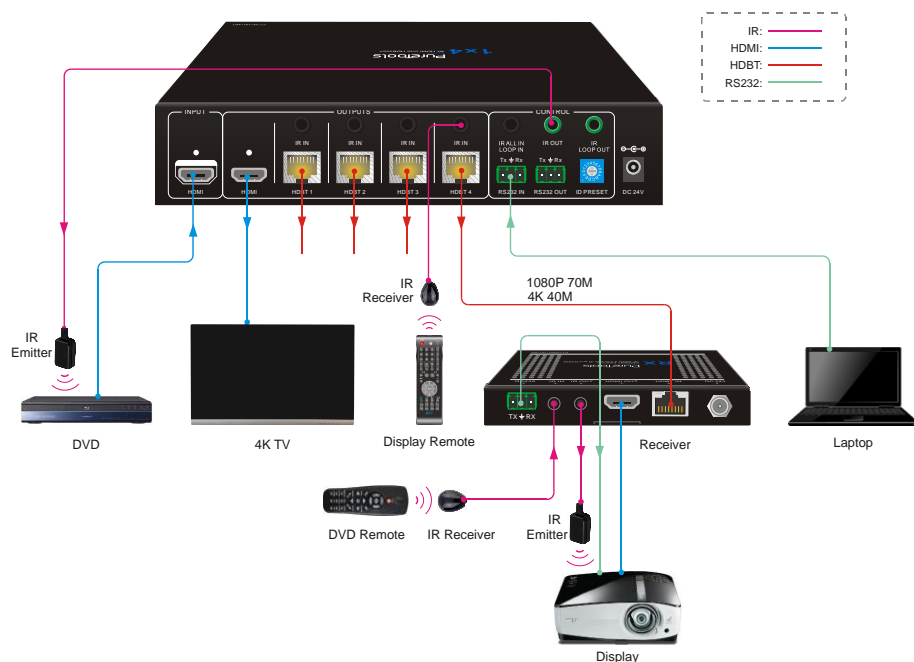
Note: The HDBaseT receivers have no need of power adaptors, they can be powered by the splitter with PoH support.

3.3 Cascading

The splitter supports cascade connection to distribute video signal to multiple video displays. Use the following connection diagram as a guide for cascading multiple units. Note that each unit must have a unique ID if using RS232 control.

4. IR Control

The IR receivers and emitters can be connected to the system to allow for IR control of remote devices. The bidirectional IR feature provides the two-way control either for the source or display device(s). Use the following sample connection diagrams to connect for IR remote control.

4.1 Controlling the Display Device by IR IN

The four **IR IN** ports of the splitter can receive IR signals from remotes to send to control displays. Connect four IR receiver to **IR IN** ports of the splitter, and then connect four IR emitters to **IR OUT** ports on HDBaseT receivers.
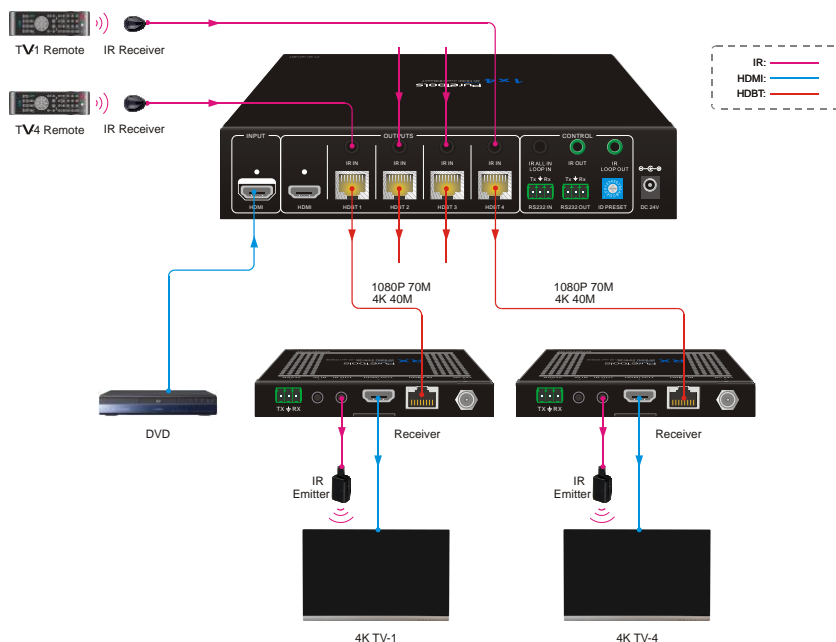
4.2 Controlling the Display Device by IR ALL IN

The **IR ALL IN** port of the splitter can receive all IR signals from remotes to send to control displays. Connect an IR receiver to **IR ALL IN** port of the splitter, and then connect four IR emitters to **IR OUT** port on HDBaseT receivers.

4.3 Controlling the Source Device
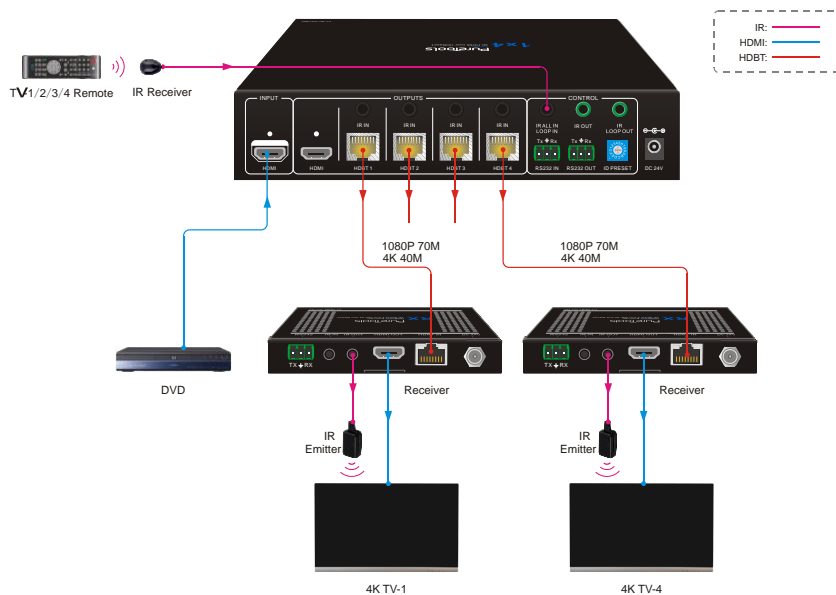
The **IR OUT** port of the splitter can send all IR signals to control source device. Connect four IR receivers to **IR IN** ports on HDBaseT receivers, and then connect an IR emitter to **IR OUT** port of the splitter.

5. RS232 Control

The splitter and compatible receivers features RS232 ports to transmit RS232 signals from computer to control far-end third-party devices by using 3-pin to DB9 cable and a RS232 control software, such as **CommWatch**. Compatible receivers must be able to communicate at 2400, 4800, 9600, 19200, 38400, 57600, or 115200 baud. The Splitter Extender requires the following communication protocol parameters:

5.1 RS232 Control Software

- **Installation:** Copy the control software file to the computer connected with the splitter.
- **Uninstallation:** Delete all the control software files in corresponding file path.

Basic Settings:

First to connect all input devices and output devices needed, then to connect it with a computer which is installed with RS232 control software.
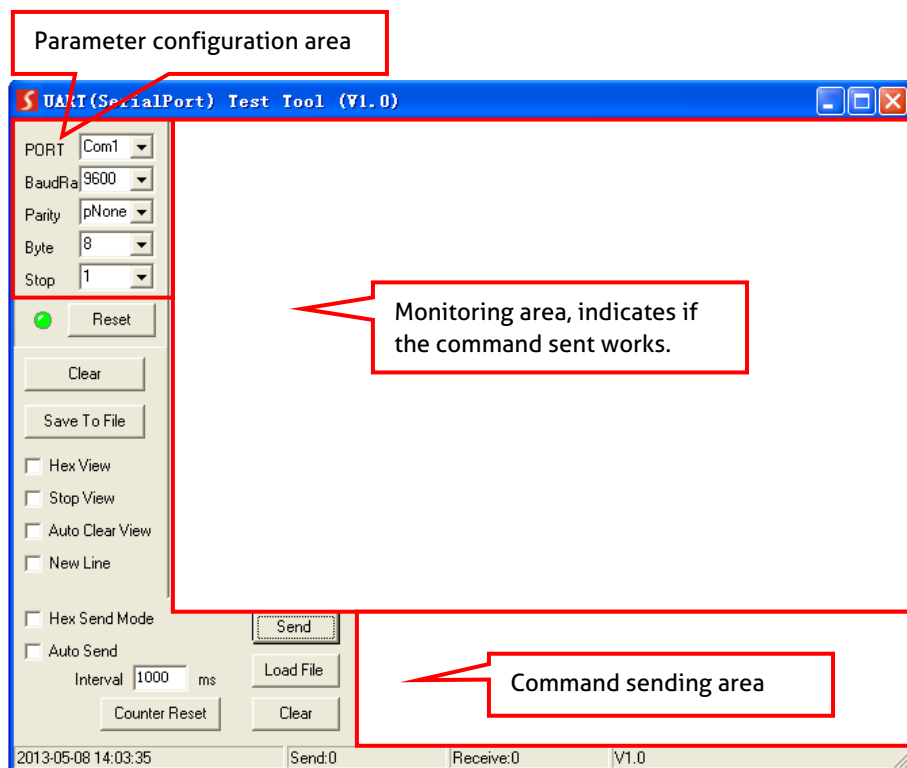
Double-click the software icon to run this software. Here take the software **CommWatch.exe** as example. The icon is shown as below:

CommWatch.exe

The interface of the control software is shown as below:

9600 baud rate, 8 data bits, 1 stop bit, no parity bits

Parameter configuration area

Monitoring area, indicates if the command sent works.

Command sending area

Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, and then commands are ready to send in Command Sending Area.

5.2 RS232 Command Format

Each unit in cascading system must have a unique ID if using RS232 control. Through the DIP switch **ID PRESET** to set their ID for distinguishing. For example, the unit ID of the first splitter is set as 0, and then the second is set as 1 and so on.

The system supports RS232 pass-through control; if the **RS232 IN** port is connected to PC, and the others are connected to the third-party devices, these third-party devices can be controlled by following these steps:

1) First, according to the below format to send the command to select the unit to receive commands

F5 BB 6F X0
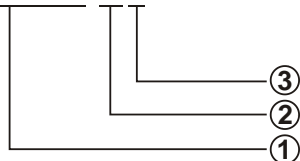
① Fixed value.

② The unit ID of splitter, x=0~9/A~F

③ Fixed value.

2) Second, send the specific control command data (HEX) to control the select third-party devices. For specific commands, please refer to the user manual of the devices which are needed to be control. For example, send **A5 A5 A5 5A 01 VV 02 0A 01 00 RR** to mute the third-party devices.

● **Switching on/off HDBaseT Outputs**

The HDBaseT outputs can be controlled by sending commands. Connect the PC to the **RS232 IN** port, and then according to the below steps to switch on/off HDBaseT outputs.

Take the unit ID of 2 for example.

1) First, send **F5 BB 6F 20** to select the unit to receive commands.

2) Second, according to the below format to send the command to switch on/off HDBaseT outputs.

AB AC BC XX XX

①　　　　②
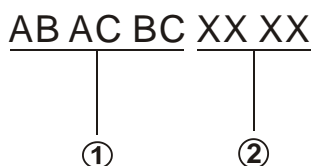
① Fixed value.

② The four **X** represent four HDBaseT outputs.

　　X=0, OFF

　　X=1, ON

If the HDBT 1 port need to be turned on, other ports are closed, the command **AB AC BC 10 00** should be sent.

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6. EDID Management

The Extended Display Identification Data (EDID) is used by the source device to match its video resolution with that of the connected display. By default, the source device obtains its EDID from the first connected display. However, since the displays with different capabilities can be connected to the splitter, the EDID DIP switch can be used to set the EDID to a fixed value.
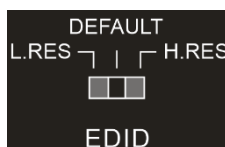
Switch Status	Description
L.RES	The splitter reads EDID from all connected displays, and then the source device will automatically obtain the EDID which contain the lowest resolution.
DEFAULT	Reset to the default EDID to distribute 4K@30Hz video.
H.RES	The splitter reads EDID from all connected displays, and then the source device will automatically obtain the EDID which contain the highest resolution.

Note: *When the four displays have the same resolution parameter, the source device will obtain the EDID with priority from HDBT 1 to HDBT 4.*

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7. Technical Specification

Video Input	
Input	(1) HDMI
Input Connector	(1) Female type A HDMI
Input Video Signal	HDMI
HDMI Input Resolution	Up to 4Kx2K@60Hz 4:2:0
Video Output	
Output	(1) HDMI; (4) HDBT
Output Connector	(1) Female type A HDMI; (4) RJ45
Output Video Signal	HDMI, HDBaseT
HDMI Output Resolution	Up to 4Kx2K@60Hz 4:2:0
HDBT Output Resolution	Up to 4Kx2K@60Hz 4:2:0
Control	
Control port	(1) EDID; (1) ID PRESET; (1) IR ALL IN/LOOP IN; (1) IR OUT; (1) IR LOOP OUT; (1) RS232 IN; (1) RS232 OUT
Control Connector	(1) 3-pin DIP switch; (1) DIP switch; (3) 3.5mm mini jacks; (2) 3-pin phoenix connectors
General	
HDMI Standard	HDMI 1.4 with HDCP 2.2
Transmission Mode	HDBaseT
Transmission Distance	1080p ≤229 feet (70 meters) 4K ≤131 feet (40 meters)
Operation Temperature	-10 ~ +55℃
Storage Temperature	-25~ +70℃
Relative Humidity	10% ~ 90%

General	
AC Adapter Input Power	100V~240V AC, 50/60Hz
Input Power	24V DC 2.71A
Power Consumption	45W (Max)
Dimension (W*H*D)	220mm x 44mm x 148mm
Net Weight	725g

Note: Please adopt quality CAT Ethernet cable compliant with CAT6e or higher standard for reliable transmission.

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8. Panel Drawing

9. Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Colour losing or no video signal output in HDMI display.	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
	The display is not compatible with the present output resolution.	Make sure the resolution of the display(s) is compatible with the present resolution.
No HDMI signal output in splitter while local HDMI input is in normal working state.	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
Splash screen in output devices.	Poor quality of the connecting cable.	Change for another cable of good quality.
Static becomes stronger when connecting the video connectors.	Bad grounding.	Check the grounding and make sure it is connected well.

Note: If your problem still remaining after following the above troubleshooting steps, please contact your local dealer or distributor for further assistance.

10. After-Sales Service

If there appear some problems when running the product, please check and deal with the problems referring to this user manual. Any transport costs are borne by the users during the warranty.

1) **Product Limited Warranty:** The product will be free from defects in materials and workmanship for **two years** (The purchase invoice shall prevail).
   Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

2) **What the warranty does not cover (servicing available for a fee):**
   - Warranty expiration.
   - Factory applied serial number has been altered or removed from the product.
   - Damage, deterioration or malfunction caused by:
     - Normal wear and tear.
     - Use of supplies or parts not meeting our specifications.
     - No certificate or invoice as the proof of warranty.
     - The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
     - Damage caused by force majeure.
     - Servicing not authorized by distributor.
     - Any other causes which does not relate to a product defect.
   - Delivery, installation or labor charges for installation or setup of the product.

3) **Technical Support:** For any questions or problems, contact your distributor or reseller and tell them the respective product name and version, the detailed failure situation as well as the formation of the cases.

Asking for Assistance

Technical Support:
Phone: +49 5971 800299 - 0
Fax: +49 5971 800299 – 99

Technical Support Hours:
8:30 AM to 5:00 PM Monday thru Thursday
8:30 AM to 4:00 PM Friday

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