

Welcome to the 2port VGA/Keyboard/Mouse-Splitter Family!

Thank you for purchasing a 2port VGA/Keyboard/Mouse-Splitter model. We appreciate your business, and we think you'll appreciate the many ways that your enhanced keyboard/video/ mouse system will save you money, time, and effort.

That's because our 2port VGA/Keyboard/Mouse-Splitter allows you the possibility to operate a computer from two different places. In combination with KVM Extender cables (up to 10 m) or KVM Extender (up to 10 Km) the Input/Output devices can be remotely located far away.

Wherever you need two (or more) consoles for your computer, e.g. in engines with two operation places, in server environments or at places where two employees share one computer, the 2port VGA/Keyboard/Mouse-Splitter is a solution for such problems.

Three different models cover a range of applications: There is one device for splitting the VGA signal only – displaying the VGA signal on two monitors, one device for monitor, PS2-Keyboard and PS2-Mouse (standard PS2-Console) and one device for monitor, PS2 (AT)-Keyboard and a serial mouse (former PS2/AT-Console). Using this device a serial mouse is switchable.

This manual will tell you all about your new 2port VGA/Keyboard/Mouse-Splitter, including how to install, operate, and troubleshoot it. For an introduction to the Extender, see **Chapter 2**. The product codes covered in this manual are:

K240-2F: Monitor-Splitter for VGA

K239-4E: KVM-Splitter for VGA, PS2-/AT-Keyboard/serial Mouse

K239-4P: KVM-Splitter for VGA, PS2- Keyboard/Mouse

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All trademark and trade names mentioned in this document are acknowledged to be the property of their respective owners.

Disclaimer

While every precaution has been taken in the preparation of this manual, the manufacturer assumes no responsibility for errors or omissions. Neither does the manufacturer assume any liability for damages resulting from the use of the information contained herein. The manufacturer reserves the right to change the specifications, functions, or circuitry of the product without notice.

The manufacturer cannot accept liability for damage due to misuse of the product or due to any other circumstances outside the manufacturer's control (whether environmental or installation related). The manufacturer shall not be responsible for any loss, damage, or injury arising directly, indirectly, or consequently from the use of this product.

Cautions and Notes

The following symbols are used in this guide:



CAUTION. This indicates an important operating instruction that should be followed to avoid any potential damage to hardware or property, loss of data, or personal injury.



NOTE. This indicates important information to help you make the best use of this product.

EUROPEAN UNION DECLARATION OF CONFORMITY

This is to certify that, when installed and used according to the instructions in this manual, together with the specified cables and the maximum cable length <3m, the Units:

K240-2F, K239-4E, K239-4P

are shielded against the generation of radio interferences in accordance with the application of Council Directive 89/336/EEC as well as these standards:

EN 55022:	1999	Class A
EN 55024:	1999	
IEC 61000-4-2:	2001	
IEC 61000-4-3:	2001	
IEC 61000-4-4:	2001	
EN 61000-3-2	2001	
EN 61000-3-3	2002	

The device was tested in a typical configuration with PC.



Oberteuringen, Wednesday, October 21th, 2006

The management

A handwritten signature in black ink, appearing to read 'Peter Prigel'. The signature is written in a cursive, flowing style.

This equipment has been found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Safety Precautions and Installation Guidelines

- To ensure reliable and safe long-term operation, please note the following installation guidelines:
- Only use in dry, indoor environments.
- The 2port VGA/Keyboard/Mouse-Splitter and any power supplies can get warm. Do not locate them in an enclosed space without any airflow.
- Do not place a power supply directly on top of a unit.
- Do not obstruct a unit's ventilation holes.



To safeguard against personal injury and avoid possible damage to equipment or property, please observe the following:

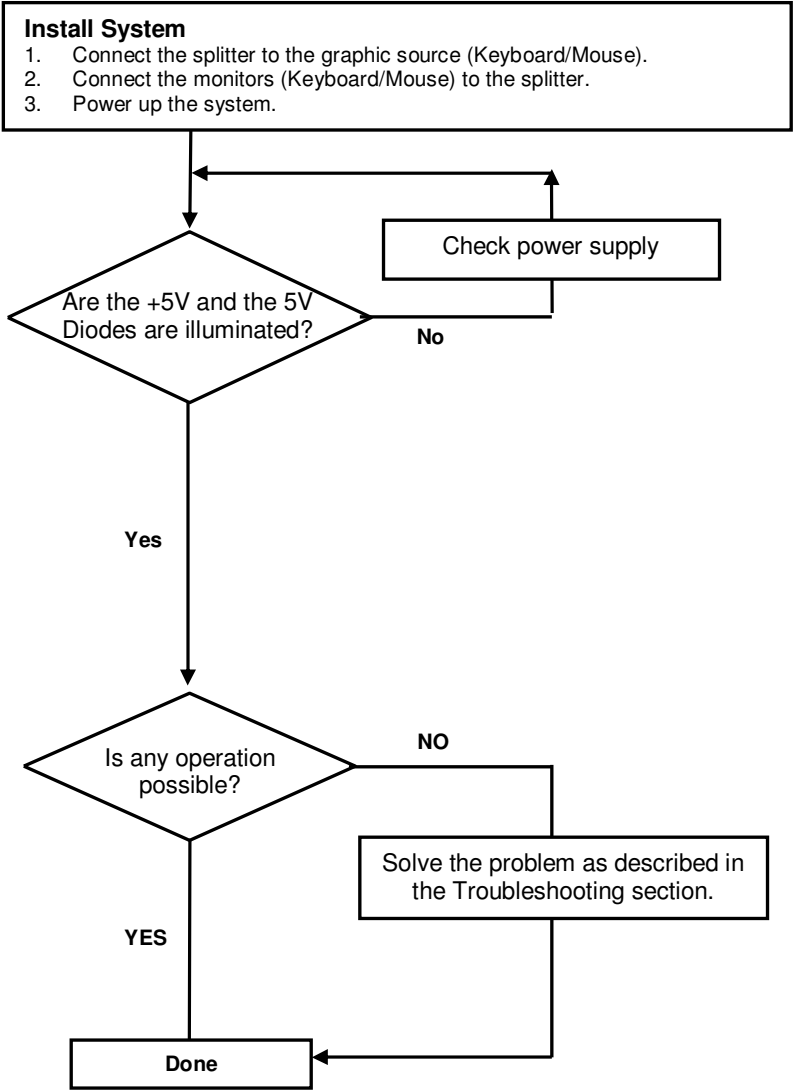
- **Only use the power supply originally supplied with the product or manufacturer-approved replacements. Do not attempt to dismantle or repair any power supply. Do not use a power supply if it appears to be defective or has a damaged case.**
- **Connect the power supply to grounded outlets. In each case, ensure that the ground connection is maintained from the outlet socket through to the power supply's AC power input.**
- **Do not attempt to modify or repair this product**

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1. Quick Setup

This section briefly describes how to install your 2port VGA/Keyboard/Mouse-Splitter. Unless you are an experienced user, we recommend that you follow the full procedures described in the rest of this manual.



2. Overview

2.1 Introduction

A 2port VGA/Keyboard/Mouse-Splitter is mainly used to operate a IBM compatible PC using two consoles (KVM). In combination with KVM Extender cables (up to 10 m) or KVM Extender (up to 10 Km) the Input/Output devices can be remotely located far away. Switching is alternatively by the connected keyboards or by an external dry contact.

A 2port VGA/Keyboard/Mouse-Splitter comprises one unit. This unit connects directly to the PC (or KVM switch system) using the supplied cables. The user consoles (KVM) are connected to the opposite device side.

2.2 Glossary

The following terms are used in this guide:

<i>KVM</i>	Keyboard, Video (monitor) and Mouse.
<i>Console</i>	A keyboard, monitor, and mouse, plus optional serial/audio devices.
<i>VGA (also called RGBHV)</i>	Video signal, consisting of R (red) G (green) and B (blue) signals and the additional horizontal/vertical synchronisation signals. The colour signals have a level of 0.7Vpp, the synchronisation TTL (5Volts).
<i>PSU</i>	The desktop power supply connected to the unit.

2.3 Features

- The 2port VGA/Keyboard/Mouse-Splitters offer the following features:
- Support for VGA Graphic Cards (all models).
- Support for PS2-Keyboard and PS2-Mouse (K239-4P)
- Support for PS2 (/AT with adapter)-Keyboard and serial-Mouse (K239-4E)
- Maximum Resolution: VGA: 1280x1024@75Hz.
- Small footprint chassis.
- VGA connecting cable (1,8 m) + universal PSU included (K240-2F)
- CPU KVM-cable (1.8m) + universal PSU included (K239-4P and K239-4E)

2.4 Product Range

There are three products in the range and various mounting options:

<i>VGA-/Keyboard-/Mouse-Splitter</i>	
K240-2F	Monitor-Splitter for VGA
K239-3P	KVM-Splitter for VGA, PS2-Keyboard/Mouse
K239-4E	KVM-Splitter for VGA, PS2-/AT-Keyboard/serial Mouse
<i>Upgrade Kits</i>	
283-1K	Mounting brackets to mount by screws
284-1K	Mounting brackets to mount by snap-on

2.5 Compatibility

Interface Compatibility

- **RGB:** Video signal, consisting of R (red) G (green) and B (blue) signals. The signals have a level of 0.7Vpp. The Green-Signal also carries the (composite) synchronisation signals.
- **VGA (also called RGBHV):** Video signal, consisting of R (red) G (green) and B (blue) signals and the additional horizontal/vertical synchronisation signals. The colour signals have a level of 0.7Vpp, the synchronisation TTL (5Volts).
- **PS/2 Keyboard:** Compatible with all standard keyboards. Certain keyboards with enhanced features may also be supported with custom firmware.
- **PS/2 Mouse:** Compatible with all standard 2-button, 3-button and wheel mice.
- **Serial Mouse:** Transparent, independent of Baud rate setup. The following serial signals are extended: RX, RTS. The signals TX, CTS, DTR, DSR provide a fixed level for powering of the connected mouse.

2.6 How to Use This Guide

This guide describes the installation and configuration of the 2port VGA/Keyboard/Mouse-Splitter Series. Although the connection and operation of the system is relatively straightforward, you should consider the following before getting started:

Connection & Compatibility

If you have purchased a *2port VGA/Keyboard/Mouse-Splitter Kit*, this will contain all cables required to connect the Local unit to your PC or KVM switch. For information about connection and installation, see **Installation**, page 10.

VGA-/Keyboard/-Mouse adjustment to the type of switching (automatically resp. by potential free contact)

The device in the delivery status is switchable by using any key on the connected keyboard. This first key pressed is already transferred to the computer. If switching is desired without sending a character to the CPU, please use the <SHIFT> or one of the keys <CTRL>, <ALT> or <ALT GR> keys without pressing another key simultaneously. If switching is desired by using a key-switch, the device must be converted to dry contact switching. Please see in **Adjustments** (Page 14)

3. Installation

For first-time users, we recommend that you carry out a test placement, confined to a single room, before commencing full installation. This will allow you to identify and solve any cabling problems, and experiment with the VGA-/Keyboard-/Mouse Switch more conveniently.

3.1 Package Contents

You should receive the following items in your extender package:

- 2port VGA/Keyboard/Mouse-Splitter
- VGA CPU-cable 1,8m (HD15 male / HD15 female) @ device K240-2F
- VGA CPU cable, ZIP type 1,8m (HD15 male / HD15 female, 2 x PS2 male / PS2 male) @ device K239-4P
- VGA CPU-cable 1,8m (HD15 male / HD15 female), 1x AT male/AT female, 1x DB9 female / DB9 male @ device K239-4E
- 4x adapter AT female / PS2 male @ device K239-4E
- 1 x 12V DC universal PSU
- 1 x power cord
- Manual (Quick Setup)

If anything is missing, please contact Technical Support (see Appendix D – Technical Support).

3.2 Interconnection Cable Requirements

CPU/Splitter Unit Connections

To connect the splitter unit to your graphic source you will need:

- **VGA:** Connect the supplied VGA CPU-cable 1,8m (HD15 male / HD15 female) to the CPU (KVM - Switch, etc.). Please ensure that the connection is tension-free. (K240-2F)
- **VGA, Keyboard, Mouse:** Connect the supplied VGA CPU cable 1,8m (HD15 male / DB9 female, 2x PS2 male / PS2 male) to the CPU (or KVM Switch). Please ensure that the connection is tension-free. (K239-4P)
- **VGA, Keyboard, Mouse:** Connect the supplied VGA CPU cable 1,8m (HD15 male / DB9 female, AT male / AT male, DB9 female / DB9 male) to the CPU (or KVM Switch). Please ensure that the connection is tension-free. (K239-4E)
- **Power Supply:** Connect the supplied 12V/DC power supply to the screw terminal on the rear of the unit.

3.3 System Setup

To install your 2port VGA/Keyboard/Mouse-Splitter system:

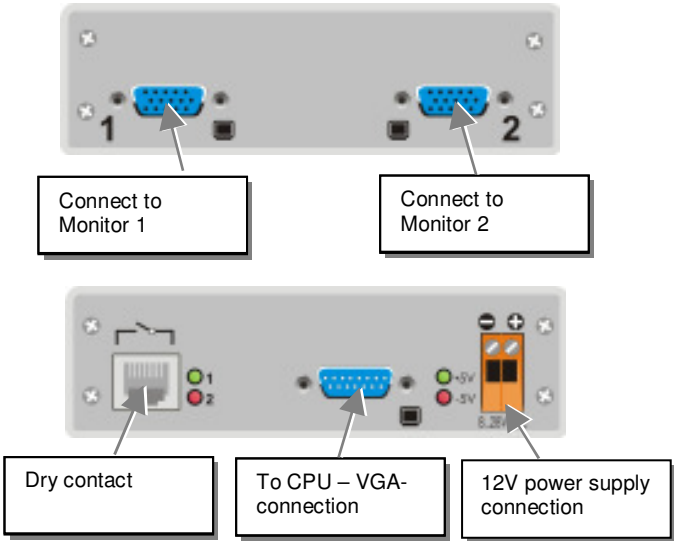
1. Switch off all devices.
2. Connect your keyboards, monitors and mice to the VGA/Keyboard/Mouse-Splitter system. Ensure that you attach the keyboard and mouse connectors to the correct ports (K239-4P). The keyboard connector is purple; the mouse connector is green.
3. Connect the CPU to the VGA/Keyboard/Mouse-Splitter, using the supplied CPU cable. Ensure that you attach the keyboard and mouse connectors to the correct ports (K239-4P). The keyboard connector is purple; the mouse connector is green.
4. Connect the 12V power supplies to the splitter unit.



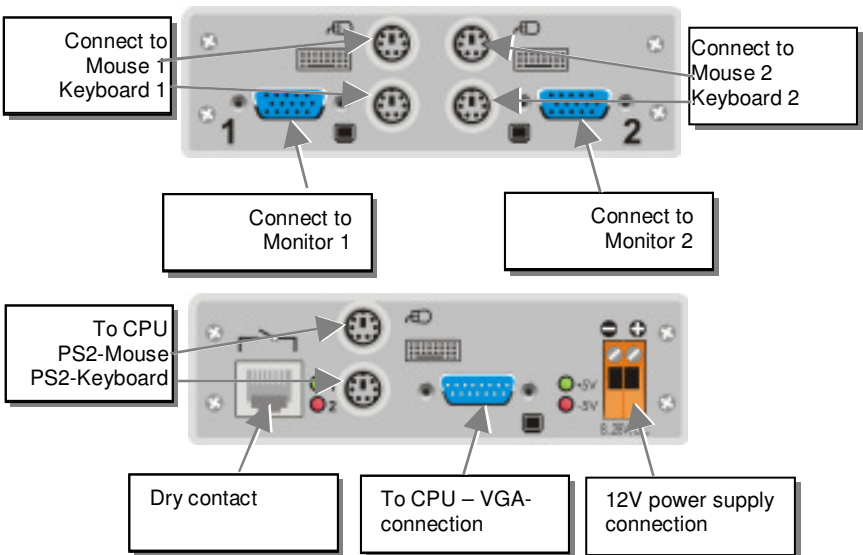
The unit is designed, to accept power in the range between 8VDC and 28VDC. Please check your voltage carefully before powering up the device. (see also page 21 - Power Requirements) We suggest to only use the power supply originally supplied with this equipment or a manufacturer-approved replacement.

5. Power up the system.

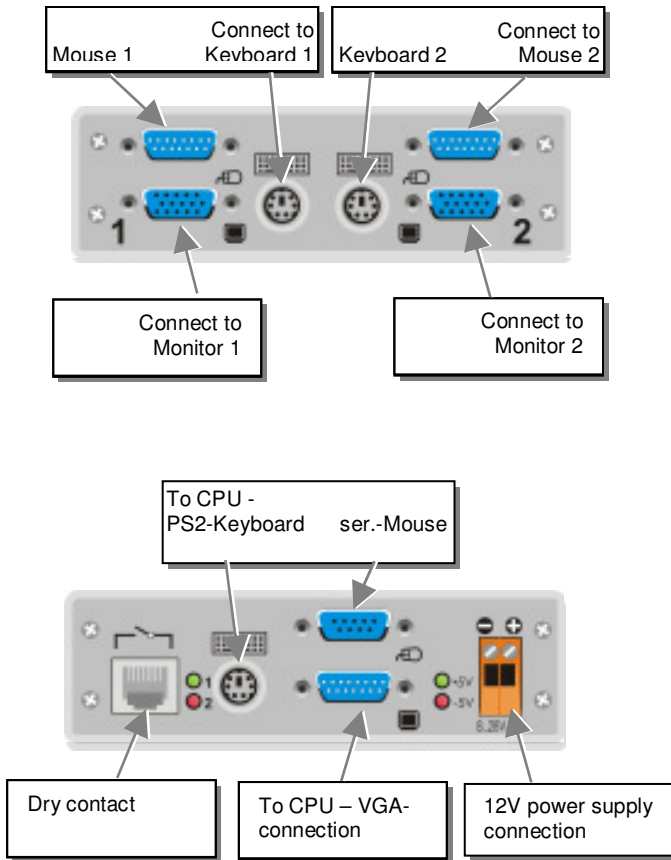
2PORT VGA/KEYBOARD/MOUSE - SPLITTER



VGA-Splitter Type K240-2F



VGA-/Keyboard-/Mouse-Splitter Type K239-4P

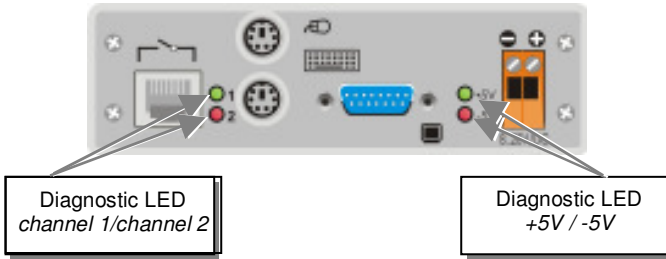


VGA-/Keyboard-/Mouse-Splitter Type K239-4E

3.4 Diagnostic and Adjustments

Each 2port VGA/Keyboard/Mouse-Splitter is fitted with an indicator LED device for +5V, -5V and an indicator LED for channel 1/channel 2. All LED's are located on the side of the power supply.

The location of the LEDs is shown below:



Diagnostic- LEDs at the VGA-/Keyboard-/Mouse-Splitter

<i>LED</i>	<i>Zustand</i>	<i>Bedeutung</i>
+5V/-5V (green/red LED)	Off On	Device not ready Device ready
Channel 1 /Channel 2 (green/red LED)	Off On	Channel is not enabled, no KVM access Channel is enabled , KVM access

4. Adjustments

For most applications, you shouldn't need to do any adjustments to set up your 2port VGA/Keyboard/Mouse-Splitter. For some applications, you may need to do custom designed settings.

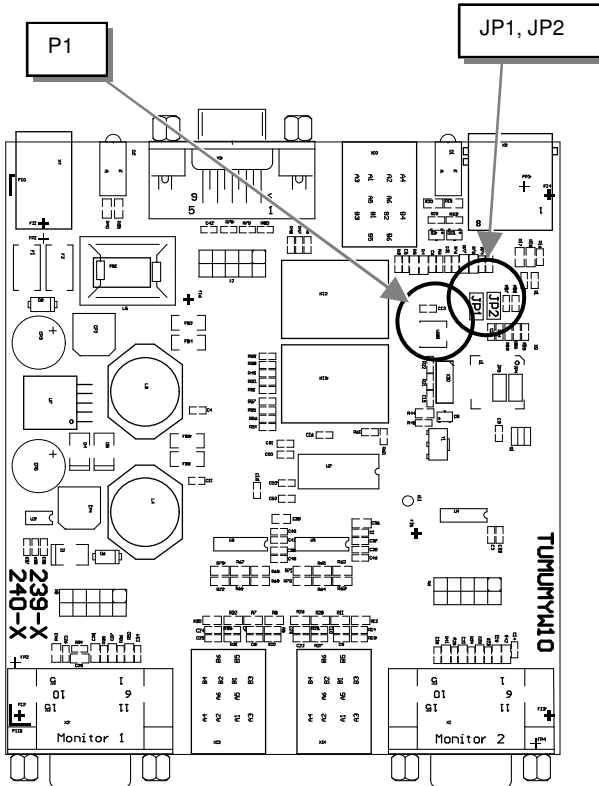
To do custom designed settings you have to open the device. Unscrew the screws at the top of both sides. Carefully displace the upper shell of the case.



4.1 Jumper Location in the Unit

After unscrewing and opening the upper shell, please place the device facing the output connectors to your side.

The main PCB then will look like this:



You will find the jumper/potentiometer as shown above.

4.2 Setup Possibilities on the device

The following adjustments are possible:

Monitor behavior

- Both monitors are enabled permanently
- The monitor is enabled whose keyboard was enabled at last
- The monitor is enabled whose keyboard is enabled at the moment
- The monitor is enabled which is enabled using the dry contact

Keyboard behavior

- Using a key will switch automatically
- The keyboard is enabled which is selected by using the dry contact

Mouse behavior









Switching by using the mouse is not possible. The mouse is enabled whose keyboard is/was enabled.

Clearance time

Using the potentiometer P1 the time can be adjusted locking the other keyboard after pressing a key. Any times between approx. 0.5 and approx. 40 seconds are possible. Setting: Left limit (anticlockwise) = minimum delay (delivery status). Clockwise turning extends the time which has to be waited using the other keyboard.

Adjustment of the monitor- / keyboard behavior (JP1, JP2)

 = free  = stuck

JP1	JP2	Mode	Operating behavior
		0	Monitor: On, while clearance time is running Keyboard: Switching with clearance time (Potentiometer P1)
		1	Monitor: On permanently Keyboard: Switching with clearance time (Potentiometer P1)
		2	Monitor: On, where the latest key was pressed Keyboard: Switching immediately
		3	Monitor: On permanently Keyboard: Switching without immediately (delivery status)

Switching by using the dry contact

Switching by signals at the dry contact is identified automatically. For a proper function JP1 and JP2 must be stuck. Switching happens while setting the suitable pin on GND. This keyboard is enabled now; the other (incl. mouse) is without function. Connecting both contacts simultaneously, the automatic switching is enabled again. The simplest external switching is to realize by using a change-over switch.

Controlling of other devices

The inverter state of the switch can also be used for switching other devices. For this purpose the inverter state is exported at the dry contact. The Output of the enabled keyboard carries a TTL-High-Level, which can be loaded by a TTL-loading.

5. Troubleshooting

There isn't a picture

Check the power supply connection.

Internal damage of the power supply: Are the LED's for the power supply illuminated?

You have chosen the "mode 0" (monitor is on where the keyboard is enabled) and the clearance time is expired.

The 2nd mouse isn't running

You haven't carried out the switch to the 2nd KVM. A switching is only possible by using the dry contact or pressing any key – a mouse movement **doesn't** result in a switch.

You have installed two different mouse types.

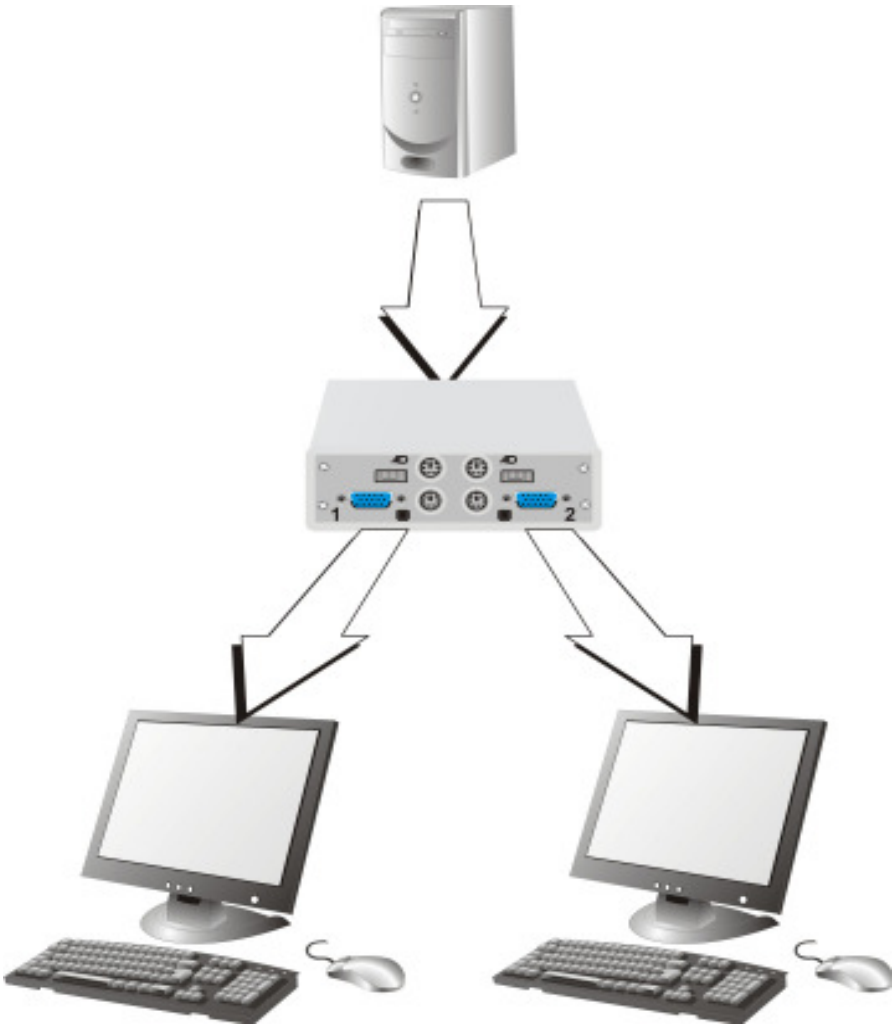
Switching isn't possible

You have chosen "mode 0" or "mode 2" (keyboard with clearance time) and the time limit (up to 40 seconds) hasn't expired

Appendix A: Example Applications

This section illustrates some specific applications using VGA/Keyboard/Mouse-Splitter:

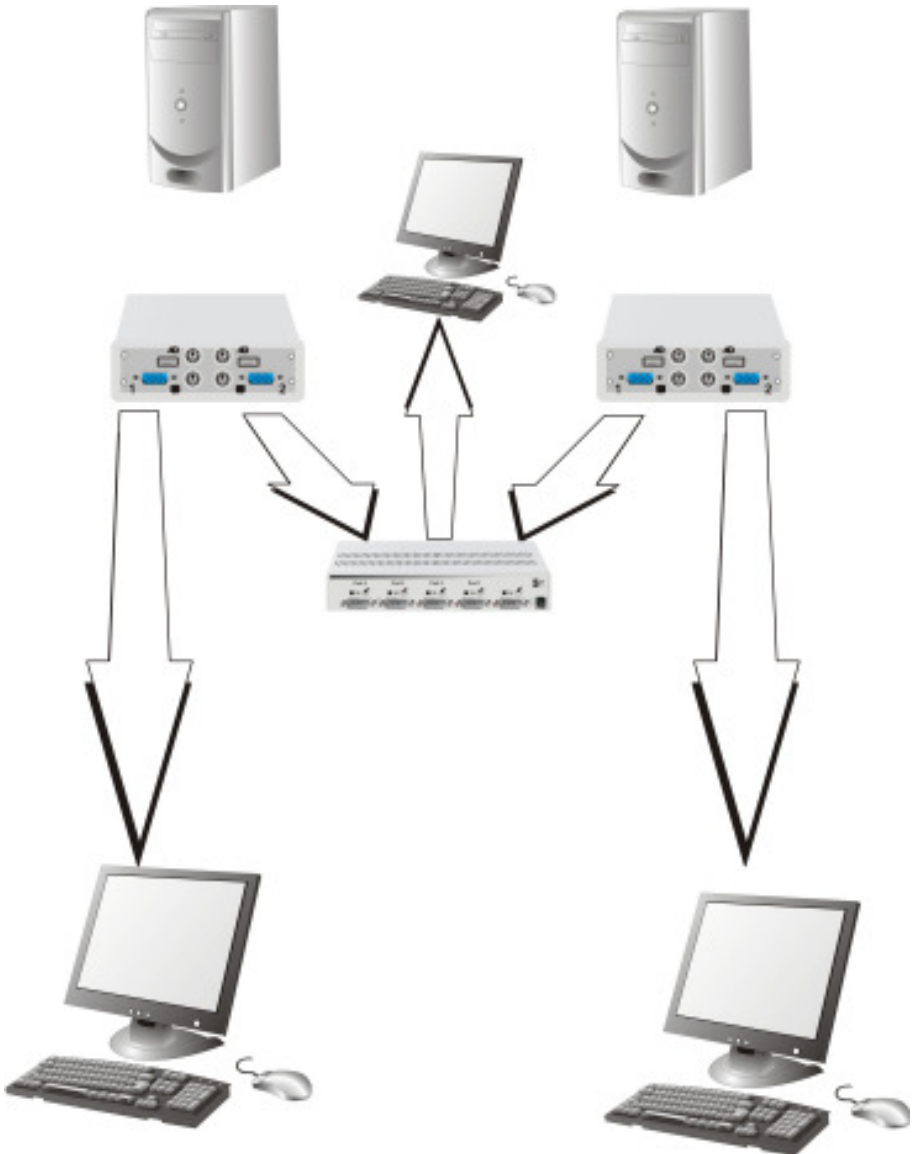
- Two KVM at one CPU:



Two KVM at one CPU

APPENDIX A: EXAMPLE APPLICATIONS

- Two CPU's – local Outputs are joined by using a KVM Switch and for administration reasons connects to a second console. The second consoles are for work stations.



VGA-/Keyboard-/Mouse-Splitter – local console using a KVM- Switch

Appendix D: Technical Support

If you determine that your VGA-/Keyboard-/Mouse-Splitter is malfunctioning, **do not attempt to alter or repair it**. It contains no user-serviceable parts. Contact Technical Support.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- The firmware-revision level printed on the bottom of the Extender (very important, especially for keyboard and mouse problems); The VGA-/Keyboard-/Mouse-Splitter 's firmware revision level:

-

Version Number Format:

Board:	<i>xxLO/RE Myyy Pzzz Auuu Gvvvvvv</i>
Transceiver:	<i>C/M/S xx Pyy Mzz</i>
Keyboard/Mouse:	<i>P/U xx Vyyy</i>

- The nature and duration of the problem.
- When the problem occurs.
- The components involved in the problem—that is, what type of computers, what type of keyboard, brand of mouse, make and model of monitor, type and make of cable, etc.
- Any particular application that, when used, appears to create the problem or make it worse.
- The results of any testing you've already done.

To solve some problems, it might be necessary to upgrade the Extender's firmware. If this turns out to be the case for your difficulty, our Technical Support technicians will arrange for you to receive the new firmware and will tell you how to install it.

Shipping and Packaging

If you need to transport or ship your VGA-/Keyboard-/Mouse-Splitter:

- Package it carefully. We recommend that you use the original container.
- If you are shipping it for repair, please include the Unit's external power supplies. If you are returning it, please include everything you received with it. Before you ship the Splitter back to the manufacturer for repair or return, contact us to get a Return Authorization (RA) number.

Appendix E: Specifications

Power Requirements

<i>Voltage</i>	Any DC voltage in the range between 8VDC and 28VDC with a maximum ripple of 5% is allowed. The switching voltage in a PLC cabinet normally matches. Suggested PSU: 90-240VAC-0.5A-47-63Hz/12VDC-2100 mA
<i>Power required</i>	approx. 6W + power consumption of the connected keyboards/mice

Interface

(Depending on type of device)

<i>Video Source/Monitor</i>	VGA up to 1280x1024@75Hz
<i>Keyboard</i>	PS2
<i>Mouse</i>	PS2 2-/3-button and wheel mice resp. serial

Size and Shipping Weight

<i>Splitter</i>	5.2"x7.1"x1.7" (120 x 120 x 35mm) Gewicht: 1.1lb (0,5kg)
<i>Shipping box</i>	18.1"x9.8"x2.6" (460x250x65mm) Gewicht: 3.3lb (1,5kg)

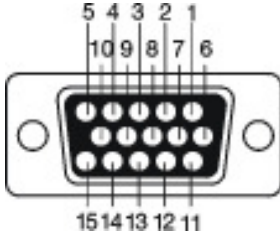
Environmental

<i>Operating Temperature</i>	41 to 113°F (5 to 45 °C)
<i>Storage Temperature</i>	-13 to 140°F (-25 to 60 °C)
<i>Relative Humidity</i>	max. 80% non-condensing

Appendix F: Connectors

VGA (Signal Output)

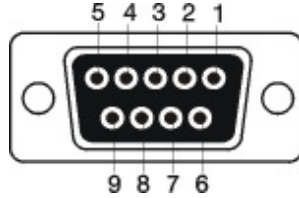
HD15 Female



<i>Pin</i>	<i>Signal</i>
1	RED
2	GREEN
3	BLUE
4	
5	
6	RED GND
7	GREEN GND
8	BLUE GND
9	
10	SYNC GND
11	
12	
13	HSYNC
14	VSYNC
15	

VGA (Signal Input)

DB9 Male



<i>Pin</i>	<i>Signal</i>
1	RED GND
2	GREEN GND
3	BLUE GND
4	HSYNC
5	VSYNC
6	RED GND
7	GREEN GND
8	BLUE GND
9	SYNC GND

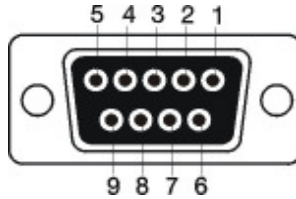
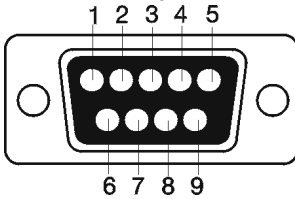
NOTES

Keyboard/Mouse Female (Signal Input/Output)



<i>Pin</i>	<i>Keyboard</i>	<i>Pin</i>	<i>Mouse</i>
1	KBD-DATA-	1	MOUSE-DATA-
2		2	
3	KBD-GND	3	MOUSE-GND
4	VCC (+5V)	4	VCC (+5V)
5	KBD-CLCK	5	MOUSE-CLCK
6		6	

RS232 (K239-4E only)



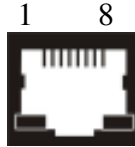
9 pin DSUB Female (Local Unit)

9 pin DSUB Male (Remote Unit)

<i>Pin</i>	<i>Signal</i>
1	Not connected
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	Not connected

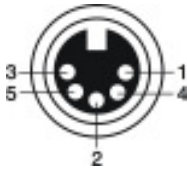
NOTES

Dry contact

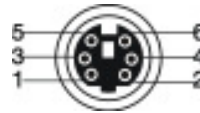


<i>Pin</i>		<i>Pin</i>	
1	Not connected	5	Switching Output 1
2	Not connected	6	Switching Output 2
3	Switching Input 1	7	GND
4	Switching Input 2	8	GND

Adapter AT Female / PS/2 Male



<i>Pin</i>	<i>Keyboard</i>
1	KBD-CLCK
2	KBD-DATA-
3	Not connected
4	KBD-GND
5	VCC (+5V)



<i>Pin</i>	<i>Mouse</i>
1	KBD-DATA-
2	Not connected
3	KBD-GND
4	VCC (+5V)
5	KBD-CLCK
6	Not connected