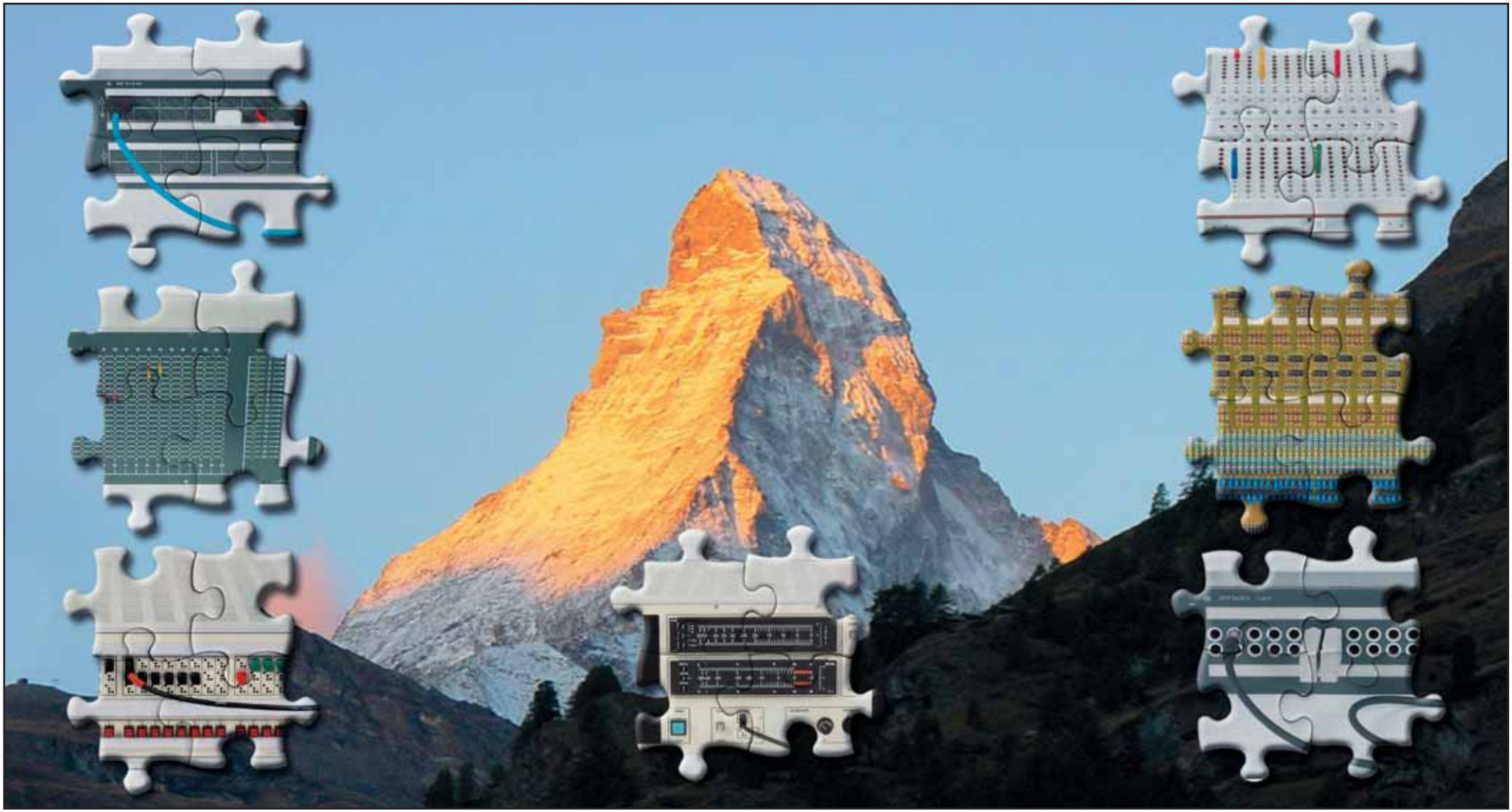
GHIELMETTI



AUDIO – VIDEO – MULTIMEDIA – DATA – EDP – FIBRE OPTIC – SIGNAL DISTRIBUTION – FACILITY MANAGEMENT

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info@promovisa.es

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Fax: +386 62 791 07 99
prodaja.ap@ap-pro.si

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Tschechien
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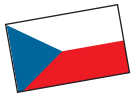
Tel. +42 02 6121 18 47
Fax +42 02 6121 18 47



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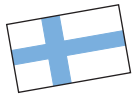

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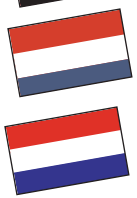

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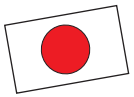

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vistar@hn.vnn.vn

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The World's Electronic Media Event

IBC2001

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RADIO SUISSE ROMANDE

GHIELMETTI®

Audio @ Video @ Data Communications

AUDIO
Router
Matrix Boards
Patch Panels

VIDEO
Router
Patch Panels

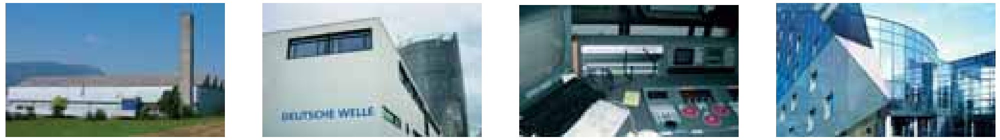
MULTIMEDIA, DATA, FIBER OPTIC
Connectors
MODULINE
MICROLINE
1,3 GHz NewLine connectors
Fiber Optic Patch Panels

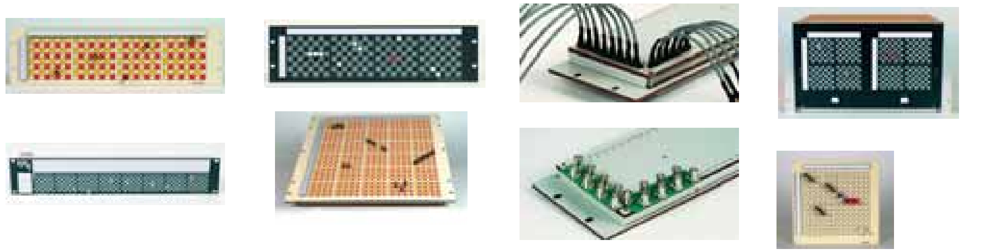
SIGNAL DISTRIBUTION
Matrix Boards
Control matrix
Programming matrix

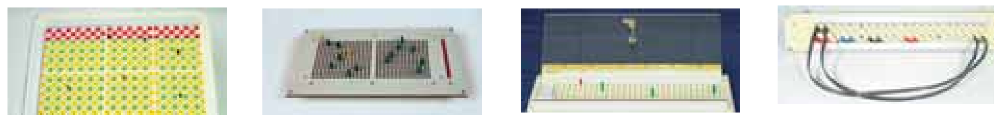
FRONTPANELS
19“ PANELS
CONNECTOR PANELS
INFORMATION PANELS

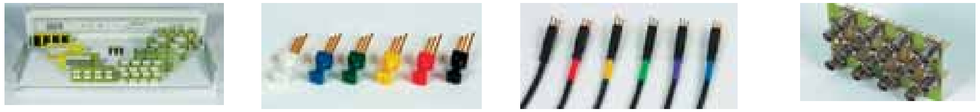
FACILITY MANAGEMENT SOFTWARE
CAFM
Network and cabling documentation and adminstration software

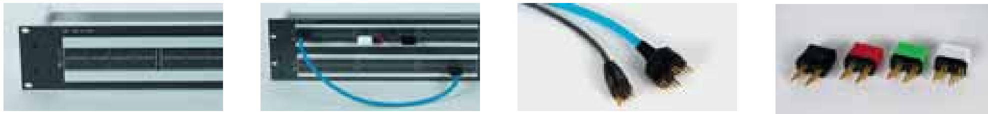
Contents

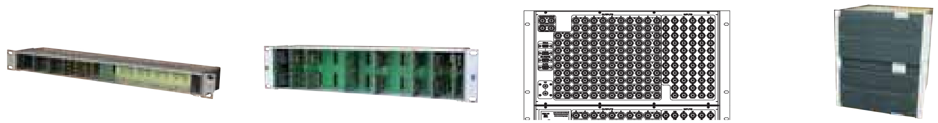


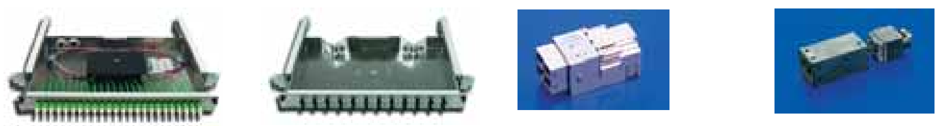


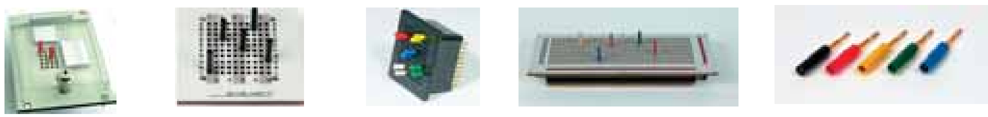


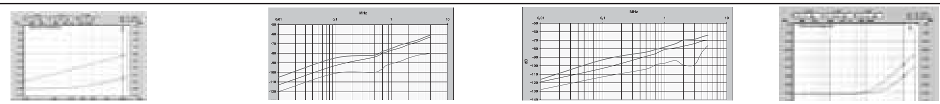












GHIELMETTI COMMUNICATIONS

Ghielmetti: The company

GHIELMETTI engineering team developing new products and solutions.

Franz Ghielmetti (1st from left), founder of the company, 1912 in Bern, Switzerland, with his partner and wife.

GHIELMETTI® is a registered mark and guarantees for innovative solutions as well as for highest quality of its products and its performances. GHIELMETTI is specialized in design, development and assembling of professional devices and equipment for efficient connections in audio, video, data and signal networks.
Multimedia and thereby wide-band technology are our challenges. GHIELMETTI develops technical sophisticated products together with customers all around the world. GHIELMETTI is a traditional, independent company with her head quarter in Biberist, Switzerland.

Franz Ghielmetti from Bern, the main capital of Switzerland, together with his partner Mr. Zbinden, constitute the company. Mr. Zbinden developed many new products in the field of switch and control units i.e. time switch.
The company evolved continuously and successfully. GHIELMETTI is a trustworthy company for all partners.

GHIELMETTI time switch from the year 1912

Our specialists of the staff are available around the clock for all your requests

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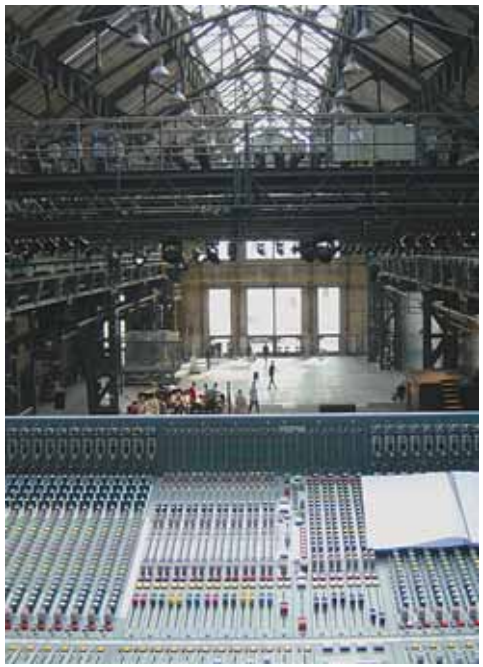
Procurement & logistics

adam1@ghielmetti.ch

Jahrhunderthalle in Bochum, Germany

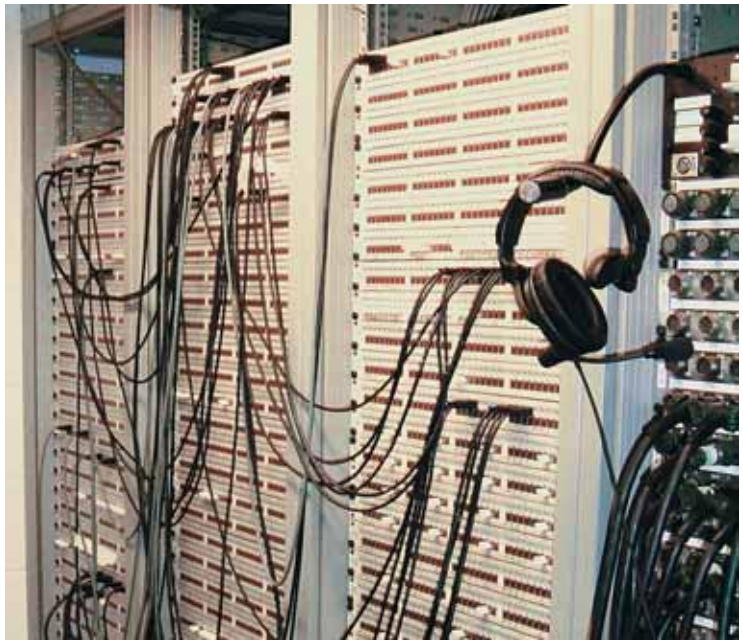
Digital, analogue and fibre optic patch panels

Royal Opera House, London, UK



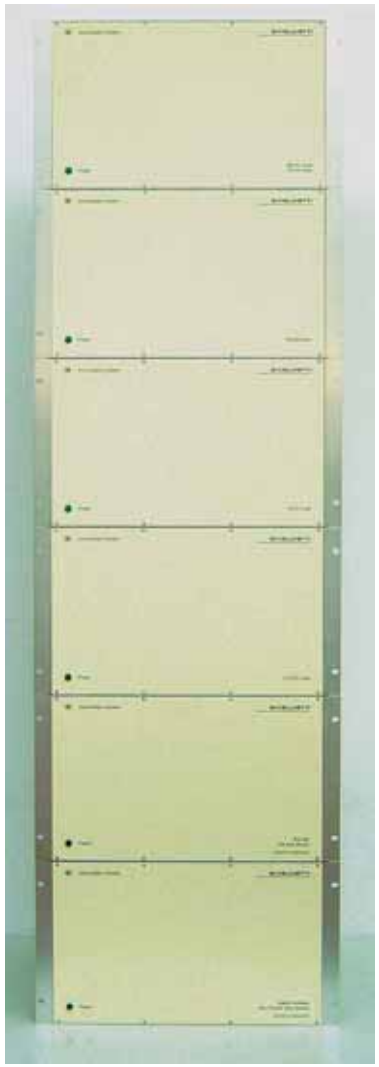
View from the sound control to the stage

Main Control at the Jahrhunderthalle Bochum: Routing Matrix and distribution of all loudspeaker lines from the power amplifier (Imax 32A) to the loudspeaker on each of the four stages as well as distribution an linking of all microphone lines from the different stages.

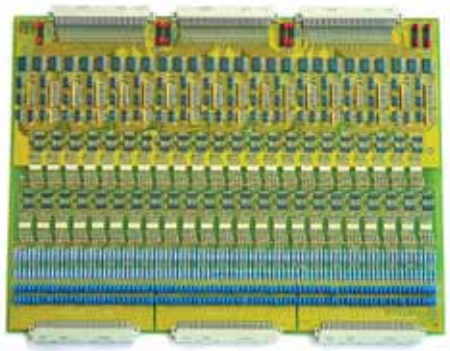


Royal Opera House, London
Main control for all microphone and loudspeaker lines

Design and development of custom made professional electronic equipment



19", 6RU Cabinet with 6 racks

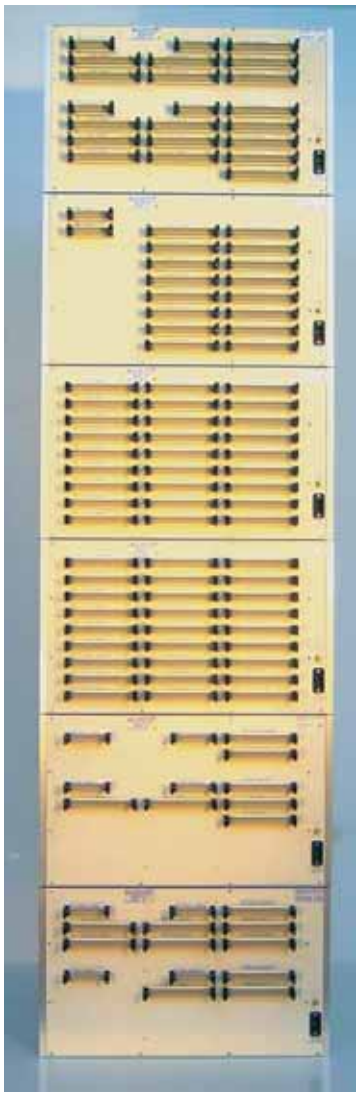


Input card, with 180 input channels

Output card 1 with 90 output channels

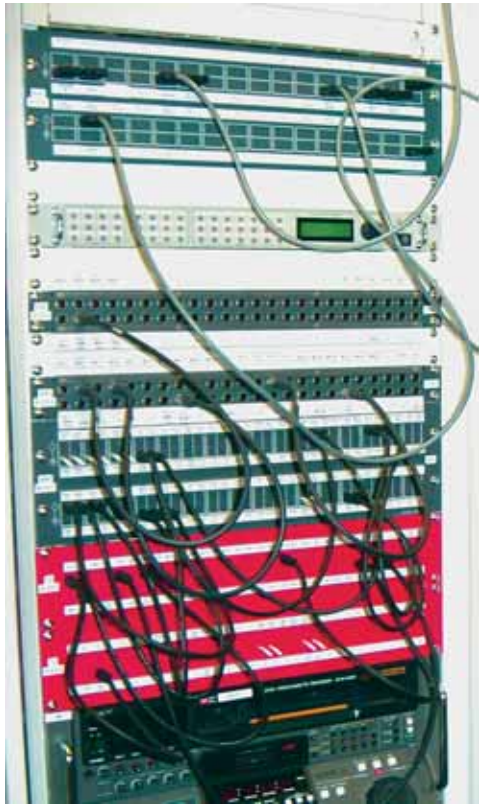
Output card 2 with 121 output channels

Output card 3 with 112 output channels



Interactive signal detcting and information system
3580 input channels (110VDC) separated by opto-couplers are switched to the input ports, memorised and analysed. Corresponding output signals are generated and switched to the output ports. The output ports are interconnected to a information panel with control buttons, buzzers, and indication lamps.

Hotel Estrel. Berlin, Germany

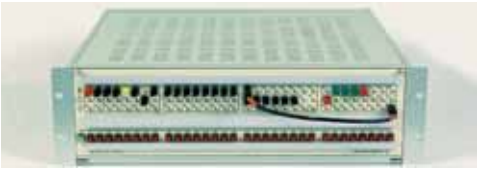


Main Control for sound and pictures control, Digital Images, Halle, Germany

Multimedia control room, Hotel Estrel, Berlin, Germany

Video cutting room, Digital Images

ATK 32x1 CPA a



ATK 32x1 CPV d

GMS 1100 D/A

Radio Deutsche Welle in Bonn, Germany, emitting world wide in more than 30 different languages on 6,075 MHz. Main control with electronic monitoring routers (ATK) for analogue and digital (AES/EBU) lines and Monitoring units GMS 1100 D/A.

Monitoring Router and Control Systems

Audio Monitor Router System ATK 32x1

The ATK 32x1 is an electronic monitoring router with 32 input lines which can be switched to 1 resp. 2 output lines (monitor lines). Control is made by a Lumitas for each input line. The ATK 32x1 can be operated by remote control through a parallel control RS 232 (37-pole D-Sub connector). Several ATK 32x1 can be cascaded. The ATK series are available in different versions.

Description / tender text – ATK 32x1 digital AES/EBU

Audio Monitoring Router for 32 digital AES/EBU input signals on a digital output line. Optionally with integrated connecting patch panel with parallel contacts at the input. Prelistening or monitoring. Cascadable. Incl. power supply 230 VAC. Inputs with system connector D-Sub 37-pole. Output XLR 3-pole. For the installation into a 19" rack, 3RU.

Brand: GHIELMETTI Type: ATK 32x1 CPV d

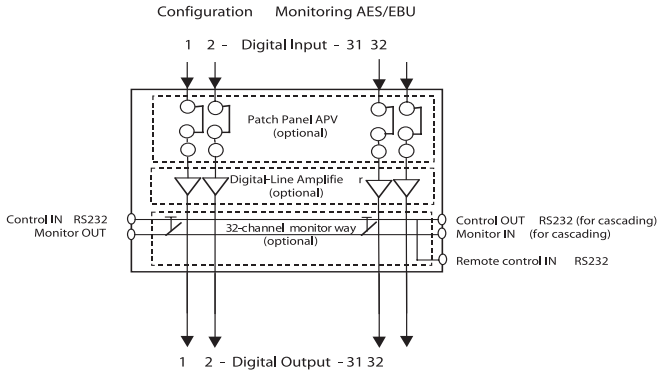
ATK 32x1 CPV d Digital Monitoring Router for pre-listening 673.113.662.60

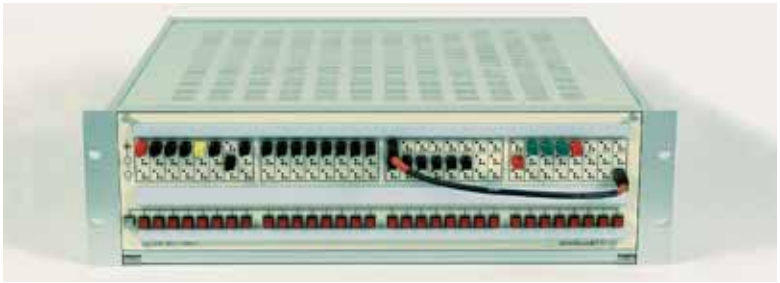
Description / tender text – ATK 32x1 analogue

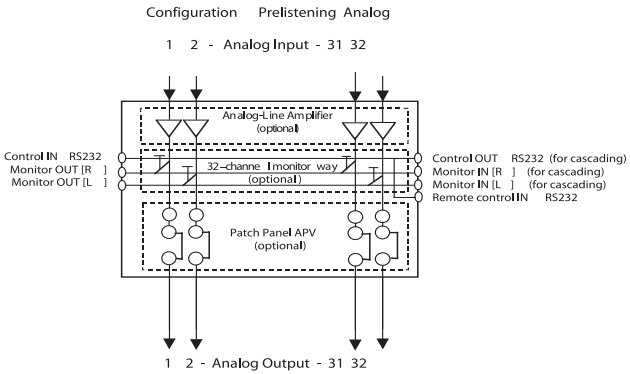
Audio Monitoring Router for 32 analogue mono or 16 stereo input signals to 2 output lines (R/L). Optionally with integrated connecting patch panel with parallel contacts at the input. Prelistening or monitoring. Cascadable. Incl. power supply 230 VAC. Inputs with system connector D-Sub 37-pole. Output XLR 3-pole. For the installation into a 19" rack, 3RU.

Brand: GHIELMETTI Type: ATK 32x1 CPA a

ATK 32x1 CPA a Digital Monitoring Router for monitoring 673.113.663.20







ATK 32x1 CPA d digital Monitoring Router for monitoring 673.113.663.60

Digital Monitoring Router ATK 32x1 d (AES/EBU):

Monitoring Router for 32 audio lines with remote control, without Lumitas
ATK 32x1 d 19", 3RU, incl. power supply 673.113.863.20

Monitoring Router for 32 audio lines with D/A converter, remote control, without Lumitas
ATK 32x1 D/A d 19", 3RU, incl. power supply 673.113.864.20

Monitoring Router for 32 audio lines with control panel and Lumitas
ATK 32x1 C d 19", 3RU, incl. power supply 673.113.867.20

Monitoring Router for 32 audio lines with control panel, D/A converter and Lumitas
ATK 32x1 C D/A d 19", 3RU, incl. power supply 673.113.868.20

Monitoring Router for 32 audio lines with control panel, integrated patch panel and Lumitas
ATK 32x1 CPV d 19", 3RU, pre-listening, incl. power supply 673.113.662.60
ATK 32x1 CPA d 19", 3RU, monitoring, incl. power supply 673.113.663.60

Monitoring Router for 32 audio lines with control panel, integrated patch panel, D/A converter and Lumitas
ATK 32x1 CPV D/A d 19", 3RU, pre-listening, incl. power supply 673.113.662.80
ATK 32x1 CPA D/A d 3RU, monitoring, incl. power supply 673.113.663.80

ATK 32x1 CPA a analogue Monitoring Router for pre-listening 673.113.662.20

Analogue Monitoring Router ATK 32x1 a:

Monitoring Router for 32 audio lines with remote control, without Lumitas
ATK 32x1 a 19", 3RU, incl. power supply 673.113.861.20

Monitoring Router for 32 audio lines with remote control and amplifier, without Lumitas
ATK 32x1 Amp a 19", 3RU, incl. power supply 673.113.862.20

Monitoring Router for 32 audio lines with control panel and Lumitas
ATK 32x1 C a 19", 3RU, incl. power supply 673.113.865.20

Monitoring Router for 32 audio lines with control panel, amplifier and Lumitas
ATK 32x1 C Amp a 19", 3RU, incl. power supply 673.113.866.20

Monitoring Router for 32 audio lines with control panel, integrated patch panel and Lumitas
ATK 32x1 CPV a 19", 3RU, pre-listening, incl. power supply 673.113.662.20
ATK 32x1 CPA a 19", 3RU, monitoring, incl. power supply 673.113.663.20

Monitoring Router for 32 audio lines with control panel, integrated patch panel, amplifier and Lumitas
ATK 32x1 CPV Amp a 19", 3RU, pre-listening, incl. power supply 673.113.662.40
ATK 32x1 CPA Amp a 19", 3RU, monitoring, incl. power supply 673.113.663.40

Audio Monitor Systems

The Monitor Systems GMS enables the monitoring and examination of analogue or digital (AES/EBU) audio signals. It is available with different function modules. The basic device consists of 2 high quality loudspeakers, a peakmeter, a headphone output with changeover switch and peak control as well as an integrated power supply. Optionally, it can be equipped with an audio amplifier, a D/A converter and a digital peakmeter.

GMS 1100 D/A 678.110.060.22

GMS 1000 678.110.050.21

Monitor System GMS 1000, GMS 1100 D/A

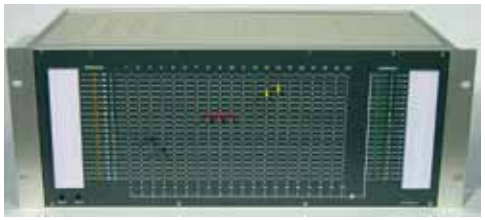
GMS 1000	19", 4RU, 2 loudspeakers including amplifier, 1 headset output with switch off button, potentiometer. analogue peakmeter RTW1113E, XLR Input connectors (L/R), power supply 230VAC	678.110.050.21
GMS 1000 D/A	19", 4RU, 2 loudspeakers incl. amplifier, 1 headset output with switch off button, potentiometer, analogue peakmeter RTW1113E, XLR Input connectors (L/R), power supply 230VAC, D/A-converter	678.110.050.31
GMS 1100 D/A d	19", 4RU, 2 loudspeaker, digital peakmeter RTW 11519 D, analogue Peakmeter RTW 1139 G, power supply 230VAC, D/A-converter, 2nd analogue and digital input, output for headset with volume control on the front side.	678.110.060.22

Tender text

Monitoring System for monitoring and control of analogue (digital) audio signals. 19", 4RU rack with loudspeakers (R,L), peakmeter, headphone connection, changeover switch and peak control. With loudspeaker amplifier, can be equipped with a digital/analogue converter and digital peakmeter.
Brand: GHIELMETT: Type: GMS 1000 / 1100 D/A

Digital Signal Distributing Matrix (AES/EBU)

The GAD distributing matrix switches digital symmetrical input lines (AES/EBU 100 Ω) to one or several ouput lines.

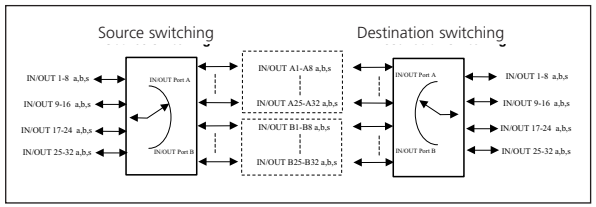


GAD 20x20 AES 19", 4RU 678.110.070.00

In- and outputs:	trafosymmetrical
Input impedance:	110 Ω AES/EBU, V.11
Band width:	5 Mb/s
min. inpul level:	0,6 Vpp
max. output level:	5 Vpp
Power supply:	230 VAC
Inputs:	XLR 3-pole female
Outputs:	XLR 3-pole male

GAD 10x10 AES 19", 2RU 673.113.818.21

Change-over Switch, 32 channels, analogue, AES/EBU, RS-232



GCS 4x8 A/B bg	32 input channels on port A/B, 19"/3RU, change-over to groups of 8 channels, each or simultaneously to 32 channels	673.113.664.62
GCS 1x32 A/B an	32 input channels on port A/B, 19"/3RU, change-over channel by channel or all 32 channels at once Option: Remote control through RS-232 port	673.113.665.61

Electronic Routing Systems

8x8 Multiformat Router – MF500

Optional Control Panel

MF500 - 8x8 Combined Video and Audio Router

MF500 - 8x8 SDI/ASI

MF500 - 8x8 AES

MF500 – 8x8 Stereo Modul

Optional Dual power modul for redundancy

8 x 8 Router in 19" (1 RU)

The Sandar MF500 8x8 is a multiformat 8 input / 8 output router designed to cover the need for small, combined audio and video routers.
The router concept consists of one exchangeable control/power module, and up to two 8x8 crosspoint modules for different signal formats.
In addition the router can be equipped with one optional control panel at the front of the router.
The control/power module and the different crosspoint modules are mounted by sliding them sideways into the rear side of the frame.
Exchanging modules is equally simple. A bus cable is handling the communication between the different card modules.

Control

All control of crosspoints is performed by the control/power module, which can be remotely controlled by BNC-bus or RS-232 ports from an external control device such as remote control panel, PC's etc.
The BNC-bus is connected through 75 Ohm BNC's (loop through), and the RS-232 by 9 pin D-sub. Optionally the crosspoints can be controlled from a specially designed Control Panel mounted in the front of the router, through an internal local bus.
The system configuration is performed by switch settings on the controller board.

Power

The control/power module can be connected to two independent power sources (36-72VDC). As standard the router is also delivered with one external AC/DC converter for connection to 230/115VAC mains supply. Optionally a second AC/DC converter can be connected for power redundancy.

Specifications *PAL/NTSC/SEECAM*

Number of Inputs/Outputs	8 each
Input/Output Impedance	75 Ohms
Return Loss @ 5MHz	>40 dB
Crosstalk @ 5MHz All Hostile	<60 dB
Crosstalk @ 5MHz Adjacent	<65 dB
Max Output Voltage @ 75 Ohms load	+/- 1.7 V (G=1)
Freq. Response up to 5MHz	+/-0.1 dB
Gain	0.2 dB
Diff Gain	<0.1%
Diff Phase	<0.1 degrees
Bandwidth -0.1dB	-30 MHz
Bandwidth -3dB	>150 MHz

DS3/E3/STS-1

Data Rate	34/45/52 Mb
Input/Output Impedance	75 Ohms
Return Loss up to 50MHz	>30 dB

AES Asynchronous

Input/Outpt Impedance @ 3MHz	110 Ohms
Output Voltage	5 Vpp
Max clockrate	96 kHz

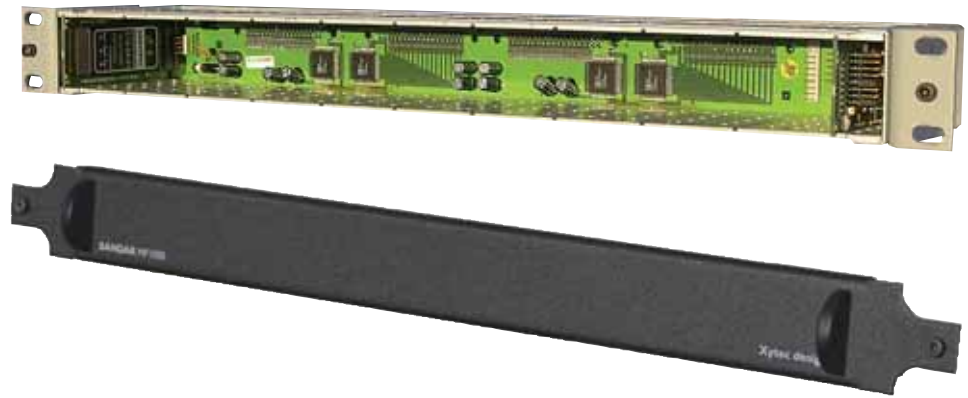
SDI/ASI

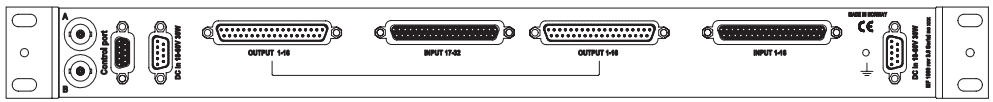
Input/Output Impedance	75 Ohms
Return Loss @ 270MHz	>20 dB
Bandwidth	50-270 Mbs
Output Voltage	0.8 Vpp +/-10%
Cable EQ (SDI only)	250 m of rep cable

STEREO

Input Impedance	20k Ohms
Output Impedance	50 Ohms
CMRR @ 15kHz	>60 dB
Symmetry @ 15kHz	>60 dB
Off Isolation @ 15kHz	>100 dB
Crosstalk @ 15kHz	>90 dB
Bandwidth 20Hz-20kHz	
2kOhm	<0.1 dBOutput Level
max.	+24 dBu
THD and noice +6dBu	
2kOhm	<0.002%
Click noise	<95 dBrqp

32 x 16 Line Router for Audio and Time-Code Signals – MF1000A





Optional Dual Power Unit for redundancy

Optional Converter from RS232/RS422 to Esbus

Audio 32 x 16 Router in 19" (1 RU)

The MF1000A is a 32x16 line router, based on the standard MF1000A stereo router with external tie-lines between outputs. This router handles analogue mono and/or AES signals, as well as time-code signals.
The router is equipped with plug-in type Controller Card and single Power Module, and space for an optional Dual Power Module is allocated. As an alternative to the Power Modules, the frame can be powered from a separate Power Frame PF1000. The router comes in the same type of frame as the other products in the MF1000 family.

Controller and Controller Function

Control of the router is made via RS-232 or ESbus/RS-422, and the router can easily be integrated in larger systems controlled by the Sandar WinPESE control system or by one out of a wide range of management system protocols that are implemented. The MF1000A can be controlled "married" with any other router in a system.

Highlights

Free choice of configurations: 32x16 Mono, 32x16 AES/EBU,
Several signal formats: Analogue Audio (N10/Recommendation), Digital AES/EBU (AES3), Time Code Signals (SMPTE/EBU LTC), Hot-swappable plug-in controller and power modules, Selectable DC or AC supply, optional dual power supply. Selectable RS-232/ESbus/RS-422 control interface. A wide range of Control Panels and Control SW available.

General

Number of Inputs	32
Number of Outputs	16
Power	18-60 VDC or 115/230 VAC
Size	19" Wide,1RU High, 100mm deep
Weight	1.3 kg
Control Interface	9 pin D-sub (female), RS-232
Signal Connectors	37 pin D-sub (input-female,output-male)
Power connectors	9 pin D-sub (male)
Ambient temperature range	0 - 45deg. C

***AES/EBU Inputs*:**

Impedance	110 Ohm +/-20%; 0.1-6 MHz
Signal level	200 mVpp – 10 Vpp

***AES/EBU Outputs*:**

Impedance	110 Ohm +/-20%; 0.1-6 MHz
Signal level	5 Vp-p nom.; 110 Ohm term.
CM signal	<-30 dB rel. signal; DC-6 MHz
Rise/Fall time	20 ns typ. (max 30 ns); 10-90%
Jitter	<20ns

Analogue Audio

System Gain, 100 kOhms no load	0 dB, +/- 0.2 dB
Gain Difference two channels 1 kHz	+/- 0.2 dB
Frequency Range +/- 0.1 dB	DC – 100 kHz
Phase between two channels	< 1 deg.
TDH+noise, +6 dB into 600 Ohm	<0.01%
TDH+noise, +22 dB into 600 Ohm	<0.1%
Max level, 10 kOhms load	+27 dBu
Noise, 50 Ohms source	<-90 dBqp
Click noise	<-80 dBqp
Cross talk, 20 Hz – 15kHz	<-100 dBr
Input Impedance	>2k Ohms
Output Impedance	110 Ohms
Output Symmetry	>35 dB

AARS is a 16x16 Analogue Audio Routing Switcher with single power supply. The router can be delivered as Mono or Stereo version. The SA2783 also comes in a version called SA2957 for dual power supply

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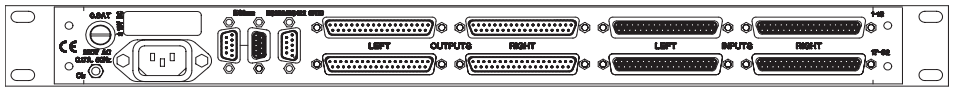
16x16 Analogue Audio Router, as mono or stereo upgradable to 32x32 – 2783/2957



Control

All control of the crosspoints are operated from a SC-2000 Control Card by Esbus, RS-232 or RS-422 ports, from a control panel(s), PC etc.

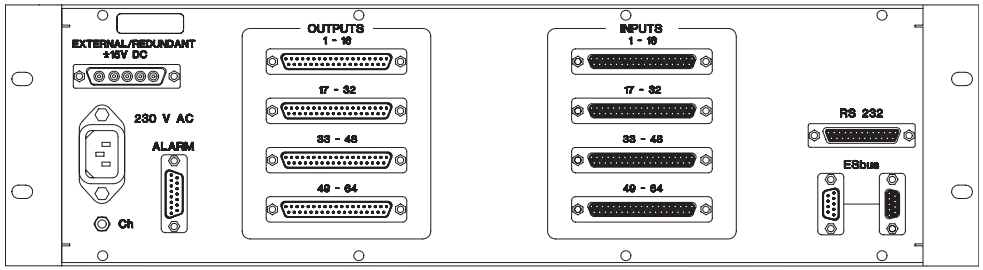
The SA2783 frame is powered from a single external power Mains, 230/115VAC or 48VDC. If power redundancy is required this can be obtained by using with an external dual power frame. All cards in the system are hot-swappable and crosspoint status will be kept after the change of cards.

Specifications

Power supply	230VAC, ±10%, 32W, 115VAC, 48VDC
Dimensions	
W	482.6 mm (19")
H	44.1 mm (1U)
D	400 mm + Connectors
Weight	6 kg

INPUT impedance	>20 kΩ
CMRR 20Hz - 20kHz	>70 dB
OUTPUT impedance	<55 kΩ
Output symmetry	>35 dB
System gain @ 2kΩ load	0 dB ±0.2 dB
Gaindifference two ch. 1kHz	±0.2 dB
Frequency range ±0.1dB	DC - 100 kHz
Phase between two ch.	< 1°
THD+noise, +6dB into 600Ω	< 0.01%
THD+noise, +22dB into 600Ω	< 0.1%
Maxlevel, 10kΩ load	+27 dBu
Noise, 50Ω source	< -90 dBqp (BW 22Hz–22kHz)
Clicknoise	< -80 dBqp
Crosstalk, 20Hz - 15kHz	> 98 dBr (typ.>110dBr)
Ambient temperature range	0°C - 40°C
Control Interface	Esbus, RS-232 or RS-422

64x64 Balanced Analogue Stereo Audio Router – SA2786



Balanced Analogue Stereo Audio
The SA2786 is a 19" wide, 6RU high and 50 cm deep audio router frame powered from an external 3RU power supply unit. The 64x64 version frame contains up to eight crosspoint cards, each with 32 inputs and 32 outputs and one controller card. The SA2786 can also be delivered in a 32x32 version with only 2 crosspoint cards, upgradable to 64x64 at a later stage. All input connectors are female 37 pin D-Sub, and all output connectors are male 37 pin D-Sub.

Audio Performance
The input and output circuits are based upon integrated balanced line receiver and driver solutions, eliminating the need for transformers to obtain CMRR and symmetry on long cable loads. The input impedance is high, while the output driver has an impedance of less than 55 Ohms. No gain adjustment is needed, and the system is optimised for 0 dB gain (input / output) 2 kOhms output load. Each input and output circuit has separate powerline filtering and serial resistors to minimise noise and crosstalk.

Control
All control of the crosspoints is done through the SC-2000 controller card by ESbus, RS-232 or RS-422 interfaces, from control panels, PC's etc. The SC-2000 controller card has a battery backup of RAM, which will latch the status of the routing switcher at power loss. The software is stored in a Flash EPROM in the SC-2000 and can be re-configured by a special serial port in the front of the card.

Power Supply
The SA2786 frame is powered from an external 3RU power supply unit, which can be configured with single power supply or N+1 power redundancy.

Specifications Analogue Stereo

Input impedance	>10 kΩ
CMRR 20 Hz – 20 kHz	>70 dB
Output impedance	<55 kΩ
Output symmetry	> 35 dB
System gain, 2 kΩ load	0 dB, ± 0.2 dB
Gain difference two ch. 1 kHz	± 0.2 dB
Frequency range ± 0. 1dB	DC – 100kHz
Phase between two ch.	<1 degrees
THD+noise, +6 dB into 600 Ω	<0.01%
THD+noise, +22 dB into 600 Ω	<0.1%
Max level, 10 kΩ load	+27 dBu
Noise, 50Ω source (22 Hz–22 kHz)	< -90 dBqp
Clicknoise	< -80 dBqp
Crosstalk, 20 Hz–15 kHz	>96 dBr (typ.>105 dBr)
Input/Output Connectors	Female/male 37 pin D-sub connectors
Control interface	ESbus, RS-232 or RS-422
Ambient temperature range	0 – 40 degrees C
Power consumption	±15V, +6.4A / – 3.2A, 144W
Power failure alarm	Potential free contacts (normally closed)
Dimensions	W: 482.6mm, 19" / H: 265.85mm, 6RU / D: 500mm + Connectors
Weight	11kg

128x128 Digital Audio Router for AES/EBU Signals – SA2785

Digital Audio

The SA2785 is a 19" wide, 6 RU high and 50 cm deep audio router frame powered from an external 3 RU power supply unit.

The 128x128 version frame contains sixteen crosspoint cards, each with 32 inputs and 32 outputs and one controller card.

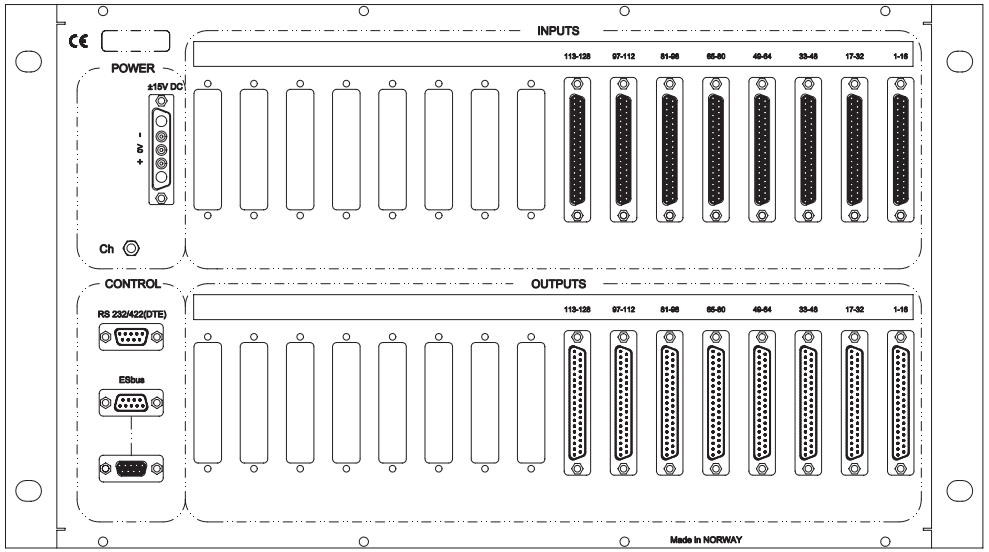
The SA2785 can also be delivered in a 64x64 version with only 4 crosspoint cards, upgradable to 128x128 at a later stage.

All input connectors are female 37 pin D-Sub, and all output connectors are male 37 pin D-Sub. All control of the crosspoints is done through the SC-2000 controller card by ESbus, RS-232 or RS-422 interfaces, from control panels, PC's etc.

The SC-2000 controller card has a battery backup of RAM, which will latch the status of the routing switcher at power loss. The software is stored in a Flash EPROM in the SC-2000 and can be re-configured by a special serial port in the front of the card.

Power Supply

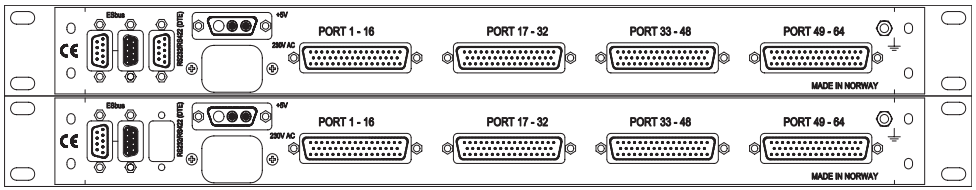
The SA2785 frame is powered from an external 3 RU power supply unit, which can be configured with single power supply or N+1 power redundancy.



Specifications

Input impedance	110 Ω or 50 kΩ jumper selectable
Output impedance	110 Ω when active, >1 MΩ when disabled
Max input level	10 Vpp
Max output level	8 Vpp
Max data rate	5 Mbs or 54 kHz/24 bit sampling
Max added jitter	< 6 ns
Input/Output Connectors	Female/male 37 pin D-sub connectors
Control interface	ESbus, RS-232 or RS-422
Ambient temperature range	0 – 40 degrees C
Internal power supply	±15V
Power failure alarm	Potential free contacts (normally closed)
Dimensions	W: 482.6mm, 19" / H: 265.85mm, 6U / D: 500mm + Connectors
Weight	18 kg

128 Ports Digital Audio Router for AES/EBU Signals – SA2788



Digital Audio

The SA2788 is a router intended for AES/EBU digital sound signals. The frame is a self contained router with switch board and a controller card. The input ports are none-reclocking, thereby enabling the use of all standard defined clock-rates without changes. The router has I/O ports with transformer decoupled AES/EBU 110 Ohms symmetrical inputs and outputs. The I/O ports may be set up in software to perform as outputs or as inputs, in steps of 16. The configuration will be preset to the desired size during test before delivery. The 50 pin D-Sub connectors are defined as ports, each with 16 Channels.

Control

The control of the crosspoints is operated from a SC-2000 Control Card by Esbus, RS-232 or RS-422 ports from control panels, PC etc.

Power Supply

The SA2788 frame is powered from an external dual power frame which can be supplied with 230/115 VAC or 48 VDC.

INPUT AES/EBU	
Type	Transformer balanced
Impedance	110Ω ±20%; 0.1-6 Mhz
Input Voltage	200 mVpp - 10Vpp
CMR	No errors with CM of 7Vp; DC-20kHz
OUTPUT AES/EBU	
Type	Transformer balanced
Impedance	110Ω ±20%; 0.1-6 MHz
Output	5Vpp nom. ; 110Ω term.
CM signal	<-30 dB rel. signal; DC-6 MHz
Rise/Fall Time	20ns typ. (max. 30ns); 10-90%
Jitter	<±20ns

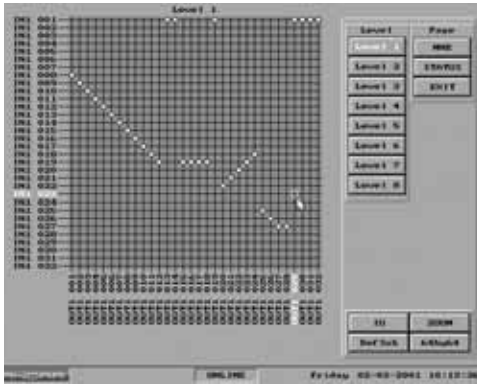
GENERAL	
Data-rates	100 MB/s - 10 MB/s
Rear connection	50 pin, D-Sub connector, male
Operating temp.	0 to 40°C ambient
POWER	
Power supply	230VAC / 115VAC / 48VDC
FRAME	
Dimensions	W: 482.6mm (19")
	H: 88.2mm (2RU)
	D: 370mm + Connectors
Weight	7.6 kg

PESE - Matrix Control Software

The basic version of the software will enable you to make connections in one or more matrices, monitor the status of the matrices and edit mnemonics used by the PC and control panels. Options can be added to the program to enable automatic switching and panel configuration.
Summing matrices and conference systems are other options, which can be included, as well as special user functions.

System requirements

PESE is MSDOS based software. It can be installed on a PC compatible computer with **DOS** or **WIN95/98** operating system, but will **not** run on Windows NT/2000/XP. Minimum system recommendation: DOS: 486/66Mhz, 8Mb RAM, 4Mb free disk space, SVGA graphics.
WIN95/98: Pentium100, 16Mb RAM, 4Mb free disk space, SVGA graphics. An **ISA interface card** with cable is normally delivered as a part of the PESE basic module software. The Interface card and cable can also be ordered separately from FTG Sandar TeleCast AS.

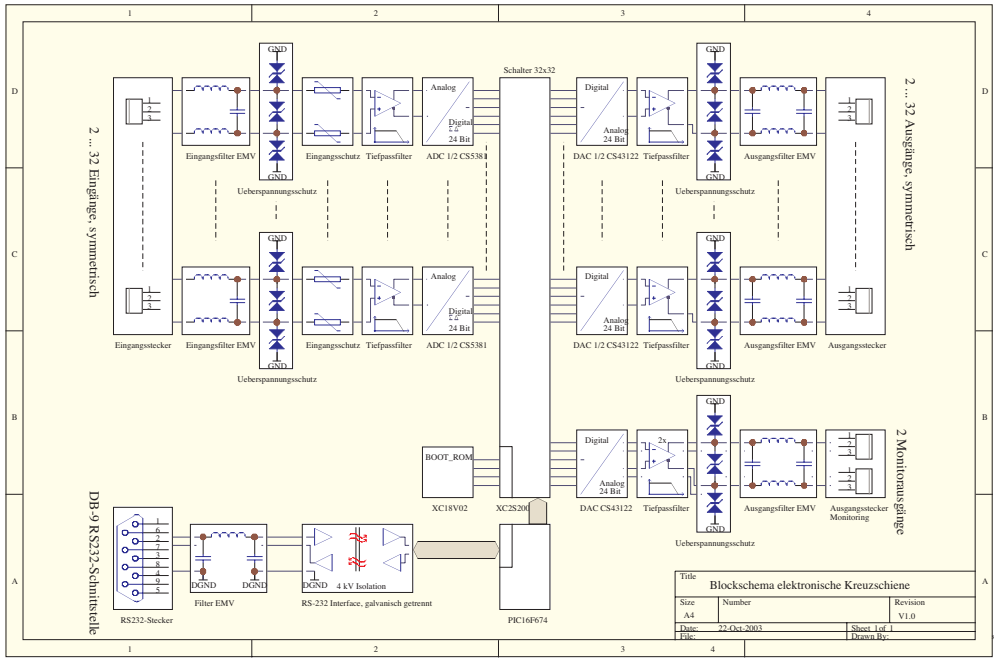


SANDAR PESE 2.x OPTIONS

001	Basic Module
002	Panel Configuration
003	Events Programming
004	Reversed Main Screen / Multiple Outputs
005	Group Connection / Configurable User Desk
006	Fast Executing Surface / Status Multiple Outputs With Take
007	Summing Control
008	Conference Control
009	Salvo Control
010	Masking Crosspoints
011	Security

32x32 Analogue Audio Router / Mixer, GKVE 32x32 AA

Router – Mixer – Monitoring Router – all in one unit, 19"/1 RU



Specifications:

Inputs:

Number Of Input Channels:	8 to 32 in 4 input steps
Input Voltage:	max. 22 dBu
Impedance:	asymmetric: 10 kΩ @ 1 kHz, symmetric: 10 kΩ @ 1 kHz
Impedance w. Mains Power:	high Z up to input signals of ± 30 Vss
Input Configuration:	symmetric and asymmetric inputs
Input Plug:	4 x D-Sub 25 female each for 8 inputs
Coupling:	galvanic coupled between inputs and outputs, no transformers

Outputs:

Number Of Output Channels:	8 to 32 in 4 output steps
Output Voltage:	max. 22 dBu @ 600 Ω
Impedance:	100 Ω @ 1 kHz
Frequency Response (± 0.1 dB):	20 Hz to 25 kHz
Output Configuration:	symmetric
Output Plug:	4 x D-Sub 25 male each for 8 outputs
Dynamic Range:	> 90 dB
Signal To Noise Ratio:	> 90 dB
Total Harmonic Distortion:	< 0.01 % @ 0 dBu with 600 Ω load
Mute Facility:	every output can be muted

Monitoring Outputs:

Number Of Output Channels:	2
Output Voltage:	max. 22 dBu @ 600 Ω
Impedance:	100 Ω @ 1 kHz
Frequency Response (± 0.1 dB):	20 Hz ... 25 kHz
Output Configuration:	symmetric
Output Plug:	D-Sub 9 male
Dynamic Range:	> 90 dB
Signal To Noise Ratio:	> 90 dB
Total Harmonic Distortion:	< 0.01 % @ 0 dBu with 600 Ω load

Overall Gain:

Input to Output:	0 dB ± 0.1 dB
Input to Monitoring Output:	0 dB ± 0.1 dB
Channel Separation:	> 90 dB

Remote Control:

Interface:	opto-isolated RS-232, 19200 kB/s
Instruction Software:	ascii instruction set via usual terminal program GMOS 2000 windows based remote software (optional)

Power Supply:

Input Voltage:	24 VDC, 2.5 A 230 VAC with external power supply

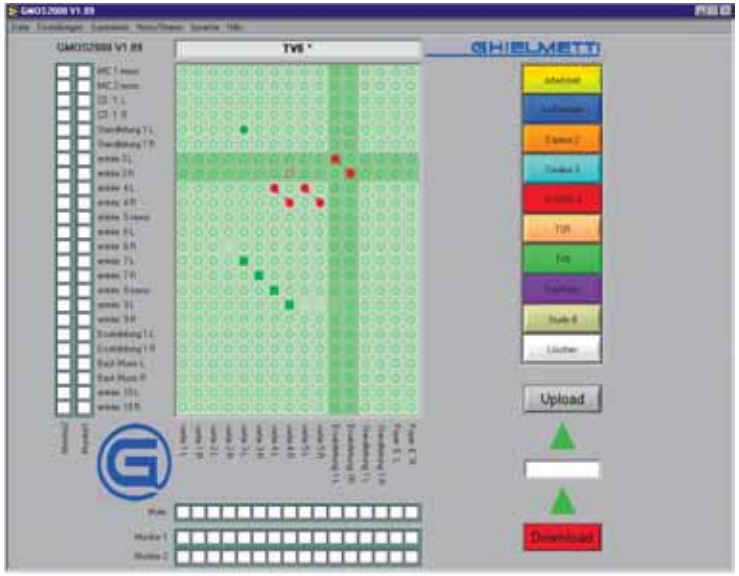
Summing: Possibility of summing up to 8 inputs to an output

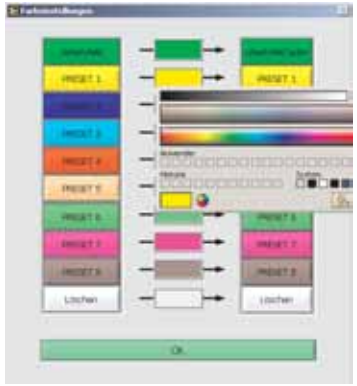
Monitoring: 2 additional monitoring outputs for observing input and or output signals

GMOS 2000 – Remote Control Software for GHIELMETTI Routing Systems

GMOS: Ghielmetti Matrix Operation System

The GMOS 2000 control software allows for preparation and execution of all the switching functions of audio-, video- and data matrices. The software runs on every off-the-shelf computer under Windows 98/2000/XP. The matrix is connected via a RS232 interface.

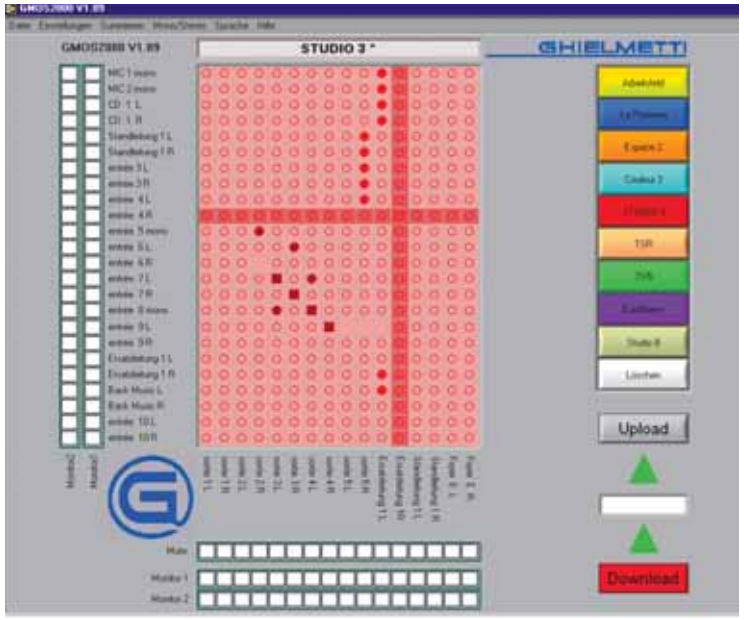


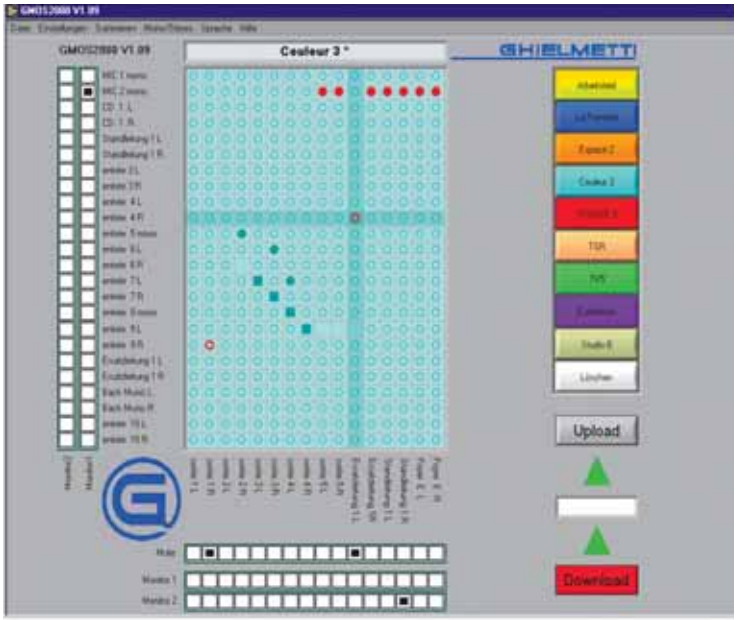


The use of appropriate coloration for the different elements on the screen makes the graphical user interface optimum and user-friendly.

Main functions

- 4 Single channel through-connection (mono)
- 4 Double channel through-connection (stereo)
- 4 8 Preset levels
- 4 1 onto n distribution functions
- 4 n onto 1 summing functions
- 4 Mute functions
- 4 Input-monitoring
- 4 Output-monitoring
- 4 Power supply independent storage of the switching- and connection-functions
- 4 Switching and monitoring of the matrix by download- and upload function keys
- 4 Locking of cross points
- 4 Setting of permanent connections





Modularity and Flexibility in System Solutions

General

Sandar has its own Control Bus System covering the need for control and centralized configuration for small to medium sized systems. The system has open protocol and the system philosophy is based on three fundamental concepts: • The same type of controller card is used in all matrices • The same controller software is used in all matrices • All status data are stored in the different units. Therefore, Sandar systems do not need an external controller unit. The units themselves will perform as matrix controllers, bus controllers and when necessary interface to products from other vendors. The advantage of the Sandar Control System is its ability to interface to the environment in which the Sandar equipment is operating. Each controller card has three serial communication ports to the exterior:

Sandar Control – ESbus

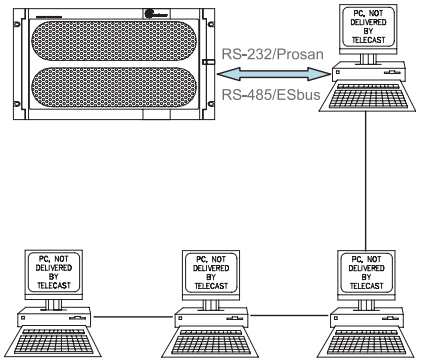
Our main interconnect and controller system is a RS-485 based bus running the ESbus protocol.
This protocol was developed by SMPTE and EBU as the means to control all devices in a studio or broadcast environment. All Sandar units (i.e. matrices, control panels, level controllers, conference units, set-up and configuration units) can be connected to the ESbus. One unit must be set up initially as the system controller, also called the bus master. Whenever a new unit is connected to the bus, the master will automatically detect it.

Sandar Control – Prosan

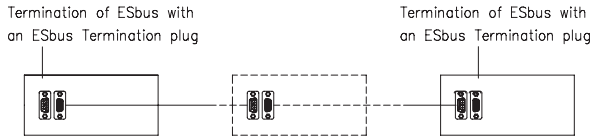
Prosan is the name of Sandar's own protocol. Prosan has been used by other vendors to control and integrate Sandar units into a large context. The protocol is a character based communication protocol for serial point to point interconnection with the ability to transmit control and status data for eight matrix levels.
The matrix controller communicates with a host computer, PC or similar, via a serial channel:
• Type: RS-232/ or RS-422
• Speed: 9600 baud (19 200 baud on request)
• Data bits: 7, Stop bits: 1, Parity: odd
• Cable length: max. 15m

3. Party Protocols...

Need to integrate a Sandar product into your existing control system? At request Ghielmetti/Sandar may interface to special protocols. Examples below:
•Quartz type 1
•PROBEL SWP-02 (Omnibus)
•Telekom (Deutsche Telekom)
•NTP One port is RS-422/485, one is either RS-422/485 or RS-232, and one is RS-232.The user can choose from a number of communication protocols to run on the different ports. The Sandar controller software will automatically copy and transmit the data between the communication links. The protocols and communication parameters for the serial communication on these ports are configurable bay a fourth communication link that is used for configuration and set-up purposes only. Status data is, as default, transparent between the serial communication links. An essential advantage to the Sandar system is how easily Sandar equipment can be controlled by several other external control systems simultaneously. This feature is standard in all Sandar matrices. The matrix controller card can be used as a link between two different controller systems.

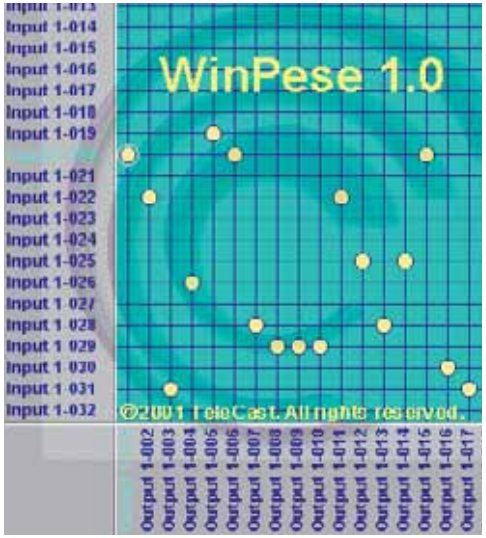


The unit then updates the master with the nature of the hardware and need for status data to be transmitted. After this initial transmission of set-up data, the new unit will be operating on the bus, having access to all relevant status data. The maximum length ESbus is 1200 meters, using a data rate of 38400 baud.
Sandar will provide for active termination units meant to terminate both ends of the physical bus.



RS-232-C specifications generally limit the cable length to 15 meters. However, at baud-rates lower than 19200 baud, the cable length can be increased. The length depends on environment and cable type.
Cable lengths of 100 meters and above are possible at 1200 baud.

WinPese – Network Matrix Control



WinPese 1.0 is a Windows based application for control of SANDAR routing switchers.
WinPese is prepared for installation on a single computer as well as multiple network clients.
The software supports both the ESbus and Prosan protocols, giving maximum flexibility in system design. Supports virtually unlimited number of clients, and access level control in NT/2000/XP. **Key features:**
• Monitoring of crosspoint status.
• Setting of crosspoints.
• Control of up to 8 individual routers.
• Edit mnemonics.
• Control and monitor routers via Ethernet/Internet.

System Recommendation
Windows 98/Me/NT/2000/XP
Pentium 200 MHz
32 MB RAM
256 colors, 640x480

Control Panels

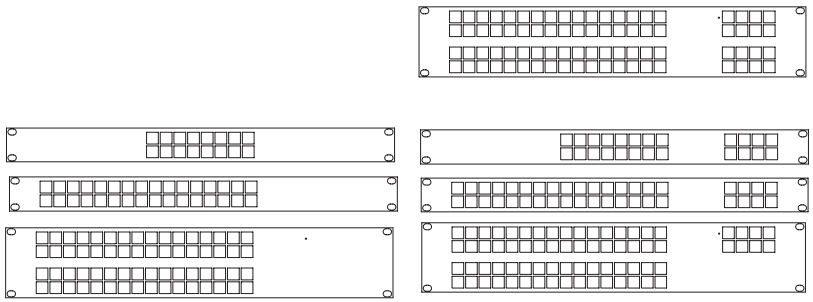
There are many different control panels available. The only common requirement for them is the ability to connect to the ESbus. The desired function has traditionally been determined during the initial phase of projects, and a project specific solution may be tailored to a reasonable price. From 1995 all SANDAR panel software has been made user configurable. The use of the word configurable in this context indicates that the function, or action corresponding to a panel push button may be defined as well as being programmed by the customer. The desired configuration is predefined by offline operation trough PC. When the operational surface for each panel has been prepared, the configuration data may be transmitted to each separate panel by ESbus. Neither preparation nor upload of data affects the general operation of the bus.

There are 7 models in the **CP2900** family, configurable to cover a broad range of applications. The standard configuration covers the requirement for simple control of single routers.
They also can be ordered pre–programmed according to customer specifications.

Panel buttons may perform as:
1. Input select for X-Y panels – selecting up to 8 inputs in any of up to 8 matrix levels.
2. Output select for X-Y panels – selecting up to 8 outputs in any of up to 8 matrix levels.
3. Direct x-point set – setting up to 8 crosspoints in any of up to 8 matrix levels.
4. Direct preset / setting a predefined status to one or all outputs in any of up to 8 matrix levels.
5. Take button
6. Break away button
7. Shift button to change inputs or outputs or groups of buttons.

Control Panel Type CP2848

The **CP2848A** Control Panel has 2 key boards, 3 displays and is housed in a 19", 3 RU, 153mm deep frame, with ESbus connectors and power supply for 230/115VAC. It is used to control 8 levels of video / audio / data / router. The panel has a numeric keyboard to select inputs and outputs and 8 function keys are used to select the levels to operate.
The panel displays mnemonics stored in the ESbus master controller. The text can be edited by using the optional PESE and WinPese software.



Control Panel Type CP2900

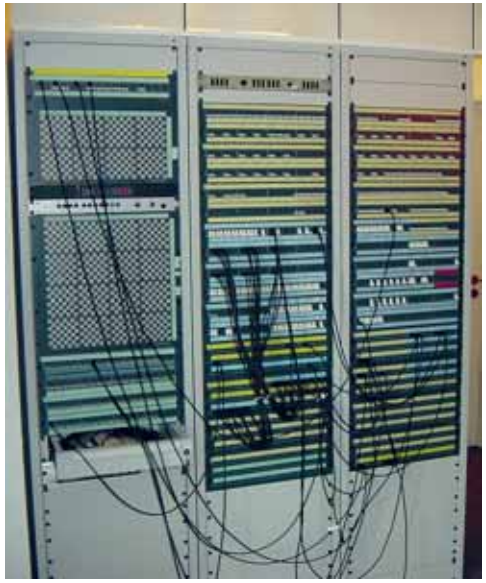
Customised Control Panels
Please contact us if you have particular requirements that are not met with the above control panels. We have a long tradition in custom design.

Electro-mechanical Matrix Boards

System description

For the routing, switching and distribution of signals in sound studios, electro-acoustics and telecommunication, different kinds of matrix boards and distributors are used. GHIELMETTI offers matrix boards (GKV) for all applications of transmission technology. They are used for switching and distributing balanced and unbalanced lines. Because of the high crosstalk attenuation, GKVA are also suitable for dual-channel and multichannel systems. The construction principle of GHIELMETTI distributor with the **gold-plated double-contact system** allows easily switching of all signal levels which are used for signal transmission from DC up to 20 MHz. e.g. for data signals up to microphone and loudspeaker levels.

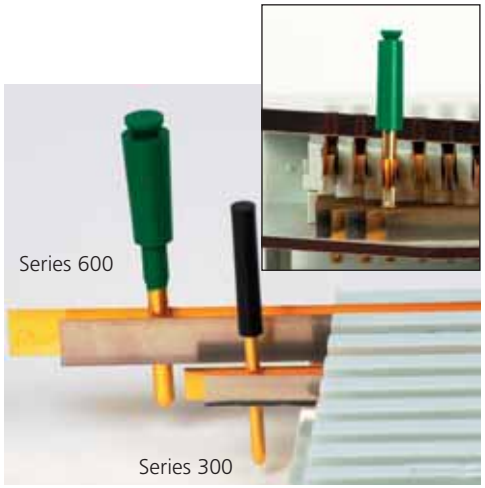
GHIELMETTI matrix boards are available with different types of shielding: High Performance, Standard and Econom. They are distinguished by their crosstalk features. Between two signal lines a contact ribbon is earthed as channel shielding. For the High Performance devices, the connecting layers are additionally shielded. Thus, a crosstalk of more than 115 dB at 15 kHz at 600 Ω can be achieved. In addition to the standard board GHIELMETTI offers other sizes and models. They can be supplied with or without inscription or print or with a multicoloured front panel. There are various possibilities for the design of matrix boards according to our customers' requests.



nt-v / cnn, Main Control, Berlin, Germany

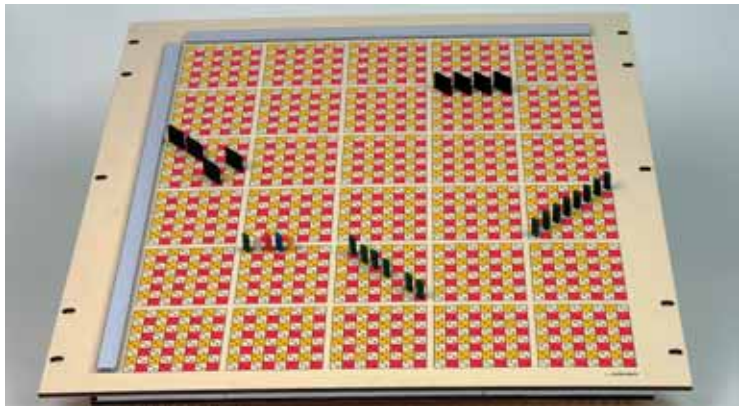
Construction

GHIELMETTI matrix boards of series 300 (up to 50 VAC / 6 A) are produced with a grating distance of 3mm, the ones of series 600 (up to 230 VAC / 16 A) with a grating distance of 6mm. Distributors for e.g. microphone and +6-dBu-lines are constructed with a 3 mm pitch (Series 300) and transmit levels up to +36 dBu. Matrix boards e.g. for loudspeakers with voltages of 100 V and power exceeding 300 W are built with a 6 mm pitch (Series 600).



Inputs and Outputs

In the electronic transmission technology a signal line is normally made by a cable shielded in pairs or a non-shielded one, e.g. an input or an output always has several wires. Because of the different switching technology, the cable shield is not always used. For the GHIELMETTI matrix boards, the inputs are related to the rows and the outputs to the columns. On the front panel, the inputs are normally on the left side and the outputs on top. This arrangement can, of course, be changed according to the kind of application.



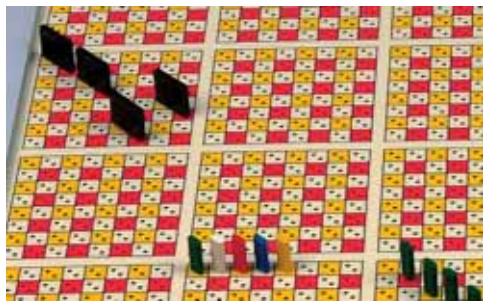
Design of front panel

The layout and design of the front panel can be designed according to customers' needs. For the mounting of optical indicators or sockets, the front panel can be drilled as required. The standard non-reflecting front panel colours are anthracite or beige. They have a silver or dark brown grid which marks the single cross points. In addition, these cross points are accentuated in silver or red/yellow colour. The left channel on the matrix boards for microphone and +6-dBu-lines is marked in yellow and the right channel in red. On matrix boards for loudspeaker levels the cross points are accentuated in dark beige alternatively. There are designation strips for the individual inscription of the inputs and outputs. The descriptions for the inputs and outputs as well as symbols can, of course, be printed. However, in this case they are permanent.

Function

The switching is done by appropriate connection plugs. The cable shield can be switched, earthed or be non connected. For 4-, 6- and 8-pole switching (e.g. stereo, RS-422, RS-232, etc.) a multi-pole connecting plug is available. For the connection, the incoming signal of the 1st layer (front) is connected to the outgoing signal of the 2nd layer (back). Connection plugs are available in different colours. For the connection, you can use different connector modules (D-Sub, Krone, BNC as well as interconnecting cables), instead of soldering lugs.

The matrix boards are cascadable in x- and y- direction.



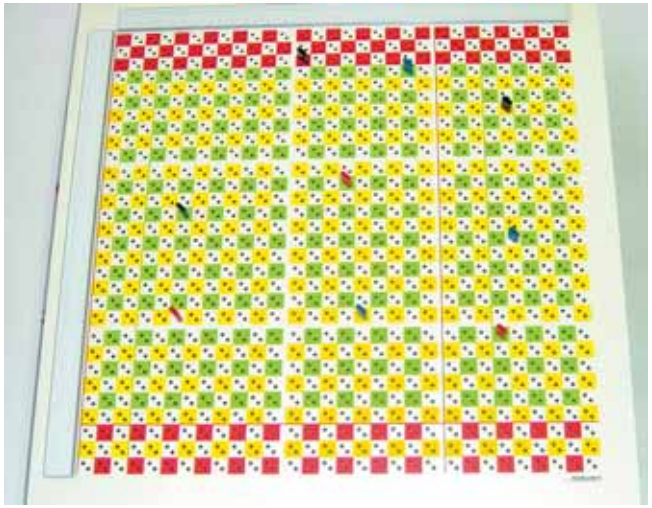
Switching room at Transfer Video in Geneva, Switzerland

Telecom Matrix: GKV 208x288 341 SS K, Swiss Telecom

Switching room of Czech-Telecom, Prague, FAT: factory acceptance test at Ghielmetti

GHIELMETTI Measurement Equipment

The test unit GLP 1000 allows testing and measuring of the different values of LF-transmission lines and cables. It is equipped with a Level-Meter as well as an Ohm-Meter.
Different configurations may be switched through the Control Panel and integraded Patch Bay.



Customised layout and print optimises handling and safety.

2-pole Compact Matrix System for the Musical Academy in Berlin, 4-layer technology halves the space requirement (Series 341).

The GHIELMETTI Connecting System

Safety

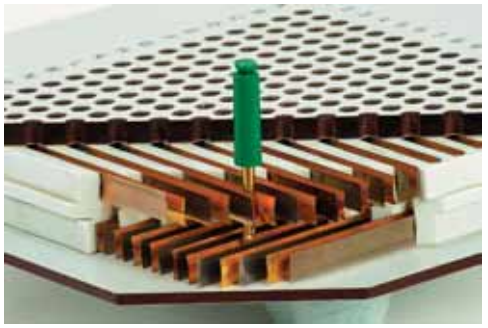
All GHIELMETTI patch panels and electro-mechanical matrix boards are based on the same technology: **the multi-level gold ribbon system with a flexible bus structure.** This technology is characterized by operational safety, flexibility, modular construction and modern design. With a conventional jackfield system (Bantam or TT) the «hot connection» is made by open touch contacts which oxidize quickly if they are exposed to normal air current. In this case, two oxidized surfaces are pressed together creating no or only a bad contact. With GHIELMETTI patch panels a connection over two or more contact levels is achieved with a **self-cleaning gold contact system.** By executing a connection – i.e. inserting the plug into the panel – the plug will touch the contact ribbon with a friction force of about 2N. During this process, any oxide coating will be mechanically removed so that this connection guarantees the highest contact safety. Thus, a constantly high security of switching can be guaranteed, even under extreme climatic conditions.

Areas of use of electro-mechanical matrix boards and patch panels
For the respective areas, different varieties are available: We distinguish between: High Performance, Standard and Econom signal distributors. They are distinguished by their crosstalk features:

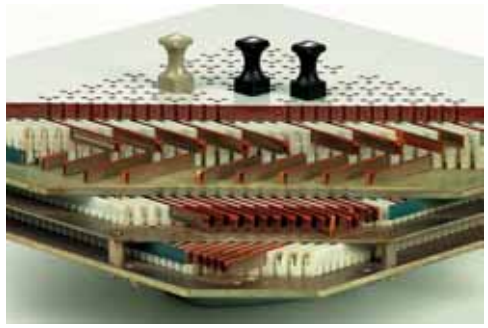
High Performance A_N >115 dB
For professional broadcasting and audio/video applications > 115 dB with 20 kHz at 600 Ω crosstalk and switch off attenuation as a result of the channel and layer shielding. Digital and analogue signals may be mixed without any interference, highest EMC immunity, conforming to CE standards.

Standard A_N >90 dB
For Telecoms and studio applications > 90 dB crosstalk and switch off attenuation and channel shielding. Digital and analogue signals may be mixed without any interference to provide the highest EMC compatibility, conforming to CE standards.

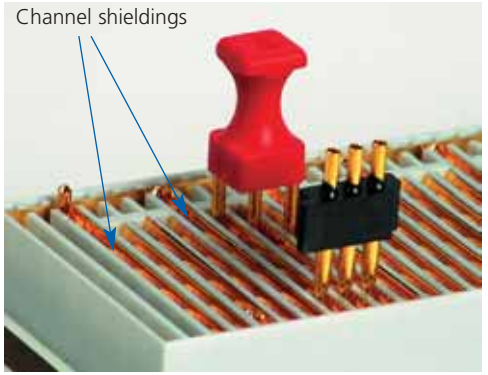
ECONOM A_N <70 dB
For interconnections for which a crosstalk and switch off attenuation of 70 dB is sufficient. E.D.P., Telecom, data, signal distribution and control systems. They do not have any additional layers and channel shieldings and are therefore a very economical solution. Conforming to CE standards.



2-layer-double-contact-system



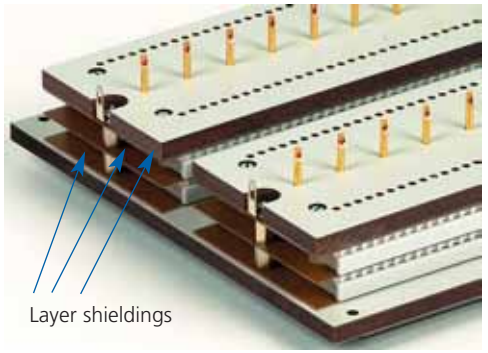
4-layer-double-contact-system with High Performance layer shielding



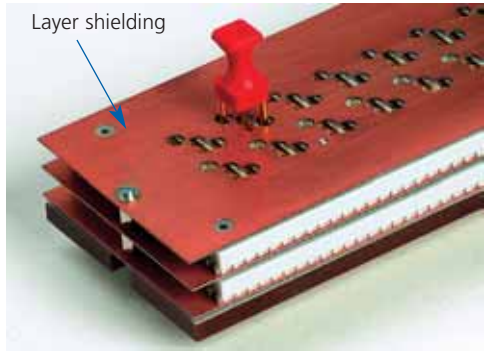
Flexible 3-pole bus structure with channel shielding Standard

Compact and complete
Thanks to the compact construction, the GHIELMETTI patch panels are more space-efficient than common solutions. The shielding concept is designed to be flexible. Modifications according to customer specifications are possible so that e.g. a star point in the patch panel can be achieved without any additional soldering work.

All patch panels and matrix boards except for customized devices are delivered ready-to-use with all
connection plugs.



Nearly coaxial signal feeding inside the switching package

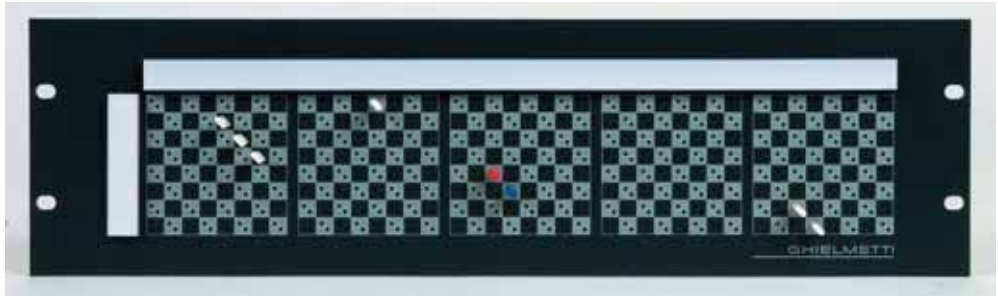


High Performance construction with front, back and layer shielding

2-pole / 4-pole Matrix Boards – Series 322

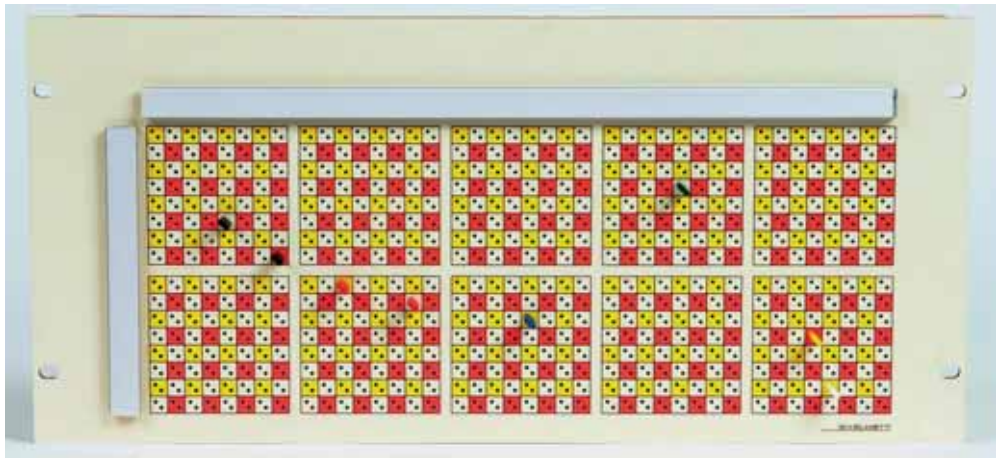
High Perfomance (A_N > 115 dB)

Matrix boards for digital signals (AES/EBU), Line level, LTC-Timecode, front panel anthracite with silver grid and silver accentuated cross points, high channel separation and EMC protection by front and back shielding. The switching is made by 2 poles for the a and b wire. The cable shield is not switched and can be earthed or be non connected. For switching of one or more channels, 2-pole connection plugs are available. For 4-wire-switching (e.g. stereo, RS-422, etc.), 4-pole connection plugs are available in different colours. For connecting, there are different connecting modules and cables available or soldering lugs. The matrix boards can be cascaded in x- and y- direction.



GKVA 8x40 322 LA H 19", 3RU High Performance matrix board 673.113.643.01

Standard (A_N > 90 dB)

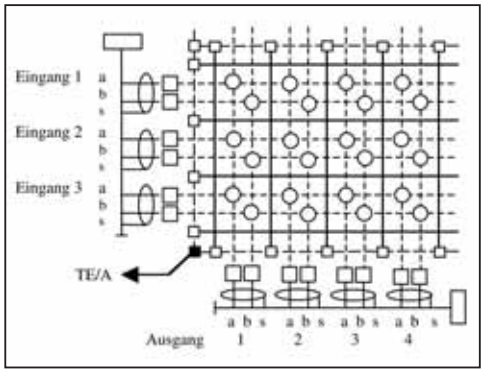


GKVA 16x40 322 LA 19", 5RU Standard matrix board 673.112.791.00

Tender text – High Performance (> 115 dB)

Matrix Board, 2-pole, for signal levels up to +36 dBu, with n-inputs and m-outputs, symmetrically earth-free, switching 2-pole, internal shielding of all signal ways as well as additional layer shielding, > 115 dB crosstalk and switch off attenuation, solder lugs on back panel, cascadable, front panel anthracite, non-reflecting with silver grid and accentuated cross points, with exchangeable designation strips
Brand: GHIELMETTI Type: GKVA n x m 322 LA H

GKVA 8x8 322 LA H	21 TE, 3RU, solder lugs	673.113.641.01
GKVA 16x16 322 LA H	35 TE, 5RU, solder lugs	673.113.642.01
GKVA 8x40 322 LA H	19", 3RU, solder lugs	673.113.643.01
GKVA 16x40 322 LA H	19", 5RU, solder lugs	673.113.644.01
GKVA 24x40 322 LA H	19", 6RU, solder lugs	673.113.645.01
GKVA 32x40 322 LA H	19", 8RU, solder lugs	673.113.646.01
GKVA 40x40 322 LA H	19", 10RU, solder lugs	673.113.647.01
GKVA 48x40 322 LA H	19", 12RU, solder lugs	673.113.648.01



Wiring diagram GKVA 322,
Standard & High Performance

High Performance matrix boards are equipped with channel shieldings and additionally with layer shieldings, reaching thereby highest crosstalk and switch off attenuation values. (> 115 dB)

Tender text – Standard (> 90 dB)

Matrix Board, 2-pole, for modulation levels up to +36 dBu, with n-inputs and m-outputs, symmetrically earth-free, switching 2-pole, internal shielding of cross points, > 90 dB crosstalk and switch off attenuation, solder lugs on back panel, front panel beige, non-reflecting with dark brown grid and accentuated multicoloured cross points, with exchangeable designation strips
Brand: GHIELMETTI Type: GKVA n x m 322 LA

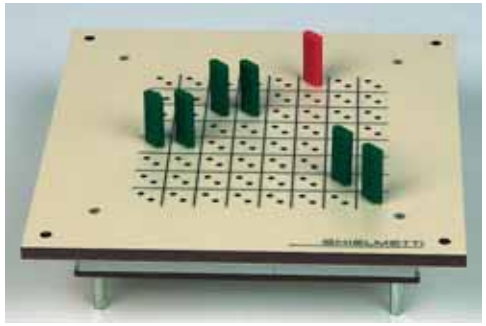
GKVA 8x8 322 SA [LA]	19", 3RU, plug-in facility [solder lugs]	673.112.797.00
GKVA 16x16 322 SA [LA]	19", 5RU, plug-in facility [solder lugs]	673.112.798.00
GKVA 8x40 322 SA [LA]	19", 3RU, plug-in facility [solder lugs]	673.112.790.00
GKVA 16x40 322 SA [LA]	19", 5RU, plug-in facility [solder lugs]	673.112.791.00
GKVA 24x40 322 SA [LA]	19", 6RU, plug-in facility [solder lugs]	673.112.792.00
GKVA 32x40 322 SA [LA]	19", 8RU, plug-in facility [solder lugs]	673.112.793.00
GKVA 40x40 322 SA [LA]	19", 10RU, plug-in facility [solder lugs]	673.112.794.00
GKVA 48x40 322 SA [LA]	19", 12RU, plug-in facility [solder lugs]	673.112.795.00
GKVA 56x40 322 SA [LA]	19", 13RU, plug-in facility [solder lugs]	673.112.796.00

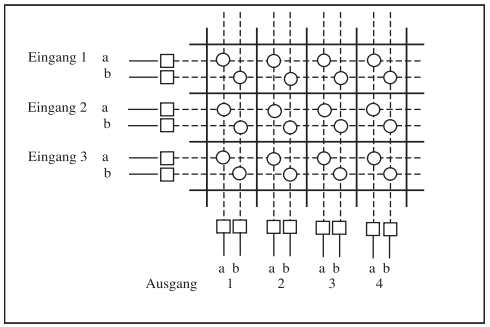
Econom (A_N < 70 dB)

2-pole matrix boards are for all applications in transmission technology and signal distribution. The front panel is white with a black grid. The matrix board provides no additional channel shieldings. Switching is made either 2-pole or 4-pole with the respective connecting plugs. One connecting plug 2-pole black per input channel is included in the shipment.

Tender text ECONOM (< 70 dB)

Matrix Board, 2-pole, for all Telecom signal levels up to 50V / 6A, with n-inputs and m-outputs, symmetrically earth-free, switching 2-pole / 4-pole, < 70 dB crosstalk and switch off attenuation, solder lugs on back panel, front panel white, non-reflecting with black grid, with exchangeable designation strips.
Brand: GHIELMETTI Type: GKV n x m 322 LA





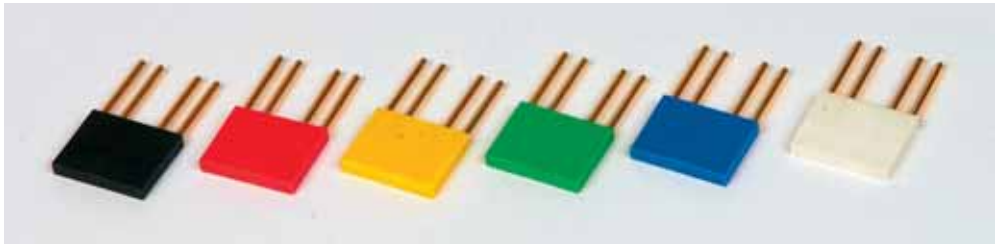
GKV 8x8 322 LA 21 TE/3RU 673.113.971.00 Wiring diagram GKVA 322, Econom (without channel & layer shieldings)

GKV 8x8 322 LA	21 TE, 3RU, solder lugs	673.113.971.00
GKV 16x16 322 LA	35 TE, 5RU, solder lugs	673.113.972.00
GKV 8x40 322 LA	19", 3RU, solder lugs	673.113.973.00
GKV 16x40 322 LA	19", 5RU, solder lugs	673.113.974.00
GKV 24x40 322 LA	19", 6RU, solder lugs	673.113.975.00
GKV 32x40 322 LA	19", 8RU, solder lugs	673.113.976.00
GKV 40x40 322 LA	19", 10RU, solder lugs	673.113.977.00
GKV 48x40 322 LA	19", 12RU, solder lugs	673.113.978.00

2-pole connecting plug – series 322

GVS 322 sw	2-pole, connecting plug, black	673.910.002.20
GVS 322 rt	2-pole, connecting plug, red	673.910.002.22
GVS 322 gb	2-pole, connecting plug, yellow	673.910.002.24
GVS 322 gn	2-pole, connecting plug, green	673.910.002.25
GVS 322 bl	2-pole, connecting plug, blue	673.910.002.26
GVS 322 ws	2-pole, connecting plug, white	673.910.002.29

4-pole connecting plug – series 324



GVS 324 D sw	4-pole (2x2-pole) connecting plug, black	673.910.120.00
GVS 324 D rt	4-pole (2x2-pole) connecting plug, red	673.910.120.02
GVS 324 D gb	4-pole (2x2-pole) connecting plug, yellow	673.910.120.04
GVS 324 D gn	4-pole (2x2-pole) connecting plug, green	673.910.120.05
GVS 324 D bl	4-pole (2x2-pole) connecting plug, blue	673.910.120.06
GVS 324 D ws	4-pole (2x2-pole) connecting plug, white	673.910.120.09

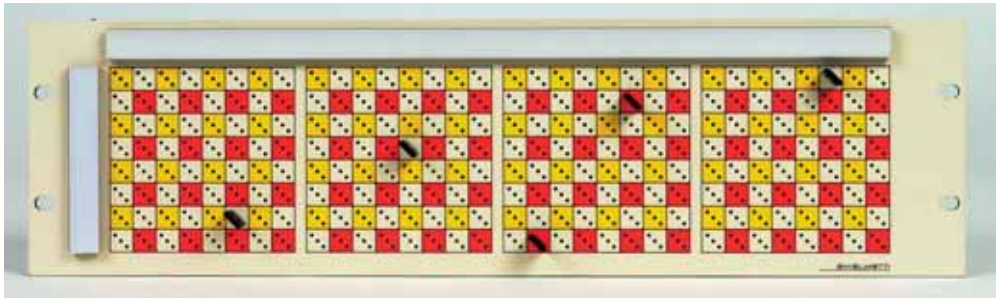
3-pole/6-pole Matrix Boards – Series 323

High-Performance (A_N > 115 dB)

Matrix boards for the switching of symmetrically earth free modulation lines up to 36 dBu in mono and multi-channel systems. Switching is made 3-pole (e.g. for the a-, b wire and shield). A third signal, or the cable shielding can be switched, earthed or be non connected.
EMC protection by front and back panel shielding, > 115 db channel separation.

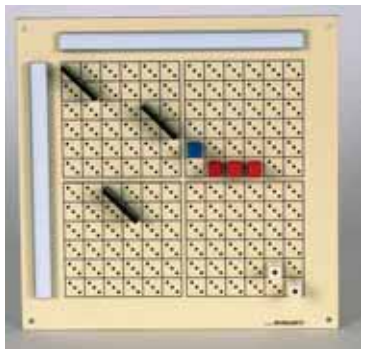
GKVA 8x32 323 SA H an High Performance Matrix Board, 19“, 3RU 673.113.653.06

Standard (A_N > 90 dB) (with channel shieldings)



GKVA 8x32 323 SA Standard Matrix Board 19“, 3RU 673.112.816.05

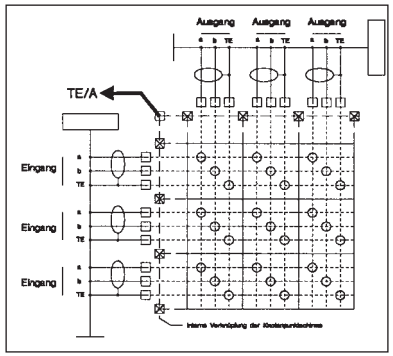
Econom (A_N < 70 dB) (without channel- and layer shieldings)



ECONOM
Matrix Board
GKV 12x12 323 LA
673.113.982.00

Wiring diagram
GKVA 323 Standard and
High Performance

Econom:; without
channel and layer
shieldings



Tender text High Performance (> 115 dB)

Matrix Board, 3-pole, for modulation levels up to +36 dBu, with n-inputs and m-outputs, symmetrically earth free, switching 3-pole, internally connected line shieldings, high channel separation and EMC protection by front and back panel shielding, connector modules or solder lugs on the back panel, front panel anthracite or beige, non-reflecting with silver grid and accentuated cross points, with exchangeable designation strips, for the installation in a 19” rack according to DIN 41494.
Brand: GHIELMETTI Type: GKVA n x m 323 SA H

GKVA 8x8 323 SA [LA] H an	28 TE,	4RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.651.06 [.01]
GKVA 12x12 323 SA [LA] H an	35 TE,	5RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.652.06 [.01]
GKVA 8x8 323 SA [LA] H an	19",	4RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.658.06 [.01]
GKVA 12x12 323 SA [LA] H an	19",	4RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.659.06 [.01]
GKVA 8x32 323 SA [LA] H an	19",	3RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.653.06 [.01]
GKVA 16x32 323 SA [LA] H an	19",	6RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.654.06 [.01]
GKVA 24x32 323 SA [LA] H an	19",	8RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.655.06 [.01]
GKVA 32x32 323 SA [LA] H an	19",	10RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.656.06 [.01]
GKVA 40x32 323 SA [LA] H an	19",	13RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.657.06 [.01]
GKVA 48x32 323 SA [LA] H an	19",	15RU, plug-in facility, anthracite/silver, [solder lugs]	673.113.660.06 [.01]

Tender text Standard (> 90 dB)

Matrix Boards, 3-pole, for Line-level, AES/EBU, LTC-Timecode, front panel beige with dark-brown grid, yellow/red accentuation of the cross points, high channel separation. Audio matrix board for the installation in a 19” rack.
Brand: GHIELMETTI Type: GKVA n x m 323 SA

GKVA 12x12 323 SA [LA]	195 x 195 mm,	plug-in facility, beige/red/yellow [solder lugs	673.110.086.05 [.03]
GKVA 12x12 323 SA [LA]	19",	4RU, plug-in facility, beige/red/yellow [solder lugs]	673.112.817.05 [.00]
GKVA 8x32 323 SA [LA]	19",	3RU, plug-in facility, beige/red/yellow [solder lugs]	673.112.816.05 [.00]
GKVA 16x32 323 SA [LA]	19",	6RU, plug-in facility, beige/red/yellow [solder lugs]	673.112.811.05 [.00]
GKVA 24x32 323 SA [LA]	19",	8RU, plug-in facility, beige/red/yellow [solder lugs]	673.112.812.05 [.00]
GKVA 32x32 323 SA [LA]	19",	10RU, plug-in facility, beige/red/yellow [solder lugs]	673.112.813.05 [.00]
GKVA 40x32 323 SA [LA]	19",	13RU, plug-in facility, beige/red/yellow [solder lugs]	673.112.814.05 [.00]
GKVA 48x32 323 SA [LA]	19",	15RU, plug-in facility, beige/red/yellow [solder lugs]	673.112.815.05 [.00]

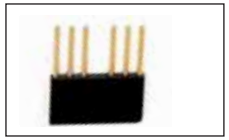
Tender text ECONOM (< 70 dB)

Matrix Board, 3-pole, for all Telecom signal levels up to 50V/6A, with n-inputs and m-outputs, switching 3-pole, < 70 dB crosstalk and switch off attenuation, interconnection or solder lugs on the back panel, cascadable, front panel white, non reflecting with black grid, with exchangeable designation strips for inputs and outputs.
Brand: GHIELMETTI Type: GKV n x m 323 SA

GKV 8x8 323 LA	28TE,	4RU, solder lugs, white, print black	673.113.981.00
GKV 12x12 323 LA	35TE,	4RU, solder lugs, white, print black	673.113.982.00
GKV 8x32 323 LA	19",	3RU, solder lugs, white, print black	673.113.983.00
GKV 16x32 323 LA	19",	6RU, solder lugs, white, print black	673.113.984.00
GKV 24x32 323 LA	19",	8RU, solder lugs, white, print black	673.113.985.00
GKV 32x32 323 LA	19",	10RU, solder lugs, white, print black	673.113.986.00
GKV 40x32 323 LA	19",	13RU, solder lugs, white, print black	673.113.987.00
GKV 48x32 323 LA	19",	15RU, solder lugs, white, print black	673.113.988.00

GVS 323 c Standard connecting plug 3-pole

GVS 323 c sw	3-pole, square handle, black	673.910.079.00
GVS 323 c rt	3-pole, square handle, red	673.910.079.02
GVS 323 c gb	3-pole, square handle, yellow	673.910.079.04
GVS 323 c gn	3-pole, square handle, green	673.910.079.05
GVS 323 c bl	3-pole, square handle, blue	673.910.079.06
GVS 323 c ws	3-pol, pole, square handle, white	673.910.079.09

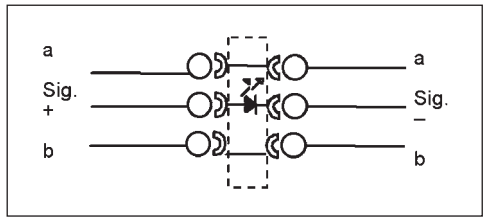


GVS 326 D sw,
6-pole connecting plug
673.910.121.00

GBS 321 sw
Locking jumper
673.140.083.00

With the help of locking jumpers, a connection point can be locked for preventing unintentional switching

LED-Connecting Plug GLS 323 rt
2-pole with sig. LED
673. 910. 081.09



When using 3 poles (a, sig., b) the middle conductor can be used as a signal conductor. It activates the LED and signalises the operational state of the respective connection.

Customised Devices, Facility Construction

Main control room at Digital Images, in Halle IS', Germany

GHIELMETTI provides their customers with the planning and development of Routing Systems and Patch Bays solutions as well as back-up and complete switch board solutions. The present catalogue provides an overview of our products and solutions. Our strong point is the system solution which is developed in close cooperation with the customer. The spectrum includes small adaptations of standard products as well as the development and installation of complete facilities. Our long experienced engineering team provides competent support.

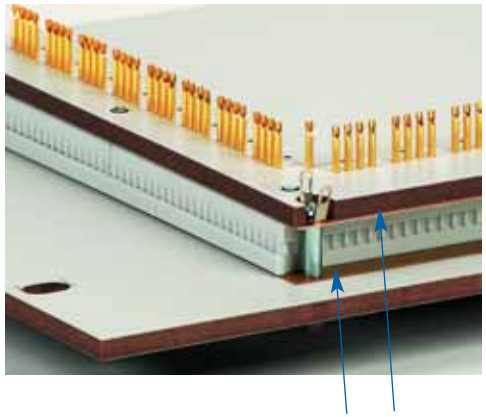
Planning
In addition to standard sizes, GHIELMETTI provides various audio matrix boards according to customers' requirements. They can be produced with or without print and one- or multi-coloured front panel. There are many possibilities for customised designs. It is recommended to contact our engineers in the early stage of the planning in order to guarantee optimal solutions.

User interface
The user interface (front panel) can also be customised and produced in many colour designs and individual wiring diagrams. Even prints may be choosed by the customer. Moreover, additional elements like LED's, lamps or switches can be mounted or mount drilling can be made. The size may be customised within the construction scope.

4-pole / 8-pole Matrix Boards – Series 324

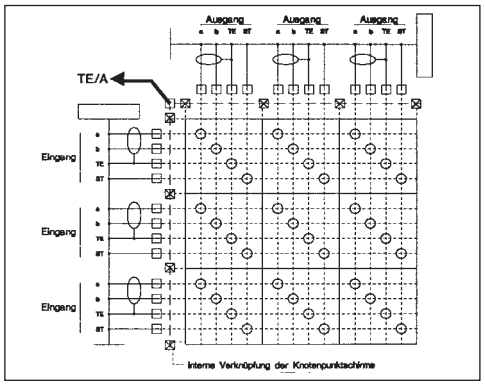
The matrix boards of the series 324 are technically equivalent to the ones of series 322 and 323. With a 4-pole connecting plug, 4 signal lines can be switched simultaneously (e.g. a, b, ground and an additional control signal). With the 8-pole connecting plug, 8 signal lines are switched simultaneously (e.g.RS-422 send/receive lines).

GKVA 8x24 324 LA H an High Performance matrix board, 19", 4RU, 4-/8-Pole 673.113.667.01



Layer shieldings

Solder lug facility GKVA 324
High Performance matrix board with layer and channel shieldings



Wiring diagram GKVA 324
High Performance and Standard
(Standard: with channel shieldings)

ECONOM: without channel and layer shieldings

Tender text

Matrix Boards, 4-pole, for signal levels up to +36 dBu, with n-inputs and m-outputs, symmetrically shielded, switching 4-pole or 8-pole
– for High Performance: internal shielding of all signal ways as well as an additional layer shielding, > 115 dB crosstalk and switch off attenuation, Type: GKVA n x m 324 LA H
– for Standard: channel separation, < 70 dB crosstalk and switch off attenuation, Type: GKVA n x m 324 LA
– for Econom: >80 dB crosstalk and switch off attenuation, Type: GKV n x m 324 LA
Solder lugs on the back side, cascadable, front panel anthracite or beige, non-reflecting with grid and accentuation of the cross points, with exchangeable designation strips.
Brand: GHIELMETTI

High Performance (> 115 dB)

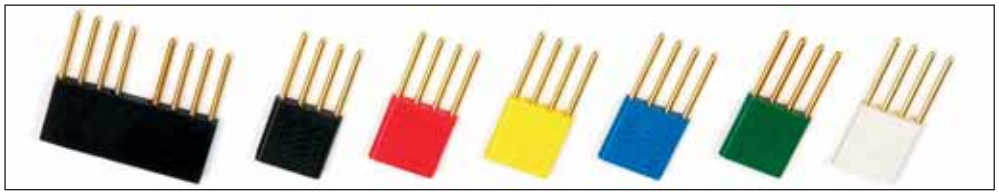
GKVA 8x24 324 LA H	19", 4RU, solder lugs, anthracite	673.113.667.01
GKVA 24x24 324 LA H	19", 10RU, solder lugs, anthracite	673.113.670.01

Standard (> 90 dB)

GKVA 8x24 324 LA	19", 4RU, solder lugs, beige/red/yellow	673.113.668.00
GKVA 24x24 324 LA	19", 10RU, solder lugs, beige/red/yellow	673.113.669.00

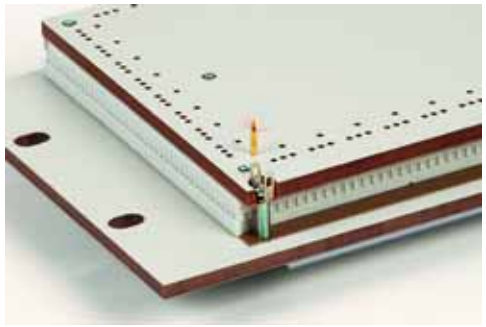
Econom (< 70 dB)

GKV 8x8 324 LA	30TE, 4RU, solder lugs, white	673.113.991.00
GKV 8x24 324 LA	19", 4RU, solder lugs, white	673.113.992.00
GKV 24x24 324 LA	19", 10RU, solder lugs, white	673.113.993.00

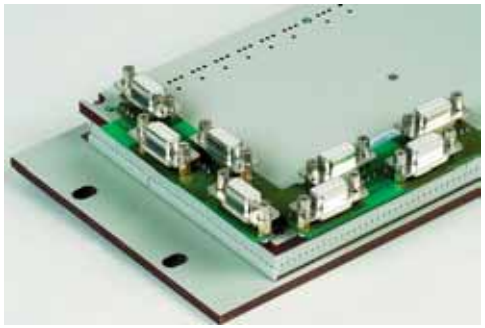


GVS 328 D sw	8-pole (2x4-pole), diagonal, black	673.910.135.00
GVS 324 sw	4-pole, black	673.910.002.40
GVS 324 rt	4-pole, red	673.910.002.42
GVS 324 gb	4-pole, yellow	673.910.002.44
GVS 324 gn	4-pole, green	673.910.002.45
GVS 324 bl	4-pole, blue	673.910.002.46
GVS 324 ws	4-pole, white	673.910.002.49

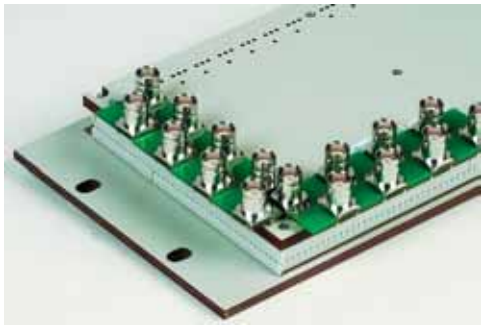
Interconnecting of Matrix Boards – Series 323



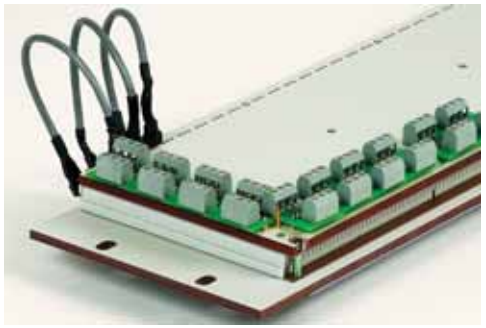
Plug-in facility [SA]



In- and outputs with D-Sub-9-pole connector modules



In- and outputs with 75 Ω BNC connector modules

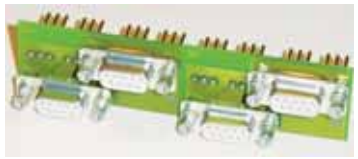


In- and outputs with screw-mount connector modules and cascade cables

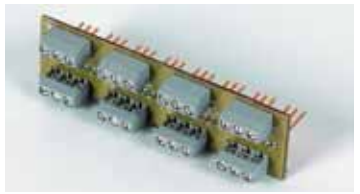
Solder plug 3-pole
GAS 313 LA 673.910.311.01

Interconnecting cable
GKS 3/30H 673.910.295.03
GKS 3/60H 673.910.295.06
GKS 3/100H 673.910.295.00

WAGO connector module
WA 1x8 A 673.130.495.01

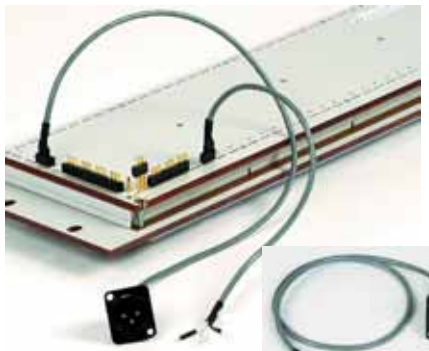


D-Sub-9-pole connector module
D9 1x 8 A 673.130.476.01



Screw mount connector module
SK 1x8 A 673.130.475.01

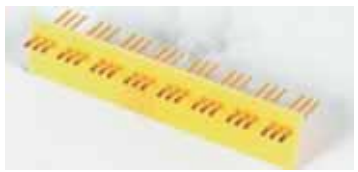
KRONE LSA Plus connector module
KP 1x8 A 673.130.472.01



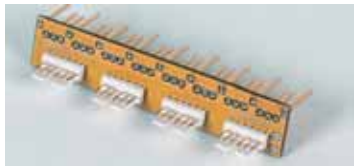
XLR connecting cable
male 673.910.304.00
female 673.910.305.00

3-pole cascade cable
GKK 3/15 H, 15 cm, 673.910.299.02
GKK 3/30 H, 30 cm, 673.910.299.03
GKK 3/60 H, 60 cm, 673.910.299.06

RJ11/RJ45 6-pole connector module
RJ11 1x4 A 673.130.478.01
RJ45 1x4 A 673.130.478.03

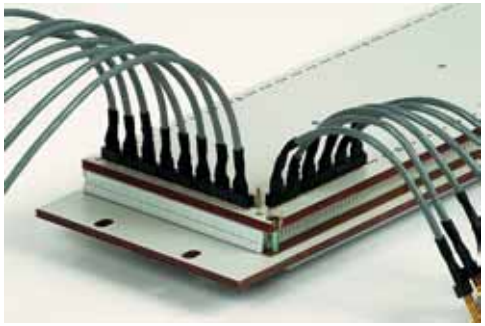


Solder lug connector module
LA 1x8 A 673.130.473.01

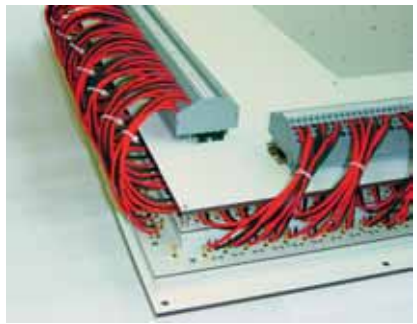


MOLEX connector module
MX 1x8 A 673.130.474.01

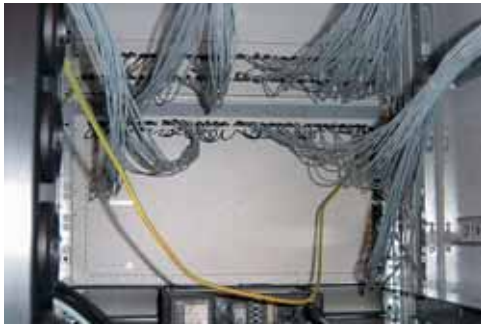
BNC 75 Ω connector module
BN 1x8 A 673.130.477.01



Connection GKVA 323 with interconnecting cables



Wiring to WAGO – blocks

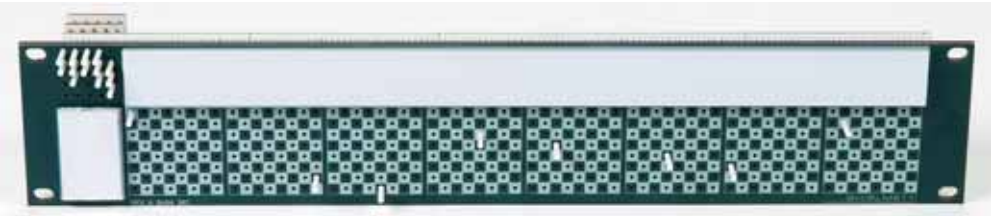


Wiring of GKVA

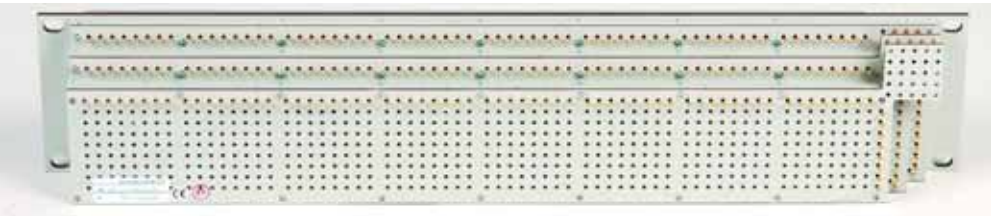
Compact Matrix Boards – Series 300

The specific construction of the GHIELMETTI Matrix Boards allows the construction of highly Compact Matrix Boards with the same electrical features as the standard ones. The standard matrix boards are constructed with a 2-layer technology. The 1st layer for the incoming lines and the 2nd layer for the outgoing lines. Compact Matrix Boards are constructed in 4- or even 6-layers. In doing this, the depth in the 3rd dimension can be used. Thus, the same number of switching functions can be produced on a space that is 3 times smaller. The connection of 3-pole lines is made by special plugs for 4 or 6 layers.

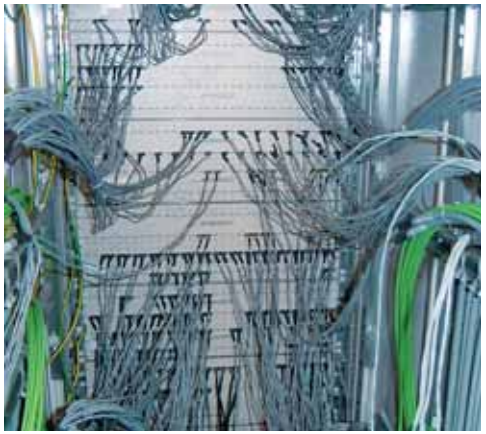
	Number of input and output channels in 19":				
Poles:	2-pole	3-pole	4-pole	6-pole	6-pole
Type:	341	361	342	343	362
Depth incl. solder lugs:	40 mm	55 mm	40 mm	40 mm	55 mm
Rack units (RU)				in 4 layers	in 6 layers
1	2 x 64	1 x 64	1 x 46	1x 34	---
2	9 x 64	8 x 64	6 x 46	5 x 34	5 x 44
3	17 x 64	15 x 64	11 x 46	9 x 34	10 x 44
4	24 x 64	22 x 64	16 x 46	12 x 34	15 x 44
5	32 x 64	29 x 64	21 x 46	16 x 34	20 x 44
6	39 x 64	37 x 64	26 x 46	20 x 34	25 x 44
7	46 x 64	44 x 64	31 x 46	23 x 34	30 x 44
8	54 x 64	52 x 64	36 x 46	17 x 34	35 x 44
9	61 x 64	59 x 64	41 x 46	31 x 34	40 x 44
View of the switching point on the front panel					



GKVA 8x64 361 LA an 19", 2RU, solder lugs 8x64x3 = total of 1536 cross points 673.113.947.01

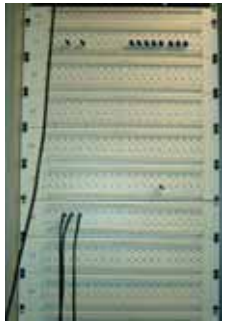


Connecting plugs for 4-, 6 layers, 2- up to 6-pole



Matrix Boards, Patch Panels for electro acoustics (ELA) and medium voltage applications

Royal Opera House, London

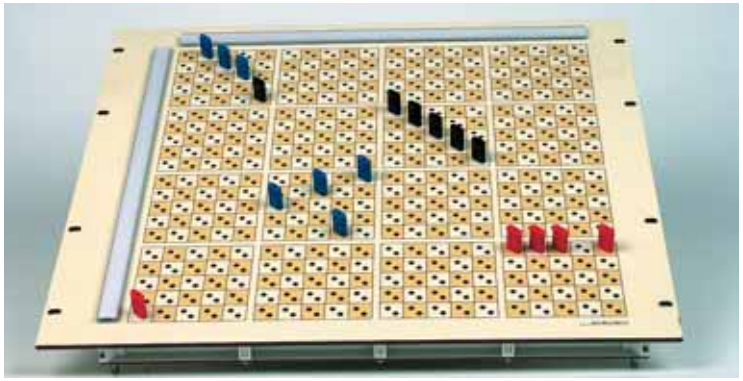


Loudspeaker distribution at Royal Opera House

Jahrhunderthalle (Century Hall), Bochum, Germany

Loadspeaker distribution at Jahrhunderthalle Bochum, Germany

Matrix board for 2-pole or 4-pole routing, 230 VAC/16A



GKVA 20x20 622 LA 19", 10RU, 2-pole 674.114.507.00

Tender text

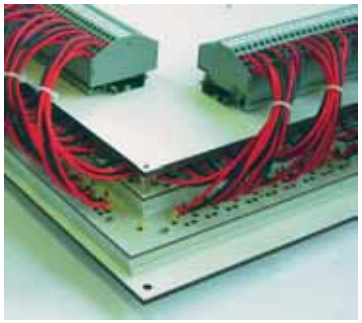
Matrix Board, for signal sources up to max. 230 VAC and max. 16 A or symmetrically earth free modulation lines in loudspeaker devices respectively low-resistant loudspeaker systems, with n-inputs and m-outputs, symmetrically earth free, switching 2-pole, connections on back panel, front panel beige, non reflecting, with dark-brown grid and accentuated cross points, with exchangeable designation strips.
Brand: GHIELMETTI
Type: GKVA n x m 622 LA

GKVA 10x10 622 LA	240 x 240 mm, solder lugs	674.114.508.00
GKVA 10x20 622 LA	19", 6RU, solder lugs	674.114.506.00
GKVA 20x20 622 LA	19", 10RU, solder lugs	674.114.507.00

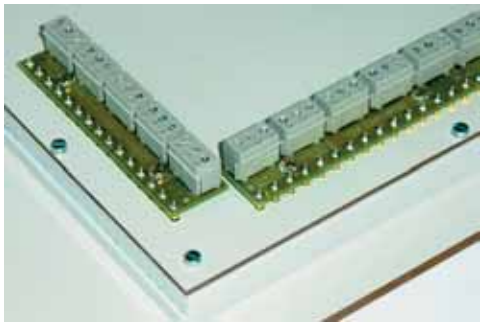
Matrix Boards for the switching of signal sources up to max. 230 VAC and max 16 A. Specially suitable for low voltage facilities as well as for the switching of symmetrically earth free modulation lines in loudspeaker devices. The switching is made by 2-pole for the a and b wire. It is important that the inputs of the matrix board (e.g. the live lines which come from the power amplifier) are connected to the 2nd layer. Thus, when ordering, the positions of the inputs (e.g. left or above) should be indicated. Standard ELA Matrix Boards are supplied in beige with a dark grey grid. When switching and routing under voltage, the directions of the use of low voltage facilities are recommended.

High voltage matrix board for max. 230VAC/32 Ampère, 2-pole switching

GKVA 30x30 642 WA K



Connecting technology with WAGO blocks

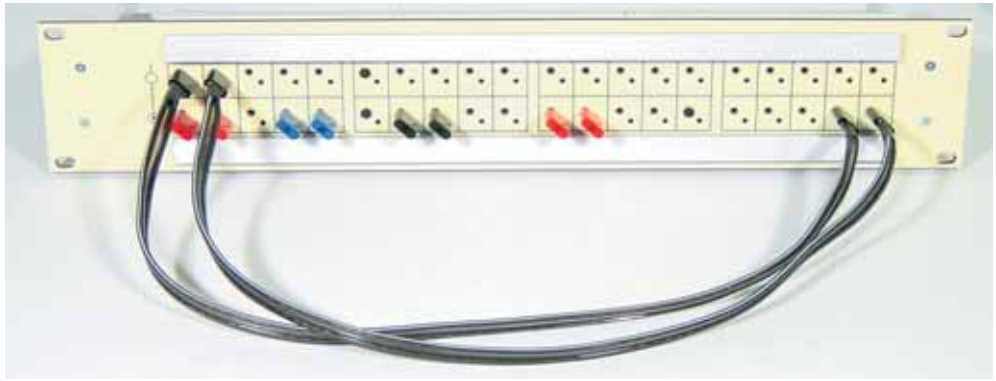


Screw-mount connector modules

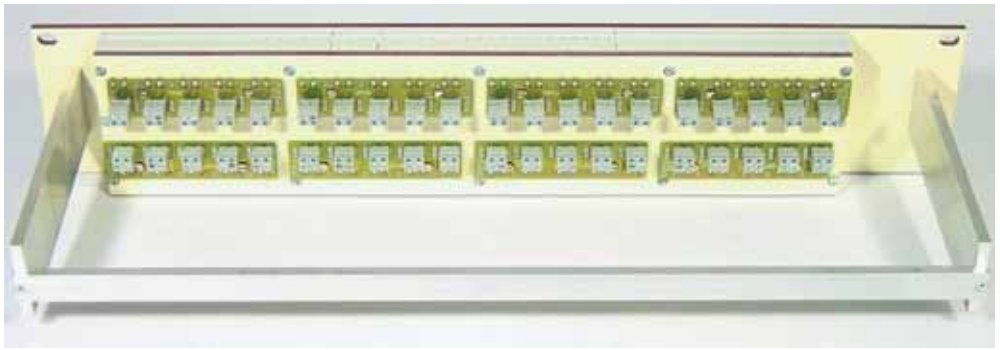
GKVA 20x20 622 LA back view

Patch Panel for ELA and voltage up to 230 VAC / 16A – Series 622

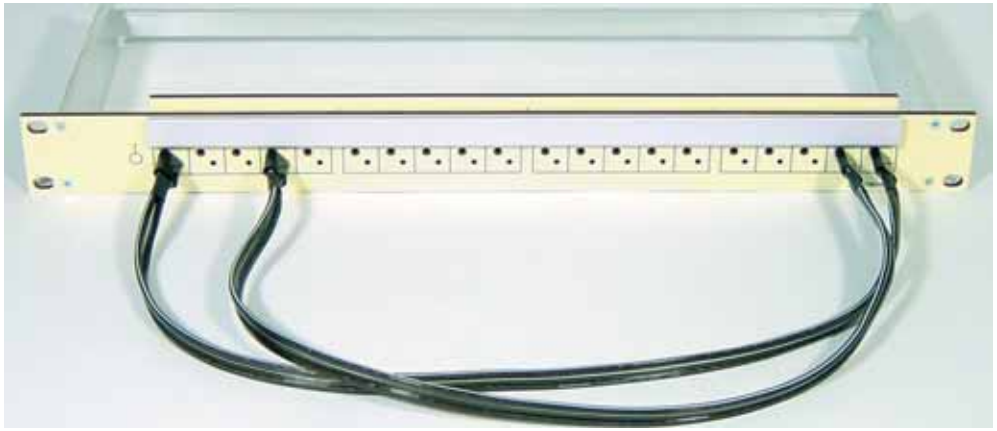
Connecting patch panel for 230 VAC / 16 A (LSF) 1x20 channels, 2-pole



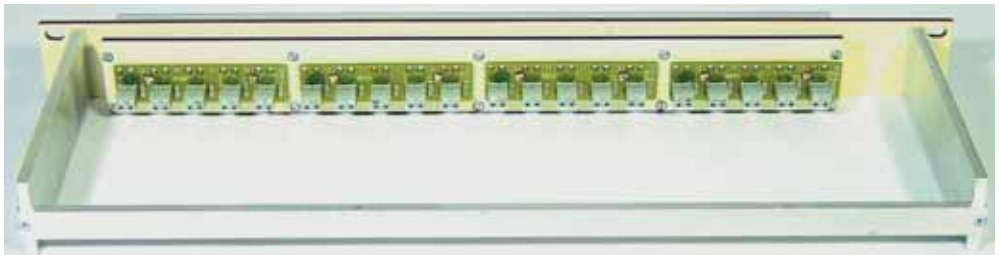
LSF 1x20 AV 2/2 SA Connecting patch panel, 20 channels, 2-pole, 19", 2 RU 674.115.139.00



Normal Patch Panel for 230 VAC / 16 A (LSF), 20 channels, 2-pole



LSF 1x20 A 2/1 SA Normal patch panel, 20 channels, 2-pole, 19", 1 RU 674.115.140.00



Connector modules are screwed

SK 1x5 622 A 674.130.217.00
Screw-mount connector module
max. conductor Ø 2, 5 mm

2-pole connecting plugs – series 622

4-pole special connecting plug, 4-layer **GVS 642 sw**

1-pole locking jumper
GBS 621 sw 674.140.028.00

GMK 622/60 60 cm, 2-pole 1,5mm² 674.910.149.00

GVS 622 sw	2-pole connecting plug, black	674.910.136.00
GVS 622 bl	2-pole connecting plug, blue	674.910.136.06
GVS 622 rt	2-pole connecting plug, red	674.910.136.02
GVS 642 sw	4-pole connecting plug, 4-layer	674.910.148.00

Use of locking jumpers
With the help of locking jumpers, a connection point can be locked for preventing unintentional switching

Patch Panels

The GHIELMETTI connecting system

Patch panels are used in all areas of electronic communication technology and electro-acoustics. Within the sound direction facility, the in- and outputs may have fixed wiring or can be switched variable, e.g. with matrix boards or connecting patch panels. By using connecting patch panels, the flexibility of a matrix system increases considerably. Patch panels offer an optimal and space-saving solution when many lines must be distributed. The GHIELMETTI Patch Panel System was developed in accordance with the specific demands of the transmission technology. It combines the advantages of matrix boards with those of the well-proven jackfield and completes them. Often patch panels are placed in the in- and output lines of routing switches. The essential features are the exceptional contact safety, highest channel separation and flexibility. Channel shieldings are connected internally and led to an external solder lug. Front panels are available in different designs as well as in different colours (ref. to page 48). Printing is covered by a mar-resistant transparent melamine resin layer. There are different elements to construct a GHIELMETTI patch panel. These elements can be combined each other.

The basic elements of the GHIELMETTI Patch Panel system consist of:

– Normal contact (A): Connected to an input or output of a device
– Parallel contact (P): To tap a signal twice
– Connecting contact (V): Lies between two terminals and connect or disconnect them.

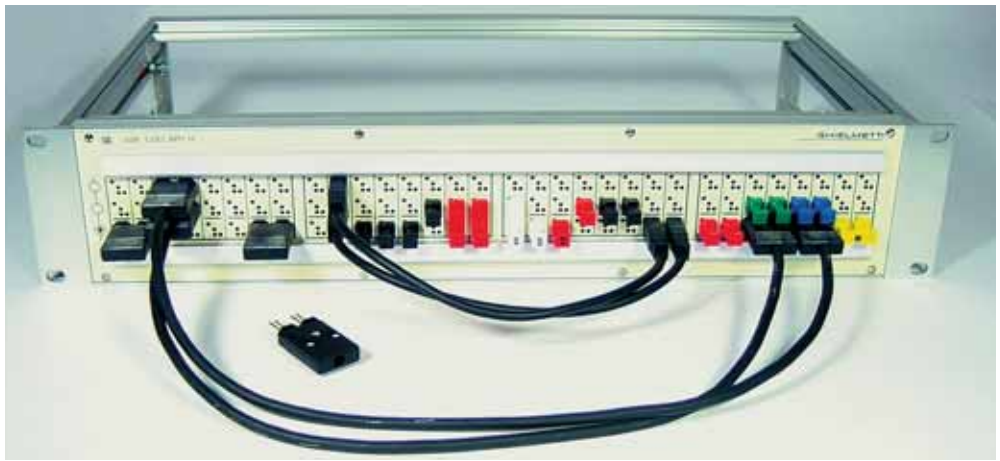
Flexible patch- and connecting system

Specification	Symbol	View	Current Flow inactive	with connecting Plug	with Patch Cord
Normal Patch Panel with A Normal Contact like ASF 1x32 A 3/1 LA H	A		Input		Input
Normal Patch Panel with A Normal Contact P Parallel Contact like ASF 1x32 A P 3/1 LA H	A P		Input		Input
Connecting Patch Panel with A Normal Contact V Connecting Contact like ASF 2x32 A V 3/3 LA H or CSF 1x48 A V 3/1 LA	A V		Input Output	Input Output	Input Output
Connecting Patch Panel with A Normal Contact P Parallel Contact V Connecting Contact like ASF 1x32 A P V 3/2 LA H	A P V		Input Output	Input Output	Input Output

High Performance Patch Panels – SERIES 323

Normal and connecting patch panels – in 19" frame, 3-pole / 6-pole, front panel beige

All patch panels can be prewired to RP300 30-pole, XLR, D-Sub, KRONE or other connectors.



ASF 1x32 APV 3/2 SA H 32-channels, High Performance Patch Panel with parallel contacts (APV)

ASF 2x32 AV 3/3 SS H 64 channel connecting patch panel, High Performance, prewired to RP300 30-pole connectors.

Normal patch panel – 32 channels, High Performance [H]

ASF 1x32 A 3/1 LA H	19", 1RU-rack, solder lugs	673.113.692.10
ASF 1x32 A 3/1 SA H	19", 1RU-rack, plug-in facility	673.113.692.13
ASF 1x32 A 3/1 SS H	19", 1RU-rack, wired to Siemens 30-pole	673.113.692.20
Normal patch panel with parallel contact – 32 channels, High Performance [H]		
ASF 1x32 AP 3/1 LA H	19", 1RU-rack, solder lugs	673.113.694.10
ASF 1x32 AP 3/1 SA H	19", 1RU-rack, plug-in facility	673.113.694.12
ASF 1x32 AP 3/1 SS H	19", 1RU-rack, wired to Siemens 30-pole	673.113.694.20
Connecting patch panel – 32 channels, High Performance [H]		
ASF 1x32 AV 3/1 LA H	19", 1RU-rack, solder lugs	673.113.698.10
ASF 1x32 AV 3/2 SA H	19", 2RU-rack, plug-in facility	673.113.698.16
ASF 1x32 AV 3/2 SS H	19", 2RU-rack, wired to Siemens 30-pole	673.113.698.20
Connecting patch panel with parallel contact – 32 channels, High Performance [H]		
ASF 1x32 APV 3/2 LA H	19", 2RU-rack, solder lugs	673.114.060.10
ASF 1x32 APV 3/2 SA H	19", 2RU-rack, plug-in facility	673.113.060.12
ASF 1x32 APV 3/2 SS H	19", 2RU-rack, wired to Siemens 30-pole	673.114.060.20

Connecting patch panels of type AV / APV are supplied incl. connecting plugs

Normal patch panel – 64 channels, High Performance [H]

ASF 2x32 A 3/2 LA H	19", 2RU-rack, solder lugs	673.113.693.10
ASF 2x32 A 3/2 SA H	19", 2RU-rack, plug-in facility	673.113.693.13
ASF 2x32 A 3/2 SS H	19", 2RU-rack, wired to Siemens 30-pole	673.113.693.20
Normal patch panel with parallel contact – 64 channels, High Performance [H]		
ASF 2x32 AP 3/2 LA H	19", 2RU-rack, solder lugs	673.113.695.10
ASF 2x32 AP 3/2 SA H	19", 2RU-rack, plug-in facility	673.113.695.13
ASF 2x32 AP 3/2 SS H	19", 2RU-rack, wired to Siemens 30-pole	673.113.695.20
Connecting patch panel – 64 channels, High Performance [H]		
ASF 2x32 AV 3/3 LA H	19", 3RU-rack, solder lugs	673.113.697.10
ASF 2x32 AV 3/2 SA H	19", 3RU-rack, plug-in facility	673.113.697.18
ASF 2x32 AV 3/3 SS H	19", 3RU-rack, wired to Siemens 30-pole	673.113.697.20

High Performance Patch Panels (ASF) (> 115dB)

High Performance Patch panels have a constructed with additional layer shieldings. Thus, they have best electrical data because of quasi-coaxial design. Therefore, analogue and digital operations can be mixed. The ASF meets all European broadcast requirements (e.g. IRT recommendation 3/5).

Universal Connecting Patch Panels (USF)

USF is constructed in modular for universal use in all areas of communication technology. Because of its high band width, USF is equally suitable for digital audio and video (component/composite). USF's special feature is its ability to connect to every network through many different connector modules. There are additional shieldings between all channels in order to increase the channel separation and switch off attenuation. The channel shieldings can easily be earthed by a common tap (TE/A). The line shielding is switched when inserting the 3-pole connecting plug. All USF patch panels are supplied including connecting plugs.

Tender text

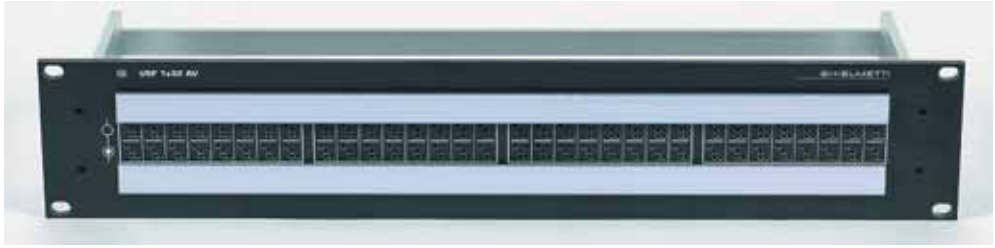
Universal connecting patch panel for 32 or 64 analog or digital lines, with flexible wiring by modular connecting technology. High switch off attenuation and channel separation of > 90 dB.
Brand: GHIELMETTI
Type: USF 1x32 AV / USF 2x32 AV

Universal connecting patch panel: USF 1x32 AV – 3-pole, 32 channels, 19", 2RU

USF 1x32 AV 3/2 SA (Operational state with locking plugs for digital channels)

Universal connecting patch panel: USF 2x32 AV – 3-pole, 64 channels, 19", 3RU

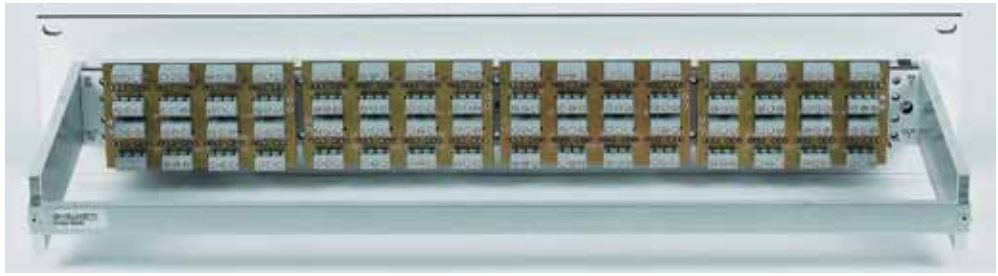
USF 2x32 AV 3/3 SA (Operational state with locking plugs for digital channels)



USF 1x32 AV 3/2 SA 32 channels, 19", 2RU, for connector modules 673.114.012.01

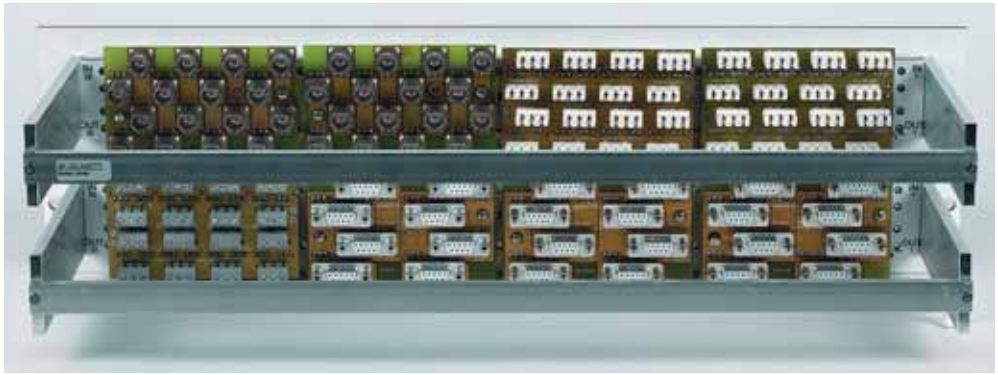
USF 1x32 AV 3/2 SA back view showing different plug-in facilites 673.114.012.81

USF 1x32 AV 3/2 LA with 4 solder lugs connector modules 673.114.012.11

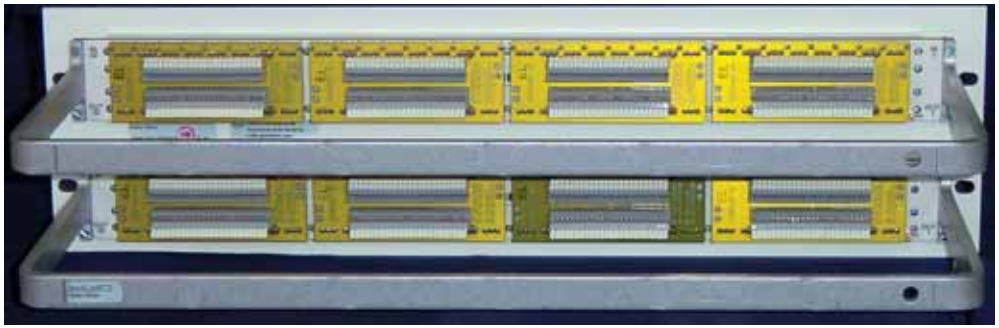


USF 1x32 AV 3/2 SK with 4 screw-mount connector modules 673.114.012.71

USF 2x32 AV 3/3 SA 64 channels, 19", 3RU, for connector modules 673.114.018.01



USF 2x32 AV 3/3 SA connector modules for all type of cables



USF Patch Panels interconnect all type of signals to all type of cables

USF: 32 channels, 19" / 2 RU, including 32 normalling plugs

Without connecting modules:

USF 1x32 AV 3/2 SA	plug-in facility	673.114.012.01
USF 1x32 AV 3/2 SA 84	84 TE, for solder lug connectors or connector modules	673.114.013.01

Including 4 connector modules:

USF 1x32 AV 3/2 LA	including 4 solder lug connector modules	673.114.012.11
USF 1x32 AV 3/2 RJ11	including 4 RJ11-6pole connector modules	673.114.012.21
USF 1x32 AV 3/2 MX	including 4 MOLEX connector modules	673.114.012.41
USF 1x32 AV 3/2 KP	including 4 KRONE connector modules	673.114.012.51
USF 1x32 AV 3/2 BNC	including 4 BNC 75 Ω connector modules	673.114.012.61
USF 1x32 AV 3/2 SK	including 4 screw-mount connector modules	673.114.012.71
USF 1x32 AV 3/2 D9	including 4 D-Sub 9-pole connector modules	673.114.012.81
USF 1x32 AV 3/2 D25	including 4 D-Sub 25-pole connector modules	673.114.012.31
USF 1x32 AV 3/2 WA	including 4 WAGO clamping connector modules	673.114.012.91

USF High Performance connecting patch panel, 32 channels, 19", 2RU

> 115 dB channel separation 0 ≤ f ≤ 2MHz, < 100dB channel separation between 2MHz ≤ f ≤ 5MHz

USF 1x32 AV 3/2 SA H	plug-in facility	673.114.051.01

Including 4 connector modules:

USF 1x32 AV 3/2 LA H	including 4 solder lug connector modules	673.114.051.11
USF 1x32 AV 3/2 RJ11 H	including 4 RJ11-6pole connector modules	673.114.051.21
USF 1x32 AV 3/2 MX H	including 4 MOLEX connector modules	673.114.051.41
USF 1x32 AV 3/2 KP H	including 4 KRONE connector modules	673.114.051.51
USF 1x32 AV 3/2 BNC H	including 4 BNC 75 Ω connector modules	673.114.051.61
USF 1x32 AV 3/2 SK H	including 4 screw-mount connector modules	673.114.051.71
USF 1x32 AV 3/2 D9 H	including 4 D-Sub 9-pole connector modules	673.114.051.81
USF 1x32 AV 3/2 D25 H	including 4 D-Sub 25-pole connector modules	673.114.051.31
USF 1x32 AV 3/2 WA H	including 4 WAGO clamping connector modules	673.114.051.91

High Performance patch panel: HSF 1x32 AV / HSF 2x32 AV, 75 Ω

> 115 dB cross talk & switch off attenuation, for signal band width up to 30 MHz (e.g. RGBHV connections)

High Performance patch panels have an all around shielding system. Switching is quasi-coaxial 1-pole.

HSF 1x32 AV 1/2 BNC	32 channels, 19", 2RU including BNC connector modules	673.114.052.01
HSF 2x32 AV 1/3 BNC	64 channels, 19", 3RU including BNC connector modules	673.114.056.01

USF: 64 channels, 19" / 3 RU, including 64 normalling plugs

Without connecting modules:

USF 2x32 AV 3/3 SA	plug-in facility	673.114.018.01
USF 2x32 AV 3/3 SA 84	84 TE, for solder lug connectors or connector modules	673.114.019.01

Including 8 connector modules:

USF 2x32 AV 3/3 LA	including 8 solder lug connector modules	673.114.018.11
USF 2x32 AV 3/3 RJ11	including 8 RJ11-6pole connector modules	673.114.018.21
USF 2x32 AV 3/3 MX	including 8 MOLEX connector modules	673.114.018.41
USF 2x32 AV 3/3 KP	including 8 KRONE connector modules	673.114.018.51
USF 2x32 AV 3/3 BNC	including 8 BNC 75 Ω connector modules	673.114.018.61
USF 2x32 AV 3/3 SK	including 8 screw-mount connector modules	673.114.018.71
USF 2x32 AV 3/3 D9	including 8 D-Sub 9-pole connector modules	673.114.018.81
USF 2x32 AV 3/3 D25	including 8 D-Sub 25-pole connector modules	673.114.018.31
USF 2x32 AV 3/3 WA	including 8 WAGO clamping connector modules	673.114.018.91

USF High Performance connecting patch panel, 64 channels, 19", 3RU

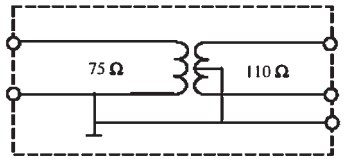
> 115 dB channel separation 0 ≤ f ≤ 2MHz, < 100dB channel separation between 2MHz ≤ f ≤ 5MHz

USF 2x32 AV 3/3 SA	plug-in facility	673.114.055.01

Including 8 connector modules:

USF 2x32 AV 3/3 LA H	including 8 solder lug connector modules	673.114.055.11
USF 2x32 AV 3/3 RJ11 H	including 8 RJ11-6pole connector modules	673.114.055.21
USF 2x32 AV 3/3 MX H	including 8 MOLEX connector modules	673.114.055.41
USF 2x32 AV 3/3 KP H	including 8 KRONE connector modules	673.114.055.51
USF 2x32 AV 3/3 BNC H	including 8 BNC 75 Ω connector modules	673.114.055.61
USF 2x32 AV 3/3 SK H	including 8 screw-mount connector modules	673.114.055.71
USF 2x32 AV 3/3 D9 H	including 8 D-Sub 9-pole connector modules	673.114.055.81
USF 2x32 AV 3/3 D25 H	including 8 D-Sub 25-pole connector modules	673.114.055.31
USF 2x32 AV 3/3 WA H	including 8 WAGO clamping connector modules	673.114.055.91

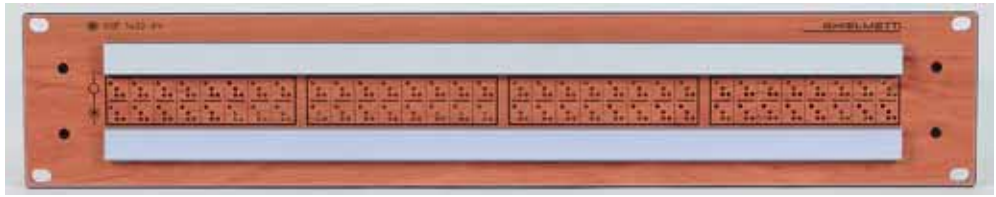
Impedance convertor module 75 Ω BNC asymmetrical to 110 Ω symmetrical, MOLEX



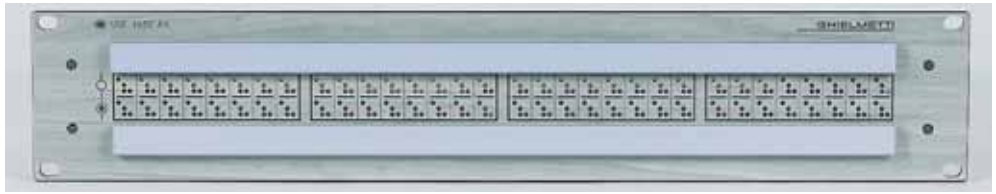
BNC75-MX110 1x2 AV
673.130.492.00

NEW

Universal connecting patch panel USF with design front panels



USF 1x32 AV 3/2 SA WoodStar	Front panel in wooden design brown/mat	673.114.012.03
USF 1x32 AV 3/2 SA WoodStar g	Front panel in wooden design brown/high polish	673.114.012.03g



USF 1x32 AV 3/2 SA SilverStar g	Front panel in wooden design silver/high polish	673.114.012.08g

Data Connecting Patch Panels (DSF)

6-pole connecting patch panel for 16 respectively 32 data lines in RS422 format. For control signals of the professional AV production (VTR, image scanner, matrix boards and editors). With Sony priority signal on pin 5.

DSF 1x16 AV 6/2 SA	6-pole RS-422 patch panel, 19", 2RU	673.113.998.01

6-pole RS422 connecting patch panels, including connector modules, without normalling plugs

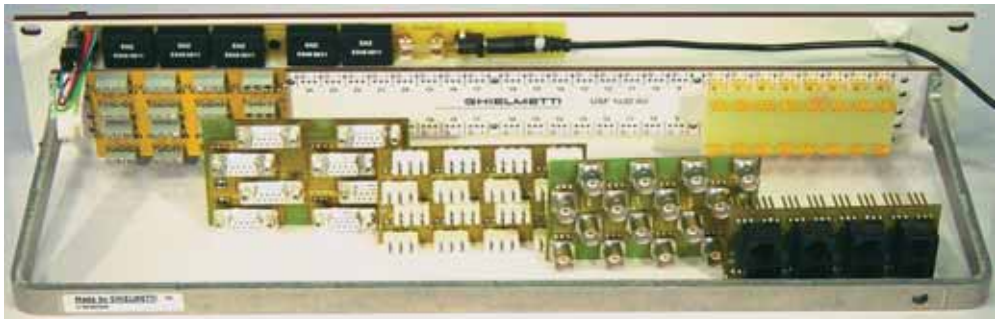
DSF 1x16 AV 6/2 LA	incl. 4 solder lug connector modules	673.113.998.11
DSF 1x16 AV 6/2 RJ11	incl. 4 RJ11 6-pole connector modules	673.113.998.21
DSF 1x16 AV 6/2 MX	incl. 4 MOLEX connector modules	673.113.998.41
DSF 1x16 AV 6/2 KP	incl. 4 KRONE connector modules	673.113.998.51
DSF 1x16 AV 6/2 BNC	incl. 4 BNC 75 Ω connector modules	673.113.998.61
DSF 1x16 AV 6/2 SK	incl. 4 screw-mount connector modules	673.113.998.71
DSF 1x16 AV 6/2 D9	incl. 4 D-Sub 9-pole connector modules	673.113.998.81
DSF 1x16 AV 6/2 D25	incl. 4 D-Sub 25-pole connector modules	673.113.998.31
DSF 1x16 AV 6/2 WA	incl. 4 WAGO clamping connector modules	673.113.998.91

Universal connecting patch panels USF with back lighted front panel

USF 1x32 AV 3/2 SA Light	USF with back lighted front panel	673.114.000.01

USF 1x32 AV 3/2 SA Light by night … illumination can be switched on/off through a push button

The front panel illumination is generated by a front panel integrated EL-foil, fed by a 12VDC commercial power supply adaptor. The exchangeable designation strips are commercial transparent foils, which can be labelled and printed off by any type of printer. After printing they are cut off to size and inserted into the front panel. The designation strips are background illuminated and therefore optimally readable even with poor environment illumination. The front panel illumination can be switched off by a push button.



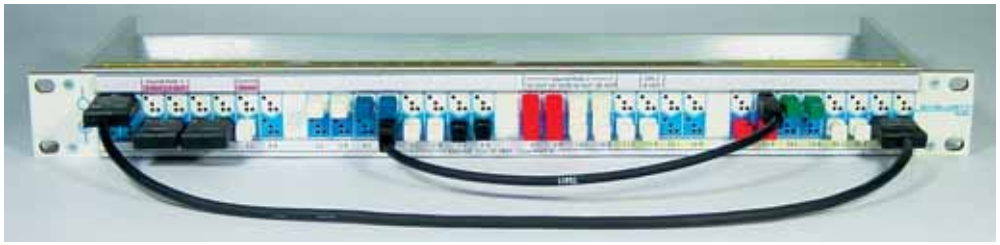
Connector modules and plug-in facilities: see page 46

Power supply adapter
230 VAC/12V/500mA/6W/plug 5,5 mm/2,1mm

Standard Connecting Patch Panels (BLUELINE)

Blueline is a product range of efficient 3-pole patch panels for the use in all areas of analog and digital transmission technology. Its special feature is the construction in 19"/1RU with solder or plug-in facilities.
All AV-types are delivered including 32 normalling plugs.

Connection patch panels ASF 1x32 AV, 19", 1RU, 32 channels, 3-pole



ASF 1x32 AV 3/1 SA Blueline	plug-in facility	673.113.900.01
ASF 1x32 AV 3/1 LA M Blueline	incl. 4 solder lug connector modules	673.113.900.05
ASF 1x32 AV 3/1 RJ11 Blueline	incl. 4 RJ11 6-pole connector modules	673.113.900.21
ASF 1x32 AV 3/1 D25 Blueline	incl. 4 D-Sub 25-pole connector modules	673.113.900.31
ASF 1x32 AV 3/1 MX Blueline	incl. 4 MOLEX connector modules	673.113.900.41
ASF 1x32 AV 3/1 WA Blueline	incl. 4 WAGO clamping connector modules	673.113.900.91

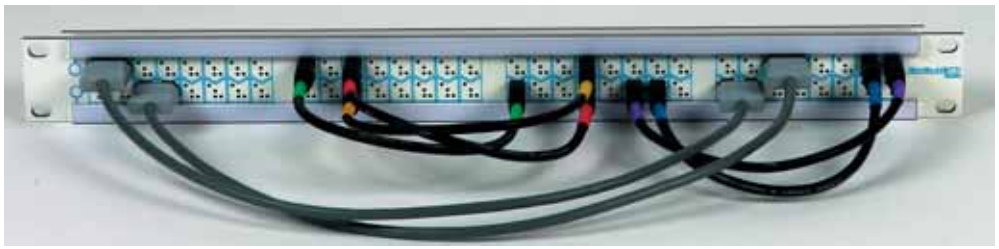
* ***The Patch Panels are available in different colours in mat or high polish (see page 48)***

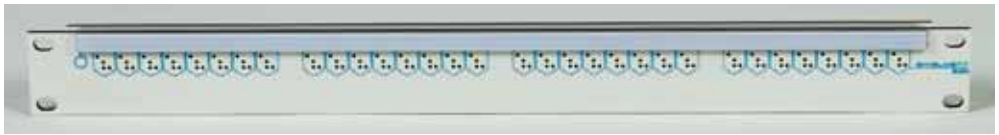
ASF 1x32 AV 3/1 SA RedStar	with red front panel design	673.114.900.02

ASF 2x32 A 3/1 SA BlueStar	with blue front panel design, plug-in facility	673.114.960.06
ASF 2x32 A 3/1 LA M BlueStar	19", 1HE, incl. 4 solder lug connector modules	673.114.960.16

Tender text
Standard connecting patch panel for 32 analog or digital channels, 19", 1RU, 3-pole switching with normalling plugs, channel separation and switch off attenuation > 90 dB
Brand: GHIELMETTI Type: ASF 1x32 AV / ASF 1x32 A / ASF 1x32 AP Blueline

Normal Patch Panels, ASF 2x32 A, 19", 1HE, 32-channels (64-channels), 3-pole





ASF 1x32 A 3/1 SA Blueline	32 channels, plug-in facility	673.113.910.01
ASF 1x32 A 3/1 LA Blueline	32 channels, solder lug	673.113.910.02

ASF 1x32 AP 3/1 SA Blueline	32 channels with parallel contact, plug-in facility	673.113.950.01
ASF 1x32 AP 3/1 LA Blueline	32 channels with parallel contact, solder lug	673.113.950.02

ASF 2x32 A 3/1 SA Blueline	64 channels, plug-in facility	673.113.960.01
ASF 2x32 A 3/1 LA Blueline	64 channels, solder lug	673.113.960.02

Normal patch panels including solder lug connector modules, cable bar & designation strips

ASF 1x32 A 3/1 LA M Blueline	19", 1RU, including 4 solder lug connector modules	673.113.910.05
ASF 1x32 AP 3/1 LA M Blueline	19", 1RU, including 4 solder lug connector modules	673.113.950.05
ASF 2x32 A 3/1 LA M Blueline	19", 1RU, including 4 solder lug connector modules	673.113.960.05

connector modules on page 46

Compact Connecting Patch Panels (CSF), 19“, 1RU, 48 Channels

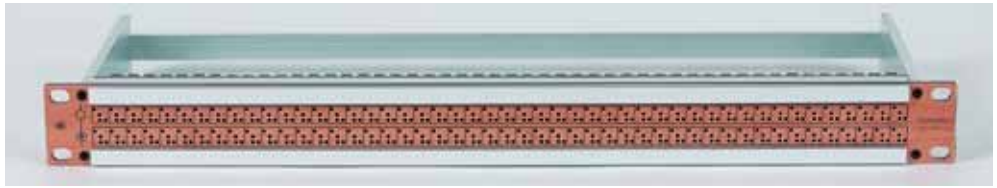
Tender text
Compact connecting patch panel for 48 channels, digital (AES/EBU), analogue, 3-pole, 19” 1RU
Flexible and time-saving plug-in facility. Switch off attenuation and channel separation > 90 dB.
Brand: GHIELMETTI *Type: CSF 1x48 AV*

CSF 1x48 AV all CSF Patch Panels are delivered incl. 48 normalling plugs, cable bar and designation strips

CSF 1x48 AV 3/1 SA for solder lug connectors or connector modules 673.113.553.01

CSF 1x48 AV 3/1 LA direkt 673.113.553.91

* ***CSF Patch Panels are available in different colours in mat or high polish (see page 48)***

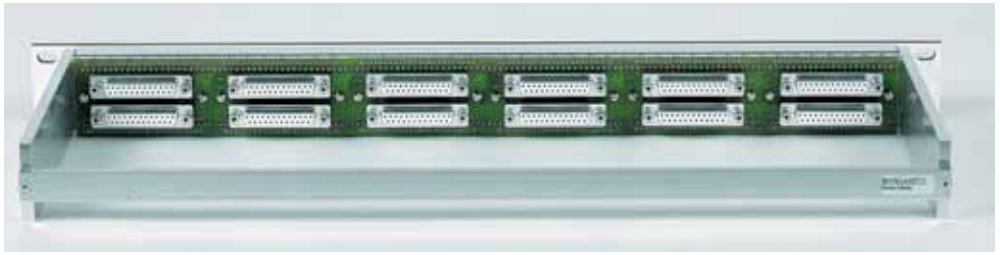


CSF 1x48 AV 3/1 SA WoodStar with brown, wooden front panel design 673.114.553.03

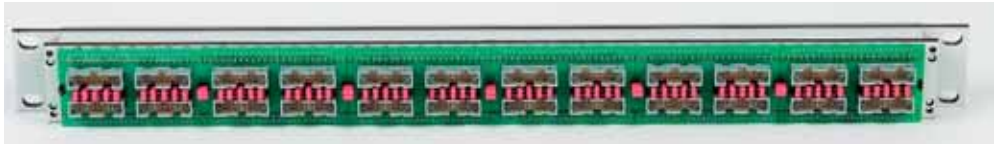
CSF 1x48 AV 3/1 SA SilverStar with silver/alumatt wooden front panel design 673.114.553.08

CSF 1x48 AV 3/1 SA G including 96 solder lug connectors type GAS 323 LA C 673.113.553.13

CSF 1x48 AV 3/1 LA including 6 solder lug connector modules LA 2x8 AV C 673.113.553.12
CSF 1x48 AV 3/1 LA plus including 6 solder lug connector modules with shield connection LA 2x8 AV C plus 673.113.553.11



CSF 1x48 AV 3/1 D25S incl. 6 D-Sub 25-pole connector modules (673.130.309.00) 673.113.553.41



CSF 1x48 AV 3/1 FB including 6 ribbon cable connector modules 673.113.553.51

CSF 1x48 AV 3/1 WW including 6 Wire Wrap connector modules 673.113.553.21
CSF 1x48 AV 3/1 MX including 6 MOLEX connector modules 673.113.553.31

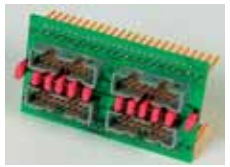
INDIVIDUAL PLUG-IN FACILITIES TO CSF

CSF 1x48 AV 3/1 SA with different connector modules

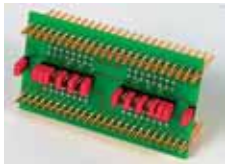
D-Sub 25-pole connector module, standard pinout
D25S 2x8 AV C
673.130.309.00

D-Sub 25-pole connector module, HARRIS/ARRI pinout
D25H 2x8 AV C
673.130.483.00

Ribbon cable connector module
FB 2x8 AV C
673.130.376.00



Ribbon cable connector module with shield jumpers
FB 2x8 AV C plus
673.130.303.00



Solder lug module with shield jumpers
LA 2x8 AV C plus
673.130.306.00

Solder lug module
LA 2x8 AV C
673.130.465.00

Solder lug connector
GAS 323 LA C
673.910.311.01

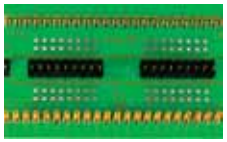
Standard Steckerbelegung Pinout 673.130.309.00			
Kanal Channel	Signal	D-Sub female	
1	a	1	
	b		14
	GND	2	
2	a		15
	b	3	
	GND		16
3	a	4	
	b		17
	GND	5	
4	a		18
	b	6	
	GND		19
5	a	7	
	b		20
	GND	8	
6	a		21
	b	9	
	GND		22
7	a	10	
	b		23
	GND	11	
8	a		24
	b	12	
	GND		25
	NC	13	

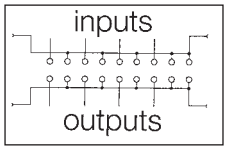
Harrison /ARRI Pinout 673.130.483.00			
Kanal Channel	Signal	D-Sub female	
1	GND	1	
	a		14
	b	2	
2	GND		15
	a	3	
	b		16
3	GND	4	
	a		17
	b	5	
4	GND		18
	a	6	
	b		19
5	GND	7	
	a		20
	b	8	
6	GND		21
	a	9	
	b		22
7	GND	10	
	a		23
	b	11	
8	GND		24
	a	12	
	b		25
	NC	13	

Flachband-Stecker
Ribbon cable connector
Scotch flex 2516-6002 DIN 41651

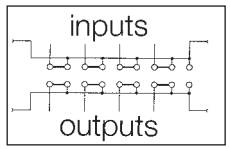
Kanal channel	Signal	Pin	
1	a	1	
	b		9
	GND	2	10
2	a	3	
	b		11
	GND	4	12
3	a	5	
	b		13
	GND	6	14
4	a	7	
	b		15
	GND	8	16

Switching/separating of the ground lines (cable shielding)

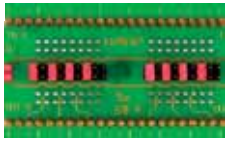


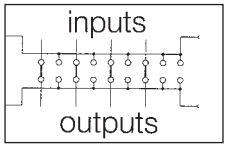


Shieldings are lead over the lines and end at the patch panel, not switched

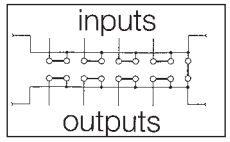


Shieldings are lead separately for input and output lines to a common potential TE/A





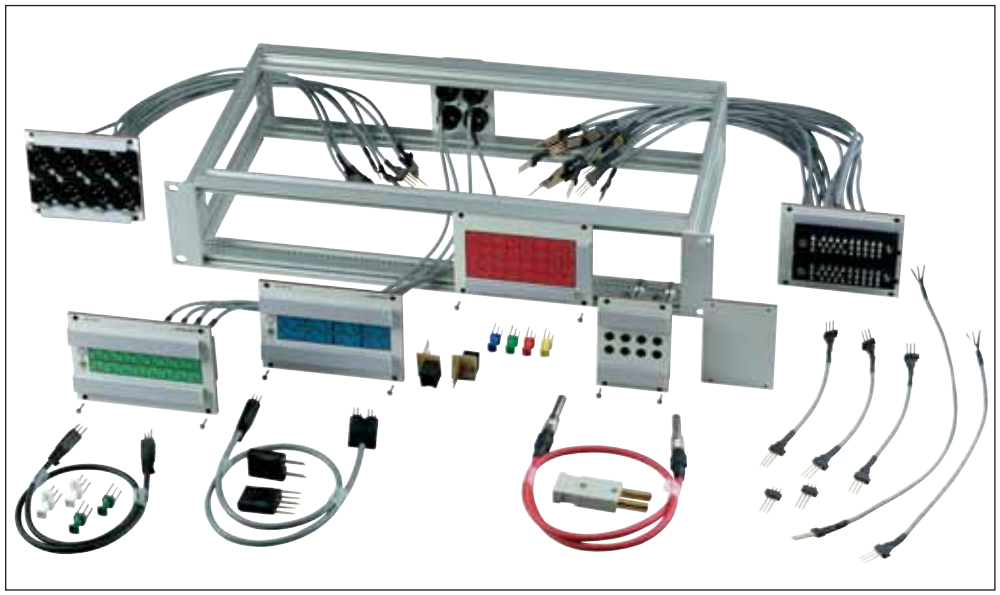
Shieldings of the incoming and outgoing lines are firmly connected and switched through



Shieldings are radial on a common potential

Ghielmetti patch panels allow an easy and prompt wiring, owing to the fact that connector modules can be wired before the patch panel is assembled. Patch panels are delivered from factory including mounted and screwed connector modules, ready for use. Optionally they may be delivered in advance, enabling to prepare wiring.

MODULINE: Multimedia patch and Routing system

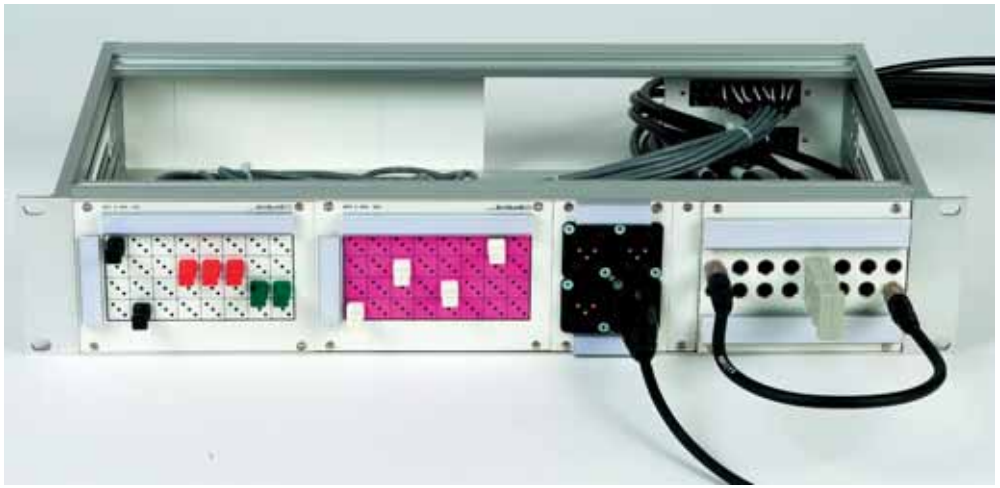


MODULINE is a completely harmonized product range for individual, efficient routing functions in the audio, video and data networks. Different colours identify different signals (analog, digital, RS-422, etc.).
With its new product range MODULINE, GHIELMETTI offers a completely modular and flexible matrix and patch system for audio, video and data lines. The different modules allow individual configuration of different routing functions. MODULINE is supplied in a standard 19"/2RU frame or in customised surfaces. The standard size of the basic modules is 24TE. Different types of signals like audio digital, audio analogue, video digital, RS-422, ISDN, Tally, RS-232, etc. are clearly marked by different colours of modules. For the link up with the connection cables, different connector modules are available: XLR, RJ45, RP300, direct connectors as well as cascading cables in various lengths. The MODULINE range currently includes the following basic modules: audio matrix 4x8, audio patch panel 1x8 in different functions, RS-422 connecting patch panel 1x4 6-pole, standard audio patch panel 1x8 and 2x8 in various functions, video patch panel in 1x4 and 1x8 as well as connection modules with XLR, RJ45, Siemens 30-pole and others.
All technical specifications meet the Standard-Specifications of GHIELMETTI Patch Panels.

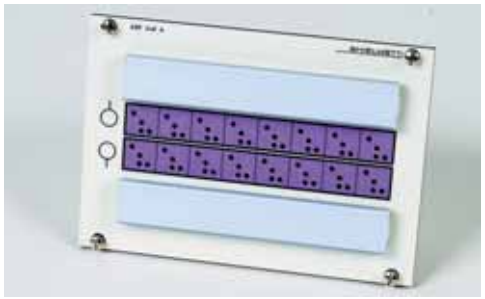
MODULINE 19"/2RU frame

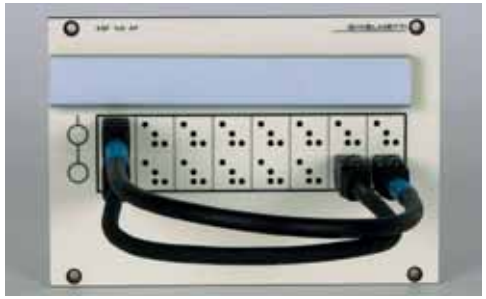
All MODULINE modules can be screwed into a 19"/2RU frame, 245 mm.
Moduline-Rack 673.130.322.05

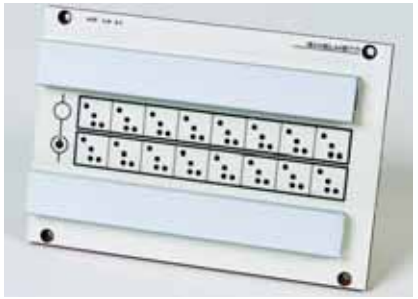
19", 2RU frame, completely wired with the following connection modules:
2 connecting patch panels ASF 1x8 AV (red: digital AES/EBU, white: analog audio),
1 parallel patch extension GSD 4x4 P, 1 RS-422 connecting patch panel DSF 1x4 AV

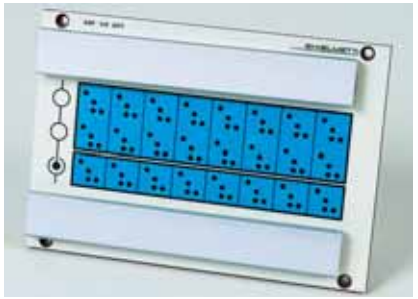


19", 2RU frame, completely wired with the following connection modules:
2 matrix boards GKVA 4x8 323 SA cascaded to 4x16, inputs in front on XLR module,
1 video patch panel GVP 1x8 AV (3 GHz midsize)









Normal patch module, 2x8 channels, 3-pole

ASF 2x8 A SA rt Moduline	2x8 normal patch, red, 24TE/2RU	673.113.951.02
ASF 2x8 A SA gn Moduline	2x8 normal patch, green, 24TE/2RU	673.113.951.05
ASF 2x8 A SA bl Moduline	2x8 normal patch, blue, 24TE/2RU	673.113.951.06
ASF 2x8 A SA li Moduline	2x8 normal patch, violet, 24TE/2RU	673.113.951.07
ASF 2x8 A SA ws Moduline	2x8 normal patch, white, 24TE/2RU	673.113.951.09

(3-pole connector modules on page 46)

Normal patch module with parallel contact, 1x8 channels, 3-pole

ASF 1x8 AP SA rt Moduline	1x8 parallel patch, red, 24TE/2RU	673.113.952.02
ASF 1x8 AP SA gn Moduline	1x8 parallel patch, green, 24TE/2RU	673.113.952.05
ASF 1x8 AP SA bl Moduline	1x8 parallel patch, blue, 24TE/2RU	673.113.952.06
ASF 1x8 AP SA li Moduline	1x8 parallel patch, violet, 24TE/2RU	673.113.952.07
ASF 1x8 AP SA ws Moduline	1x8 parallel patch, white, 24TE/2RU	673.113.952.09

(3-pole connector modules on page 46)

Parallel patch extension, 4x4 channels (may also be used as a pin park for 16 plugs)

GSD 4x4 P rt Moduline	4x4 parallel patch, red, 12TE/2RU	673.113.957.02
GSD 4x4 P gn Moduline	4x4 parallel patch, green, 12TE/2RU	673.113.957.05
GSD 4x4 P bl Moduline	4x4 parallel patch, blue, 12TE/2RU	673.113.957.06
GSD 4x4 P li Moduline	parallel patch, violet, 12TE/2RU	673.113.957.07
GSD 4x4 P ws Moduline	4x4 parallel patch, white, 12TE/2RU	673.113.957.09

Connecting patch module, 1x8 channels, 3-pole, incl. 8 normalling plugs

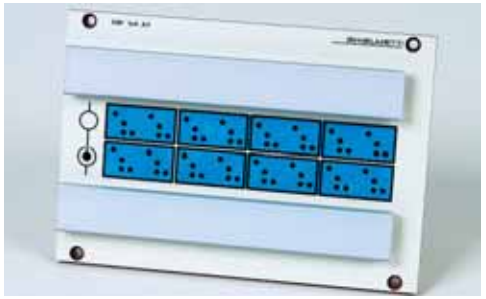
ASF 1x8 AV SA rt Moduline	1x8 connecting patch, red, 24TE/2RU	673.113.953.02
ASF 1x8 AV SA gn Moduline	1x8 connecting patch, green, 24TE/2RU	673.113.953.05
ASF 1x8 AV SA bl Moduline	1x8 connecting patch, blue, 24TE/2RU	673.113.953.06
ASF 1x8 AV SA li Moduline	1x8 connecting patch, violet, 24TE/2RU	673.113.953.07
ASF 1x8 AV SA ws Moduline	1x8 connecting patch, white, 24TE/2RU	673.113.953.09

(3-pole connector modules on page 46)

Connecting patch module with parallel contact, 1x8 channels, 3-pole, incl. 8 normalling plugs

ASF 1x8 APV SA rt Moduline	1x8 parallel & connecting patch, red, 24TE/2RU	673.113.955.02
ASF 1x8 APV SA gn Moduline	1x8 parallel & connecting patch, green, 24TE/2RU	673.113.955.05
ASF 1x8 APV SA bl Moduline	1x8 pparallel & connecting patch, blue, 24TE/2RU	673.113.955.06
ASF 1x8 APV SA li Moduline	1x8 parallel & connecting patch, violet, 24TE/2RU	673.113.955.07
ASF 1x8 APV SA ws Moduline	1x8 parallel & connecting patch, white, 24TE/2RU	673.113.955.09

(3-pole connector modules on page 46, on the top)



19"-Video Patch Panel (siehe Seite 54)

8-pole RJ45 / RS-422 / RS-232 patch module

DSF 1x4 AV 8 SA rt Moduline	1x4 connecting patch, red, 24TE/2RU	673.113.958.02
DSF 1x4 AV 8 SA gn Moduline	1x4 connecting patch, green, 24TE/2RU	673.113.958.05
DSF 1x4 AV 8 SA bl Moduline	1x4 connecting patch, blue, 24TE/2RU	673.113.958.06
DSF 1x4 AV 8 SA li Moduline	1x4 connecting patch, violet, 24TE/2RU	673.113.958.07
DSF 1x4 AV 8 SA ws Moduline	1x4 connecting patch, white, 24TE/2RU	673.113.958.09

(8-pole connector modules on page 43)

6-pole RJ11 / RS-422 / RS-232 patch module

DSF 1x4 AV 6 SA rt Moduline	1x4 connecting patch, red, 24TE/2RU	673.113.954.02
DSF 1x4 AV 6 SA gn Moduline	1x4 connecting patch, green, 24TE/2RU	673.113.954.05
DSF 1x4 AV 6 SA bl Moduline	1x4 connecting patch, blue, 24TE/2RU	673.113.954.06
DSF 1x4 AV 6 SA li Moduline	1x4 connecting patch, violet, 24TE/2RU	673.113.954.07
DSF 1x4 AV 6 SA ws Moduline	1x4 connecting patch, white, 24TE/2RU	673.113.954.09

(8-pole connector modules on page 46)

Matrix module, 4x8 inputs/outputs, 3-pole, incl. 4 connecting plugs

GKVA 4x8 323 SA rt Moduline	4 in-, 8 outputs, red, 24TE/2RU	673.113.956.02
GKVA 4x8 323 SA gn Moduline	4 in-, 8 outputs, green, 24TE/2RU	673.113.956.05
GKVA 4x8 323 SA bl Moduline	4 in-, 8 outputs, blue, 24TE/2RU	673.113.956.06
GKVA 4x8 323 SA li Moduline	4 in-, 8 outputs, violet, 24TE/2RU	673.113.956.07
GKVA 4x8 323 SA ws Moduline	4 in-, 8 outputs, white, 24TE/2RU	673.113.956.09

Digital video patch module, Midsize, 3 GHz

GVP 2x4 A M Moduline	with 8 video jacks, 12TE/2RU	677.110.034.00
GVP 2x4 A M T75 Moduline	with 8 video jacks, 12TE/2RU, terminated 75 Ω	677.110.035.00
GVP 1x4 AV M N75 Moduline	with 4 video modules, 12TE/2RU, self normalling 75 Ω	677.110.036.00
GVP 2x8 A M Moduline	with 16 video jacks, 21TE/2RU	677.110.037.00
GVP 2x8 A M T75 Moduline	with 16 video jacks, 21TE/2RU, terminated 75 Ω	677.110.038.00
GVP 1x8 AV M N75 Moduline	with 8 video modules, 21TE/2RU, self normalling 75 Ω	677.110.039.00

Video patchcord, Midsize to Midsize, black

GVK M/30	30 cm	140.950.500.65
GVK M/60	60 cm	140.950.500.66
GVK M/90	90 cm	140.950.500.67

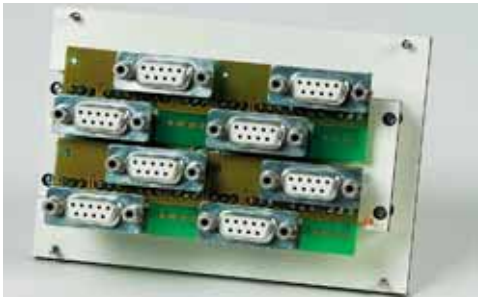
Video MUSA U-link, Midsize

GUL-M	MUSA U-Link, midsize	140.950.500.82

(see page 55)

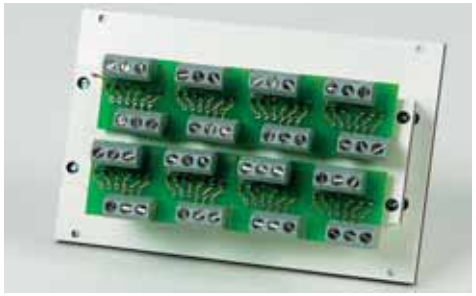
MODULINE Plug-in facilities

Connector modules see page 46

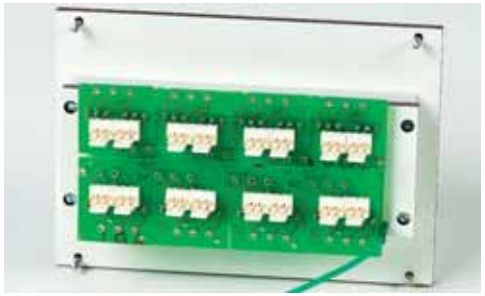


MODULINE with D-Sub 9-pole connector module

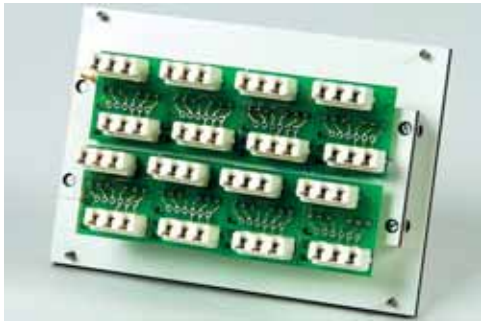
MODULINE with RJ11 6-pole connector module



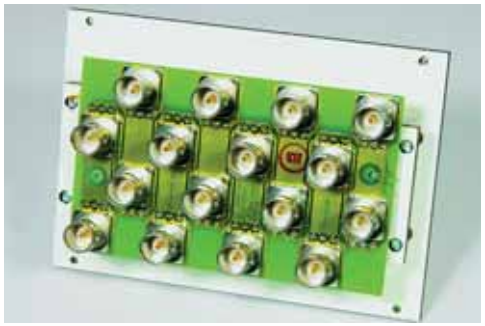
MODULINE with screw-mount connector module



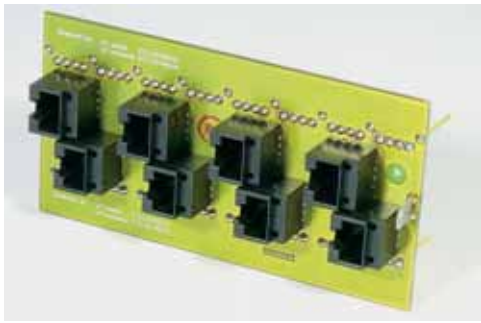
MODULINE with MOLEX connector module



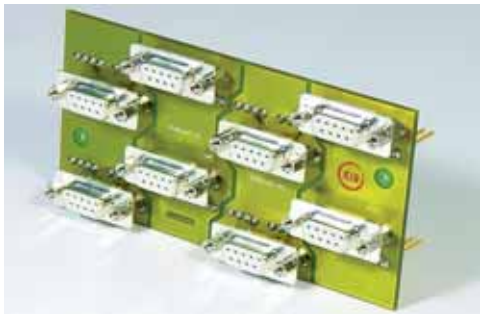
MODULINE with KRONE-LSA-PLUS connector module



MODULINE with BNC-75-Ω connector module



RJ45 2x4 AV 8 8-pole, for DSF 1x4 673.130.480.00



D9 2x4 AV 8 D-Sub 9-pole, for DSF 1x4 673.130.479.00

XLR connector modules, non-wired/wired with connection cable, 60cm

GXL 4 f Moduline	4 channels, female, 12TE/2RU	673.130.401.00
GXL 4 f Moduline	4 channels, female, 12TE/2RU, wired	673.130.401.10
GXL 4 m Moduline	4 channels, male, 12TE/2RU	673.130.402.00
GXL 4 m Moduline	4 channels, male, 12TE/2RU, wired	673.130.402.10
GXL 8 f Moduline	8 channels, female, 21TE/2RU	673.130.403.00
GXL 8 f Moduline	8 channels, female, 21TE/2RU, wired	673.130.403.10
GXL 8 m Moduline	8 channels, male, 21TE/2RU	673.130.404.00
GXL 8 m Moduline	8 channels, male, 21TE/2RU, wired	673.130.404.10

RP300/30-pole connector modules, non-wired/wired with connection cable, 60cm

GSI 2x30 f Moduline	2x30-pole, female, 21TE/2RU	673.130.405.00
GSI 2x30 f Moduline	2x30-pole, female, 21TE/2RU, wired	673.130.405.10
GSI 2x30 m Moduline	2x30-pole, male, 21TE/2RU	673.130.406.00
GSI 2x30 m Moduline	2x30-pole, male, 21TE/2RU, wired	673.130.406.10
GSI 2x30 f/m Moduline	2x30-pole, 1 x male/1 x female, 21TE/2RU	673.130.407.00
GSI 2x30 f/m Moduline	2x30-pole, 1 x male/1 x female, 21TE/2RU, wired	673.130.407.10

19"- standard rack: Matrix Boards wired to RP300 30-pole connectors. Video Patch Modules, Midsize 3 GHz connected to 75 Ω BNC connector cables.

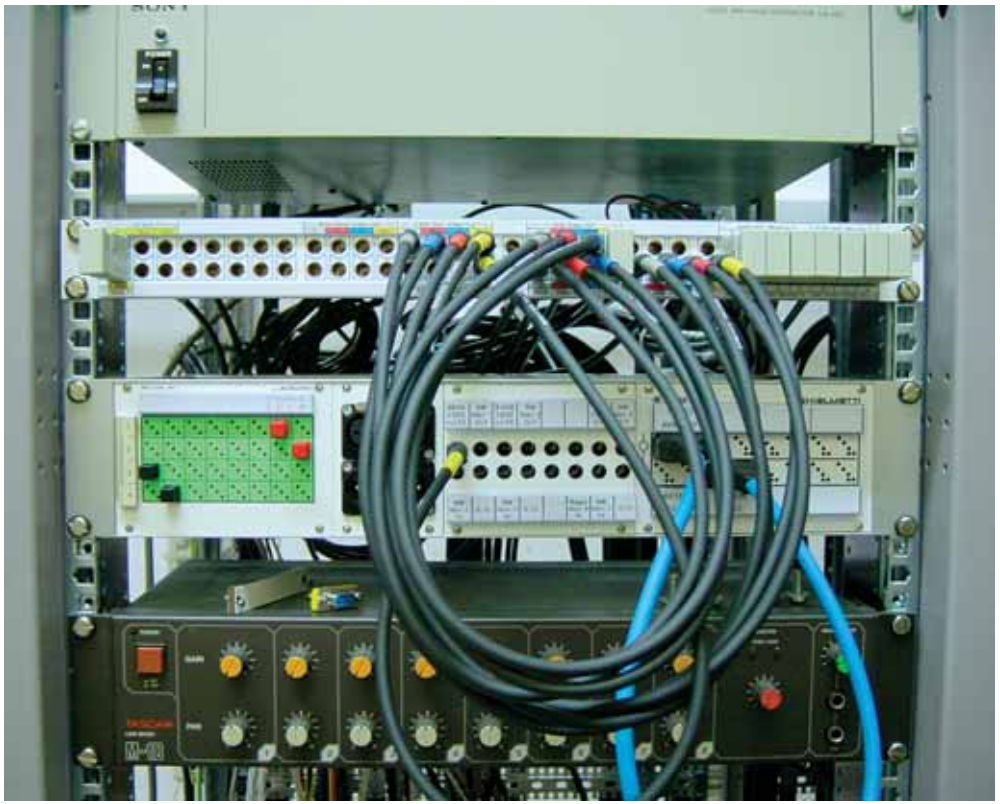
XLR interconnecting modules

GXL 8 SA f Moduline	8 channels, female, 21TE/2RU, wired	673.130.403.10
GXL 8 SA m Moduline	8 channels, male, 21TE/2RU, wired	673.130.404.10

Blanking panels

GPP M 3/2	3TE/2RU, white, incl. screws M2,5	P1583
GPP M 6/2	6TE/2RU, white, incl. screws M2,5	P1582
GPP M 12/2	12TE/2RU, white, incl. screws M2,5	P1580
GPP M 21/2	21TE/2RU, white, incl. screws M2,5	P1579
GPP M 24/2	24TE/2RU, white, incl. screws M2,5	P1581

Main switch room at AVMedia Ltd., Zollbrück (Switzerland), owner Mr. Beat Lüthi



Midsize video patch panel **GVP 2x32 A** (on top). MODULINE-Rack with matrix boards type GKVA 4x8 323, video patch panel **GVP 1x4 AV** and RS-422 data patch module **DSF 1x4 AV 8**

MICROLINE Multimedia Connectors (DC to 3 GHz)

GSM 1A LA – ***Ghielmetti 3-pole connectors (type A) DC – 20 MHz***


680.110.000.02


680.110.000.05

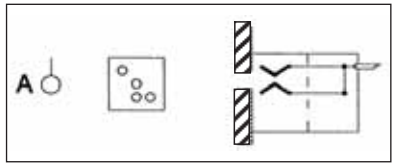

680.110.000.06


680.110.000.04


680.110.000.01


680.110.000.09

680.110.012.01
with designation strip



3-pole connector

GSM 1AV LA – ***Ghielmetti 3-pole connector with switch facility (type V) DC – 20 MHz***


680.110.010.02


680.110.010.05

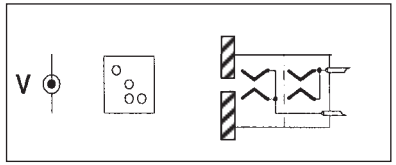

680.110.010.06


680.110.010.04


680.110.010.01


680.110.010.09


680.110.013.01



3-pole connecting module

GSM 1A BNC75 – ***RG59 BNC 75 Ohm – 750 MHz***


680.200.100.02


680.200.100.05


680.200.100.06


680.200.100.04


680.200.100.01

Colours identify signals
MICROLINE Modules are available in:
- red
- green
- blue
- yellow
- black
- white

GSM 1A VM – ***video socket Midsize, 75 Ohm, DC – 3 GHz***


680.200.110.02


680.200.110.05


680.200.110.06


680.200.110.04


680.200.110.01


GSM 1A M/K75 an
680.200.120.01

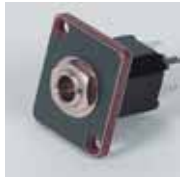
with 75 Ω resistor


GXL 8 P1574

* **GSM 1A** – ***connectors for all connections***


GSM 1A CHINCH ws
680.500.001.09


GSM 1A CHINCH rt
680.500.002.02


GSM 1A J6.35 an
680.500.003.01


GSM 1A J4.4 an
680.500.004.01


GSM 1A XLR f
140.950.500.25


GSM 1A VS an
680.500.130.01


GSM 1A ST
680.501.001.00


GXL 4 P1575

The Universal GHIELMETTI Connecting Technology for Matrix Boards & Patch Panels

Connector modules for Matrix Boards GKV/GKVA 323, Patch Panels USF, ASF and ASF Moduline as well as Blueline type A, AP & APV)

RJ11 1x4 A 673.130.478.01

LA 1x8 A 673.130.473.01

WA 1x8 A 673.130.495.01

MX 1x8 A 673.130.474.01

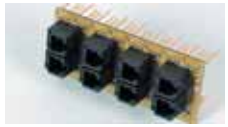
KP 1x8 A 673.130.472.01

SK 1x8 A 673.130.475.01

D9 1x8 A 673.130.476.01

BN75 1x8 A 673.130.477.01

1RU connector modules, for USF, ASF, Moduline & Blueline panels, type AV



RJ11 2x4 AV 673.130.478.00
RJ45 2x4 AV 673.130.478.03

LA 2x8 AV 673.130.473.00

WA 2x8 AV 673.130.495.00

MX 2x8 AV 673.130.474.00

2RU connector modules for USF panels type AV

KP 2x8 AV 673.130.472.00

SK 2x8 AV 673.130.475.00

D9 2x8 AV 673.130.476.00

BN75 2x8 AV 673.130.477.00

ASF 1x32 AV 3/1 MX Blueline 4 Molex connector modules 673.113.900.41

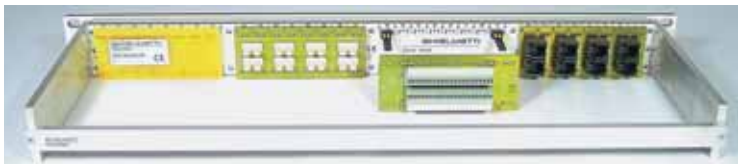
GMX 8S
673.130.474.02
Set incl. 8 connector housings 3-pole & 24 crimp contacts, female

LSA-PLUS insertion tool for KRONE 673.110.010.00

BNC-Mounting tool 140.950.500.78

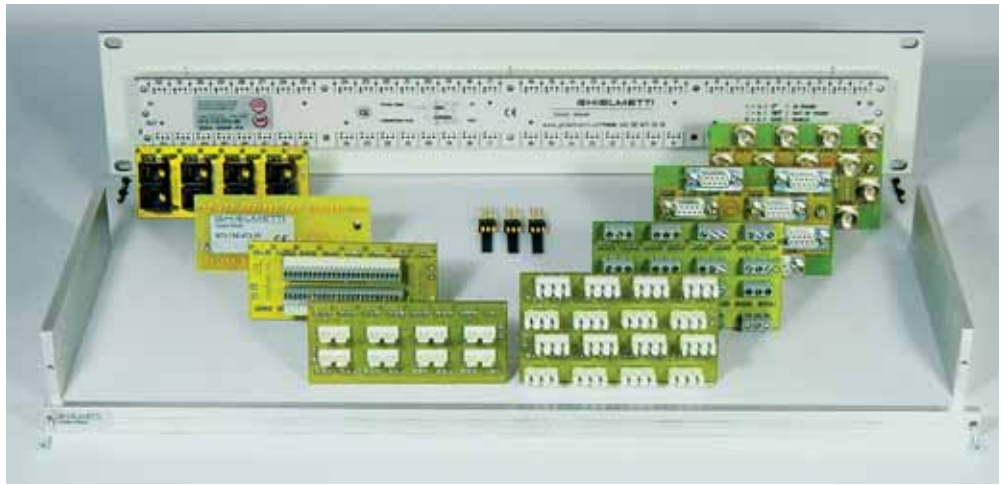
Cable bar mounting kit, see page 47

KRONE LSA PLUS for PVC insulated copper wires
Wire diameter: 0,4 – 0,65 mm
Cable diameter: 0,7 – 1,40 mm



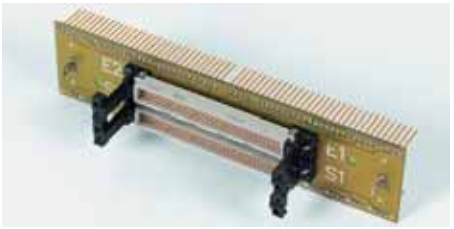
Blueline with solder lug connector modules & and 3-pole solder connectors

GAS 323 LA C
673.910.311.01



Connector modules for Universal Patch Panels (USF)

Customised connector modules for ASF panels type AV



2 x 96-pole DIN 41950 Multipole connector module

4 x 48-pole Ribbon cable connector module

Normalling Plugs, Patchcords and Accessories for 3-pole and 6-pole Patch Panels

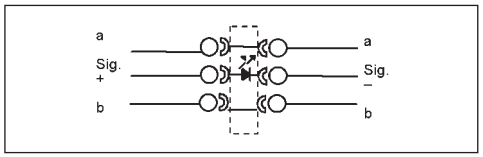
3-pole normalling plugs

GVS 323 c sw	3-pole, black	673.910.079.00
GVS 323 c rt	3-pole, red	673.910.079.02
GVS 323 c gb	3-pole, yellow	673.910.079.04
GVS 323 c gn	3-pole, green	673.910.079.05
GVS 323 c bl	3-pole, blue	673.910.079.06
GVS 323 c ws	3-pole, white	673.910.079.09

3-pole normalling and locking plug
avoids parallel tap of the incoming channel

GVS 323 d sw	black	673.910.302.00
GVS 323 d ws	white	673.910.302.09
GVS 323 d rt	red	673.910.302.02

LED normalling plug
GLS 323 rt
673. 910. 081.09



When using 3 poles (a, sig., b), the middle conductor can be used as a signal conductor. It activates the LED and signalises the operational state of the respective connection.

3-pole Adapters
XLR f to G3P

GXK 250 fG
250 cm
673.910.317.50

Different length available

2-pole normalling plugs
for 2-pole switching without cable shielding with coding pin
GVS 322 c ws (rt)
white 673.910.313.09
red 673.910.313.02

2-pole normalling locking plug

GVS 322 d ws (rt)
white 673.910.302.19
red 673.910.302.12

3-pole screened patchcords – AES / EBU

GMK 313/30 d	black, 30 cm	673.910.269.20
GMK 313/60 d	black, 60 cm	673.910.269.00
GMK 313/90 d	black, 90 cm	673.910.269.10
GMK 313/120 d	black, 120 cm	673.910.269.30
GMK 313/180 d	black, 180 cm	673.910.269.40
GMK 313/250 d	black, 250 cm	673.910.269.50

Colour markings

red	.269.x2	**blue**	.269.x6
yellow	.269.x4	**violet**	.269.x3
green	.269.x5		

Designation strips

GBZ 8 C	8x432 mm	128.110.000.19
GBZ 8 B	8x418 mm	128.110.000.20
GBZ 10	10x500 mm	128.110.000.10
GBZ 15	15x500 mm	128.110.000.11
GBZ 30	30x500 mm	128.110.000.12

Solder lug connector
GAS 323 LA C
673.910.311.01

XLR-Connecting cable
XLR f auf XLR m

GXK 90 fm
90 cm
673.910.316.10

Interconnecting cable
GSK 3/30 H
30 cm, 673.910.295.03
GSK 3/60 H
60 cm, 673.910.295.06
GSK 3/100 H
100 cm, 673.910.295.00

3-pole cascading cable
GKK 3/15 H
15 cm, 673.910.299.02
GKK 3/30 H
30 cm, 673.910.299.03
GKK 3/60 H
60 cm, 673.910.299.06

Patchcord plug
max. Ø 5,9 mm
(not for CSF panels)

GKS 313 m (rt,bl,gn,gb)

red	673.910.201.12
blue	673.910.201.16
green	673.910.201.15
yellow	673.910.201.14

Patchcord plug
3-pole
max. Ø 5,9 mm
(not for CSF panels)

GKS 313 m sw
black 673.910.201.10

Cable bar kit for matrix boards and patch panels

GKB-PP
673.130.499.00

6-pole normalling plug
(2x3-pole)
GVS 326 S sw
673.910.232.00
(not for CSF panels)

Patchcord plug
6-pole
max. Ø 5,9 mm
(not for CSF panels)

GKS 316 s
673.910.231.00

Patchcord 6-pole digital, stereo, AES/EBU, RS-422
(not for CSF panels)
GSK 316/60 sw
60 cm 673.910.228.00
GSK 316/90 sw
90 cm 673.910.228.10

Front Panels – Switch Boards – 19”-Panels – Connection Panels

GHIELMETTI’s front panels enable many design possibilities and can easily be processed mechanically. They are easy to clean, mar-resistant and resistant to most chemicals and solvents. The standard surface is slightly structured (alumatt) and is supplied in the standard colours, grey and beige. Special colours are available on request.
Colours are an important design element at GHIELMETTI. Many years of experience in silk-screen processing guarantee high quality colour printings. Moreover, state of the art equipment and a company owned CAD centre enable quick and precise mechanical processings as well as customised designs. The front panels consist of paper foils which are impregnated with artificial resin. On a deck press, they are welded together to provide a sturdy material.
Front panels can be multicoloured or engraved achieving a decorative look. The plate is coated with a mar resistant and transparent artificial resin (melamin resin) to protect its surface.

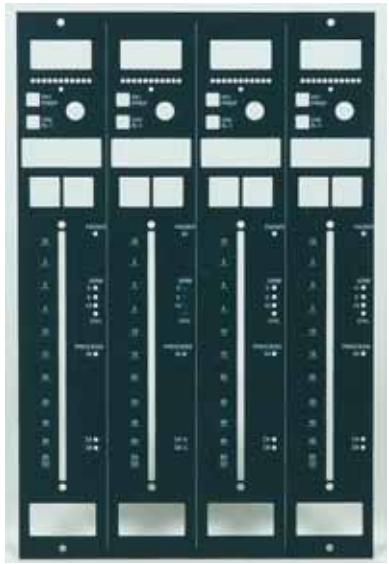
Dimensions
Front panels are produced in all sizes. Sizes which can be processed mechanically and typographically are max. 600 x 1120mm.

Standard thickness 2,5 / 3 / 5 mm
With the respective thickness they can be used as a self-supporting front panel. Larger dimensions and special thickness (like 1 / 2 / 4 / 6 / 8,5mm) are also available.

Standard basic colours light grey, light ivory, creamy white, anthracite, other colours on request

Areas of use:

- device front panels
- control panels
- 19” front panels
- blanking panels
- connection panels
- diagrams
- guiding boards in public areas
- charts
- advertising boards
- decoration panels
- schemes
- course diagrams



Technical data

PROTECTOPRINT material: laminated plates on cellulose basis which are pressed under high heat and pressure

Mechanical:	mar-resistant, wear-resistant, impact-resistant
Chemical:	resistant to benzine as well as corrosives like sulphuric, phosphoric and nitric acid
Electrical:	insulating, high disruptive strength
Thermal:	Tu: -70°C up to + 110°C, DIN 53499
Atmospheric:	FN (DIN 50010)
Quality:	light resistant according to NEMA regulations

Universal Connection Panels

The connection panels are produced of an insulating laminated cellulose basis. Besides the standard sizes, customised sizes are also possible and the colour as well as the printing can be defined by customers' requests. Different types of connectors are available. Exchangeable designation strips are avaiable. They are 19" or can be mounted into a 19" frame in 84TE.

XLR connector panels 19" for MICROLINE connector modules (see page 45)

All XLR connection panels are available for different types of connectors. They can be supplied unpopulated, populated or mixed (male, female).




Unpopulated, for the insertion of GSM patch modules type Microline

XLR 1x16 ws	16 times, 19", 1RU, white	P 1570
XLR 1x16 an	16 times, 19", 1RU, anthracite	P 1570.01
XLR 2x16 ws	32 times, 19", 2RU, white	P 1571
XLR 2x16 an	32 times, 19", 2RU, anthracite	P 1571.01

Populated with XLR 3-pole (female, male)

XLR 1x16 ws f	16 XLR female, 19", 1RU, white	673.130.412.00
XLR 1x16 an f	16 XLR female, 19", 1RU, anthracite	673.130.412.01
XLR 1x16 ws m	16 XLR male, 19", 1RU, white	673.130.413.00
XLR 1x16 an m	16 XLR male, 19", 1RU, anthracite	673.130.413.01
XLR 2x16 ws f	32 XLR female, 19", 2RU, white	673.130.414.00
XLR 2x16 an f	32 XLR female, 19", 2RU, anthracite	673.130.414.01
XLR 2x16 ws m	32 XLR male, 19", 2RU, white	673.130.415.00
XLR 2x16 an m	32 XLR male, 19", 2RU, anthracite	673.130.415.01

Custom made Video panels

RP300 30-pole connection panels

All RP300 connection panels are available for different types of connectors. They can be supplied unpopulated, populated or mixed (male, female).


Unpopulated for the insertion of 30-pole/72-pole connectors (female, male)

RP300 1x8 30	8 RP300, 19", 2RU, white	P 1584
RP300 1x8 30	8 RP300, 19", 2RU, anthracite	P 1584.01
RP300 1x16 30	16 RP300, 19", 3RU, white	P 1585
RP300 1x16 30	16 RP300, 19", 3RU, anthracite	P 1585.01

Populated with RP300 30-pole connectors

RP300 1x8 30 f	8 RP300 female, 19", 2RU, white	673.130.416.00
RP300 1x8 30 f	8 RP300 female, 19", 2RU, anthracite	673.130.416.01
RP300 1x8 30 m	8 RP300 male, 19", 2RU, white	673.130.417.00
RP300 1x8 30 m	8 RP300 male, 19", 2RU, anthracite	673.130.417.01
RP300 1x16 30 f	16 RP300 female, 19", 3RU, white	673.130.418.00
RP300 1x16 30 f	16 RP300 female, 19", 3RU, anthracite	673.130.418.01
RP300 1x16 30 m	16 RP300 male, 19", 3RU, anthracite	673.130.419.00
RP300 1x16 30 m	16 RP300 male, 19", 3RU, anthracite	673.130.419.01

Other types on request


4-pole (8-pole) Connecting Patch Panels – Series 324 (ASF)

High Performance normal and connecting patch panels for 24/48 4-pole lines, e.g.for 4-pole/8-pole data patch bay or modulation lines with signal line or 4-wire connections, high switch off attenuation and channel separation (> 115 dB)

ASF 2x24 AV 4/3 LA H	19", 3HE, solder lug, High Performance	673.113.639.01

ASF 2x24 A 4/2 LA H bg	673.113.636.10
ASF 2x24 A 4/2 LA H an	673.113.636.11

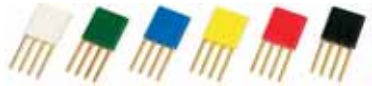
ASF 1x24 APV 4/2 LA H bg	673.113.638.10
ASF 1x24 APV 4/2 LA H an	673.113.638.11

Standard, Normal and Connecting Patch Panels, 4-pole, solder lug [LA] or plug-in facility [SA]

ASF 1x24 A 4/1 SA	Normal Patch Panel, 24-channels,19", 1RU	673.114.130.01
ASF 2x24 A 4/2 SA	Normal Patch Panel, 48-channels,19", 2RU	673.114.131.01
ASF 1x24 AP 4/2 SA	Normal/parallel Patch Panel, 24-channels,19", 2RU	673.114.132.01
ASF 1x24 AV 4/2 SA	Connecting Patch Panel, 24-channels,19", 2RU	673.114.133.01
ASF 2x24 AV 4/3 SA	Connecting Patch Panel, 48-channels,19", 3RU	673.114.134.01
ASF 1x24 APV 4/2 SA	Normal/parallel Connecting Patch Panel, 24-channels,19",2RU	673.114.135.01

RJ45 2x4 AV	RJ45, 8-pole	673.130.480.00

D9 2x4 AV 8	D-Sub 9-pole	673.130.479.00



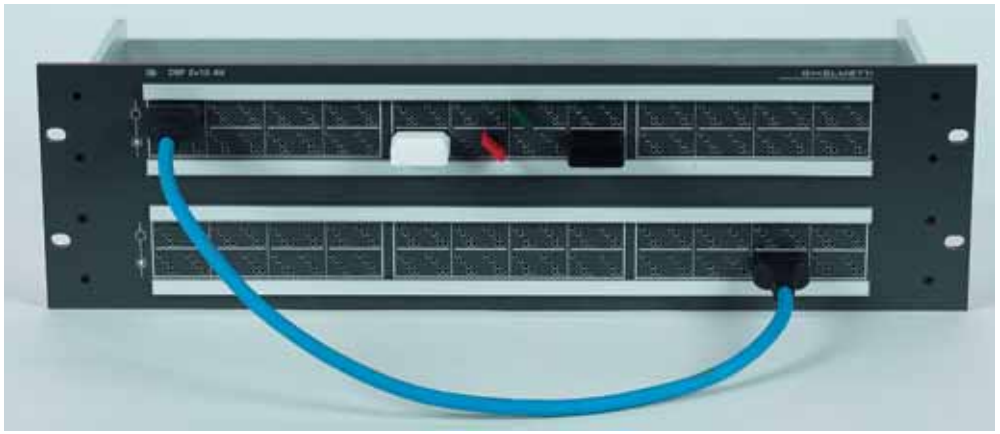
4-pole normalling plugs

GVS 324 sw	4-pole, black	673.910.002.40
GVS 324 rt	4-pole, red	673.910.002.42
GVS 324 gb	4-pole, yellow	673.910.002.44
GVS 324 gn	4-pole, green	673.910.002.45
GVS 324 bl	4-pole, blue	673.910.002.46
GVS 324 ws	4-pole, white	673.910.002.49

8-pole normalling plugs

GVS 328 sw	8-pole, black	673.910.240.00
GVS 328 rt	8-pole, red	673.910.240.02
GVS 328 gn	8-pole, green	673.910.240.05
GVS 328 ws	8-pole, white	673.910.240.09

Standard 8-pole connecting patch panel for 12 respectively 24 data lines in 19"/2RU respectively 3RU version for AV production (VTR, image scanners, matrix boards, editors, RS-422, RS-232, ISDN).



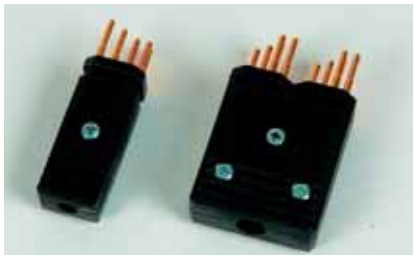
DSF 1x12 AV 8/2 SA	19", 2RU, for plug-in facility	673.113.996.01

8-pole Connecting Patch Panels (normalling plugs to be ordered separately)

DSF 1x12 AV 8/2 SA	12 channels, 19", 2RU, plug-in facility	673.113.996.01
DSF 1x12 AV 8/2 LA	12 channels, 19", 2RU, incl. 3 solder lug modules	673.113.996.11
DSF 1x12 AV 8/2 D9	12 channels, 19", 2RU, incl. 3 RJ45 modules	673.113.996.21
DSF 1x12 AV 8/2 RJ45	12 channels, 19", 2RU, incl. 3 D-Sub 9-pole connection modules	673.113.996.31
DSF 2x12 AV 8/3 SA	24 channels, 19", 3RU, plug-in facility	673.113.997.01
DSF 2x12 AV 8/3 LA	24 channels, 19", 3RU, incl. 6 solder lug modules	673.113.997.11
DSF 2x12 AV 8/3 D9	24 channels, 19", 3RU, incl. 6 RJ45 modules	673.113.997.21
DSF 2x12 AV 8/3 RJ45	24 channels, 19", 3RU, incl. 6 D-Sub 9-pole modules	673.113.997.31

4-pole / 8-pole patchcord

GMK 314/60 sw	4-pole, 60 cm	673.910.235.00
GMK 314/90 sw	4-pole, 90 cm	673.910.235.10
GSK 318/60 bl	8-pole, 60 cm	673.910.247.00
GSK 318/90 bl	8-pole, 90 cm	673.910.247.10



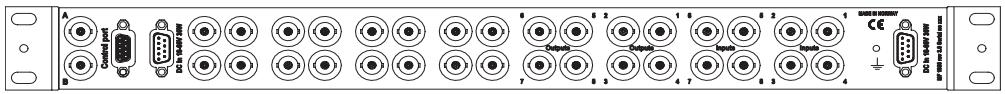
4-pole / 8-pole cable plug

GKS 314	4-pole, black	673.910.222.00
GKS 318	8-pole, black	673.910.254.00

max. 5,9 mm cable diameter

8x8 SDI Video Router – MF1000

Optional CP1000 Control Panel mounted at the front of the router frame



8 x 8 Router in 19" (1 RU)

The MF1000 – SDI is a digital 8x8 router which contains one wide band cross point module with digital output amplifiers and input cable equalizers mounted directly onto the back plane.

Distribution In addition the router frame contains 4 extra slots which can be used for different types of distribution amplifiers 1:3 or automatic change-over modules 2:1, refer to separate product information «Expansion Modules for MF1000 - 8x8». Alternatively the router can easily be expanded up to 16x16.

As standard the router is equipped with Controller Card and Single Power Module, and space for an optional Dual Power Module is allocated. As an alternative to the power modules, the frame can be powered from a separate power frame PF1000. All electronic modules in the MF1000 are hot-swappable.

Controller and Controller Function

Control of the router is made by RS-232 or ESbus/RS-422, and/or by an optional Control Panel CP1000 mounted at the front of the router.

The MF1000 can easily be integrated in larger systems controlled by the Sandar WinPESE control system or by one out of a wide range of management systems protocols that are implemented.

This router is well suited for OB-vans, studios and sports arenas, as well as in the distribution and contribution chains.

Highlights

Hot-swappable plug-in card modules
Selectable DC or AC Supply
Optional Dual Power Supply
Selectable RS-232/ESbus/RS-422 Control Interface
Expandable up to 16x16 router
Optional Distribution Amplifiers and Change-over modules
A wide range of Control Panels and Control SW available

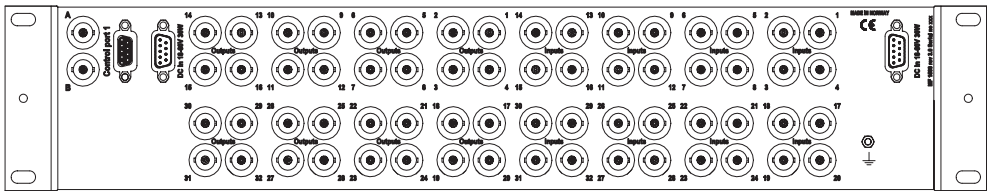
Specifications

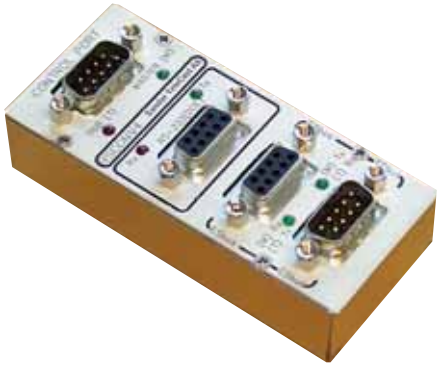
Data Rate	max. 270 Mbs
Return loss@70MHz	> 15 dB
In-/Out- Impedance	75 Ohms
Cable EQ.	> 150 meters of 0,6/2,8 cable
Signal Output Voltage	0,8 Vpp +/-10%
Jitter	< 2ns
Number of In/Out	8x8 (16x16)
Power	18-60 VDC or 115/230 VAC
Size	19",1RU, 100mm deep
Weight	1.3 kg
Control Interface	9 pin D-Sub (female), RS-232
Signal Connectors	75 Ohms BNC
Power Connectors	9 pin D-Sub (male)
Ambient Temperature Range	0°C- +45°C

Optional Dual Power Unit for redundancy

Optional Converter from RS-232 / RS-422 to Esbus

32 x 32 Multiformat Wide Band Router – MF1500





Optional Dual Control Adapter

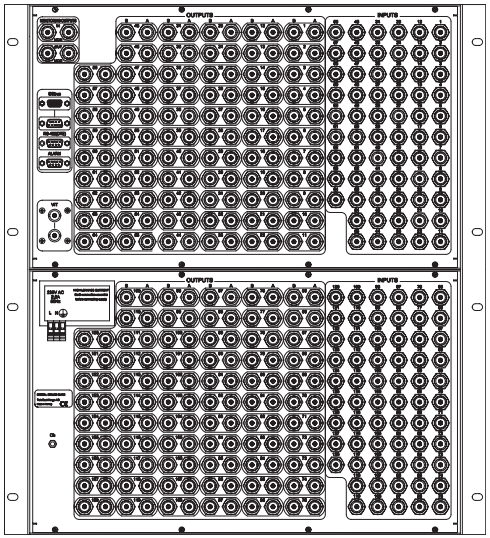
32 x 32 Router in 19", 2RU
** PAL/NTSC/SECAM - DS3/E3/STS-1 - PDH/SDH - ASI/SDI*

The Sandar MF1500 is a wideband 32x32 router based on two plug-in 32x16 crosspoint modules and a wide range of 8 channel signal specific input and output modules. As standard the router is equipped with Controller Card and Single Power Module, and space for an optional Dual Power Module is allocated. As an alternative to the power modules, the frame can be powered from a separate power frame PF1000. All electronic modules in the MF1500 are hot swappable. Control of the router is made via RS-232 and/or ESbus As standard the router is configured for control by RS-232, and control by ESbus is possible by adding an optional ESbus converter. Simultanous control by both ESbus and RS-232 is possible by adding an optional double control adapter. The MF1500 can easily be integrated into larger systems controlled by the Sandar WinPESE control SW, or by one out of a wide range of management systems protocols that are implemented. This router is well suited for OB vans, studios and sports arenas, as well as in the distribution and contribution chains.

Highlights
Hot-swappable plug-in card modules
Selectable DC or AC Supply, Optional Dual Power Supply
Selectable Control Interface RS-232, ESbus or both
Optional Retimers, Cable Equalizers and Reclockers
A wide range of Control Panels and Control SW are available

PAL/NTSC/SECAM	
Input/Output Impedance	75Ohms
Return Loss @ 5MHz	> 35dB
Crosstalk @ 5MHz All	< 60dB
Nom. Output voltage	+/- 1.0Vpp
Max output voltage	+/- 1.5Vpp
Freq. Response up to 5MHz	+/-0.1dB
Gain	0.2dB
Diff Gain	< 0.1%
Diff Phase	< 0.1degrees
DS3/E3/STS-1	
Data Rate	34/45/52 Mb/s
Return Loss @ 70MHz	> 15dB
Input/Output Impedance	75Ohms
Max output voltage	+/- 1.7Vpp
Optional cable Eq.	Automatic up to 500m
PDH/SDH	
Data Rate	140/155 Mb/s
Return Loss @ 70MHz	> 15dB
Input/Output Impedance	75Ohm Max
Output Voltage	1,0 Vpp +/– 10%
Jitter	< 2ns
ASI/SDI	
Data Rate	270 Mb/s
Return Loss @ 70MHz	> 15dB
Input/Output Impedance	75Ohms
Max Output Voltage	0,8 Vpp +/– 10%
Jitter	< 2ns
Cable EQ (SDI only)	225 m of 0,6/2,8 cable

128 x 128 Digital Video Routing System – SA 3120
**** SDI, ASI, SDH, PDH, E3, DS3***



The SA3120 is a non-blocking Routing Switcher in the VD3000 family of routing systems.
A choice of modules are available to support a variety of signal formats and frame configurations. The modular design, internal redundant PSU and dual controller solution, make the SA3120 a perfect choice for mission critical applications in both the Broadcast and Telecom markets.

Compact design
The rugged 12RU frame make a reliable platform for matrix configurations in various sizes up to the fully equipped frame of 128 x 128 inputs/outputs. The internal motherboard solution eliminates the need for external distribution and interconnect wiring of modules. Fan units are an integrated part of the front door assembly, ensuring optimal working conditions.

Internal power supply
The SA3120 is powered by high efficiency, hot-swappable power supplies. Additional power supplies may be installed to form a N+N power solution with active load sharing. Potential free power failure alarms are made available for external management systems.

Flexible solution
The modular design allows all modules to be exchanged without disturbing the operation of the rest of the system. Individual 32-channel input & output modules and a 32x32 crosspoint module form a scalable router that is easily expandable.
By combining the different modules available for the VD3000 family, it is even possible to configure a multiformat router within one frame.

Control
The internal control module provides two individual interfaces for external control and monitoring:
RS-232 or 422 & RS-485 (ESbus). The multipoint ESbus is perfect for interconnecting multiple units (i.e. control panels, UMDs & routers) over long cable runs. The point-to-point RS-232/422 interface, normally running the Prosan protocol, is commonly used for local computer control and integration with 3. party control systems. To meet the ever increasing demands for system availability, a dual hot standby controller may be installed. A sophisticated automatic changeover system provides the switching between the two controllers. Controller-failure alarms are available both on serial protocol and external hard wiring.

Monitoring
As an option, the SA3120 can be installed with separate 128x1 input and output monitoring switchers.
The monitoring switchers have dual BNC outputs.

Input & Output modules
32-channel I/O-modules are made up of a universal basecard (BC-3043) and plug-in sub modules that are adapted to different signal formats. The I/O-modules also contain a 32x1 broadband analogue switcher - used with the input and output monitoring option.

Crosspoint modules
Two 32x32 crosspoint modules are currently available. The DX-3232 is capable of handling any two-level digital signal and is designed in particular for serial digital component or composite video at the rates of 143/177/270 MB/s, as well as for the 140 MB/s (PDH) or 155MB/s (SDH) telecom standard transmission rates. The DX-3232 is completely transparent with respect to data-rate and timing, and may also be used for MPEG compressed transport streams like ASI/SSI. The AX3300 is a general purpose, broadband (analog) switching module that is completely transparent and non-blocking. Typical applications will be routing of 2MB/s E1, 8MB/s E2, 34MB/s E3, 45MB/s DS-3, 52MB/s STS-1 and general IF signals below 200MHz.

Control modules
The SC–2000/2001 control module provides two individual serial ports for interfacing to external control systems. The onboard VIT-circuit accommodates correct switching of synchronous signals, and battery backup keeps the correct crosspoint settings during the event of a power down. Multiple control modules may be linked to control larger routers or form backup systems.

INPUT

Number	128
Impedance	75 Ohms
Connector	BNC, Amphenol 31-71016-RFX

OUTPUT

Number	128 dual
Input monitoring	1 dual
Output omitoring	1 dual
Impedance	75 Ohms
Connector	BNC, Amphenol 31-71016-RFX

VIT-trigger

Signal format	Analogue Composite Video/Sync.
Impedance	High – Loop through
Level	Nom. 1Vpp/0.3Vpp Sync-pulse
Timing, synchronized	Within 25-35µs after H.sync, Line 6

CONTROL INTERFACE	ESbus and RS-232 or RS-422
POWER	90-264VAC, 47-63Hz,2.5-8 A Dependent of configuration.

MECHANICAL DIMENSIONS

Height	532.55mm(12RU)Width 482.6mm (19")Depth 500mm + connectors & fan fronts
Weight	30 kg
ENVIRONMENT	Ambient temp. range 0-40'C

SDI/ASI

Signal type:	Serial Digital Video	134, 177 & 270Mb/s
Input:	Nominal Voltage Level	0.8Vp-p
	Max. Cable EQ	200m of 0.8/4.9Dz
	Return Loss	≥11dB, 5-270MHz
Output:	Nominal Voltage Level	0.8Vpp (±10%)
	Return Loss	≥10dB, 5-270MHz
Performance:	Rise/Fall Time, Term	0.75-1.5ns (20 to 80%)
	Jitter	<0.5ns

PDH/SDH

Signal type:	Telecom/G.703	140 & 155MB/s
Input:	Nominal Voltage Level	1Vpp
	Max. Cable EQ	200m of 0.8/4.9Dz
	Return Loss	≥11dB, 5-270MHz
Output:	Nominal Voltage Level	1Vpp (±10%)
	Return Loss	≥10dB, 5-270MHz
Performance:	Rise/Fall Time, Term	0.75-1.5ns (20 to 80%)
	Jitter	<0.5ns

E3/DS3

Signal type:	Telecom/G.703	34 & 45MB/s
Input:	Nominal Voltage Level	2Vpp
	Max. Cable EQ	200m of 0.8/4.9Dz
	Return Loss	≥12dB, 860kHz-75MHz
Output:	Nominal Voltage Level	2Vpp (±10%)
	Return Loss	≥15dB, 860kHz-75MHz

Video Patch Panels

3 GHz video patch panel (Midsize), SDI, Embedded Audio, Ø 7.6 mm, BNC 75 Ω

GVP 2x20 A 1/1 M	19", 1RU, 40 channels, Midsize Video Jacks	677.110.029.00

GVP 2x32 A 1/1 M T75	19", 1RU, 64 channels, with 75 Ω termination	677.110.032.00

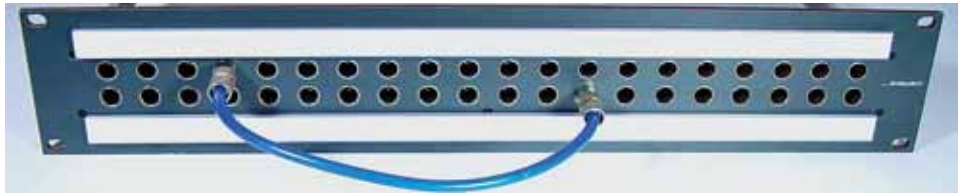
GVP 1x20 AV 1/1 M N75	19", 1RU, 20 channels self normalling, 75Ω termination	677.110.085.00

GVP 2x20 A 1/1 M	19", 1RU, 40 channels Midsize Video Jacks	677.110.029.00
GVP 2x24 A 1/1 M	19", 1RU, 48 channels Midsize Video Jacks	677.110.030.00
GVP 2x32 A 1/1 M	19", 1RU, 64 channels Midsize Video Jacks	677.110.031.00

GVP 2x20 A 1/1 M T75	19", 1RU, 40 channels, with 75 Ω termination	677.110.084.00
GVP 2x24 A 1/1 M T75	19", 1RU, 48 channels, with 75 Ω termination	677.110.086.00
GVP 2x32 A 1/1 M T75	19", 1RU, 64 channels, with 75 Ω termination	677.110.032.00

GVP 1x20 AV 1/1 M N75	19", 1RU, 20 channels, self normalling, 75Ω termination	677.110.085.00
GVP 1x24 AV 1/1 M N75	19", 1RU, 24 channels, self normalling, 75Ω termination	677.110.087.00
GVP 1x32 AV 1/1 M N75	19", 1RU, 32 channels, self normalling, 75Ω termination	677.110.033.00

600 MHz Standard Video Patch Panels Ø 9,5mm, BNC 75Ω



GVP 2x20 A 1/2	19", 2RU, 40 channels Standard Video Jacks	677.110.061.01
GVP 1x20 AV 1/2 N	19", 2RU, 20 channels Standard, self normalling	677.110.015.01
GVP 1x20 AV 1/2 N75	19", 2RU, 20 channels Standard, self normalling, with 75Ω termination	677.110.018.01

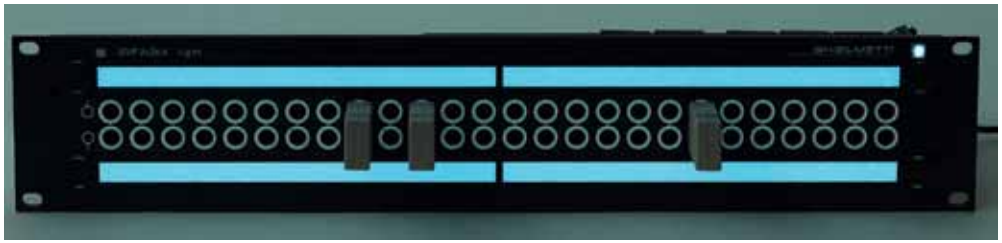
GVP 2x20 A 1/1	19", 1RU, 40 channels Standard Video Jacks 600 MHz	677.110.063.01
GVP 1x20 AV 1/2 N	19", 1RU, 20 channels Standard, self normalling	677.110.015.01
GVP 1x20 AV 1/2 N75	19", 1RU, 20 channels Standard, self normalling, 75 Ω termination	677.110.018.01

NEW

Video Patch Panels with illuminated Front Panel

GVP 2x26 A 1/2 M Light 19", 2RU, 52 channels, 3 GHz Midsize BNC 75 Ω-video jacks 677.110.090.00

GVP 2x26 A 1/2 M Light rear side with illumination electronic 677.110.090.00



GVP 2x26 A 1/2 M Light Light by night front panel illumination to be switched off through press key 677.110.090.00

The front panel illumination is generated by a front panel integrated EL-foil, fed by a 12VDC commercial power supply adaptor. The exchangeable designation strips are commercial transparent foils, which can be labelled and printed off by any type of printer. After printing they are cut off to size and inserted into the front panel. The designation strips are background illuminated and therefore optimally readable even with bad environment illumination. The front panel illumination can be switched off by a push button.

Power supply adapter
230 VAC/12V/500mA/6W/plug 5,5 mm/2,1mm, 140.152.000.01

Video Patchcords, Musa links, video plugs and modules

3 GHz patchcord Midsize

GVK 30M sw	30 cm, black	140.950.500.65
GVK 60M sw	60 cm, black	140.950.500.66
GVK 90M sw	90 cm, black	140.950.500.67

600 MHz video patchcord

GVK-66 sw	66 cm, black	677.910.001.00
GVK-99 sw	99 cm, black	677.910.002.00

MUSA-Link Midsize
GUL-M 140.950.500.82

600 MHz MUSA-Link
GUL-S 677.910.004.00

Video-BNC 75Ω Adapter

3 GHz Midsize

GVA-BNC-S 677.910.003.00

GVJ M/L 140.950.500.58
GVJ M/K 140.950.500.57

GVJ M/L75 140.950.500.60
GVJ M/K75 140.950.500.59

600 MHz

GVA-BNC-S 677.910.003.01

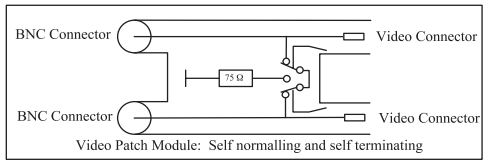
GVJ S/L 140.950.500.96
GVJ S/K 140.950.500.95

600 MHz Video Jack
with 75 Ω termination

GVJ S75 140.950.500.00

3 GHz Video Midsize modules, self normalling and self terminating to 75 Ω

GVM 2x2 M N	self normalling	140.950.500.61
GVM 2x2 M N75	elf normalling, 75 Ω termination	140.950.500.62



RGB patch cords

RGB-Patchcord
GVK 60 RGB 60 cm,
677.910.006.00

GVP 1x6 RGBS 1/2 RGBS – Video components patch panel 677.130.011.00

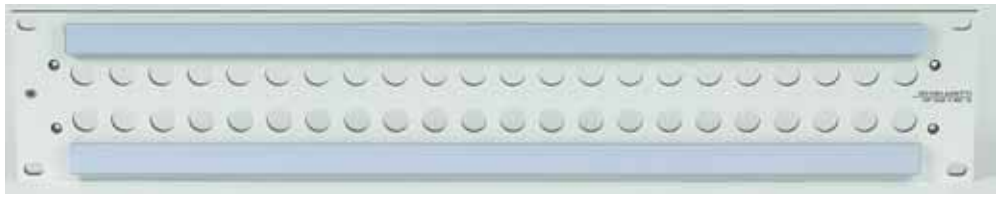
BNC 75Ω (50Ω) Video Patch Panels

19" 1RU/2RU BNC 75 Ω patch panels, populated, unpopulated, including cable bar and designation strips also available with BNC 50 Ω plugs – Frontpanels in different colours available (ref. to page 48)

GVP 1x16 A 1/1 BNC75 ws	19", 1RU, 16 channels, populated	677.110.070.09
GVP 1x16 A 1/1 FP ws	19", 1RU, 16 channels, unpopulated	677.140.051.09

GVP 2x16 A 1/2 BNC75 ws	19", 2RU, 32 channels	677.110.073.09

GVP 2x16 A 1/2 FP ws	19", 2RU, 32 channel BNC connector panel	677.140.053.09



GVP 2x22 A 1/2 FP ws	19", 2 RU, 44 channel BNC connector panel	677.140.056.09

GVK 30 BNC75 sw	30 cm	140.950.500.97
GVK 60 BNC75 sw	60 cm	140.950.500.98
GVK 90 BNC75 sw	90 cm	140.950.500.99

BNC PUSH PULL CRIMP
Patchcord 60 cm
140.950.503.08

BNC PUSH PULL CRIMP
NBNC75PNS7
140.950.503.10

GVP 1x16 A 1/1 BNC75 ws	Back view, populated, incl. designation strips & cable bar	677.110.070.09

GVP 2x16 A 1/2 BNC75 ws	19", 2RU, Back view, populated, incl. designation strips & cable bar	677.110.073.09

GVP 2x16 A 1/1 FP ws	19", 1RU, 32 channel BNC connector panel, unpopulated without designation strips, with numerical inscription	677.140.052.09

GVP 2x22 A 1/1 FP ws	19", 1RU, 44 channel BNC connector panel, unpopulated without designation strips, with numerical inscription	677.140.055.09

GVP 1x22 A 1/1 FP ws	19", 1RU, 22 channel BNC connector panel, unpopulated With designation strips	677.140.054.09

Multimedia 1,5 GHz Sockets and Plugs, BKS NewLine RJ45 cabling

Cat. 6 Multimedia connector plugs

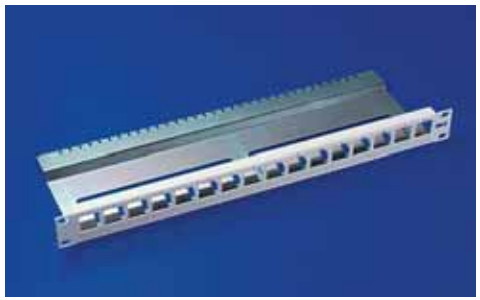
* ***do not hesitate to ask for detailed information***

MMC 3000 Multimedia 4 channel
1.5 GHz socket (long body)

MMC 3000 Multimedia 4 channel
1.5 GHz socket (short body)

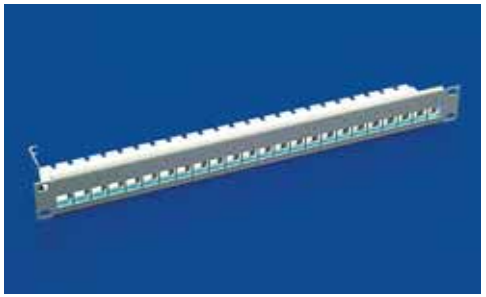
RJ45 socket, category 6 , in 3 parts

Connector plug and patchcords with adaptation to commercial interconnecting facilities

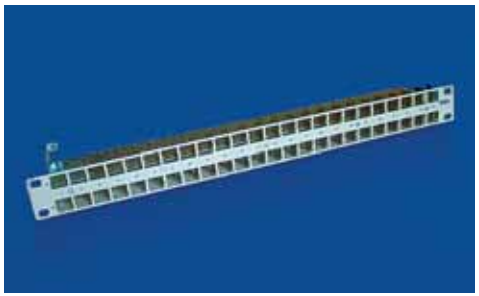


Distributing frame 1x16, 19", 1RU

Distributing frame 2x16, 19", 2RU



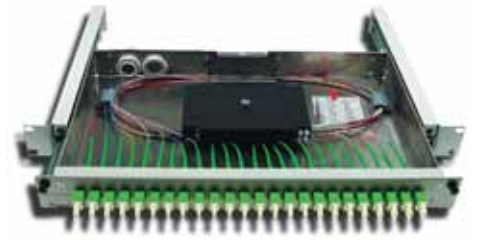
Distributing frame 1x24, 19", 1RU



Distributing frame 2x24, 19", 1RU

Fibre Optic Patch Panels

* ***do not hesitate to ask for detailed information***



FO-patch panel, 24 channel, with splice box, 19"/1RU

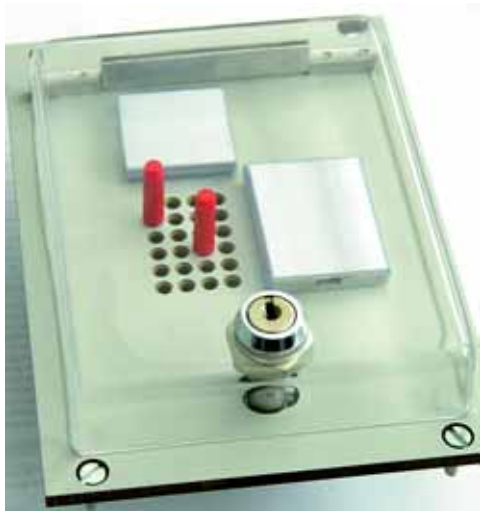
FO-patch panel, 2x12 channels, 19"/1RU

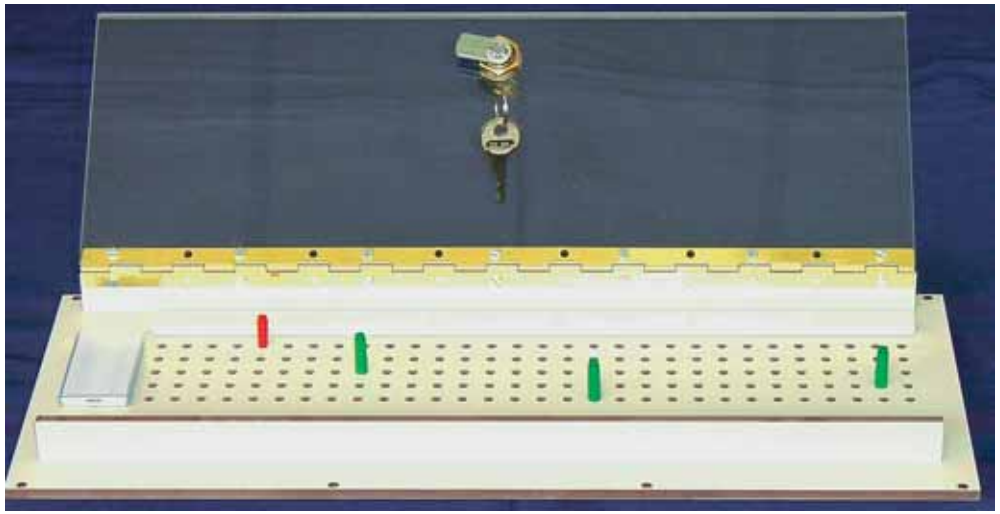
Interface rack, 19"/3RU

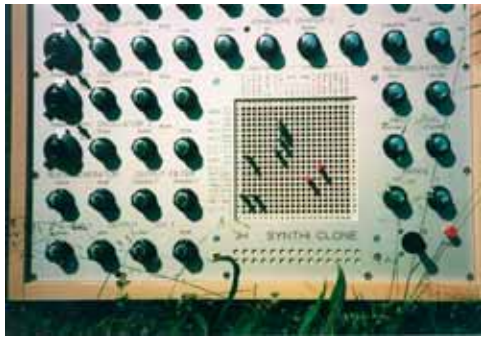
Fibre optic cables

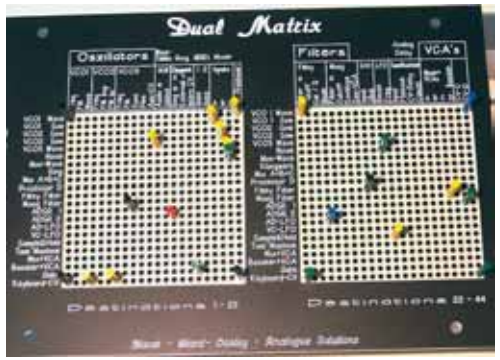
SIGNAL DISTRIBUTORS, CONTROL & PROGRAMMING MATRIX BOARDS 50VAC/6A AND 230VAC/16A

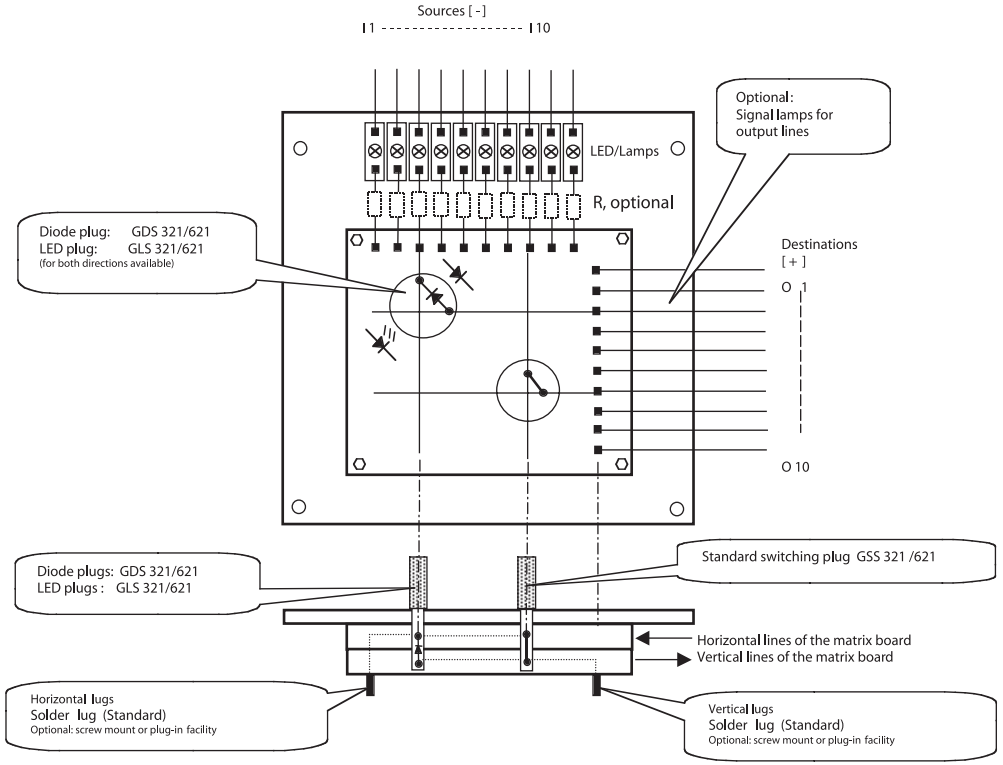
to program and control switchgear and control systems

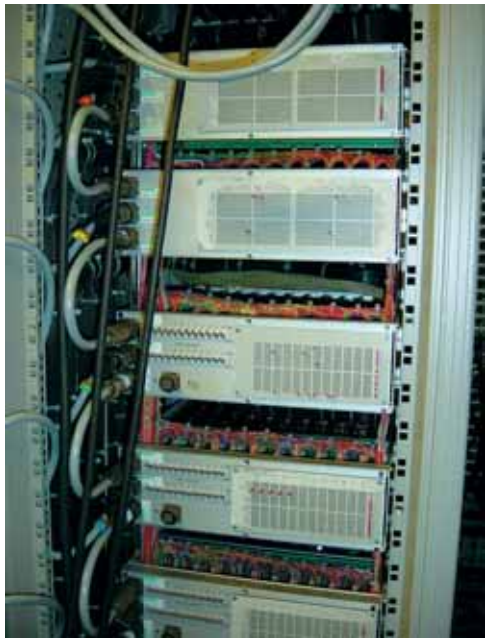






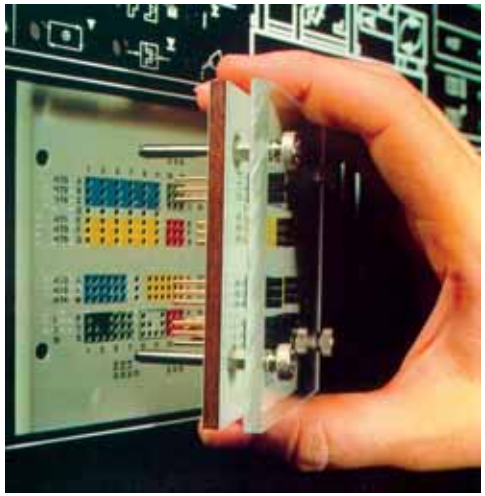




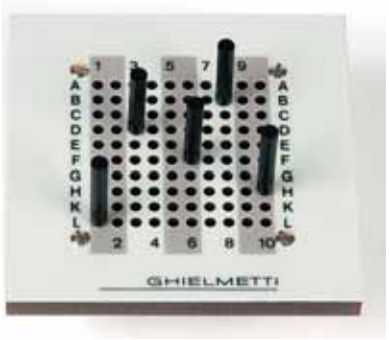


Programming Modules for Signal Distributors

Programming modules are used to program easily & rapidly switching configurations, allowing to prepare (store) different switching programs.



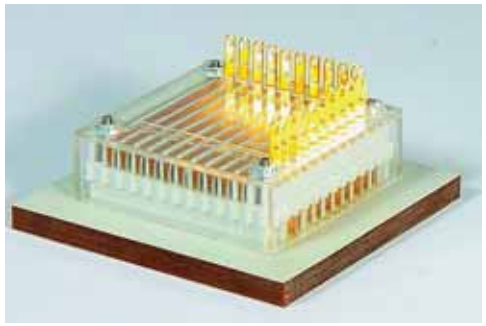
10x10 Signal distributor (50V/6A) Series 321



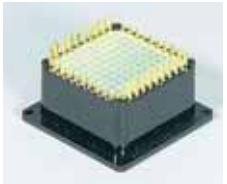
Solder lug [LA] or PCB pins [LP]

GKV 10x10 321 LA	57x57x26 mm	673.110.007.01
GKV 10x10 321 LP	57x57x26 mm	673.110.007.13

Specific sizes and versions on request



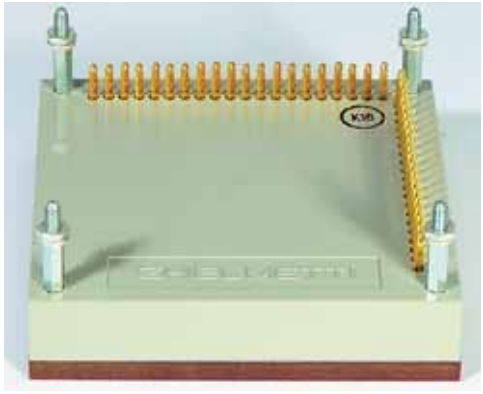
Available for solder lug, PCB pins and plug-in facility



GKV 10x10 321 LA MONO
45x45x26 mm 673.110.050.00

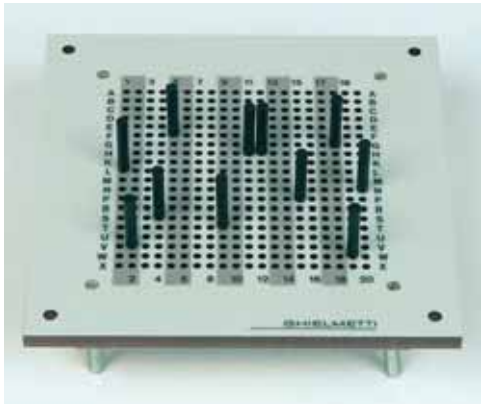
20x20 Signal distributor (50V/6A) Series 321

GKV 20x20 321 LA 79x79x32 mm 673.110.008.19

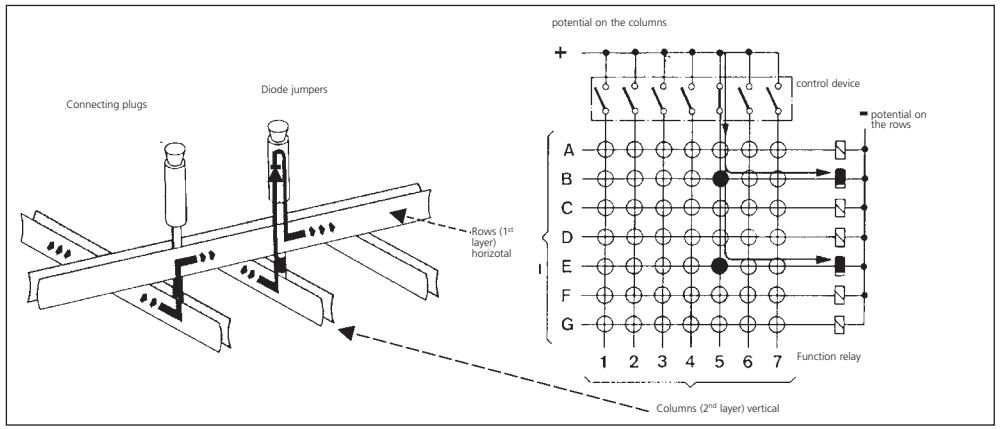


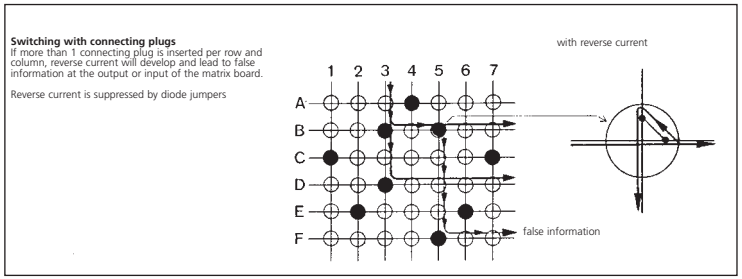
Mounting by screws onto the front panel

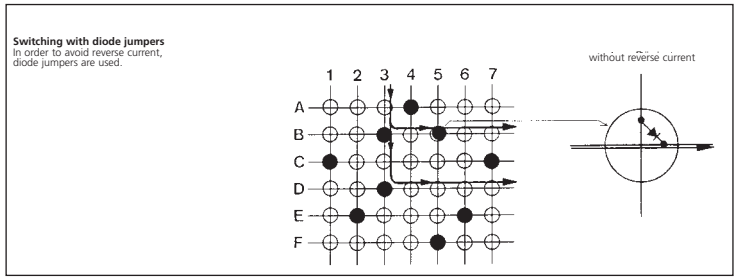
20x20 Signal distributor (50V/6A) Series 321



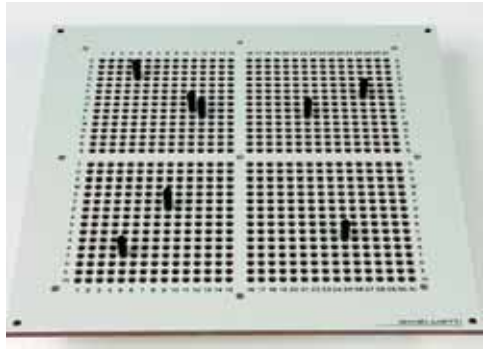
GKV 20x20 321 LA	99x99x32 mm	673.110.022.07
GKV 20X40 321 LA	183x105x32 mm	673.110.026.02



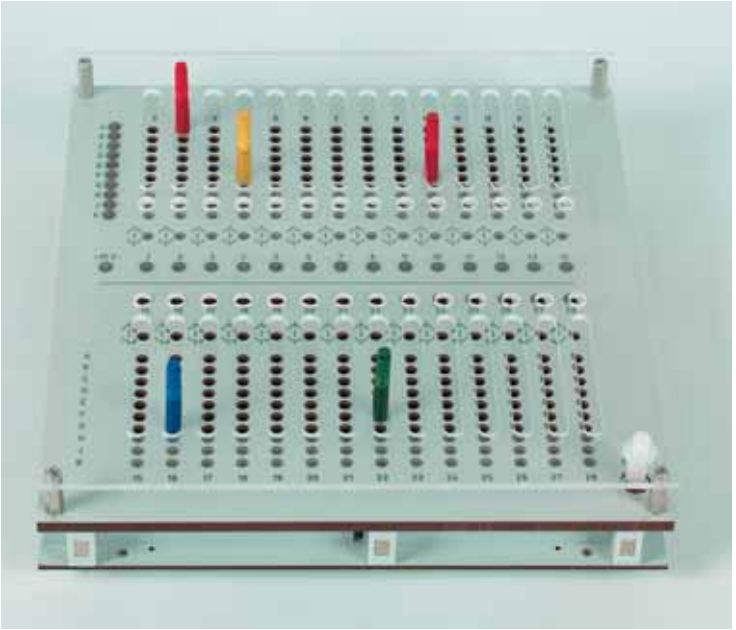


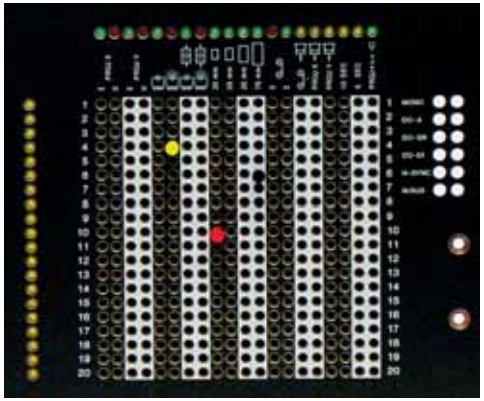


31x31 Signal distributor (230VAC/16A) Series 621

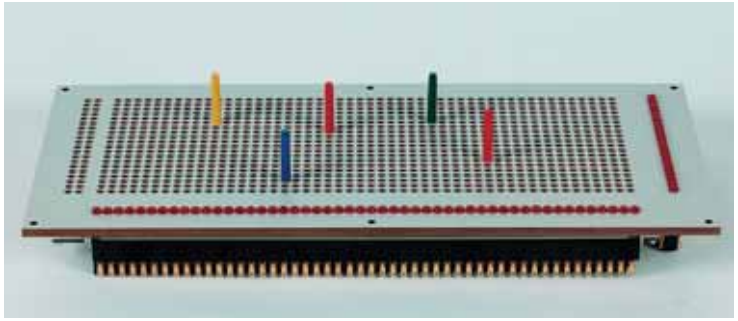


GKV 10x10 621 LA	126x126x39 mm	674.110.031.02
GKV 15x15 621 LA	156x156x39 mm	674.110.800.02
GKV 20x20 621 LA	186x186x39 mm	674.110.609.02
GKV 15x31 621 LA	258x156x39 mm	674.110.035.02
GKV 31x15 621 LA	156x258x39 mm	674.110.037.02
GKV 31x31 621 LA	258x258x39 mm	674.110.039.02





It is recommended to print the frontpanel with signs, letters and symbols (wingdings) in order to get an clearly arranged and optimised user interface.



Connecting plugs

GSS 321/6 sw 6 mm handle, black 673.310.000.00
GSS 321/6 rt 6 mm handle, red 673.310.000.02
other colours available

Locking jumpers – series 321/621

With the help of locking jumpers, a connection cross point can be locked to prevent unintentional switching

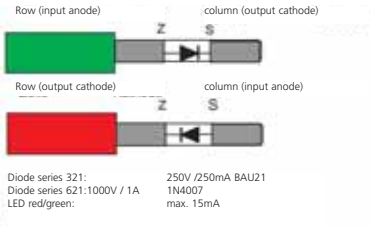
GBS 321 sw series 321 673.140.083.00
GBS 621 sw series 621 674.140.028.00

Diode plugs

GDS 321/16 ZS gn 250V/250mA, green673.210.202.05
GDS 321/16 SZ rt 250V/250mA, red 673.210.302.02
other colours available

Direction of the diode plugs

ZS = row to column (input to output)
SZ = column to row (output to input)



LED plug, series 321

GLS 321/16 ZS gn LED red,Imax = 15mA, handle green 673.910.088.05
other colours available

LED plug, series 621

LED: rot, Imax = 15 m A
GLS 621/22 SZ rt LED red, Imax = 15mA, handle red 674.910.088.02
GLS 621/22 ZS gn LED red, Imax = 15mA, handle green 674.910.085.05

Connecting plugs series 621

GSS 621/15 sw 15 mm handle, black 674.310.180.00
GSS 621/15 ws 15 mm handle, white 674.310.180.09
other colours available

Diode plugs series 621

Diode: 1000 V/1A, 1N4007

GDS 621/20 SZ rt 1000V/1A, red 674.213.002.02
GDS 621/20 ZS gn 1000V/1A, green 674.212.002.05
other colours and handle lengths available

IMS*ware*.NET Netzwerkverwaltung

(At present available in German only)

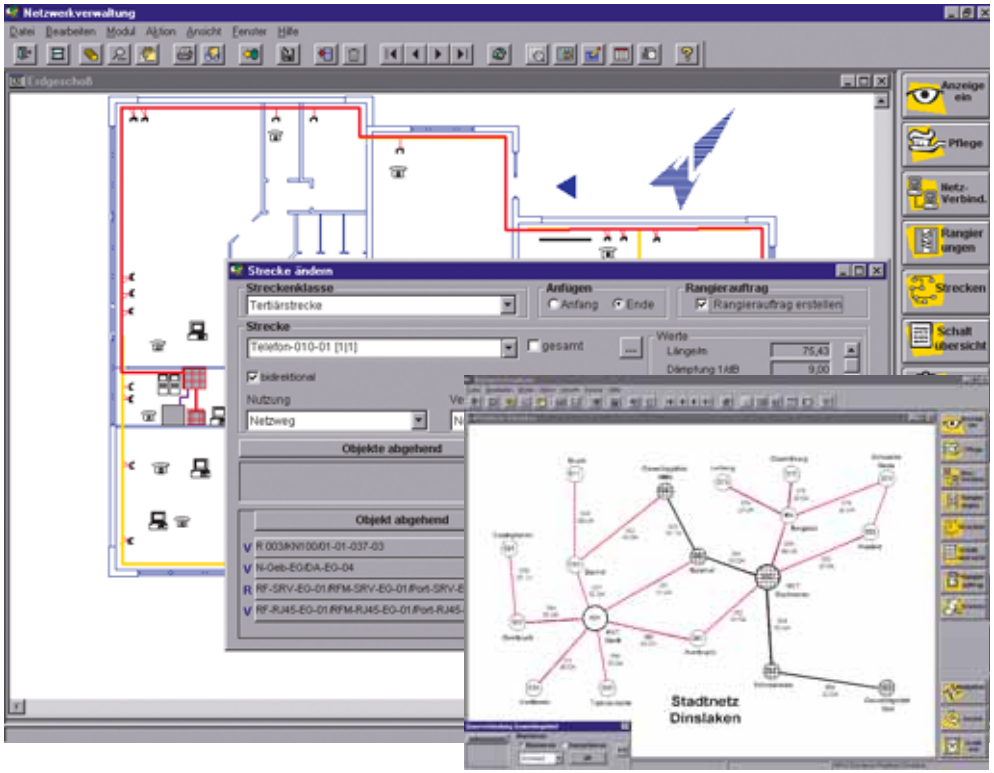
Leistungsstarke und flexible Lösungen für den Innen- und Aussenbereich

IMSware.NET Netzwerkverwaltung ist ein leistungsstarkes und flexibles Informationssystem für den Innen- und Außenbereich, welches den Anwender bei allen Aufgaben, Analysen und Planungen unterstützt und die Transparenz der Informationen nachhaltig erhöht.

Rasant, wie sich die Kommunikations- und Informationstechnologie in den vergangenen Jahren entwickelt hat – und ein Ende dieser Entwicklung ist noch nicht abzusehen. Moderne Kommunikationsnetzwerke, welche Informationen in Form von Sprache, Daten, Signalen und Bildern zur richtigen Zeit an den richtigen Ort transportieren, gewinnen deshalb zusehends an strategischer Bedeutung. Die intensive Nutzung dieser immer komplexer und leistungsfähiger werdenden Netzwerke fordert zudem auch immer höhere Ansprüche an deren Auslastung und Verfügbarkeit. Es gilt also, diesen Ansprüchen gerecht zu werden und die laufenden Kosten in den Griff zu bekommen. Das Thema Dokumentation und Verwaltung von Kommunikationsinfrastrukturen ist somit aktueller und wichtiger denn je.

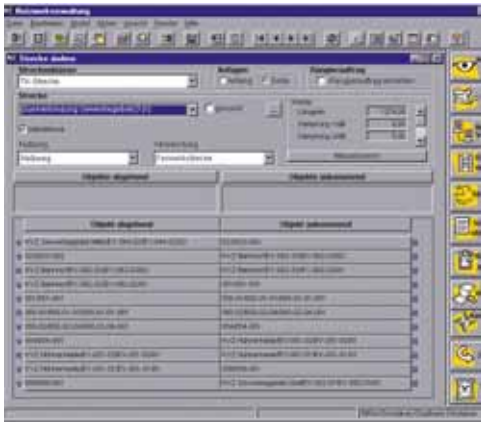
Mit IMS*ware*.NET hat IMS ein leistungsstarkes und flexibles Informationssystem für das Kabel- und Netzwerk Management entwickelt, mit dem eine umfassende Dokumentation und Verwaltung der gesamten Kommunikationsinfrastruktur möglich wird. Unabhängig von der Grösse und Portfolio Ihres Unternehmens, schaffen Sie so die nötige Transparenz, um Arbeitsabläufe zu optimieren und die Kosten für Planung, Betrieb und Wartung zu reduzieren.
Das System kombiniert die geografische Ordnung eines Gebäudeplans mit der logischen Ordnung einer Datenbank – dies ermöglicht eine optimale Netzorganisation nach logischen und örtlichen Kriterien. Standorte und Organisationsstrukturen werden mit ihren nutzerspezifischen Attributen übersichtlich in hierarischen Baumstrukturen dargestellt und erlauben ein sehr effektives Navigieren.

Als Anwender haben Sie so die Möglichkeit, jederzeit beliebige Informationen über den Ist-Zustand Ihres Netzes abzurufen und es entsprechend zu pflegen. Dabei beziehen sich die Informationen keineswegs nur auf Anschlüsse, verlegte Kabel oder



vorhandene Geräte - selbstverständlich können auch Auskünfte über die Netzbeschaltung, verfügbare Ports, Kapazität von Kabeltrassen und die Topologie eingeholt werden. Ausserdem stehen Ihnen viele nützliche Tools, beispielsweise für das Erstellen und Verwalten von Rangierungen oder Autorouting nach verschiedensten Kriterien zur Verfügung.

Das System ist so flexibel, dass es sich ohne Programmieraufwand genauestens an Ihre betrieblichen Erfordernisse anpassen lässt. Änderungen am Netz, die bisher mit einem hohen Arbeits- und Verwaltungsaufwand verbunden waren, können Sie mit IMS*ware*.NET fortan schneller und gezielter erledigen. Dank des einfachen Zugriffs auf detaillierte Konnektivitätsinformationen können Sie so z.B.



mühelos Netzwerkpläne entwerfen, Fehler beheben oder Mitarbeiter bei minimaler Ausfallzeit verlegen – und wiederfinden und das alles bei einer langfristigen Reduzierung Ihrer Betriebskosten.

Das kann IMSware.NET Netzwerkverwaltung insgesamt für Sie leisten:

- Grafische, modellierte Darstellung der gesamten Kommunikationsinfrastruktur (Verkabelungen, Trassen, Komponenten usw.)
- Dokumentation und Verwaltung aller Netztopologien und Netzstrukturen im Innen,- Außen- und Überlandbereich
- Dokumentation und Verwaltung beliebiger aktiver und passiver Komponenten
- Manuelle oder automatische Fortschreibung der Informationen
- Vordefinierte Datenmodelle für Netzkomponenten und Verbindungen (LWL, EA, DA usw.)
- Dokumentation von strukturierter und unstrukturierter Verkabelung
- Unterstützung von beliebiger Verkabelung in denselben Gebäuden, Etagen und Räumen
- Berechnung der Auslastung von Kabeln
- Beliebige Klassifizierung der Netze (LWL-, Fernmelde-, Brandmelde-, Steuer-Netze usw.)
- Beliebige Klassifizierung der Dienste (Netzwege, Ersatzwege, Reservierungen, Fernwirken, PC, Telefon, Multiplexer, Prioritäten usw.)
- Automatische Dienstezuordnung von Kabeln, Ports, Dosen usw.
- Autorouting nach verschiedenen Kriterien (max. Auslastung, Leiterbereiche, Leiterabstände, Länge/Dämpfung/Widerstand, Multiplexerstrecken, Netzarten, Kabeltyp usw.)
- Autorouting für Umzüge durch einfache Neudefinition des Standortes
- Autorouting für Umschaltungen von wichtigen Diensten (Kabelumschaltung)
- Erzeugung von Patch-/Rangierlisten
- Auftragsverwaltung von Patch-/Rangierlisten (Status, Bearbeiter usw.)
- Aktualisierung der Datenbank nach Fertigmeldung aus der Auftragsverwaltung (Planung)
- Planung neuer Strecken auf zukünftig freien Komponenten

Ghielmetti AG, Industriestrasse 6, CH-4562 Biberist, Schweiz
www.ghielmetti.ch **Tel. +41 32 671 13 13**
ghielmetti@ghielmetti.ch **Fax +41 32 671 13 14**
Verkauf Deutschland **Tel. 03371 402754**
www.ghielmetti.de **Fax 03371 610548**

- Berücksichtigung vorhandener Rangierungen
- Schaltübersichten (Strecke, Teilnehmer, Endgeräte, Rufnummern, IP-Adresse, Org. Daten usw.)
- Patchkabelverwaltung
- Suchen von geschalteten Strecken anhand beliebiger Suchkriterien (Teilnehmer, Rufnummer, Anschlusspunkte, IP-Adresse, Endgeräte usw.)
- Netzknoten einschleifen (Muffe, Abzweigmuffe, Verteiler usw.)
- Verteilerrenovierung (Neue Leisten, Kabel umschwenken usw.)
- Abbildung von Bus-, Ring, und Punkt- zu- Punkt Technologien
- Dokumentation von Parallelabgriffen
- Kabellängenverwaltung (Kabelstrecken)
- Verwaltung beliebiger Übertragungstechniken (SDH, PDH, PCM, WT usw.)
- Umfangreiche Reports (Kabel-/Verteilerbelegung, Streckenverlauf, Schaltübersichten, Inventarlisten, Mulitplexer-Belegung, Stammdaten usw.)
- Schnittstellen zu Management-Systemen (TKA, NMS usw.)
- Optimale Prozesse für Steuerung und Überwachung
- Individuelle und zielgerichtete Ermittlung von Planungs- und Entscheidungsdaten
- Optimierung der Kosten für Planung, Betrieb und Wartung
- Nachhaltige Erhöhung der Transparenz
- Aufdeckung von Schwachstellen durch kontinuierliche Datenauswertung
- Verteilung von Kosten auf verschiedene Kostenstellen
- Individuelle Anpassungen an die betrieblichen Abläufe
- Erzielung weiterer Einspareffekte durch Nutzung der Daten in anderen IMSware- Modulen

Technical Data

Electrical data (transmission)	Measuring range	*GKV series 300* High Performance	Standard	ECONOM	*GKV series 600* Standard
Signal level	0 Hz < f < 5 MHz	-64 dBu to + 36 dBu	-64 dBu to + 36 dBu	-64 dBu to + 36 dBu	230 VAC
Crosstalk	(30 Hz < f < 30 kHz)	>115 dB	> 90 dB	> 70 dB	> 90 dB
Switch off attenuation	(30 Hz < f < 30 kHz)	>115 dB	> 90 dB	> 70 dB	> 90 dB
Insertion loss	(30 Hz < f < 30 kHz)	< 0,01dB	< 0,01dB	< 0,01dB	< 0,01 dB
Symmetry loss	(30 Hz < f < 30 kHz)	> 60 dB	> 60 dB	> 60 dB	> 60 dB
Operation voltage*	max.	50 VDC	50 VDC	50 VDC	230 VAC
Test voltage		1000 V	1000 V	1000 V	2000 V
Line distances (pitch)		3 mm	3 mm	3 mm	6 mm
Therm. rated current**		6 A	6 A	6 A	16 A
Contact resistance (bus bar – plug – bus bar)		0,8 – 1 m Ω	0,8 – 1 m Ω	0,8 – 1 m Ω	0,5 – 0,7 m Ω
Resistance of a pair of contact bands per line		0,4 m Ω	0,4 m Ω	0,4 m Ω	0,34 m Ω
Insulation resistance of parallel pair of contact bands					
	per 10 insertion points with 80 – 95 % humidity	5 x 10^3 M Ω	5 x 10^3 M Ω	5 x 10^3 M Ω	15 x 10^3 M Ω
Capacity of 2 parallel pairs of bands	distance: 10 insertion points	~ 5 pF	~ 5 pF	~ 5 pF	~ 6 pF
Capacity of 2 crossed pairs of bands	distance: 10 insertion points	~ 3,1 pF	~ 3,1 pF	~ 3,1 pF	~ 4 pF
CE / EMC / ESD		yes	yes	yes	yes

Mechanical data (contact material)					
Insulation material		Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate
Air and surface-leakage paths		min. 1 mm	min. 1 mm	min. 1 mm	min. 3 mm
Operating temperature		-20...+50°C	-20...+50°C	-20...+50°C	-20...+60°C
Humidity (no condensation)		95%	95%	95%	95%
Bus bars	Material	Cu Be	Cu Be	Cu Be	Cu Be
	Surface	0,25 µ Au über 2 µ Ni	0,25 µ Au over 2 µ Ni	0,25 µ Au over 2 µ Ni	0,25 µ Au over 2 µ Ni
Plugs	Material	brass	brass	brass	brass
	Surface	0,25 µ Au über 2 µ Ni	0,25 µ Au over 2 µ Ni	0,25 µ Au over 2 µ Ni	0,25 µ Au over 2 µ Ni
Inserting and extracting forces	2-pole	4,5 N	4,5 N	4,5 N	14 N
	3-pole	7 N	7 N	7 N	
	4-pole	11 N	11 N	11 N	
	6-pole	20 N	20 N	20 N	
	8-pole	24 N	24 N	24 N	
	2-pole/4-layers	15 N	15 N	15 N	
Contact force		~ 2 N	~ 2 N	~ 2 N	~ 5 N
Number of insertions without loss of contact force		>10'000	>10'000	>10'000	>20'000
Pin diameter	Ø	1,6 mm	1,6 mm	1,6 mm	2,4 mm

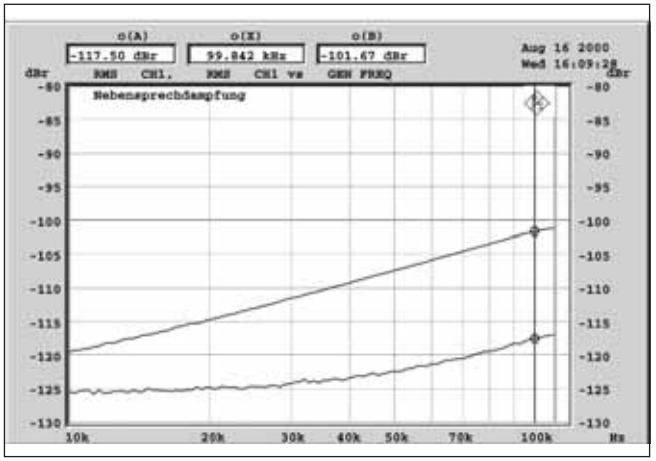
* *for voltage exceeding 50 V AC/DC plugs may only be inserted or removed in the "switched off" position.*

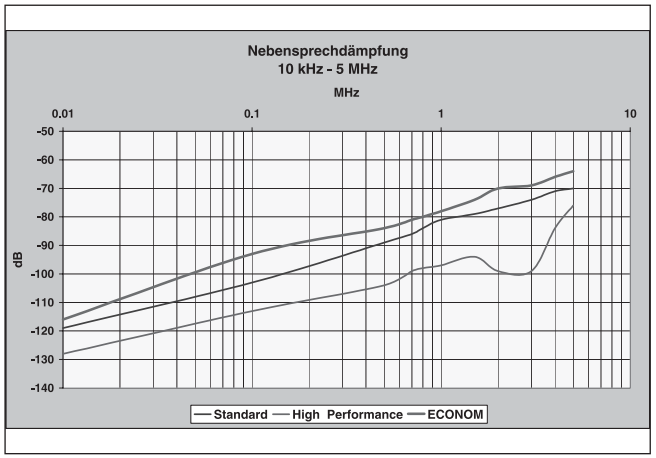
** *Diode and connecting plugs may be changed only in dead state of the matrix.*

DIAGRAMS

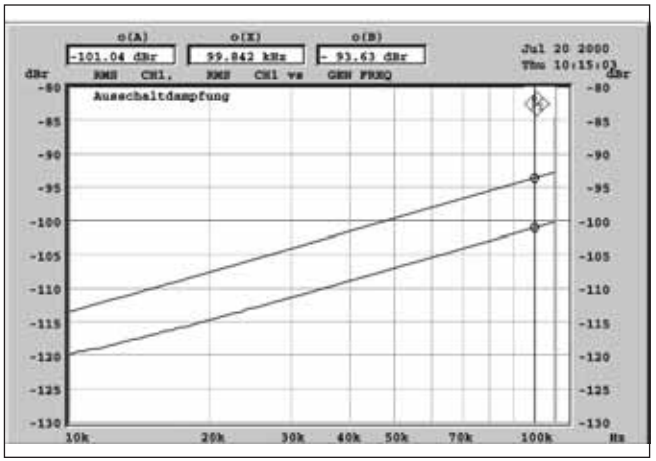
Crosstalk and switch off attenuation in frequency range of 10 Hz up to 5 MHz

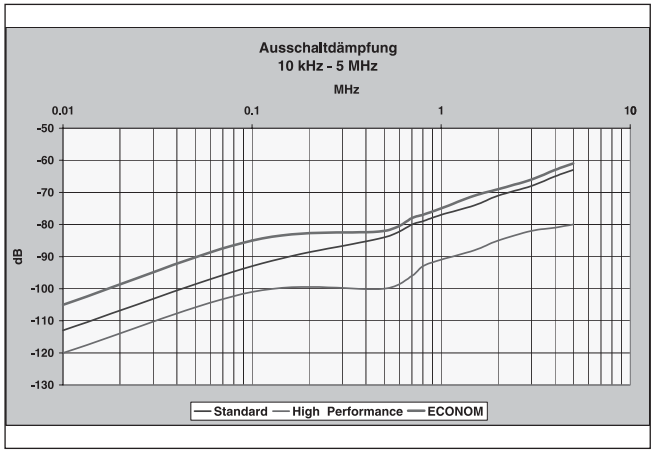
Crosstalk attenuation



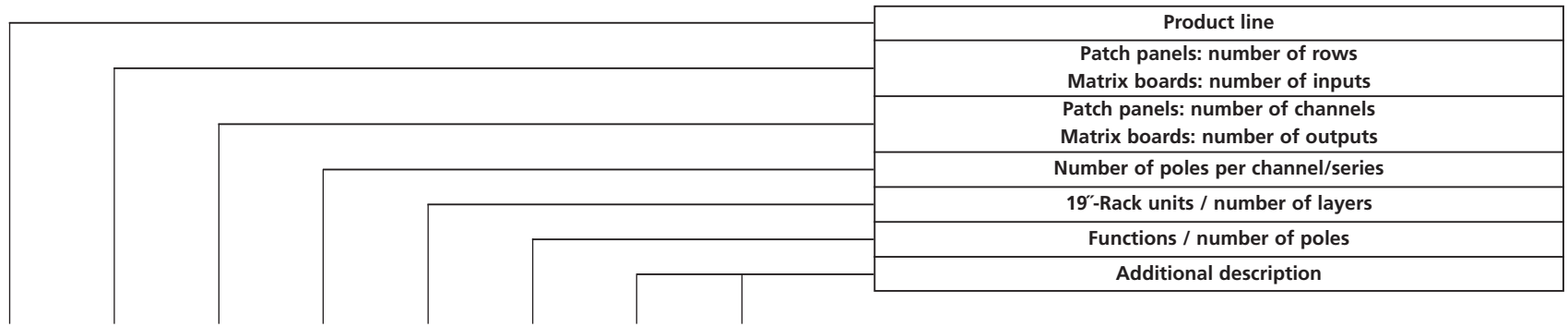


Switch off attenuation



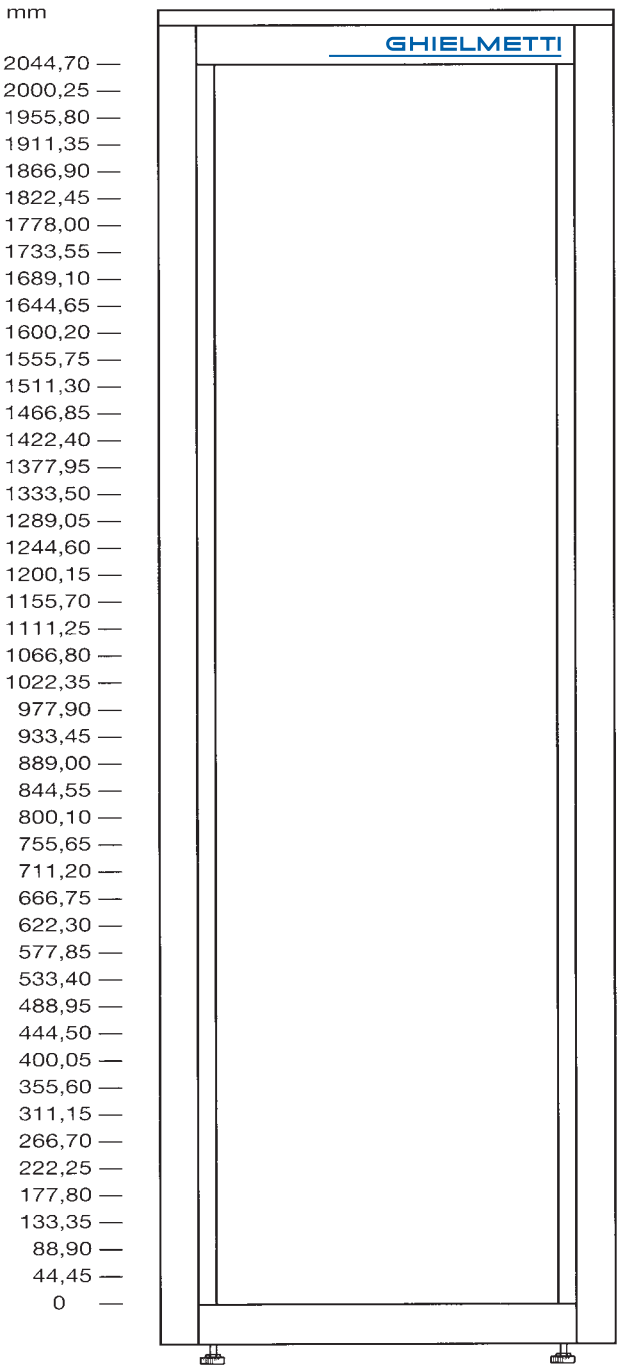


Description Structure for GHIELMETTI Matrix Boards and Patch Panels



Examples:										
Audio Patch Panels	**ASF**	**1**	**X**	**32**	**3**	**/**	**3**	**AV**	**SS**	**H**
Matrix Boards	**GKVA**	**32**	**X**	**32**	**3**		**2**	**3**	**LA**	**H K**

Product lines and designations		**GUL-M/-S**	GHIELMETTI Video U-Link Midsize/Standard	**SK**	Screw mount connector module
CSF	Compact Patch Panel	**GVP**	GHIELMETTI Video Patch Panel	**MX**	Molex connector module
USF	Universal Patch Panel	**GVM**	GHIELMETTI Video Modul	**RJ11/RJ45**	RJ11/RJ45 connector module
ASF	Audio Patch Panel	**GVJ**	GHIELMETTI Video Jack	**D9, D25**	D-Sub connector module
DSF	Data Patch Panel			**FB**	Ribbon cable connector module
LSF	230 VAC / 16 A Patch Panel	**Number of channels / number of 19"-rack units**		**BNC75**	BNC connector module 75Ω
Blueline	Product line «BLUELINE»	**2/ 3/ 4/**	2-pole, 3-pole, 4-pole	**WA**	WAGO connector module
MODULINE	Product line «MODULINE»	**/1 /2 /3**	1 RU, 2 RU, 3 RU	**SS**	Prewired to system connector (Multicore)
MICROLINE	Product line «MICROLINE»				e. g. RP300 30-pole / 72 pole or D-Sub 50-pole etc.)
GKV	GHIELMETTI Matrix Board	**Models**			
GKVA	GHIELMETTI Matrix Board Audio	**321**	Series: 3mm-technology / 2-Layer-technology / 1-pole	**Additional description**	
GKVE	GHIELMETTI Electronic Router	**322**	Series: 3mm-technology / 2-Layer-technology / 2-pole	**H**	High Performance
ATK	GHIELMETTI Monitoring Router	**323**	Series: 3mm-technology / 2-Layer-technology / 3-pole	**K**	custom made
GAD	GHIELMETTI Audio Distribution Matrix	**324**	Series: 3mm-technology / 2-Layer-technology / 4-pole	**a, d**	Analogue, digital
GCS	GHIELMETTI Channel Switcher / Change-over switch	**341**	Series: 3mm-technology / 4-Layer-technology / 1-pole	**A, V**	Monitoring, Prelistening
GMS	GHIELMETTI Monitor System	**342**	Series: 3mm-technology / 4-Layer-technology / 2-pole	**f, m**	Female, male
GSM	GHIELMETTI Connectors	**362**	Series: 3mm-technology / 6-Layer-technology / 2-pole	**m , s**	mono, stereo
GVS	GHIELMETTI Normalling plug			**N / N75**	Self normalising / Self normalising, 75 Ω resistance
GSS	GHIELMETTI Switching plug	**621**	Series: 6mm-technology / 2-Layer-technology / 1-pole	**T75**	Self terminating to 75 Ω resistance
GLS	GHIELMETTI LED plug	**622**	Series: 6mm-technology / 2-Layer-technology / 2-pole	**an, bg ...**	colours (sw: black, rt: red, gn: green, bl: blue,
GDS	GHIELMETTI Diode plug				pk: pink gb: yellow, ws: white, an: anthracite, bg: beige)
GBS	GHIELMETTI Locking plug	**Contact functions**		**ZS**	Polarity: row to column (forward current)
GAS	GHIELMETTI Solder lug connector	**A**	Normal contact	**SZ**	Polarity: column to row (reverse current)
GSI	GHIELMETTI Connecting Interface Modul	**AP**	Normal and parallel contact	**D**	Diagonal mode (Matix Boards)
GXL	GHIELMETTI XLR Connecting Modul	**APV**	Normal/parallel and connecting contact	**C**	Compact edition
GMK	GHIELMETTI Shielded Patchcord	**AV**	Normal and connecting contact	**G**	for GAS 323 LA C solder lug connectors
GSK	GHIELMETTI Stereo Patchcord	**V**	Normalling contact (connecting contact)		
GKS	GHIELMETTI Patchcord plug	**Connection technology**			
GVK	GHIELMETTI Video-Patchcord	**SA**	Plug-in facility		
GPP	GHIELMETTI Protectoprint Panel	**LA**	solder lug connector module		
GVA	GHIELMETTI Video-Adapter	**KP**	Krone LSA Plus connector module		



HE / RU	Elma-Aufnahmegehäuse Elma-Schränke
46	
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15	Typ 38, 48
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12	Typ 38
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10	Typ 38
9	Typ 38
8	Typ 38
7	Typ 38
6	Typ 38
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4	Typ 38
3	Typ 38
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