

PAS .../GN/Kfz series of 2-/4-Quadrant Amplifiers

For 12V, 24V and new 48V



The relating standards:

ISO 7637

ISO 16750-2

ISO 21848

LV124

SAE J 1113-11

Audi BT-LAH XXX.915.181.XX

BMW GS 95002

BMW GS 95003-2

BMW GS 95024-2-2

DaimlerChrysler DO-10615

Fiat 9.90110

Ford EMC-CS-2009.1

General Motors GMW 3097

Mercedes-Benz MBN 10615

Mitsubishi ES-X82010

Nissan 28400NDS02_3

PSA B21 7110

Renault 36-00-808/--L

VW 80000

VW 80101

VW TL 82066

VW TL 82366

The 2-/4-Quadrant Amplifier type PAS GN/Kfz suits as an adjustable voltage source for the automotive supply simulation system for 12V, 24V and new 48V especially for the generation of pulse #2b and pulse #4 for all mentioned supply voltages.

The modularly constructed Automotive Supply Simulation System is a compact EMC-Test System for the execution of immunity measurements for pulse-shaped, line conducted disturbances at electronic equipment of motor vehicles. The high performance version enables tests of current-intense consumers or even complete vehicles.

- ✓ *2-/4-Quadrant Amplifiers*
- ✓ *High short-time load ability*
- ✓ *Very high slew rate*
- ✓ *Wide frequency range*
- ✓ *Very low internal resistance*
- ✓ *Common output*
- ✓ *Free programmable waveform generator*

TECHNICAL DATA – TYPE SPECIFIC

Type	PAS 1000/GN/Kfz	PAS 2500/GN/Kfz	PAS 5000/GN/Kfz
Power ¹⁾			
<i>Continuous power:</i>	900W at 60V	3000W at 60V	6000W at 60V
<i>Short-time power:</i>	1500W for max. 3min at 60V (duty cycle 1:9)	4800W for max. 3min at 60V (duty cycle 1:9)	9600W for max. 3min at 60V (duty cycle 1:9)
Nominal Voltage:			
$U_1: 0V_{DC} \dots 18V_{DC}$	$I_{cont}: 28A_{DC}$ $I_{short-time}: 44A_{DC}$	$I_{cont}: 100A_{DC}$ $I_{short-time}: 150A_{DC}$	$I_{cont}: 200A_{DC}$ $I_{short-time}: 300A_{DC}$
$U_2: 0V_{DC} \dots 36V_{DC}$	$I_{cont}: 22A_{DC}$ $I_{short-time}: 44A_{DC}$	$I_{cont}: 65A_{DC}$ $I_{short-time}: 125A_{DC}$	$I_{cont}: 130A_{DC}$ $I_{short-time}: 250A_{DC}$
$U_3: 0V_{DC} \dots 60V_{DC}$	$I_{cont}: 15A_{DC}$ $I_{short-time}: 25A_{DC}$	$I_{cont}: 50A_{DC}$ $I_{short-time}: 80A_{DC}$	$I_{cont}: 100A_{DC}$ $I_{short-time}: 160A_{DC}$
$U_1 \dots U_3: -15V_{DC} \dots 0V_{DC}$	$I_{cont}: 9A_{DC}$ $I_{short-time}: 14A_{DC}$	$I_{cont}: 33A_{DC}$ $I_{short-time}: 50A_{DC}$	$I_{cont}: 66A_{DC}$ $I_{short-time}: 100A_{DC}$
Digital instrument:			
<i>Voltage range:</i>	100V		
<i>Current range:</i>	100A	200A	400A
	<i>Max. / Typ. (of measured value ± 2 digit)</i>		
<i>Accuracy Voltage (DC):</i>	0,5% / 0,2%		
<i>Accuracy Current (DC):</i>	0,8% / 0,4%		
Supply:			
<i>Power Supply</i> ($\pm 10\%$, 50Hz ... 60Hz)	230V	230V/400V	230V/400V
<i>Protection:</i>	16A	16A	32A
<i>Contactors type:</i>	Schuko	CEE	CEE
Housing:	19"-plug-in unit, colour light grey (RAL 7035)		
<i>Dimensions (mm):</i> (without option pulse 5/7)	Amplifier incl. Power supply (4U) 178x483x600	Amplifier (6U): 267x483x600 Power supply (5U): 222x483x600	Amplifier (7U): 311x483x600 Power supply (12U): 533x483x600
<i>Weight:</i>	approx. 60kg	PAS: approx. 30kg NT: approx. 90kg	PAS: approx. 65kg NT: approx. 200kg
<i>Dimensions (mm):</i> (including option pulse 5/7)	Amplifier (6U): 267x483x600 Power supply (8U): 356x483x600	Amplifier (6U): 267x483x600 Power supply (8U): 356x483x600	Amplifier (7U): 311x483x600 Power supply (12U): 533x483x600
<i>Weight:</i>	PAS: approx. 30kg NT: approx. 90kg	PAS: approx. 30kg NT: approx. 90kg	PAS: approx. 65kg NT: approx. 200kg

Remarks:

- 1) nominal power at 230V supply voltage

Type	PAS 7500/GN/Kfz	PAS 10000/GN/Kfz	PAS 15000/GN/Kfz
Power ¹⁾			
<i>Continuous power:</i>	7500W at 60V	15000W at 60V	22500W at 60V
<i>Short-time power:</i>	18000W for max. 3min at 60V (duty cycle 1:9)	30000W for max. 3min at 60V (duty cycle 1:9)	45000W for max. 2min at 60V (duty cycle 1:9)
Nominal voltage:			
$U_1: 0V_{DC} \dots 18V_{DC}$	$I_{cont}: 300A_{DC}$ $I_{short-time}: 600A_{DC}$	$I_{cont}: 500A_{DC}$ $I_{short-time}: 1000A_{DC}$	$I_{cont}: 675A_{DC}$ $I_{short-time}: 1350A_{DC}$
$U_2: 0V_{DC} \dots 36V_{DC}$	$I_{cont}: 200A_{DC}$ $I_{short-time}: 400A_{DC}$	$I_{cont}: 330A_{DC}$ $I_{short-time}: 660A_{DC}$	$I_{cont}: 500A_{DC}$ $I_{short-time}: 1000A_{DC}$
$U_3: 0V_{DC} \dots 60V_{DC}$	$I_{cont}: 150A_{DC}$ $I_{short-time}: 300A_{DC}$	$I_{cont}: 250A_{DC}$ $I_{short-time}: 500A_{DC}$	$I_{cont}: 375A_{DC}$ $I_{short-time}: 750A_{DC}$
$U_1 \dots U_3: -15V_{DC} \dots 0V_{DC}$	$I_{cont}: 100A_{DC}$ $I_{short-time}: 200A_{DC}$	$I_{cont}: 160A_{DC}$ $I_{short-time}: 320A_{DC}$	$I_{cont}: 240A_{DC}$ $I_{short-time}: 480A_{DC}$
Digital instrument:			
<i>Voltage range:</i>	100V		
<i>Current range:</i>	500A	1000A	1500A
	<i>Max. / Typ. (of measured value ± 2 digit)</i>		
<i>Accuracy Voltage (DC):</i>	0,5% / 0,2%		
<i>Accuracy Current (DC):</i>	0,8% / 0,4%		
Supply:			
<i>Power Supply</i> ($\pm 10\%$, 50Hz ... 60Hz)	230V/400V	230V/400V	230V/400V
<i>Protection:</i>	32A	32A	63A
<i>Contacteur type:</i>	GEE	GEE	GEE
Housing:			
<i>Dimensions (mm):</i> (without option pulse 5/7)	Amplifier (10U): 444x483x600 Power supply(12U): 533x483x600	Amplifier (7U): 311x483x600 Power supply(12U): 533x483x600	Amplifier (23U): 1022x483x600 Power supply(37U): 1643x483x600
<i>Weight:</i>	PAS: approx. 75kg NT: approx. 250kg	PAS: approx. 65kg NT: approx. 200kg	PAS: approx. 65kg NT: approx. 200kg
<i>Dimensions (mm):</i> (including option pulse 5/7)	Amplifier (7U): 311x483x600 Power supply (12U): 533x483x600	Amplifier (7U): 311x483x600 Power supply (12U): 533x483x600	Amplifier (7U): 311x483x600 Power supply (12U): 533x483x600
<i>Weight:</i>	PAS: approx. 65kg NT: approx. 200kg	PAS: approx. 65kg NT: approx. 200kg	PAS: approx. 65kg NT: approx. 200kg

Remarks:

- 1) nominal power at 230V supply voltage

TECHNICAL DATA – GENERAL

Type	All PAS xxx/GN/Kfz
<i>Voltage adjustment:</i>	depending on oscillator used
<i>Load regulation: 0 ... nominal load</i>	max. 2%, typ. <1%
<i>Gain stability:</i>	10min: <0.2% at constant load and temperature 8h: <0.5% at constant load and temperature
<i>Line regulation:</i>	<1.5x10 ⁻⁴ per 10V line-voltage change
<i>Frequency range at AC superposition:</i>	DC ... 50kHz small signal bandwidth 8Vpp DC ... 100kHz small signal bandwidth 4Vpp
<i>Rise time (at load=10Ω):</i>	<10μs
<i>Slew rate:</i>	U ₁ : >1V/μs U ₂ : >2V/μs U ₃ : >3V/μs
Protection circuits:	Overload / Short circuit / Overtemperature
Input:	
<i>Input voltage: (for max. output voltage)</i>	±5V _p
<i>Input impedance:</i>	approx. 8kΩ
Interface (optional):	IEEE488
Ambient temperature:	0°C up to +40°C

Options:	
<i>Option 06:</i>	Output voltage monitor
<i>Option 07:</i>	Output current monitor
<i>Option 10:</i>	Internal resistance compensation
<i>Option 11:</i>	Special voltage ranges
<i>Option 17-300:</i>	Floating output Max. voltage between earth and ground of the output of the amplifier:300V _{rms}
<i>Option 18:</i>	Special line voltages (110V ... 300V)
<i>Option pulse 5:</i>	U _{test pulse 5 (short-time)} : max. 200V _{DC} R _i :0.5 Ω ... 8Ω
<i>Option pulse 7:</i>	U _{test pulse 7 (short-time)} : max. -80V _{DC} R _i :10Ω
<i>Option OPD:</i>	
<i>Option Car Tester:</i>	
<i>Option Load Dump Generator:</i>	