Datasheet

GvA Power Supply System (GPSS)

GPSS 221-24

- **Potential separated power supply with two channels**
- **Expandable of 2-3 supplies for 4-6 Channels**
- **Input voltage range: 21.6 – 25.2V_{DC}**
- **Output voltage: 29 – 41V_{DC}**
- **Continuous output power per channel: 150W**
- **Fiber-optic status signal**
- **Isolation voltage: 50kVrms**

General information:

Power supply system for applications at different electrical potentials.

Applications:

Auxiliary power supply for low voltage devices in high voltage environment, eg. drivers for semiconductors such as IGCT or IGBT, sensors and actors.

GvA Leistungselektronik GmbH
Boehringerstraße 10-12
68307 Mannheim

Telefon: +49 (0) 621/7 89 92-0
Fax: +49 (0) 621/7 89 92-99
E-Mail: info@gva-leistungselektronik.de
Web: gva-leistungselektronik.de

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1 Electrical Characteristics

2 Channel System		**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**
Supply Voltage	Nominal input voltage	V_{cc}	21.6	24	25.2	V_{DC}
Supply Voltage	UPS mode[1)]	V_{cc}	20 [2)]		28 [2)]	V_{DC}
Output voltage	Unregulated DC output voltage	V_{out}	29	35	41	V_{DC}
Continuous output power	Continuous output power 1 channel	$P_{cont.\_1ch}$	130 [3)]	150	170	W
Continuous output power	Continuous output power 2 channels together	$P_{cont.\_2ch}$	260	300	340	W
Input current	V_{cc} = 24 V_{DC} / P_{2ch} = 300W	I_{cc}		14	16	A
Short Circuit Shutdown Time	Output shortened	T		60 [4)]		sec

1) UPS mode: Uninterruptible Power Supply is a safety mode with a larger Input voltage range (20V – 28V). In this mode the output voltage have a larger range than 29V – 41V.
2) Reduced Output Power
3) At an ambient temperature of 40°C (Derating Curve on request)
4) The overcurrent limitation starts at an output current greater than 4.5A. If this error is present on the output channel for more than one minute, the affected channel is switched off to protect the device from being damaged. After five minutes, the output channel switches on again and checks the output current of the affected channel again. Once the overcurrent fault has been vanished, the device returns to normal operation and changes the error signal back to normal via the optical fiber.

4 Channel System		**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**
Continuous output power	Continuous output power 4 channels together	$P_{cont.\_4ch}$	520	600	680 [5)]	W

5) WARNING: If the System is supplied by one supply cable (complete input current flow over one input plug) it is not allowed to increase the output power over 340W. A higher output power probably damage the power supply input plug!
If a higher output power is required every 2-Channel-System has to be supplied by one power supply cable.

6 Channel System		**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**
Continuous output power	Continuous output power 6 channels together	$P_{cont.\_6ch}$	780	900	1020 [6)]	W

6) WARNING: If the System is supplied by one supply cable (complete input current flow over one input plug) it is not allowed to increase the output power over 340W. A higher output power probably damage the power supply input plug!
If a higher output power is required every 2-Channel-System has to be supplied by one power supply cable.

Efficiency		**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**
Efficiency during nominal power	P_{2ch}=300W (symmetrical load)	η	91	92	94	%

2 Insulation and Failure Behavior

Insulation				**Unit**
Partial discharge (type test) <10pC/60s	Input to output (extinction)	min. 21 [7) 8)]		kV_{rms}/ 50Hz
	Output to output (extinction)	min. 14 [7) 8)]		kV_{rms}/ 50Hz
Insulation voltage (type test) 50Hz/60s	Input to output	min. 50 [8)]		kV_{rms}/ 50Hz
	Output to output	min. 24 [8)]		kV_{rms}/ 50Hz
Impulse test (type test) 1,2µs/50µs	Input to output	min. 95 [8)]		kV
Distances		**Creepage Distance**	**Clearance Distance**	
	Output to input	245	210	mm
	With plug connector	245	194	mm
	Output to output	199	133	mm
	With plug connector	210	114	mm
Material class		III, CTI>=600		

7) Test according to standard IEC 60270

8) All Values are measured under Pollution Degree 2

Failure Feedback		**Condition**
Optical fibre status signal	Light on	Normal operation
	Light off	Over temperature (>70°C Chip)
		Output overload / Short circuit
		False input voltage range
The transmitter light will be switched off if at least one of the above mentioned failure pattern occurs. As soon as the failure condition is no longer present the light turns on automatically.		
Failure Behavior		
Over temperature (>70°C Chip)		Failure feedback No shutdown of the output channels
Output overload		Failure feedback Shutdown of the affected output channel [4)]
False input voltage range		Failure feedback Beyond UPS-range [1)] shutdown of both output channels

3 Climatic Condition and Connector Interface

Climatic Condition	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**
Operation range	T_{Device}	0		+70	°C
Transportation / Storage Temperature	$T_{Storage}$	-40		+70	°C
Humidity (target)	$T_{Humidity}$	<95			%

Connector Interface		**Pin**	**Signal**
Input connector female	Phoenix Contact 6 Pole Type: MSTBA 2,5 HC/ 6-G-5,08 (1923908)	1	Error Signal 1 [9)]
		2	Error Signal 2 [9)]
		3	DC input 24V
		4	DC input 0V
		5	DC input 24V [10)]
		6	DC input 0V [10)]
Input connector male (customer side)		Phoenix Contact 6 Pole- Type: MSTB 2,5 HC/ 6-ST-5,08 - (1912003)	
Output connector female	Phoenix Contact 4 Pole Type: MSTBVA 2,5/4-G-5,08 (1755752)	1	NC
		2	DC output V_{GND}
		3	DC output V_{CC}
		4	NC
Output connector male (customer side)		Phoenix Contact 4 Pole- MSTB 2,5/ 4-ST-5,08 - (1757035)	
Optical fibre connector	Optical transmitter AFBR-1529Z	"Light on": I_{F_DC}=30mA	

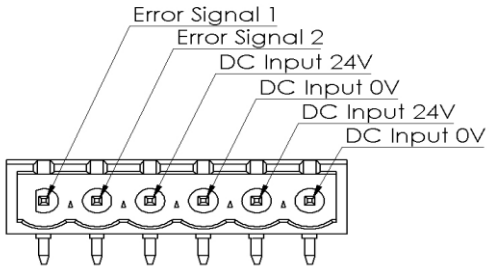

Figure 1: Input Connector

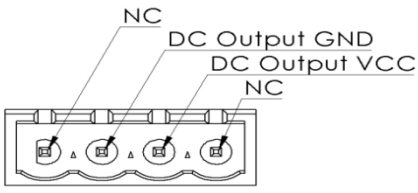

Figure 2: Output connector

9) Connector for looping through the error states when using several GPSS
10) The signals on Pin 5 and 6 are the looped-through signals of the corresponding Pins 3 and 4.

4 Dimensions and Weight

Dimensions			**Length**	**Width**	**Height**	**Unit**
2 Channel System		**L**x**W**x**H**	73	200	165	mm
4 Channel System		**L**x**W**x**H**	156 11)	200	165	mm
6 Channel System		**L**x**W**x**H**	239 11)	200	165	mm
Packaging size		**L**x**W**x**H**	300	240	95	mm

11) We recommend a minimum distance of 10mm between the devices.

Weight	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**
Weight	m		2.3		kg

Packaging	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**
Packaging weight (include one GPSS 221-24)	m		2.7		kg

5 Mechanical Drawings

All dimensions in [mm]

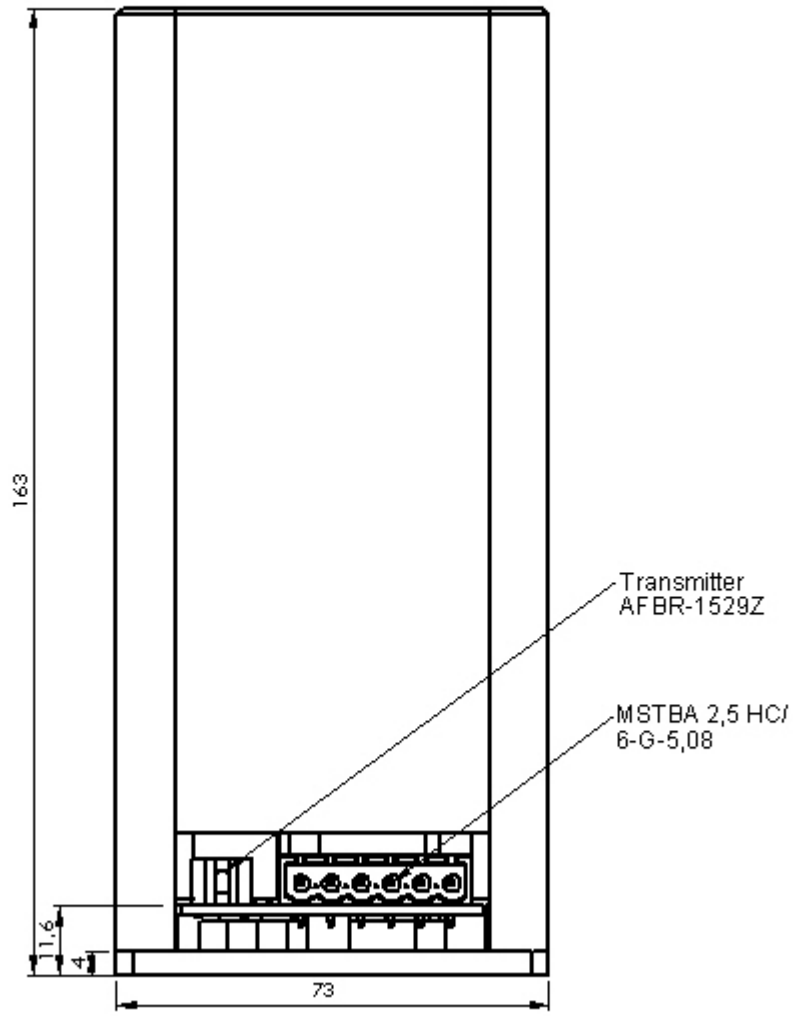

Figure 3: Mechanical drawing GPSS 221-24

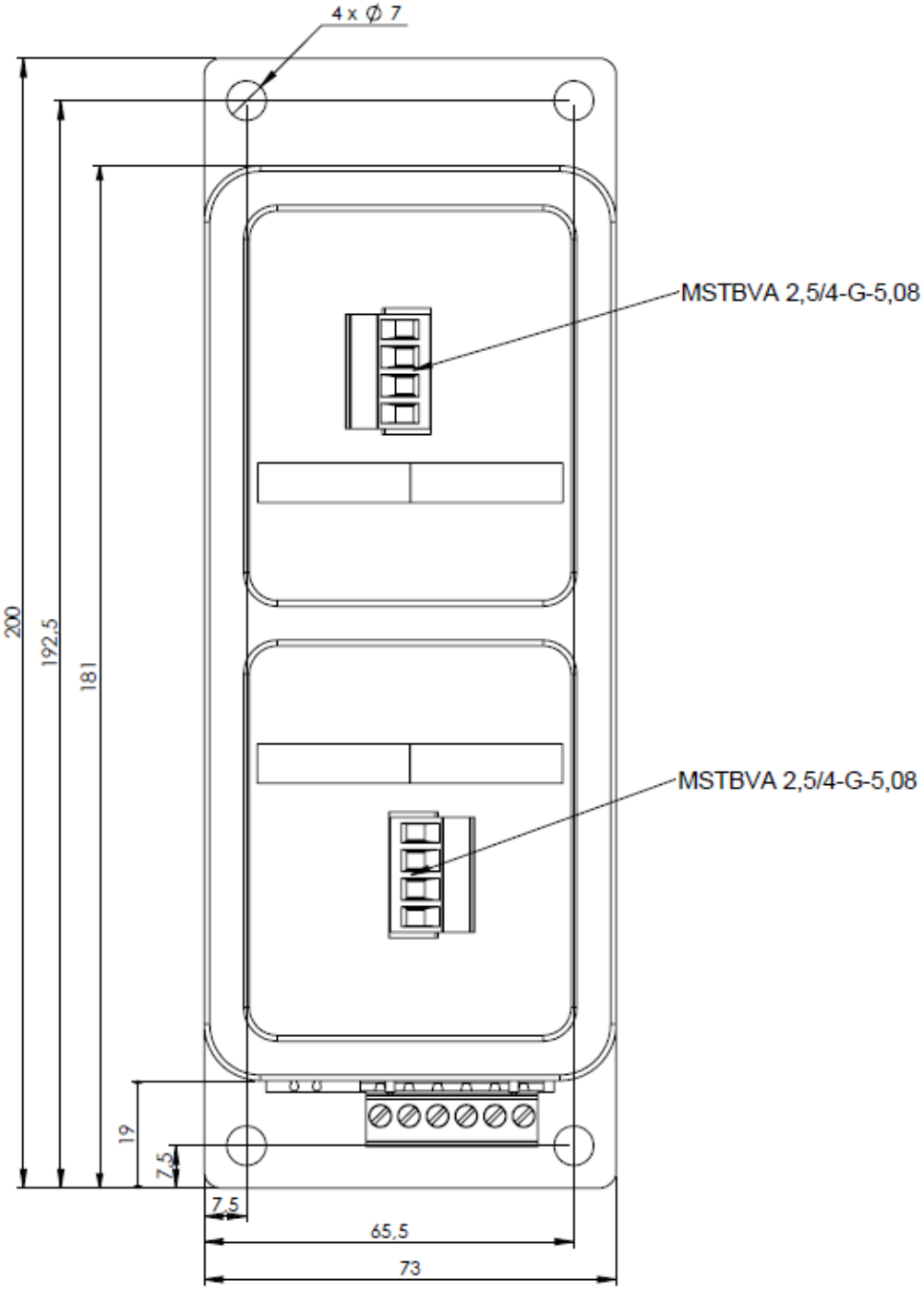

Figure 4: Mechanical drawing GPSS 221-24

6 Application and Implementation

Note: Each application in which the GPSS is used must be verified for functionality by the customer. GvA does not warrant its accuracy or completeness. GvA's costumers are responsible for determining suitability of components for their purpose. Costumers should validate and test their design implementation to confirm system functionality.

7 Document History

Document Name	Index	Date	Creator
DS_P15057	00	19.06.2015	Rehmann
DS_P15057	01	07.11.2016	Bergold
DS_P15057	02	18.11.2016	Bergold
DS_P15057	03	30.03.2017	Bergold
DS_P15057	04	27.04.2017	Bergold
DS_P15057	05	01.11.2017	Bergold
DS_P15057	06	22.02.2018	Bergold
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DS_P15057	08	15.03.2018	Bergold
DS_P15057	09	15.03.2018	Bergold
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For further information feel free to contact us:

GvA Leistungselektronik GmbH
Boehringer Str. 10-12
D-68307 Mannheim
Phone: +49 (0)621 78992-0
www.gva-leistungselektronik.de
Email: info@gva-leistungselektronik.de