

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: 50kV_{rms}



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.



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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	
	Input 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	
	Input 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		

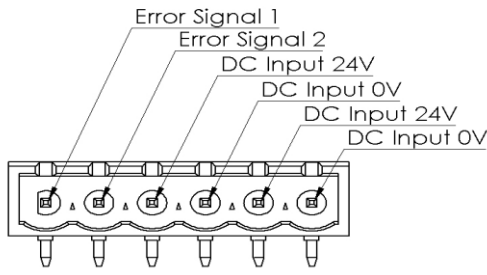
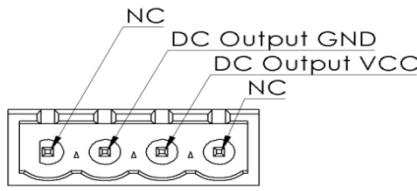
7) Test according to standard IEC 60270

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": $I_{F_DC}=30mA$	
 <p>Figure 1: Input Connector</p>		 <p>Figure 2: Output connector</p>	

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		LxWxH	73	200	165	mm
4 Channel System		LxWxH	156 ¹¹⁾	200	165	mm
6 Channel System		LxWxH	239 ¹¹⁾	200	165	mm
Packaging size		LxWxH	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]

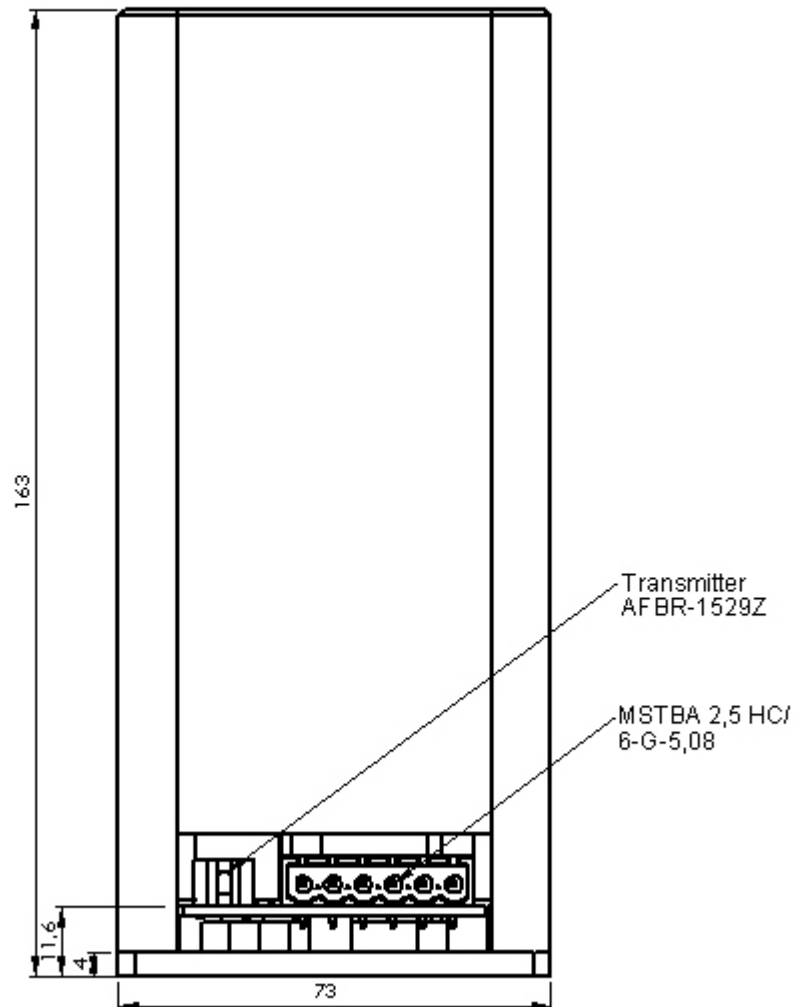


Figure 3: Mechanical drawing GPSS 221-24

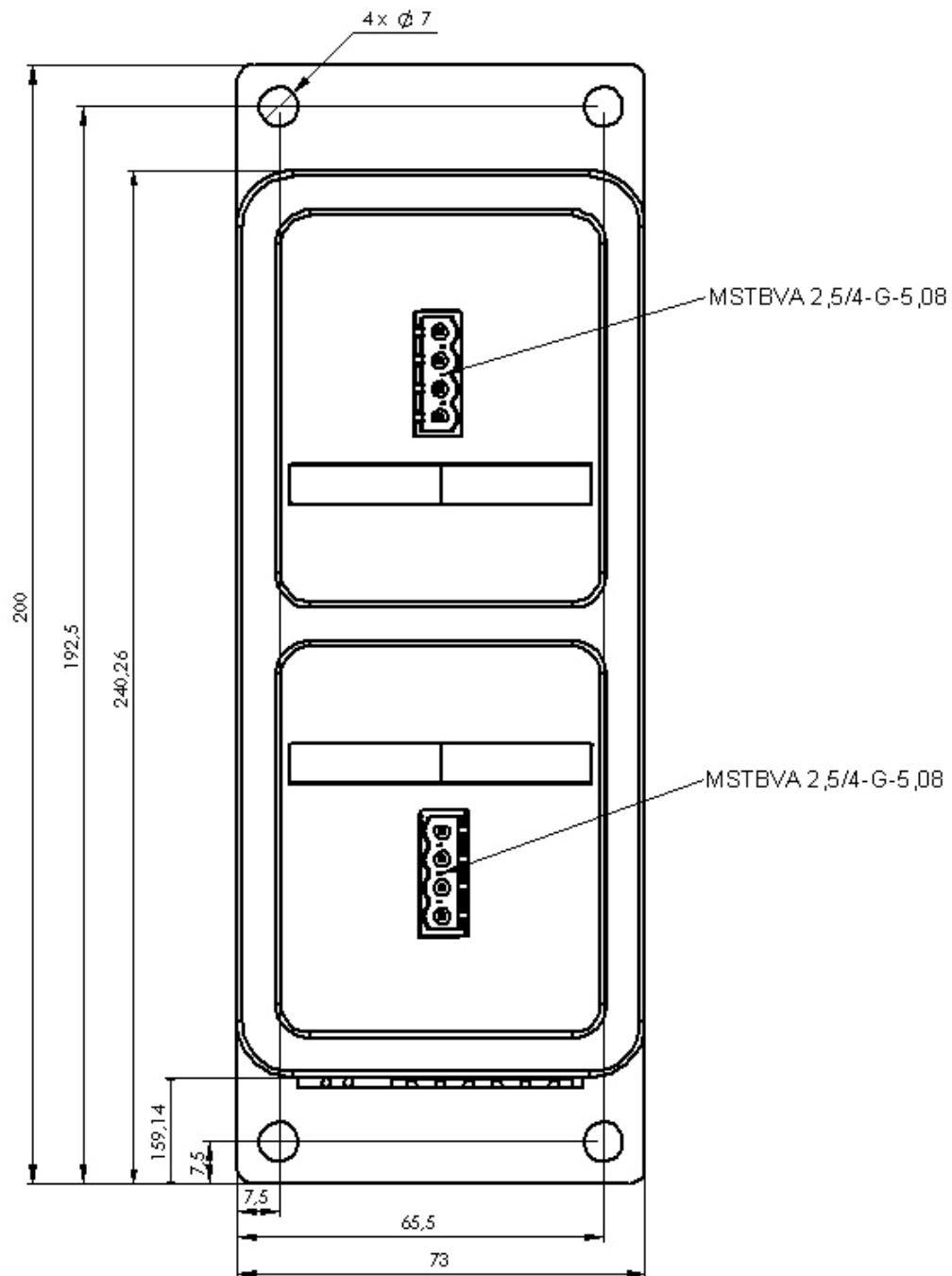


Figure 4: Mechanical drawing GPSS 221-24

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 customers are responsible for determining suitability of components for their purpose. Customers 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
DS_P15057	07	12.03.2018	Bergold
DS_P15057	08	15.03.2018	Bergold
DS_P15057	09	15.03.2018	Bergold
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