# MIC-3890

### **3U CompactPCI® Serial DC 250W Power Supply Unit**



#### **Features**

- 3U x 8HP CPCI serial form factor
- M12 or WAGO DC-IN connector
- Wide operating temperature -40°C to +70 °C
- 1+1 redundancy, hot-swappable
- Reserve PMBus communication
- Wide input 66-160V<sub>DC</sub>
- 80% Plus efficiency
- Meets EN50155 class S2 & C2 compliance

#### Introduction

MIC-3890 series are 3U/8HP CompactPCI® Serial power supply units. There are two SKUs for your application: one is a 250W with M12 connector and another is a 250W with Wago connector as input interface. Both can accept 66-160VDC as input voltage via a connector in front panel. The power supply output payload power is +12 V, the +5Vsb voltage is for wake-up events. The power supply reserve the function that supports PMBus communication protocol and the voltage, current and temperature of the power supply can be detected at any time. The wide input and wide temperature design makes it suitable for harsh environments and provides an ideal solution for railway rolling stock.

## **Specifications**

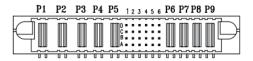
Input (DC)  Input Current ≤5A  Input Current Peak 11.4A at 160V <sub>DC</sub> Input Connector Wago769-663/004-000  M12 WP-04M2-93-11  Output Connector FCI 51939-667LF  Line Regulation ±0.5%  Load Regulation ±2%  Total Regulation ±2%  Noise & Ripple 5V: ≤120mV  Remote Sense Available at 12V  Current Sharing Available at 12V  Over Voltage Built-in (LATCH)  Over Temperature Available  I/P reverse voltage Available  U/P reverse voltage Available  Efficiency ≥84%  Switching Frequency 225-275KHz → Typical 250KHz  Dielectric Withstand I/P-GND:1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> Remote ON/OFF Available  Power Fail Signal Available  DC OK Available  N+1 Redundancy Internal OR-ing diodes  Hot-swappable Available						
Input (DC)  Inrush Current Input Connector Input Connector Input Connector Input Connector  Unput Connector Input Connector I		input Range	66V-160V <sub>DC</sub>			
Input Connector  Input Connector  Wago769-663/004-000 M12 WP-04M2-93-11  Output Connector  Line Regulation  ±0.5%  Load Regulation  ±2%  Total Regulation  12V: ≤100mV  12V: ≤120mV  Remote Sense  Available at 12V  Current Sharing  Over Voltage  Over Voltage  Ver Temperature  Over Temperature  Available  I/P reverse voltage  Conformal Coating  Efficiency  Switching Frequency  Dielectric Withstand  Prover Fail Signal  Prover Internal OR-ing diodes  N+1 Redundancy  Internal OR-ing diodes	Input (DC)	Input Current	≤5A			
Output Connector    M12 WP-04M2-93-11		Inrush Current	Peak 11.4A at 160V <sub>DC</sub>			
		Input Connector				
Load Regulation       ±2%         Total Regulation       ±2%         Noise & Ripple       5V: ≤100mV         Remote Sense       Available at 12V         Current Sharing       Available at 12V         Over Voltage       Built-in (LATCH)         Over Current       Installed         Over Temperature       Available         LyP reverse voltage       Available         Conformal Coating       Available         Efficiency       ≥84%         Switching Frequency       225~275KHz → Typical 250KHz         Dielectric Withstand       I/P-O/P: 1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> I		Output Connector	FCI 51939-667LF			
Output         Total Regulation $\pm 2\%$ Noise & Ripple $5V: \le 100 \text{mV}$ 12V: ≤120mV       12V: ≤120mV         Remote Sense       Available at 12V         Over Sense       Available at 12V         Over Voltage       Built-in (LATCH)         Over Current       Installed         Over Temperature       Available         I/P reverse voltage       Available         Conformal Coating       Available         Efficiency       ≥84%         Switching Frequency       225~275KHz → Typical 250KHz         Dielectric Withstand       I/P-O/P: 1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> I/P-		Line Regulation	±0.5%			
Noise & Ripple    SV: ≤100mV		Load Regulation	±2%			
Noise & Ripple    SV: ≤100mV	Outnut	Total Regulation	±2%			
Protection  Current Sharing Over Voltage Over Current Over Current Over Temperature Installed Over Temperature V/P reverse voltage  Conformal Coating Efficiency Switching Frequency Dielectric Withstand General  Remote ON/OFF Power Fail Signal DC OK N+1 Redundancy Available at 12V Available Available Available at 12V Available Available Available Available I/P-O/P: 1500V <sub>AC</sub> I/P-GND: 1500V <sub></sub>	σιιραί	Noise & Ripple				
Protection  Over Voltage Built-in (LATCH)  Over Current Installed  Over Temperature Available  I/P reverse voltage Available  Conformal Coating Available  Efficiency ≥84%  Switching Frequency 225~275KHz → Typical 250KHz  Dielectric Withstand I/P-O/P: 1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> I/P-O/P: Available  Remote ON/OFF Available at [FAL#] pin  DC OK Available  N+1 Redundancy Internal OR-ing diodes		Remote Sense	Available at 12V			
Protection  Over Current Over Temperature Installed Over Temperature Available I/P reverse voltage  Conformal Coating Efficiency ≥84% Switching Frequency Dielectric Withstand I/P-O/P: 1500V <sub>AC</sub> I/P-GND:1500V <sub>A</sub>		Current Sharing	Available at 12V			
Protection  Over Temperature Available  I/P reverse voltage Available  Conformal Coating Available  Efficiency ≥84%  Switching Frequency 225~275KHz → Typical 250KHz  Dielectric Withstand I/P-O/P: 1500V <sub>AC</sub> I/P-GND:1500V <sub></sub>		Over Voltage	Built-in (LATCH)			
Over Temperature Available  I/P reverse voltage Available  Conformal Coating Available  Efficiency ≥84%  Switching Frequency 225~275KHz , Typical 250KHz  Dielectric Withstand I/P-0/P: 1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> I/P-GND	Drataation	Over Current	Installed			
Conformal Coating Available  Efficiency ≥84%  Switching Frequency 225~275KHz → Typical 250KHz  Dielectric Withstand I/P-O/P: 1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> Remote ON/OFF Available  Power Fail Signal Available at [FAL#] pin  DC OK Available  N+1 Redundancy Internal OR-ing diodes	Protection	Over Temperature	Available			
Efficiency ≥84%  Switching Frequency 225~275KHz → Typical 250KHz  Dielectric Withstand  /P-0/P: 1500V <sub>AC</sub>  /P-GND:1500V		I/P reverse voltage	Available			
Switching Frequency 225~275KHz ¬ Typical 250KHz  Dielectric Withstand I/P-O/P: 1500V <sub>AC</sub> I/P-GND:1500V		Conformal Coating	Available			
General  Dielectric Withstand I/P-O/P: 1500V <sub>AC</sub> I/P-GND:1500V <sub>AC</sub> Remote ON/OFF Available  Power Fail Signal Available at [FAL#] pin  DC OK Available  N+1 Redundancy Internal OR-ing diodes		Efficiency	≥84%			
General  Remote ON/OFF Available Power Fail Signal DC OK N+1 Redundancy Available I/P-GND:1500V <sub>AC</sub> Available Available at [FAL#] pin DC OK Internal OR-ing diodes		Switching Frequency	225~275KHz , Typical 250KHz			
Power Fail Signal Available at [FAL#] pin DC OK Available N+1 Redundancy Internal OR-ing diodes		Dielectric Withstand				
DC OK Available N+1 Redundancy Internal OR-ing diodes	General	Remote ON/OFF	Available			
N+1 Redundancy Internal OR-ing diodes		Power Fail Signal	Available at [FAL#] pin			
, ,		DC OK	Available			
Hot-swappable Available		N+1 Redundancy	Internal OR-ing diodes			
		Hot-swappable	Available			

	Operating Temperature	40 ~ 70 °C (with air flow and derating)		
Environmental	Storage Temperature	-55°C to +85°C		
	Cooling	≥150W , forced air		
	Emissions (conducted)	GB/T 24338.5 EN50121-4		
	Safety Standard	GB/T 25119		
Safety/EMC	Shock and Vibration	GB/T 21563		
outoty/EMO	Radiated Susceptibility	GB/T 24338.4 EN50121-3-2 IEC 62236-3-2		
	Surge	EN50121-3-2		

# **Output Voltage & Current Rating Chart**

Assignment	Voltages	Minimum	Maximum
V1	12V	0A	20A
V1	5Vsb	0A	2.5A

## **Pin Assignments**



P1	P2	P3	P4	P5	D1	D2	D3	D4	D5	D6	P6	P7	P8	P9
				N/A	FAL	PS-P	COM	DEG	5Vsb					
					C1	C2	C3	C4	C5	C6				
					N/A	N/A	COM	A0	ALERT	5Vsb				
N/A	N/A	GND	Vin-	Vin+	B1	B2	В3	B4	B5	B6	COM	COM	V1	V1
					N/A	12VCS	PSON	A1	SCL	COM				
					A1	A2	A3	A4	A5	A6				
					N/A	-VS	+VS	A2	SDA	EN				ĺ

#### **OUTPUTS**

0	DO VOLTAGE	DIN NDD				
Assignment	DC VOLTAGE	min	Тур	Max	PIN NBR	
V01	+12V	0A	20A	20A	CNT1-P8,P9	
COM		Return of	all ouput		CNT1-P6,P7,C3,B6,D4	
5Vsb	+5V	0A	2.5A	2.5A	CNT1-C6,D6	
-VS		The negative rem	note sense of V01		CNT1-A2	
12VCS		The current sh	are bus of V01		CNT1-B2	
EN		CNT1-A6				
FAL		CNT1-D2				
+VS		CNT1-A3				
PSNON		CNT1-B3				
PS_P	PS_present, pull low in the PSU CN					
A2	I <sup>2</sup> C address bit 2 CNT1-A4					
A1	I <sup>2</sup> C address bit 1 CNT1					
A0		CNT1-C4				
SDA		CNT1-A5				
SCL	Clock interface respectively for I <sup>2</sup> C logic CNT1-B5					
ALERT	Active low to alert fot PUMBus CNT1-C2					
DEG	Active low to show over temperature CNT1-D2					

# **Ordering Information**

P	'n	Description
N	/IC-3890-A1D1	3U/8HP CPCI-S 250W Wago DC-IN Power
N	/IC-3890-A1D2	3U/8HP CPCI-S 250W M12 DC-IN Power

Note: Matched the power cable can be selected according to customer demand Wago connector: 1700032645-01, A Cable 1x3P-5.0/TEMx2 OPEN 100cm ITA-CS02 M12 connector: 1700029923-01, M cable plug-in 5P-5.0/Waterproof 4P 10cm

### **Product Picture**





# **CPU and Peripheral I/O Board Description**

Models	Description
MIC-330	3U CPCI-Serial main board
MIC-3810	3U CPCI-Serial PCIe Carrier board
MIC-3820	3U CPCI-Serial SATA Carrier board
MIC-3811	3U CPCI-Serial Dual Mini-PCle Carrier board
MIC-3954	3U CPCI-S Quad Mini-PCIe & M.2 Carrier Board
MIC-300	3U CPCI-Serial 1 x7&1X9 serial BP W/O RIO, fan