

# QUINT-PS/24DC/24DC/20 DC to DC Converter

 [perle.com/products/industrial-power-supply/quint-ps-24dc-24dc-20-23201028.shtml](https://www.perle.com/products/industrial-power-supply/quint-ps-24dc-24dc-20-23201028.shtml)

## Regulated DIN Rail Power Supply

- 24 V DC Output Voltage
- 20 Amps
- 480 Watts
- Wide DC input voltage ranges of 18 ... 32 V DC

If you need to efficiently produce a regulated output voltage from a source that may or may not be well controlled to a load that may or may not be constant, the **QUINT-PS/24DC/24DC/20** Converter is for you. This DC to DC Converter provides a regulated DC voltage. It alters the voltage level, regenerates voltages at the end of long cables, or enables the creation of independent supply systems by means of electrical isolation. With all required safety certifications to support ITE (Information Technology Equipment), ruggedized packaging, extended operating temperatures, high peak load capabilities and high isolation voltages, this QUINT Industrial DC to DC Converter is designed to meet the needs of your industrial application. The QUINT DC to DC converter uses leading technologies to increase safety and reliability:



- Preventive function monitoring warns against critical operating states before errors occur.
- The static power reserve enables difficult loads to be started reliably with up to 1.25 times the nominal current (POWER BOOST).
- Fast tripping of standard circuit breakers with up to six times the nominal current for 12 ms (SFB technology).

## 18 to 29.5 V DC Adjustable Output Voltage Range

Using the rotary potentiometer on the front face of the QUINT power supply, the output voltage can be optimally adjusted to meet specific application environment requirements. For example, you can easily adjust to compensate for a voltage drop caused by a long cable length.

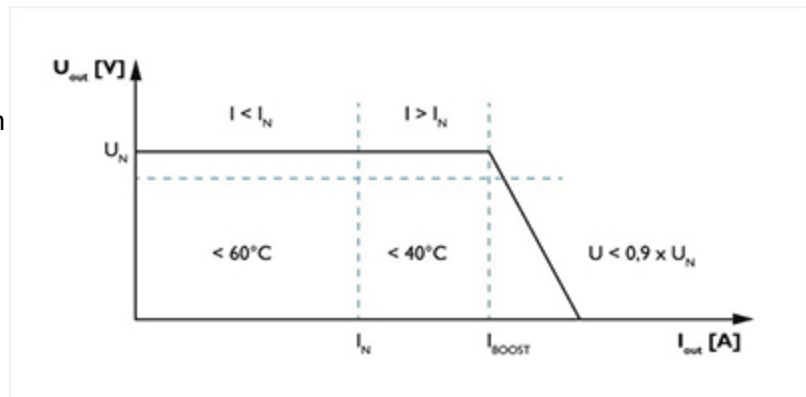
## POWER BOOST: reliably start difficult loads

A high degree of flexibility is required to configure, optimize and expand large systems. To optimally adapt a system or machine to your requirements, a power reserve in the power supply unit is crucial. With this QUINT Power Boost function a **static boost will continuously provide up to 125% of the nominal current**. This is useful when it is not possible to predict which loads will be switched on at the same time or high switch-on currents of capacitive loads have to be absorbed without voltage dips.

## Preventive function monitoring reports critical operating states before they occur

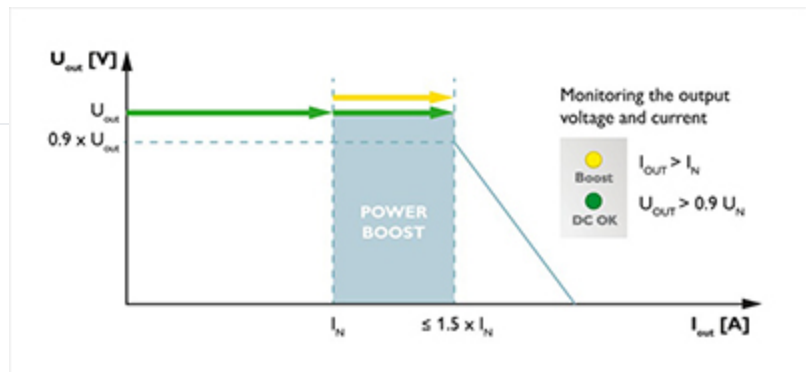
With the QUINT-PS/24DC/24DC/20 Industrial DC to DC Power Supply, the output voltage and output current are constantly monitored. Preventive function monitoring visualizes critical operating states and indicates them locally and remotely to the controller as follows:

- Via LED
- Via floating relay contact
- Via active switching output



## For use in Extreme Ambient Conditions

Equipment found in traffic management, oil and gas pipelines, weather tracking, industrial and outdoor applications must function in temperatures that cannot be supported by a commercial power supplies. With an operating temperature of **-25°C to +70°C, and reliable device start-up at -40°C**, the QUINT-PS/24DC/24DC/20 Industrial Power Supply is ideal for use with equipment subjected to harsh environments and severe temperatures.



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## High efficiency and low no load power consumption

Compared with other products on the market, this QUINT DC to DC Industrial Power Supply provides excellent energy savings. With a very low no load power consumption, and high efficiency at a nominal load, just a small amount of electrical energy is converted into undesired heat energy making this a very ECO friendly power supply. .

## SFB (Selective Fuse Breaking) Technology

SFB Technology can be used to quickly and reliably trip miniature circuit breakers and fuses connected on the secondary side. In the event of a short circuit on the secondary side, the QUINT-PS/24DC/24DC/20 supplies up to 6 times the nominal current for 12 ms. Faulty current paths are switched off selectively, the fault is located, and important system parts remain in operation. Loads that are connected in parallel are still supplied with energy ensuring continued operation of these system parts.

- Tripping circuit breakers: The circuit breaker is typically tripped by the high SFB current within 3 to 5 ms. As a result, any voltage dips for loads connected in parallel are avoided.
- Tripping a fuse: Fuses are tripped by melting the predetermined breaking point inside the fuse capsule. The tripping characteristic of the fuse is described by the melting integral ( $I^2t$ ). A high current is crucial in order to achieve a very short tripping time.

**Ideal application environments for the QUINT-PS/24DC/24DC/20 DIN Rail Power Supply**

- Shipbuilding
- Railways: All models have Railway approvals
- machine building
- automated production process
- industrial control, automation, assembly, and test equipment
- building control, security and surveillance, and climate control systems.
- power countless industrial automation devices such as sensors, controllers and valves



## Other reasons to choose the QUINT-PS/24DC/24DC/20 Industrial DC to DC Converter

- Shipbuilding Approval
- Voltage Isolation input/output: 1.5 kV AC
- Protections: Short-circuit, Overload, Over voltage, Over-temperature
- To ensure maximum availability all models have high MTBF (Mean Time Between Failure) values.

### Environmental Product Compliance

REACH SVHC

Lead 7439-92-1

China RoHS

Environmentally Friendly Use Period = 25;

### General

Net weight

1.7 kg

Efficiency

&gt; 93 %

Insulation voltage input/output

1.5 kV (type test)

1 kV (routine test)

Protection class

III

Degree of protection

IP20

MTBF (IEC 61709, SN 29500)

554938,96 h (40 °C)

Mounting position

horizontal DIN rail NS 35, EN 60715

Assembly instructions

alignable:  $P_N \geq 50\%$ , 5 mm horizontally, 15 mm next to active components, 50 mm vertically  
 alignable:  $P_N < 50\%$ , 0 mm horizontally, 40 mm vertically top, 20 mm vertically bottom

### Standards and Regulations

<https://www.perle.com/products/industrial-power-supply/quint-ps-24dc-24dc-20-23201028.shtml>

Electromagnetic compatibility

Conformance with EMC Directive 2014/30/EU

Noise immunity	EN 61000-6-2:2005
Connection in acc. with standard	CUL
Standards/regulations	EN 61000-4-2
Contact discharge	4 kV (Test Level 2)
Standards/regulations	EN 61000-4-3
Frequency range	80 MHz ... 1 GHz
Test field strength	10 V/m
Frequency range	1.4 GHz ... 2 GHz
Test field strength	3 V/m
Standards/regulations	EN 61000-4-4
Comments	Criterion B
Standards/regulations	EN 61000-6-3
	EN 61000-4-6
Frequency range	0.15 MHz ... 80 MHz
Voltage	10 V (Test Level 3)
Standard - Electrical safety	EN 60950-1/VDE 0805 (SELV)
Standard – Electronic equipment for use in electrical power installations and their assembly into electrical power installations	EN 50178/VDE 0160 (PELV)
Standard – Safety extra-low voltage	EN 60950-1 (SELV)
	EN 60204 (PELV)
Standard - Safe isolation	DIN VDE 0100-410
Shipbuilding approval	DNV GL (EMC B)
UL approvals	UL/C-UL listed UL 508
	UL/C-UL Recognized UL 60950-1
	UL ANSI/ISA-12.12.01 Class I, Division 2, Groups A, B, C, D (Hazardous Location)
Shock	18 ms, 30g, in each space direction (according to IEC 60068-2-27)
Vibration (operation)	< 15 Hz, amplitude $\pm 2.5$ mm (according to IEC 60068-2-6)
	15 Hz – 150 Hz, 2.3g, 90 min

Rail applications	EN 50121-4
<b>Connection data, input</b>	
Connection method	Screw connection
Conductor cross section solid min.	0.5 mm <sup>2</sup>
Conductor cross section solid max.	16 mm <sup>2</sup>
Conductor cross section flexible min.	0.5 mm <sup>2</sup>
Conductor cross section flexible max.	16 mm <sup>2</sup>
Conductor cross section AWG min.	8
Conductor cross section AWG max.	6
Stripping length	10 mm
Screw thread	M3
<b>Output data</b>	
Nominal output voltage	24 V DC $\pm$ 1 %
Setting range of the output voltage ( $U_{Set}$ )	18 V DC ... 29.5 V DC (> 24 V DC, constant capacity restricted)
Nominal output current ( $I_N$ )	20 A (-25 °C ... 60 °C)
POWER BOOST ( $I_{Boost}$ )	25 A (-25°C ... 40°C permanent, $U_{OUT}$ = 24 V DC )
Selective Fuse Breaking ( $I_{SFB}$ )	120 A (12 ms)
Derating	60 °C ... 70 °C (2.5%/K)
Connection in parallel	Yes, for redundancy and increased capacity
Connection in series	yes
Protection against surge voltage on the output	< 35 V DC
Max. capacitive load	Unlimited
Active current limitation	approx. 29 A
Control deviation	< 1 % (change in load, static 10 % ... 90 %)
	< 2 % (change in load, dynamic 10 % ... 90 %)
	< 0.1 % (change in input voltage $\pm$ 10 %)
Residual ripple	< 20 mV <sub>PP</sub>
Peak switching voltages nominal load	< 10 mV <sub>PP</sub> (20 MHz)

Maximum power dissipation in no-load condition	2.2 W
Power loss nominal load max.	39 W
<b>Connection data for signaling</b>	
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	2.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section AWG min.	24
Conductor cross section AWG max.	12
Screw thread	M3
<b>Dimensions</b>	
Width	82 mm
Height	130 mm
Depth	125 mm
Width with alternative assembly	122 mm
Height with alternative assembly	130 mm
Depth with alternative assembly	85 mm
Weight per piece	1700.0 GRM
<b>Input data</b>	
Nominal input voltage range	24 V DC
Input voltage range	18 V DC ... 32 V DC
Current consumption	28 A (24 V, I <sub>BOOST</sub> )
Inrush surge current	< 26 A (typical)
Mains buffering	typ. 10 ms (24 V DC)
Choice of suitable circuit breakers	40 A ... 50 A (Characteristics B, C, D, K)
Type of protection	Transient surge protection
Protective circuit/component	Varistor

**Connection data, output**

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Connection method

Screw connection

Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	6 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section flexible max.	4 mm <sup>2</sup>
Conductor cross section AWG min.	12
Conductor cross section AWG max.	10
Stripping length	8 mm
Screw thread	M3
<b>Ambient conditions</b>	
Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C (> 60 °C derating, 2.5 %/K, startup at -40°C type-tested)
Ambient temperature (start-up type tested)	-40 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Max. permissible relative humidity (operation)	≤ 95 % (at 25 °C, non-condensing)
Climatic class	3K3 (in acc. with EN 60721)
Degree of pollution	2
<b>Approvals</b>	

- ABS
- BV
- RINA
- cUL Recognized
- cUL Listed
- LR
- UL Listed
- IECEE CB Scheme
- cULus Listed
- UL Recognized
- EAC
- NK
- DNV

Nominal voltage	750 V
$U_N$	

Nominal current	15 A
$I_N$	

mm <sup>2</sup> /AWG/kcmil	4
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#### QUINT-PS DC to DC Converter Industrial Power Supply Block Diagram

