



RECTIFIER UNIT FOR AVIATION

The Rectifier Unit (RU28) Model 2063 converts an aircraft's primary three-phase 115VAC/ 400Hz generator power to 28 VDC with outstanding power density.

This lightweight 175A Rectifier Unit has been especially designed for the latest Fighter Aircraft SAAB Gripen E.

The basic electrical topology of the RU28 is a 12-pulse rectifier circuit. The transformer has two independent secondary windings, providing interleaved secondary three phase AC voltage systems with a phase shift of 30 degrees. This arrangement ensures low harmonic content in the input current of the RU28. An interphase transformer decouples the two six-pulse bridge rectifiers that are connected to the two secondary windings.

In a traditional transformer rectifier unit (not used here), simple diodes would be used as rectifying semiconductors. With diodes, the conduction losses are dominated by the load-independent forward voltage drop of the diode. To meet the efficiency requirements a novel rectifier unit was developed which utilizes the principle of synchronous rectification to reduce the conduction losses of the



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semiconductors. As synchronous rectifier switches, state-of-the-art discrete MOSFETs with low on-state resistance are used.

For Military Aircraft

Key Features

- High efficiency
- Low weight and size
- Integrated data memory & recording function
- Integrated BIT
- Databus MIL-STD-1553B

- Conduction + additional air cooling
- Tandem operation

Application

- Military fighter aircraft

Support Service

- Complete integrated logistic support (ILS)



EUROATLAS

Electrical Specifications

Input

Voltage..... 115/200 Vac. 3-ph
 Frequency 390...400 Hz, acc. to MIL-STD 704D
 Voltage spikes
 and transients Acc. to MIL-STD 704D
 Current harmonics THD < 8% @ dc 175 A
 (depending on input voltage unbalance)

Output

Voltage..... 28 Vdc
 Current..... 175 A nominal
 Ripple Iout > dc 110 A: approx. 1.6 V
 (peak to peak)
 Overload 110%, after 500 ms the RU28
 will switch off
 Short circuit protection. Immediately switch off
 when output current >300 A
 Efficiency..... 94% @ 175 A, 95% @ 110 A

General Specifications

Power system Input and output galvanically separated
 Temperature range..... -40°C to +75°C (operation),
 -55°C to +85°C (storage)
 Humidity 95%, 30°C...0°C
 Shock 30 g/2.5 ms, 25 g/6 ms, 7.5 g/40 ms
 acc. to MIL-STD 810 D
 Vibration 20...30 Hz: 4 m²/s³
 35...180 Hz: 2 m²/s³
 250...1000 Hz: 7.5 m²/s³
 Altitude..... 16.6 km (continuous), 20.6 km (2 min)
 EMI MIL-STD-461F, CE102, CS101, CS114,
 RE102, RS103
 Protection..... IP 20 acc. to DIN 40050

Physical Characteristics

Dimensions..... H 142 mm, W 142 mm, D 255 mm
 Weight..... 6.8 kg

Design Characteristics

Service life..... 40 years, >8,000 flying hours
 (>10,000 operational hours)