

THYROBOX_{DC} 3

Industrial High-Power DC Power Supply

Base frame solution

Option for single or two units available



Thyrobox_{DC} 3 from AEG Power Solutions fulfills the most stringent power supply requirements for demanding industrial processes: a perfect stability of output voltage for the best current quality and high efficiency performance.

In line with the specificities of those processes, power consumption is as close as possible to a sine wave form and the system has a high-power factor. Thyrobox_{DC} 3 is based on proven B12 Thyristor Rectifier and IGBT chopper technology. Due to the wide output voltage range, load voltages from 50 V up to 1100 V can be achieved with Thyrobox_{DC} 3. The maximum output current of each Thyrobox_{DC} 3 module is 1800 A.

Thanks to its modularity and to the capability of interconnecting up to 8 units into one power block, higher power requirements can be easily met.

The robust and compact design of the Thyrobox_{DC} 3 enables utilization even in harsh environments.

Thyrobox_{DC} 3 supplies demanding industrial processes and meets the grid connection requirements without installing additional power factor correction or harmonic filters. This allows to increase the efficiency and decrease the life cycle costs to combine the highest level of reliability with the best economic results.

FEATURES

- Output current ripple <1%
- High efficiency (over 97%)*
- High power factor
- Low THDi
- Project specific parameter optimization possible
- Modular Design for multi MW installations
- Graphical display

Options include

- Various communication interfaces
- Special instrumentation and software
- Different configurations for water inlet and DC connection possible

High efficiency at different load situations

- Eco Mode for highly efficient partial load operation
- Optimized OPEX due to decreased energy losses
- Optimal system utilization due to combination of Eco Mode and Equipment Care

Parallel operation

- Up to 8 units of Thyrobox_{DC} 3 with a total max. output of 14400 A
- Base frame option for one or two combined units

* depending on point of operation

BENEFITS

- **Highly reliable process power supply** combined with high efficiency
- **High dynamics to supply different types of applications**
- **High quality DC power supply** to increase the life span of DC components
- **Wide range of output voltage** can be supplied by using proven B12 Thyristor Rectifier and IGBT chopper technology
- **Small footprint**, especially low cabinet depth for simple container integration to increase the cost efficiency of system solutions
- **DC current or voltage source**, depending on the project requirements
- **Fully grid compliant** without cost intensive filter elements reduces CAPEX and optimizes OPEX costs
- **Stainless Steel cooling system**, allowing use of tap water as cooling liquid



Typical applications

where high-quality voltage and current output and greater efficiency are needed:

- Coating
- Electrolysis
- Electroplating
- Any continuous industrial process requiring reliable high-level power supply

Specifications

THYROBOX _{dc3}		
	DC 3 Standard	DC 3 High Voltage
INPUT		
Input voltage	0.4 – 35 kV	
Transformer	External Customized	
Auxiliary input	230 VAC, 50/60 Hz	
Power factor	0.95 for P > 20 % P _N	
THDi	Single unit: < 7 % @ rated point of operation System level: < 3 % @ rated point of operation	
OUTPUT		
Min. load voltage	50 V	
Max. load per single unit	700 V 1800 A ~650 kW	1100 V 1300 A 1250 kW
Max. load parallel operation	700 V 14.400 A ~5200 kW	1100 V 10.400 A ~10000 kW
Current ripple	< 1%	
Efficiency @ rated point of operation	> 98 % @ nominal operation	> 99 % @ nominal operation
CONFIGURATION		
AC power cable	From bottom	
DC output	Bottom, top optional	Bottom, top optional
Water inlet	Top, bottom optional	Top, bottom optional
Dimensions without connectors W x D x H (mm)	1200 x 600 x 2200	1200 x 600 x 2200
Weight	950 kg	950 kg
ENVIRONMENT AND PROTECTION DEGREE		
Cooling	Water cooling 30 l/min	Water cooling 30 l/min
Inlet temperature of cooling fluid/air	< 35 °C without derating	< 35 °C without derating
Ambient temperature	> 5 °C to < 40 °C	> 5 °C to < 40 °C
IP protection degree	Standard: IP40; customizable: up to IP54	Standard: IP40; customizable: up to IP54
CONTROLS		
Digital voltage control	Yes	
Digital current control	Yes	
Digital power control	Yes	
COMMUNICATIONS		
According to customer requirements	Profibus, Profinet, Modbus	
Optional analogue I/O	0 – 10 V / 4 – 20 mA	
STANDARDS AND CERTIFICATIONS		
Conformity	IEC 62103 (EN 50178), EN 60146	
EMC	EN 61000	

POWER FRAME SOLUTION

SCALABLE THYROBOX DC-3



1,25 MW
Rectifier Module



2,5 MW
Power Frame



10 MW
Power Block

To increase power density and to allow easier installation on site, a new base frame solution for two Thyrobox^{dc} 3 systems is proposed by AEG Power Solutions.

The immediate benefit is that integration is easier in larger systems and it significantly decreases the handling cost on site.

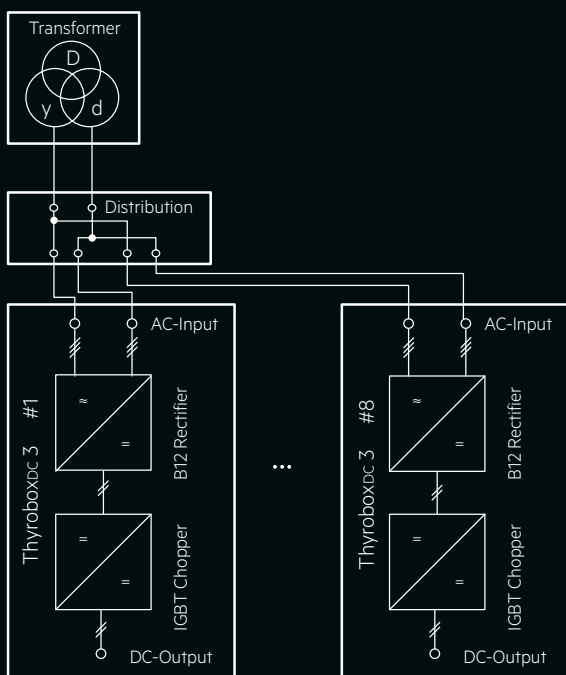
The option comprises

- 2 Modules of Thyrobox^{dc} 3 installed on a single base frame
- Prewired AC paralleling cabinet, which allows to choose AC connection top or bottom and comprises a synchronization and decoupling choke as well as optional fuse switches or circuit breakers
- Single base frame allows forklift handling

- Power Frame option available for a stand alone unit. It is possible to install four Power Frames to form a up to 10 MW Power Block solution

Additional scope of supply

- Transformer
- Busbar
- Cooling system
- Outdoor solution
- AC-LV-Distribution



Two Thyrobox^{dc} 3 on baseframe with paralleling cabinet, options: DC top, water bottom, AC top



Specifications

THYROBOX_{dc3} – BASE FRAME SOLUTION

	Power Frame	Power Block
INPUT		
Input voltage	0.4 – 35 kV	
Transformer	External Customized	
Auxiliary input	230 VAC, 50/60 Hz	
Power factor	0.95 for P > 20% P _N	
THDi	Single unit: <7% @ rated point of operation System level: <3% @ rated point of operation	
OUTPUT		
Min. load voltage	50 V	
Max. load per single unit	1100 V 2600 A ~2500 kW	1100 V 10.400 A ~10.000 kW
Current ripple	<1%	
Efficiency @ rated point of operation	>99% @ nominal operation	>99% @ nominal operation
CONFIGURATION		
AC power cable	Top, bottom optional	
DC output	Bottom, top optional	
Water inlet	Top, bottom optional	
Dimensions without connectors W x D x H (mm)	3000 x 680 x 2450	6000 x 1375 x 2450
Weight	~2500 kg	~10000 kg
ENVIRONMENT AND PROTECTION DEGREE		
Cooling	Water cooling 2x 30l/min	Water cooling 8x 30l/min
Inlet temperature of cooling fluid/air	<35 °C without derating	
Ambient temperature	>5 °C to <40 °C	
IP protection degree	Standard: IP40; customizable: up to IP43	
CONTROLS		
Digital voltage control	Yes	
Digital current control	Yes	
Digital power control	Yes	
COMMUNICATIONS		
According to customer requirements	Profibus, Profinet, Modbus	
Optional analogue I/O	0 – 10 V / 4 ... 20 mA	
STANDARDS AND CERTIFICATIONS		
Conformity	IEC 62103 (EN 50178), EN 60146	
EMC	EN 61000	

AEG Power Solutions

Approach your local AEG Power Solutions representative for further support. Contact details can be found on: www.aegps.com