

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 high requirements of power supply 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 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 700 V can be realized with Thyrobox_{DC} 3. The maximum output current of each Thyrobox_{DC} 3 module is 1800 A. Thanks to its modularity and the capability of paralleling up to 8 units, higher requirements can be easily met.

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

Typical applications

Where high quality output voltage and electric current and greater efficiency are needed:

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

FEATURES

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

Options include

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

Water or air cooled version available

- Modular water cooled version and external transformer for high power demand
- Compact air cooled version DC 3C, single cabinet approach, transformer included in the rectifier cabinet, for medium power demand

Parallel operation

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

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
- **Low distortion, low THDi and high-level power factor** without cost intensive filter elements reduces CAPEX and optimizes OPEX costs
- **Stainless Steel cooling system**, allowing use of tap water as cooling liquid



Specifications

THYROBOXbc3		
	DC 3	DC 3C
INPUT		
Input voltage	0.4 – 35 kV	380/400 V
Transformer	External Customized	Integrated
Auxiliary input	230 VAC, 50/60 Hz	
OUTPUT		
Min. load voltage	50 V	
Max. load per single unit	700 V 1800 A ~500 kW	700 V 1000 A 200 kW
Max. load parallel operation	700 V 14,400 A ~4000 kW	
Power factor	0.95 for P > 20% P _N	0.94 for P > 20% P _N
THDi	<7% @ rated point of operation	
Current ripple	<1%	
Efficiency @ rated point of operation	>97% @ nominal operation	>97% excl. transformer >95% incl. transformer
CONFIGURATION		
AC power cable	From bottom	
DC output	Bottom, top optional	Bottom
Water inlet	Top, bottom optional	-
Dimensions without connectors W x D x H (mm)	1200 x 600 x 2200	1200 x 800 x 2200
Weight	950 kg	1400 kg
ENVIRONMENT AND PROTECTION DEGREE		
Cooling	Water cooling 30 l/min	Forced air 3300 Nm ³ /h
Inlet temperature of cooling fluid/air	<35 °C without derating	<40 °C
Ambient temperature	>5 °C to <40 °C	>0 °C to <40 °C
IP protection degree	Standard: IP40; customizable: up to IP54	IP20
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	

BASE FRAME SOLUTION

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

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

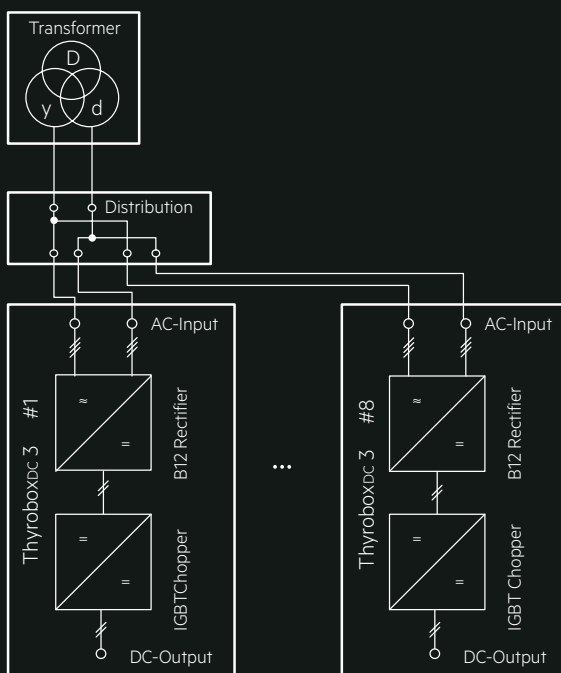
The option comprises

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

- Base frame option available for a stand alone unit. It is possible to install two double base frames back to back for a 4 unit base frame solution

Additional scope of supply

- Transformer
- Busbar
- AC-LV-Distribution



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

Specifications

THYROBOX _{dc3} – BASE FRAME SOLUTION		
	2 UNITS	4 UNITS
INPUT		
Input voltage	0.4 – 35 kV	
Transformer	External Customized	
Auxiliary input	230 VAC, 50/60 Hz	
OUTPUT		
Min. load voltage	50 V	
Max. load per single unit	700 V 3600 A ~1000 kW	700 V 7200 A ~2000 kW
Max. load parallel operation	700 V 14 400 A ~4000 kW	
Power factor	0.95 for P > 20% P _n	
THDi	< 7% @ rated point of operation	
Current ripple	< 1%	
Efficiency @ rated point of operation	> 97% @ nominal operation	> 97% exd. transformer > 95% ind. transformer
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	3000 x 1375 x 2450
Weight	~2500 kg	~5000 kg
ENVIRONMENT AND PROTECTION DEGREE		
Cooling	Water cooling 2x 30l/min	Water cooling 4x 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 6014-6	
EMC	EN 61000	



AEG Power Solutions

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