

**ADELSYSTEM**

**5 year warranty!**

The New ADEL FLEX Power Supply

# Flex Power Supplies

one solution...  
many applications

Yet another strong proposition by Adelsystem for power supplies and power continuity specialists. Adelsystem aim is to provide designers and users with a complete range of solutions in power supplies and power continuity products, focusing on both standard and special applications. The target is to deliver problem-free solutions so that you can safely dedicate your attention to the rest of the automation project.

The FLEX is designed taking into account the pressure to optimal use of space, FLEX units are very compact in size. The wide input voltage range allows to have just one article for many applications and minimize stock.

FLEX is based on semi-resonant switching circuit which allows efficiency up to 93% and a very dynamic and robust power supply to a wide range of loads such as PLC, sensors, motors, resistive/inductive loads, etc.

The FLEX range conforms with the highest quality standards and guarantees a reliable and durable operation with a MTBF up to 500.000 hours and 5 year warrantee.



# Flex Power Supplies Features

- Sprecher + Schuh is offering a 5-Year Warranty on any ADEL Flex Power Supply.
- Reduced dimensions and snap-on DIN rail bracket
- Easy Parallel connection
- More flexibility in input voltage
- More power: "Power Boost"
- More power at varying rated temperatures

- Three modes for output protection:
  - Hiccup Mode - Automatic Restart
  - Manual Rest - by Operator
  - "Continuous Output mode"
- Power Good relay for monitoring the output voltage level
- Applications in compliance with EN 60204-1

"Power Good" Contacts  
Output (Load side)

Enable Parallel Connection

Adjust Output 22...27 VDC

LED Status "VDC OK"

Field selectable via factory supplied jumper



Hiccup Mode (default)



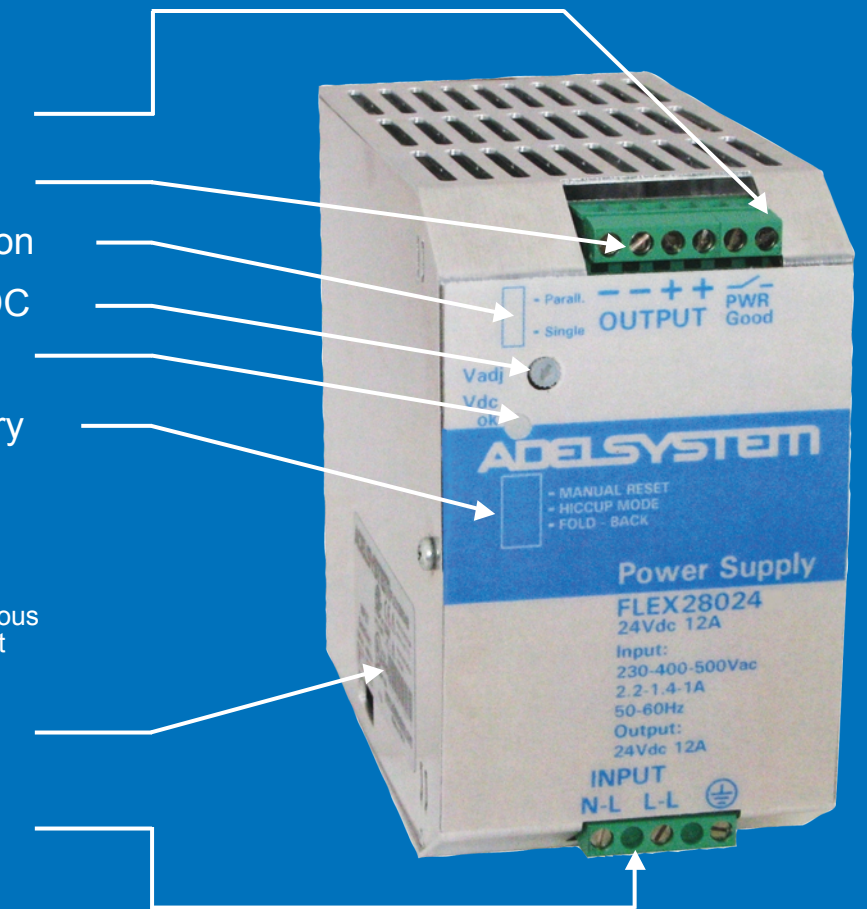
Manual Restart



Continuous Output

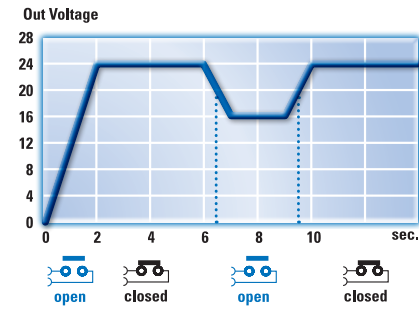
Set Voltage Selection  
(Slide switch in casing)

Input (Input voltage)



"Power Good" relay for monitoring the output voltage level

Output voltage is continuously monitored. The units FLEX170 (optional), FLEX280 and FLEX500 are equipped with Power Good relay. The NO contact triggers any time the output voltage level goes below 20Vdc. This feature is particularly useful in redundant applications.

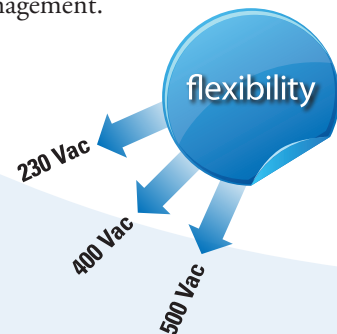


Applications in compliance with the norm EN 60204-1  
FLEX units comply with the norm requirement that an overload of 50% over the nominal current be withstood by the power supply for at least 1 hour to allow the tripping of magneto-thermic switches on the output. These features allow the implementation of "Control of commands and Emergency stops" by means of industrial PCs, PLC, remote I/O, etc. required by the norm.

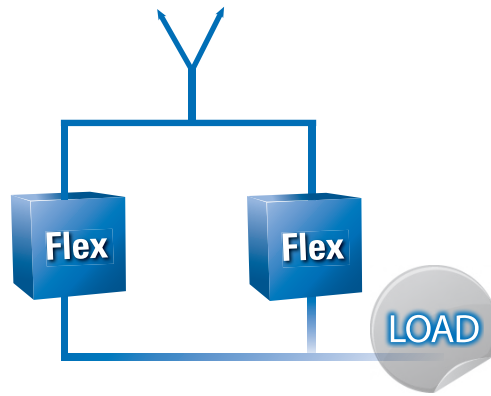
Adelsystem supplies a table for the sizing and length of connecting cables and the choice of proper magneto-thermic switches.

More flexibility in input voltage

The power supplies FLEX90, FLEX170 and FLEX280 B are suitable to a wide range of input voltage. With a single type it is therefore possible to meet the requirements of more applications and consequently improve design activity and stock management.



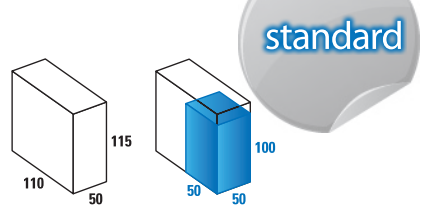
Easy Parallel connection  
With FLEX technology it is easier to double capacity. The units FLEX280 and FLEX500 can be easily connected in parallel without needing high precision instruments, but a normal tester. Just remove the jumper and the trick is done!



Reduced dimensions and snap-on DIN rail bracket

The higher performances obtained with the FLEX! line, allow almost half dimensions as conventional technology and higher performances. An example is Flex6024A 60W with maximum current till 6A. In permanent duty at 40°C it can deliver 3A at 24Vdc.

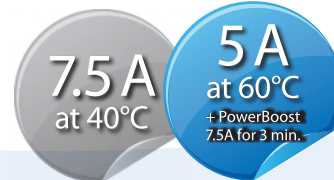
All FLEX units feature the new DIN rail mounting bracket, easy to use and safe against heavy loading and vibrations.



More power at varying rated temperature

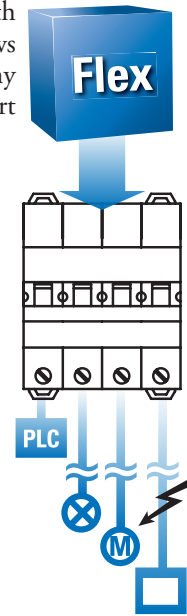
As an example, Flex17024A can be the right solution for two design cases in very different temperature conditions:

- 1) 7.5A, 24Vdc in continuous duty at 40°C.
- 2) 5A, 24Vdc in continuous duty at 60°C + Power Boost 7.5A for at least 3 min.



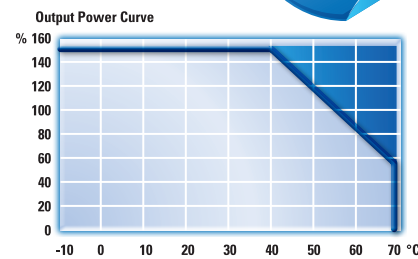
Output circuits protected by thermal-magnetic circuit breakers

Standard output circuit breakers can be triggered quickly and reliably with FLEX technology, which allows three times the nominal current at 60°C. Defective current paths are selectively disconnected, the defect is limited and the important parts of the system remain in operation. This together with the 50% overload capacity in compliance with EN60204-1 allows to safely manage any overload and short circuit condition.



More power: "Power Boost"

As an example, Flex17024A is a 24Vdc power supply that features a continuous duty current of 5A at 60°C and a Power Boost of 150%, equivalent to 7.5A, for at least 3 min. This feature allows the use of a smaller size unit to power demanding loads such as motors, solenoid valves, lamps and other loads with transient overload behavior which would otherwise require an oversize power supply.

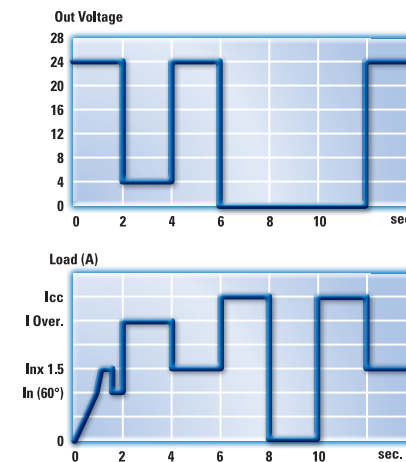


## Three modes for output protection.

Hiccup Mode

Automatic Restart

This is the default factory setting of all FLEX units. In case of short-circuit or overloading, the output current is interrupted. The device tries again to re-establish output voltage and normal condition about every 2 second till the problem is cleared.

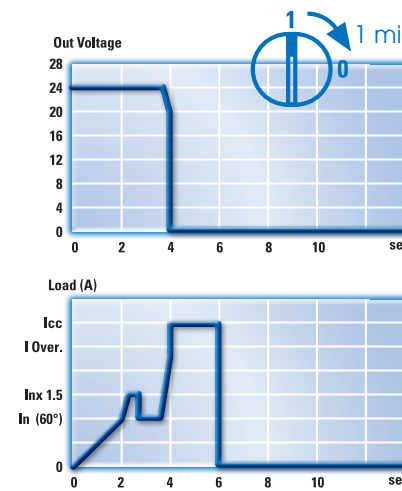


Hiccup Mode

Manual reset

manual Restart by Operator

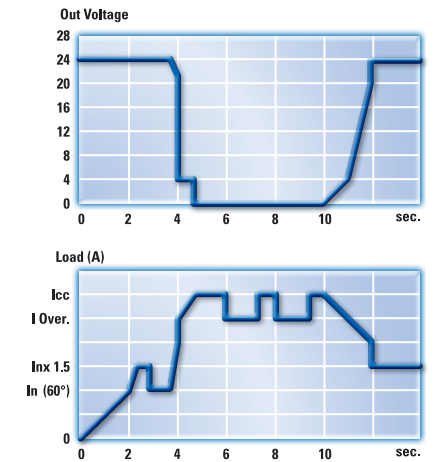
In case of short-circuit or overload, the output current is interrupted. In order to restart the output it is necessary to switch-off the input circuit for about 1 minute. This protection mode is particularly suggested in applications where safety procedures require that reset be carried out only by an authorized person.



Manual Reset

"Continuous Output mode"

In case of short-circuit or overload, the output current is kept at high values with near zero voltage. In case of short circuit the current can reach up to 3 times the rated current at 60°C. This protection mode is used to meet the requirements of demanding loads such as motors, solenoid valves, lamps, PLC with highly capacitive input circuits and other loads with marked transient overload behavior.



Continuous Output (Fold-back Mode)

Jumper settings



HICCUP MODE  
(default setting)



MANUAL RESET



CONTINUOUS OUT MODE

# The FLEX Power Supplies

## Flex - 1 Phase



Model	FLEX6024A	FLEX9024A	FLEX17024A	FLEX28024A	
Input (Volt)	115 - 230Vac	115 - 230Vac	115 - 230Vac	115 - 230Vac	
Output (Vdc - W)	24Vdc - 72W	24Vdc - 120W	24Vdc - 180W	24Vdc - 336W	
INPUT DATA	Imput rated voltage	115 - 230Vac	115...230Vac*	115 / 230Vac*	
	Rated voltage range (Vac)	90 ÷ 264Vac	90 - 264Vac	90 - 264Vac	
	Inrush Current (Vn and In Load) I <sup>2</sup> t	≤ 7A ≤ 5 msec	≤ 11A ≤ 5msec	≤ 11A ≤ 5msec	≤ 16A ≤ 5msec
	Frequency	47 ÷ 63Hz ± 6%	47 - 63Hz ± 6%	47 - 63Hz ± 6%	47 - 63Hz ± 6%
	Input Current	1 - 0.7A	1.8 - 0.9A	2.8 - 1.3A	3.3 - 2.2A
	Internal fuse (not replaceable)	4A	4A	4A	6.3A
	External fuse (recommended)	6A	10A	10A	16A
	Output voltage factory setting ± 3% (Vn)	24Vdc	24Vdc	24Vdc	24Vdc
OUTPUT DATA	Adjustment range (Vadj)	22 - 27Vdc	22 - 27Vdc	22 - 27Vdc	22 - 27Vdc
	Start up with capacitive load	≤ 50.000µF	≤ 50.000µF	≤ 50.000µF	≤ 50.000µF
	Turn-On delay after applying mains voltage	1.5sec (max)	1sec (max)	1sec (max)	1sec (max)
	Continuous Current at 24V < 40°C (In)	2A (115) - 3A (230)	5A	7.5A	14A
	Continuous Current at 24V < 50°C (In)	1.5A (115) - 2.5 A (230)	4.5A	6A	12A
	Continuous Current at 24V < 60°C (In)	-	4A	5A	10A
	Power Boost current (24 Vdc 60°C x 1.5 ≥ 3 min.)	3.5A	6A	7.5A	14A
	Short circuit current (Icc) (Permanent)	7A	12A	16A	30A
	Holdup Time (min Vac) 24Vdc	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec
	Residual Ripple	≤ 80 mV <sub>pp</sub>	≤ 80 mV <sub>pp</sub>	≤ 80 mV <sub>pp</sub>	≤ 80 mV <sub>pp</sub>
	Efficiency (50% of In)	≥ 88%	≥ 91%	≥ 91%	≥ 91%
	Over temperature protection	Shut-down output and automatic restart	Shut-down output and automatic restart	Shut-down output and automatic restart	Shut-down output and automatic restart
	Short-circuit protection	Continuous mode	(1) Hiccup Mode; (2) Continuous mode; (3) Restart After Main	(1) Hiccup Mode; (2) Continuous mode; (3) Restart After Main	(1) Hiccup Mode; (2) Continuous mode; (3) Restart After Main
	Dissipation power load max (W)	6	11	17	28
	Over load protection	Yes	Yes	Yes	Yes
Over voltage output protection (internal failure)	Yes (Typ. 35Vdc)	Yes (Typ. 35Vdc)	Yes (Typ. 35Vdc)	Yes (Typ. 35Vdc)	
Parallel connection	Yes	Yes	Yes	Easy parallel	
Relay power good	-	optional	optional	Trigger 20Vdc	
CLIMATIC DATA	Ambient temperature operation	-25 ÷ +70°C	-25 ÷ +70°C	-25 ÷ +70°C	-25 ÷ +70°C
	De rating T <sup>a</sup> > (In)	> 50° 2.5%°C	> 60° 2.5%°C	> 60° 2.5%°C	> 60° 2.5%°C
	Ambient temperature storage	-40 ÷ +85°C	-40 ÷ +85°C	-40 ÷ +85°C	-40 ÷ +85°C
	Humidity at 25°C	95% to 25°C	95% to 25°C	95% to 25°C	95% to 25°C
GENERAL DATA	Isolation voltage	3000Vac	3000Vac	3000Vac	3000Vac
	Isolation voltage (IN/PE)	1605Vac	1605Vac	1605Vac	1605Vac
	Isolation voltage (OUT/PE)	500Vac	500Vac	500Vac	500Vac
	Reliability (MTBF IEC 61709)	> 500.000 h	> 500.000 h	> 500.000 h	> 500.000 h
	Pollution Degree Environment	2	2	2	2
	Connection Terminal Blocks Screw Type	2,5 mm	2,5 mm	2,5 mm	2,5 mm
	Dimensions (w-h-d)	50x120x50 mm	55x110x105 mm	55x110x105 mm	72x115x135 mm
	Weight	0.30 kg approx	0.50 kg approx	0.60 kg approx	0.65 kg approx
	Safety Standard Approval	CE, UL	CE, UL	CE, UL	CE, UL

## Flex - 2 Phase



Model	FLEX50024A	
Input (Volt)	115 - 230Vac	
Output (Vdc - W)	24Vdc - 600W	
INPUT DATA	Imput rated voltage	115 / 230Vac*
	Rated voltage range (Vac)	90 - 264Vac
	Inrush Current (Vn and In Load) I <sup>2</sup> t	≤ 16A ≤ 5msec
	Frequency	47 - 63Hz ± 6%
	Input Current	8 - 4.2A
	Internal fuse (not replaceable)	10A
	External fuse (recommended)	16A
	Output voltage factory setting ± 3% (Vn)	24Vdc
OUTPUT DATA	Adjustment range (Vadj)	22 - 27Vdc
	Start up with capacitive load	≤ 50.000µF
	Turn-On delay after applying mains voltage	1sec (max)
	Continuous Current at 24V < 40°C (In)	25A
	Continuous Current at 24V < 50°C (In)	22A
	Continuous Current at 24V < 60°C (In)	20A
	Power Boost current (24 Vdc 60°C x 1.5 ≥ 3 min.)	25A
	Short circuit current (Icc) (Permanent)	60A
	Holdup Time (min Vac) 24Vdc	Typ. 20 msec
	Residual Ripple	≤ 80 mV <sub>pp</sub>
	Efficiency (50% of In)	≥ 92%
	Over temperature protection	Shut-down output and automatic restart
	Short-circuit protection	(1) Hiccup Mode; (2) Continuous mode; (3) Restart After Main
	Dissipation power load max (W)	54
	Over load protection	Yes
Over voltage output protection (internal failure)	Yes (Typ. 35Vdc)	
Parallel connection	Easy parallel	
Relay power good	Trigger 20Vdc	
CLIMATIC DATA	Ambient temperature operation	-25 ÷ +70°C
	De rating T <sup>a</sup> > (In)	> 60° 2.5%°C
	Ambient temperature storage	-40 ÷ +85°C
	Humidity at 25°C	95% to 25°C
GENERAL DATA	Isolation voltage	3000Vac
	Isolation voltage (IN/PE)	1605Vac
	Isolation voltage (OUT/PE)	500Vac
	Reliability (MTBF IEC 61709)	> 500.000 h
	Pollution Degree Environment	2
	Connection Terminal Blocks Screw Type	4 mm
	Dimensions (w-h-d)	85x120x140 mm
	Weight	0.75 kg approx
	Safety Standard Approval	CE, UL

Model	FLEX9024B	FLEX17024B	FLEX28024B	
Input (Volt)	230 - 400 - 500Vac	230 - 400 - 500Vac	230 - 400 - 500Vac	
Output (Vdc - W)	24Vdc - 120W	24Vdc - 180W	24Vdc - 336W	
INPUT DATA	Imput rated voltage	230 / 400...500Vac*	230 / 400...500Vac*	230 / 400...500Vac*
	Rated voltage range (Vac)	187 - 264 / 330 - 550 Vac	187 - 264 / 330 - 550 Vac	187 - 264 / 330 - 550 Vac
	Inrush Current (Vn and In Load) I <sup>2</sup> t	≤ 17A ≤ 5msec	≤ 17A ≤ 5msec	≤ 17A ≤ 5msec
	Frequency	47 - 63Hz ± 6%	47 - 63Hz ± 6%	47 - 63Hz ± 6%
	Input Current	1.0 - 0.5 - 0.4A	1.5 - 0.8 - 0.7A	2.2 - 1.4 - 1A
	Internal fuse (not replaceable)	4A	4A	4A
	External fuse (recommended)	10A	10A	16A
	Output voltage factory setting ± 3% (Vn)	24Vdc	24Vdc	24Vdc
OUTPUT DATA	Adjustment range (Vadj)	22 - 27Vdc	22 - 27Vdc	22 - 27Vdc
	Start up with capacitive load	≤ 50.000µF	≤ 50.000µF	≤ 50.000µF
	Turn-On delay after applying mains voltage	1sec (max)	1sec (max)	1sec (max)
	Continuous Current at 24V < 40°C (In)	5A	7.5A	14A
	Continuous Current at 24V < 50°C (In)	4.5A	6A	12A
	Continuous Current at 24V < 60°C (In)	4A	5A	10A
	Power Boost current (24 Vdc 60°C x 1.5 ≥ 3 min.)	6A	7.5A	14A
	Short circuit current (Icc) (Permanent)	12A	16A	30A
	Holdup Time (min Vac) 24Vdc	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec
	Residual Ripple	≤ 80 mV <sub>pp</sub>	≤ 80 mV <sub>pp</sub>	≤ 80 mV <sub>pp</sub>
	Efficiency (50% of In)	≥ 91%	≥ 91%	≥ 91%
	Over temperature protection	Shut-down output and automatic restart	Shut-down output and automatic restart	Shut-down output and automatic restart
	Short-circuit protection	(1) Hiccup Mode; (2) Continuous mode; (3) Restart After Main	(1) Hiccup Mode; (2) Continuous mode; (3) Restart After Main	(1) Hiccup Mode; (2) Continuous mode; (3) Restart After Main
	Dissipation power load max (W)	11	17	28
	Over load protection	Yes	Yes	Yes
Over voltage output protection (internal failure)	Yes (Typ. 35Vdc)	Yes (Typ. 35Vdc)	Yes (Typ. 35Vdc)	
Parallel connection	Yes	Yes	Easy parallel	
Relay power good	optional	optional	Trigger 20Vdc	
CLIMATIC DATA	Ambient temperature operation	-25 ÷ +70°C	-25 ÷ +70°C	-25 ÷ +70°C
	De rating T <sup>a</sup> > (In)	> 60° 2.5%°C	> 60° 2.5%°C	> 60° 2.5%°C
	Ambient temperature storage	-40 ÷ +85°C	-40 ÷ +85°C	-40 ÷ +85°C
	Humidity at 25°C	95% to 25°C	95% to 25°C	95% to 25°C
GENERAL DATA	Isolation voltage	3000Vac	3000Vac	3000Vac
	Isolation voltage (IN/PE)	1605Vac	1605Vac	1605Vac
	Isolation voltage (OUT/PE)	500Vac	500Vac	500Vac
	Reliability (MTBF IEC 61709)	> 500.000 h	> 500.000 h	> 500.000 h
	Pollution Degree Environment	2	2	2
	Connection Terminal Blocks Screw Type	2,5 mm	2,5 mm	2,5 mm
	Dimensions (w-h-d)	55x110x105 mm	55x110x105 mm	72x115x135 mm
	Weight	0.50 kg approx	0.60 kg approx	0.65 kg approx
	Safety Standard Approval	CE, UL	CE, UL	CE, UL

## Flex - 3 Phase



Model	FLEX50024B	
Input (Volt)	400 - 500Vac	
Output (Vdc - W)	24Vdc - 600W	
INPUT DATA	Imput rated voltage	400...500Vac
	Rated voltage range (Vac)	330 - 550 Vac
	Inrush Current (Vn and In Load) I <sup>2</sup> t	≤ 17A ≤ 5msec
	Frequency	47 - 63Hz ± 6%
	Input Current	0.95 - 0.85A
	Internal fuse (not replaceable)	6.3A
	External fuse (recommended)	16A
	Output voltage factory setting ± 3% (Vn)	24Vdc
OUTPUT DATA	Adjustment range (Vadj)	22 - 27Vdc
	Start up with capacitive load	≤ 50.000µF
	Turn-On delay after applying mains voltage	1sec (max)
	Continuous Current at 24V < 40°C (In)	25A
	Continuous Current at 24V < 50°C (In)	22A
	Continuous Current at 24V < 60°C (In)	20A
	Power Boost current (24 Vdc 60°C x 1.5 ≥ 3 min.)	25A
	Short circuit current (Icc) (Permanent)	60A
	Holdup Time (min Vac) 24Vdc	Typ. 20 msec
	Residual Ripple	≤ 80 mV <sub>pp</sub>
	Efficiency (50% of In)	≥ 92%
	Over temperature protection	Shut-down output and automatic restart
	Short-circuit protection	(1) Hiccup Mode; (2) Continuous mode; (3) Restart After Main
	Dissipation power load max (W)	54
	Over load protection	Yes
Over voltage output protection (internal failure)	Yes (Typ. 35Vdc)	
Parallel connection	Easy parallel	
Relay power good	Trigger 20Vdc	
CLIMATIC DATA	Ambient temperature operation	-25 ÷ +70°C
	De rating T <sup>a</sup> > (In)	> 60° 2.5%°C
	Ambient temperature storage	-40 ÷ +85°C
	Humidity at 25°C	95% to 25°C
GENERAL DATA	Isolation voltage	3000Vac
	Isolation voltage (IN/PE)	1605Vac
	Isolation voltage (OUT/PE)	500Vac
	Reliability (MTBF IEC 61709)	> 500.000 h
	Pollution Degree Environment	2
	Connection Terminal Blocks Screw Type	4 mm
	Dimensions (w-h-d)	85x120x140 mm
	Weight	0.75 kg approx
	Safety Standard Approval	CE, UL

All products:  
Protection degree: IP20  
Protection class: I, with PE connected

1 Phase (input 115 - 230Vac)

\* Input selectable

2 and 3 Phase (input 230 - 400 - 500 Vac)

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**PRODFLYER-ADEFLEX-110 (10/10)**

