

Flex

Power Supply



ENG / 05.2013

One solution, many applications

ADELSYSTEM

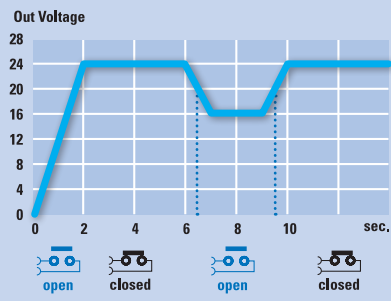
Integrated Electronic Solutions

"Power Good" relay for monitoring the output voltage level

Output voltage is continuously monitored. The units 24 Vdc output FLEX170, FLEX280 and FLEX500 are equipped with Power Good relay. The NO contact triggers any time the output voltage level goes below 20Vdc (24 Vdc output).

This feature is particularly useful in redundant applications.

Power good!



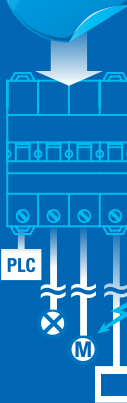
Applications in compliance with the norm EN 60204-1

FLEX units comply with the norm requirement that an overload of 50% over the nominal current be withstand by the power supply for at least 1 hour to allow the tripping of magneto-thermic switches on the output. These features allows 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.

Output circuits protected by magneto-thermic circuit breakers

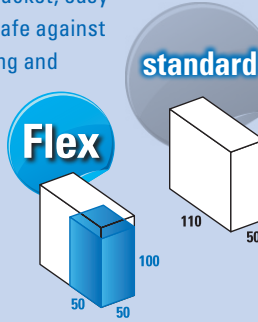
Standard output circuit breakers can be triggered quickly and reliably with FLEX technology, which allows three times the nominal current at 60°C. Defective current paths are selectively disconnected, the defect is limited and the important parts of the system remain in operation. This together with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

Flex



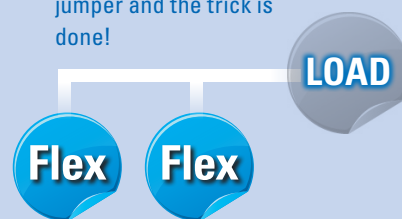
Reduced dimensions and snap-on DIN rail bracket

The higher performances obtained with the FLEX1 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.



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!



A new way to make and use Power Supplies

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. Our target is to deliver problem-free solutions so that you can safely dedicate your attention to the rest of the automation project.

The FLEX technology is the result of these corner stones of our corporate identity. 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 3 year warrantee.

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PRODUCT RANGE



DC UPS "ALL IN ONE"
DC UPS "All In One" DC Power Back Up units. Multi-function devices: power supply, battery charger and back-up module in the same casing together with Adels Battery Care software.



FLEX
DIN rail Switching Power Supplies. Very compact in size, 150% power boost, wide input voltage range 110 - 230 - 400 - 500 Vac. Selectable output protection mode.



D-FLEX
High efficiency Power Supply in Mini Size Dimension, for all kind of small power request in a flat control panel. For Domestic, Domestic and Industrial field.



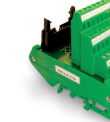
CB
The Best generation of Battery Charger with 4 level of charge, Auto Diagnosis system inside. One product for all battery types.



POWER SUPPLY LOW INPUT VOLTAGE
Switching power supply for direct connection to secondary transformer. In 24 Vac. Out 12 - 24 - 48 Vdc Watt: 25 - 460.



DC/DC CONVERTER
Dc / Dc Converter, step Up and Step down. Input - Output isolated, low voltage. With or without DIN Rail.



INTERFACES
Wide range of passive interfaces units for Input and Output connections, for PLC and CNC machine.



BATTERY BANK
Power Storage Devices, for connection to DC Ups Products. Battery size: 1.2; 3; 7.2; 12 Ah, 24 Vdc.



AUXILIARY MODULE
Decoupling Modules for redundancy applications. Electronic Fuses for Over Load output control, up to 4 channel.



SFP SAFETY POWER
Power continuity solutions for alarm systems and fire alarms. Available as a fully enclosed device conforming with EN54-4 or as a component to be integrated in other instrumentation.



POWER VIEW GRAPHIC
Robust Display wide viewing-angle 3.5" TFT. ADELBus network. Gateway for Ethernet in Modbus TCP and SNMP.



ADEL VIEW SYSTEM
Suite for remote monitoring and management devices connected in an ADELBus network. Features: PC software; iOS and Android; Cloud platform; Advanced features for installation and demonstration purposes.

INNOVATION AND MULTIMEDIAILITY

ADELSystem continues to implement its offering of innovative and functional products as a company specializing in the electrical continuity for the DIN Rail field. The wide range of available products is now involved in the Interconnection field through the ADELBus protocol implemented in the main devices of our products range. Every new device developed comes with

ADELBus inside. The Power Continuity products ADELSystem are enhanced by Multimedia devices like Display and Software Applications for the new way towards Industry 4.0. These, are innovative solutions has been developed by the ADELSystem R&D team for the expert electrical designer and the user who need to change their point of view in

the search of innovation. ADELBus, the ADELViewsystem and the ADELViewgraphic are the connecting elements to DC Ups, Power Supply and Battery Charger for catching all of the parameters inside the device. All of this, to involve you into a new evolution of Actions both for today and next-future life.

ADELSYSTEM

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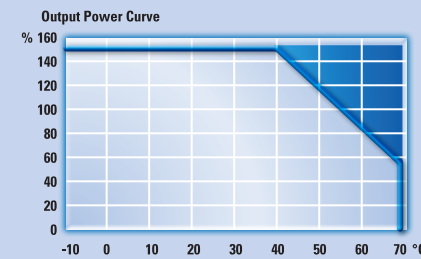
More flexibility in input voltage

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.



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.

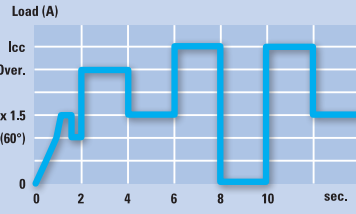
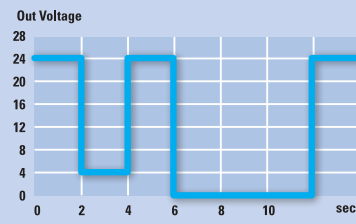


three
modes for output protection

Three modes for output protection.

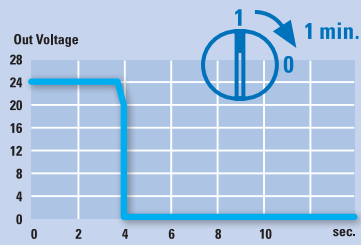
Hiccup Mode Automatic Restart

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.



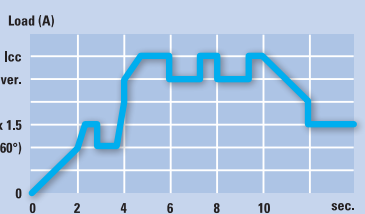
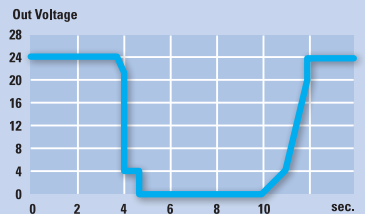
Manual reset manual Restart by Operator

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.



"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.



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.

7.5A
at 40°C

5A
at 60°C
+PowerBoost
7.5A for 3 min.

Jumper settings



1 Phase



	5 Vdc	12 Vdc	48 Vdc	24 Vdc	230 - 400 - 500 Vac	230 - 400 - 500 Vac	230 - 400 - 500 Vac	400 - 500 Vac								
INPUT DATA																
Input (Volt)	115 - 230 Vac	115 - 230 Vac	115 - 230 Vac	115 - 230 Vac	115 - 230 Vac	115 - 230 Vac	115 - 230 Vac	115 - 230 Vac								
Output (Vdc - W)	5 Vdc 35 W	12 Vdc 36 - 72 W	12 Vdc 120 - 180 W	12 Vdc 280 - 336 W	48 Vdc 120 - 180 W	48 Vdc 240 - 345 W	48 Vdc - 480 - 600 W	24 Vdc - 40 - 70 W								
Model	FLEX6005A	FLEX6012A	FLEX17012A	FLEX28012A	FLEX17048A	FLEX28048A	FLEX50048A	FLEX6024A								
Nominal Input Voltage	115 - 230 Vac	115 - 230 Vac	115 - 230 Vac Input ¹	115 - 230 Vac Input ¹	115 - 230 Vac Input ¹	115 - 230 Vac Input ¹	115 - 230 Vac Input ¹	115 - 230 Vac								
Input Voltage Range	90 - 264	90 - 264 Vac	90 - 135 Vac 180 - 264 Vac	90 - 135 Vac 180 - 264 Vac	90 - 135 Vac 180 - 264 Vac	90 - 135 Vac 180 - 264 Vac	90 - 135 Vac 180 - 264 Vac	90 - 135 Vac 180 - 264 Vac								
Inrush Current (Vn and In Load) I _{lt}	≤ 7 A ≤ 5 msec.	≤ 11 A ≤ 5 msec	≤ 16 A ≤ 5 msec	≤ 16 A ≤ 5 msec	≤ 11 A ≤ 5 msec	≤ 16 A ≤ 5 msec	≤ 16 A ≤ 5 msec	≤ 7 A ≤ 5 msec								
Frequency	47 - 63 Hz ±6%	47 - 63 Hz ±6%	47 - 63 Hz ±6%	47 - 63 Hz ±6%	47 - 63 Hz ±6%	47 - 63 Hz ±6%	47 - 63 Hz ±6%	47 - 63 Hz ±6%								
Input Current	0.5 - 0.25 A	1 - 0.7 A	2.8 - 1.3 A	3.3 - 2.2 A	2.8 - 1.3 A	3.3 - 2.2 A	8.5 - 4.2 A	1.0 - 0.7A								
Internal Fuse	4.0 A	4.0 A	4.0 A	6.3 A	4.0 A	6.3 A	10.0 A	4A								
External Fuse (recommended)	6 A (MCB curve B)	6.0 A	10.0 A	16.0 A	10.0 A	16.0 A	16.0 A	6A								
OUTPUTS DATA																
Output Voltage Factory Setting ±3%	5 Vdc	12 Vdc	12 Vdc	12 Vdc	48 Vdc	48 Vdc	48 Vdc	24 Vdc								
Adjustment range (Vadj)	4.75 - 5.25 Vdc	10 - 15.5Vdc	10 - 14 Vdc	10 - 14 Vdc	41 - 55 Vdc	41 - 55 Vdc	41 - 55 Vdc	22 - 27 Vdc								
Start up with capacitive load	≤ 50.000 mF	≤ 50.000 μF	≤ 50.000 μF	≤ 50.000 μF	≤ 50.000 μF	≤ 50.000 μF	≤ 50.000 μF	≤ 50.000 μF								
Turn-On delay after applying mains voltage	1 sec. (max)	1 sec. (max)	1 sec. (max)	1 sec. (max)	1 sec. (max)	1 sec. (max)	1 sec. (max)	1.5 sec. (max)								
Continuous Current at Vn < 40°C (In)	5.0 A	4 A (115) 6A (230)	14 A	16 A	3.75 A	7.0 A	12.0 A	2.0A (115) 3.0 A (230)								
Continuous Current at Vn < 50°C (In)	5.0 A	3 A (115) 5A (230)	12 A	14 A	3.0 A	6.0 A	11.0 A	1.5A (115) 2.5A (230)								
Continuous Current at Vn < 60°C (In)	5.0 A	2 A (115) 3A (230)	10 A	14 A	2.5 A	5.0 A	10.0 A	-								
Power Boost Current (at Vn 60°C ≥ 3min.)	5.0 A	4 A (115) 6A (230)	14 A	16 A	3.75 A	7.0 A	12.0 A	3.5A								
Short circuit current (I _{cc})								7.0A								
Hold-upTime (min. Vac) Vn	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec	Typ. 20 msec								
Residual Ripple	≤ 80 mV _{pp}	≤ 80 mV _{pp}	≤ 80 mV _{pp}	≤ 80 mV _{pp}	≤ 80 mV _{pp}	≤ 80 mV _{pp}	≤ 80 mV _{pp}	≤ 80 mV _{pp}								
Efficiency (50% of In)	≤ 82 %	≤ 88 %	≤ 91 %	≤ 92 %	≤ 91 %	≤ 91 %	≤ 92 %	≥ 88%								
Over temperature Protection	Shut-down output and automatic restart															
Short-circuit protection	Continuous Mode				1° Hiccup Mode ; 2° Continuous Mode ; 3° Manual Reset				Continuous Mode				1° Hiccup Mode; 2° Continuous Mode; 3° Restart After Main			
Dissipation power load max (W)	6	6	17	28	17	28	54	6	11	17	28	54	11	17	28	54
Over Load protection	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Over voltage output protection (Internal Failure)	Yes (typ. 15 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 72 Vdc)	Yes (typ. 72 Vdc)	Yes (typ. 72 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)	Yes (typ. 35 Vdc)
Parallel connection	✓	✓	✓	Easy parallel	✓	Easy parallel	Easy parallel	✓	✓	✓	✓	✓	✓	✓	✓	✓
Relay power good	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
CLIMATIC DATA																
Ambient Temperature operation	-25 - +70 °C	-25 - +70 °C	-25 - +70 °C	-25 - +70 °C	-25 - +70 °C	-25 - +70 °C	-25 - +70 °C	-25 - +70°C	-25 - +70°C	-25 - +70°C	-25 - +70°C	-25 - +70°C	-25 - +70°C	-25 - +70°C	-25 - +70°C	-25 - +70°C
De rating T ⁺ > (In)	>60° 2.5% °C	>60° 2.5% °C	>60° 2.5% °C	>60° 2.5% °C	>60° 2.5% °C	>60° 2.5% °C	>60° 2.5% °C	> 50° 2.5% °C	> 60° 2.5% °C	> 60° 2.5% °C	> 60° 2.5% °C	> 60° 2.5% °C	> 60° 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	-40 - +85 °C	-40 - +85 °C	-40 - +85 °C	-40 - +85°C	-40 - +85°C	-40 - +85°C	-40 - +85°C	-40 - +85°C	-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	95 % to 25 °C	95 % to 25 °C	95 % to 25 °C	95 % to 25°C	95 % to 25°C	95 % to 25°C	95 % to 25°C	95 % to 25°C	95 % to 25°C	95 % to 25°C	95 % to 25°C	95 % to 25°C
GENERAL DATA																
Isolation Voltage (IN / OUT)	3000vac	3000vac	3000vac	3000vac	3000vac	3000vac	3000vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac	3000 Vac
Isolation Voltage(IN / PE)	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac	1605 Vac
Isolation Voltage(OUT / PE)	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac	500 Vac
Reliability (MTBF IEC 61709)	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h	> 500 000 h
Pollution Degree Environment	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Connection Terminal Blocks Screw Type	2,5 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm	4 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm	4 mm	2,5 mm	2,5 mm	2,5 mm
Dimension (w-h-d) mm	50x120x50	50x120x50	55x110x105	72x115x135	55x110x105	72x115x135	85x120x140	50x120x50	55x110x105	55x110x105	72x115x135	85x120x140	55x110x105	55x110x105	72x115x135	85x120x140
Weight	0.30 kg approx	0.30 kg approx	0.6 kg approx	0.77 kg approx	0.60 kg approx	0.77 kg approx	1.1 kg approx	0.30 kg approx	0.50 kg approx	0.60 kg approx	0.72 kg approx	1.1 kg approx	0.50 kg approx	0.60 kg approx	0.72 kg approx	1.0 kg approx
Safety Standard Approval	CE	CE	CE	CE	CE	CE	CE	CE UL_{LISTED}^2	CE UL_{LISTED}^2	CE UL_{LISTED}^2	CE UL_{LISTED}^2	CE UL_{LISTED}^2	CE UL_{LISTED}^2	CE UL_{LISTED}^2	CE UL_{LISTED}^2	CE UL_{LISTED}^2

(1) Selectable
(2) UL 508