Power Supply

Contents

Industrial automation is becoming more demanding than ever, and the complexity of tasks is forever increasing. Efficient operation of equipment and machines demands reliable power sources. Balluff power supplies: the powerful solution for fault-free operation of your system.

Take advantage of the special benefits of Balluff power supplies:

- Full product line – choose just what you need
- Short circuit and overload protection in industrial environments
- High availability of all devices
- Unlimited, precise power for increased demands
- Long life for reliable operation
- Worldwide approvals for use anywhere

Power Supply

A Power Supply You Can Trust

Intelligent power supplies with HeartBeat technology give reliable feedback on the real time and long term status of the supply. Built with the roughest applications in mind, these power supplies provide many great advantages:

- Highly energy efficient (>93% efficiency)
- Electrically durable (power boost 150% for 4 seconds)
- Long lasting (minimum service life of 15 years)
- Vibration and shock resistant
- IP67 – Outside the cabinet rated

HEART*BEAT*™

Stress level
Reversible in medium term

Stress level indicates the physical and thermal loads. A change in the load status delays the "pulse" of the device slightly.

Lifetime
Irreversible in long term

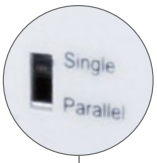
Lifetime indicates the remaining useful life of the device and is based on the combination of all loads.

Load level
Reversible in short term

Load level indicates the current load on the device. The display indicates the load without delay.

Network Auxiliary Power
This fully potted power supply can be installed virtually anywhere in an industrial manufacturing environment and provide efficient and reliable power. Easy to see indicators communicate the status of the power supply for simple preventative maintenance plan. With greater than 93% efficiency you can improve plant performance and decrease waste power consumption.

Power Supply
Reliable control power



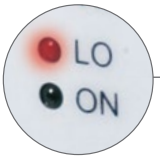
Parallel/Single mode
When more power is needed, multiple units can be connected in parallel mode (most models)

Ready output
Informs control system that power supply is operational (most models)

Adjustable output
Adjust voltage output to compensate for losses in wiring and distributed components

Rugged DIN rail mount

CE, UL/cUL, & TUV approvals



Status indication
LED for DC power ON and DC power LO indication (most models)

IP20-rated metal housing (most models)

Finger-safe terminals
No additional guarding is necessary

Control and Network Power
These power supplies were designed by Balluff with control products in mind, so you can be sure they will integrate perfectly with your control suite.

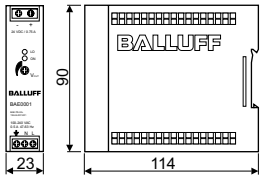
The PS Series of ultra reliable power supplies come in a wide range of 24 V DC models with single or 3-phase inputs. With current ranges from 0.75 A (18 W) to 40 A (960 W), there is a size for most applications. But if more power is needed, connect multiple power supplies together (parallel mode) for additive current capacity.

Seamless Installation
Reliable power has never been this easy to install. It starts with convenient DIN mounting with Balluff's heavy-duty, built-in mounting system. Screw terminals are oriented to allow AC power to enter from the bottom and DC power to exit from the top. Finger-safe terminals require no additional guarding.

Power Supply

Power Supply
IP20 standard
Single-phase
12 V, 24 V output

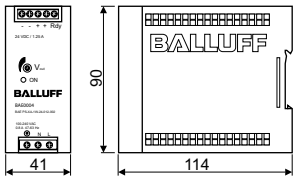
Output values	**1.5 A @ 12 V DC** **0.75 A @ 24 V DC**
Output wattage	18 W
Input voltage	100...240 V AC
12 VDC	**BAE0036**
24 VDC	**BAE0001**
Ripple and noise	50 mV
Short Circuit Protection	Yes
Switching frequency	> 100 kHz
Efficiency (12 V / 24 V)	77% typical / 77% typical
Ambient temperature	-25 °C to +71 °C
Degree of protection per IEC 60529	IP 20
Cooling	Air free convection
Housing material	Plastic
Approvals	CE, UL/cUL, TUV, Class 2

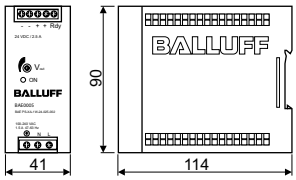


Siemens S7-300 rail adapter	**BAM01FH**

Power Supply
IP20 standard
Single-phase
12 V, 24 V output

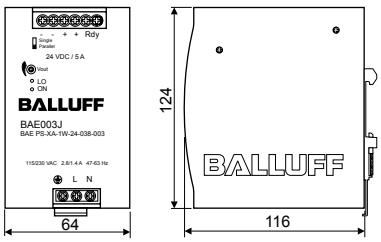
2.5 A @ 12 V DC 1.25 A @ 24 V DC	5.0 A @ 12 V DC 2.5 A @ 24 V DC
30 W	60 W
100...240 V AC	100...240 V AC
BAE0039	**BAE003E**
BAE0004	**BAE0005**
50 mV	50 mV
Yes	Yes
> 100 kHz	> 100 kHz
84% typical / 86% typical	86% typical / 89% typical
-25 °C to +71°C	-25 °C to +71°C
IP 20	IP 20
Air free convection	Air free convection
Plastic	Plastic
CE, UL/cUL, TUV, Class 2	CE, UL/cUL, TUV, Class 2

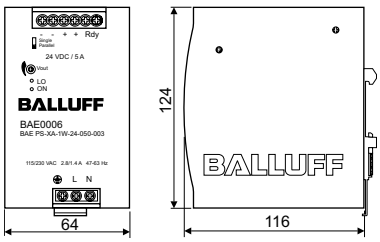




Power Supply
IP20 standard
Single-phase
12 V, 24 V, 48 V output

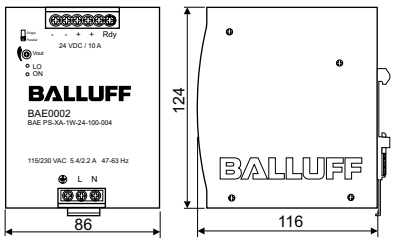
Output values	3.8 A @ 24 V DC (SELV)	10 A @12 V DC 5 A @ 24 V DC 2.5 A @ 48 V DC
Output wattage	91.20 W	120 W
Input voltage	115/230 V AC (Auto-Select)	115/230 V AC (auto select)
12 V		**BAE003H**
24 V	**BAE003J**	**BAE0006**
48 V		**BAE003K**
Ripple and noise	50 mV	50 mV
Short Circuit Protection	Yes	Yes
Switching frequency	> 55 kHz (typically)	> 80 kHz
Efficiency (12 V / 24 V / 48 V)	- - - / 85% typically / - - -	84% typically / 86% typically / 87% typically
Ambient temperature	–25...+71 °C	-25 °C to +71 °C
Degree of protection per IEC 60529	IP 20	IP 20
Cooling	Air free convection	Air free convection
Housing material	Metal	Metal
Approvals	CE, UL/cUL, TUV, Class 2, ODVA certified	CE, UL/cUL, TUV

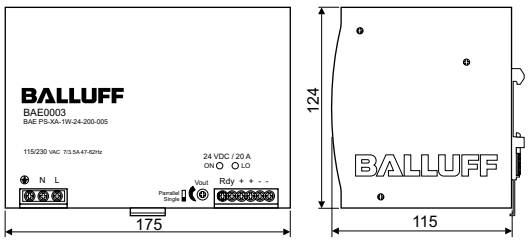




Power Supply
IP20 standard
Single-phase
24 V, 48 V output

10 A @ 24 V DC **5 A @ 48 V DC**	**20 A @ 24 V DC** **10 A @ 48 V DC**
240 W	480 W
115/230 V AC (auto select)	115/230 V AC (auto select)
BAE0002	**BAE0003**
BAE003L	**BAE003M**
100 mV	100 mV
Yes	Yes
> 80 kHz	> 100 kHz
- - - / 89% typically / 90% typically	- - - / 89% typically / 90% typically
-25 °C to +71 °C	-25 °C to +71 °C
IP 20	IP 20
Air free convection	Air free convection
Metal	Metal
CE, UL/cUL, TUV	CE, UL/cUL, TUV

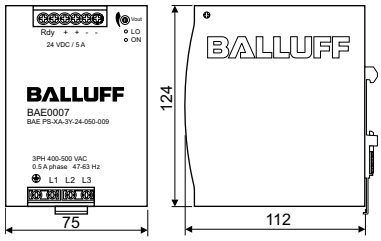


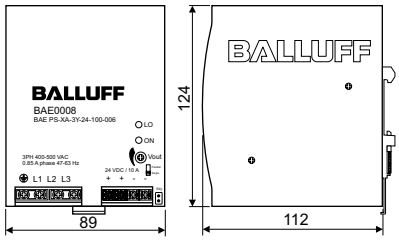


Power Supply

Power Supply
IP20 standard
Three-phase
24 V output

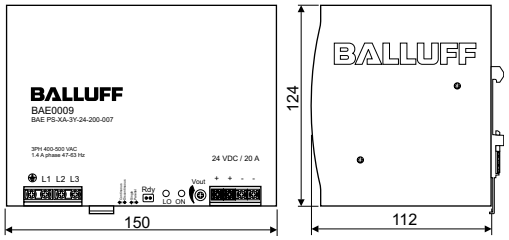
Output values	5 A @ 24 V DC	10 A @ 24 V DC
Output wattage	120 W	240 W
Input voltage	3x 340...575 V AC	3x 340...575 V AC
	BAE0007	**BAE0008**
Ripple and noise	100 mV	100 mV
Short Circuit Protection	Yes	Yes
Switching frequency	> 100 kHz	> 100 kHz
Efficiency	89% typically	90% typically
Ambient temperature	-25 °C to +71 °C	-25 °C to +71 °C
Degree of protection per IEC 60529	IP 20	IP 20
Cooling	Air free convection	Air free convection
Housing material	Metal	Metal
Approvals	CE, UL/cUL, TUV	CE, UL/cUL, TUV

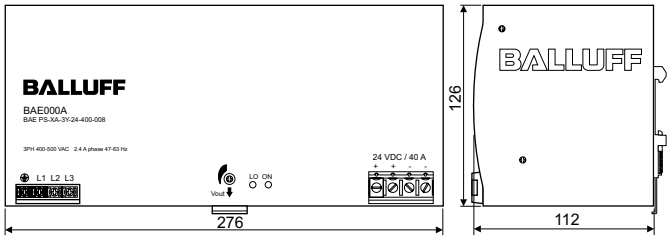




Power Supply
IP20 standard
Three-phase
24 V output

20 A @ 24 V DC	40 A @ 24 V DC
480 W	960 W
3x 340...575 V AC	3x340...575 V AC
BAE0009	**BAE003R**
100 mV	80 mV
Yes	Yes
> 100 kHz	> 100 kHz
90% typically	92% typically
-25 °C to +71 °C	-25 °C to +71 °C
IP 20	IP 20
Air free convection	Air free convection
Metal	Metal
CE, UL/cUL, TUV	CE, UL/cUL, TUV



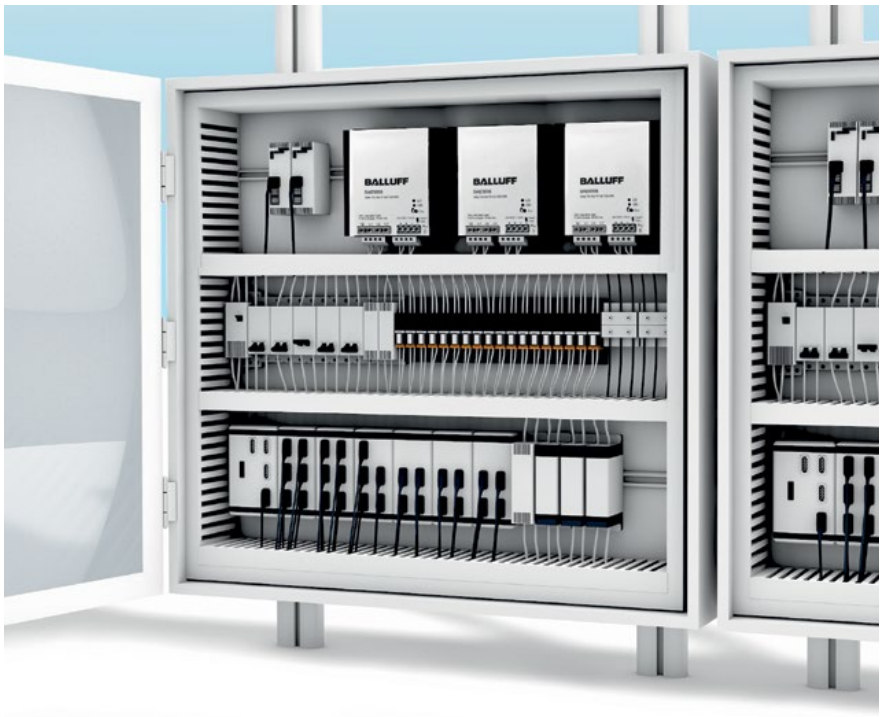


Power Supply

Power Supply
Intelligent power supplies

Power supplies are key components in automation but can easily be overlooked or last on the agenda. When a power supply fails, the sensors, actuators and the controller all come to a halt to figure out which part of the system has failed. It is up to the controller to figure out which part caused the halt in production. The power supply is often replaced long before it is necessary to prevent the risk of automation component failure, which ultimately leads to loss of productivity.

The Balluff Difference
Balluff's HEARTBEAT® function, which consists of stress level indicator, load level indicator and life expectancy indicator, lets the user visually know how the power supply is doing and when a power supply would need to be replaced. Ultimately this will allow the full life of the power supply, years longer than the standard replacement time.



Load Level

Symbol	Meaning
Green	0...80% load
Yellow	81...100% load
Red	>100...150% load, typically when a higher current is required, max. 4 s

The load level (Bars) provides information about the actual load condition on the output. If the standard load is too much for one power supply, the bar level will turn yellow. This will indicate either load needs to be removed or another power supply is needed. By taking action to reduce the load, this ensures no damage to the power supply.

Stress Level

Symbol	Meaning
Green	Low pulse speed: everything OK, a long service life can be expected.
Yellow	Pulse speed increasing: thermal load not optimum. No immediate risk of overheating. Slightly accelerated aging. Reduce the load or improve ventilation!
Red	High pulse speed: poor internal thermal state, service life at serious risk. Check the load and improve ventilation!

The stress indicator (Pulse) takes into account the load as well as the ambient temperature to determine the stress level. Temperature is one of the factors that will reduce the life of a power supply. If the stress level is up but not the load level, it is a clear indicator the temperature is too high and is causing stress on the power supply.

Life Expectancy

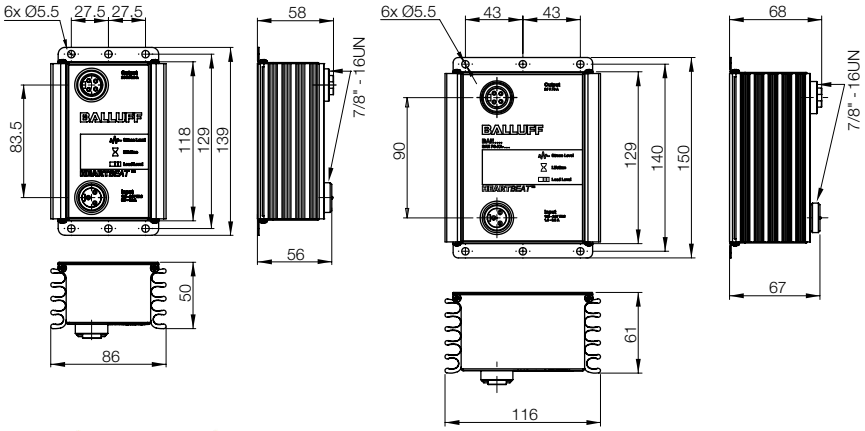
Symbol	Meaning
Green	Power supply with long service life
Yellow	Service life less than 3 years, replace during next maintenance cycle
Red	Power supply at end of service life, replace immediately

Visually the HEARTBEAT® function informs users of the life expectancy display (Hour glass) with a minimum service life of 15 years at 100% load and 40ºC. The red hourglass indicates it is time to replace the power supply.

Power Supply
Intelligent power supplies
Machine mount IP67

Machine Mount IP67 Intelligent Power Supplies

Degree of protection per IEC 60529	IP 67	IP 67
Output current	3.8 A	8 A
Output power	91.2 W	192 W
Output voltage	24 V DC (SELV)	24 V DC (SELV)
Input voltage	100...240 V AC, Single phase	100...240 V AC, Single phase
Isolated output (4-pin),DeviceNet Aux, SELV & GND	**BAE00EN**	
Isolated output (4-pin), EtherNet IP Aux, SELV	**BAE00FW**	**BAE00ET**
Grounded output (4-pin) EtherNet IP Aux, PELV	**BAE00EP**	**BAE00FY**
Isolated output (5-pin), PROFI & CC-Link Aux, SELV & GND	**BAE00ER**	**BAE00FL**
Efficiency	High efficiency > 93 %	
MTBF	> 800,000 h	
Input	3-pin (male)	
Output	4-pin (female), 2 circuits	
	5-pin (female) for DN Network Power	
Operating temperature	–25...+70 °C	
Storage temperature range	–40...+80 °C	
Mounting	Panel, wall and field mounting	
Housing material	Metal, fully enclosed	
Service life	Almost 15 years	
Warranty	2 years	



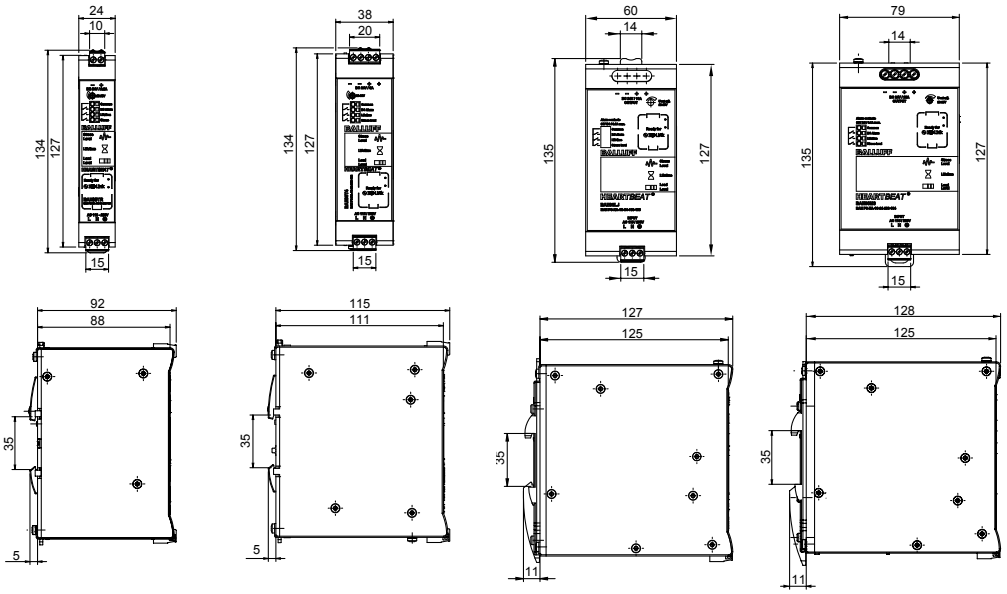
Standard Cable Information

3-wire	Female	2 m	Straight	**BCC099E**
			Right Angle	**BCC099L**
4-wire	Male	2 m	Straight	**BCC0917**
			Right Angle	**BCC091E**
5-wire	Male	2 m	Straight	**BCC0ACY**
			Right Angle	**BCC0AE2**

Power Supply

Compact and Intelligent IP20 Power Supply Units BAE With IO-Link

Output current	2.5 A	5 A	10 A	20 A
Output wattage	80 W	120 W	240 W	480 W
Output voltage	24 V DC (SELV, PELV)	24 V DC (SELV, PELV)	24 V DC (SELV, PELV)	24 V DC (SELV, PELV)
Input voltage	115…230 V AC	115 V/230 V AC (automatic setting)	115 V/230 V AC (automatic setting)	115 V/230 V AC (automatic setting)
	BAE00TR	**BAE00T4**	**BAE00LJ**	**BAE00M3**
Efficiency	High efficiency Typically > 88%	High efficiency Typically > 92%	High efficiency Typically > 93%	High efficiency Typically > 94%
Degree of protection as per IEC 60529	IP 20	IP 20	IP 20	IP 20



Load level

Load level
- Reversible in short term

Load level indicates the current load on the device. The display indicates the load without any delay.

Heartbeat

Stress level
- Reversible in medium term

Stress level indicates the physical and thermal loads. Changing the load has an effect on device wear.

Life expectancy

Lifetime
- Irreversible in long term

Lifetime shows the remaining service life of the device, based on the total of all loads.

All indicators show the status of the device and are multi-colored:
- green
- yellow
- red

IO-Link adapter BAE00TF

Compact and Intelligent IP20 Power Supply Units BAE With IO-Link

In industrial automation, the focus continues to shift more towards decentralized installation without control cabinets. Balluff power supply units with IP 67 degree of protection are absolutely ideal for meeting this change. They can be used in the field directly and under harsh conditions.

Special sensors in the device continuously monitor wear factors such as temperature, overload, interference and other basic conditions.

In addition to the visualized interface, the devices provide the option of transmitting parameters using IO-Link for the first time. This means the power supply unit can now be conveniently monitored from a control station even for inaccessible applications.

Continuous transmission of process data
- Output voltage
- Output current

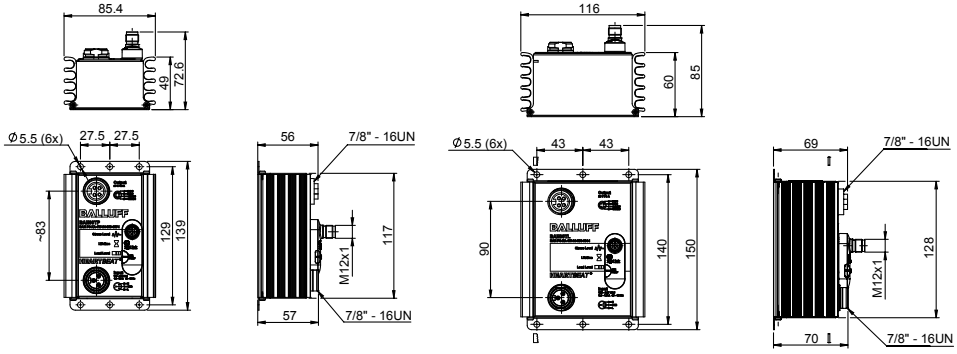
The power supply emits a message automatically if any of the following events occur:
- DC alarm
- Stress level alarm
- Lifetime alarm
- Critical temperature
- Power boost

Additional retrieval of service data
- Charge life
- Current input voltage
- Absolute temperature minimum and maximum
- Power boost counter

Machine Mount IP20 Intelligent Power Supplies

Output current	3.8 A	8 A
Output wattage	91.2 W	192 W
Output voltage	24 V DC (SELV)	24 V DC (SELV)
Input voltage	100…240 V AC	100…240 V AC
Isolated ouput, DeviceNet	**BAE00TH**	
Isolated output, EtherNet	**BAE00TP**	**BAE00TL**
Grounded output, EtherNet	**BAE00TJ**	**BAE00TN**
Isolated output, PROFI & CC-Link	**BAE00TK**	**BAE00TM**
Efficiency	High efficiency, typically > 91%	High efficiency, typically > 91%
Degree of protection as per IEC 60529	IP 67	IP 67

This compilation is an excerpt from the complete portfolio.



Power supplies for applications without a control cabinet

- Output voltage versions: 5 V DC, 12 V DC, 15 V DC, 24 V DC
- Power ranges: 20 W, 35 W, 60 W, 100 W, 150 W
- Secondary voltage regulation +/- 10 %
- Short-circuit protected
- UL certified

Enclosed power supplies are ideal for small and medium-size applications where no control cabinet is used, eliminating an additional distribution board. Their compact form factor makes enclosed power supplies ideal for small, self-contained applications such beverage vending machines, slot machines or machine modules. They are installed directly in the device enclosure. In addition to the compact form factor, enclosed power supplies offer a good price-performance ratio.

Compact IP20 devices with wide-range input



Output current	0,9 A	1,5 A	2,5 A
Output wattage	21,6 W	36 W	60 W
Output voltage	24 V DC	24 V DC	24 V DC
Input voltage	100...240 V AC	100...240 V AC	100...240 V AC
	BAE00LT	**BAE00LU**	**BAE00LW**
Efficiency	87 % typ.	87 % typ.	89 % typ.
Degree of protection per IEC 60529	IP20	IP20	IP20

Also available in other versions with comparable output wattage:

Output voltage 5 V DC	**BAE00M4**	**BAE00MK**	**BAE00M7**
Output voltage 12 V DC	**BAE00M5**	**BAE00ML**	**BAE00M8**
Output voltage 15 V DC	**BAE00M6**	**BAE00MM**	**BAE00M9**


Output current	4,5 A	6,5 A
Output wattage	108 W	156 W
Output voltage	24 V DC	24 V DC
Input voltage	100...240 V AC	100...240 V AC
	BAE00LY	**BAE00LZ**
Efficiency	89 % typ.	92 % typ.
Degree of protection per IEC 60529	IP20	IP20

Also available in other versions with comparable output wattage:

Output voltage 5 V DC	**BAE00MA**	**BAE00MF**
Output voltage 12 V DC	**BAE00MC**	**BAE00MH**
Output voltage 15 V DC	**BAE00ME**	**BAE00MJ**