Electrical Devices

Electrical Devices

A wide selection of accessories, such as pulse extender, digital display and testers for all applications and the areas of inspection, testing, function and monitoring.

Contents

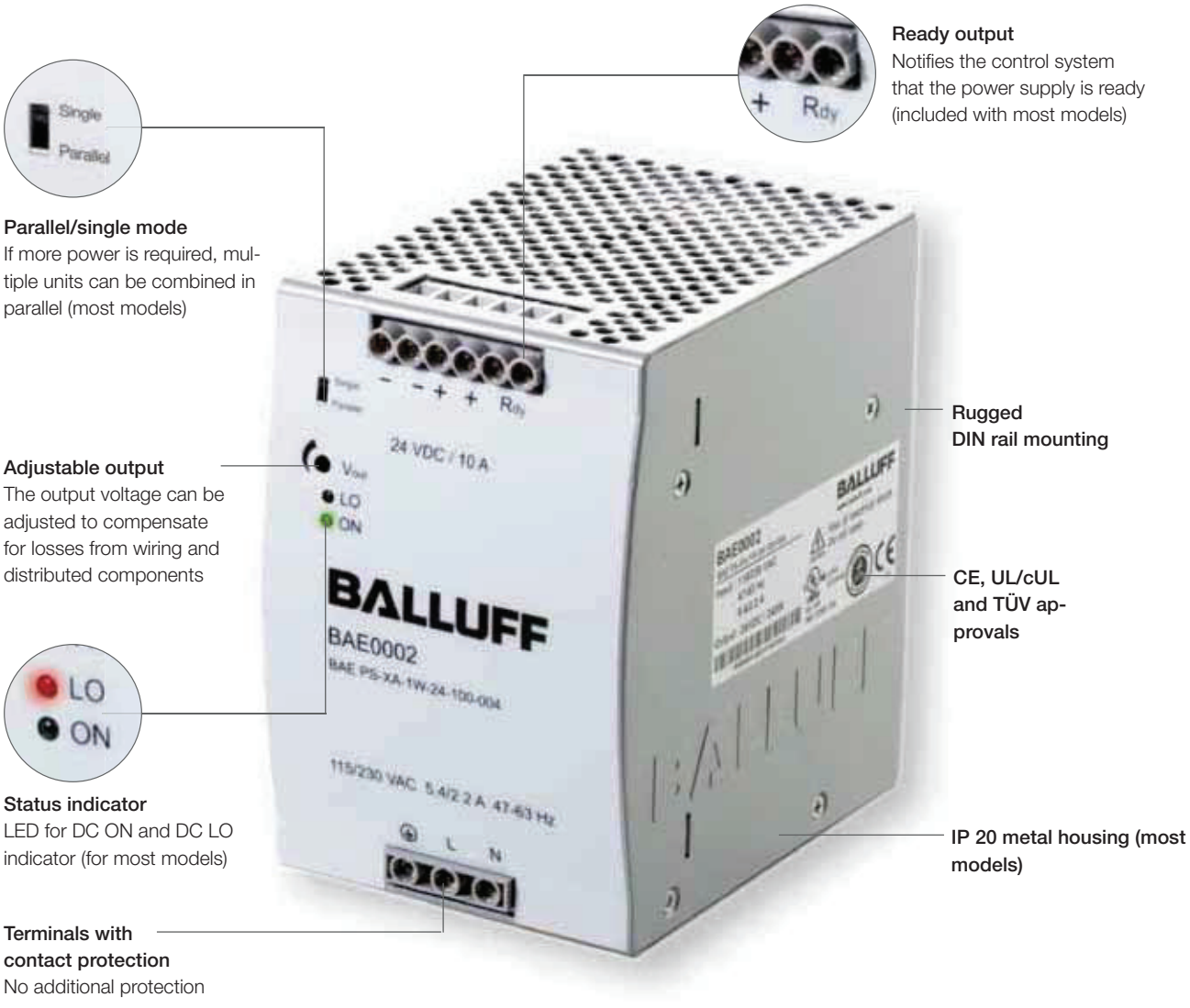
Power Supplies
Reliable performance for high requirements

High performance – for faultless system operation

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 system availability of all devices
- Unlimited, precise power for increased demands
- Long service life for reliable operation
- Worldwide approvals for use anywhere

Every industrial automation system needs a reliable, clean and controlled source of power without spikes. Only then can these systems deliver the expected performance. With the Balluff power supplies you get what you expect and more. They ensure reliable power even under demanding conditions.

- **Ultra-reliable power supplies**
  for protecting sensitive control electronics
- **Protection against unforeseen events**
  Integrated overload and overvoltage protection
- **Wide selection of models**
  Whether stand-alone or an individual combination of various models, these solutions are perfect for your requirements
- **Clean, precise power supply for particularly demanding systems**
  Load regulation ±1% for all models, ripple and noise under 50 mV for most models
- **Long service life for less system downtime**
  MTBF (Mean Time Between Failure) up to 800,000 hours/ 91 years



Type	Output voltage	Output power																	Input voltage	Features		Product information	Page
		0.75 A/18 W	1.25 A/30 W	1.5 A/18 W	2.5 A/30 W	2.5 A/60 W	2.5 A/120 W	3.8 A/91.20 W	5 A/60 W	5 A/120 W	5 A/240 W	8 A/192 W	10 A/120 W	10 A/240 W	10 A/480 W	20 A/480 W	40 A/960 W			Housing material	Parallel mode / Ready output		
Standard IP 20	12 V			■															Single-phase[1]	Plastic		**BAE0036**	432
					■														Single-phase[1]	Plastic	■	**BAE0039**	433
									■										Single-phase[1]	Metal	■	**BAE003E**	435
													■						Single-phase[2]	Metal	■ ■	**BAE003H**	437
	24 V	■																	Single-phase[1]	Plastic		**BAE0001**	432
			■																Single-phase[1]	Plastic	■	**BAE0004**	433
						■													Single-phase[1]	Plastic	■	**BAE0005**	434
								■											Single-phase[2]	Metal	■ ■	**BAE003J**	436
										■									Single-phase[2]	Metal	■ ■	**BAE0006**	437
														■					Single-phase[2]	Metal	■ ■	**BAE0002**	438
																■			Single-phase[2]	Metal	■ ■	**BAE0003**	439
										■									3-phase[3]	Metal	■	**BAE0007**	440
														■					3-phase[3]	Metal	■ ■	**BAE0008**	441
																■			3-phase[3]	Metal	■ ■	**BAE0009**	441
																	■		3-phase[3]	Metal	■ ■	**BAE003R**	442
	48 V						■												Single-phase[2]	Plastic	■ ■	**BAE003K**	436
											■								Single-phase[2]	Metal	■ ■	**BAE003L**	438
															■				Single-phase[2]	Metal	■ ■	**BAE003M**	439
Intelligent devices IP 20	24 V									■									Single-phase[1]	Metal	■	**BAE00EK**	427
														■					Single-phase[1]	Metal	■	**BAE00EU**	427
Intelligent devices IP 67								■											Single-phase[1]	Metal		**BAE00EN**	428
								■											Single-phase[1]	Metal		**BAE00EP**	428
								■											Single-phase[1]	Metal		**BAE00ER**	429
								■											Single-phase[1]	Metal		**BAE00FW**	429
												■							Single-phase[1]	Metal		**BAE00ET**	429
												■							Single-phase[1]	Metal		**BAE00FL**	430
												■							Single-phase[1]	Metal		**BAE00FY**	430

[1] = 100…240 V AC
[2] = 115/230 V AC (Auto-Select)
[3] = 340…575 V AC

Power Supplies

Reliable performance for the high requirements in industrial automation

Intelligent power supply units –
For outstanding system availability
If you want to operate your systems and machines with maximum efficiency, the power supply you use must be reliable. Intelligent power supply units from Balluff guarantee a high degree of reliability. This is because they enable you to monitor their environment continuously by providing a complete picture of it wherever they are installed.

LEDs for easy monitoring
- Load level
- Stress level
- Lifetime

LEDs indicate the load level and stress level so the operator knows immediately when the unit is operating at maximum performance. LEDs also show the service life of the devices, simplifying maintenance and operation. The user can also see when a device has to be replaced. This is how Balluff power supply units contribute to increased system availability.

Your advantages
- Continuous monitoring of machines and systems
- Reliable power supply units guarantee efficient operation
- Optimized use of devices and a longer service life
- Maintenance planning

Devices only replaced when necessary

Versions
Intelligent power supply units from Balluff are available in two versions

IP 20 (with screw terminal)
- With a wide input voltage range from 90…264 V AC
- Designed for versatile use in industrial automation
- Also satisfies all wind turbine requirements

IP 67 (with connector)
- Can be used directly in harsh environments
- Fully potted housing
- High shock and vibration ratings

Power for controllers and networks
Specially developed for controller units, Balluff power supply units can be perfectly integrated into your control package.

The PS series of ultra-reliable power supply units is available in a wide range of 12, 24, and 48 V DC models with single or 3-phase input. With a bandwidth of 18 W to 960 W, they truly leave nothing to be desired. For even greater power, multiple power supplies are interconnected (parallel switching mode).
Do you need a different voltage? Please contact us.

Trouble-free installation
Reliable power has never been so simple to install. It starts with the convenient DIN rail mounting using the integrated Balluff high-performance mounting system. The screw terminals are aligned to enable the integration of an AC input from below and a DC output from above. Connections with contact protection render additional safety equipment superfluous.

Power Supplies

Reliable performance for the high requirements of industrial automation

Load level:

Load level

■ Reversible in short term

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

Wear indicator:

Lifetime

■ Irreversible in long term

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

All indicators are multi-colored – green, yellow, or red – and show the status of the device.

Intelligent power supplies in IP 67

Power Supplies

Intelligent devices for the high requirements of industrial automation

Intelligent power supplies from Balluff

The installation of local power supply units without switch cabinets with the IP 67 degree of protection is becoming more popular in industrial automation. Although local power supply units are already available, they are generally difficult to access once installed.
To further complicate matters, it is practically impossible to monitor the operating state. As a result, operators rely on preventive maintenance concepts to guarantee maximum possible availability. This procedure is reliable, but also expensive, because devices are frequently replaced during the maintenance cycle well before the end of their service life, as there is no alternative system available.

For the first time, intelligent, energy-saving power supply units from Balluff promise to remedy this situation. Their condition is visualized by means of optical indicators.

This novel concept allows detection of the condition of the device at a glance. Since it tracks dynamic loads, it can be operated continuously even under high load conditions. This makes typical reserves of 30 to 50% superfluous.

The intelligence supports continuous high utilization of the devices. Their operational status is indicated via:

- Load level
- Stress level
- Lifetime

display. The displays provide an easy way for the operator to quickly ascertain the status.

General key information about the IP 20 and IP 67 power supply units

- High efficiency of 92%
- Minimal heat loss and generation
- Increasing efficiency of the systems
- 3-stage status indication
- Power boost (150% for 4 sec.)
- Extremely compact
- More efficient utilization of the power supply units
- Planned reserves are not wasted
- Prevention of failures caused by continuous overload
- Scheduled maintenance and repairs no longer necessary
- Higher productivity
- PSU replaced only at the end of its service life
- Service life of 15 years (at 80% load and 40 °C), MTBF > 800,000 h
- Enclosed housing guarantees high degree of resistance to vibration and shock loads
- With IP 20, also with floating alarm contacts

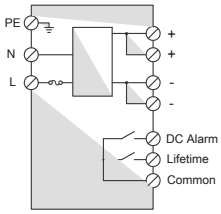
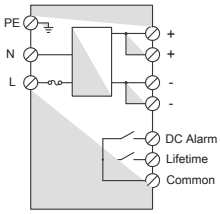
Ideal areas of application for these intelligent power supply units include decentralized installations in the automobile industry, machine construction, wind turbines, etc.

IP 20

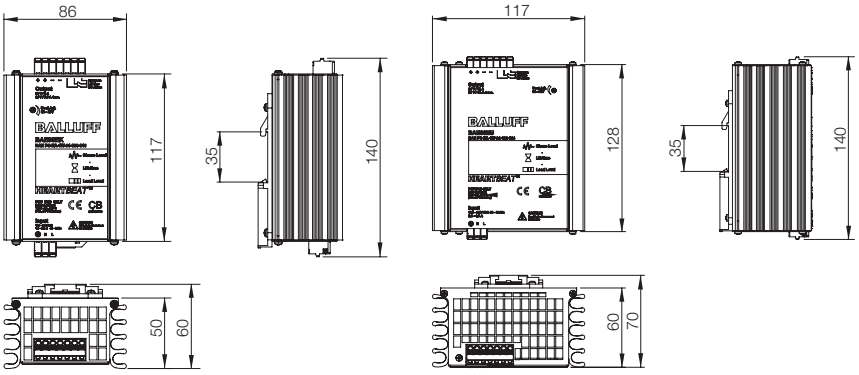
IP 67

Intelligent power supplies enable monitoring of the operating status in demanding applications.

Power Supplies
Intelligent devices
5 A. 10 A

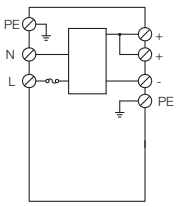
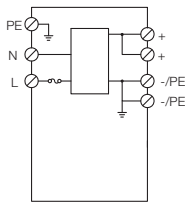
Output current	**5 A**	**10 A**
Output power	120 W	240 W
Output voltage	24 V DC (SELV)	24 V DC (SELV)
Input voltage	100…240 V AC single-phase	100…240 V AC single-phase
	BAE00EK	**BAE00EU**
Input voltage range	90…264 V AC/135…340 V DC	90…264 V AC/135…340 V DC
Inrush current	1.14 at 230 V AC / 2.1 A at 110 V AC	2.11 at 230 V AC/4.4 A at 110 V AC
Frequency range	48…62 Hz	48…62 Hz
Input fuse	6.3 A/250 V AC internal	6.3 A/250 V AC internal
Voltage adjustment range	22…28 V DC	22…28 V DC
Temperature coefficient max.	±0.03%/°C	0.03%/°C
Hold-up time	> 150 ms at 230 V AC/> 25 ms at 115 V AC	> 120 ms at 230 V AC/> 15 ms at 115 V AC
Status indicator	Stress level, lifetime, load level	Stress level, lifetime, load level
Power boost	150% for 4 s	150% for 4 s
Efficiency	High efficiency, typically > 89%	High efficiency, typically > 91%
Response	Forward characteristic	Forward characteristic
Ambient temperature	–25…+70 °C	–25…+70 °C
Storage temperature	–40…+80 °C	–40…+80 °C
Fastening	DIN rail mounting	DIN rail mounting
Parallel mode	Yes (with external diodes)	Yes (with external diodes)
Enclosure rating per IEC 60529	IP 20	IP 20
Derating	–2.5%/ °C above +60 °C	–2.5%/ °C above +60 °C
Cooling	Free convection	Free convection
Housing material	Metal, semi-potted	Metal, semi-potted
Service life (at 80% load and 40 °C)	15 years	15 years
Warranty	2 years	2 years
Weight	0.80 kg	1.15 kg
Approvals	CE	CE
Wiring diagram		

*SELV = Safety Extra Low Voltage



Intelligent devices
3.8 A

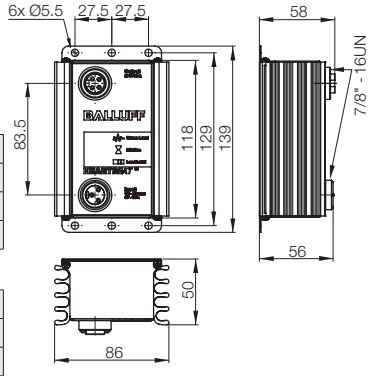
CE

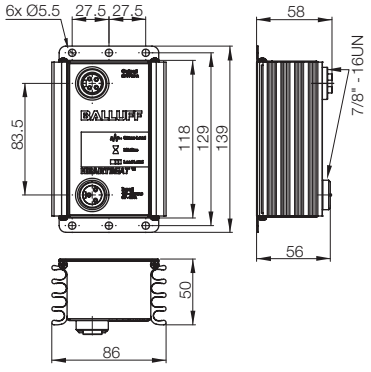
Output current	**3.8 A**	**3.8 A**
Output power	91.2 W	91.2 W
Output voltage	24 V DC (SELV)	24 V DC (PELV)
Input voltage	100…240 V AC single-phase	100…240 V AC single-phase
	BAE00EN	**BAE00EP**
Input voltage range	90…264 V AC/135…340 V DC	90…264 V AC/135…340 V DC
Inrush current	< 30 A	< 30 A
Frequency range	48…62 Hz	48…62 Hz
Input fuse	6.3 A/250 V AC internal	6.3 A/250 V AC internal
Voltage adjustment range	24 V DC fixed adjustment	24 V DC fixed adjustment
Temperature coefficient max.	±0.03%/°C	±0.03%/°C
Hold-up time	> 200 ms at 230 V AC/> 40 ms at 115 V AC	> 200 ms at 230 V AC/> 40 ms at 115 V AC
Status indicator	Stress level, lifetime, load level	Stress level, lifetime, load level
Power boost	150% for 4 s	150% for 4 s
Efficiency	High efficiency, typically > 88%	High efficiency, typically > 88%
Input	3-pin (male)	3-pin (male)
Output	4-pin (female)	4-pin (female) e.g. for DeviceNet, Ethernet/IP modules
Response	Forward characteristic	Forward characteristic
Ambient temperature	–25…+70 °C	–25…+70 °C
Storage temperature	–40…+80 °C	–40…+80 °C
Fastening	Panel, wall, and field mounting	Panel, wall, and field mounting
Enclosure rating per IEC 60529	IP 67	IP 67
Derating	–2.5%/ °C above +60 °C	–2.5%/ °C above +60 °C
Cooling	Free convection	Free convection
Housing material	Metal, fully potted	Metal, fully potted
Service life (at 80% load and 40 °C)	15 years	15 years
Warranty	2 years	2 years
Weight	1 kg	1 kg
Approvals	CE	CE
Wiring diagram		

*SELV = Safety Extra Low Voltage

Appropriate cables	Length	
Input 3-pin	2 m	**BCC0AHZ**
Output 4-pin	2 m	**BCC06HL**
Output 5-pin	2 m	**BCC06HC**

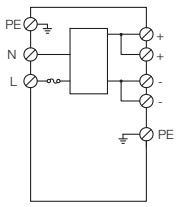
Tee	
3-pin	**BCC0AA5**
4-pin	**BCC0AA6**
5-pin	**BCC0AA7**

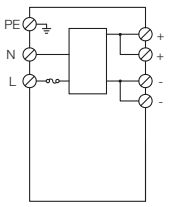


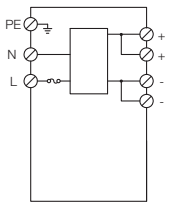


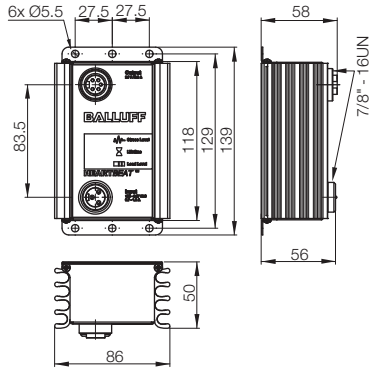
Power Supplies
Intelligent devices
3.8 A, 8 A

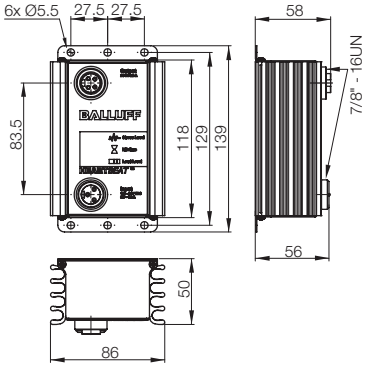
3.8 A	3.8 A	8 A
91.2 W	91.2 W	192 W
24 V DC (SELV)	24 V DC (SELV)	24 V DC (SELV)
100…240 V AC single-phase	100…240 V AC single-phase	100…240 V AC single-phase
BAE00ER	**BAE00FW**	**BAE00ET**
90…264 V AC/135…340 V DC	90…264 V AC/135…340 V DC	90…264 V AC/135…340 V DC
< 30 A	< 30 A	< 20 A
48…62 Hz	48…62 Hz	48…62 Hz
6.3 A/250 V AC internal	6.3 A/250 V AC internal	6.3 A/250 V AC internal
24 V DC fixed adjustment	24 V DC fixed adjustment	24 V DC fixed adjustment
±0.03%/°C	±0.03%/°C	±0.03%/°C
> 200 ms at 230 V AC/> 40 ms at 115 V AC	> 200 ms at 230 V AC/> 40 ms at 115 V AC	> 150 ms at 230 V AC/> 20 ms at 115 V AC
Stress level, lifetime, load level	Stress level, lifetime, load level	Stress level, lifetime, load level
150% for 4 s	150% for 4 s	150% for 4 s
High efficiency, typically > 88%	High efficiency, typically > 88%	High efficiency, typically > 90%
3-pin (male)	3-pin (male)	3-pin (male)
5-pin (female) e.g. for Profibus, Profinet, CC-Link modules	4-pin (female) e.g. for DeviceNet, Ethernet/IP modules	4-pin (female) e.g. for DeviceNet, Ethernet/IP modules
Forward characteristic	Forward characteristic	Forward characteristic
–25…+70 °C	–25…+70 °C	–25…+70 °C
–40…+80 °C	–40…+80 °C	–40…+80 °C
Panel, wall, and field mounting	Panel, wall, and field mounting	Panel, wall, and field mounting
IP 67	IP 67	IP 67
–2.5%/ °C above +60 °C	–2.5%/ °C above +60 °C	–2.5%/ °C above +60 °C
Free convection	Free convection	Free convection
Metal, fully potted	Metal, fully potted	Metal, fully potted
15 years	15 years	15 years
2 years	2 years	2 years
1 kg	1 kg	1.65 kg
CE	CE	CE

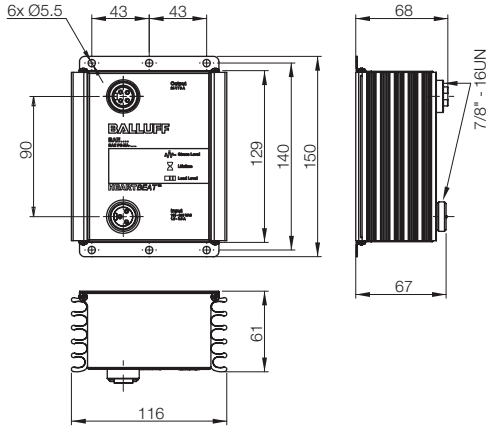




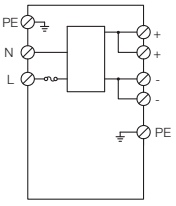
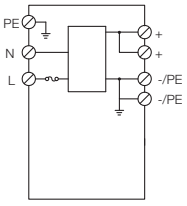




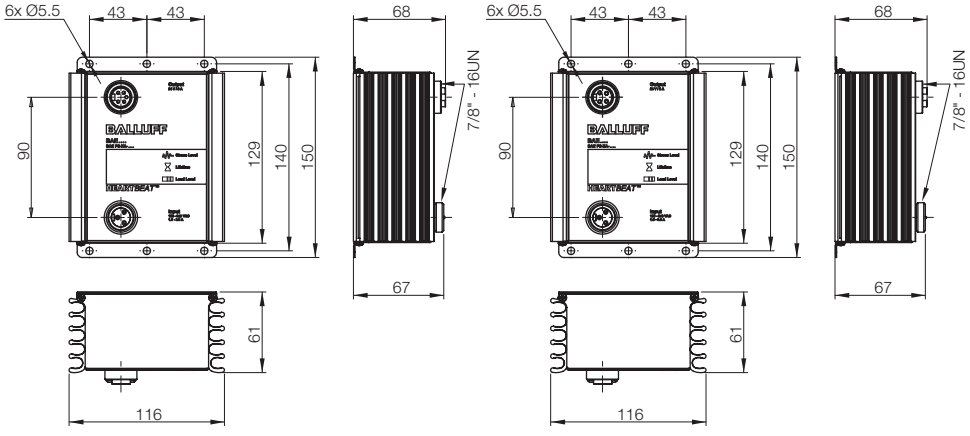


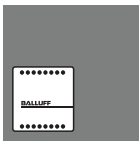


CE

Output current	**8 A**	**8 A**
Output power	192 W	192 W
Output voltage	24 V DC (SELV)	24 V DC (PELV)
Input voltage	100…240 V AC single-phase	100…240 V AC single-phase
	BAE00FL	**BAE00FY**
Input voltage range	90…264 V AC/135…340 V AC	90…264 V AC/135…340 V AC
Inrush current	< 20 A	< 20 A
Frequency range	48…62 Hz	48…62 Hz
Input fuse	6.3 A/250 V AC internal	6.3 A/250 V AC internal
Voltage adjustment range	24 V DC fixed adjustment	24 V DC fixed adjustment
Temperature coefficient max.	±0.03%/°C	±0.03%/°C
Hold-up time	> 150 ms at 230 V AC/> 20 ms at 115 V AC	> 150 ms at 230 V AC/> 20 ms at 115 V AC
Status indicator	Stress level, lifetime, load level	Stress level, lifetime, load level
Power boost	150% for 4 s	150% for 4 s
Efficiency	High efficiency, typically > 90%	High efficiency, typically > 90%
Input	3-pin (male)	3-pin (male)
Output	5-pin (female) e.g. for Profibus, Profinet, CC-Link modules	4-pin (female) e.g. for DeviceNet, Ethernet/IP modules
Response	Forward characteristic	Forward characteristic
Ambient temperature	–25…+70 °C	–25…+70 °C
Storage temperature	–40…+80 °C	–40…+80 °C
Fastening	Panel, wall, and field mounting	Panel, wall, and field mounting
Enclosure rating per IEC 60529	IP 67	IP 67
Derating	–2.5%/ °C above +60 °C	–2.5%/ °C above +60 °C
Cooling	Free convection	Free convection
Housing material	Metal, fully potted	Metal, fully potted
Service life (at 80% load and 40 °C)	15 years	15 years
Warranty	2 years	2 years
Weight	1.65 kg	1.65 kg
Approvals	CE	CE
Wiring diagram		

*SELV = Safety Extra Low Voltage




BALLUFF

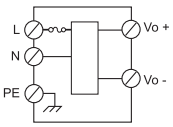
Power Supplies
Single-phase input voltage
0.75 A, 1.5 A

Class 2

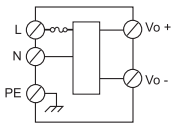
Class 2

Output current	**0.75 A**	**1.5 A**
Output power	18 W	18 W
Output voltage	24 V DC (SELV)	12 V DC (SELV)
Input voltage	100…240 V AC	100…240 V AC
	BAE0001	**BAE0036**
Input voltage range	90…264 V AC/120…375 V DC	90…264 V AC/120…375 V DC
Inrush current	115 V AC < 10 A/230 V AC < 18 A	115 V AC < 10 A/230 V AC < 18 A
Frequency range	47…63 Hz	47…63 Hz
Input fuse	T2 A/250 V AC internal	T2 A/250 V AC internal
Voltage adjustment range	22.5…28.5 V DC	11…14 V DC
Temperature coefficient max.	±0.03%/°C	±0.03%/°C
Ripple and noise	50 mV	50 mV
Hold-up time	115 V AC > 20 ms/230 V AC > 30 ms	115 V AC > 20 ms/230 V AC > 30 ms
Status indicator DC ON	Green LED	Green LED
Status indicator DC LOW	Red LED	Red LED
Efficiency	77 %	77 %
Response	Hiccup mode	Hiccup mode
Switching frequency	> 100 kHz	> 100 kHz
Input/output isolation voltage	3000 V AC	3000 V AC
Isolation resistance	100 MΩ	100 MΩ
Switch-on delay	< 1 s	< 1 s
Ambient temperature	–20…+70 °C	–20…+70 °C
Derating	–2.5%/°C of +61 °C	–2.5%/°C of +61 °C
Parallel mode	Yes (with external diodes)	Yes (with external diodes)
Enclosure rating per IEC 60529	IP 20	IP 20
Ready output	no	no
Cooling	Free convection	Free convection
Housing material	Plastic	Plastic
Weight	0.15 kg	0.15 kg
Approvals	CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

Wiring diagram

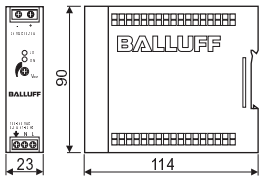


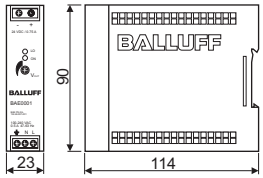
L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +



L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +

*SELV = Safety Extra Low Voltage



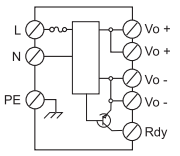


Power Supplies
Single-phase input voltage
1.25 A, 2.5 A

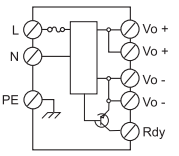
Class 2

Class 2

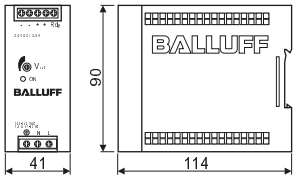
1.25 A	2.5 A
30 W	30 W
24 V DC (SELV)	12 V DC (SELV)
100…240 V AC	100…240 V AC
BAE0004	**BAE0039**
85…264 V AC/90…375 V DC	85…264 V AC/90…375 V DC
115 V AC < 20 A/230 V AC < 40 A	115 V AC < 20 A/230 V AC < 40 A
47…63 Hz	47…63 Hz
T2 A/250 V AC internal	T2 A/250 V AC internal
22.5…28.5 V DC	11…14 V DC
±0.03%/°C	±0.03%/°C
50 mV	50 mV
115 V AC > 20 ms/230 V AC > 30 ms	115 V AC > 20 ms/230 V AC > 30 ms
Green LED	Green LED
86 %	84 %
Forward characteristic	Forward characteristic
> 80 kHz	> 80 kHz
3000 V AC	3000 V AC
100 MΩ	100 MΩ
< 1 s	< 1 s
–40…+70 °C	–40…+70 °C
–2.5%/°C of +61 °C	–2.5%/°C of +61 °C
Yes (with external diodes)	Yes (with external diodes)
IP 20	IP 20
DC OK output	DC OK output
Free convection	Free convection
Plastic	Plastic
0.29 kg	0.29 kg
CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

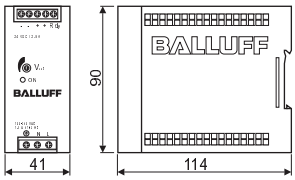


L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output



L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

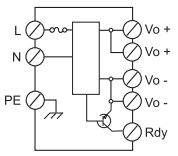




Power Supplies
Single-phase input voltage
2.5 A

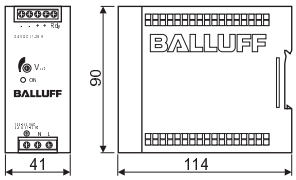
Class 2

Output current	**2.5 A**
Output power	60 W
Output voltage	24 V DC (SELV)
Input voltage	100…240 V AC
	BAE0005
Input voltage range	85…264 V AC/90…375 V DC
Inrush current	115 V AC < 30 A/230 V AC < 60 A
Frequency range	47…63 Hz
Input fuse	T2 A/250 V AC internal
Voltage adjustment range	22.5…28.5 V DC
Temperature coefficient max.	±0.03%/°C
Ripple and noise	50 mV
Hold-up time	115 V AC > 20 ms/230 V AC > 30 ms
Status indicator DC ON	Green LED
Efficiency	89 %
Response	Forward characteristic
Switching frequency	> 55 kHz
Input/output isolation voltage	3000 V AC
Isolation resistance	100 MΩ
Switch-on delay	< 1 s
Ambient temperature	–40…+70 °C
Derating	–2.5%/°C of +61 °C
Parallel mode	Yes (with external diodes)
Enclosure rating per IEC 60529	IP 20
Ready output	DC OK output
Cooling	Free convection
Housing material	Plastic
Weight	0.36 kg
Approvals	CE, UL/cUL, TÜV
Wiring diagram	



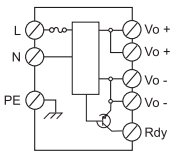
L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

*SELV = Safety Extra Low Voltage

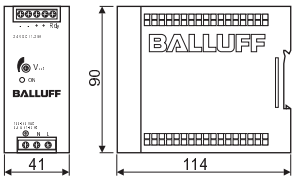


Power Supplies
Single-phase input voltage
5 A

5 A	
60 W	
12 V DC (SELV)	
100…240 V AC	
BAE003E	
85…264 V AC/90…375 V DC	
115 V AC < 30 A/230 V AC < 60 A	
47…63 Hz	
T2 A/250 V AC internal	
11…14 V DC	
±0.03%/°C	
50 mV	
115 V AC > 20 ms/230 V AC > 30 ms	
Green LED	
86 %	
Forward characteristic	
> 55 kHz	
3000 V AC	
100 MΩ	
< 1 s	
–40…+70 °C	
–2.5%/°C of +61 °C	
Yes (with external diodes)	
IP 20	
DC OK output	
Free convection	
Plastic	
0.36 kg	
CE, UL/cUL, TÜV	



L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

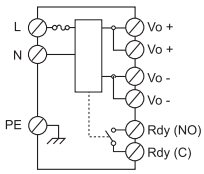


Single-phase input voltage
2.5 A, 3.8 A

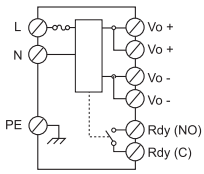
Class 2

Output current	**3.8 A**	**2.5 A**
Output power	91.20 W	120 W
Output voltage	24 V DC (SELV)	48 V DC (SELV)
Input voltage	115/230 V AC (Auto-Select)	115/230 V AC (Auto-Select)
	BAE003J	**BAE003K**
Input voltage range	90…132 V AC; 180…264 V AC/210…375 V DC	90…132 V AC; 180…264 V AC/210…375 V DC
Inrush current	115 V AC < 24 A/230 V AC < 48 A	115 V AC < 24 A/230 V AC < 48 A
Frequency range	47…63 Hz	47…63 Hz
Input fuse	T3.15 A/250 V AC internal	T3.15 A/250 V AC internal
Voltage adjustment range	22.5…24.5 V DC	47…55 V DC
Temperature coefficient max.	±0.03%/°C	±0.03%/°C
Ripple and noise	50 mV	50 mV
Hold-up time	115 V AC > 25 ms/230 V AC > 30 ms	115 V AC > 25 ms/230 V AC > 30 ms
Status indicator DC ON	Green LED	Green LED
Status indicator DC LOW	Red LED	Red LED
Efficiency	86 %	87 %
Response	Forward characteristic	Forward characteristic
Switching frequency	> 55 kHz (typically)	> 55 kHz (typically)
Input/output isolation voltage	3000 V AC	3000 V AC
Isolation resistance	100 MΩ	100 MΩ
Switch-on delay	< 1 s	< 1 s
Ambient temperature	–35…+70 °C	–35…+70 °C
Derating	–2.5%/°C of +61 °C	–2.5%/°C of +61 °C
Parallel mode	no	yes
Enclosure rating per IEC 60529	IP 20	IP 20
Ready output	DC OK output relay	DC OK output relay
Cooling	Free convection	Free convection
Housing material	Metal	Metal
Weight	0.92 kg	0.92 kg
Approvals	CE, UL/cUL, TÜV, ODVA	CE, UL/cUL, TÜV

Wiring diagram

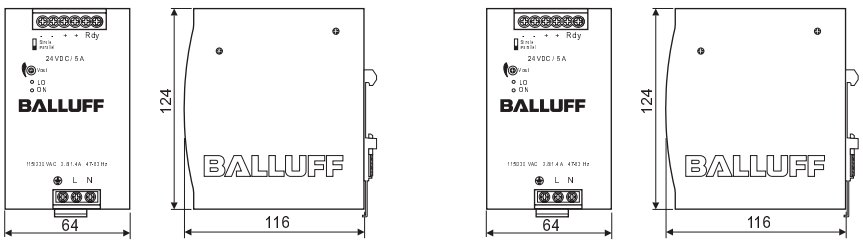


L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output



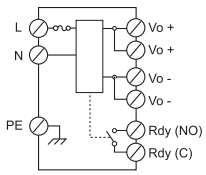
L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

*SELV = Safety Extra Low Voltage

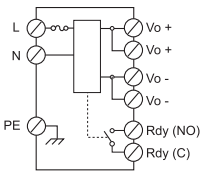


Power Supplies
Single-phase input voltage
5 A, 10 A

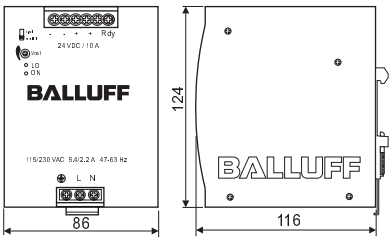
5 A	10 A
120 W	120 W
24 V DC (SELV)	12 V DC (SELV)
115/230 V AC (Auto-Select)	115/230 V AC (Auto-Select)
BAE0006	**BAE003H**
90…132 V AC; 180…264 V AC/210…375 V DC	90…132 V AC; 180…264 V AC/210…375 V DC
115 V AC < 24 A/230 V AC < 48 A	115 V AC < 24 A/230 V AC < 48 A
47…63 Hz	47…63 Hz
T3.15 A/250 V AC internal	T3.15 A/250 V AC internal
22.5…28.5 V DC	11…14 V DC
±0.03%/°C	±0.03%/°C
50 mV	50 mV
115 V AC > 25 ms/230 V AC > 30 ms	115 V AC > 25 ms/230 V AC > 30 ms
Green LED	Green LED
Red LED	Red LED
86 %	84 %
Forward characteristic	Forward characteristic
> 55 kHz (typically)	> 55 kHz (typically)
3000 V AC	3000 V AC
100 MΩ	100 MΩ
< 1 s	< 1 s
–35…+70 °C	–35…+70 °C
–2.5%/°C of +61 °C	–2.5%/°C of +61 °C
yes	yes
IP 20	IP 20
DC OK output relay	DC OK output relay
Free convection	Free convection
Metal	Metal
0.92 kg	0.92 kg
CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

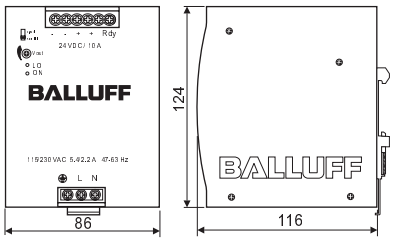


L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output



L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

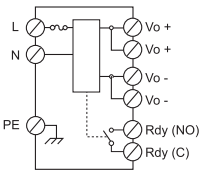




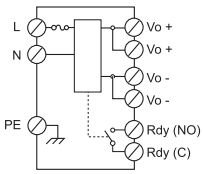
Single-phase input voltage
5 A, 10 A

Output current	**5 A**	**10 A**
Output power	240 W	240 W
Output voltage	48 V DC (SELV)	24 V DC (SELV)
Input voltage	115/230 V AC (Auto-Select)	115/230 V AC (Auto-Select)
	BAE003L	**BAE0002**
Input voltage range	90…132 V AC; 180…264 V AC/210…375 V DC	90…132 V AC; 180…264 V AC/210…375 V DC
Inrush current	115 V AC < 30 A/230 V AC < 60 A	115 V AC < 30 A/230 V AC < 60 A
Frequency range	47…63 Hz	47…63 Hz
Input fuse	T6.3 A/250 V AC internal	T6.3 A/250 V AC internal
Voltage adjustment range	47…55 V DC	22.5…28.5 V DC
Temperature coefficient max.	±0.03%/°C	±0.03%/°C
Ripple and noise	100 mV	100 mV
Hold-up time	115 V AC > 25 ms/230 V AC > 30 ms	115 V AC > 25 ms/230 V AC > 30 ms
Status indicator DC ON	Green LED	Green LED
Status indicator DC LOW	Red LED	Red LED
Efficiency	90 %	89 %
Response	Forward characteristic	Forward characteristic
Switching frequency	> 40 kHz (typically)	> 40 kHz (typically)
Input/output isolation voltage	3000 V AC	3000 V AC
Isolation resistance	100 MΩ	100 MΩ
Switch-on delay	< 1 s	< 1 s
Ambient temperature	–40…+70 °C	–40…+70 °C
Derating	–2.5%/°C of +61 °C	–2.5%/°C of +61 °C
Parallel mode	yes	yes
Enclosure rating per IEC 60529	IP 20	IP 20
Ready output	DC OK output relay	DC OK output relay
Cooling	Free convection	Free convection
Housing material	Metal	Metal
Weight	1.0 kg	1.0 kg
Approvals	CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

Wiring diagram

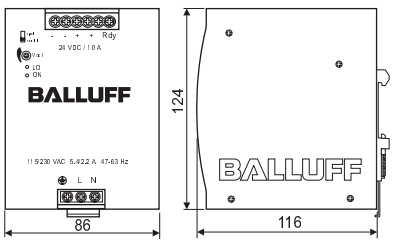


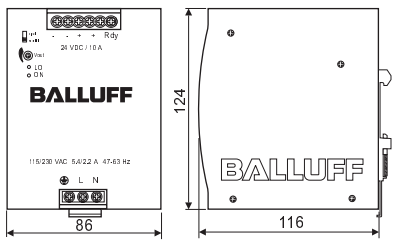
L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output



L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

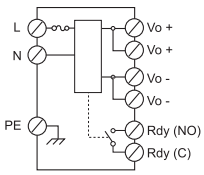
*SELV = Safety Extra Low Voltage



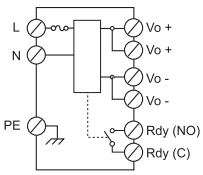


Power Supplies
Single-phase input voltage
10 A, 20 A

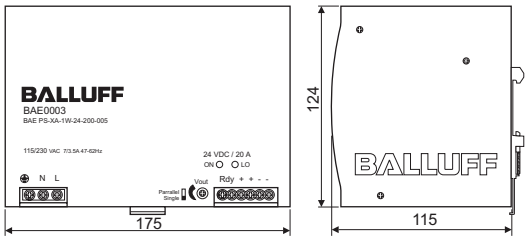
10 A	20 A
480 W	480 W
48 V DC (SELV)	24 V DC (SELV)
115/230 V AC (Auto-Select)	115/230 V AC (Auto-Select)
BAE003M	**BAE0003**
90…264 V AC/120…370 V DC	90…264 V AC/120…370 V DC
115 V AC < 25 A/230 V AC < 50 A	115 V AC < 25 A/230 V AC < 50 A
47…63 Hz	47…63 Hz
T10 A/250 V AC internal	T10 A/250 V AC internal
47…55 V DC	22.5…28.5 V DC
±0.03%/°C	±0.03%/°C
100 mV	100 mV
115 V AC > 25 ms/230 V AC > 30 ms	115 V AC > 25 ms/230 V AC > 30 ms
Green LED	Green LED
Red LED	Red LED
90 %	89 %
Forward characteristic	Forward characteristic
> 65 kHz (typically)	> 65 kHz (typically)
3000 V AC	3000 V AC
100 MΩ	100 MΩ
< 1 s	< 1 s
–40…+70 °C	–40…+70 °C
–2.5%/°C of +56 °C	–2.5%/°C of +56 °C
yes	yes
IP 20	IP 20
DC OK output relay	DC OK output relay
Free convection	Free convection
Metal	Metal
1.92 kg	1.92 kg
CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

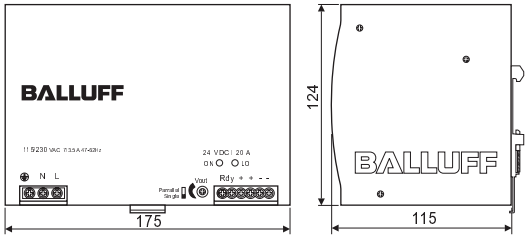


L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

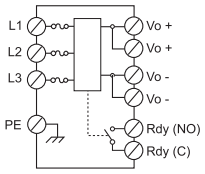


L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output



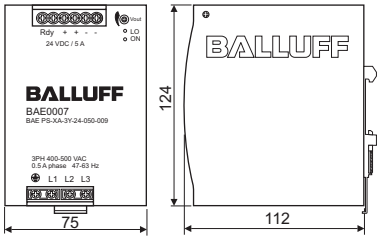


Output current	**5 A**
Output power	120 W
Output voltage	24 V DC (SELV)
Input voltage	3× 400…500 V AC
	BAE0007
Input voltage range	340…575 V AC/480…820 V DC
Inrush current	< 10 A
Frequency range	47…63 Hz
Input fuse	2 A/600 V AC internal/phase
Voltage adjustment range	22.5…28.5 V DC
Temperature coefficient max.	±0.03%/°C
Ripple and noise	100 mV
Hold-up time	> 20 ms
Status indicator DC ON	Green LED
Status indicator DC LOW	Red LED
Efficiency	89 %
Response	Hiccup mode
Switching frequency	> 65 kHz (typically)
Input/output isolation voltage	3000 V AC
Isolation resistance	100 MΩ
Switch-on delay	< 1 s
Ambient temperature	–40…+70 °C
Derating	–2.5%/°C of +61 °C
Parallel mode	Yes (with external diodes)
Enclosure rating per IEC 60529	IP 20
Ready output	DC OK output relay
Cooling	Free convection
Housing material	Metal
Weight	0.8 kg
Approvals	CE, UL/cUL, TÜV
Wiring diagram	



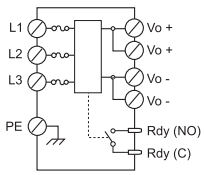
L	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

*SELV = Safety Extra Low Voltage

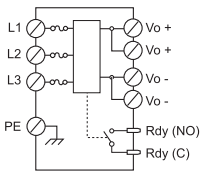


Power Supplies
3-phase input voltage
10 A, 20 A

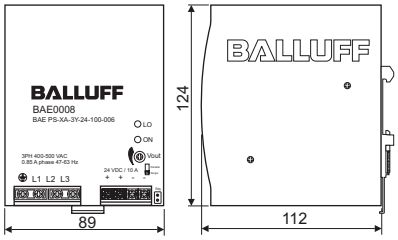
10 A	20 A
240 W	480 W
24 V DC (SELV)	24 V DC (SELV)
3× 400…500 V AC	3× 400…500 V AC
BAE0008	**BAE0009**
340…575 V AC/480…820 V DC	340…575 V AC/480…820 V DC
< 20 A	< 20 A
47…63 Hz	47…63 Hz
T2 A/600 V AC internal/phase	3.15 A/500 V AC internal/phase
22.5…28.5 V DC	22.5…28.5 V DC
±0.03%/°C	±0.03%/°C
100 mV	100 mV
> 20 ms	> 20 ms
Green LED	Green LED
Red LED	Red LED
90 %	90 %
Hiccup mode	Forward characteristic (C), restart after 30 s (D), Shutoff within 3 s, (C)/(D) togglable
> 30 kHz (typically)	> 75 kHz (typically)
3000 V AC	3000 V AC
100 MΩ	100 MΩ
< 1 s	< 1 s
–40…+70 °C	–30…+70 °C
–2.5%/°C of +61 °C	–2.5%/°C of +61 °C
yes	yes
IP 20	IP 20
DC OK output relay	DC OK output relay
Free convection	Free convection
Metal	Metal
1.1 kg	1.75 kg
CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

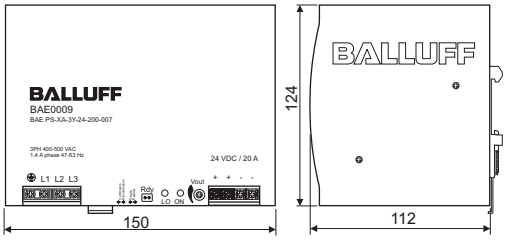


L	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

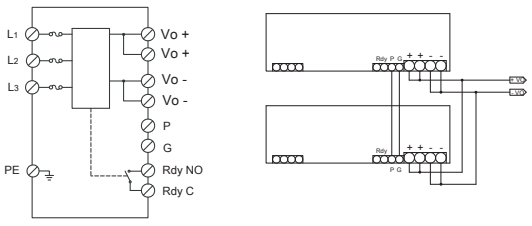


L	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output

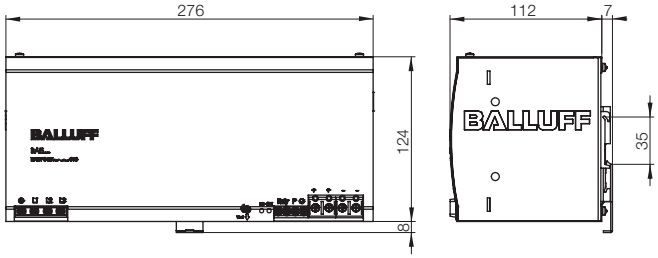




Output current	**40 A**
Output power	960 W
Output voltage	24 V DC (SELV)
Input voltage	3× 400…500 V AC
	BAE003R
Input voltage range	340…575 V AC/480…820 V DC
Inrush current	< 30 A
Frequency range	47…63 Hz
Input fuse	T5 A/500 V AC internal/phase
Voltage adjustment range	22.5…28.5 V DC
Temperature coefficient max.	±0.03%/°C
Ripple and noise	80 mV
Hold-up time	> 15 ms
Status indicator DC ON	Green LED
Status indicator DC LOW	Red LED
Efficiency	92 %
Response	Hiccup mode
Switching frequency	> 50 kHz (typically)
Input/output isolation voltage	3000 V AC
Isolation resistance	100 MΩ
Switch-on delay	< 1 s
Ambient temperature	–40…+70 °C
Derating	–3.5%/°C above +61 °C
Parallel mode	yes
Enclosure rating per IEC 60529	IP 20
Ready output	no
Cooling	Free convection
Housing material	Metal
Weight	3.2 kg
Approvals	CE, UL/cUL, TÜV
Wiring diagram	

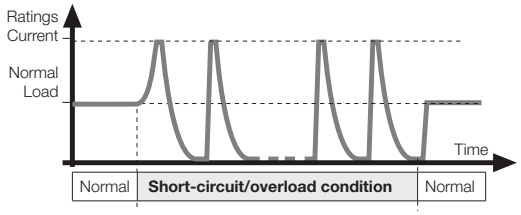


*SELV = Safety Extra Low Voltage

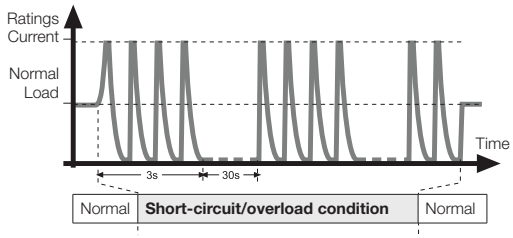


Output short circuit protection

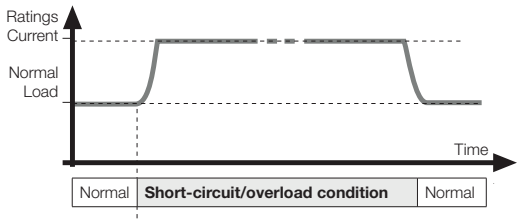
Hiccup mode overload protection*



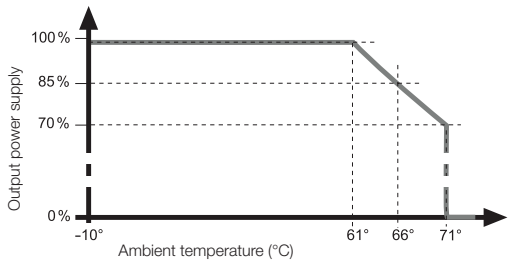
Hiccup mode with turn-off overload protection*



Current limiter and forward characteristic*



Temperature under-load



LED definition

DC ON	DC LO	Possible situation
○ off	○ off	AC power supply off, internal fuse burned out, short circuit
● on	○ off	Normal operation
○ off	● on	Output voltage < 19.2 V
● on	● on	Power supply failure
Green	Red	

Approvals and standards

UL/cUL
UL 508 listed/UL 60950-1, UL 1310 Class 2

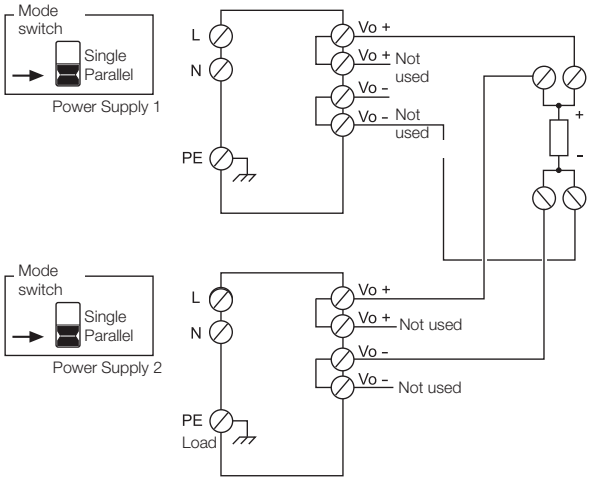
TÜV
EN 60950-1

CE
EN 61000-6-3, EN 55022 Class B, EN 61000-3-2,
EN 61000-3-3, EN 61000-6-2, EN 55024
EN 61000-4-2, EN 61000-4-3, EN 61000-4-4
EN 61000-4-5, EN 61000-4-6, EN 61000-4-8,
EN 61000-4-11

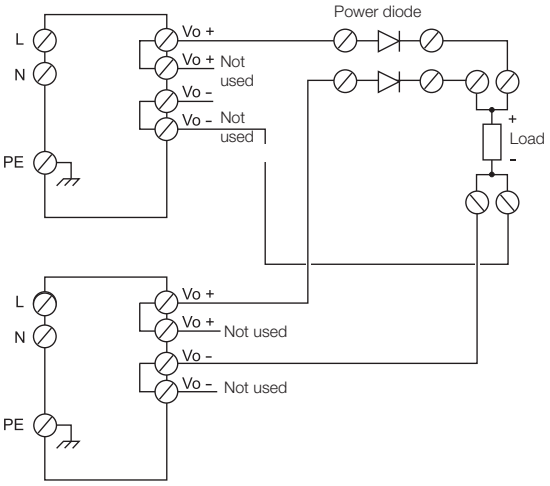
*Note: Diagrams are for illustration only. They do not reflect the actual waveforms.

Parallel mode**

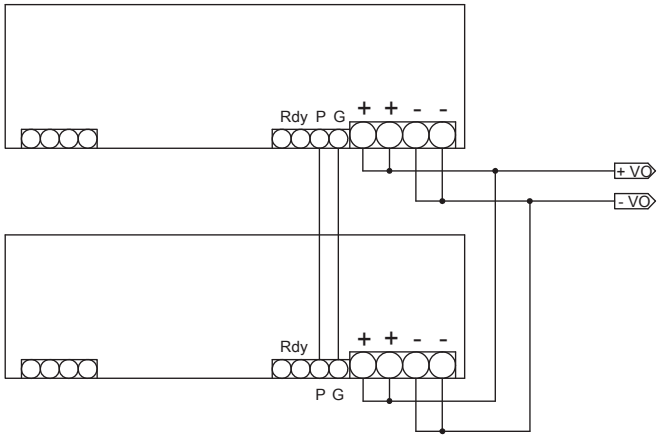
BAE0002, BAE0003 BAE0006, BAE0008, BAE0009



For all without parallel switching mode



BAE003R



**Note: When wiring power supplies in parallel, the cable lengths should be the same for all DC connections on the load.