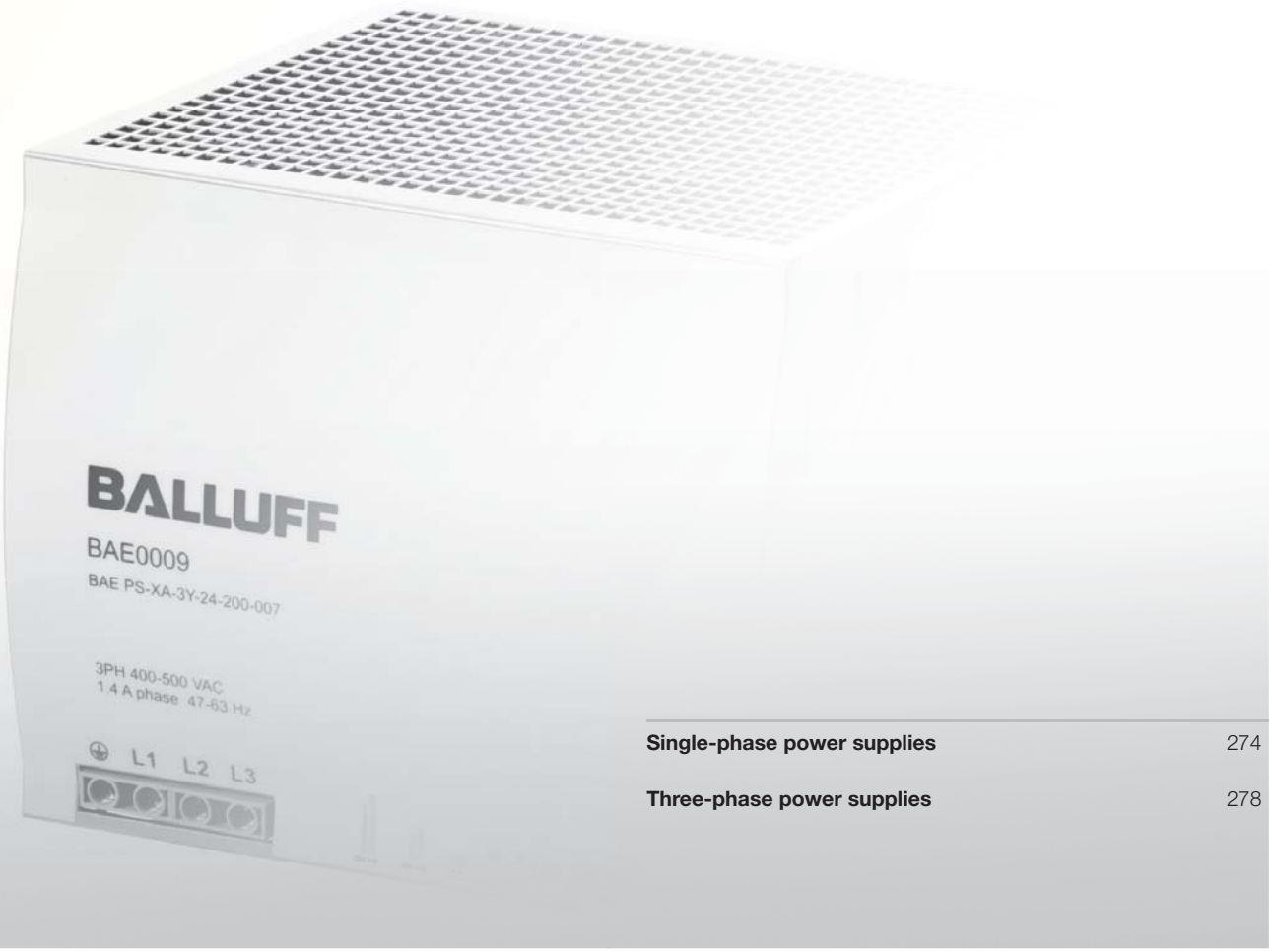
BALLUFF
BAE0009
BAE PS-XA-2V-24-2R5-002
– – + + Rdy
24 VDC / 2.5 A
V out
ON
BALLUFF
BAE0005
BAE PS-XA-1W-24-025-002
100-240 VAC
1.5 A 47-63 Hz
N L
BALLUFF
www.balluff.com
BAE0005
BAE PS-XA-1W-24-025-002
Input : 100-240 VAC
47-63 Hz
1.5 A
Output : 24VDC / 60W
Risk of electrical shock
Do not open

Power Supplies
Contents

Industrial automation is becoming ever more demanding 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



Single-phase power supplies 274

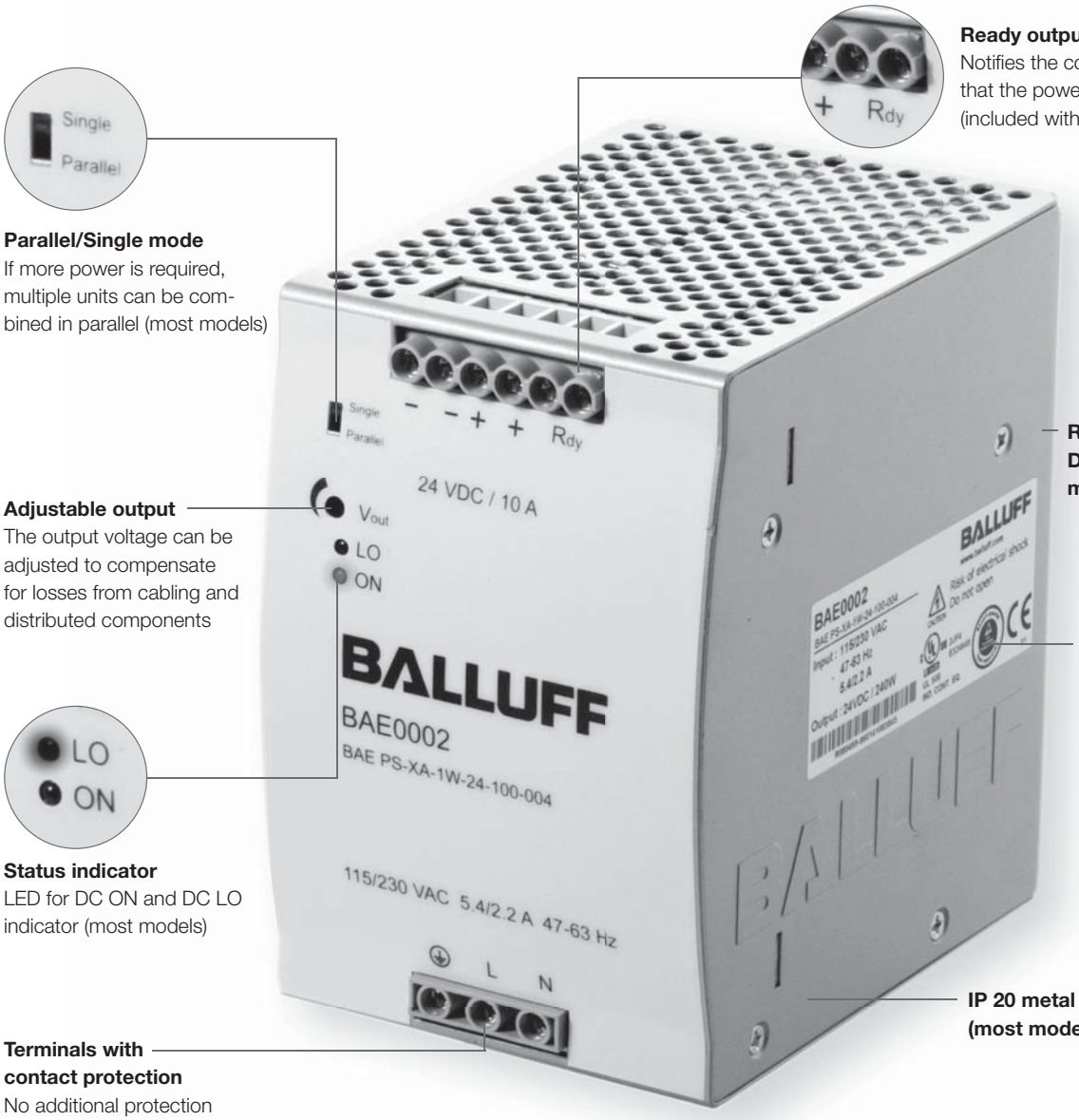
Three-phase power supplies 278

Power Supplies

Reliable power for demanding industrial automation

Every industrial automation system needs a reliable, clean and controlled source of power without spikes.
Only then can these systems deliver the expected performance. The new Balluff power supplies exceed expectation because they ensure reliable power even under demanding conditions. They fall in line with the long Balluff tradition of reliable and high-quality performance products for industrial automation. But that's not all. Balluff power supplies are one of many products from a comprehensive, professional system. From a single source: from standardized inductive and photoelectric sensors and connectivity products to industrial RFID and industrial network solutions including our new product line of I/O modules for Profibus, DeviceNet and EtherNet/IP networks.

- **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, precision power supply for particularly complex systems**
  Load regulation +/– 1 % for all models, ripple & noise for most models less than 50 mV
- **Long service life and fewer system failures**
  MTBF (Mean Time Between Failure) over 210,000 hours/24 years



Power Supplies
Selection

Output voltage (24 V DC)									Features			Product information		
750 mA/18 W	1.25 A/30 W	2.5 A/60 W	3.8 A/91.20 W	5 A/120 W	10 A/240 W	20 A/480 W	40 A/960 W	Input voltage	Housing material	Parallel mode	Ready output	**Ordering code**	Part number	Page
■								Single-phase[1]	Plastic			**BAE0001**	BAE-PS-XA-1W-24-007-001	274
	■							Single-phase[1]	Plastic		■	**BAE0004**	BAE-PS-XA-1W-24-012-002	275
		■						Single-phase[1]	Plastic		■	**BAE0005**	BAE-PS-XA-1W-24-025-002	275
			■					Single-phase[2]	Metal	■	■	**BAE003J**	BAE-PS-XA-1W-24-038-003	276
				■				Single-phase[2]	Metal	■	■	**BAE0006**	BAE-PS-XA-1W-24-050-003	276
				■				3-phase[3]	Metal		■	**BAE0007**	BAE-PS-XA-3Y-24-050-009	278
					■			Single-phase[2]	Metal	■	■	**BAE0002**	BAE-PS-XA-1W-24-100-004	277
					■			3-phase[3]	Metal	■	■	**BAE0008**	BAE-PS-XA-3Y-24-100-006	279
						■		Single-phase[2]	Metal	■	■	**BAE0003**	BAE-PS-XA-1W-24-200-005	277
						■		3-phase[3]	Metal	■	■	**BAE0009**	BAE-PS-XA-3Y-24-200-007	279
							■	3-phase[3]	Metal			**BAE000A**	BAE-PS-XA-3Y-24-400-008	280

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

Power for controllers and networks
Specially designed for control devices, Balluff power supplies are easily integrated into your control package and offer extra security.

The PS series of ultra-reliable power supplies is available in a wide range of 24V models with single or 3-phase input. A bandwidth of 0.75 A (18 W) to 40 A (960 W) leaves nothing to be desired. If you need even more power, connect multiple power supplies together in parallel for greater capacity.

Single-phase power supplies

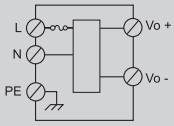
Three-phase power supplies

Trouble-free installation
Reliable power has never been so simple to install. Starting with the convenient mounting of DIN rails 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

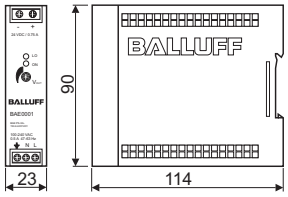
Single-phase input voltage
750 mA

Plastic

Output current	0.75 A
Output power	18 W
Output voltage	24 V DC (SELV)
Input voltage	100...240 V AC
Ordering code	**BAE0001**
Part number	BAE PS-XA-1W-24-007-001
Input voltage range	90...264 V AC/120...375 V DC
Inrush current	115 V AC < 10 A/230 V AC < 18 A
Frequency range	47...63 Hz
Input fuse	T2 A/250 V AC internal
Voltage adjustment range	21.6...28.8 V DC
Temperature coefficient	±0.03 %/°C
Ripple & noise	50 mV
Holdup time	115 V AC > 20 ms/230 V AC > 30 ms
Status indicator DC ON	Green LED
Status indicator DC LOW	Red LED
Efficiency	77 %
Response	Hiccup mode
Switching frequency	> 100 kHz
Isolation voltage	3000 V AC
Isolation resistance	100 MΩ
Turn-on delay	< 1 s
Ambient temperature range	–25...+71 °C
Derating	–3 %/°C above +61 °C
Parallel mode	Yes (with external diodes)
Degree of protection as per IEC 60529	IP 20
Ready output	No
Cooling	Air convection
Housing material	Plastic
Weight	0.15 kg
Approvals	CE, UL/cUL, TÜV
Wiring diagram	

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

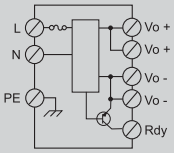
*SELV = Safety Extra Low Voltage



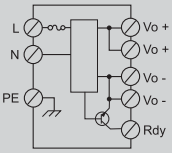
Power Supplies

Single-phase input voltage
1.25 A, 2.5 A

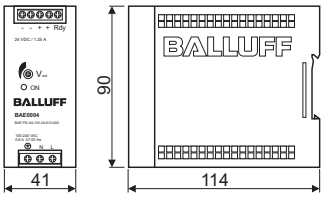
1.25 A	2.5 A
30 W	60 W
24 V DC (SELV)	24 V DC (SELV)
100...240 V AC	100...240 V AC
BAE0004	**BAE0005**
BAE PS-XA-1W-24-012-002	BAE PS-XA-1W-24-025-002
85...264 V AC/90...375 V DC	85...264 V AC/90...375 V DC
115 V AC < 20 A/230 V AC < 40 A	115 V AC < 30 A/230 V AC < 60 A
47...63 Hz	47...63 Hz
T2 A/250 V AC internal	T2 A/250 V AC internal
24.0...28.0 V DC	24.0...28.0 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 %	89 %
Forward characteristic	Forward characteristic
> 80 kHz	> 55 kHz
3000 V AC	3000 V AC
100 MΩ	100 MΩ
< 1 s	< 1 s
–25...+71° C	–25...+71° C
–2.5 %/°C above +61 °C	–2.5 %/°C above +61 °C
Yes (with external diodes)	Yes (with external diodes)
IP 20	IP 20
DC OK output	DC OK output
Air convection	Air convection
Plastic	Plastic
0.29 kg	0.36 kg
CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

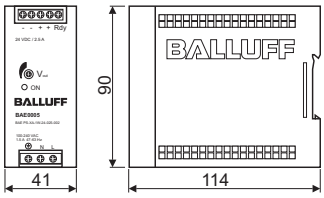


L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output



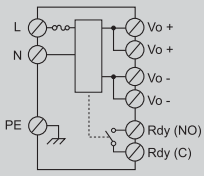
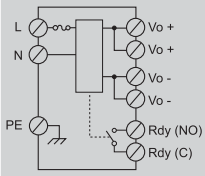
L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output





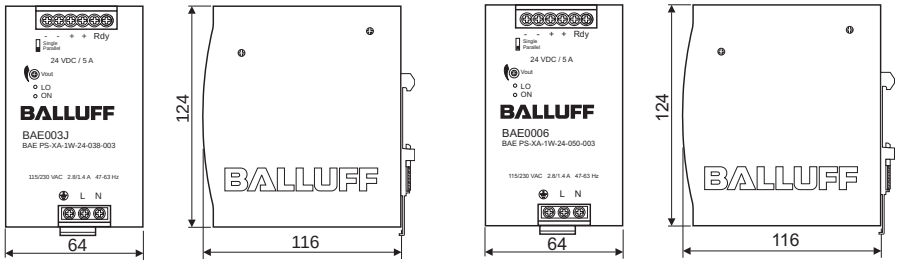
Power Supplies

Single-phase input voltage
3.8 A, 5 A

Output current	3.8 A	5 A
Output power	91.20 W	120 W
Output voltage	24 V DC (SELV)	24 V DC (SELV)
Input voltage	115/230 V AC (Auto-Select)	115/230 V AC (Auto-Select)
Ordering code	**BAE003J**	**BAE0006**
Part number	BAE PS-XA-1W-24-038-003	BAE PS-XA-1W-24-050-003
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	22.5...28.5 V DC
Temperature coefficient	±0.03 %/°C	±0.03 %/°C
Ripple & noise	50 mV	50 mV
Holdup 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 %	86 %
Response	Forward characteristic	Forward characteristic
Switching frequency	> 55 kHz (typically)	> 55 kHz (typically)
Isolation voltage	3000 V AC	3000 V AC
Isolation resistance	100 MΩ	100 MΩ
Turn-on delay	< 1 s	< 1 s
Ambient temperature range	–25...+71 °C	–25...+71 °C
Derating	–2.5 %/°C above +61 °C	–2.5 %/°C above +61 °C
Parallel mode	Yes	Yes
Degree of protection as per IEC 60529	IP 20	IP 20
Ready output	DC OK output relay	DC OK output relay
Cooling	Air convection	Air convection
Housing material	Metal	Metal
Weight	0.92 kg	0.92 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

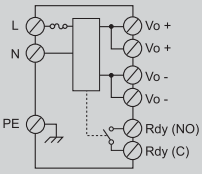
*SELV = Safety Extra Low Voltage



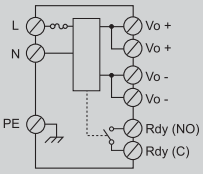
Power Supplies

Single-phase input voltage
10 A, 20 A

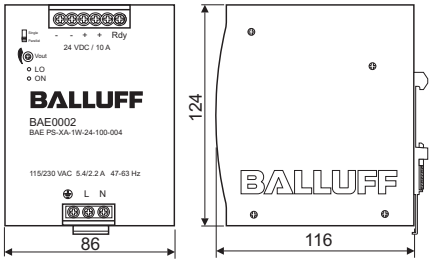
	10 A	20 A
	240 W	480 W
	24 V DC (SELV)	24 V DC (SELV)
	115/230 V AC (Auto-Select)	115/230 V AC (Auto-Select)
	BAE0002	**BAE0003**
	BAE PS-XA-1W-24-100-004	BAE PS-XA-1W-24-200-005
	90...132 V AC; 180...264 V AC/210...375 V DC	90...264 V AC/120...370 V DC
	115 V AC < 30 A/230 V AC < 60 A	115 V AC < 25 A/230 V AC < 50 A
	47...63 Hz	47...63 Hz
	T6.3 A/250 V AC internal	T10 A/250 V AC internal
	22.5...28.5 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
	89 %	89 %
	Forward characteristic	Forward characteristic
	> 40 kHz (typically)	> 65 kHz (typically)
	3000 V AC	3000 V AC
	100 MΩ	100 MΩ
	< 1 s	< 1 s
	–25...+71 °C	–25...+71 °C
	–2.5 %/°C of +61 °C	–2.5 %/°C of +56 °C
	Yes	Yes
	IP 20	IP 20
	DC OK output relay	DC OK output relay
	Air convection	Air convection
	Metal	Metal
	1.0 kg	1.92 kg
	CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

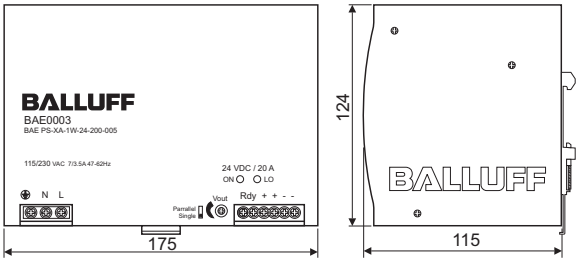


L, N	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output



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



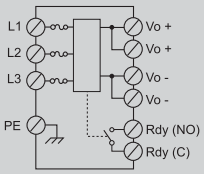


Single-phase power supplies

Three-phase power supplies

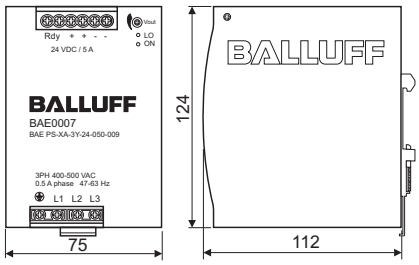
Power Supplies

3-phase input voltage
5 A

Output current	5 A
Output power	120 W
Output voltage	24 V DC (SELV)
Input voltage	3× 400...500 V AC
Ordering code	**BAE0007**
Part number	BAE PS-XA-3Y-24-050-009
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	±0.03 %/°C
Ripple & noise	100 mV
Holdup time	> 20 ms
Status indicator DC ON	Green LED
Status indicator DC LOW	Red LED
Efficiency	89 %
Response	Current limiter
Switching frequency	> 65 kHz (typically)
Isolation voltage	3000 V AC
Isolation resistance	100 MΩ
Turn-on delay	< 1 s
Ambient temperature range	–25...+71 °C
Derating	–2.5 %/°C above +61 °C
Parallel mode	Yes (with external diodes)
Degree of protection as per IEC 60529	IP 20
Ready output	DC OK output relay
Cooling	Air 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

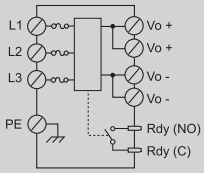
*SELV = Safety Extra Low Voltage



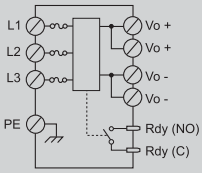
Power Supplies

3-phase input voltage
10 A, 20 A

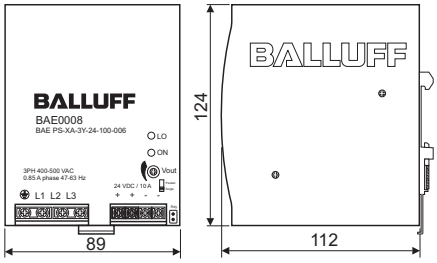
	10 A	20 A
	240 W	480 W
	24 V DC (SELV)	24 V DC (SELV)
	3× 400...500 V AC	3× 400...500 V AC
	BAE0008	**BAE0009**
	BAE PS-XA-3Y-24-100-006	BAE PS-XA-3Y-24-200-007
	340...575 V AC/480...820 V DC	340...575 V AC/480...820 V DC
	< 20 A	< 20 A
	47...63 Hz	47...63 Hz
	T2 A/600 V AC internal/phase	3.15 A/500 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 %
	Current limiter	Forward characteristic (C), deactivation within 3s, Restart after 30s (D)
	> 30 kHz (typically)	> 75 kHz (typically)
	3000 V AC	3000 V AC
	100 MΩ	100 MΩ
	< 1 s	< 1 s
	–25...+71 °C	–25...+71 °C
	–2.5 %/°C above +61 °C	–2.5 %/°C above +61 °C
	Yes	Yes
	IP 20	IP 20
	DC OK output relay	DC OK output relay
	Air convection	Air convection
	Metal	Metal
	1.1 kg	1.75 kg
	CE, UL/cUL, TÜV	CE, UL/cUL, TÜV

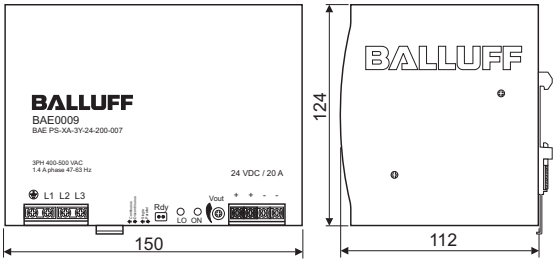


L	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output



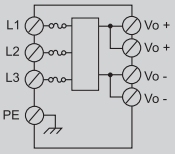
L	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +
Rdy	Ready output





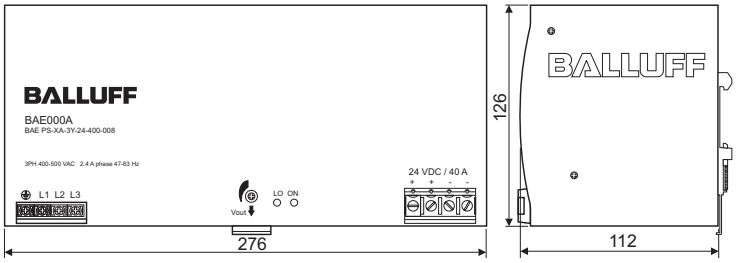
Power Supplies

3-phase input voltage
40 A

Output current	40 A
Output power	960 W
Output voltage	24 V DC (SELV)
Input voltage	3× 400...500 V AC
Ordering code	**BAE000A**
Part number	BAE PS-XA-3Y-24-400-008
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	±0.03 %/°C
Ripple & noise	80 mV
Holdup time	> 15 ms
Status indicator DC ON	Green LED
Status indicator DC LOW	Red LED
Efficiency	92 %
Response	Forward characteristic
Switching frequency	> 50 kHz (typically)
Isolation voltage	3000 V AC
Isolation resistance	100 MΩ
Turn-on delay	< 1 s
Ambient temperature range	–25...+71 °C
Derating	–3.5 %/°C above +61 °C
Parallel mode	No
Degree of protection as per IEC 60529	IP 20
Ready output	No
Cooling	Air convection
Housing material	Metal
Weight	3.2 kg
Approvals	CE, UL/cUL, TÜV
Wiring diagram	

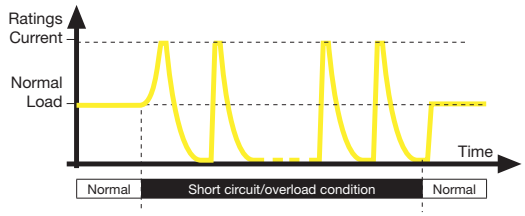
L	Input terminals
PE	PE connection
Vo –	Output terminal –
Vo +	Output terminal +

*SELV = Safety Extra Low Voltage

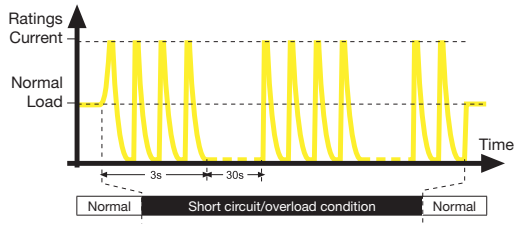


Output short circuit protection

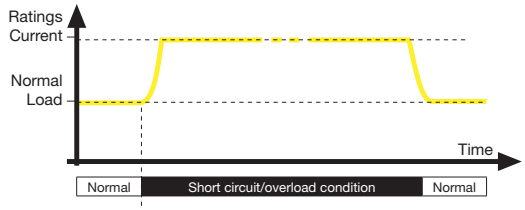
Hiccup mode overload protection*



Hiccup mode with turn-off overload protection*

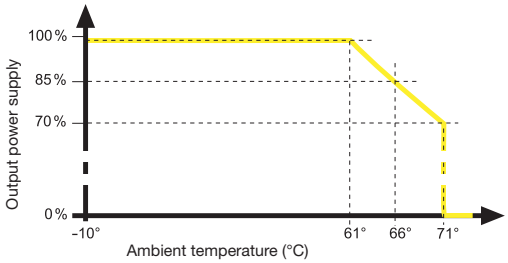


Current limiter and forward characteristic*



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

Temperature under-load

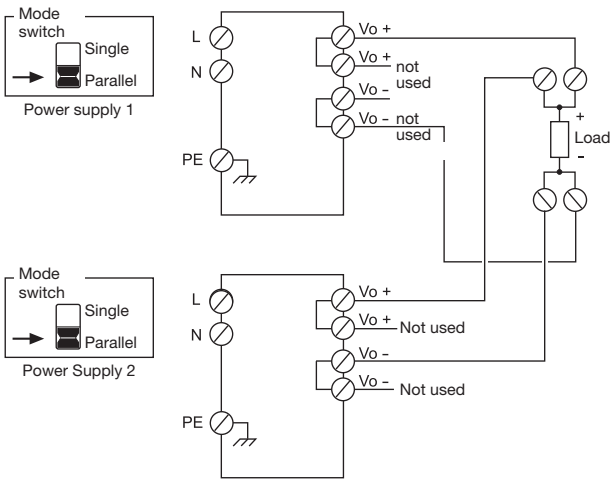


LED definition

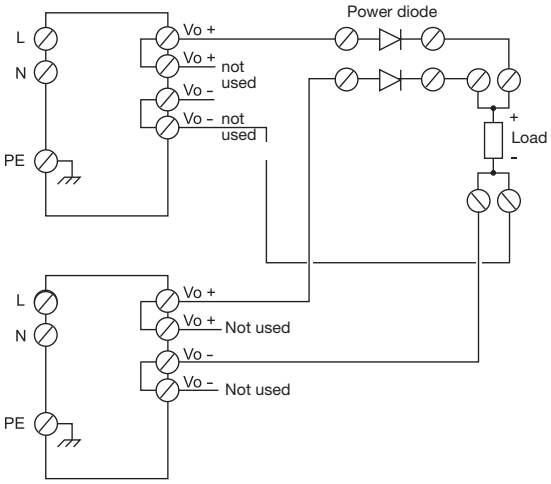
DC ON	DC LO	Possible situation
○ off	○ off	AC supply off, internal fuse burned out, short circuit
● on	○ off	Normal operation
○ off	● on	Output voltage < 19.2 V
● on	● on	Power supply failure
Green	red	

Parallel mode**

BAE0002, BAE0003 BAE0006, BAE0008, BAE0009



BAE0001, BAE0004, BAE0005, BAE0007, BAE000A



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