

Innovation und quality from Germany and Austria



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Industrial UPS





TYPE USV 7011-7013
WITH NOMINAL POWER BATTERY TEST



The GUSTAV KLEIN company was founded in Schongau, Germany, in 1948. In 1969 a subsidiary factory was opened in Inzing, Austria, west of Innsbruck. The GUSTAV KLEIN company has 220 employees in the two factories.



Static uninterruptible power supplies (also known as UPS systems) are for many applications indispensable today. Statistics show that in Germany on average between two and four extended AC mains failures and more than one hundred short interruptions in the range of milliseconds every year. Systems failures caused by these interruptions can lead to long downtime and data loss.

UPS systems protect against:

- Short-duration interruptions
- AC mains failure
- Voltage variations
- Superimposed interference voltages
- Frequency variations
- AC mains voltage waveform distortion

Our UPS protects your investments and supplies a save power to your resources at any time.

Decades of experience in railway signalling, telecom, power plants, hospitals and all kind of industrial applications stand for our high quality and availability.



Classification

1. Single phase UPS-systems Type USV-7001 (thyristor rectifier) optional Type USV-7011 (transistor rectifier)

2. Three phase UPS-systems Type USV-7003 (thyristor rectifier) optional Type USV-7013 (transistor rectifier)

3. Small single phase UPS-systems Type Minicompact as well as modular UPS can be found in our special brochure





General

Our UPS are equipped with a coloured TFT Touchscreen-Display and consists of the following components:

- Rectifier (backfeed type for 100% battery test)
- Battery (Energystorage)
- Inverter
- · Electronic mains bypass
- Service-bypass

Classification according to EN/IEC 62040-3: class VFI-SS-111

The UPS is built of discrete control and supervision boards (plug in modules with front signalling), each control and supervision board (A2-A4) consists of its own analogue control and microprocessor supervision.

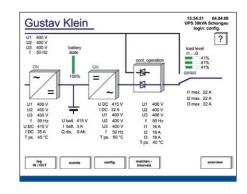
The modular design offers an eminent advantage in time and cost in case of service or maintenance.

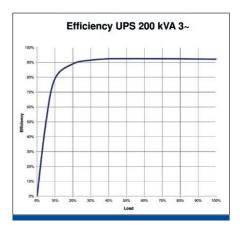
The transistor rectifier (sinusoidal input current, lambda >0.99) is designed for the connection on a three phase mains, for the supply of the inverter at rated load and simultaneously for charging the battery. The rectifier has an IU-characteristic with adjustable current limitation.

The following battery types are available: low maintenance lead-acid batteries, maintenance free, sealed lead-acid batteries or NiCdbatteries. The batteries are installed on racks or in cabinets.

Separate inputs for rectifier and bypass supply are provided.









Technical Data

		U	SV-7011 -	3-phase	input; sin	gle phase	output: 3	372V DC I	GBT rectif	ier
Rated power (power factor 0.8 lag.)	kVA	10	20	30	50	80	100	120	160	200
Rectifier type					IGBT, ga	alvanically	isolated			
Inverter type						alvanically				
Rectifier						,				
nput voltage					3/N/PE/	AC 400/23	0V ± 10%			
Frequency					50 (or 60 Hz ±	5%			
Input power factor						> 0,99				
Total harmonic distortion THDi						< 6%				
Power consumption										
- battery fully charged	kVA	9.4	18.3	27.2	45.3	70.9	88.6	106.4	140.4	175.4
- battery under charge	kVA	11.3	22.2	32.9	54.9	86.0	107.4	128.9	170.1	212.6
Max. input current under charge	۸	18.2	05.0	52.8	88.1	138.0	170.4	000.0	070.1	341.3
(Umains 400V)	Α	10.2	35.6	52.0	00.1	130.0	172.4	206.9	273.1	341.3
Recommended input fuse	А	20	40	63	100	160	200	225	315	355
Nominal output voltage	V					372				
Voltage range	V 316-446									
Voltage tolerance					(IU-chargin		ng to DIN 4			
Nominal output current	А	27.5	54.4	80.7	134.6	213.1	266.3	319.6	426.1	532.6
Battery charging current	А	4.1	8.2	12.1	20.2	32.0	39.9	47.9	63.9	79.9
Output power	kW	10.5	20.9	30.9	51.6	81.7	102.0	122.4	163.3	204.1
Battery charging power	kW	1.8	3.7	5.4	9.0	14.3	17.8	21.4	28.5	35.7
Efficiency		93%	94%	94%	94%	95%	95%	95%	96%	96%
Bypass										
Input voltage						E AC 230V				
Frequency					5	0 Hz + 5 %	6			
nput current	Α	43.5	87.0	130.4	217.4	347.8	434.8	521.7	695.7	869.6
Recommended input fuse	Α	63	100	160	250	400	500	600	800	1000
Overload performance for 10ms		10 x In	10 x In	10 x ln	10 x In	10 x In	10 x ln	10 x In	10 x In	10 x In
nverter/UPS Output										
Power consumption (power factor=0,8lag)	kW	8.7	17.2	25.5	42.6	67.4	84.2	101.1	134.7	168.4
Current feedback to DC bus						≤ 10 % rms				
Output voltage					1/N	I/PE AC 2	30V			
Voltage tolerance static						± 1%				
dynamic					± 4% a	it 100% loa	ad step			
assymetric load						-				
nverter output voltage adjustment range						± 5%				
Regulation time					< 4ms (ir	nstantenius				
Wave form						sinusoida				
Distortion factor						at linear lo	,			
Frequency			50 or 6	0 Hz +/- 0.	1 % crystal		or synchr	onized to A	C input	
Synchronization range						± 3%				
Slew rate				15004		1 Hz/s				
Overload performance		405			1 min., 125					6155
Short-circuit performance for 5 sec.	Α	182	182	545	545	1090	1090	1454	2180	2180
Permissible power factor		0.	U lag. to 0.	U lead, on o			ŭ	reduction	of UPS-ration	ng
Permissible crestfactor of load		00.77	00.77	0.4.554		(at 100%		0.5		0.5.
Inverter efficiency with nominal load		92.0%	93.0%	94.0%	94.0%	95.0%	95.0%	95.0%	95.0%	95.0%
UPS efficiency with nominal load	1.147	85.6%	87.4%	88.4%	88.4%	90.3%	90.3%	90.3%	91.2%	91.2%
	kW	1.5	2.5	3.5	5.8	7.7	9.6	11.5	13.5	16.9
Total power losses max.					0.5	70	70	70	70	70
General data	dD (4)		00	00				< 70	< 70	
General data Acoustic noise level	dB (A)	< 55	< 60	< 60	< 65	< 70	< 70	< 10		< 70
General data Acoustic noise level	dB (A)				E	EN 62040-2	2			
General data Acoustic noise level EMC	dB (A)	Storage	acc. EN 60)721-3-1 I (2M2: -25 to	long term)	EN 62040-2 1K2/1M3: peration ac	2 0 to +40°C c. EN 6072	C/transport 21-3-3 3K3	acc. EN 60/3M2: 0 to)721-3-2
General data Acoustic noise level EMC Permissible environmental conditions	dB (A)	Storage	acc. EN 60)721-3-1 I (2M2: -25 to	long term) +60°C/op 6 rel. humid	EN 62040-2 1K2/1M3: peration ac	2 0 to +40°C c. EN 6072 t condensa	C/transport 21-3-3 3K3	acc. EN 60)721-3-2
General data Acoustic noise level EMC Permissible environmental conditions Permissible operation altitude	dB (A)	Storage	acc. EN 60)721-3-1 I (2M2: -25 to	long term) > +60°C/op % rel. humid 1000 m N	EN 62040-2 1K2/1M3: peration accidity withou IN with nor	2 0 to +40°C c. EN 6072 t condensa ninal load	C/transport 21-3-3 3K3, ation	acc. EN 60)721-3-2
General data Acoustic noise level EMC Permissible environmental conditions Permissible operation altitude Protection class	dB (A)	Storage	acc. EN 60)721-3-1 I (2M2: -25 to	long term) 0 +60°C/op % rel. humid 1000 m N	EN 62040-2 1K2/1M3: peration ac- dity withou IN with nor ording IEC	0 to +40°C c. EN 6072 t condensa ninal load /EN 60529	C/transport 21-3-3 3K3, ation	acc. EN 60)721-3-2
General data Acoustic noise level EMC Permissible environmental conditions Permissible operation altitude Protection class Painted finish	dB (A)	Storage	acc. EN 60)721-3-1 I (2M2: -25 to	long term) 0 +60°C/op % rel. humid 1000 m N	EN 62040-2 1K2/1M3: peration accidity withou IN with nor	0 to +40°C c. EN 6072 t condensa ninal load /EN 60529	C/transport 21-3-3 3K3, ation	acc. EN 60)721-3-2
General data Acoustic noise level EMC Permissible environmental conditions Permissible operation altitude Protection class Painted finish Cooling	dB (A)	Storage (short t	acc. EN 60 erm) 2K2/2	0721-3-1 I (2M2: -25 to 85 %	long term) 0 +60°C/op 6 rel. humid 1000 m N IP 20 according	EN 62040-2 1K2/1M3: peration ac- dity withou IN with nor ording IEC d finish, RA	0 to +40°C c. EN 6072 t condensa minal load /EN 60529 AL 7035	C/transport 21-3-3 3K3, ation	acc. EN 60/3M2: 0 to	0721-3-2 +40°C/
General data Acoustic noise level EMC Permissible environmental conditions Permissible operation altitude Protection class Painted finish Cooling	dB (A)	Storage (short t	acc. EN 60 rerm) 2K2/2	0721-3-1 I (2M2: -25 to 85 9 AF	long term) o +60°C/op o +60°C/op o rel. humio 1000 m N IP 20 according textured AF	EN 62040-2 1K2 / 1M3: peration ac- dity withou IN with nor ording IEC. d finish, RA AF	0 to +40°C c. EN 6072 t condensa ninal load /EN 60529 AL 7035 AF	C/transport 21-3-3 3K3, ation	acc. EN 60/3M2: 0 to	0721-3-2 +40°C/
General data Acoustic noise level EMC Permissible environmental conditions Permissible operation altitude Protection class Painted finish Cooling Dimensions Width	mm	Storage (short t	acc. EN 60 erm) 2K2/2 AN	0721-3-1 I (2M2: -25 to 85 9 AF 1000	long term) on +60°C/op of rel. humicon North Nor	EN 62040-: 1K2/1M3: beration accidity without IN with nor ording IEC. d finish, RA AF	2 0 to +40°C c. EN 6072 t condensa minal load /EN 60529 AL 7035 AF	C/transport 11-3-3 3K3. ation AF 2400	acc. EN 60/3M2: 0 to AF	0721-3-2 +40°C/
General data Acoustic noise level EMC Permissible environmental conditions Permissible operation altitude Protection class Painted finish Cooling Dimensions		Storage (short t	acc. EN 60 rerm) 2K2/2	0721-3-1 I (2M2: -25 to 85 9 AF	long term) o +60°C/op / rel. humio 1000 m N IP 20 according AF	EN 62040-2 1K2 / 1M3: peration ac- dity withou IN with nor ording IEC. d finish, RA AF	0 to +40°C c. EN 6072 t condensa ninal load /EN 60529 AL 7035 AF	C/transport 11-3-3 3K3, ation	acc. EN 60 /3M2: 0 to	0721-3-2 +40°C/ AF 3400

			USV-70	13 – 3-ph	ase input; 3	3-phase out	tput: 372\	/ DC IGBT	rectifier			
10	20	30	50	80		120 alvanically is alvanically is		200	250	330	400	500
_		_	_	_	3/N/PE	AC 400/230	V ± 10%					
					50	or 60 Hz ± 5	%					
						> 0,99						
						< 6%						
9.2	18.1	27.2	45.3	70.9	88.6	106.4	138.9	173.6	217.0	286.5	347.2	434
11.2	22.0	33.0	54.9	86.1	107.6	129.1	168.9	211.1	263.1	347.4	421.1	525
18.0	35.3	52.9	88.1	138.2	172.8	207.3	271.2	339.0	422.5	557.8	676.1	843.
20	40	63	100	160	200	250	315	355	500	630	800	100
20	40	00	100	100	200	372	313	333	300	030	000	100
						316-446						
				± 19	% (IU-chargi	ng according	g to DIN 41	772)				
27.2	53.8	80.7	134.6	213.1	266.3	319.6	421.7	527.1	658.9	869.7	1054.2	1317
4.1	8.2	12.2	20.2	32.3	40.4	48.4	64.6	80.7	99.2	131.0	158.8	195
10.4	20.7 3.7	31.0	51.6	81.8 14.4	102.2	122.7 21.6	162.2 28.8	202.7 36.0	252.6 44.3	333.5	404.2	504
93%	94%	5.4 94%	9.0 94%	95%	18.0 95%	95%	96%	96%	96%	58.5 96%	70.9 96%	87.4 969
3370	3470	3470	3470	3370	3370	3370	3070	3070	3070	3070	3070	307
					3/N/	PE AC 400/2	230V					
						50 Hz ± 5 %						
14.5	29.0	43.5	72.5	115.9	144.9	173.9	231.9	289.9	362.3	478.3	579.7	724
16	32	50	100	125	160	200	250	315	400	500	630	800
10 x ln	10 x ln	10 x ln	10 x ln	10 x ln	10 x ln	10 x ln	10 x ln	10 x ln	10 x ln	10 x ln	10 x ln	10 x
8.6	17.0	25.5	42.6	67.4	84.2	101.1	133.3	166.7	208.3	275.0	333.3	416
						≤ 10 % rms						
					3/N/	PE AC 400/2	30V					
					. 40/ 6	± 1% pei 100% loa	d atan					
						00% unbalar						
					- L /0 at 1	0070 dilbalai						
						± 5%						
					< 4ms (i	± 5% Instantenius	control)					
					·	nstantenius o sinusoidal	,					
					≤ (nstantenius o sinusoidal 3 at linear loa	ıd					
			50 oi	r 60 Hz +/-	≤ (nstantenius of sinusoidal 3 at linear loa al controlled of	ıd	nized to AC	input			
			50 oi	r 60 Hz +/-	≤ (nstantenius of sinusoidal 3 at linear loa al controlled of ± 3%	ıd	nized to AC	input			
			50 o		≤ 3 0.1 % crysta	nstantenius of sinusoidal 3 at linear loa al controlled of	or synchror		input			
41	83	124	50 or		≤ 3 0.1 % crysta	nstantenius o sinusoidal 3 at linear loa al controlled o ± 3% 1 Hz/s	or synchror		input 763	763	943	165
41	83	124	124	150% fo	5 (0.1 % crystar 1 min., 125248n deviation o	nstantenius of sinusoidal at linear loa al controlled of ± 3% 1 Hz/s 6% for 10 mir 330 f power factor	or synchror n., 110% fo 496 or 0.8 lag re	or 20 min. 496	763	763	943	165
			124 0,0 lag. to	150% fo 248 0,0 lead, or	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3	nstantenius of sinusoidal at linear load al controlled of ± 3% 1 Hz/s 6% for 10 mir 330 ff power factor at 100% Lo	n., 110% fc 496 or 0.8 lag re	or 20 min. 496 eduction of	763 UPS-rating			
93%	94%	94%	124 0,0 lag. to	150% fo 248 0,0 lead, or 95%	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95%	nstantenius of sinusoidal at linear load al controlled of ± 3% 1 Hz/s 5% for 10 mir 330 of power factor 8 (at 100% Log 95%)	n., 110% fc 496 or 0.8 lag re pad) 96%	or 20 min. 496 eduction of 96%	763 UPS-rating	96%	96%	969
			124 0,0 lag. to	150% fo 248 0,0 lead, or	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3	nstantenius of sinusoidal at linear load al controlled of ± 3% 1 Hz/s 6% for 10 mir 330 ff power factor at 100% Lo	n., 110% fc 496 or 0.8 lag re	or 20 min. 496 eduction of	763 UPS-rating			96% 92.2
93% 86.5%	94% 88.4%	94% 88.4%	124 0,0 lag. to 94% 88.4%	150% fo 248 0,0 lead, or 95% 90.3%	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3%	nstantenius of sinusoidal at linear loa al controlled of ± 3% 1 Hz/s 5% for 10 mir 330 of power factor 8 (at 100% Lo 95% 90.3%	n., 110% fc 496 or 0.8 lag re pad) 96% 92.2%	or 20 min. 496 eduction of 96% 92.2%	763 UPS-rating 96% 92.2%	96% 92.2%	96% 92.2%	96% 92.2
93% 86.5%	94% 88.4%	94% 88.4%	124 0,0 lag. to 94% 88.4%	150% fo 248 0,0 lead, or 95% 90.3%	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6	nstantenius of sinusoidal at linear loa al controlled of ± 3% 1 Hz/s 5% for 10 mir 330 f power factor (at 100% Log 95% 90.3% 11.5	n., 110% fc 496 or 0.8 lag re pad) 96% 92.2%	or 20 min. 496 eduction of 96% 92.2%	763 UPS-rating 96% 92.2%	96% 92.2%	96% 92.2%	969 92.2 37.
93% 86.5% 1.4	94% 88.4% 2.3	94% 88.4% 3.5	124 0,0 lag. to 94% 88.4% 5.8	150% fo 248 0,0 lead, or 95% 90.3% 7.7	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6	nstantenius of sinusoidal at linear loa al controlled of ± 3% 1 Hz/s 5% for 10 mir 330 f power factor (at 100% Lo 95% 90.3% 11.5 < 70 EN 62040-2	n., 110% for 496 or 0.8 lag rebad) 96% 92.2% 12.1	or 20 min. 496 eduction of 96% 92.2% 15.1	763 UPS-rating 96% 92.2% 18.9	96% 92.2% 24.9	96% 92.2% 30.2	969 92.2 37.
93% 86.5% 1.4	94% 88.4% 2.3	94% 88.4% 3.5 < 60	124 0,0 lag. to 94% 88.4% 5.8 < 65	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70	nstantenius of sinusoidal 3 at linear loa al controlled of ± 3% 1 Hz/s 5% for 10 mir 330 f power factor 3 (at 100% Lo 95% 90.3% 11.5 < 70 EN 62040-2 1K2/1M3: 0	n., 110% for 496 or 0.8 lag re oad) 96% 92.2% 12.1 < 70	or 20 min. 496 eduction of 96% 92.2% 15.1 < 70	763 UPS-rating 96% 92.2% 18.9 < 75	96% 92.2% 24.9 < 75	96% 92.2% 30.2	969 92.2 37.
93% 86.5% 1.4	94% 88.4% 2.3	94% 88.4% 3.5 < 60	124 0,0 lag. to 94% 88.4% 5.8 < 65	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70 60721-3-1 2/2M2: -25	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70	nstantenius of sinusoidal at linear loa al controlled of ± 3% 1 Hz/s 5% for 10 mir 330 f power factor (at 100% Lo 95% 90.3% 11.5 < 70 EN 62040-2	n., 110% for 496 or 0.8 lag re oad) 96% 92.2% 12.1 < 70 to +40°C/EN 60721	or 20 min. 496 eduction of 96% 92.2% 15.1 < 70 transport ac -3-3 3K3/3	763 UPS-rating 96% 92.2% 18.9 < 75	96% 92.2% 24.9 < 75	96% 92.2% 30.2	969 92.2 37.
93% 86.5% 1.4	94% 88.4% 2.3	94% 88.4% 3.5 < 60	124 0,0 lag. to 94% 88.4% 5.8 < 65	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70 60721-3-1 2/2M2: -25	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70 I (long term) to +60°C/oµ 9 % rel. hum	nstantenius of sinusoidal 3 at linear loa al controlled of ± 3% 1 Hz/s 5% for 10 mir 330 f power factor 3 (at 100% Lo 95% 90.3% 11.5 < 70 EN 62040-2 1K2/1M3: 0 peration acc.	n., 110% for 496 or 0.8 lag re oad) 96% 92.2% 12.1 < 70 to +40°C/EN 60721 condensati	or 20 min. 496 eduction of 96% 92.2% 15.1 < 70 transport ac -3-3 3K3/3	763 UPS-rating 96% 92.2% 18.9 < 75	96% 92.2% 24.9 < 75	96% 92.2% 30.2	969 92.2 37.
93% 86.5% 1.4	94% 88.4% 2.3	94% 88.4% 3.5 < 60	124 0,0 lag. to 94% 88.4% 5.8 < 65	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70 60721-3-1 2/2M2: -25	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70 I (long term) to +60°C/o _i 5 % rel. hum 1000 m N	nstantenius of sinusoidal at linear load at local controlled of ± 3% 1 Hz/s 5% for 10 min 330 f power factor 3 (at 100% Log 95% 90.3% 11.5 < 70 EN 62040-2 1K2/1M3: 0 peration acc. idity without	n., 110% for 496 or 0.8 lag re oad) 96% 92.2% 12.1 < 70 to +40°C/EN 60721 condensatinal load	or 20 min. 496 eduction of 96% 92.2% 15.1 < 70 transport ac -3-3 3K3/3	763 UPS-rating 96% 92.2% 18.9 < 75	96% 92.2% 24.9 < 75	96% 92.2% 30.2	969 92.2 37.
93% 86.5% 1.4 < 55	94% 88.4% 2.3 < 60	94% 88.4% 3.5 < 60 Stora (sho	124 0,0 lag. to 94% 88.4% 5.8 < 65	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70 60721-3-1 2/2M2: -25 85	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70 I (long term) to +60°C/o 5 % rel. hum 1000 m N IP 20 acc texture	nstantenius of sinusoidal at linear loa al controlled of ± 3% 1 Hz/s 5% for 10 min 330 f power factor 8 (at 100% Log 95% 90.3% 11.5 < 70 EN 62040-2 1K2/1M3: 0 peration acc. idity without NN with nomiording IEC/Ed finish, RAL	n., 110% for 496 or 0.8 lag resolved 12.1 < 70 to +40°C/EN 60721 condensational load EN 60529	or 20 min. 496 eduction of 96% 92.2% 15.1 < 70 transport ar -3-3 3K3/3 ion	763 UPS-rating 96% 92.2% 18.9 < 75 cc. EN 6072 M2: 0 to +40	96% 92.2% 24.9 < 75	96% 92.2% 30.2 < 75	96% 92.2 37.
93% 86.5% 1.4	94% 88.4% 2.3	94% 88.4% 3.5 < 60	124 0,0 lag. to 94% 88.4% 5.8 < 65	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70 60721-3-1 2/2M2: -25	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70 I (long term) to +60°C/o i % rel. hum 1000 m l IP 20 acc	nstantenius of sinusoidal at linear load al controlled of ± 3% 1 Hz/s 5% for 10 min 330 f power factor (a) 1.5 1.5	n., 110% for 496 or 0.8 lag re oad) 96% 92.2% 12.1 < 70 to +40°C/EN 60721 condensatinal load EN 60529	or 20 min. 496 eduction of 96% 92.2% 15.1 < 70 transport ac -3-3 3K3/3	763 UPS-rating 96% 92.2% 18.9 < 75	96% 92.2% 24.9 < 75	96% 92.2% 30.2	96% 92.2 37.
93% 86.5% 1.4 < 55	94% 88.4% 2.3 < 60	94% 88.4% 3.5 < 60 Stora (sho	124 0,0 lag. to 94% 88.4% 5.8 < 65 age acc. EN ort term) 2K2	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70 60721-3-1 2/2M2: -25 85	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70 I (long term) to +60°C/o _i % rel. hum 1000 m N IP 20 accounts	nstantenius of sinusoidal sinusoidal at linear load al controlled of ± 3% 1 Hz/s 6% for 10 mir 330 of power factor at 100% Log 95% 90.3% 11.5 c 70 EN 62040-2 1K2/1M3: 0 peration acc. idity without NN with nomiording IEC/Ed finish, RAL AF	n., 110% for 496 or 0.8 lag resolved 12.1 < 70 to +40°C/EN 60721 condensational load EN 60529 . 7035 AF	or 20 min. 496 eduction of 96% 92.2% 15.1 <70 transport ar -3-3 3K3/3 ion AF	763 UPS-rating 96% 92.2% 18.9 < 75 cc. EN 6072 M2: 0 to +40	96% 92.2% 24.9 < 75 11-3-2 0°C/	96% 92.2% 30.2 < 75	969 92.2 37. < 7.
93% 86.5% 1.4 < 55	94% 88.4% 2.3 < 60	94% 88.4% 3.5 < 60 Stora (sho	124 0,0 lag. to 94% 88.4% 5.8 < 65 rge acc. EN rt term) 2K2	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70 60721-3-1 2/2M2: -25 85	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70 I (long term) to +60°C/o is % rel. hum 1000 m N IP 20 acc texture AF	nstantenius of sinusoidal sinusoidal at linear load al controlled of ± 3% 1 Hz/s 6% for 10 mir 330 of power factor at 100% Log 95% 90.3% 11.5 c 70 EN 62040-2 1K2/1M3: 0 peration acc. idity without NN with nomiording IEC/Ed finish, RAL AF	n., 110% for 496 or 0.8 lag resolved 12.1 < 70 to +40°C/EN 60721 condensational load EN 60529 . 7035 AF 3000	or 20 min. 496 eduction of 96% 92.2% 15.1 < 70 transport ar -3-3 3K3/3 ion AF	763 UPS-rating 96% 92.2% 18.9 < 75 cc. EN 6072 M2: 0 to +40 AF 5×1000	96% 92.2% 24.9 < 75 11-3-2 0°C/	96% 92.2% 30.2 < 75	969 92.2 37. < 75
93% 86.5% 1.4 < 55	94% 88.4% 2.3 < 60	94% 88.4% 3.5 < 60 Stora (sho	124 0,0 lag. to 94% 88.4% 5.8 < 65 age acc. EN ort term) 2K2	150% fo 248 0,0 lead, or 95% 90.3% 7.7 < 70 60721-3-1 2/2M2: -25 85	≤ 3 0.1 % crysta r 1 min., 125 248 n deviation o ≤ 2.3 95% 90.3% 9.6 < 70 I (long term) to +60°C/o _i % rel. hum 1000 m N IP 20 accounts	nstantenius of sinusoidal sinusoidal at linear load al controlled of ± 3% 1 Hz/s 6% for 10 mir 330 of power factor at 100% Log 95% 90.3% 11.5 c 70 EN 62040-2 1K2/1M3: 0 peration acc. idity without NN with nomiording IEC/Ed finish, RAL AF	n., 110% for 496 or 0.8 lag resolved 12.1 < 70 to +40°C/EN 60721 condensational load EN 60529 . 7035 AF	or 20 min. 496 eduction of 96% 92.2% 15.1 <70 transport ar -3-3 3K3/3 ion AF	763 UPS-rating 96% 92.2% 18.9 < 75 cc. EN 6072 M2: 0 to +40	96% 92.2% 24.9 < 75 11-3-2 0°C/	96% 92.2% 30.2 < 75	165 96% 92.2 37.3 < 75 AF 5x72 100 200

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Requirements and Advantages









Requirements for industrial UPS:

- High availability
- Spare part supply for at least 15 years
- Immunity against external EMC according to EN 62040-2
- Front access for all electronic devices
- Short repair time and easy diagnosis and repair

Advantages

- IGBT PWM technology for rectifier and inverter
- Sinusoidal input current
- Operation modes: start up-, standby- and continuous operation
- 100% battery test by rectifier backfeed
- Isolation transformer for rectifier and inverter (ungrounded battery)
- TFT-display with separate microprocessor control
- · With emergency key switching also possible after failure of TFT-display
- Individual control of rectifier, inverter and bypass with separate independent circuit boards
- Control circuits are identical for all powers
- High safety by combination of analogue and digital control
- Additional safety by high test voltage (input or output against ground 2 kVAC; input against output 3.75 kVAC)
- Separate feeds for rectifier and bypass
- · Paralleling with loop control circuit
- Easy transport by fork lift by removable ground cover plate
- Easy cable connection
- Highest level according to EN62040-3, VFI-SS-111
- Industrial style; generous design of components with reserves to the limit designed for continuous operation at rated load up to 40°C
- Up to 80 kVA systems without fans
- Proven technology with more than 20 years of experience
- · Own soft- and hardware development, production and service







- · Isolation transformer at the bypass
- Enlarged bypass lines
- 12- or 6-pulse rectifier
- · Enlarged rectifier for higher battery charging current
- Intermediate voltage 60V/110V/220V
- Enlarged inverter power for high short circuit current and overload behaviour
- Redundant power inputs via 2 mains (e.g. 50 Hz/16 2/3 Hz)
- Operation mode diesel operation
- Temperature controlled charge voltage
- Fans failure control (battery room fan)
- Earth fault monitoring (AC/DC)
- · Battery circuit monitoring
- Fan supervision
- Remote panel
- Remote monitoring
- · Special input and output frequency
- Power plant design
- SNMP adapter incl. software
- RS485 interface
- Profibus
- Modbus
 - Event printer
 - Battery cabinets
 - Distribution cabinets
 - External manual bypass
 - Certified eye bolts
 - Reinforced mech. design for high seismic stress
 - Special lacquer
 - High protection class
 - Halogen free cabling
 - · Wire marking
 - Cabinet light
 - Cabinet heating
 - Sealed cable entry







