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Leading professional equipment and service provider for energy efficiency automation

Shenzhen Cumark New Technology Co., Ltd.

Address: Floor 2, 3rd Building, Hongfa Industrial Park,
Tangtou Avenue, Shiyan Town, Bao'an District,
Shenzhen, China

Zip code: 518108

Tel: 0755-81785111

Fax: 0755-81785108

Mobile: +86-013928032657

Website: www.cumark.com.cn

Email: xiu.wu@cumark.com.cn
Cumarkvfd@yahoo.com

Customer Service Online : +86-755-81709861

Sales service contact address

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Technology Co., Ltd

ES9000 High Voltage Variable Frequency Drive

Industrial Drive (250 KW to 20,000 KW)





Founded on ar , 200 and wit t e
re istered a ital o 5 0 million, S en en
umar ew e nolo y o, Ltd (ereina ter
re erred to as umar) (sto ode 25)
s e ial es in ener y mana ement and t e D.
rodu tion, and mar etin o industrial automation
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ele troni s and automation and on trol te nolo y
as well as ri e erten e in industry a l iation
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to rovidin a total solution or e ient and relia le
automation and ener y mana ement to industrial
users a ordin to t e ro ess re uirements o all
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(EPVFD), and a tive iter It rimarily serves t ree
viro nmental rote tion, and new ener y lts rodu ts
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ad ministration, and automo ile industries

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Service outlet



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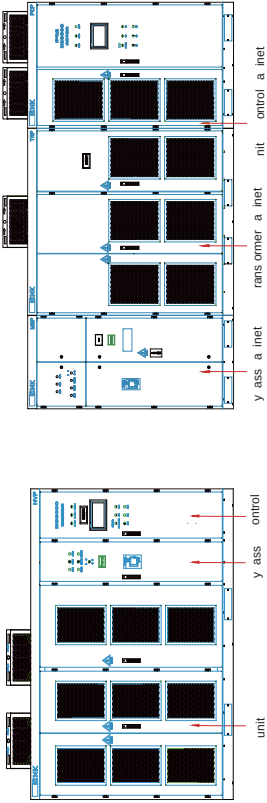
ES 000 HVVFD is a rodu t in t e lineu o relia le varia le re uen y, s eed re ulation, and ener y savin s dives, develo ed, desi ned and rodu ed y umar ased on years o oo eration wit , a worldwide well nown ele tri om any, and on its own ri ra ti ale e ifen e in t e ele tri drive and t e automation en ineerin a li ation or almost 20 years, wit e e live a sor tion o leadin ed e te nolo ies and in onsidration o inas a tual onditions do tin t e state o t e art te nolo y o lu o timi ation and ontr ol wit s a eve tor PW in ina, t is rodu t eatures lu o timi ation un tion, i ardware relia ity, e ellent eroman e, o eratin system in inese, i overload a a ity, su er ada ti lity to various ower rids, and i startin tor ue ere ore, it is more a li a le to ower rid and industrial e ui ment in ina Volta e lasses o ES 000 HVVFD over V V 0 V Produ t series in lude t e eneral HVVFD series, t e dedi ated HVVFD series or t e syn ronous motor, t e dedi ated HVVFD series or t e elt onveyor, t e our uadrant HVVFD series, t e sot start and syn ronous undistur ed swit in HVVFD series umar rodu ts are widely a lied in all ty es o loads li e drau t ans, um s, om ressors, internal mi ers, elt onveyors, and oistesr and ave won i and wide raise rom users umar is en a ed to deliverin HVVFDs wit t e i est uality and est ost eroman e in ina

echanical ara eter

High voltage in ut	Volta e ran e	V (20 5), 0 V (20 5)
	Fre uen y ran e	50 0 H 0
	ut ut volta e a ut re uen y and a ura y	0 V, 0 0 V 0 50 0 H , 0 0 H
er or ance	ut ut wave orm	ut ut wave orm
	E i len y	ut ut wave orm
	Power a tor	ut ut wave orm
	verload a a ity	ut ut wave orm
	llowa le outa e duration ean time eetween allures	ut ut wave orm
ontrol	ontrol mode	ut ut wave orm
	eleration de eleration time	ut ut wave orm
	Swit in uantity in ut out ut	ut ut wave orm
	nalo in ut	ut ut wave orm
	nalo out ut	ut ut wave orm
E citation control e cate or the ynchronou ator	ommuni ations	ut ut wave orm
	ontrol ower su ly	ut ut wave orm
	ontrol mode	ut ut wave orm
	eratin environment	ut ut wave orm
	eratin am ient tem erature	ut ut wave orm
Environ ent	Stora e and trans oration tem erature	ut ut wave orm
	m ient umidity	ut ut wave orm
	eratin altitude	ut ut wave orm
	Prote tion un tion	ut ut wave orm
	oolin mode	ut ut wave orm
ther	ser inter a e	ut ut wave orm
	Prote tion rade iP	ut ut wave orm

ro uct Structure

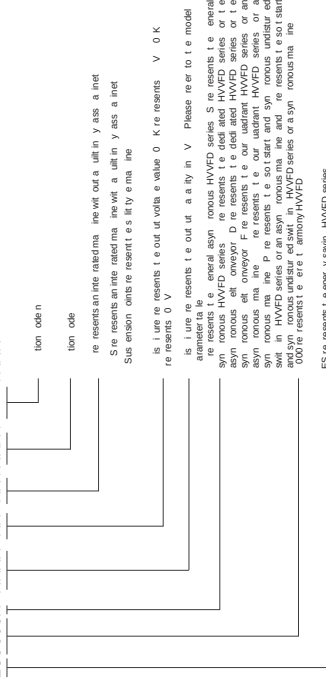
ES 000 HVVFD in ludes inte rated stru ture and s lit ty e stru ture ased on a a ity e inte rated stru ture is ado ted in low a a ity HVVFD e s lit ty e stru ture is ado ted in i a a ity HVVFD In terms o an inte rated ma ine, w i is om a tin si e, a trans ormer, unit, ontr ol, and ower re uen y ass are artially inte rated into a a inet and artioned a ordin to t e ir un tions In terms o a s lit ty e ma ine, a trans ormer, unit, ontr ol and ower re uen y y ass are assem led in se arate a inets in w i are om ined on t e s ot



Dia ram o a a inet line ratin a trans ormer, unit, ontr ol, and y ass

o e or o el e igation

ES9000X-XXXX-XX-XX+XXX+....+XXX



tion e cri tion:

nti ondensation ontr olle r it P
otor di erential rote tion it DP
S e ial o tions
ninteru ted ower su ly— PS
D ower inverter DPS
ommuni ations inter a e modules P DP, E H, and P S
a round monitoin so tware
For e am le, ES 000S 000 0 K PS re resenst t att is HVVFD is e ui ed wit a PS, wit t e out ut volta e and rated a a ity as V and 000 V res e tively, and it is a lied in a syn ronous motor

ES9000 HVVFD 0 V out ut level

o el	ate a acy o the HVVFD V	ate the atching otor	o ero the atching otor	ate o the atching otor	verall Di en ion H D nclu ing the raught an height	eight g
ES9000X-0315-10K-M	315	250	18			2780
ES9000X-0350-10K-M	350	280	20			2830
ES9000X-0375-10K-M	375	300	22			2830
ES9000X-0400-10K-M	400	315	23			2830
ES9000X-0425-10K-M	425	335	24			2830
ES9000X-0450-10K-M	450	355	26			2900
ES9000X-0475-10K-M	475	375	27			2900
ES9000X-0500-10K-M	500	400	29			2970
ES9000X-0530-10K-M	530	425	31			3050
ES9000X-0560-10K-M	560	450	32			3050
ES9000X-0600-10K-M	600	475	34			3120
ES9000X-0630-10K-M	630	500	36			3230
ES9000X-0680-10K-M	680	530	38			3230
ES9000X-0700-10K-M	700	560	40			3310
ES9000X-0750-10K-M	750	600	43			3310
ES9000X-0800-10K-M	800	630	45			3310
ES9000X-0850-10K-M	850	670	48			3310
ES9000X-0900-10K-M	900	710	51			3310
ES9000X-0950-10K-M	950	750	54			3650
ES9000X-1000-10K-M	1000	800	58			3650
ES9000X-1050-10K-M	1050	850	61			3650
ES9000X-1120-10K-M	1120	900	65			3650
ES9000X-1200-10K-M	1200	950	68			3930
ES9000X-1250-10K-M	1250	1000	72			4160
ES9000X-1400-10K-M	1400	1120	81			
ES9000X-0315-10K-MS	315	250	18			3700
ES9000X-0350-10K-MS	350	280	20			3780
ES9000X-0375-10K-MS	375	300	22			3780
ES9000X-0400-10K-MS	400	315	23			3800
ES9000X-0425-10K-MS	425	335	24			3800
ES9000X-0450-10K-MS	450	355	26			3830
ES9000X-0475-10K-MS	475	375	27			3900
ES9000X-0500-10K-MS	500	400	29			3900
ES9000X-0530-10K-MS	530	425	31			3920
ES9000X-0560-10K-MS	560	450	32			3970
ES9000X-0600-10K-MS	600	475	34			4000
ES9000X-0630-10K-MS	630	500	36			4050
ES9000X-0680-10K-MS	680	530	38			4100
ES9000X-0700-10K-MS	700	560	40			4120
ES9000X-0750-10K-MS	750	600	43			4200
ES9000X-0800-10K-MS	800	630	45			4230
ES9000X-0850-10K-MS	850	670	48			4270
ES9000X-0900-10K-MS	900	710	51			4310
ES9000X-0950-10K-MS	950	750	54			4350
ES9000X-1000-10K-MS	1000	800	58			4500
ES9000X-1050-10K-MS	1050	850	61			4600
ES9000X-1120-10K-MS	1120	900	65			4650
ES9000X-1200-10K-MS	1200	950	68			4750
ES9000X-1250-10K-MS	1250	1000	72			4850
ES9000X-1400-10K-MS	1400	1120	81			4930

o el	ate a acy o the VVFD V	ate the atching otor	o ero the atching otor	ate o the atching otor	verall Di en ion H D nclu ing the raught an height	eight g
ES 000 0 5 0K	5	250				2 0
ES 000 0 50 0K	50	2 0		20		2 0
ES 000 0 5 0K	5	0		22		2 0
ES 000 0 00 0K	00	5		2		2 0
ES 000 0 25 0K	25	5		2		2 0
ES 000 0 50 0K	50	55		2		2 00
ES 000 0 5 0K	5	5		2		2 00
ES 000 0500 0K	500	00		2		2 0
ES 000 05 0 0K	5 0	25				2 0
ES 000 05 0 0K	5 0	50		2		050
ES 000 0 00 0K	00	5				050
ES 000 0 0 0K	0	500				20
ES 000 0 0 0K	0	5 0				20
ES 000 0 00 0K	00	5 0		0	00 2000 00	2 0
ES 000 0 50 0K	50	00				2 0
ES 000 0 50 0K	50	0		5		0
ES 000 0 00 0K	00	0				0
ES 000 0 50 0K	50	0		5		0
ES 000 0 50 0K	50	00		5		50
ES 000 050 0K	050	50				50
ES 000 20 0K	20	00		5		50
ES 000 200 0K	200	50				50
ES 000 250 0K	250	000		2		0
ES 000 00 0K	00	20				0
ES 000 00 0K	00	250		0		50
ES 000 50 0K	50	00		0		55
ES 000 2000 0K	2000	00		5		50
ES 000 2250 0K	2250	00		0	00 2200 00	50
ES 000 2500 0K	2500	2000				0 0
ES 000 2 00 0K	2 00	2250		2		50
ES 000 50 0K	50	2500		0		550
ES 000 500 0K	500	2 00		202		50
ES 000 000 0K	000	50		22		50
ES 000 500 0K	500	950		25	00 2 00 550	50
ES 000 50 0K	50	00		2		200
ES 000 5000 0K	5000	000		2		050
ES 000 5 00 0K	5 00	500		25		550
ES 000 00 0K	00	5000			00 2 00 550	050
ES 000 000 0K	000	5 00		0		50
ES 000 000 0K	000	00		55		50
ES 000 0000 0K	0000	000		5 2	0 0 2 5 500	20050
ES 000 500 0K	500	00				20 50
ES 000 2500 0K	2500	0000		22	0 00 2 5 500	22050
ES 000 000 0K	000	2500				2 500
ES 000 000 0K	000	2500		20		
ES 000 000 0K	000	5000		00		
ES 000 22500 0K	22500	0000		00	Please onslut us	
ES 000 25000 0K	25000	20000		50		

ote e e ui ment dimensions and wei t are or re eren e only ey are su e t to an e wit out not e

Model parameter table

ES9000 HVVFD V output level

Model	Rated output (kW)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)
ES9000X-0315-06K-M	250	315	30	30	30	30	30	30	30
ES9000X-0350-06K-M	280	350	34	34	34	34	34	34	34
ES9000X-0375-06K-M	300	375	36	36	36	36	36	36	36
ES9000X-0400-06K-M	315	400	38	38	38	38	38	38	38
ES9000X-0425-06K-M	335	425	40	40	40	40	40	40	40
ES9000X-0450-06K-M	365	450	43	43	43	43	43	43	43
ES9000X-0475-06K-M	375	475	45	45	45	45	45	45	45
ES9000X-0500-06K-M	400	500	48	48	48	48	48	48	48
ES9000X-0530-06K-M	425	530	51	51	51	51	51	51	51
ES9000X-0560-06K-M	450	560	54	54	54	54	54	54	54
ES9000X-0600-06K-M	475	600	57	57	57	57	57	57	57
ES9000X-0630-06K-M	500	630	60	60	60	60	60	60	60
ES9000X-0680-06K-M	530	680	64	64	64	64	64	64	64
ES9000X-0700-06K-M	560	700	67	67	67	67	67	67	67
ES9000X-0750-06K-M	600	750	72	72	72	72	72	72	72
ES9000X-0800-06K-M	630	800	76	76	76	76	76	76	76
ES9000X-0850-06K-M	670	850	81	81	81	81	81	81	81
ES9000X-0315-06K-MS	250	315	30	30	30	30	30	30	30
ES9000X-0350-06K-MS	280	350	34	34	34	34	34	34	34
ES9000X-0375-06K-MS	300	375	36	36	36	36	36	36	36
ES9000X-0400-06K-MS	315	400	38	38	38	38	38	38	38
ES9000X-0425-06K-MS	335	425	40	40	40	40	40	40	40
ES9000X-0450-06K-MS	365	450	43	43	43	43	43	43	43
ES9000X-0475-06K-MS	375	475	45	45	45	45	45	45	45
ES9000X-0500-06K-MS	400	500	48	48	48	48	48	48	48
ES9000X-0530-06K-MS	425	530	51	51	51	51	51	51	51
ES9000X-0560-06K-MS	450	560	54	54	54	54	54	54	54
ES9000X-0600-06K-MS	475	600	57	57	57	57	57	57	57
ES9000X-0630-06K-MS	500	630	60	60	60	60	60	60	60
ES9000X-0680-06K-MS	530	680	64	64	64	64	64	64	64
ES9000X-0700-06K-MS	560	700	67	67	67	67	67	67	67
ES9000X-0750-06K-MS	600	750	72	72	72	72	72	72	72
ES9000X-0800-06K-MS	630	800	76	76	76	76	76	76	76
ES9000X-0850-06K-MS	670	850	81	81	81	81	81	81	81

Model	Rated output (kW)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)	Rated output (kVA)
ES 000 0 50 K	250	5	0	0	0	0	0	0	0
ES 000 0 50 0 K	200	50	20	20	20	20	20	20	20
ES 000 0 50 K	0	5	0	0	0	0	0	0	0
ES 000 0 00 0 K	5	0	5	5	5	5	5	5	5
ES 000 0 25 0 K	25	25	5	5	5	5	5	5	5
ES 000 0 50 0 K	50	50	55	55	55	55	55	55	55
ES 000 0 50 K	5	5	5	5	5	5	5	5	5
ES 000 0500 0 K	500	500	0	0	0	0	0	0	0
ES 000 05 0 0 K	50	50	25	25	25	25	25	25	25
ES 000 05 0 0 K	50	50	50	50	50	50	50	50	50
ES 000 0 00 0 K	0	0	5	5	5	5	5	5	5
ES 000 0 0 0 K	0	0	500	500	500	500	500	500	500
ES 000 0 0 0 K	0	0	50	50	50	50	50	50	50
ES 000 0 0 0 K	0	0	50	50	50	50	50	50	50
ES 000 0 50 0 K	50	50	0	0	0	0	0	0	0
ES 000 0 00 0 K	0	0	50	50	50	50	50	50	50
ES 000 0 50 0 K	50	50	0	0	0	0	0	0	0
ES 000 0 00 0 K	0	0	0	0	0	0	0	0	0
ES 000 0 50 0 K	50	50	50	50	50	50	50	50	50
ES 000 0 50 0 K	50	50	0	0	0	0	0	0	0
ES 000 050 0 K	0	0	50	50	50	50	50	50	50
ES 000 050 0 K	0	0	50	50	50	50	50	50	50
ES 000 20 0 K	20	20	0	0	0	0	0	0	0
ES 000 200 0 K	200	200	50	50	50	50	50	50	50
ES 000 250 0 K	250	250	0	0	0	0	0	0	0
ES 000 00 0 K	0	0	20	20	20	20	20	20	20
ES 000 00 0 K	0	0	250	250	250	250	250	250	250
ES 000 50 0 K	50	50	0	0	0	0	0	0	0
ES 000 2000 0 K	2000	2000	0	0	0	0	0	0	0
ES 000 2250 0 K	2250	2250	0	0	0	0	0	0	0
ES 000 2500 0 K	2500	2500	2000	2000	2000	2000	2000	2000	2000
ES 000 2 00 0 K	2	2	2250	2250	2250	2250	2250	2250	2250
ES 000 50 0 K	50	50	2500	2500	2500	2500	2500	2500	2500
ES 000 500 0 K	500	500	2	2	2	2	2	2	2
ES 000 000 0 K	0	0	50	50	50	50	50	50	50
ES 000 500 0 K	500	500	500	500	500	500	500	500	500
ES 000 5 00 0 K	5	5	500	500	500	500	500	500	500
ES 000 00 0 K	0	0	5000	5000	5000	5000	5000	5000	5000
ES 000 000 0 K	0	0	5	5	5	5	5	5	5
ES 000 000 0 K	0	0	5000	5000	5000	5000	5000	5000	5000
ES 000 000 0 K	0	0	500	500	500	500	500	500	500
ES 000 000 0 K	0	0	500	500	500	500	500	500	500
ES 000 0000 0 K	0	0	5000	5000	5000	5000	5000	5000	5000
ES 000 500 0 K	500	500	0	0	0	0	0	0	0
ES 000 2500 0 K	2500	2500	0	0	0	0	0	0	0

o el ara eter table

ES9000 VVFD V out ut level

o el	ate o the VVFD (kVA)	ate the otor (kW)	ate the atching otor (A)	verall Di H D nclu ing the raught an height)	eight (Kg)
ES 000 0 5 K	5	250	0	50 25 0 00	20 0
ES 000 0 50 K	50	2 0			20 0
ES 000 0 5 K	5	00			20 0
ES 000 0 00 K	00	5			2 00
ES 000 0 25 K	25	5	0		2 20
ES 000 0 50 K	50	55			2 50
ES 000 0 5 K	5	5	5		2 0
ES 000 0500 K	500	00			22 0
ES 000 05 0 K	5 0	25	5		2250
ES 000 05 0 K	5 0	50	5		22 0
ES 000 0 00 K	00	5	5		2 00
ES 000 0 0 K	0	500	0		2 20
ES 000 0 0 K	0	5 0			2 50
ES 000 0 00 K	00	5 0			2 0
ES 000 0 50 K	50	00	2		2 0
ES 000 0 00 K	00	0			2 0
ES 000 0 50 K	50	0			2500
ES 000 0 5 K S	5	250	0		50
ES 000 0 50 K S	50	2 0			0
ES 000 0 5 K S	5	00			200
ES 000 0 00 K S	00	5			2 0
ES 000 0 25 K S	25	5	0		2 0
ES 000 0 50 K S	50	55			250
ES 000 0 5 K S	5	5	5		0
ES 000 0500 K S	500	00			50
ES 000 05 0 K S	5 0	25	5		0
ES 000 05 0 K S	5 0	50	5		0
ES 000 0 00 K S	00	5	5		00
ES 000 0 0 K S	0	500	0		0
ES 000 0 0 K S	0	5 0			0
ES 000 0 00 K S	00	5 0			0
ES 000 0 50 K S	50	00	2		500
ES 000 0 00 K S	00	0			5 0
ES 000 0 50 K S	50	0			5 0

o el	ate o the VVFD V	ate the atching otor	ate o ero atching otor	ate the atching otor	verall Di H D nclu ing the raught an height	eight g
ES 000 0 5 K	5	250		0	50 2 00 00	20 0
ES 000 0 50 K	50	2 0				20 0
ES 000 0 5 K	5	00				20 0
ES 000 0 00 K	00	5				2 00
ES 000 0 25 K	25	5		0		2 20
ES 000 0 50 K	50	55				2 50
ES 000 0 5 K	5	5	5	5		2 0
ES 000 0500 K	500	00				22 0
ES 000 05 0 K	5 0	25		5		2250
ES 000 05 0 K	5 0	50	5	5		22 0
ES 000 0 00 K	00	5	5	5		2 00
ES 000 0 0 K	0	500		0		2 20
ES 000 0 0 K	0	5 0				2 50
ES 000 0 00 K	00	5 0				2 0
ES 000 0 00 K	00	0		2		2 0
ES 000 0 50 K	50	0	0			2500
ES 000 0 00 K	00	0	0	5		50
ES 000 0 50 K	50	50	50	0		50
ES 000 000 K	000	00	00		50 2 00 00	5000
ES 000 050 K	050	50	50	02		5 50
ES 000 20 K	20	00	00	0		5200
ES 000 200 K	200	50	50			5250
ES 000 250 K	250	000	20			5250
ES 000 00 K	00	20	5		50 2 00 00	5550
ES 000 00 K	00	250	50			5 50
ES 000 50 K	50	00	00			5 50
ES 000 2000 K	2000	00	00	2		200
ES 000 2250 K	2250	00	00	2		00
ES 000 2500 K	2500	2000	2000	2	200 2 00 550	50
ES 000 2 00 K	2 00	2250	2250	2 0		50
ES 000 50 K	50	2500	2500	0		0 00
ES 000 500 K	500	2 00	2 00			000
ES 000 000 K	000	50	50			00
ES 000 500 K	500	550	550	2	500 2 00 550	2200
ES 000 50 K	50	00	00	5		2 00
ES 000 5000 K	5000	000	000			00
ES 000 5 00 K	5 00	500	500	5		00
ES 000 00 K	00	5000	5000	0		00
ES 000 000 K	000	5 00	5 00		5 0 2 5 500	00
ES 000 000 K	000	5 00	5 00			00
ES 000 000 K	000	000	000	0		55 0
ES 000 000 K	000	000	000	0	Please onsultus	
ES 000 0000 K	0000	000	000	5		
ES 000 500 K	500	00	00	0		
ES 000 2500 K	2500	0000	0000	200		

ES9000 VVFD V out ut level

o el	ate a acity o the VVFD V	ate o er o the atching otor	ate o the atching otor	verallDi en ion H D o nclu ing the raught an height	eight g
ES 000 0 5 K	5	250	0	550 2200 00	20 0
ES 000 0 50 K	50	2 0			20 0
ES 000 0 5 K	5	00			20 0
ES 000 0 00 K	00	5			2 00
ES 000 0 25 K	25	5	0		2 20
ES 000 0 50 K	50	55			2 50
ES 000 0 5 K	5	5	5		2 0
ES 000 0500 K	500	00			22 0
ES 000 05 0 K	5 0	25	5		2250
ES 000 05 0 K	5 0	50	5		22 0
ES 000 0 00 K	00	5	5	00 2200 00	2 00
ES 000 0 00 K	0	500	0		2 20
ES 000 0 0 K	0	5 0			2 50
ES 000 0 00 K	00	5 0			2 0
ES 000 0 50 K	50	00	2		2 0
ES 000 0 00 K	00	0			2 0
ES 000 0 50 K	50	0	5		2500
ES 000 0 00 K	00	0			50
ES 000 0 50 K	50	50	0		50
ES 000 050 K	050	50	02	00 2200 00	5 50
ES 000 20 K	20	00	0		5200
ES 000 200 K	200	50			5250
ES 000 250 K	250	000	20		5250
ES 000 00 K	00	20	5		5550
ES 000 00 K	00	250	50		5 50
ES 000 50 K	50	00			5 50
ES 000 2000 K	2000	00	2		200
ES 000 2250 K	2250	00	2		00
ES 000 2500 K	2500	2000	2		50
ES 000 2 00 K	2 00	2250	2 0	00 2 00 550	50
ES 000 50 K	50	2500	0		0 00
ES 000 500 K	500	2 00			000
ES 000 000 K	000	50			00
ES 000 500 K	500	550	2		2200
ES 000 50 K	50	00	5		2 00
ES 000 5000 K	5000	000			00
ES 000 5 00 K	5 00	500	5		00
ES 000 00 K	00	5000	0		00
ES 000 000 K	000	5 00			55 0
ES 000 000 K	000	00	0	Please consult us	
ES 000 0000 K	0000	000	5		
ES 000 500 K	500	00	0		
ES 000 2500 K	2500	0000	200		

y a cabinet o el election table

ro ct a e	ro lat o	ate urrency	Si e H D	ate voltage (V)	eight g
annual one drives one y ass a inet	ES 000 SP0 00 0 K I	00	000 2200 00		00
	ES 000 SP0 00 0K I			0	00
	ES 000 SP0 0 0 K I				50
annual one drives two y ass a inet	ES 000 SP0 0 0K I	0	2000 2200 00	0	50
	ES 000 SP0 00 0 K I				00
	ES 000 SP0 0 0 K I			0	00
utomati one drives one y ass a inet	ES 000 SP0 0 0K I	0	2 00 2200 00	0	500
	ES 000 SP0250 0 K II				50
	ES 000 SP0250 0K II			0	50
utomati one drives two y ass a inet	ES 000 SP0 00 0 K II	250	00 2200 00	0	50
	ES 000 SP0 00 0K II				50
	ES 000 SP0 0 0 K II			0	50
ES 000 SP0 0 0K II	ES 000 SP0 0 0K II	0		0	50
	ES 000 SP0250 0 K II				00
	ES 000 SP0250 0K II			0	00
ES 000 SP0 00 0K II	ES 000 SP0 00 0K II	00		0	00
	ES 000 SP0 00 0K II				00
	ES 000 SP0 0 0 K II			0	00
ES 000 SP0 0 0K II	ES 000 SP0 0 0K II	0	2 00 2200 00	0	500
	ES 000 SP0 0 0K II				500
	ES 000 SP0 0 0K II			0	500

ote e e ui ment dimensions and wei tare or reeren e only ey are su e tto an ewit out noti e

o el election table e cri tion

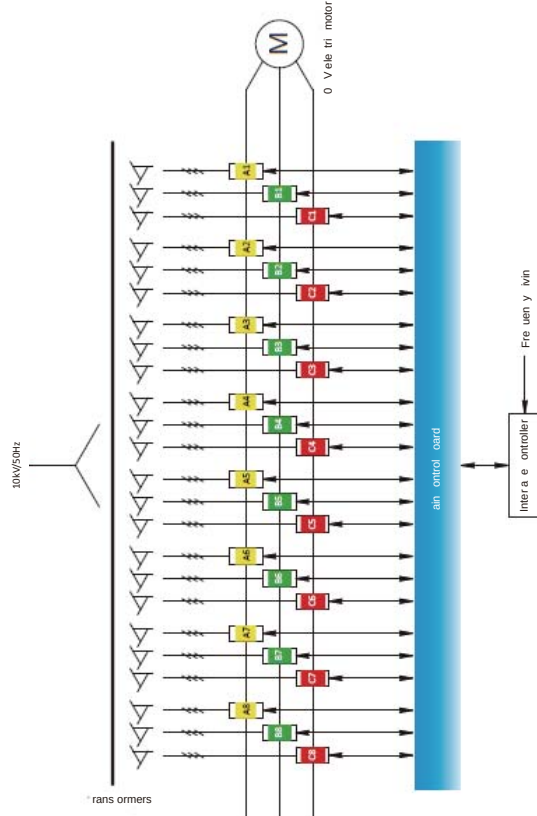
- e e ui ment dimensions and wei tare or reeren e only ey are su e tto an ewit out noti e
- 2 o ensure t att e VVFD runs steadily and relia ly or a lon time and to rolon its servi e l i e, su i lent eadroom s ould elet durin t e desi n o t e ower o t e eate an er oolin t e VVFD room It is re ommended t at o t e rated ower o t e VVFD s ould elet t e eate an er ulti le a tors s ould eta en into a ount su ast e lo al tem erature, room si e and lea ti tness durin t e desi n o t e VVFD room Sele t a ro ri ate ventilation and re ri eration e ui ment or t e VVFD room It is re ommended t at t e aust air rate s ould e not lesst an m s er 0 W loss w en t e mode o ventilation or eate an e is add ted and t e air onditioner ower s ould e not lower t an P er 0 W loss w en an air onditioner is add ted or oolin
- Please onslut us or more in or mation a out rodu ts wit ot er a a ity levels or s e ial volta e levels (or e am le, V or V)
- Please onslut us or more model in or mation a out t e dedi ated VVFD or elt onveyor, t e dedi ated VVFD or internal mi er, our uadrant VVFD series, so t start syn ronous undistur ed swit in VVFD series
- 5 Please onslut us or more in or mation a out t e rodu ts wit i er ower

Technical rincile

ES 000 WVFED is an ener y savin i volta e varia le re uen y drive oastin i relia ility It is develo ed, desi ned, and rodu ed y umar ased on ri ra ti al e efen e in ele tri drive and automation en ineerin a li ation or many years and in onsideration a tual situation o ina, y usin state o t e art te nolo ies o lu o timi ation and onrol wit s a e ve tor sinusoidal wave PW and ado tin industrial rade di Ital si nal mi ro essor, lar e s ale inte rated ir uit i, and i ly relia le l ower om onent o t e new eneration Wit t e mature te nolo y o omne tin ower units in series and ased on t e rin i le o su erim osed volta e rise, ES 000 WVFED dire tly drives a i volta e motor wit t e out ut i volta e lt as t e ere t armony un tion and meets t e a li ation re uirements o various industrial ields umar is en a ed to rovidin i volta e varia le re uen y, and ener y savin drives wit t e i est relia ility

air circuit structure

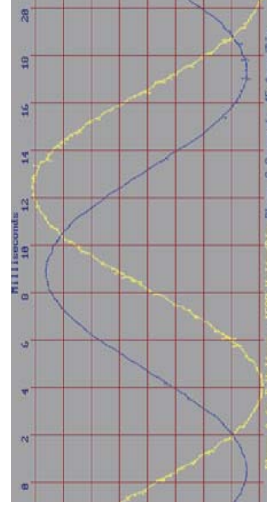
ES 000 VVFD adds a structure to multiple units on one side in series. Its main circuit is mainly composed of a multi-winding transformer and several inverter units. Power or each inverter unit is supplied via individual multi-winding transformer. Power supplies or inverter units are isolated from each other and they are isolated from the power grid. The inverter unit is the core component with its switch in the main circuit. VVFD is composed of 5 units and a base is composed of 5 units on one side in series, on one side in series, on one side in series. The main circuit is composed of 2 units and a base is composed of 2 units. The series connection Select a VFD with the structure of V units or 0 V units according to the requirements.



rans formers

inci le o o er over the in ut i e ha e hi ting tran or er

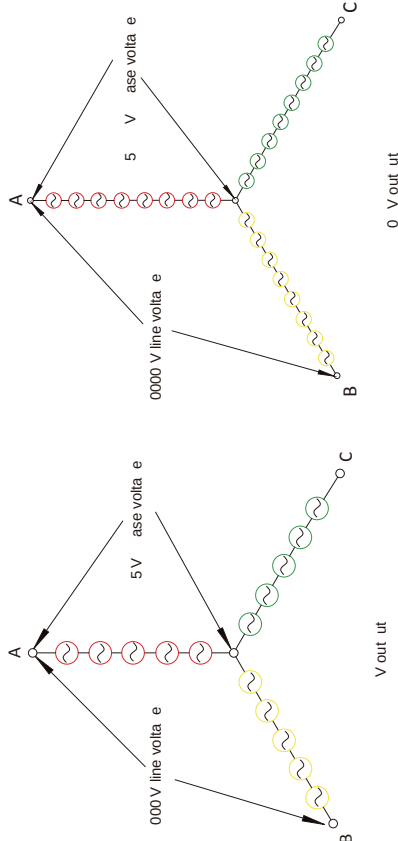
e in ut side o ES 000 VVFD is on i u red wit a multi windin isolation trans omer e se ondary side o t e
 trans omer in ludes multi le isolated t ree ase windin s Every t ree ase windin s omer a in ase rou ,
 se arately su lyin individual ower or units, and omerin use re ti ation in ut VES 000 as 5 in ase
 rou s omerin o use in ut o VES 000 as in ase rou s omerin use in ut
 In t e same way, VES 000 onstition o units omered in series as in ase rou s, w i omer use
 in ut o VES 000 onstition o units omered in series as in ase rou s, w i omer 5 use in ut
 ood rid side er omer e inde o ES 000 is ene itin rom its ara teristi o multi use in ut e in ut wave omer
 is similar to a ere t sine wave, w i ulyly meast t e re urements o IEEE5 2 and 5 2002 standards
 and an ensure an in ut ower a tor o near 0



In ut volta e and urrent wave orms

Principle of operation of the inverter unit at the output

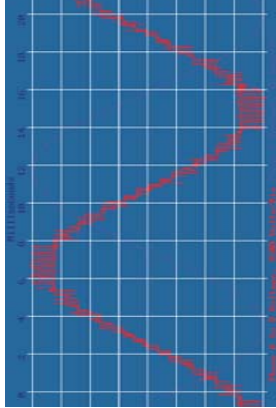
The output voltage of the ES 000 is composed of multiple sine waves in the output voltage and sine wave output voltage or inverter low voltage over unit in series. Below, several inverter units are divided into rows. Each row has the same number of units. The sine wave output voltage of the inverter unit is 20 de rees. The rows of units are combined in the output unit and at the same time the output voltage is superimposed. The output voltage is then superimposed on the output unit and at the same time the output voltage is superimposed on the output unit.



The inverter unit outputs the PWM sine wave. Multiple sine waves are added in units. The sine wave is added in series. To say, all amplitudes and the output voltage of the units on each phase are identical, but there is a phase difference of π (180 degrees) between the units. The result, the harmonic content in the wave form is significantly reduced and the wave form is almost similar to a pure sinusoidal wave. The current waveform is also measured.

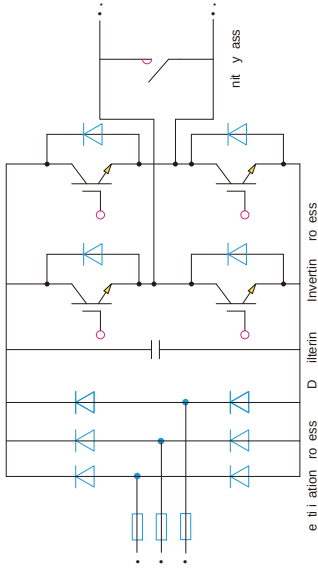


Multi-level waveform superposition principle



Output waveform

Internal structure of the inverter unit



The internal structure of the inverter unit is shown in the figure. The inverter unit is composed of the DC link, the inverter, and the output filter. The DC link is the main power supply, and the inverter is the main power converter. The output filter is used to filter the output voltage and current. The inverter unit is used to convert the DC voltage into the AC voltage.

The inverter unit outputs the PWM sine wave. Multiple sine waves are added in units. The sine wave is added in series. To say, all amplitudes and the output voltage of the units on each phase are identical, but there is a phase difference of π (180 degrees) between the units. The result, the harmonic content in the wave form is significantly reduced and the wave form is almost similar to a pure sinusoidal wave. The current waveform is also measured.

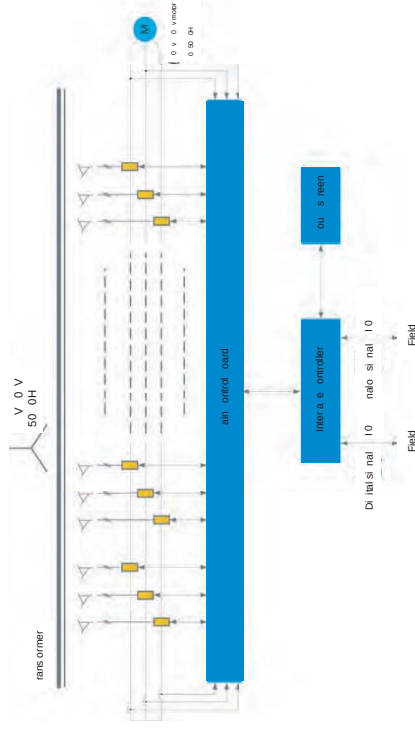
Internal architecture

The control system of the ES 000 VVFD is composed of a main control board, an interface controller board, and a touch screen human-computer interface. The main control board is the core of the control system, and the interface controller board is used to interface with the touch screen human-computer interface. The touch screen human-computer interface is used to operate the inverter unit.

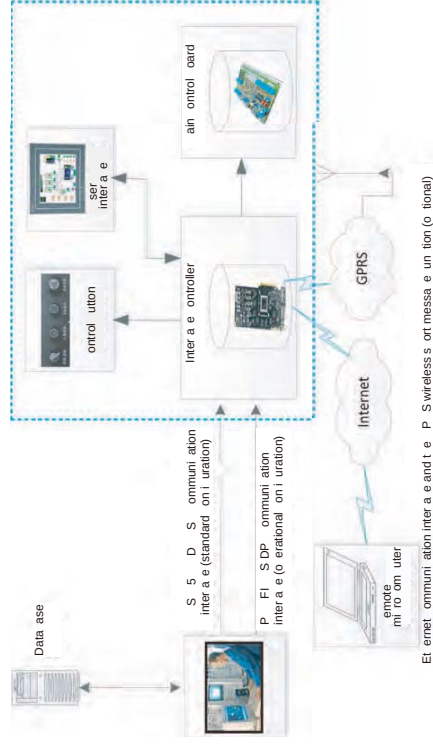
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ontrol y te inter ace iagra



External interface



er inter ace

ES 000 VVFD an e onrolled rom di erent la es in t e ollowin several modes Lo al onrol Lo al onrol is
om ined y t e dire t onrol rou a user inter a e and t e a inet onrol emot e onrol re ers to e lo al
t e onrol t rou t e start sto and ivin o t e in ut o an e ternal terminal or a omuni ation us e lo al
onrol and remote onrol sele for swit is lo ated on t e onrol oard on t e a inet door e user inter a e and
o eration utton on t e onrol oard are s own in t e i ure below

emote lo al on	ontrol sele	tor swit	Fault resettin	utton

Emer en v sto in utton

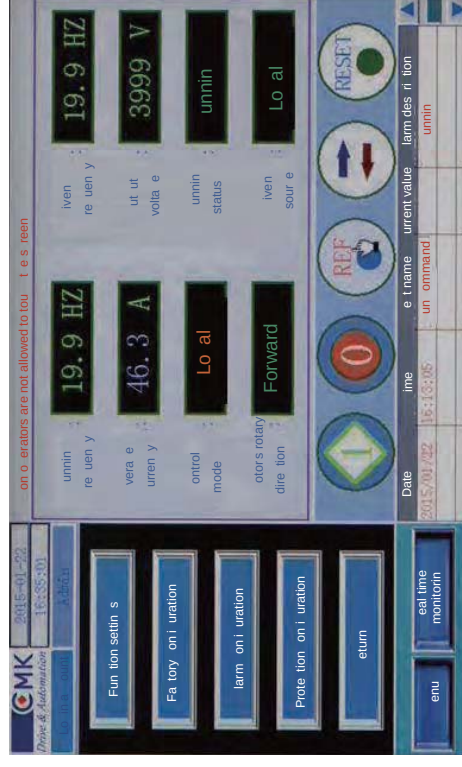
Start stop button

Power li t

unnin li t

Fault indi at l i t

ES 000 WVF is on i red with a true olor and uman om uter tou s reen inter a (0 in es) It is a ull
inese o eration inter a e, t rou wi all o erations on t e WVF an e om led e user inter a e an e
lo ed and only aut ori o erators an a ess it and modiy t e arameters ere ore, t e o eration se urity an e
uaranteed



ES 000 VVFD is a line o rdu ts wit i relia ility or re uen y onversion, s eed adustment, and ener y onservation Wit e e tive a sor tion o international leadin te nolo ies and in onsideration o inas a tual onditions, it is develo ed, desi ned, and rdu ed y S en en umar ew e nolo y o., Ltd ased on years o oo eration wit , an international amous ele tri om any, and its ri ra ti ale erien e int e ele tri drive and t e automation en ineerin a li ation or almost 20 years is rdu tis ara ten ed y inese o eratin system, i overload a a ity, su er a ility to ada tte ower rid, and i startin tor ue ere ore, it is more sutla le to e a lled in ower rid and Industrial e ui ment in ina

ontrol characteri tic

y adu tin te im roved and ere ted flux optimization and control with space vector PWM te nolo y o t e latest eneration and in om ination o state o t e art ontrl t eory, t e ontrl o tware is develo ed y a ermany D team on its own e ontrl re ision o t e dynami rotational s eed is lower tan 2 o t e rated s eed e tor ue ste res onse time 0 ms e out ut re uen y resolution is u to 0.0 H

High reliability e ign

High reliability an long eviceli e

elia ility and sta ility s all eta en ast e rin i lew en sele tin t e models o ore om onents It is re om mended t at l , re tier rid e, driver module, a a itor, and o ti al i ero internationally amous rands s ould e ado ted Su i lent sa ety sur lus s ould e let w en sele tin t e a a ity to en an e overload a a ity o t e rdu ts and uarantee t eir relia ility and lon servi eli e

In terms o stru ture desi n, we a sor t e leadin desi n idea rom t e internationally amous rand om anies li e , Siemens, and o i on and ado tte mature and sta le stru ture wit multi le units omne ted in series Iso, we use a module desi n and ma et e standard unit ave t e auto y ass un tion to en an e t e o eration relia ility o t e rdu ts and t us si ni antly redu et e ossi ility o ailure s utdown

e desi ned servi eli e is 20 years, desi ned F is lon ert an 00 t ousand ours, and desi ned is s orter t an 0 minutes ood eat dissi ation and ventilation e t an e uaranteed as internationally amous rand oolin ans wit lon servi eli e are installed on t e o t e transormer a inet, t e inverter unit a inet, and t e ontrl a inet e F o t e air oolin system is lon ert ant at o t e devi es

n allible o er u lie by the control o er u ly

e ower or t e system is su lied y a ower su ly ontrlled y dou le loo s wit standard on i uration (way internal loo o 220 V and way e ternal loo o 220 V) e internal ontrl ower su ly is ta en rom an au iliary se ondary line windin o t e in ut side isolation transormer e ontrl ower su ly will not lose ower as lon ast e i volta e main ower su ly is a tive W ent e i volta e main ower su ly lose ower, t e e ternal ower su ly (220V) will maintain a su ly

e o tional e ternal ontrl ower su ly (220 VD or 0 VD) in ut mode is s e ially desi ned ort e dire t ower su ly measurin and ontrollin system in a i volta e ower distri ution room to o tain a sta le ontrl ower su ly rom t e D system in a onvenient way

n o tional PS is availa le to o tain a more sta le redundant ower su ly

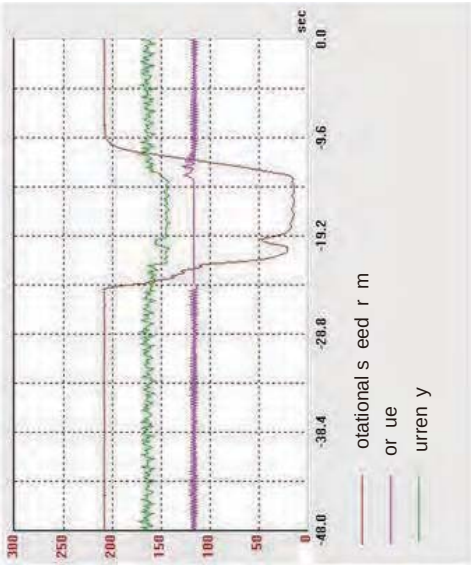
ontrol eature

ti al i er om muni ation is ado ted inside t e VFD to reali e t e om lete o toele troni isolation and a ood anti inter enen e erorman e

uto atic current li iting o eration uncton

ES 000 VVFD ado ts t es a e ve tor and PW ontrl te nolo y o t e latest eneration to reali e t e automati tor ue limitation un tion W ent e situation o a normal load su as s ort time i overload s ort time me ani al

ammin o urs a ru tly, ES 000 VVFD an automati ally redu e t e o eratin re uen y, limit t e out ut ower, tor ue, and urrent, and maintain its o eration to avoid over urrent tri ter t is enomenon o a normal load disa ears in a s ort time, t e VFD will return to normal o eratin re uen y



o er unit by a o eration

e entire ES 000 series eature ardware y ass o eration or ower units W en a ower unit is aulty, t is aulty ower unit an e automati ally swit ed to t e y ass t rou t e automati y ass te nolo y and t e out ut t ree ase volta e is automati ally alan ed or continuous o eration o t e VFD t most sta e y ass un tion is o ered t e unit is swit ed to t e y ass mode, t e out ut an e ada tively re lated a ordin to y ass sta es and t e urrent load to maintain a i er out ut ower

- ▲ onta tor is ta en ast e ardware y ass om onent ore ellent anti inter enen e erorman e and reater se urity
- ▲ e y ass and t e inverter ir uit wor inde endently and t us ave i er sta ility

er ect an reliable tructure e ign

Ele troma neti s ieldin as een erormed on t e a inet and t e ele troma neti om ati ility (E) meets strin ent IE 000 and IE 00 re urements e inte rated desi n in ludes t e dry ty e transormer (H lass insulation) wit i relia ility e tem erature o t e iron ore and windin s o a ase s itin transormer an e monitored t res old swit is desi ned on t e transormer a inet to ensure t at t e system will enerate an alarm i t e a inet door is o ened w ent e transormer is in o eration e eatin e ui ment reventin ondensation due to low tem erature an e ado ted to ensure t at t e transormer an o erates in a old and umid environment or a lon time

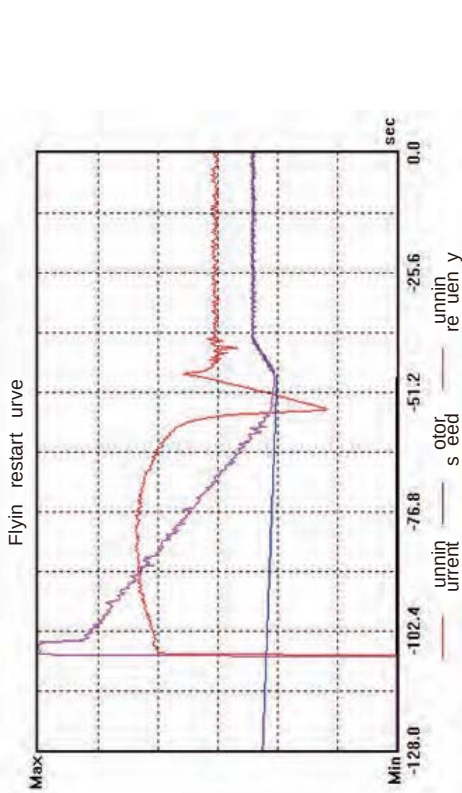
Surge ab or tion ca acity or o er rotection

e entire ES 000 serial rdu ts ave t e sur e a sor tion a a ity or ower rote tion w i ena les t em to uly a sor t e ea urrent or su ess ul ower on at on e e sur e a sor tion a a ity or ower rote tion o ES 000 in ludes t e ollowin two arts

ene itin rom its e ellent eatures, ES 000 VVFD ast e un tion o startin a motor inversely rotatin at a low speed Itado tsate nolo ye uivalentto teD ra in (D ra e)w en startin a motor inversely rotatin at a low speed First, it slows te s eed o a motor inversely rotatin at a low s eed down to ero, and t en ma et e motor run rom ero s eed e un tion o startin a motor rotatin inversely at a low s eed allows te VVFD to start a motor rotatin inversely in a safety mode wit out urrent tri

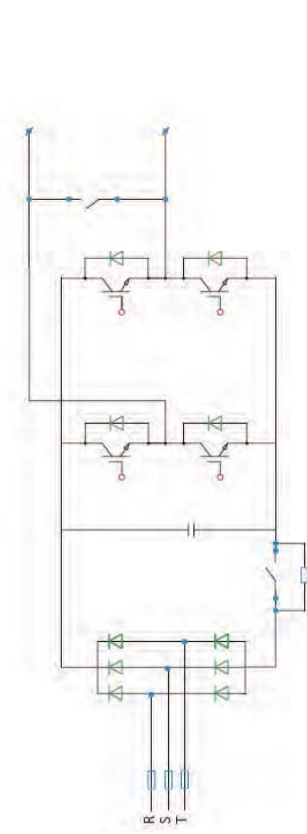
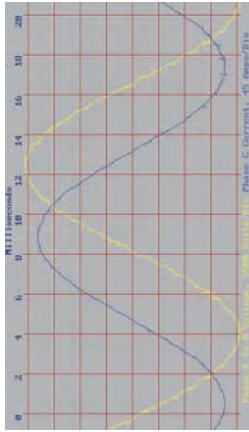
Start invertingly Flying restart

ES 000 VVFD addo ts te uni ue sli urrent ontrol al orit m to automati ally sear and re o ni et e motor rotatin s eed It starts te rotary ele tri motor at urrent s eed rat er t an te ero s eed or a sa e startu at a low urrent ere ore, it redu es te im a t on te ower rid and wea en st e in luen e on rodu tion w en an immediate outa e o urs



Excellent in utility feature

For V devi es 0 im ulse in ut
For 0 V devi es 5 im ulse in ut
e rid side armoni is low o need to instali t e noise filter e in ut armoni ontent an meet te re urements o IEEE 5 2 and 5 2002
e ower a tor e eeds 0 at rated load in te ran e o normal s eed re ulation
e lue urve and yellow urve in te dia ran re ers te in ut urrent urve and te in ut volta e urve res e tively ot wave oms are lose to te sine wave, wit ne li le armoni ontent



nti sur e ir uit or a unit

Anti surge measure or a unit

e in ut volta e o a ower unit, t rou a use, enters a t ree ase rid e re tier or re ti i ation, and t en it is ltered y an ele trol yti a a itor to e ome a dire t urrent o revent te sur e urrent u on ower on, a on ta tor and a resistor s ould e ut in arallel, and t en te y s ould e onne ted in te middle o a t ree ase rid e re tier and a lter ele trol yti a a itor in series s a result, te ele trol yti a a itor will e ar ed t rou a ower resistor u on ower on ter te ar in in is is ed, te on ta tor is su ed

Anti surge measure or a system

e main ir uit o a ase s i tin trans ormer is e ui ed wit anti sur e resistors u on ower on and a va uum on ta tor, w i an e e tively redu e te e itation inrus urrent and te ele trol yti a a itor ar in urrent att e moment o swit in on, or a su ess ul swit on o eration at on e

High voltage surge arrester or surge protection

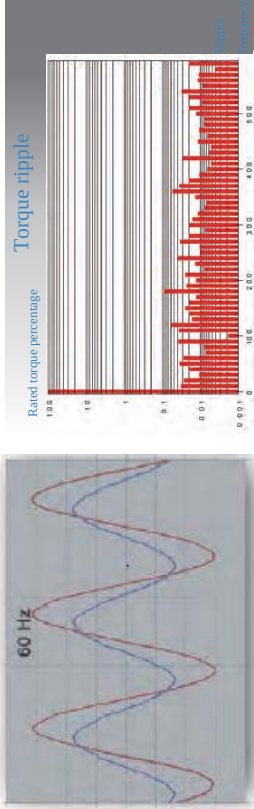
e in ut terminal o a i volta e ower su ly is e ui ed wit a sur e arrester, w i an a sor a li t nin sur e and te sur e ormed y te swit in overvoltage in te ower rid

Start in full torque at low speed

ene itin rom te leadin dynami PW software, ES 000 VVFD an o erate sta ly at an e tremely low re uen y (a ro imately 0 H) wit te widest ran e o s eed re ulation e startin tor ue o te VFD is adusta le W en startin a overloaded devi e, li e a elt onveyor, a roller mill, or a draw t an su erin rom ammin due to a seriously oroded earin s ell, te VFD an out ut an e tremely lar e startin tor ue at an e tremely low o eratin re uen y (a ro imately 0 H) to ensure a normal start o a load
ES 000 VVFD is a i er orman e VFD w i is not only suita le or varia le tor ue loads, ut also suita le or constant tor ue loads

E cellent out ut eature

e ES 000 VVFD an out ut e ellent multi level PW sine waves V VVFD an out ut an or level ase volta e, and a 2 or 25 level line volta e a 0 V VVFD an out ut a or level ase volta e, and or level line volta e It as a small dt dv value, and t e out ut volta e and urrent waves are near e r e t sine waves It as no s e ial re urements to t e driven motor and an drive motors made in ina ommon over a les an e ado ted as in ut and out ut a les e out ut a le stret es as lon as ,500 m (in orm umar in advan e i you need a lon er a le) e ES 000 VVFD an o erate sia ly wit small out ut volta e and urrent armoni s, small motor tor ue ri le, and low noises



o lete ault han ling nction

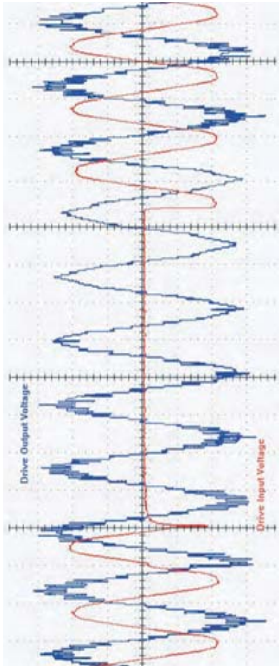
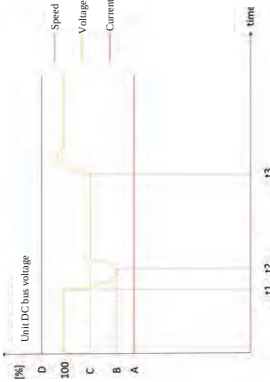
Wit lts om lete ault dia nosis, lo alion, and andlin un tions, t e ES 000 VVFD ate ori es and andles aults ased on severities, out uts t e ault and ontent in real time, and re ord t e ault in t e lo e ES 000 VVFD also as a series o om lete rote tion un tions or VVFD over eat, in ut overvolta e, in ut undervolta e, out ut over urrent, motor overload, out ut roundin , out ut s ort ir ultin , e ui ment overload, over unit ault, oolin an ault, and interlo in o doors to t e i volta e swit ear Some ault an intertri t e i volta e swit ear ont t e in ut side

o er ul a tative eature to the voltage luctuation o o er gri

ES 000 VVFD an o erate at ull load w en t e over rid volta e ran es rom 20 to 5 ES 000 VVFD an ontinue to o erate at a derated load wit de rease o t e over rid volta e y 5

o er lo ri e through an o er ailure recovery eature

ES 000 VVFD an maintain a normal o eration wit in 0 y les a ter immediate over outa e lon er over outa e duration is allowed w en ES 000 VVFD o erates under fl t load W en VFD loses over or a eriod lon er t an 0 y les, it will automati ally o erate at a derated load e VFD will s ut down w en t e over outa e duration e eds 0 se onds W en t e over is transmitted a ain y t e over rid, it is re ommanded t at t e ES 000 VVFD s ould e re started a tert e automati s eed tra in is set ased on t t e re urements



eliable re un ancy control eature

e ore ontrl art o ES 000 VVFD is desi ned y two ontrl systems ado tin PL and tou s reen ased on t e DSP ontrl oard, w i is a dual redundan y ontrl mode e PL system is ta en as t e e ternal inter a e, reali in a transition rom t e e ternal ontrl ort to t e internal DSP ontrl oard e e ternal ort is om letey isolated rom t e internal ontrl oard is not only si ni i antly en an est e relia ility and anti intereren e a ility o t e system to avoid intereren e on t e ontrl art o t e VFD rom an e ternal system, ut also is ondu live to t e u rade and maintainan e o t e system and addition o t e monitorin un tion e desi n is more relia le w en om a red wit t e desi n o ado tin only a sin le i ontrl oard ado ted y most similar manu a tures in ina

Sa e re onance avoi nce

ES 000 VVFD allows users to on i ure t ee sets o resonan e re uen y o in oints to e e tively avoid me ani al resonan e o t e ele trom e ani al system and t us to ensure t e sa e and relia le o eration o t e drive system

uto atic lu o ti i ation

ES 000 VVFD ado ts t e e lusive lu o timi ation te nolo y w i ena les real time monitorin and lu o timi ation on t e entire s eed re lation system in ludin t e motors, and t us in reases t e system e i len y y to 0 and save more ener y t an a similar VFD does e automati lu o timi ation also a liliates redu ed o eratin urrent o t e motor and im roved sta ility o t e devi e urrent motors are made ased on t e over re uen y desi n attems W en some motors are runnin at a varia le re uen y, t e est ma neti intensity rat ert an rated ma neti intensity may o ur at a arti ular re uen y (es e ially wit in t e medium or low re uen y ran e), w i may ause lar e o eratin urrent and unsia le o eration i t e traditional ve tor ontrl strate y is ado ted In t is ase, ES 000 VVFD will ena le automati lu o timi ation in om ination o t e sa e ve tor PW ontrl al orit m to adjust t e motor lu to t e s e i i ation value o t e motor, redu et e o eratin urrent o t e motor and im rovet e sta ility o t e system

arge ca acity e ign

e desi ned over o 0 V and V VVFDs is 20,000 W, V and 2,000 W res e tively ens o syn ronous asyn ronous motors wit i over a ove 5,000 W ave enoyed su ess in many a lli ations

Overview

ES 000 VVFD provides multiple overvoltage and undervoltage protection for the motor and the power supply. It also provides protection against short-circuit and ground fault.

Basic wiring

The basic wiring diagram shows the connection of the motor and the power supply to the VVFD.

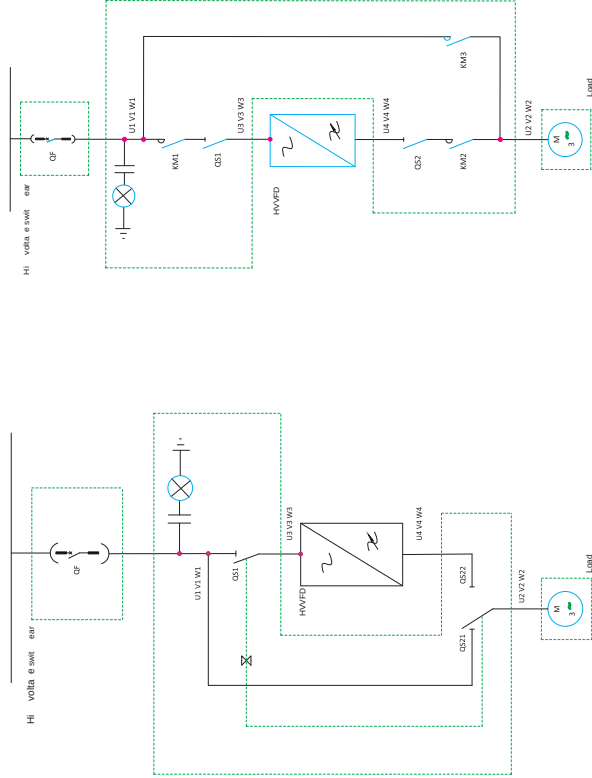


Figure 1: Basic wiring diagram

Figure 2: Basic wiring diagram

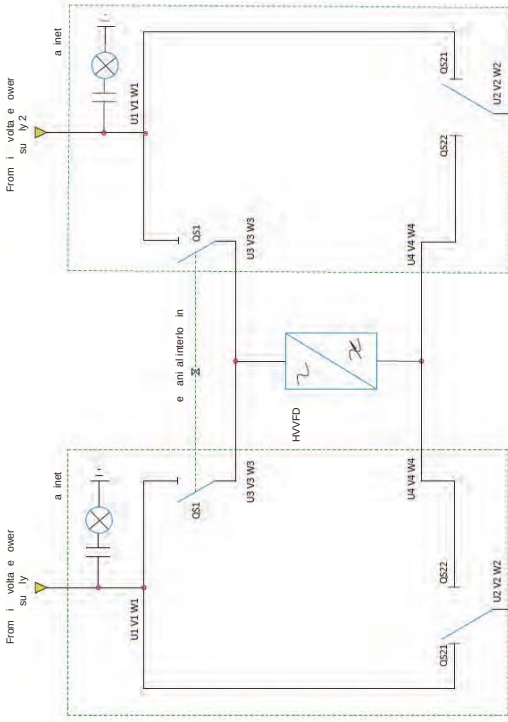


Figure 3: Basic wiring diagram

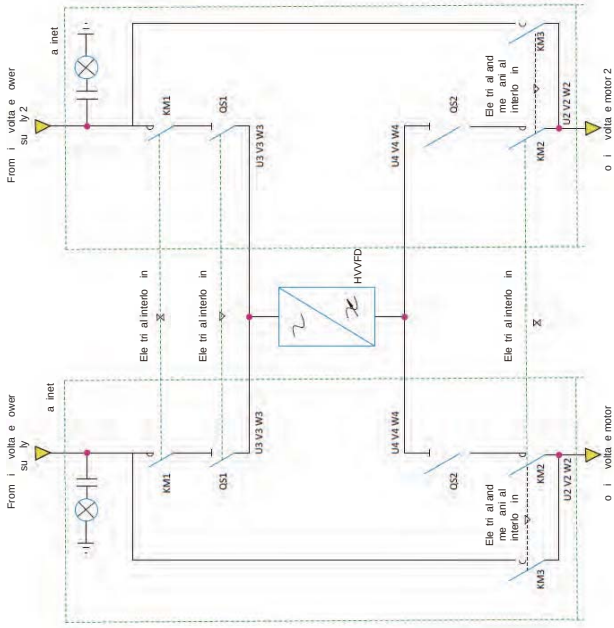


Figure 4: Basic wiring diagram

ES9000 eneral VVFD or ynchronou otor

e ES 000 eneral VVFD or asyn ronous motors is a li a le to loads su as ans, um s, air om ressors t at are driven y asyn ronous motors s most o t ese loads are dire tly driven y motors, wit lar e installed a a tly, and lay a ey role in t overall o eratin ro ess, an e ui ed VVFD or t ese loads s ould e relia le, ada tive to di erent ower rids, wit su essive startu un tion, avora le s eed ad ustment er man e, ener y savin , and easy to maintain For an e ui ment u radin ro e t in ari ular, an VVFD s ould meet t e re urements or installation in s e i i s a e and an drive eneral motors or e used or lon distan e out ut Wit its e ellent low s eed and i tor ue, t e ES 000 eneral VVFD is also a li a le to lar e loads wit onstant tor ue su as oots lowers, rotary s rew om ressors, rinders, ru er mi in mills, and rus erst t at need to e started wit eavy loads

y ado tin t e world s leadin on trol te nolo y, i ly relia le ardware, and advan ed eat dissipation stru ture, t e ES 000 eneral VVFD eatures remium er man e, etter ener y savin er man e, easier installation and a li ation, lon er lies an, and re uires lower maintenan e ees It meets t e a li ation re urements or di erent ields, and as een widely a li ed in many ro e ts in ina and ot er ountries

ain a lication



Power industry
eedwater um s,
rimary ans, air
lowers, e aust
ans, mortar
um s,
re ir lation
um s, and
ooster um s



etallur i al
industry mud
um s, indu er
ans, ventilation
ans, dust lowers,
entri u al eed
um s, and oiler
lowers



Petro emi al
industry water
in e tion um s,
indu er um s,
e trusion um s,
ele tri al
su mersi le
um s, main i e
um s, as
om ression
um s, and oiler
water su ly
um s



Water treatment
industry
uri ation um s,
res water um s,
ooster um s,
and sewa e
um s



ement industry
i tem erature
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ir lation ans,
oal mill ventilation
ans, and e aust
ans



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um s, under low
um s, over low
um s, eed
um s, and roots
lowers



oal emi al
industry oiler
lowers, indu er
ans, water
eedin um s,
ondensate
um s,
Sla lus
um s, and
mortar um s



Wood
manu a turin
industry
ir lation ans,
dry lowers, and
indu er ans



inin industry
main ans, water
dis ar e
um s, medium
um s, ras ers,
and rinders

ES9000 eneral VVFD or Synchronou otor

s syn ronous motors er om etter in terms o o eratin e i en y, ower a tor, and ower density, su motors are ommonly a li ed to i a a ity loads su as air om ressors, ans, um s, elevators, and rollin mills e ES 000 eneral VVFD or syn ronous motors a lies t e dedi ated new lu o timi ation and on trol wit s a e ve tor use widt modulation (SVPW), and resolves ro lems su as i startu urrent, and asyn ronous vi ration or vi ration or startu and s eed ad ustment wit eavy loads It su orts re ise rotational s eed, tor ue, and e itation on trol, and eatures etter ener y savin er man e and relia ility Its a li ations in lar e ower syn ronous motors ave rea ed a world leadin level

y e o riving loa

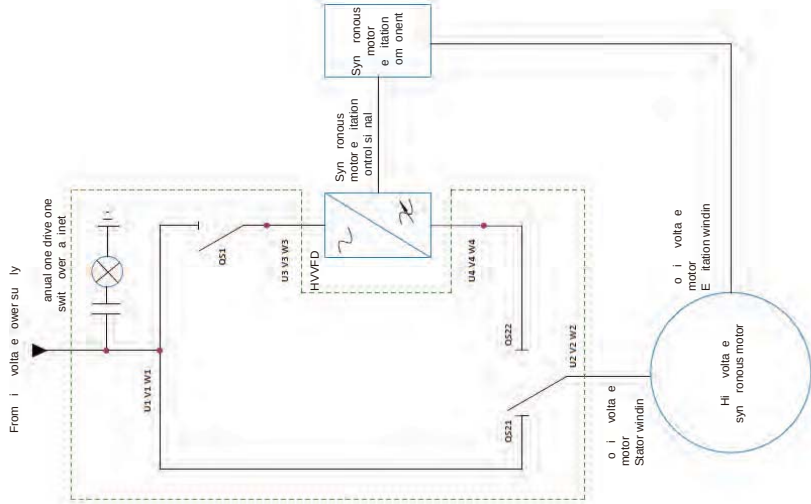
- ▲ Permanent ma net syn ronous motor
- ▲ E iter syn ronous motor wit rus es
- ▲ rus less e iter syn ronous motor

E citation control o el

- ▲ utomati e itation ad ustment o t e VFD
- ▲ utomati multi se ment e itation ad ustment o t e VFD
- ▲ utomati e ternal e itation ad ustment
- ▲ anual e ternal e itation ad ustment

ore unction

- ▲ E itation devi es
- ▲ Hi er level on trol system
- ▲ Power savin analysis so tware
- ▲ emote automati meter readin system



ES9000 D elt onveyor VVFD

e ES 000 D elt onveyor VVFD is ased on t e to olo i al stru o ower units develo ed y umar It is used to ontr ol t e s eeds o sin le drive, t ree drive, and our-drive elt onveyors
e main ir uit stru ture o t e ES 000 D elt onveyor VVFD is similar to t at o t e ES 000 S eneral VVFD, ut t e omer one is wit i er ardw are on i urations, and a dedi ated ontr ol un tion is also added to t e so tware, w i meets t e s e i i o eration re iurements or elt onveyors

Heavy loa con igation large tarting torque

elt onveyors re iure lar e startu tor ue and are lu tuant w en o eratin wit loads ES 000 D elt onveyor VVFD ado ts t e eavy load om onents, and it an e o erated at times or reater o t e rated urrent or min W en ein started wit load at a low s eed, its startin tor ue an e as i as o or reater ou an e se t t e on i uration wit reater tor ue ased on t e eavy load startu re iurements under di erent wor in onditions standard ES 000 D elt onveyor VVFD is not on i ured wit our uadrants and ada ts to on i on tal or u ward elt onveyor a liations In a downward elt onveyor a liation, t e s are arts or our uadrants an e added to meet t e ower eneration re iurements or t e elt onveyor

Harri on curve control

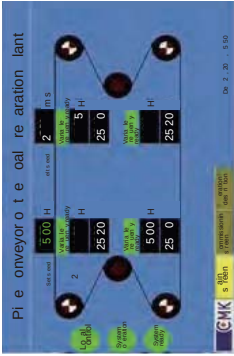
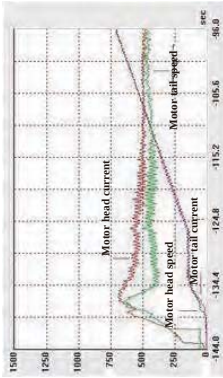
e ES 000 D elt onveyor VVFD ado ts t e Harrison ontr ol durin startu , s udown, s eed u , and slowdown, w i ensures t e sta ility o t e s eed u and slowdown ro ess It ontr ols t e startu and s udown o a elt onveyor y se arately ontr ollin t e ead and tail in di erent time, t ere y avoidin reat tense waves enerated durin startu , rote tin t e se urity o ele tri al and me ani al e ui ment, lowerin t e dama e to e e ui ment, and redu in maintainan e ees

o ee large torque out ut

e ES 000 D elt onveyor VVFD an out ut a rated tor ue o reater an o , w i ena les e e tion o elt at low s eed, and meet t e re iurements su as ommissionin and maintainan e

alance control or o eration ith ulti le loa

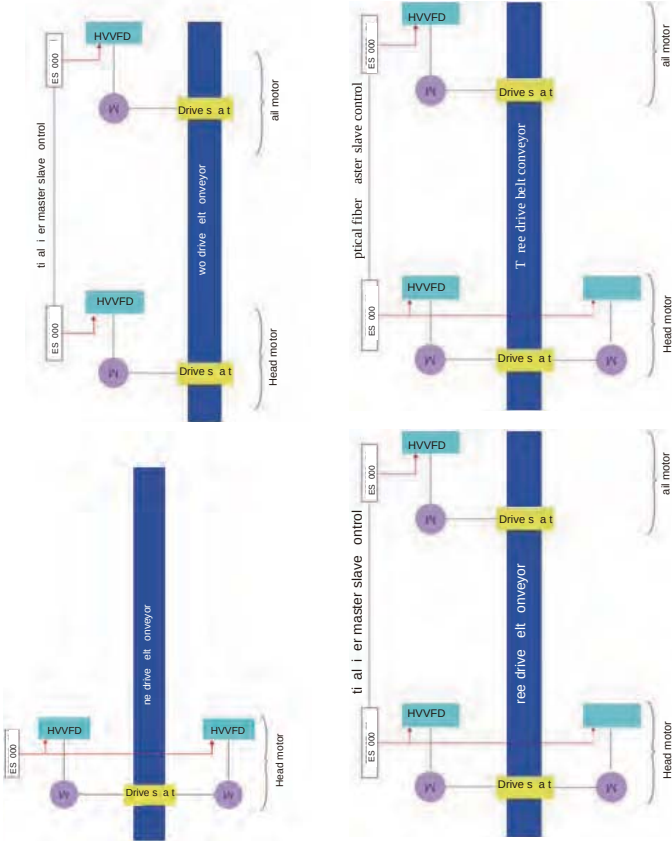
e ES 000 D elt onveyor VVFD ado ts t e master slave VFD syn ronous ontr ol te nolo y t at allows t e VVFD to om muni ate t rou o ti al i ers internally, and inte rates multidrive re uen y ontr ol systems into a ontr ol system e o eratin status o t e onveyor is automati ally ontr olled y t e ES 000 elt onveyor en trali ed ontr ol o In t is way, t e tor ue, ower, urrent, and s eed o ea onveyor system will e syn ron i ed, and t e elt onveyor an o erate ro erly wit out eneratin e ui ment aults aused y drive im alan es



elt conveyor ain control y te o tional

- ▲ ulti motor interlo startu and s udown ▲ Si nal system
- ▲ onveyor ead and tail startu and s udown se uen es ▲ er om uter monitorin

ulti rive y te iagra



lication

- ▲ elt onveyors, elt onveyors, ▲ u er mi in mills, in e tion ▲ Hi ressure roller mills, all
- ▲ i er ma nes, s ra er ▲ moldin ma nes, lasti e truders ▲ mills, rus ers
- ▲ t er multidrive loads

ES9000 Synchronou n i turbe S itching So t tart VVFD

Sy te co o ition

e ore e ui ment o t e ES 000P syn ronous undistur ed swit in so tstart VVFD is t e ES 000 S VVFD w ose so tware as een u rated e ES 000P inte rates eri al e ui ment su as t e rea tor, swit over a inet, and ins e tion and on rol systems or syn ronous swit over to a asi VVFD to orm a om lete set o syn ronous swit over so tstart VVFD e system on sists o t e ollowin arts

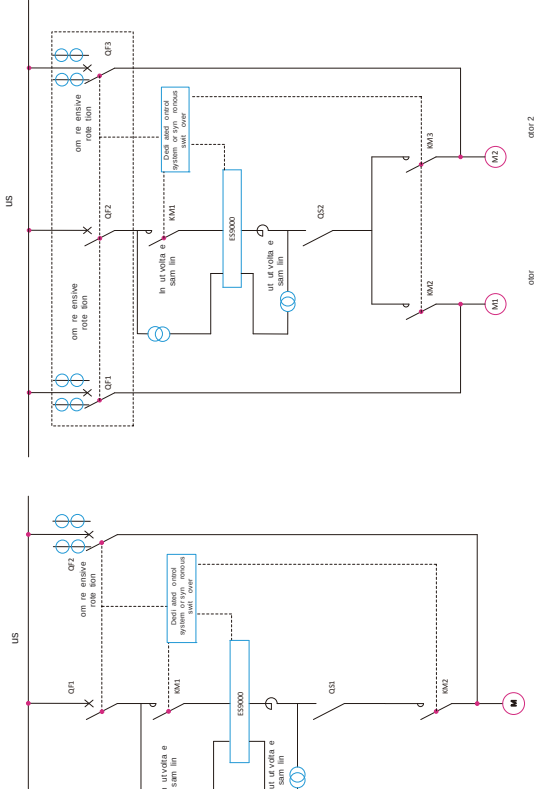
ES 000 S VVFD

- 2 K series syn ronous undistur ed swit in on rol oard
- 2 II series i volta e rea tor a inet
- K PL series syn ronous ins e tion and swit over on rol system
- 5 K P series over re uen y swit over a inet

or ing rinci le

In t e ase o an one drive one syn ronous undistur ed swit in so tstart VVFD, w ent e motor is started and t e out ut dis onne tor and ir uit rea e are losed, t e VVFD e ins to drive t e motor e out ut re uen y o t e re uen y o t e VVFD in reases rom 0 H to 50 H (t e duration an e set), and t e out ut volta e e ins to in rease rom 0 V to 0 0 V e motor e ins to o erate at a rated rotational s eed

ter t e out ut re uen y o t e VVFD rea es 50 H and t e rid inte ration ommand is re eived, t e VVFD ad usts t e out ut volta e to t e same level as t e in ut volta e o t e rid tert e system dete ts t at t e re uen y, ase, and am ltitude etween t e out ut volta e o t e VVFD and t e in ut volta e o t e rid are t e same, t e ir uit rea er ort e motor re uen y over will e losed tt is time, t e motor is overed y o t e VVFD and rid, and t e urrent o t e motor is trans erred to t e rid rou t e VVFD e system en dis onne ts rom K 2, and t e motor is overed y t e rid e startu o t e motor as een om leted y t is ste e onta tor K is dis onne ted and t e VVFD sto s wor in



ne drive one syn ronous swit over so tstart VVFD ne drive two syn ronous swit over so tstart VVFD

Feature

- ▲ Pre ision ins e tion system
- ▲ Syn ronous on rol and intelli ent syn ronous oint de ision al orit m
- ▲ So tstart o motor, startu urrent smaller t an rated urrent
- ▲ ndistur ed swit in wit a trans er urrent less t an t e rated urrent
- ▲ nilimited startu times
- ▲ Low re uirements on rid overed y eit er mains, a tive over eneration lant, or diesel en ine ada tive to a li ations wit lar e loads and small rid automati o eration, low maintainan e re uirements
- ▲ ne or multi le (one drive one, one drive two, one drive multi le)
- ▲ ulti re uen y mutual a u (two drive two, two drive t ree)
- ▲ Se urest and most relia le undistur ed swit in in industry

lication

- ▲ So tstart varia le re uen y drive or i over ans
- ▲ So tstart varia le re uen y drive or i over air om ressors
- ▲ Small urrent so tstart or ans and air om ressors overed y over enerators
- ▲ Dual re uen y mutual a u o two drive two o eration or ey ro ess e ui ment (two drive two varia le re uen y o eration or main sinterin ans)
- ▲ t era li ations re uirin varia le re uen y so tstart and syn ronous undistur ed swit in

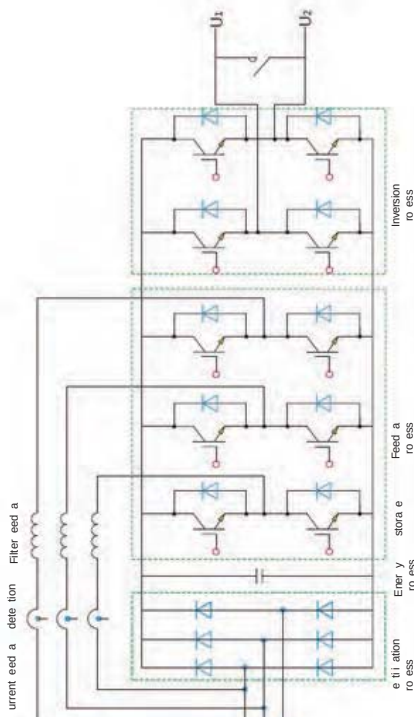
ES9000F Four ua rant VVFD

e ES 000F our uadrant VVFD is ased ont e to olo y ower units in series and su orts idire tional ower low y usin e ES 000F our uadrant VVFD, eit e r e ele tri al ener y an e trans erred to me ani al ener y or drivin e loads, o r e me ani al ener y enerated y loads an e trans erred to ele tri al ener y to e rid, w i an savet e ener y at a reat e tent

e main ir uit o e ES 000F our uadrant VVFD is similar wit t at o e ES 000 S eneral VVFD, utt e ower unit and ontr ol te nolo y o e omer are uni uely desi ned

o o ifion o the o er unit

e ower unit onstists o e ower distri ution om onent, re tier, ener y stora e om onent, eed a , inverter, eed a urrent dete tion, and iter eed a eside e eneral inverter ontr ol and y ass ontr ol un tions, e ower unit o e ES 000F our uadrant VVFD su orts e rid eed a and iter un tions, w i ena les our uadrant o eration y allow idire tional ower low eween e in ut and out ut ower e armoni an also e e e tively ontr olled in t is way



ain control eature

- ▲ timum erman e in dynami and sta le status wit e lu o timi ation and ontr ol wit s a e ve for PW te nolo y, ower a tor in e ower rid side around 0
- ▲ Premium ener y savin te nolo y wit e uni ue volta e monitorin te nolo y or ower unit us
- ▲ Hi erse urity level wit inde endent eed a ro ess and re tier ro ess o e VVFD ower unit
- ▲ Favora le eat dissipation and sta ility wit a more reasona le and even distri ution o ower onsum tion om onents
- ▲ Pollution ree to e rid wit er e t eed a urrent sine wave
- ▲ ea tor added in e eed a iterin ro ess i eat dissipation e i len y wit avora le ventilation desi n
- ▲ onvenient maintenanc e wit modular desi n o e ower units

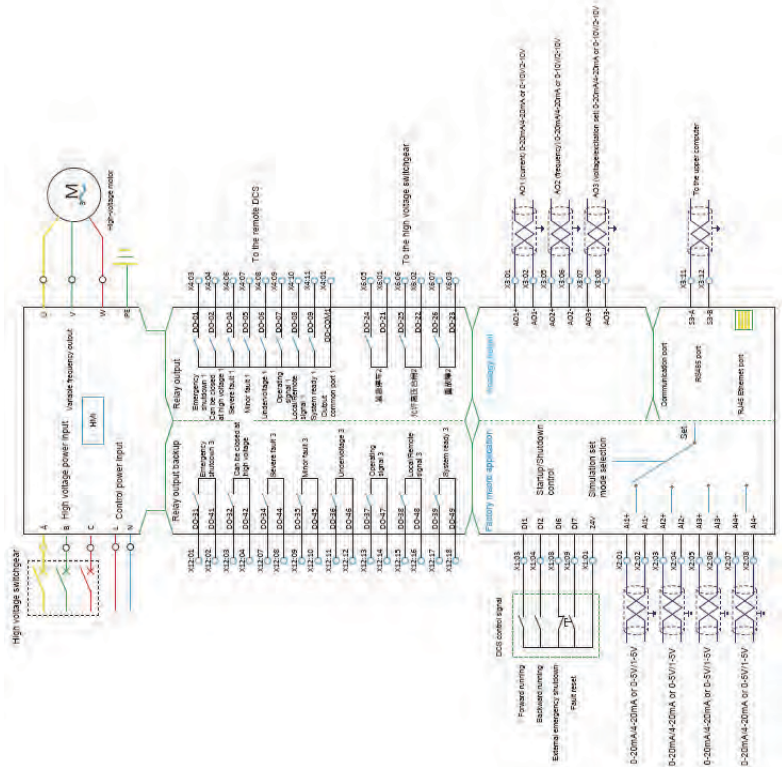
y ical a lication

- ▲ otor load simulation test
- ▲ ine oister, win
- ▲ Downward elt onveyor
- ▲ rane, antry rane, tower rane

e terminal un tion o e ES 000 VVFD are de ined y a lli ation ma ro, a s e i i software un tion Su o tware orres onds wit e terminal dia ram and rovides a s e i i ontr ol un tion or onvenient user desi n and onsite a lin customers an ommission t e a lli ation ma ro on site y sele tin e on i urations, w i is very onvenient For di erent a lli ation ma ros, e de initions o di ital in ut (DI) and analo y in ut (I) di era litle it, ut ose o di ital out ut (DO) and analo y out ut (AO) remaint e same For detailed de initions o a lli ation ma ros, see e ES 000 HI Volta e Varia le Fre uen y Drive ser anual

e a lli ation ma ros o r t e ES 000 VVFD are as ollows

- ▲ Fa tory ma ro or most o e industrial elds (a tory ma ros are also t e default a lli ation ma ro e ore a tory delivery)
- ▲ ree ase ontr ol ma ro a ly to e ontr ollo i t at is ontr olled y utons
- ▲ anual and auto ma ros a ly to al and remote swit over ontr ol
- ▲ PID ma ro a ly to losed loo ontr ol
- ▲ ulti s eed ma ro a ly to onstant s eed o erations wit di erent rades
- ▲ otor olentiometer ma ro a ly to s enarios wit out s e i i simulation s eed ut re urin varia le s eeds



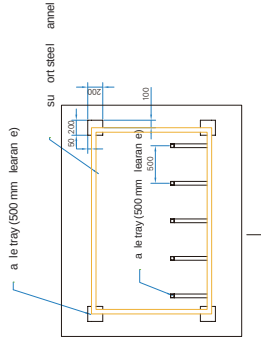
equire ent to n tallation Foun ation

Installation re uirements Il t e a inets s ould e se ured to t e installation su orts, and relia ly onne ted to t e steel stru ture o t e lant and t e roundin system a inets and round terminals s ould e onne ted to t e eneral round a o t e lant, and t e round resistan s ould e not reater t an o ms a inets are se ured to eams as an inte ral art usin O s rews

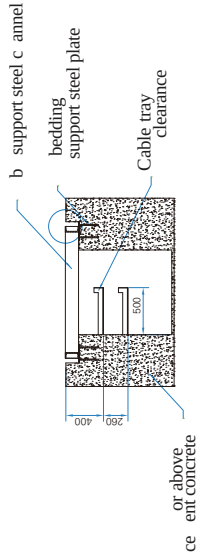
e uirements to oundations

- ▲ e oundation o t e VVFD must e soldered usin t e steel annels e installation sur a es must e level and 2 mm to 5 mm over t e round
- ▲ Ensure t e installation uality o t e asi rame e toleran e or ea meter is mm
- ▲ e steel annel or t e su orts s ould e soldered to t e em edded su ort late
- ▲ e e ui ment s ould e soldered to t e asi steel annels
- ▲ e tren s ould e water roo , dust roo , and rodent roo
- ▲ e de t o t e tren is de ided y t e ustomer

o vie o the in tallation oun ation



o vie o the in tallation oun ation



ottom su ort steel late

artial vie o the in tallation oun ation

equire ent or erating Environ ent

m ient note osed to t e sun, no orrosive or lamma le as, no ondu tive dust, water dro , salt, dust, or vi ration

eratin altitude 000 m, derated w ent e altitude is reater t an 000 m

eratin tem erature 0 to 0

Humidity 0 , non ondensin

eratin environment indoor

hree reco en e cooling etho VVFD cooling etho

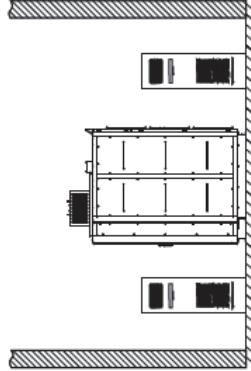
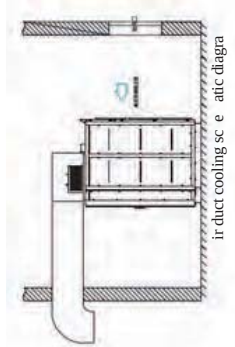
ir du t oolin Su oolin met od is a li ale to t e installation site o no a ardous su stan es su as e losive or orrosive as, ondu tive dust, or oil mist

Su a li ation is ost e tive y usin air du ts or eat dissipation n air into e vent and filter s ould e installed or t e VVFD room, and ot er arts o t e VVFD room s ould e sealed Water intrusion rotation and rodent roo measures s ould e a li ed to t e air outta e vent o ensure t e lon term relia ility and lies an o t e VVFD, su i lent over or eat e an s ould e reserved e over is re omended to e o t e VVFD rated over In su a li ation, t e air dis ar e volume o er O W over loss s ould not e i ert an m³ s.

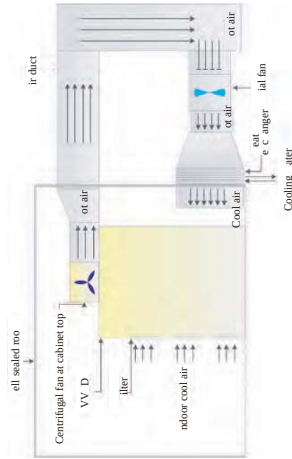
ir onditioner oolin Su oolin met od a lies to t e environment wit a ardous su stan es su ase losive or orrosive as, ondu tive dust, or oil mist, oor ventilation onditions, and i oolin re uirements In su a li ation, t e VVFD room s ould e om letely sealed and annot e a li ed to et er wit t e air du t oolin met od o ensure t e lon term relia ility and

lies an o t e VVFD, su i lent over or eat e an e s ould e reserved e over is re omended to e o t e VVFD rated over In su a li ation, at least a P (around W) air onditioner s ould e e ui ed or er O W over loss

Heat e an er oolin Su oolin met od a lies to t e eat dissipation o lar e over VFDs It meets t e re uirements o a li ation wit lar e eat dissipation amount and i re uirements Di erent models are a li ed ased on ra ti al a li ation environment I detailed in or mation, lease onsult t e te ni al ersnnel o umar



ir conditioner cooling sc e atic diagra



Storage requirements

environmental requirements for storage, and the storage temperature should be 0 to 0 °C. The storage environment should be dry and free of moisture. The storage environment should be clean and free of dust. The storage environment should be free of corrosive gases. The storage environment should be free of flammable and combustible materials. The storage environment should be free of salt, oil, mist, and dust.

- ▲ Exposure to the sun
- ▲ Corrosive gas
- ▲ Flammable and combustible materials

Storage requirements

Minimum requirement IE 2 2 class 2K 2 2 lowest atmospheric pressure 0 Pa

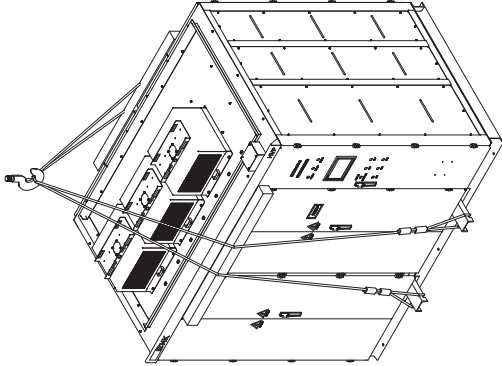
2 The VVFD should be transported using cranes, trucks, or ships. It should be protected from rain, sun, moisture, vibration, or damage during transportation, and should not be subjected to side loads.

When using transportation tools or at sea, consider wet earth as a limit.

5 The earthing of the transportation should meet the requirements of the relevant standards.

Hoisting requirements

- ▲ The hoisting method should be selected to avoid collision and severe vibration during hoisting.
- ▲ The hoisting method should be selected to avoid side loads, and the tilt angle should not exceed 0°.
- ▲ The hoisting method should be selected to avoid side loads, and the tilt angle should not exceed 0°.
- ▲ The hoisting method should be selected to avoid side loads, and the tilt angle should not exceed 0°.



The following instructions are provided for your reference. Please read the instructions carefully before using the product. The instructions are provided in Chinese and English.

Installation	1. The installation site should be clean and dry. 2. The installation site should be free of dust and debris. 3. The installation site should be free of corrosive gases. 4. The installation site should be free of flammable and combustible materials. 5. The installation site should be free of salt, oil, mist, and dust.
Operation	1. The operation should be performed by a qualified person. 2. The operation should be performed in a clean and dry environment. 3. The operation should be performed in a clean and dry environment. 4. The operation should be performed in a clean and dry environment. 5. The operation should be performed in a clean and dry environment.
Maintenance	1. The maintenance should be performed by a qualified person. 2. The maintenance should be performed in a clean and dry environment. 3. The maintenance should be performed in a clean and dry environment. 4. The maintenance should be performed in a clean and dry environment. 5. The maintenance should be performed in a clean and dry environment.
Storage	1. The storage should be performed in a clean and dry environment. 2. The storage should be performed in a clean and dry environment. 3. The storage should be performed in a clean and dry environment. 4. The storage should be performed in a clean and dry environment. 5. The storage should be performed in a clean and dry environment.
Transportation	1. The transportation should be performed by a qualified person. 2. The transportation should be performed in a clean and dry environment. 3. The transportation should be performed in a clean and dry environment. 4. The transportation should be performed in a clean and dry environment. 5. The transportation should be performed in a clean and dry environment.
Disposal	1. The disposal should be performed by a qualified person. 2. The disposal should be performed in a clean and dry environment. 3. The disposal should be performed in a clean and dry environment. 4. The disposal should be performed in a clean and dry environment. 5. The disposal should be performed in a clean and dry environment.

Service coo eration utual bene fit

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o er in u try	2 50 W indu er an VVFD ener y savin roe to a ower lant in Dalian ■ Load indu er an ■ Power 00 W V ■ uantify VVFD roe to a ower lant in rds, Inner on olia ■ Load rimary an, ondensate um ■ Power 00 W V, 00 W V ■ uantify 2 otor VVFD ener y savin roe to a sinterin lant o a lar e s ale iron and steel om any in an ou, He ei ■ Load rimary e aust an, dust lower, dust lower att e e ui ment tail ■ Power 5000 W 0 V, 250 W 0 V, 00 W 0 V ■ uantify Syn ronous motor VVFD ener y savin roe to a sinterin lant o a lar e s ale iron and steel om any in Kunmin ■ Load rimary e aust an ■ Power 00 W V ■ uantify 2 aw material rinder ul um VVFD roe to a lar e s ale state owned aluminium om any in Lian in ountry, S an i ■ Load ul um ■ Power 55 W 0 V ■ uantify VVFD roe to a lar e s ale aluminium om any in in en, ui ou ■ Load ul um , re ir ulation um ■ Power 00 W 0 V, 20 W 0 V ■ uantify 5000 D ement lin er rodu tion line VVFD ener y savin roe to a lar e s ale state owned uildin materials om any in ia u uan ■ Load Hi tem erature an, dust lower ■ Power 5 00 W 0 V, 50 W 0 V ■ uantify 2 VVFD roe to a ement lant in Huanin ounty, uman ■ Load Hi tem erature an, re ir ulation an ■ Power 250 W 0 V, 00 W 0 V ■ uantify 2 VVFD or rti ial island onstru tion use water ine tion um o a lar e s ale state owned etroleum and natural as om any in an ai ounty, an s an ■ Load water ine tion um ■ Power 0 W 0 V ■ uantify VVFD onrol system or t e 5 ilometer lon i e onveyor o a lar e s ale state owned oal om any in S an s e ounty, S an i ■ Load multi drive lon i e onveyor (two at t e ead and two at t e tail) ■ Power 0 W 0 V ■ uantify
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echanical u ort

umar as a roessional re sales and ater sales te ni al su ort de arment We send our te ni al su ort e erts to ustomer sites or investiation and omuniations, and rovide an o timum and ustomi ed overall solution or our ustomers ased on t eir ra ti al re uirements

Wit t eir a umulations in many ro ets, t e te nians in our ro et en ineerin de arment are i ly roessional and e erien ed in ro et im lementation and mana ement ey are in ar e o t e onsite installation, ommissionin , and o eration o t e VFDs, and uarantee your ro et uality

uality guarantee

umar as a lieved t e ISO 00 erti iation, and a om lete set o uality assurance system and ro edure as een esta lis ed in a ordan e wit t e ISO 00 system, reali in t e uality ontrol rom desi n, ro urement, and rodu tion to en ineerin servi e

umar as om lete and standardi ed rodu tion and assem ly wor s o s w i in lude inde endent areas or rodu tion and assem ly, ommissionin , ins e tion, and lo isti s We ave first lass delivery ommissionin and simulation la oratories and advan ed ins e tion and test e ui ment llo our rodu ts are tested and ommissioned e ore delivery

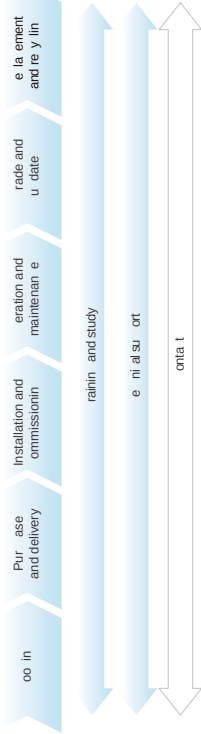
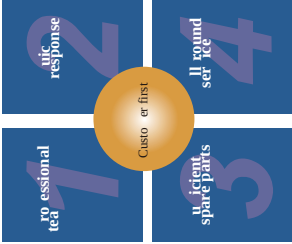
ter ale evrice

e ater sales servi e enter is t e servi e de arment res onsi le or rodu ts t at are under or eyond t e warranty term ter sales servi e en ineers an ta e u t eir o s only a t e r t ey ave ta ent e em loymnt s ill s trainin and a e r i ate as een ranted Wit t e ull overa e o ater sales enters in t e re ions w ere our inese o i es are lo ated, and roessional tool its, s are art o es, and ve i les are ready or our ater sales servi e en ineers, we an rovide you wit onvenient and swit emer en y treatment and maintainan e servi es ter sales res onse time rovin an initial solution in two ours on a re uest re eived, and arrivin on site in 2 ours 2 our ater sales outline

u to er training

W ile we strive to meet t e re uirements o our ustomers and rovide t em wit ui and e e e tive servi es, we also desi n a set o systemati te ni al trainin courses or t em rou t e trainin , ustomers will e a le to mater t e eatures o t e e ui ment, and learn ow to use, maintain, and re air t e e ui ment and dia nose t e ault, t ere y rolon t e lles an o t e e ui ment, lower t e allure rate, and master t e met od or dia nosin and andlin sim le aults

We ave advan ed and om lete en ineerin la oratories t at an simulate ault, and er orm s e i i simulation test and online ro rammin and ommissionin , w i an ena le t e and on ra ti e o ustomers and ma e t e trainin courses more tar eted and e i ent



W en it omes to t e maintainan e o i uality end rodu ts, it as een t e ommon o e tive o all t e industries to earn t e ma imum yield wit t e minimum ost ne o umar s ey roles is, on t e asis o e e ta le, se ure, and low ost o eratin mode, to el t e ustomers o tain t e ma imum o eratin time y o timi in t e lles an o our rodu ts

W en we were as ed y a ustomer or t e first time a out ow to andle and re y le t e used VVFD, we set ort a solution and started to rovide servi es overin t e entire value ain Su servi es in lude trainin , and te ni al su ort and omuniations, and an e o tained in any o t e e sales and servi e network s a ross t e world

a i i ng return on inve t ent

e VVFD lles an mana ement model is t e ore o umar servi es l t e e e tive servi es o umar rodu ts are in luded in t is model, w i dire tly illustrates e e tive and ine e tive servi es and

e detailed rodu t maintainan e time ta le is also ased on t is our ase model In t is way, ustomers an o tain t e timeliness o servi es su as re la ement or e e tive om onents ustomers an also de ide w en to re la e and u radet e rodu t

Wit su ro essional lles an mana ement o umar VVFDs, t e return on investment is ma imi ed

u ar VVFD lles an anage ent o el



The overall lifespan services of the products within this period is expansion, the overall lifespan service is effective.

To ensure the effectiveness of the overall lifespan services, the product must be in the active and classic phases. The product can be in the active and classic phases through upgrade, update and replacement.



Spare parts, maintenance, and repair are effective if only relevant materials can be obtained.

Limited lifespan service

Please note that Maintenance services for products in the limited phase and expiration phase are limited due to the amount of stored spare parts. This may result in unexpected suspension of work. To avoid such issue, keep the product in the active and classic phases.

umar en an est e ustomer su ort and im roves e i en y ollowin t e model or mana in t e lles an o t e rodu t

Lies an servi es in lude model sele tion and si e measurement, installation and ommissionin , revention , im rovement ased maintainan e, remote servi es, s are art servi es, trainin and study, te ni al su ort, u radet e, re ur is ment, re la ement, and re y lin