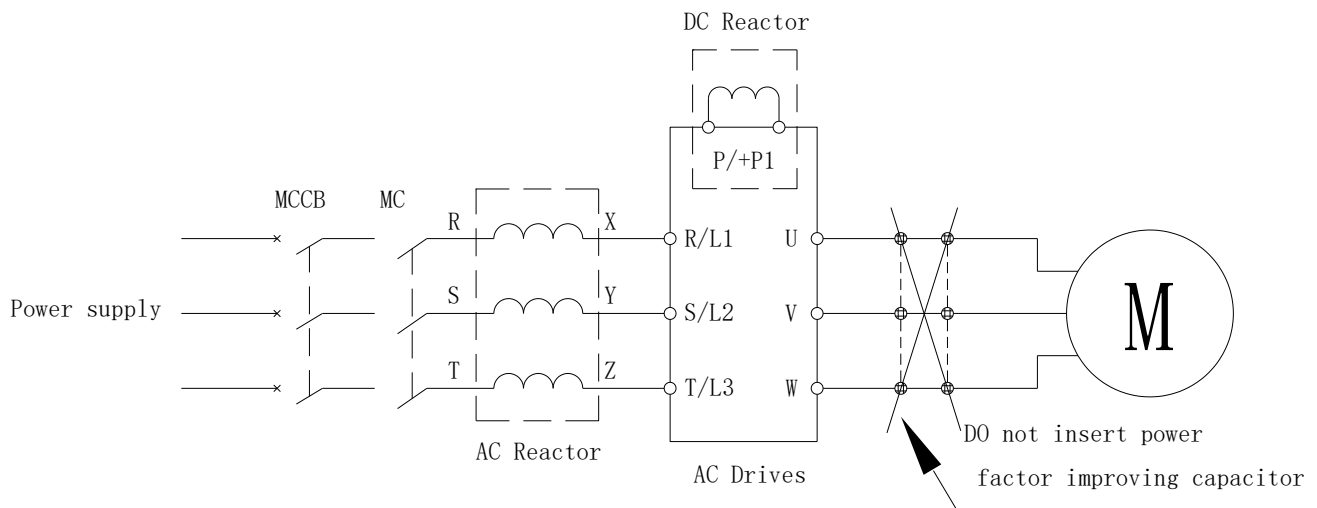


Shihlin Electric SA3 Series AC Drives Harmonics Report

(Released date: 20230527 Version: 1.00)

1. Harmonic suppression method

Power harmonics are generated by the rectifier parts of the AC Drives, which will affect both the power supply equipment and the power factor correction capacitor. To suppress harmonics and improve power factor, AC reactor (FA-ACL series) is added on the input side of the AC Drives, and DC reactor (FA-DCL series) is added in the DC bus circuit of the AC Drives.



2. Harmonic ratio

Reactor status	5th	7th	11th	13th	17th	19th	23th	25th	THDi
Without reactor	70.9	45.2	8.9	6.8	3.9	3.1	2.3	1.6	85.9
AC	36.6	14.4	7.9	3.4	3.3	1.2	1.2	0.8	40.9
DC	30.3	13.7	7.8	4.4	3.8	1.9	1.6	1.2	35.1
AC+DC	30.1	10.2	7.0	4.3	3.2	1.3	1.2	0.9	33.4

Note 1. The above table shows the value of each harmonic when the fundamental-wave current is 100% in this four wiring conditions: no reactor, AC reactor only, DC reactor only, and both AC and DC reactor are installed.

2. THDi may vary slightly, depending on the installation conditions and environment (e.g., cable, motor).

3. Outgoing harmonic current

SA3 series 220V models:

Model name	Output capacity	Output current	Fundamental wave current	Outgoing harmonic current converted from 6.6 kV (mA) (Without reactor, 100% operation rate)								
	(kVA)	(A)	converted from 6.6kV (mA)	5th	7th	11th	13th	17th	19th	23th	25th	THDi
SA3-023-0.75K/1.5KF	2	5	152	107	68	14	10	6	5	4	2	130
SA3-023-1.5K/2.2KF	3.2	8	242	172	109	22	16	10	8	6	4	208
SA3-023-2.2K/3.7KF	4.2	11	333	236	151	30	23	13	10	8	5	286
SA3-023-3.7F/5.5KF	6.7	17.5	530	376	240	47	36	21	17	12	9	455
SA3-023-5.5K/7.5KF	9.5	25	758	537	342	68	51	30	24	18	12	651
SA3-023-7.5K/11KF	12.5	33	1,000	709	452	89	68	39	31	23	16	859
SA3-023-11K/15KF	18.3	49	1,485	1,053	671	133	101	58	47	34	24	1,275
SA3-023-15K/18.5KF	24.7	65	1,970	1,397	890	176	134	77	62	46	32	1,691
SA3-023-18.5K/22KF	28.6	75	2,273	1,612	1,026	203	154	89	71	53	37	1,952
SA3-023-22K/30KF	34.3	90	2,727	1,934	1,232	244	185	107	85	63	45	2,342
SA3-023-30K/37KF	45.7	120	3,636	2,579	1,642	325	246	143	114	84	59	3,123
SA3-023-37K/45KF	55	145	4,394	3,116	1,984	393	298	173	138	102	72	3,773
SA3-023-45K/55KF	65	170	5,152	3,654	2,327	461	349	202	161	119	84	4,424
SA3-023-55K/75KF	82	215	6,515	4,621	2,942	583	442	256	204	151	106	5,595
SA3-023-75K/90KF	110	288	8,727	6,190	3,942	780	592	343	273	202	142	7,495
SA3-023-90K/110KF	132	346	10,485	7,437	4,735	937	711	412	329	242	171	9,004
SA3-023-110K/132KF	165	432	13,091	9,285	5,912	1,170	887	514	410	302	214	11,242

SA3 series 440V models:

Model name	Output capacity	Output current	Fundamental wave current	Outgoing harmonic current converted from 6.6 kV (mA) (Without reactor, 100% operation rate)								
	(kVA)	(A)	converted from 6.6kV (mA)	5th	7th	11th	13th	17th	19th	23th	25th	THDi
SA3-043-0.75/1.5KF	2	3	182	129	82	16	12	7	6	4	3	156
SA3-043-1.5/2.2KF	3	4.2	255	181	115	23	17	10	8	6	4	219
SA3-043-2.2/3.7KF	4.6	6	364	258	164	33	25	14	11	8	6	312
SA3-043-3.7/5.5KF	6.9	9	545	387	246	49	37	21	17	13	9	468
SA3-043-5.5K/7.5KF	10	12	727	516	328	65	49	29	23	17	12	625
SA3-043-7.5K/11KF	14	17	1,030	731	465	92	70	40	32	24	17	885
SA3-043-11K/15KF	18	24	1,455	1,032	657	130	99	57	46	34	24	1,249
SA3-043-15K/18.5KF	25	32	1,939	1,376	876	173	131	76	61	45	32	1,665
SA3-043-18.5K/22KF	29	38	2,303	1,633	1,040	206	156	90	72	53	38	1,978
SA3-043-22K/30KF	34	45	2,727	1,934	1,232	244	185	107	85	63	45	2,342
SA3-043-30K/37KF	46	60	3,636	2,579	1,642	325	246	143	114	84	59	3,123
SA3-043-37K/45KF	56	73	4,424	3,138	1,998	396	300	174	139	102	72	3,799
SA3-043-45K/55KF	69	91	5,515	3,912	2,491	493	374	217	173	127	90	4,736
SA3-043-55K/75KF	84	110	6,667	4,728	3,011	596	452	262	209	154	109	5,725
SA3-043-75K/90KF	114	150	9,091	6,448	4,106	813	616	357	285	210	148	7,807
SA3-043-90K/110KF	137	180	10,909	7,737	4,927	975	739	428	342	252	178	9,368
SA3-043-110F/132KF	168	220	13,333	9,457	6,022	1,192	904	523	418	308	218	11,450
SA3-043-132F/160KF	198	260	15,758	11,176	7,117	1,409	1,068	619	494	364	257	13,532
SA3-043-160F/185KF	236	310	18,788	13,326	8,485	1,680	1,273	738	589	434	307	16,134
SA3-043-185F/220KF	295	340	20,606	14,615	9,306	1,842	1,397	809	646	476	336	17,696
SA3-043-220F/250KF	367	425	25,758	18,269	11,633	2,303	1,746	1,011	807	595	420	22,120
SA3-043-250F/285KF	402	480	29,091	20,633	13,138	2,601	1,972	1,142	911	672	475	24,982
SA3-043-285K/315KF	438	530	32,121	22,782	14,507	2,872	2,177	1,261	1,006	742	524	27,584
SA3-043-315K/355KF	491	620	37,576	26,651	16,970	3,360	2,547	1,475	1,177	868	613	32,269