



SOFT STARTER PANELS PRODUCT CATALOG



*We manage water.
You can use it safely.*

***MADE IN
TURKEY***



PSS Series control board; It is specially designed for the pumps to work with soft starter in booster systems and to protect the pumps.

The control panel has automatic - manual operation selection. For manual operation, it is started with the start-stop buttons on the front panel. For automatic operation, the system activates and deactivates the pumps with the signal it receives from the pressure switch. With a specially designed multimeter on the panel, 3-phase voltage and 3-phase current are measured and displayed on the display screen.

measured values can be monitored. Protection is done by setting the upper and lower voltage/current values with a multimeter. The system can recognize the pump with a single button and set the lower and upper current values.

Soft starter application eliminates both mechanical and electrical problems caused by Pole and Star/delta starting operations.

Some of them are as follows.

Electrical problems due to transient voltages and currents caused by direct and star delta starting.

Such transient currents and voltages can affect the supply network and cause voltage fluctuations that may damage other devices connected to the network, Mechanical problems that lead motor driven equipment to overvoltage, Pressure fluctuations in pipelines.

These problems cause increased repair costs and lost production and workforce.

The easiest way to counter these problems is to use a soft starter.

General Information

- ✦ Microprocessor based design
- ✦ Auto Manual selection key.
- ✦ Manuel start-stop.
- ✦ 6 x 9.2mm 3digit 7 segment displays.
- ✦ Ability to monitor pump operating hours on the screen.
- ✦ Being able to see the voltage values on the screen.
- ✦ Phase sequence error protection.
- ✦ Being able to set High Voltage and Low Voltage protection values.
- ✦ Seeing the pump current values on the screen.
- ✦ Ability to set high current and low current protection value
- ✦ Possibility to set error delay time.
- ✦ General Error / Waterless Operation signal warning leds
- ✦ Protection against waterless operation with float
- ✦ Additional low current protection against running without water.
- ✦ All fault conditions can be seen on the screen.
- ✦ Reporting fault conditions with relay contact.
- ✦ Separate digital thermal protection for each pump in multiple pumps.
- ✦ Co-aging feature in multiple pumps (optional).
- ✦ 1 programmable dry contact output.
- ✦ Adjust the star-delta transition time

Connection Diagram

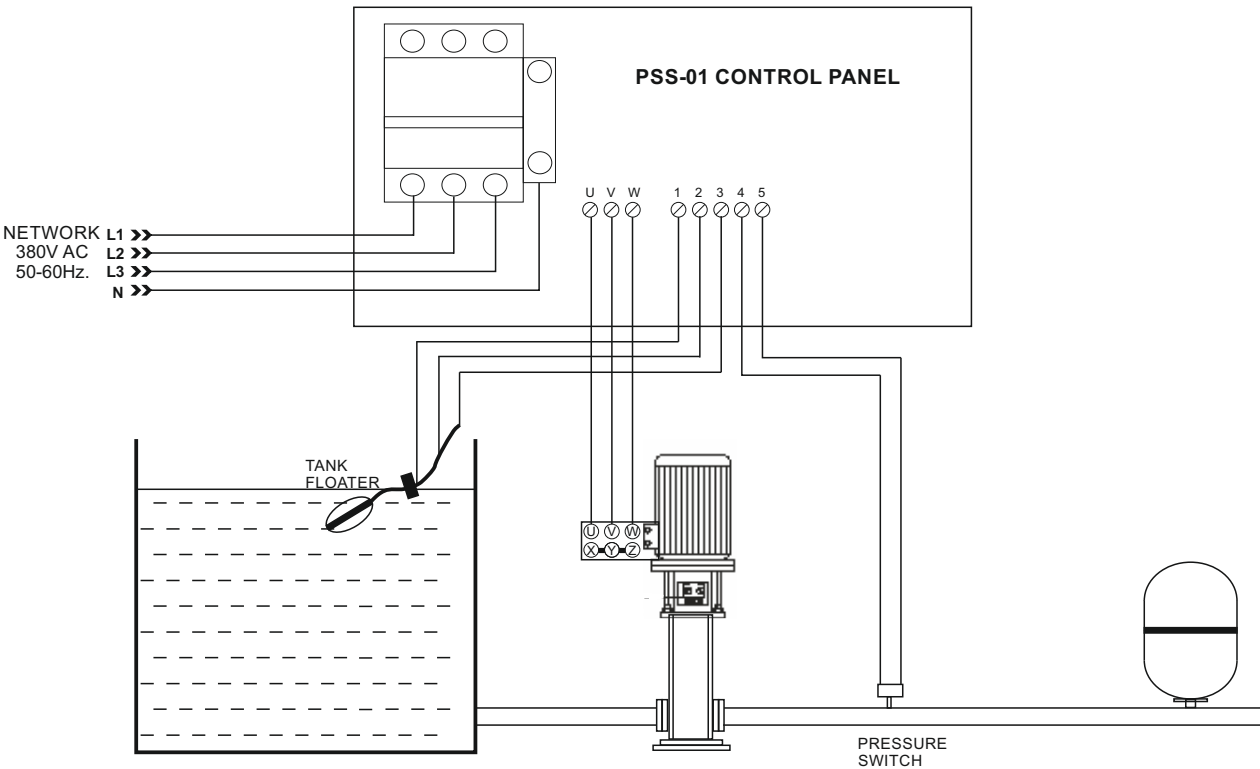


Figure 1: PSS-01 Panel Connection Diagram

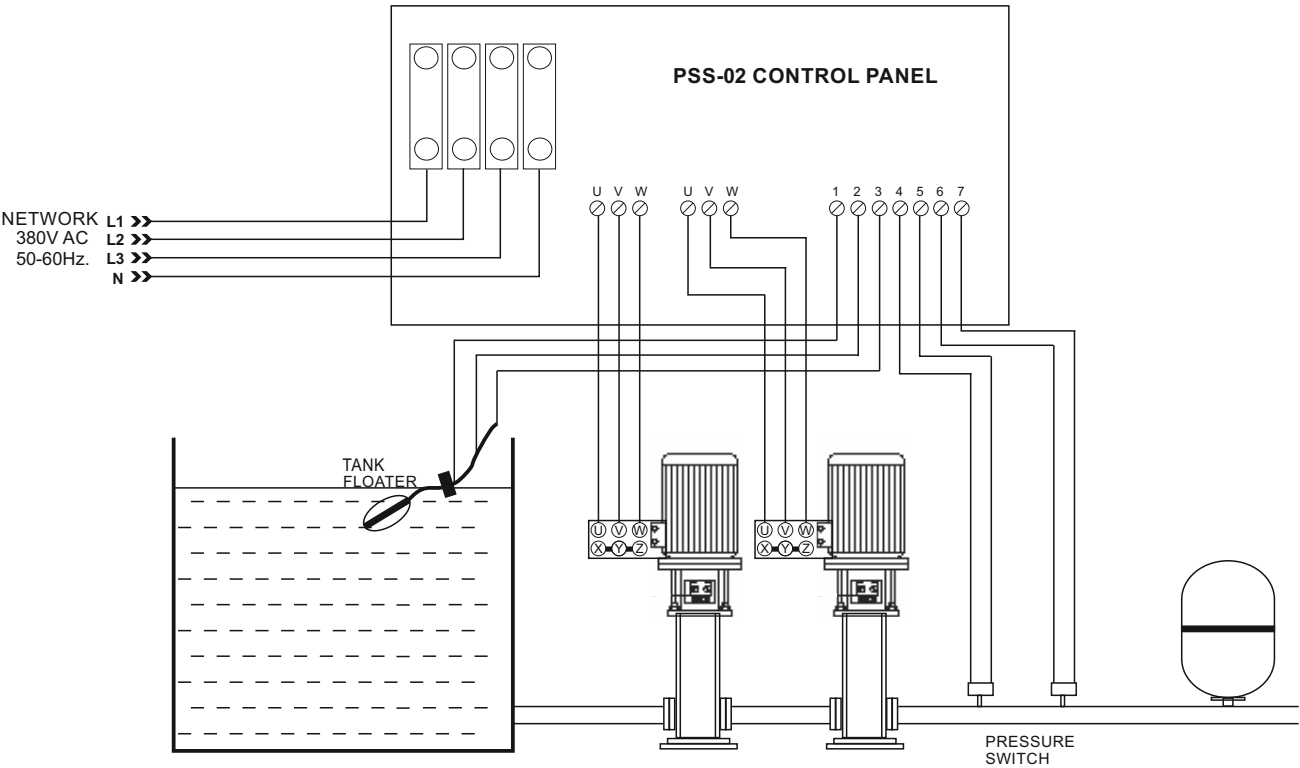


Figure 2: PSS-02 Panel Connection Diagram

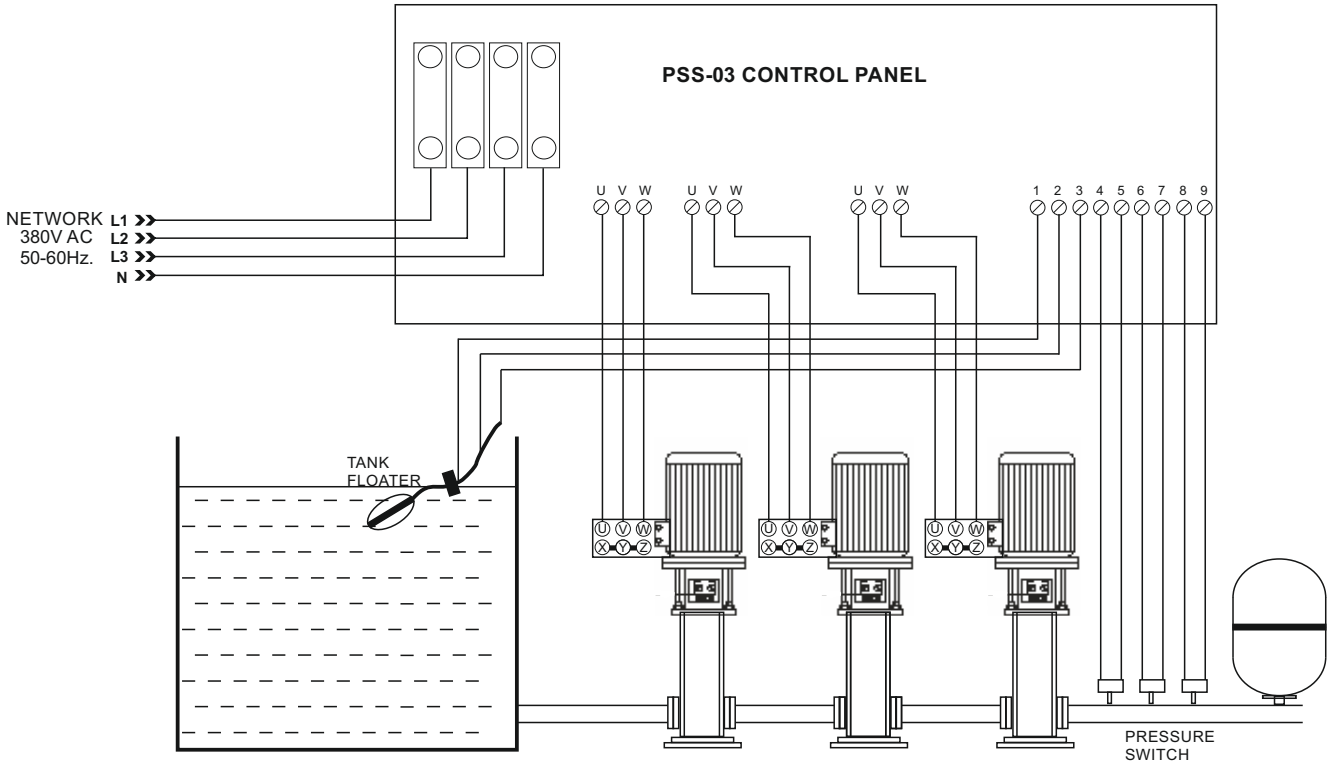


Figure 3: PSS-03 Panel Direct Start Connection Diagram

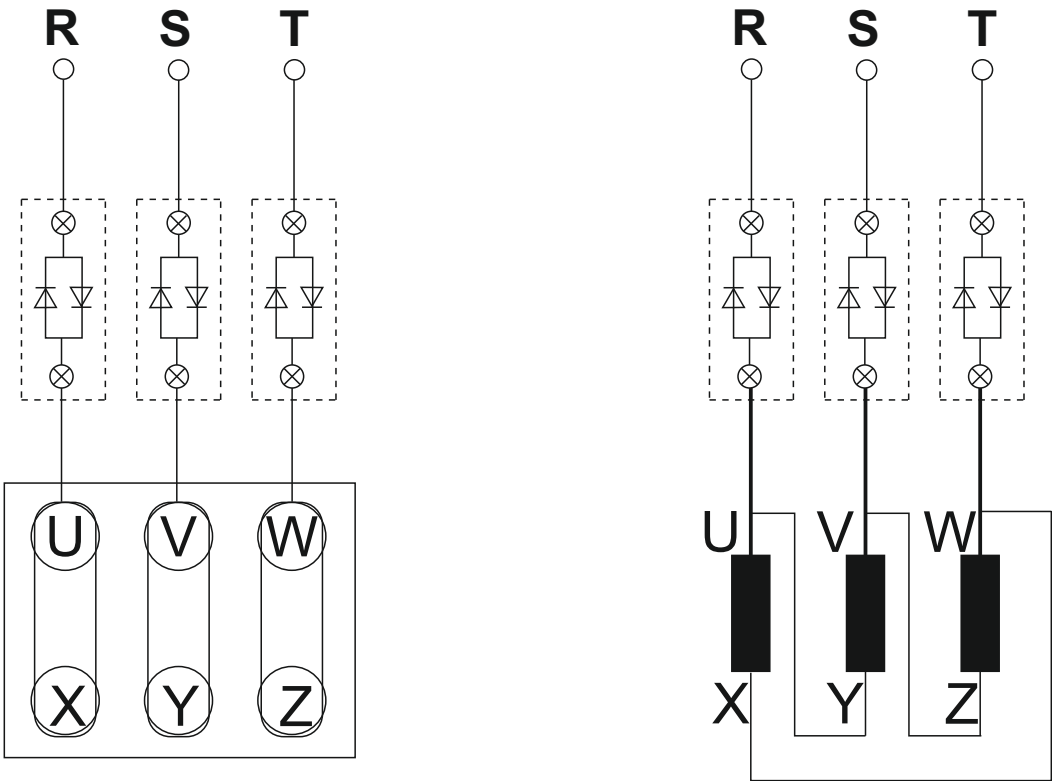


Figure 4: Soft Starter 3-Wire Direct Connection Diagram

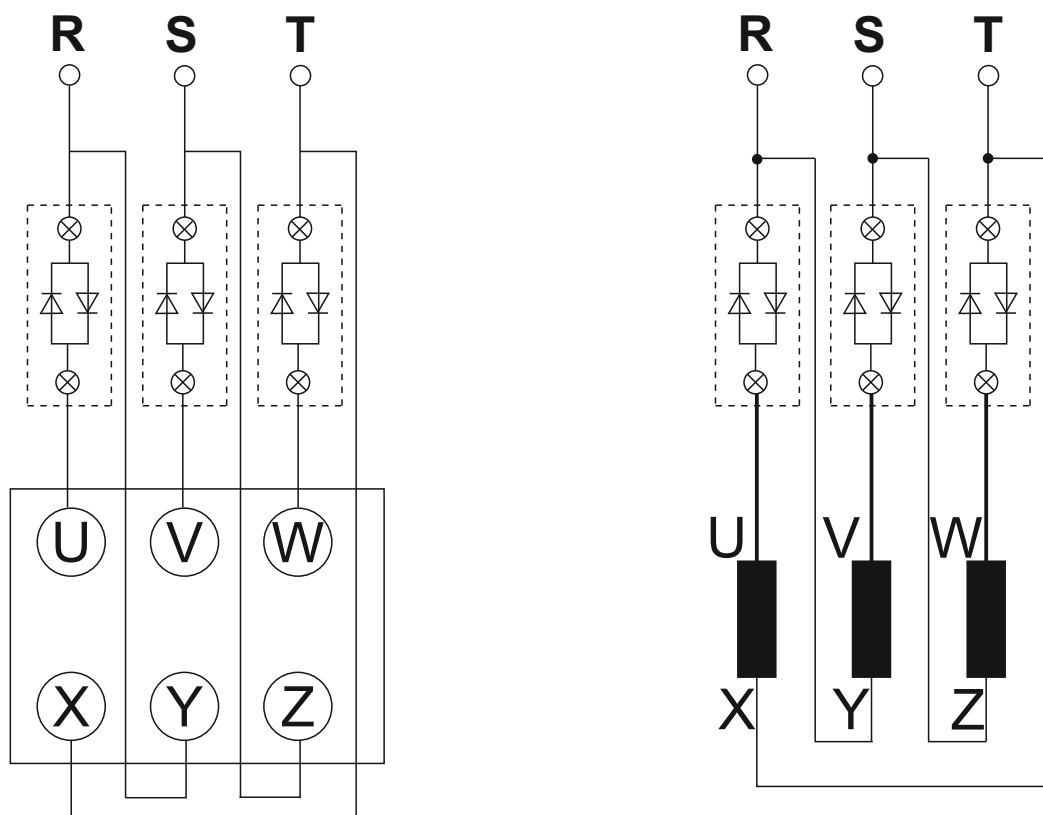


Figure 5: Soft Starter 6 Wire Triangle Connection Diagram

Technical details

Operating Voltage (Un)	230V – 380VAC
Operating Frequency	50/60Hz.
Working Power	<6VA
Operating temperature	-20°C to 55°C
Voltage Measurement Range	10-500V AC
Measurement Accuracy	%±1
DelayTime setting	1-30 sec.
Indicator	5X3digit 9.2mm display and leds
Connection style	Terminal connection
Ignition	5A/250VAC Resistive Load
Connection Insulation	2.5kV
Assembly	On the pump or on the wall
Protection Class	Ip55
Working Altitude	<2000meter

Technical Drawings

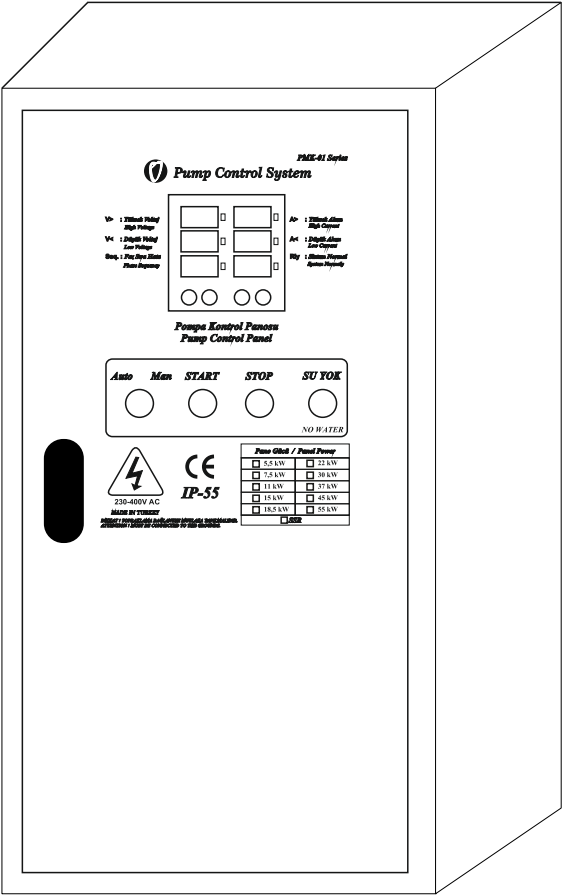


Figure 6: PSS-01 Panel Outer View

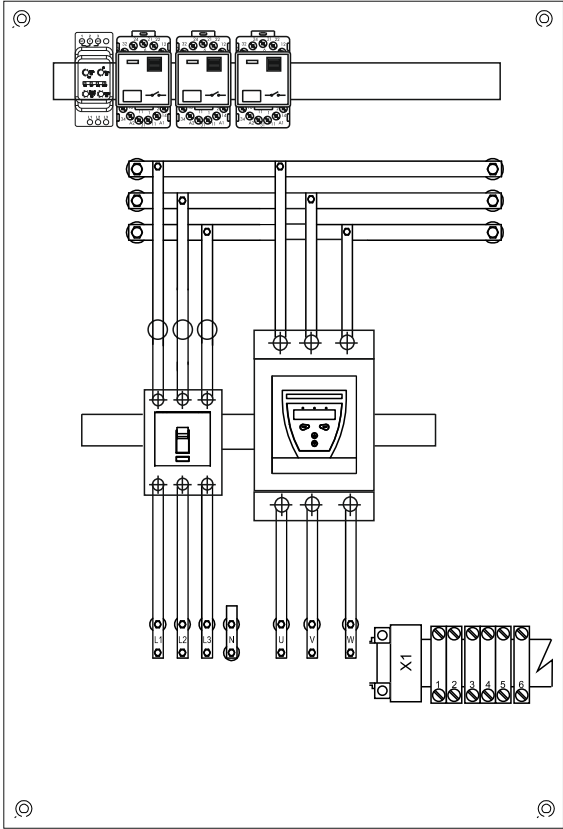


Figure 7: PSS-01 Panel Inside View

During the starting process, due to the motor voltage control with the electronic soft starter, it means that the starting current received and the starting torque generated in the motor are adjusted.

The same principle applies to the stance process. In this way, it is possible to reduce the torque generated in the motor slowly and thus to slow down the application smoothly.

In contrast to the frequency tuned starting and deceleration of the frequency converter, the frequency remains constant during this operation and is equal to the mains frequency.

After successful acceleration of the motor, the thyristors are now fully driven and thus the complete line voltage is at the motor clamps. Thyristors are bridged with internally mounted bypass contacts, as there is no need to adjust the motor voltage in operation. Thus, the heat generated by the power loss of the thyristor during continuous operation is prevented. In this way, the heating around the switchgear can be reduced.

The length of the starting time determines the time in which the motor voltage will be increased from the set starting voltage to the mains voltage. This affects the acceleration torque of the motor driving the load during the acceleration process. A longer starting time results in smaller acceleration torque at motor acceleration. Here, a longer and smoother engine acceleration occurs. The starting time should be chosen so that the motor reaches its nominal value within this time. If the time is selected shorter than necessary, that is, the starting time ends before the motor accelerates, a very high starting current occurs, which directly reaches the starting current value at this speed. In this case, the soft starter may switch itself off with the built-in overload protection function and go into a fault.

CAUTION :No capacitor should be connected to the soft starter output. The capacitor connected to the output causes the softstarter to be damaged.

The capacitor connection must be separately connected directly to the mains line and the motor must be run in parallel during operation.

SoftstarterWhile selecting (soft starter), the selection should be made in accordance with the connection type. Direct connection 3-wire: The motor must be selected according to the nominal current value.

Delta connection 6-wire : Selection should be made by dividing the motor nominal current value by $\sqrt{3}$.

For example, for a motor with a nominal current of 100A: $100/\sqrt{3} = 100/1.732 = 57.7A$.

ThisA softstarter above 57.7A should be selected accordingly.

CABLE SECTION SELECTION TABLE

Cos fi : 0,9		Kesit (mm ²) Section (mm ²)															
Güç Power kW	Yük Akımı Current load A	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
2,5	4,2	178	291	466	695	1162											
		103	169	271	404	675	1063										
3	5	150	244	391	584	976	1536										
		87	142	227	339	567	892	1391									
3,5	5,9	127	207	331	495	827	1302										
		73	120	192	227	480	756	1180									
4	6,7	111	182	292	435	728	1146										
		65	106	169	253	423	666	1038									
4,5	7,5	100	163	261	389	650	1024										
		58	94	51	226	378	595	927	1266								
5	8,4	89	145	233	347	581	914	1425									
		51	84	135	202	337	531	828	1130								
6	10,1	74	121	193	289	483	760	1185									
		43	70	112	168	200	442	689	940	1247							
7	11,8	63	103	165	247	413	651	1015									
		36	60	96	143	240	378	590	805	1067							
8	13,5	55	90	145	216	361	569	887	1210								
		32	52	84	125	210	330	515	703	932	1301						
9	15,2	49	80	128	192	321	505	787	1075								
		28	46	74	111	186	293	457	625	828	1155						
10	16,8	44	72	116	173	290	457	712	972	1290							
		25	42	67	101	168	265	414	565	750	1045						
12	20	37	61	97	146	244	384	598	817	1083							
		21	35	56	84	141	223	347	474	630	878	1166					
14	23	12	53	85	127	212	334	520	710	942	1315						
		18	30	49	73	123	194	302	413	547	764	1014					
16	27		45	75	108	180	284	443	605	802	1120						
			26	42	62	105	165	257	351	466	650	863	1053				
18	30		40	65	97	162	256	399	544	722	1007						
			23	37	56	94	148	281	316	419	585	777	948	1119			
20	33		37	59	88	147	232	362	495	656	916	1216					
			21	34	51	88	135	210	287	381	532	706	862	1017			
22	37			52	78	111	207	323	441	585	817	1085					
				30	45	76	120	288	256	340	475	630	769	907	1072		
25	42			46	69	116	182	285	389	516	719	955	1165				
				27	40	67	106	165	226	299	418	555	677	799	944	1156	
30	50				58	97	153	239	326	433	605	802	979	1155			
					33	56	89	139	189	251	351	466	569	671	793	971	1124
35	59					82	130	202	277	367	512	680	830	979	1157		
						48	75	117	161	213	297	395	482	569	672	823	952
40	67					72	114	178	243	323	451	599	730	862	1018		
						42	66	103	141	187	262	348	425	501	592	725	838
45	76						101	157	215	285	397	528	644	760	898	1100	
							58	91	124	165	231	306	374	442	522	639	739
50	84						91	142	194	258	359	477	582	688	812	995	1151
							53	82	113	149	209	277	338	400	472	578	669
55	93						82	128	175	233	325	431	526	621	734	898	1040
							48	74	102	135	188	250	305	361	426	522	604
60	101							118	161	214	299	397	484	572	675	827	957
								68	94	124	173	230	281	332	392	481	556
70	118							101	30	183	256	340	414	487	578	708	819
								58	80	106	148	197	241	284	336	411	476
75	126							95	129	172	239	318	388	458	541	663	767
								55	75	99	139	185	225	266	314	385	446
80	135								121	160	223	297	362	427	505	619	716
									70	93	130	172	210	248	293	360	416
90	152								107	142	198	172	322	380	449	549	636
									62	82	115	264	187	220	261	319	369
100	169									128	178	153	289	341	403	495	572
										74	103	237	168	198	234	287	332
110	185									117	163	138	264	312	369	451	522
										68	94	216	153	181	214	262	303
130	219										138	126	223	263	311	381	441
											80	183	129	153	181	221	256
133	224										134	106	218	257	304	373	431
											78	179	127	149	177	216	250
150	253											104	193	228	269	330	382
												158	112	132	156	192	222
160	270											92	181	213	252	309	358
												148	105	124	146	179	208
180	303											86	161	190	225	275	319
													93	110	130	160	185
200	337													171	202	248	286
														99	117	144	166
205	346													166	197	241	279
														97	114	140	162
230	386														175	215	249
															102	125	145
270	456															183	212
																106	123
280	472																205
																	119
290	490																197
																	114
300	506																191
																	111
305	515																187
																	109

PANEL POWER AND CURRENT TABLE

POWER		OPERATING VOLTAGE	STARTING TYPE	RATED CURRENT
HP	KW			
5,5	4	380/220V AC	SOFT STARTER	9 A
7,5	5,5	380/220V AC	SOFT STARTER	12 A
10	7,5	380/220V AC	SOFT STARTER	15 A
15	11	380/220V AC	SOFT STARTER	22 A
20	15	380/220V AC	SOFT STARTER	32 A
25	18,5	380/220V AC	SOFT STARTER	42 A
30	22	380/220V AC	SOFT STARTER	42 A
40	30	380/220V AC	SOFT STARTER	57 A
50	37	380/220V AC	SOFT STARTER	69 A
60	45	380/220V AC	SOFT STARTER	81 A
75	55	380/220V AC	SOFT STARTER	100 A
100	75	380/220V AC	SOFT STARTER	131 A
125	90	380/220V AC	SOFT STARTER	162 A
150	110	380/220V AC	SOFT STARTER	195 A
180	132	380/220V AC	SOFT STARTER	233 A
220	160	380/220V AC	SOFT STARTER	285 A
270	200	380/220V AC	SOFT STARTER	388 A
340	250	380/220V AC	SOFT STARTER	437 A
430	315	380/220V AC	SOFT STARTER	560 A
480	355	380/220V AC	SOFT STARTER	690 A
540	400	380/220V AC	SOFT STARTER	790 A

Panel selections should be made according to the nominal current value on the motor nameplate.

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