

QUICK INSTALLATION CARD - MSF

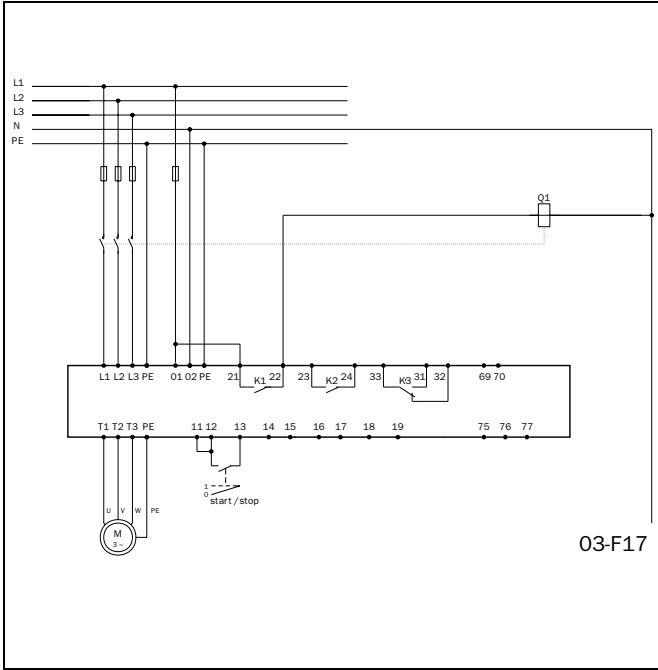


Fig. 1 Standard wiring.

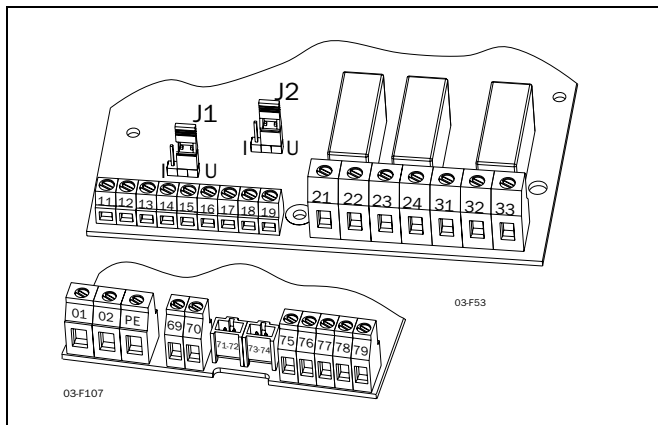


Fig. 2 Connections on the PCB, control card.

Table 1 PCB Terminals

Terminal	Function	Electrical characteristics
01	Supply voltage	100-240 VAC ±10%/380-500 VAC ± 10%
02		
PE	Gnd	
11	Digital inputs for start/stop and reset.	0-3 V → 0; 8-27 V → 1. Max. 37 V for 10 sec. Impedance to 0 VDC: 2.2 kΩ.
12		
13	Supply/control voltage to PCB terminal 11 and 12, 10 kΩ potentiometer, etc.	+12 VDC ±5%. Max. current from +12 VDC: 50mA. Short circuit proof.
14	Remote analogue input control, 0-10 V, 2-10 V, 0-20 mA and 4-20 mA/digital input.	Impedance to terminal 15 (0 VDC) voltage signal: 125 kΩ, current signal: 100 Ω.
15	GND (common)	0 VDC
16	Digital inputs for selection of parameter set.	0-3 V → 0; 8-27 V → 1. Max. 37V for 10s. Impedance to 0 VDC: 2.2 kΩ.
17		
18	Supply/control voltage to PCB terminal 16 and 17, 10 kΩ potentiometer, etc.	+12 VDC ±5%. Max. current from +12 VDC = 50mA. Short circuit proof.
19	Remote analogue output control	Analogue Output contact: 0-10V, 2-10V; min load impedance 700Ω 0-20mA and 4-20mA; max load impedance 750Ω
21	Programmable relay K1. Factory setting is "Operation" indication by closing terminal 21 - 22.	1-pole closing contact, 250 VAC 8A or 24 VDC 8A resistive, 250 VAC, 3A inductive.
22		
23	Programmable relay K2. Factory setting is "Full voltage" indication by closing terminal 23-24.	1-pole closing contact, 250 VAC 8A or 24 VDC 8A resistive, 250 VAC, 3A inductive.
24		
31	Alarm relay K3, closed to 33 at alarm.	1-pole change over contact, 250 VAC 8A or 24 VDC 8A resistive, 250 VAC, 3A inductive.
32		
33	Alarm relay K3, common terminal.	
69-70	PTC Thermistor input	Alarm level 2.4 kΩ Switch back level 2.2 kΩ.
71-72*	Clickson thermistor	Controlling soft starter cooling fine temperature MSF-170-MSF-835
73-74*	NTC thermistor	Temperature measuring of soft starter cooling fine
75	Current transformer input, cable S1 (blue)	Connection of L1 or T1 phase current transformer
76	Current transformer input, cable S1 (blue)	Connection of L3, T3 phase (MSF 017 - MSF 250) or L2, T2 phase (MSF 310 - MSF 1400)
77	Current transformer input, cable S2 (brown)	Common connection for terminal 75 and 76
78*	Fan connection	24 VDC
79*	Fan connection	0 VDC

*Internal connection, no customer use.

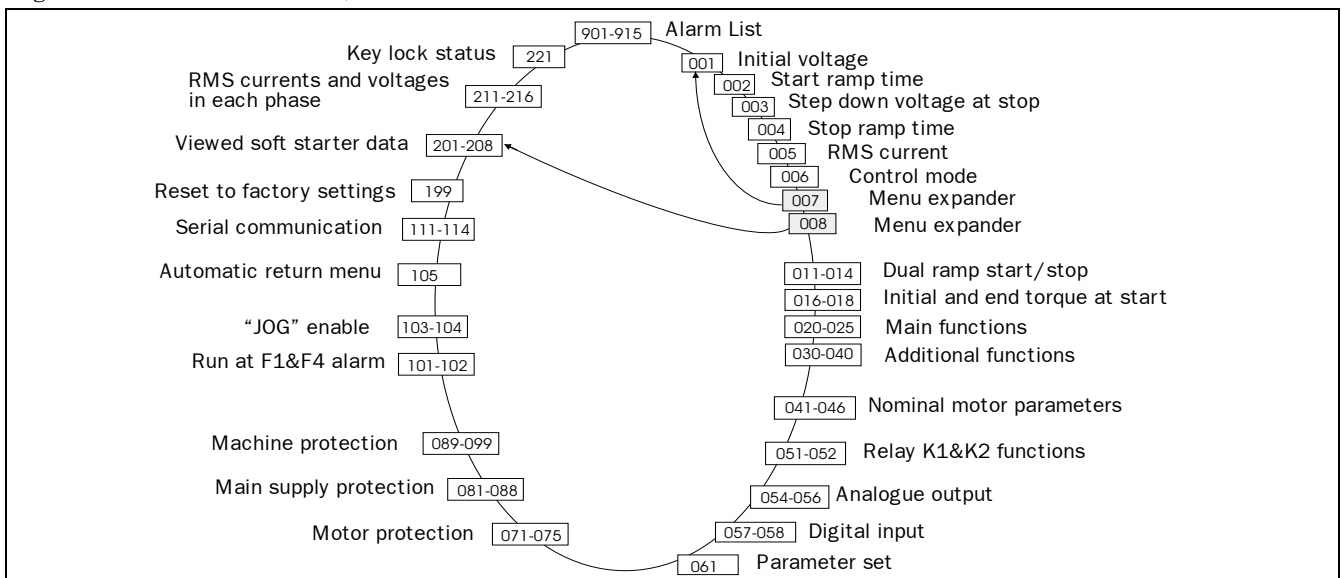


Fig. 3 Menu structure.

Menu nr.	Function/Parameter	Range	Par. set	Factory setting	Page
001	Initial voltage at start	25 - 90% of U	1 - 4	30	page 36
002	Start time ramp 1	1 - 60 s	1 - 4	10	page 36
003	Step down voltage at stop	100 - 40% U	1 - 4	100	page 36
004	Stop time ramp 1	oFF, 2 - 120 s	1 - 4	oFF	page 36
005	Current	0.0 - 9999 Amp	-----	-----	page 36
006	Control mode	1, 2, 3	1 - 4	2	page 37
007	Extended functions & metering	oFF, on	-----	oFF	page 38
008	Extended functions	oFF, on	-----	oFF	page 38
011	Initial voltage start ramp 2	30 - 90% U	1 - 4	90	page 38
012	Start time ramp 2	oFF, 1 - 60 s	1 - 4	oFF	page 38
013	Step down voltage stop ramp 2	100 - 40% U	1 - 4	40	page 38
014	Stop time ramp 2	oFF, 2 - 120 s	1 - 4	oFF	page 38
016	Initial torque at start	0 - 250% T _n	1 - 4	10	page 39
017	End torque at start	50 - 250% T _n	1 - 4	150	page 39
018	End torque at stop	0-100% T _n	1 - 4	0	page 39
020	Voltage ramp with current limit at start	oFF, 150 - 500% I _n	1 - 4	oFF	page 39
021	Current limit at start	oFF, 150 - 500% I _n	1 - 4	oFF	page 40
022	Pump control	oFF, on	1 - 4	oFF	page 40
023	Remote analogue control	oFF, 1, 2	1 - 4	oFF	page 41
024	Full voltage start D.O.L	oFF, on	1 - 4	oFF	page 41
025	Torque control	oFF, 1, 2	1 - 4	oFF	page 42
030	Torque boost active time	oFF, 0.1 - 2.0 s	1 - 4	oFF	page 43
031	Torque boost current limit	300 - 700% I _n	1 - 4	300	page 43
032	Bypass	oFF, on	1 - 4	oFF	page 43
033	Power Factor Control PFC	oFF, on	1 - 4	oFF	page 46
034	Braking time	oFF, 1 - 120 s	1 - 4	oFF	page 47
035	Braking strength	100 - 500%	1 - 4	100	page 47
036	Braking methods	1, 2	1 - 4	1	page 47
037	Slow speed torque	10 - 100	1 - 4	10	page 49
038	Slow speed time at start	oFF, 1 - 60 s	1 - 4	oFF	page 49
039	Slow speed time at stop	oFF, 1 - 60 s	1 - 4	oFF	page 49
040	DC-Brake at slow speed	oFF, 1-60 s	1 - 4	oFF	page 49
041	Nominal motor voltage	200 - 700 V	1 - 4	400	page 50
042	Nominal motor current	25-150% I _{nsoft} in Amp	1 - 4	I _{nsoft} in Amp	page 50
043	Nominal motor power	25 - 300% of P _{nsoft} in kW	1 - 4	P _{nsoft} in kW	page 50
044	Nominal speed	500 - 3600 rpm	1 - 4	N _{nsoft} in rpm	page 50
045	Nominal power factor	0.50 - 1.00	1 - 4	0.86	page 50
046	Nominal frequency	50, 60 Hz	-----	50	page 50
051	Programmable relay K1	1, 2, 3, (4), 5	-----	1	page 51
052	Programmable relay K2	1, 2, 3, 4, 5	-----	2	page 51
054	Analogue output	oFF, 1, 2	1 - 4	oFF	page 52
055	Analogue output value	1, 2, 3	1 - 4	1	page 52
056	Scaling analogue output	5 - 150%	1 - 4	100	page 52
057	Digital input selection	oFF, 1, 2, 3, 4	1 - 4	oFF	page 53
058	Digital input pulses	1-100	1 - 4	1	page 53
061	Parameter set	0, 1, 2, 3, 4	-----	1	page 54
071	Motor PTC input	no, YES	-----	no	page 55
072	Internal motor thermal protection class	oFF, 2 - 40 sec	-----	10	page 55
073	Used thermal capacity	0 - 150%	-----	-----	page 55
074	Starts per hour limitation	oFF, 1-99/hour	1 - 4	oFF	page 55

Menu nr.	Function/Parameter	Range	Par. set	Factory setting	Page
075	Locked rotor alarm	oFF, 1.0-10.0 s	1 - 4	oFF	page 55
081	Voltage unbalance alarm	2 - 25% U _n	1 - 4	10	page 56
082	Response delay voltage unbalance alarm	oFF, 1 - 60 sec	1 - 4	oFF	page 56
083	Over voltage alarm	100 - 150% U _n	1 - 4	115	page 56
084	Response delay over voltage alarm	oFF, 1 - 60 sec	1 - 4	oFF	page 56
085	Under voltage alarm	75 - 100% U _n	1 - 4	85	page 57
086	Response delay under voltage alarm	oFF, 1 - 60 sec	1 - 4	oFF	page 57
087	Phase sequence	L123, L321	-----	-----	page 57
088	Phase reversal alarm	oFF, on	-----	oFF	page 57
089	Auto set power limits	no, YES	-----	no	page 57
090	Output shaft power	0.0 - 200.0% P _n	-----	-----	page 57
091	Start delay power limits	1 - 250 sec	1 - 4	10	page 58
092	Max power alarm limit	5 - 200% P _n	1 - 4	115	page 58
093	Max alarm response delay	oFF, 0.1-25.0 s	1 - 4	oFF	page 58
094	Max power pre-alarm limit	5 - 200% P _n	1 - 4	110	page 58
095	Max pre-alarm response delay	oFF, 0.1-25.0 s	1 - 4	oFF	page 58
096	Min pre-alarm power limit	5 - 200% P _n	1 - 4	90	page 58
097	Min pre-alarm response delay	oFF, 0.1-25.0 s	1 - 4	oFF	page 59
098	Min power alarm limit	5 - 200%P _n	1 - 4	85	page 59
099	Min alarm response delay	oFF, 0.1-25.0 s	1 - 4	oFF	page 59
101	Run at single phase input failure	no, YES	1 - 4	no	page 61
102	Run at current limit time-out	no, YES	1 - 4	no	page 61
103	Jog forward enable	oFF, on	1 - 4	oFF	page 61
104	Jog reverse enable	oFF, on	1 - 4	oFF	page 61
105	Automatic return menu	oFF, 1-999	-----	oFF	page 62
111	Serial comm. unit address	1 - 247	-----	1	page 62
112	Serial comm. baudrate	2.4 - 38.4 kBaud	-----	9.6	page 62
113	Serial comm. parity	0, 1	-----	0	page 62
114	Serial comm. contact broken	oFF, 1, 2	-----	1	page 62
199	Reset to factory settings	no, YES	-----	no	page 63
201	Current	0.0 - 9999 Amp	-----	-----	page 63
202	Line main voltage	0 - 720 V	-----	-----	page 63
203	Output shaft power	-9999-9999 kW	-----	-----	page 63
204	Power factor	0.00 - 1.00	-----	-----	page 63
205	Power consumption	0.000-2000 MWh	-----	-----	page 63
206	Reset power consumption	no, YES	-----	no	page 64
207	Shaft torque	-9999-9999Nm	-----	-----	page 64
208	Operation time	Hours	-----	-----	page 64
211	Current phase L1	0.0 - 9999 Amp	-----	-----	page 64
212	Current phase L2	0.0 - 9999 Amp	-----	-----	page 64
213	Current phase L3	0.0 - 9999 Amp	-----	-----	page 64
214	Line main voltage L1 - L2	0 - 720 V	-----	-----	page 64
215	Line main voltage L1 - L3	0 - 720 V	-----	-----	page 64
216	Line main voltage L2 - L3	0 - 720 V	-----	-----	page 64
221	Locked keyboard info	no, YES	-----	no	page 65
901	Alarm list, Latest error	F1 - F16	-----	-----	page 65
902 - 915	Alarm list, Older error in chronological order	F1 - F16	-----	-----	page 65