MITSUBISHI ELECTRIC
Changes for the Better

FACTORY AUTOMATION

MEsoftstart

Industry-hardened low-voltage softstarter

- **Extending the life of motors and connected equipment**
- **Avoiding excessive current draw from the plant's electrical supply**
- **Preventing mechanical and thermal stress of your assets**

Longer motor and equipment life by mechanical shock elimination

MEsoftstart – Mitsubishi Electric's new soft starter technology – minimises costs by reducing overall electrical power requirements and wear-and-tear on your assets on your assets, providing ramped start-up and slow-down of motors. This prevents water hammer in pumped applications and reduces mechanical shocks and stresses on the motor shaft as well as the driven equipment in your plant. MEsoftstart is available in small, DIN-rail mounted package (16–32 A ratings) or in a rugged Industrial wall- or cabinet-mounted housing (100–900 A ratings)

Versatile fields of application

MEsoftstart can be effortlessly integrated into motor control solutions, offering higher productivity and shorter downtimes for various industry applications such as:

- centrifugal pumps in industry and water utilities
- fans, compressors and blowers across all industries
- mixers and agitators within the water and chemical sector

In addition, it is an ideal alternative to variable speed drives when a more cost-effective, simple solution is required, e. g. for conveyors, compressors, hydraulic pumps or for starting motors from weak power sources.

MEsoftstart is also perfect for replacement of star-delta starters to avoid the high peak currents they cause, as MEsoftstart provides all needed terminals for inside-delta motor connection.

Extended life of motors and the equipment driven by them

Our new softstarter technology offers a slower start-up – and if needed slow-down – of motors, reducing mechanical jerks and stresses on the motor and shaft as well as driven components in your plant.

Smarter use of power and less inrush current

By gradually increasing the net supply voltage to the motor during start-up (or decreasing it during slow-down), MEsoftstart efficiently manages power. It even has the ability to match the rate and pattern at which the voltage is ramped up or down to the process, motor's electrical characteristics or the strength of the electric supply. In this way, companies can avoid maximum demand charge penalties from utility companies and are able to select cheaper supply equipment with lower electrical ratings.

Prevent thermal deterioration of the electrical equipment

MEsoftstart protects motors, cables, transformers or switchgears by controlling the inrush current and enhancing the motor's starting duty, reducing the temperature rise in stator windings and supply transformer.

Functional overview

The product program consists of 5 industrial models plus 2 DIN rail models, offering solutions for a wide range of motor sizes and usage profiles:

- covering motor sizes ranging from 3 kW to a massive 1.4 MW
- available in 400 V and 690 V versions (plus 525 V for North American market) [1]
- providing both soft-start and soft-stop functions, with a variety of pre-defined ramp-up and ramp-down curves, e.g. pedestal, kickstart, constant current or torque, time-linear, RMS-linear and S-curve voltage ramp
- easy parameterisation via TFT touch-screen ("pro" models), simple potentiometers ("core" models) and PC app [2]
- on the Industrial variant, all three phases are controlled, no short cuts like only two phases controlled (which can adversely affect motor life)
- the DIN rail variants can be selected with 2- or 3-phase control
- robust and rugged design born out of extreme environments like mining and quarries

The tables to the right present the expected application motor power range [3] for each soft-starter model under varying motor duty conditions. Use the motor power ratings below only as a guidance. Motor rated currents may vary with speed and manufacturer.

Normal Connection

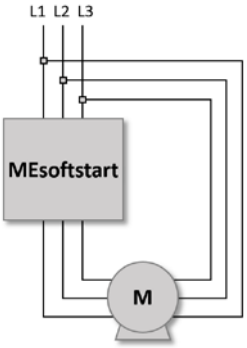
Model	Rated output (A)	Motor Power (supply voltage, 50 Hz)		
		400 V AC (kW)	525 V AC (kW)	690 V AC (kW)
MEsoftstart/din	16 - 32	3 – 18.5	–	–
MEsoftstart/I00	100	11 – 55	15 – 75	18.5 – 90
MEsoftstart/I01	200	22 – 132	30 – 132	37 – 160
MEsoftstart/I02	390	37 – 200	45 – 250	55 – 200
MEsoftstart/I03	600	75 – 315	90 – 450	110 – 560
MEsoftstart/I04	900	90 – 450	110 – 630	132 – 800

Table 1 – Expected motor size ranges[1] for each MEsoftstart model (NORMAL CONNECTION)

Inside-Delta Connection

Model	Rated-output (A)	Motor Power (supply voltage, 50Hz)		
		400VAC(kW)	525VAC(kW)	690VAC(kW)
MEsoftstart/din	16 – 32	5.5 – 30	–	–
MEsoftstart/I00	100	18.5 – 90	22 – 110	30 – 160
MEsoftstart/I01	200	37 – 160	45 – 250	75 – 315
MEsoftstart/I02	390	55 – 355	75 – 450	110 – 560
MEsoftstart/I03	600	110 – 560	160 – 710	200 – 900
MEsoftstart/I04	900	132 – 800	200 – 1000	250 – 1400

Table 2 – Expected motor size ranges[1] for each MEsoftstart model (INSIDE-DELTA CONNECTION)



1 DIN models available only for 400Vac systems
2 DIN models can be configured only via PC app.
3 Exact selection depends on factors like motor duty, starting current requirements and whether bypass contactor will be deployed.

Product range overview

Motor Supply Voltages	3 ranges: 340 – 420 V ac, 425 – 578 V ac, 586 –760 V ac (DIN rail variants: 400Vac only)					
Current Ratings	**MEsoftstart/din**	**MEsoftstart/I00**	**MEsoftstart/I01**	**MEsoftstart/I02**	**MEsoftstart/I03**	**MEsoftstart/I04**
Max continuous current @50 °C	16 – 32 A	100 A	200 A	940 A	600 A	900 A
Max starting current – normal duty	50 – 100 A	240 A	480 A	730 A	1440 A	1600 A
Max starting current – heavy duty	36 – 72 A	125 A	250 A	390 A	750 A	900 A
Operating temperature	-10 °C to +60 °C (de-rate all Ampere values at 1.4 % per °C for temperatures >50 °C)					
Storage temperature	-30 °C to +70 °C					
Relative humidity	< 85 % non-condensing					
Operating altitude	Up to 3000 m above sea-level. De-rate at 0.7 % per 100 m for altitudes >1400 m					
Enclosure protection category	IP00					
Communication						
Standard on all models	Modbus RTU (RS485, Baud rate: 9600–115200, 8 bits, 1 start, 1 stop, even parity) *					
Additional on "pro" models	Modbus TCP (Ethernet)					
Digital IO	**"DIN-rail" variants**	**"core" variants**		**"pro" variants**		
Outputs: Relay, 5 A, 240 V ac, pot. free	Qty. 2 outputs: BYPASS, ALARM	Qty. 3 outputs: READY, RUNNING/BYPASS, FAULT		Qty. 8 outputs: READY, RUNNING, TRIP, REVERSING CONTACTOR; BYPASS CONTACTOR; OVERLOAD ALARM; FAULT / LINE VOLTAGE ALARM; TEMPERATURE FAULT		
Inputs: 240 V ac	–	Qty. 3 inputs: RUN/STOP, RESET, AUTO/MAINTENANCE		Qty. 3 inputs: RUN/STOP, RESET, AUTO/MAINTENANCE		
Temperature Measurement inputs	–	1x Pt100 and 1x LM35 motor temperature measurement channel				
Fault indication	Flashing LED pattern on "core" and DIN rail models, displayed on HMI screen on "pro" models					

* no communication option on MEsoftstart/din-02LSFmodel – pre-configured for OEMs in factory

LONG TERM RELIABILITY

MEsoftstart's comprehensive motor protection guarantees long term reliability while the external bypass connections or internal bypass options ensure flexibility and excellent performance – all in a small, versatile design.

European Offices

Mitsubishi Electric Europe B.V. Germany
Mitsubishi-Electric-Platz 1
D-40882 Ratingen
Phone: +49 (0)2102 / 486-0

Mitsubishi Electric Europe B.V. Czech Rep.
Pekařská 621/7
CZ-155 00 Praha 5
Phone: +420 255 719 200

Mitsubishi Electric Europe B.V. France
25, Boulevard des Bouvets
F-92741 Nanterre Cedex
Phone: +33 (0)1 / 55 68 55 68

Mitsubishi Electric Europe B.V. Italy
Viale Colleoni 7 Palazzo Sirio
I-20864 Agrate Brianza (MB)
Phone: +39 039 / 60 53 1

Mitsubishi Electric Europe B.V. Ireland
Westgate Business Park, Ballymount
IRL-Dublin 24
Phone: +353 (0)1 4198800

Mitsubishi Electric Europe B.V. Netherlands
Nijverheidsweg 23C
NL-3641RP Mijdrecht
Phone: +31 (0) 297 250 350

Mitsubishi Electric Europe B.V. Poland
ul. Krakowska 48
PL-32-083 Balice
Phone: +48 (0) 12 347 65 00

Mitsubishi Electric (Russia) LLC Russia
2 bld. 1, Letnikovskaya st.
RU-115114 Moscow
Phone: +7 495 / 721 2070

Mitsubishi Electric Europe B.V. Spain
Carretera de Rubí 76-80 Apdo. 420
E-08190 Sant Cugat del Vallés (Barcelona)
Phone: +34 (0) 93 / 5653131

Mitsubishi Electric Europe B.V. (Scandinavia) Sweden
Hedvig Möllers gata 6
SE-223 55 Lund
Phone: +46 (0) 8 625 10 00

Mitsubishi Electric Turkey Elektrik Ürünleri A.Ş. Turkey
Şerifali Mahallesi Kale Sokak No:41
TR-34775 Ümraniye-İSTANBUL
Phone: +90 (216) 969 25 00

Mitsubishi Electric Europe B.V. UK
Travellers Lane
UK-Hatfield, Herts. AL10 8XB
Phone: +44 (0)1707 / 28 87 80

Representatives

GEVA Austria
Wiener Straße 89
A-2500 Baden
Phone: +43 (0)2252 / 85 55 20

ООО ТЕСНNIKON Belarus
Prospect Nezavisimosti 177-9
BY-220125 Minsk
Phone: +375 (0)17 / 393 1177

INEA RBT d.o.o. Bosnia and Herzegovina
Stegne 11
SI-1000 Ljubljana
Phone: +386 (0)1/ 513 8116

AKHNATON Bulgaria
4, Andrei Ljapchev Blvd., PO Box 21
BG-1756 Sofia
Phone: +359 (0)2 / 817 6000

INEA CR Croatia
Losinjska 4 a
HR-10000 Zagreb
Phone: +385 (0)1 / 36 940 - 01/ -02/ -03

AutoCont C.S. S.R.O. Czech Republic
Kafkova 1853/3
CZ-702 00 Ostrava 2
Phone: +420 595 691 150

HANS FØLSGAARD A/S Denmark
Theilgaards Torv 1
DK-4600 Køge
Phone: +45 4320 8600

Electrobit OÜ Estonia
Pärnu mnt. 160i
EST-11317, Tallinn
Phone: +372 6518 140

UTU Automation Oy Finland
Peltotie 37
FIN-28400 Ulvila
Phone: +358 (0)207 / 463 500

UTECO A.B.E.E. Greece
5, Mavrogenous Str.
GR-18542 Piraeus
Phone: +30 (0)211 / 1206-900

MELTRADE Kft. Hungary
Fertő utca 14.
HU-1107 Budapest
Phone: +36 (0)1 / 431-9726

ТОО Kazpromavtomatika Kazakhstan
Ul. Zhambyla 28
KAZ-100017 Karaganda
Phone: +7 7212 / 50 10 00

OAK Integrator Products SIA Latvia
Ritausmas iela 23
LV-1058 Riga
Phone: +371 67842280

Automatikos Centras, UAB Lithuania
Neries krantinė 14A-101
LT-48397 Kaunas
Phone: +370 37 262707

ALFATRADE Ltd. Malta
99, Paola Hill
Malta-Paola PLA 1702
Phone: +356 (0)21 / 697 816

INTEHSIS SRL Moldova
bld. Traian 23/1
MD-2060 Kishinev
Phone: +373 (0)22 / 66 4242

Fonseca S.A. Portugal
R. João Francisco do Casal 87/89
PT-3801-997 Aveiro, Esgueira
Phone: +351 (0)234 / 303 900

Sirius Trading & Services Romania
Aleea Lacul Morii Nr. 3
RO-060841 Bucuresti, Sector 6
Phone: +40 (0)21 / 430 40 06

INEA SR d.o.o. Serbia
Ul. Karadjordjeva 12/217
SER-11300 Smederevo
Phone: +381 69 172 27 25

SIMAP SK Slovakia
Dolné Pažite 603/97
SK-911 06 Trenčín
Phone: +421 (0)32 743 04 72

INEA RBT d.o.o. Slovenia
Stegne 11
SI-1000 Ljubljana
Phone: +386 (0)1 / 513 8116

OMNI RAY AG Switzerland
Im Schörli 5
CH-8600 Dübendorf
Phone: +41 (0)44 / 802 28 80

CSC- AUTOMATION Ltd. Ukraine
4 B, Yevhena Sverstyuka Str.
UA-02002 Kiev
Phone: +380 (0)44 / 494 33 44

EIM Energy Egypt
3 Roxy Square
ET-11341 Heliopolis, Cairo
Phone: +202 24552559

SHERF MOTION TECHN. Ltd. Israel
Rehov Hamerkava 19
IL-58851 Holon
Phone: +972 (0)3 / 559 54 62

CEG LIBAN Lebanon
Cebaco Center/Block A Autostrade DORA
Lebanon-Beirut
Phone: +961 (0)1 / 240 445

ADROIT TECHNOLOGIES South Africa
20 Waterford Office Park 189 Witkoppen Road
ZA-Fourways
Phone: + 27 (0)11 / 658 8100

Mitsubishi Electric Europe B.V. / Factory Automation EMEA headquarter
Mitsubishi-Electric-Platz 1 / 40882 Ratingen / Germany / https://eu3a.mitsubishielectric.com

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