MOTORTRONICS™
Solid State AC Motor Control

Low Voltage Soft Starter

VMX-Synergy Plus™

Premium Digital Soft Starter

200 - 690VAC, 18 - 1250A, 10 - 1000HP

THE MOST ADVANCED SOFT STARTER FOR ANY APPLICATION

- Removable 3.5" Color Touch Screen rated IP66/N4X
- 42 Smart Application profiles - easy setup in 1 minute
- Auto Pedestal to control spinning motors
- Built-in iERS – intelligent Energy Recovery System
- 65 kA rating with breakers
- Advanced motor protection with memory
- Life Time Event Logging Diagnostics
- Metering for power, voltage and current
- Three Integral Bypass Types
  - IEC - Run Rated Relay
  - ANSI - Start Rated Contactor
  - NEMA - Start Rated NEMA Contactor

IEC, ANSI & NEMA Rated Soft Starter

Motortronics Motor Controls Made Easy

VMX-Synergy Plus™

CONNECTIONS AND PROGRAMMING

Connection Features

- 110~240VAC / 24VDC Control
- Easy User Terminal Access
- 4 Programmable Digital Inputs
- 5 Programmable Relay Outputs
- Analog Output 0-10V / 4-20mA
- Analog Input 0-10V / 4-20mA
- RS485 - Modbus RTU
  Other Industrial Protocols Available as Option

Built-in Touchscreen

Setup, Status and Diagnostics

MOTOR PROTECTION, MEASUREMENT AND ANALYSIS FUNCTIONS

Motor Overload Protection

The soft starter protects the motor in the event of an overload condition at full at full I^2t motor overload with intelligent thermal memory retention feature. Continually monitors overloads to ascertain the reduction in motor heating levels even when VMX-Synergy Plus™ is in the 'off' state. This is combined with protection and diagnostics giving the operator peace of mind while running the motor.

Event Logging

VMX-Synergy Plus™ data logger records up to 3 million events to enable fast accurate fault analysis and their resolution. Recording multiple activities including start, stop, top of ramp, faults, application parameters (time, overload level, currents, frequency) and the device information. Event log can be downloaded via USB port or via the VMX-Synergy Plus™ MLINK software.

Soft Starter and Motor Monitoring

The VMX-Synergy Plus™ continuously monitors and analyzes soft starter and motor data such as: Line Frequency, Phase Rotation, Current I rms, V rms , Real Power Factor, True Power P, Apparent Power S, Reactive Power Q, iERS Saving Level, SCR Overload, Delay Angle, Backstop, Delay Max, Pres PF Degrees, Ref PF Degrees, Start Saving Level, Last Peak Start Current, Last Peak Stop Current, Last Temperature, Last Overload, Heatsink Temp, Motor Thermistor Overload, Trip Free Time, Number of Starts, etc...

Advanced Features

EASY SETUP AND TUNING

Easy of Use

The display will show all messages in full and many different global languages. The use of graphic/schematic images and active mimic diagrams will facilitate complete understanding. Detailed lifelong logging will aid setup and onboard USB allows configurations to be uploaded/downloaded and emailed.

Auto Configuration

The automatic functionality has been expanded so that more features can be configured without referring to parameter lists.

Built-in Applications

With many different applications profiles, the VMX-Synergy Plus™ offers a quick and comprehensive commissioning process. Setup takes less than 1 minute.

Automatic Load Tuning

The VMX-Synergy Plus™ will dynamically tune to a changing load.

MLINK Configuration Software

MLink software tools can be used to commission, start-up, diagnose and troubleshoot the VMX-Synergy Plus™. Software has an easy-to-use interface with built-in trend recorder, monitor and status panel.

DEDICATED APLICATION FEATURES & FUNCTIONS

Pumps, Fans, Bowers & Conveyors

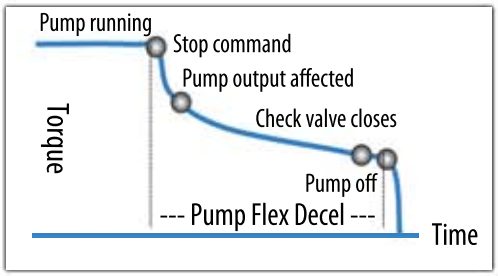
Closed Loop Torque/Current Ramping provides a linear increase in output torque during acceleration and maximizes the available torque using an internal PID feedback loop ensuring a smooth linear ramp.

Compressors & Chillers

Voltage Ramp with Current Limit provides the smoothness of voltage ramping while maintaining the ability to start in limited power environments.

Pump-Flex Decel Control - Auto Adjust 3 Points

Eliminate Water Hammer with automatic advanced Soft Stop Controls. A gradual reduction in the output torque of your pump motor is provided when a stop signal is initiated. Check valves close gently and other fluid system components are no longer subjected to the shock and destructive potential of water hammer.



Auto Pedestal

Automatically corrects the start voltage and senses the motor is turning in the correct direction. For dynamic situations like roof cooling fans, which sometimes spin backwards, the Auto Pedestal feature will control the ramp while the motor spins down to a stop and accelerates in the correct direction. Once the soft start senses the motor is turning in the right direction, the soft start will accelerate the motor normally. There will be no belt failures from fans spinning backwards. The Auto Pedestal offers the best, simplest, and most economical way to deal with roof cooling fans, which spin backward. No user input required.

VMX-Synergy Plus™

SPECIFICATIONS

Range from 18 - 1250A or 10 - 1000HP
3-phase 6 SCR Control
Full motor overload with Memory
IEC Trip Class 10; 300% for 23 Sec. or 350% for 17 Sec.
ANSI/NEMA Trip Class 20; 500% for 60 Sec.
200, 208, 230, 380, 400, 460, 480, 575, 600, 690 volts
Operates on varying frequency 45Hz-65Hz
Internally Bypassed, Contactor both ANSI and NEMA
Auto Pedestal Function for spinning motor direction control
IP20 / NEMA 1, IP00
User-friendly, full color touch screen / Full automatic set up
Control voltages of 24VDC, 110~240VAC
iERS - intelligent Energy Recovery System as standard
In Delta / 6 wire connection

Multiple languages
Fire Mode
Modbus RTU as standard, other protocols available
Inputs / Outputs:
- 5 x programmable output relays
- 4 x programmable digital inputs
- 1 x Analog input
- 1 x Analog output
- USB for data logging and parameter setting/saving
- Full Meter Functions
Comprehensive data logging
Fully field upgradeable via USB port
Fully field serviceable fans
2 year warranty

DEDICATED OPTIONS

Remote Display Keypad
IP65 / NEMA Class 4X
Plug in remote mounting touch screen pad mimics the VMX-Synergy Plus™ display and functionality.

Communication Options
Modbus TCP/IP
EtherNet/IP
PROFIBUS DP-V1

I/O Expansion Module
Expand number of digital inputs and outputs of VMX-Synergy Plus™

Premium Features

ENERGY SAVINGS & EFFICIENCY

iERS is an advanced motor control technology for use in fixed-speed lightly loaded applications. It is proven to reduce the energy consumed in a variety of industrial and commercial applications and has been implemented in every market from HVAC to Oil and Gas.

In the industrial sector it is becoming increasingly important to offer technology that meets the corporate social responsibilities of companies as well as reducing the overall running costs of equipment and minimizing downtime and maintenance.

iERS is a technology that matches the power consumption to the load required. It intelligently monitors and regulates energy consumption on fixed speed motors. It also monitors the voltage, current and power factor during the start to calculate the fullload figures. During the running stage, the power factor continues to be monitored.

When the power factor drops, the motor is lightly loaded, and there are losses inherent in the design of a motor causing excess energy to be wasted. These are known as excitation losses. iERS's continual monitoring automatically recognizes these costly losses, and in turn reduces the voltage and current, to not only increase the motor load power factor, but also to reduce the energy consumption in kW and allow motor to run cooler.

When the power factor increases, the motor is more loaded. iERS then automatically bypasses itself to remove any losses within the equipment.

*1. Reduces Lost Energy, 80% more efficient compared to VFD running at line frequency
*2. With Internal bypass

RUGGED, HEAVY DUTY FOR ANY APPLICATION

RUGGED HEAVY DUTY
Premium Soft Starter

500%
Starting Capacity

Heavy Duty Ratings, Built-in Bypass, and Advanced Motor Protection make the VMX-Synergy Plus™ Series Soft Starter suitable for the most demanding motor applications.

Product Versions

VMX-Synergy Plus™ Product Versions

Motortronics is the only company in the world to offer all three versions of the reduced voltage soft starter.

As seen in the picture above, to the left are the new ANSI rated products with contractor. To the right are the new IEC rated products with relays. In the middle is "Big Brother" the new NEMA rated contactor for bypass of the soft starter. Motortronics offers a complete line of reduced voltage starters.

IEC relay Bypass

As seen above on the right side of the family picture, Motortronics offers an internal relay bypass for the SCR. The IEC units have a built-in app for sizing the product correctly for Heavy-Duty applications. Motortronics offers both, an online and mobile application for correct sizing of the IEC product. Correct sizing is the key to success with IEC products.

ANSI Contactor Bypass

As seen above on the left side of the family picture, Motortronics Heavy-Duty ANSI model needs no application for sizing. Use the internal contactor to start the motor in an emergency. For heavy duty or high cycling, the ANSI product is the best choice for demanding applications. Tested to 65kA with breakers.

NEMA Contactor Bypass

Internal NEMA contactors are best used in very heavy duty applications where down time is not option. The NEMA contactor can continue to run the motor should the electronics fail, and keep them running until a repair can be scheduled. This helps to reduce your down time.

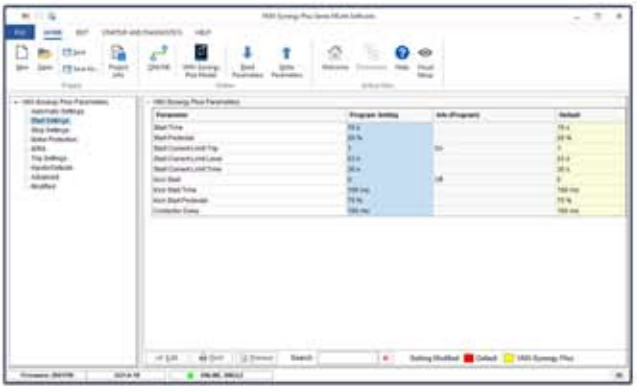
Software Tools

MLINK SOFTWARE

Online Computer software MLINK + VMX-Synergy Plus™ is a winning combination

The VMX-Synergy Plus™ stores 3 million events and provides a free link to a suite of the world's most advanced software to help track trends, commission motors, find problems, or record information. Mlink has a built-in user manual for the customer who wants to get into the details. Should a critical motor need special attention, MLINK can be connected to the VMX-Synergy Plus™ and access the signal traces.

A six channel trender-recorder can be used to troubleshoot problems. The trends can be shared via emails to help find issues with critical motors. An event log that can store up to three million events offers detailed information about the motor's life. A predictive maintenance program can monitor trends for when it is time to service the motor or driven components. Mlink and VMX-Synergy Plus™ help commission the system, record the events and troubleshoot the problems. Nothing helps engineers keep the application running better than the combination of Mlink and VMX-Synergy Plus™. For critical motors, VMX-Synergy Plus™ is the product of choice.



SOFTWARE FEATURES

Parameter editing and commissioning

Parameter compare functions

Modified Parameter Overview

Parameter report export to popular file format (PDF, XLSX, RTF, etc...)

Visual Programming, point and click on VMX-Synergy™ Plus I/O terminals

Monitor Panel with 4 programmable signals and customizable gauges

Trend-recorder with 6 programmable channels, storage, triggering, playback

Trend-recorder signal measuring mode (Avg, Min, Max, Peak).

Status and Diagnostics Panel

Fault History Overview

Communication connection for serial, USB and Ethernet (Modbus TCP/IP)

Built-in comprehensive help and product documentation

Multi-drop network support for multiple VMX-Synergy Plus™ starters

Full Power Range

Ratings — Sizing Guide

VMX-SYNERGY PLUS™ - ANSI

NOMINAL MOTOR RATING (1)

Overload Rating: 500% for 60 sec.

VMX-SGY-A Model Number	Max Amps (2)	208V/HP/BYPASS SHUNT	208V/HP/BYPASS START	240V/HP/BYPASS SHUNT	240V/HP/BYPASS START	480V/HP/BYPASS SHUNT	480V/HP/BYPASS START	600V/HP/BYPASS SHUNT	600V/HP/BYPASS START	FRAME	WEIGHT - Lb(kg)	DIMENSIONS - H x W x D inches (mm)
VMX-SGY-A-18	9- 18	5	3	5	5	10	10	15	15	1	8.8 (4.0)	11.15 (283) x 5.62 (143) x 7.25 (184)
VMX-SGY-A-28	14-28	7.5	7.5	7.5	7.5	20	15	25	25	1	8.8 (4.0)	11.15 (283) x 5.62 (143) x 7.25 (184)
VMX-SGY-A-39	19-39	10	10	10	10	25	25	30	30	1	8.8 (4.0)	11.15 (283) x 5.62 (143) x 7.25 (184)
VMX-SGY-A-48	24-48	15	10	15	15	30	30	40	40	1	8.8 (4.0)	11.15 (283) x 5.62 (143) x 7.25 (184)
VMX-SGY-A-62	31-62	20	15	20	20	40	40	50	50	2	23 (10)	14.93 (125) x 8.14 (207) x 7.94 (202)
VMX-SGY-A-78	39-78	25	20	25	25	60	50	60	60	2	23 (10)	14.93 (125) x 8.14 (207) x 7.94 (202)
VMX-SGY-A-92	46-92	30	25	30	30	60	60	75	75	2	23 (10)	14.93 (125) x 8.14 (207) x 7.94 (202)
VMX-SGY-A-112	56-112	30	30	40	30	75	75	100	100	2	23 (10)	14.93 (125) x 8.14 (207) x 7.94 (202)
VMX-SGY-A-150	75-150	40	40	50	50	100	100	125	125	3	33 (15)	19.6 (498) x 8.2 (208) x 7.7 (196)
VMX-SGY-A-160	80-160	50	40	60	50	125	100	150	150	3	33 (15)	19.6 (498) x 8.2 (208) x 7.7 (196)
VMX-SGY-A-210	105-210	60	50	75	60	150	150	200	200	4	130 (59)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-A-275	138-275	75	60	100	75	200	150	200	200	4	140 (64)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-A-361	181-361	125	75	125	125	300	250	350	350	4	145 (66)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-A-450	225-450	150	125	150	150	350	300	450	450	4	145 (66)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-A-550	275-550	150	150	200	200	450	400	500	500	4	165 (75)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-A-600	300-600	200	200	200	200	500	500 (3)	600	600 (3)	4	165 (75)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-A-862	431-862	250	250	300	300	600	500	700	700	5	325 (147)	43 (1092) x 25.5 (648) x 11.53 (293)
VMX-SGY-A-900	450-900	300	250	350	300	700	600	900	900	5	325 (147)	43 (1092) x 25.5 (648) x 11.53 (293)
VMX-SGY-A-1006	503-1006	350	300	400	400	800	800	1,000	1,000	6	400 (181)	46.56 (1183) x 26.27 (667) x 14.7 (373)
VMX-SGY-A-1250	625-1250	450	350	500	450	1,000	900	1,200	1,200	6	400 (181)	46.56 (1183) x 26.27 (667) x 14.7 (373)

VMX-SYNERGY PLUS™ - NEMA

NOMINAL MOTOR RATING (1)

Overload Rating: 500% for 60 sec.

Model Number	Max Cont. Amps	208V/HP	230V/HP	480V/HP	575V/HP	FRAME	WEIGHT - Lb(kg)	DIMENSIONS - H x W x D inches (mm)
VMX-SGY-32-NS1	27	7.5	7.5	10	15	1	8.8 (4.0)	11.15 (283) x 5.62 (143) x 7.25 (184)
VMX-SGY-45-NS2	45	10	15	25	30	2	23 (10)	14.93 (125) x 8.14 (207) x 7.94 (202)
VMX-SGY-90-NS3	90	25	30	50	60	3	33 (15)	19.6 (498) x 8.2 (208) x 7.7 (196)
VMX-SGY-135-NS4	135	40	50	100	125	4	130 (59)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-270-NS5	270	75	100	200	250	4	130 (59)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-540-NS6	540	150	200	400	500	4	130 (59)	32 (813) x 12.62 (321) x 10.08 (256)
VMX-SGY-810-NS7	810	250	300	600	700	5	325 (147)	43 (1092) x 25.5 (648) x 11.53 (293)

VMX-SYNERGY PLUS™ - IEC

NOMINAL MOTOR RATING (1)

Overload Rating: 350% for 17 sec. 90-5 (4)

VMX-SGY-I Model Number	Max Amps (2)	200V HP	208V HP	200-240V HP	440-480V HP	550-600V HP	FRAME	WEIGHT - Lb(kg)	DIMENSIONS - H x W x D inches (mm)
VMX-SGY-I-17	17	3	5	5	10	15	1	6.6 (3.0)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-22	22	5	5	5	15	20	1	6.6 (3.0)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-29	27	7.5	7.5	7.5	20	25	1	6.6 (3.0)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-35	34	10	10	10	25	30	1	7.7 (3,5)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-41	41	10	10	10	30	40	1	7.7 (3.5)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-55	52	15	15	15	40	50	1	7.7 (3.5)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-66	65	20	20	20	50	60	1	7.7 (3.5)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-80	77	20	25	25	60	75	1	7.7 (3.5)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-100	99	30	30	30	75	100	1	7.7 (3.5)	11.15 (283) x 5.62 (143) x 7.26 (184)
VMX-SGY-I-132	125	40	40	40	100	125	2	12.1 (5.5)	12.52 (318) x 5.62 (143) x 9.96 (253)
VMX-SGY-I-160	156	50	50	60	125	150	2	14.3 (6.5)	12.52 (318) x 5.62 (143) x 9.96 (253)
VMX-SGY-I-195	192	60	60	75	150	200	2	14.3 (6.5)	12.52 (318) x 5.62 (143) x 9.96 (253)
VMX-SGY-I-242	242	75	75	75	200	250	3	35.3 (16.0)	19.30 (490) x 8.08 (205) x 13.0 (330)
VMX-SGY-I-302	302	100	100	100	250	300	3	35.3 (16.0)	19.30 (490) x 8.08 (205) x 13.0 (330)
VMX-SGY-I-361	361	125	125	150	300	350	3	35.3 (16.0)	19.30 (490) x 8.08 (205) x 13.0 (330)
VMX-SGY-I-430	414	150	150	150	350	450	3	35.3 (16.0)	19.30 (490) x 8.08 (205) x 13.0 (330)
VMX-SGY-I-500	480	150	150	150	400	500	3	35.3 (16.0)	19.30 (490) x 8.08 (205) x 13.0 (330)
VMX-SGY-I-850	850	300	300	350	700	800	5	119.7 (54)	27.62 (702) x 20.48 (520) x 11.93 (303)

USE SIZING IEC UNITS WITH APPLICATION CHART "CLASS 10"

1) Rated operational powers in HP corresponding to FLA current rating according to UL508 and Table 430.250 of the National Electrical Code.
2) The FLA rating applies for a maximum surrounding air temperature of 50°C.
3) – VMX-SGY-A-600 @ 480V and 600VAC is 1.0 S.F.
4) Rating index for VMX-SGY-I-430 and VMX-SGY-I-500 is Ie: AC-53a: 3.5-17: 90-3.

USA HEADQUARTERS
Motortronics / Phasetronics
1600 Sunshine Drive
Clearwater, Florida 33765
USA
Tel: + 727-573-1819 / 888-767-7792
Fax: + 727-573-1803 / 800-548-4104
E-mail: sales@motortronics.com
www.motortronics.com

UNITED KINGDOM
Motortronics UK
Bristow House,
Gillard Way, Ivybridge,
Devon, PL21 9GG,
United Kingdom
Tel: +44 (0)1752-894554
www.motortronics-uk.co.uk

SOUTH KOREA
Motortronics Int'l Korea Co Ltd
#1607, 128 Gasan digital 1-ro,
Gasan digital 1-ro,
Geumcheon-gu,
Seoul 08507, Republic of Korea
Tel: 82-2-867-5808
Fax: 82-2-867-6004
www.motortronics-korea.com

CHINA
M & P Machinery & Electronics Control
Part of the Motortronics Group
32 Jiaxin Road,
Jimo,
Qingdao, China 266229
Tel: 86-532-81725028
Fax: 86-532-81725038
www.mp-cn.com

UNITED ARAB EMIRATES
Motortronics MEA, LLC
Sharjah Media City,
Sharjah,
United Arab Emirates
Tel: +1 971-50 763 4920
www.motortronics.com

PN: VMX-SYGP-110521