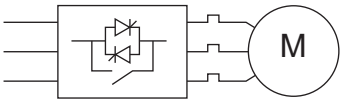
CSX
Soft Starter

The AuCom CSX-030 soft starter

AuCom's CSX soft starters provide greater control over the starting and stopping of three phase motors. There are two product ranges: the CSX for a simple soft start control device, or the CSXi for an advanced soft start system complete with motor protection.

The CSX range is a Timed Voltage Ramp system that provides soft start and soft stop functionality in a very compact frame.



THE CSX IS A COMPACT AND COST EFFECTIVE SOFT STARTER SOLUTION. SIMPLE OPERATION AND A BUILT-IN BYPASS FUNCTION MAKE THE CSX SERIES A PLEASURE TO USE WITH MANY BENEFITS IN A TIDY PACKAGE.

COMPACT DESIGN

The CSX soft starter is a compact unit suitable for mounting in a switchboard or motor control centre without the need for an external bypass contactor. At only 165 mm deep it is easy to mount in shallow switchboards.

For motors up to 60 A, soft starters can be mounted on a DIN-rail. Or the CSX may be mounted in a bank horizontally to use less space, often critical in certain switchboards.

SIMPLE TO USE

CSX series soft starters are easy to use with only three adjustments to be made to get started:

- initial start time
- start ramp time
- soft stop ramp time

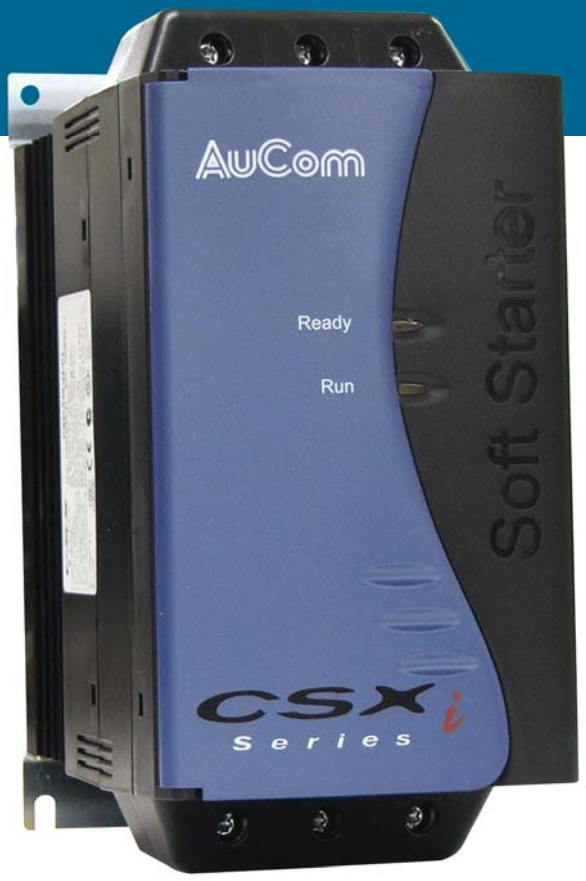
Adjustments are made using simple rotary switches. CSXi soft starters allow more control over starts and stops with several adjustment controls.

BUILT-IN BYPASS FUNCTION

CSX soft starters are equipped with integrated bypass function. The internal bypass allows CSX starters to be easily installed into switchboards or motor control cubicles without need for extra ventilation or external bypass contactors.

This makes installation simple, reduces ventilation requirements and overall installation cost.

CSXi Soft Starter

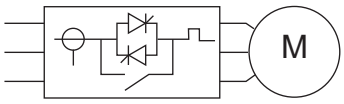


The AuCom CSXi-030 soft starter

The CSXi range is a Constant Current system with current measurement and control.

It provides a range of motor protection functions in addition to soft start and soft stop. Protections include motor overload, phase loss and excess start time.

The CSXi also features a programmable relay.



Contact your local distributor to learn how a CSX soft starter can benefit you today.

PROTECTION

The CSXi has built-in thermal model motor overload protection. The motor current is continuously monitored and the expected temperature is calculated based on this monitored current.

The user sets the Motor Trip Class, and will trip when the calculated motor temperature reaches 105%.

An external motor protection device is not required when using a CSXi soft starter.

EASY TO OPERATE

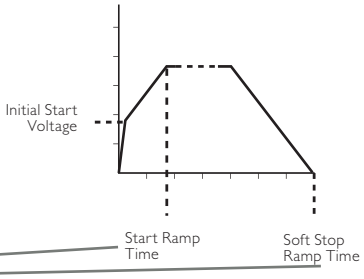
Three adjustments can be made on the CSX soft starter:

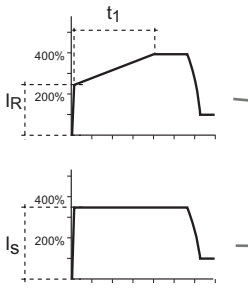
- Initial start voltage
- Start ramp time
- Soft stop ramp time

The CSXi has several adjustments for more control:

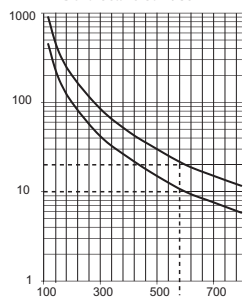
- Motor FLC
- Current limit
- Current ramp
- Stop time
- Motor trip class
- Phase sequence
- Excess start time
- Auxiliary relay selection

CSX control panel



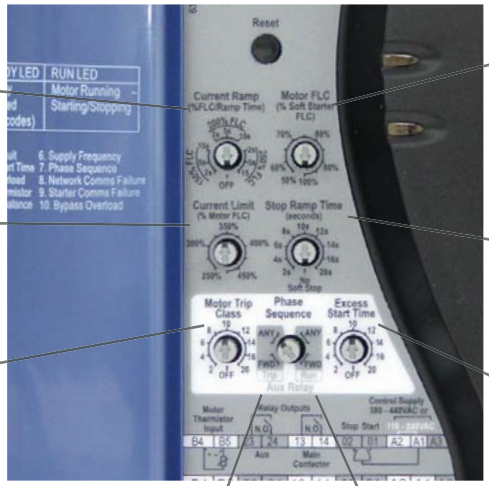


Cold start curves

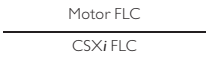


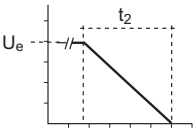
OFF = No overload protection

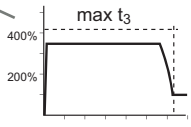
Note: Trip class must be set to match installation limitations.

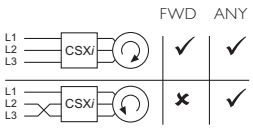


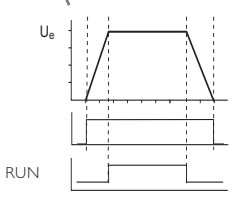
CSXi control panel











TRIP = Fault

EQUI-VEC: BALANCED VECTOR CONTROL

EQUI-VEC™
BALANCED VECTOR CONTROL

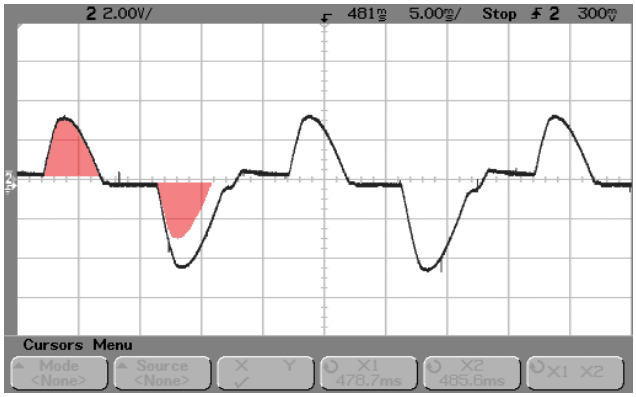
BALANCED VECTOR CONTROL

In the past, soft starters using two phase control caused extra heating in the motor and required higher starting currents because the output waveform was not symmetrical.

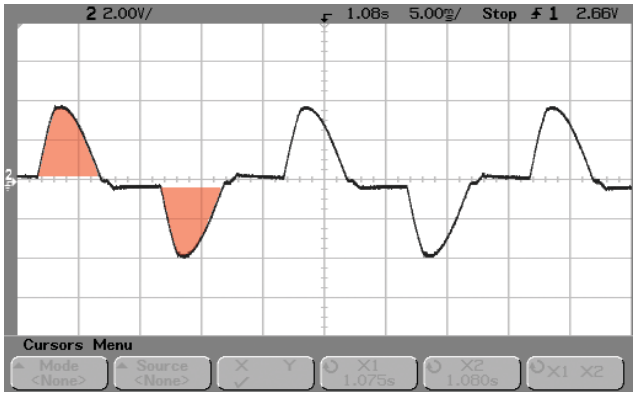
CSX soft starters control only two phases, but include Equi-Vec™ balanced vector control technology. Equi-Vec™ balances the output waveform to make it symmetrical. By balancing the waveform, the CSX provides 3 phase like performance with compact soft starter technology.

This eliminates previous limitations of two phase controllers such as:

- Limited starts per hour
- Limited to light loads only
- Limited to motor < 55 kW



Typical 2-Phase control waveform



Equi-vec waveform

TRIP MESSAGES

The CSX series allows for fast diagnosis of a trip via two LEDs on the front of the unit. LEDs will flash to indicate the trip. (Note: some trip messages available only on the CSXi or with an optional accessory).

Indicator	Description
○	No control power
●	Ready
☼	Tripped

Flash Code	Description
☼ x 1	Power circuit
☼ x 2	Excess Start Time
☼ x 3	Motor Overload
☼ x 4	Motor Thermistor
☼ x 5	Current Imbalance
☼ x 6	Supply Frequency
☼ x 7	Phase Rotation
☼ x 8	Network Communication Failure
☼ x 9	Starter Communication Failure
☼ x 10	Bypass Overload

FEATURES

	CSX	CSXi
STARTING FUNCTIONS		
Timed Voltage Ramp	✓	
Current Limit		✓
Current Ramp		✓
STOPPING		
Coast To Stop	✓	✓
Soft Stop	✓	✓
PROTECTION		
Motor Overload		✓
Phase Loss		✓
Excess Start Time		✓
Phase Sequence		✓
Current Imbalance		✓
Motor Thermistor		✓
Power Circuit Fault	✓	✓
Supply Frequency	✓	✓
Instantaneous Overcurrent		✓
Bypass Overload		✓
Communications Failure	✓	✓

	CSX	CSXi
INTERFACE		
Fixed Relay Output (Main Contactor Relay)	✓	✓
Programmable Relay (Trip or Run)		✓
Run Relay Output	✓	
ACCESSORIES (OPTIONAL)		
Remote Operator	✓	✓
Modbus Interface	✓	✓
Profibus Interface	✓	✓
DeviceNet Interface	✓	✓
Ethernet Interfaces (Ethernet/IP, Modbus TCP, Profinet)	✓	✓
PC Software	✓	✓

SPECIFICATIONS

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General

Current Range ..... 18 A ~ 200 A (nominal)
Motor connection ..... In-line
Bypass ..... Internal

Supply

Mains Voltage (A1, A2, A3)
CSX-xxxx-V4 ..... 3 x 200 VAC ~ 440 VAC (± 10%/ -15%)
CSX-xxxx-V6 ..... 3 x 200 VAC ~ 575 VAC (± 10%/ -15%)
Control Voltage (A1, A2, A3)
C1 ..... 110 ~ 240 VAC (+ 10% / -15%)
..... or 380 ~ 440 VAC (+ 10% / -15%)
C2 ..... 24 VAC AC/24 VDC (+ 20%)
Mains Frequency ..... 45 Hz to 66 Hz

Inputs

Start (terminal 01) ..... Normally open, 300 VAC max
Stop (terminal 02) ..... Normally closed, 300 VAC max

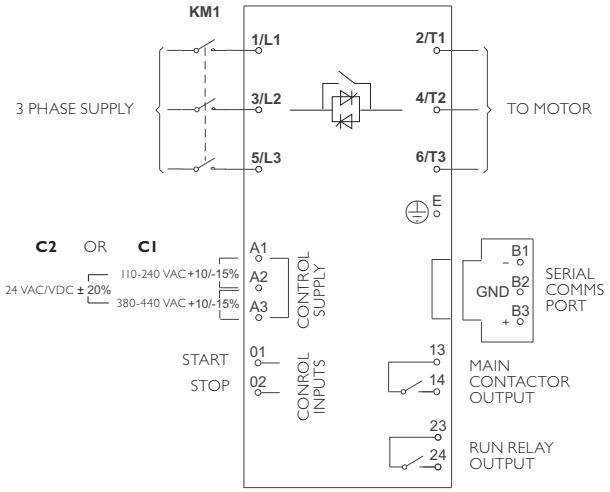
Motor Thermistor (B4, B5) (CSXi only) .....

Relay Outputs

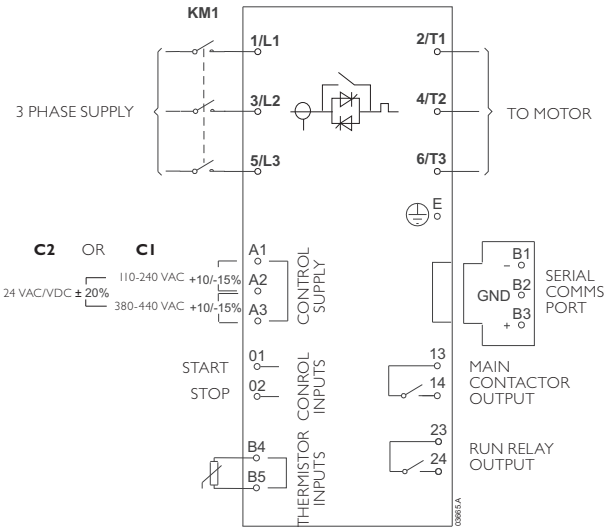
Main Contactor (13, 14) ..... Normally Open
..... 6A, 30 VDC resistive / 2A, 400 VAC, AC11
CSX Run Relay ..... Normally Open
CSXi Programmable Relay (23, 24) ..... Normally Open
..... 6A, 30 VDC resistive / 2A, 400 VAC, AC11

Environmental

Protection
CSX-007 ~ CSX-055 .....IP20
CSX-075 ~ CSX-110 ..... IP00
Operating temperature ..... -10 °C , max 60 °C with derating
Humidity..... 5% to 95% Relative Humidity
Conformal Coating ..... Standard



CSX electrical schematic



CSXi electrical schematic

THE COMPLETE RANGE

CSX-007 ~ CSX-030 *CSX-075 ~ CSX-110* *CSX-037 ~ CSX-055*

CSXI-007 ~ CSXI-030 *CSXI-075 ~ CSXI-110* *CSXI-037 ~ CSXI-055*

CSX AND CSXI CURRENT RATINGS

	AC53b 4.0-6:354 <1000 meters								AC53b 4.0-20:340 <1000 meters							
	40 °C				50 °C				40 °C				50 °C			
	Motor HP (nominal)			Max	Motor HP (nominal)			Max	Motor HP (nominal)			Max	Motor HP (nominal)			Max
Model	230 VAC	460 VAC	575 VAC	FLC (A)	230 VAC	460 VAC	575 VAC	FLC (A)	230 VAC	460 VAC	575 VAC	FLC (A)	230 VAC	460 VAC	575 VAC	FLC (A)
CSX-007	5	10	15	18	5	10	15	17	3	10	15	17	5	10	10	15
CSX-015	10	25	30	34	10	20	30	32	—	20	25	30	10	20	25	28
CSX-018	15	30	40	42	—	30	—	40	10	25	30	36	—	—	30	33
CSX-022	—	—	—	48	15	—	40	44	—	30	—	40	—	25	—	36
CSX-030	20	40	50	60	20	40	50	55	15	—	40	49	15	30	40	45
	AC53b 4.0-6:594 <1000 meters								AC53b 4.0-20:580 <1000 meters							
CSX-037	25	—	60	75	25	50	60	68	20	50	60	65	20	40	50	59
CSX-045	30	60	75	85	30	60	75	78	25	—	60	73	25	50	60	67
CSX-055	—	75	100	100	40	75	100	100	30	75	75	96	30	60	75	87
CSX-075	50	100	125	140	50	100	125	133	40	—	100	120	40	75	100	110
CSX-090	60	125	150	170	60	125	150	157	50	100	125	142	50	100	125	130
CSX-110	75	150	200	200	—	150	—	186	60	125	150	165	—	—	150	152

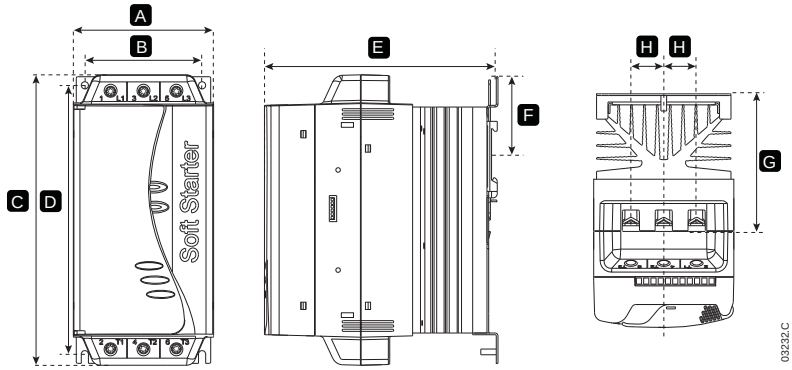
AuCom ratings are detailed using the AC53b utilisation code specified by IEC60947-4-2: **90 A: AC-53b 3.5-15 : 345**

- Off time (seconds)
- Start time (seconds)
- Start current (multiple of FLC)
- Start current rating (amperes)

INSTALLATION

DIMENSIONS AND WEIGHTS

The design of the CSX allows for multiple units to be mounted side by side, or in a bank of starters due to the flexibility in cabling options. Convection cooled starters further reduce the overall size of your soft starter.



Model	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	H (in)	WEIGHT (lb) CSX	WEIGHT (lb) CSXi
CSX-007	3.9	3.2	7.9	7.4	6.5	2.2	3.6	0.9	4.6	4.9
CSX-015										
CSX-018										
CSX-022										
CSX-030										
CSX-037	5.7	4.9	8.5	7.7	7.6	n/a	4.4	1.5	8.4	8.8
CSX-045										
CSX-060										
CSX-075	7.9	6.3	9.4	8.5	8.4	n/a	4.5	2.0	13.4	14.3
CSX-090										
CSX-110