

Extended features inside Compact Soft Starters

ASTAT XB - XBm - XL



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Welcome to the new
digital soft starters!
GE ASTAT family

ASTAT XB and XBm

The GE ASTAT family of Low Voltage Soft Starters is pleased to welcome the new **XB** and **XBm** series in the power range from 18 to 200A, 7.5 to 110kW at 400Vac, 10 to 180HP at 460Vac, with a wide voltage range of 200 to 575Vac

Perfect for applications like Pump, Fans, Compressors, Conveyors,...

These new series are compact and cost effective soft starter solution, simple operation, with a built-in bypass function and conformal coated as standard. Easy DIN-rail mounting for sizes up to 60A, 30kW/50HP at 460Vac, 2-wire or 3-wire start/stop control and excellent starting duty (4 x In for 6 seconds). Heavy starting ratings at 4x In for 20 seconds. Compatible with grounded delta power systems.

The ASTAT XBm 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, along with a programmable relay.

Features:

- ✓ Compact design
- ✓ Built-in bypass
- ✓ Friendly use
- ✓ Conformal coated PCBs (3C2)
- ✓ DIN-rail mounting up to 30kW at 400Vac, 50HP at 460Vac
- ✓ Motor protections (XBm series)
- ✓ Remote operator kit available as option



(1) In progress



ASTAT XL

New digital soft starter **XL** series in the power range from 23 to 1600A, 11 to 850kW at 400Vac, 15 to 1340HP at 460Vac, with a wide voltage range of 200 to 690Vac

Perfect for applications like Pump, Fans, Compressors, Conveyors, Mixers, Mills, Centrifuges,...

These new series has an intuitive user-friendly keypad, with four-line multi-language text (8 languages: English, German, French, Spanish, Portuguese, Italian, Chinese and Russian), Real-time graphs of motor operating performance and 3 types of Setup menus: Standard, Extended and Quick. It can record the last 8 trips, up to 99 events log.

The ASTAT XL is a Constant Current and Current Ramp but also able to control acceleration. According to your application, you can select between early, constant or late acceleration/deceleration.

Features:

- ✓ Compact design
- ✓ Built-in bypass (up to 1000A)
- ✓ User friendly programming and feedback
- ✓ Conformal coated PCBs (3C2)
- ✓ Automatically detects in-line or inside delta connection
- ✓ Adjustable busbars for both top and bottom entry
above 360A, 200kW at 400Vac, 300HP at 460Vac
- ✓ Motor protections
- ✓ DC injection braking distributed over the 3 phases



(1) In progress



Short overview

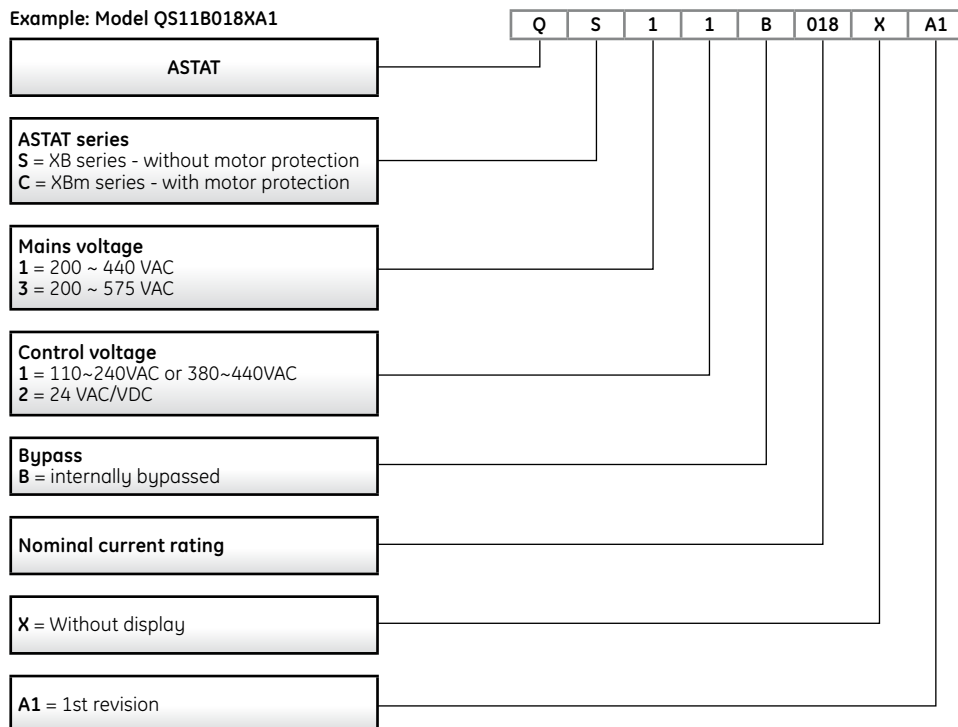
Series ASTAT	XB	XBm	XL
Starting functions			
Timed Voltage Ramp	✓		
Current Limit		✓	✓
Current Ramp		✓	✓
Kick Start			✓
Adaptative Control			✓
Stopping			
Coast to stop	✓	✓	✓
Timed Voltage Ramp	✓	✓	✓
Adaptative Control			✓
Protection			
Excess Start time		✓	✓
Phase loss		✓	✓
Phase sequence		✓	✓
Current imbalance		✓	✓
Instantaneous overcurrent		✓	✓
Undercurrent			✓
Motor overload		✓	✓
Motor thermistor		✓	✓
Bypass overload		✓	✓
Power Circuit fault	✓	✓	✓
Supply frequency	✓	✓	✓
Communications failure	✓	✓	✓
Interface			
Fixed relay (main contactor)	✓	✓	✓
Programmable relay (Trip or Run)		✓	✓
Run relay	✓		✓
Accessories			
Remote operator	✓	✓	✓
Modbus RTU interface	✓	✓	✓
Modbus TCP/IP interface	✓	✓	✓
Profibus interface	✓	✓	✓
Profinet interface	✓	✓	✓
Ethernet/IP interface	✓	✓	✓
DeviceNet interface	✓	✓	✓
USB interface	✓	✓	✓
IP20 Terminal protection kit (above 140A)	✓	✓	✓
IP20 Terminal protection kit (from 255 to 1000A)			✓
ASTAT Select tool ed.1 (free download)	✓	✓	✓
ASTAT Setup tool ed.3 (free download)	✓	✓	✓

Legend = AVAILABLE = NOT AVAILABLE

Catalogue number structure

ASTAT XB and XBm

Example: Model QS11B018XA1



Current Ratings

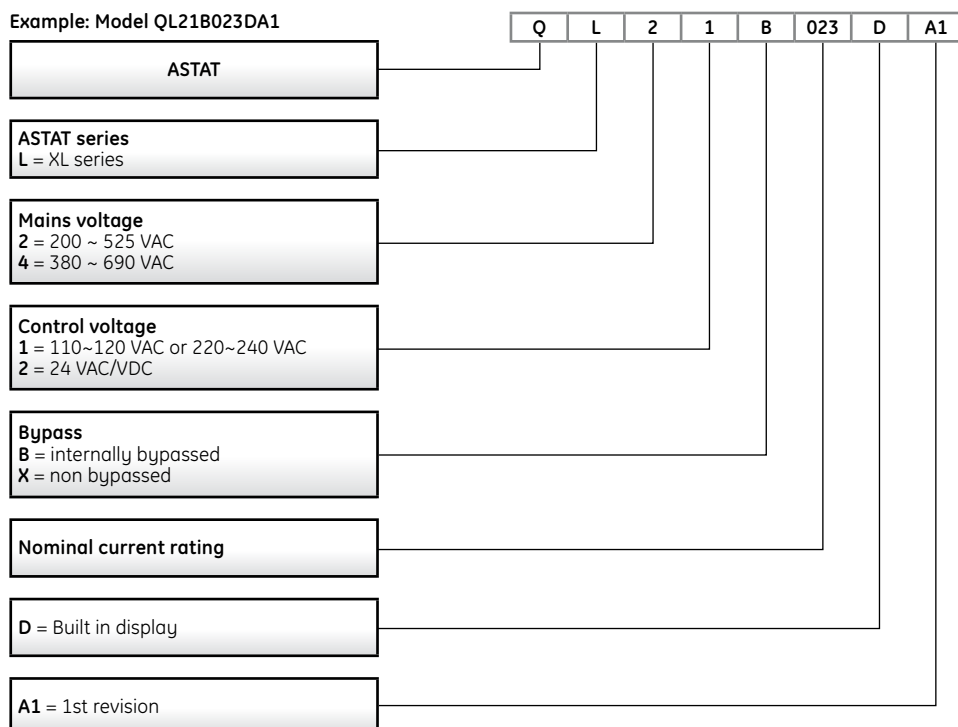
Unit Size	
18A	1
34A	
42A	
48A	
60A	2
75A	
85A	
100A	3
140A	
170A	
200A	

AC53b 4.0-6:354

AC53b 4.0-6:394

ASTAT XL

Example: Model QL21B023DA1



Current Ratings

	Bypassed	Non bypassed
18	23A	-
	43A	-
	50A	-
	53A	-
	76A	-
	97A	-
	100A	-
	105A	-
28	145A	-
	170A	-
	200A	-
	220A	-
38	255A	3C 255A
	350A	360A
	425A	380A
	500A	430A
48	580A	4C 620A
	700A	650A
	820A	790A
	920A	930A
	1000A	1200A
	-	5C 1410A
	-	1600A
	-	



Specifications

Series	XB - XBm	XL
Rated current range		
	18 to 200A	23 to 1600A
Motor connection	In-line	In-line or Inside delta
Bypass	Internal	Internal, from 23 to 1000A External, from 255 to 1600A
Supply		
Mains frequency	45 Hz to 66 Hz	45 Hz to 66 Hz
Rated insulation voltage	600Vac	600Vac
Mains Voltage (A1, A2, A3)		
XB series: QS1_B_XA1	3 x 200 VAC ~ 440 VAC (+ 10%/-15%)	-
XBm series: QC1_B_XA1		-
XB series: QS3_B_XA1	3 x 200 VAC ~ 575 VAC (+ 10%/-15%)	-
XBm series: QC3_B_XA1		-
XL series: QL2_B/X_DA1	-	3 x 200 VAC ~ 525 VAC (± 10%)
	-	3 x 380 VAC ~ 600 VAC (± 10%) (in-line or inside delta connection)
XL series: QL4_B/X_DA1	-	3 x 380 VAC ~ 690 VAC (±10%) (earthed star supply system only)
	-	-
Control Voltage (A1, A2, A3)		
XB series: QS 1B_XA1	110 ~ 240 VAC (+ 10% / -15%)	-
XBm series: QC 1B_XA1	or 380 ~ 440 VAC (+ 10% / -15%)	-
XB series: QS 2B_XA1	24 VAC AC/24 VDC (+ 20%)	-
XBm series: QC 2B_XA1		-
XL series: QL 1B/X_DA1	-	110 ~ 240 VAC (+ 10% / -15%), 600mA
XL series: QL 2B/X_DA1	-	24 VAC AC/24 VDC (+ 20%), 2,8A
Current consumption (during run)	< 100mA	-
CURRENT CONSUMPTION (INRUSH)		
QSx1xxxxXA1	10A	-
QSx2xxxxXA1	2A	-
Inputs		
Input rating	-	Active 24 VDC, 8mA approx
Start (terminal 01)	NO, 150 kOhm at 300 VAC max and 5,6 kOhm at 24 VAC/DC	-
Start (terminal 54, 55)	-	NO
Stop (terminal 02)	NO, 150 kOhm at 300 VAC max and 5,6 kOhm at 24 VAC/DC	-
Stop (terminal 56, 57)	-	NC
Reset (terminal 58, 57)	-	NC
Programmable input (terminal 53, 55)	-	NO
Motor Thermistor (B4, B5) (ASTAT XBm only)	-	-
Motor Thermistor (terminal 64, 65)	-	Trip > 3.6kOhm, reset <1.6kOhm
Relay Outputs	-	10A at 250 VAC resistive, 5A at 250 VAC AC15 pf 0.3
Main Contactor (13, 14)	NO	-
	6A, 30 VDC resistive / 2A, 400 VAC, AC11	-
ASTAT XB - Run relay	NO	-
ASTAT XBm - Programmable relay (23, 24)	NO	-
	6A, 30 VDC resistive / 2A, 400 VAC, AC11	-
Programmable Outputs		
Relay A (terminal 13, 14)	-	NO
Relay B (terminal 21, 22, 24)	-	CO
Relay C (terminal 33, 34)	-	NO
Analog output (terminal 40, 41)	-	0-20mA or 4-20mA (selectable)
Maximum load	-	600W (12 VDC at 20mA)
Accuracy	-	+ 5%
24 VDC output (terminal 55, 41)	-	-
Maximum load	-	200 mA
Accuracy	-	+ 10%

Series	XB - XBm	XL
Environmental		
IP20	18 to 100A	23 to 105A
IP00	140 to 200A	145 to 1600A
Operating temperature	-10 °C, max 60 °C, above 40°C with derating	
Storage temperature	-25 °C to +60 °C	
Operating altitude	0 - 1000m, above 1000m with derating	
Humidity	5% to 95% Relative Humidity	
Pollution degree	Degree 3	
Vibration	IEC 60068 Test Fc Sinusoidal 4Hz to 13,2Hz: + 1mm displacement 13,2Hz to 200Hz: + 0,7 g	
Conformal Coating	Standard (3C2)	
Electromagnetic Capability (Compliant With EU Directive 89/336/EEC)		
EMC Emission	IEC 60947-4-2 Class B and Lloyds Marine No 1 Specification	
Equipment class (EMC)	Class B	
Conducted radio frequency emission	0.15 MHz to 0.5MHz: < 56 - 46 dB (µV), 0.5 MHz to 5 MHz: < 46 dB (µV), 5 MHz to 30 MHz: < 50 dB (µV)	
Radiated radio frequency emission	30 MHz to 230 MHz: < 30 dB (µV/m), 230 MHz to 1000 MHz: < 37 dB (µV/m)	
EMC Immunity	IEC 60947-4-2	
Electrostatic discharge	4kV contact discharge, 8kV air discharge	-
Radio frequency electromagnetic field	0.15 MHz to 1000 MHz: 140 dB (µV)	-
Rated impulse withstand voltage (fast transients 5/50 ns)	2kV line to earth, 1kV line to line	-
Voltage dip and short time interruption	100ms (at 40% nominal voltage)	-
Harmonics and distortion	IEC 61000-2-4 (Class 3), EN/IEC 61800-3-	
Short Circuit Capability		
Rated short circuit current XB, XBm: 18 to 48A	5kA (1)	-
Rated short circuit current XB, XBm: 60 to 200A	10kA (1)	-
(1) These short circuit ratings are with fuses used as given in the table under Semiconductor fuses		
Coordination with semiconductor fuses	-	Type 2
Coordination with HRC fuses	-	Type 1
QLxxB023D ~ QLxxB220D	-	prospective current 65kA
QLxxB255D ~ QLxxB1K0D	-	prospective current 85kA
QLxxX255D ~ QLxxX930D	-	prospective current 85kA
QLxxX1K2D ~ QLxxX1K6D	-	prospective current 100kA
Heat Dissipation		
During Start	3 W/Ampere	4.5 W/Ampere
During Run	10 W typical	
QLxxB023D ~ QLxxB053D	-	≤ 39 W approx.
QLxxB076D ~ QLxxB105D	-	≤ 51 W approx.
QLxxB145D ~ QLxxB220D	-	≤ 120 W approx.
QLxxB255D ~ QLxxB500D	-	≤ 140 W approx.
QLxxB580D ~ QLxxB1K0D	-	≤ 357 W approx.
QLxxX255D ~ QLxxX1K6D	-	4.5 W/ampere approx.
UL certification		
IMPORTANT: ADDITIONAL REQUIREMENTS AND CONFIGURATION SETTINGS FOR ASTAT XL TO BE UL-COMPLIANT		
See also UL Fuse selection and Short Circuit ratings		
QLxxB023D ~ QLxxB105D	-	No additional requirement
QLxxB145D ~ QLxxB220D	-	Use finger guard kit, QOFPROTXL2, 872395
	-	Use the recommended pressure terminal/connector kit
QLxxB255D ~ QLxxB425D	-	Use finger guard kit, QOFPROTXL3, 872396
	-	Use the recommended pressure terminal/connector kit
QLxxX255D	-	Use the recommended pressure terminal/connector kit
QLxxX360D ~ QLxxX1K6D	-	Configure the busbar for line / load terminals at opposite ends of ASTAT XL (i.e. Top In, Bottom Out or Top Out, Bottom In)
	-	Use the recommended pressure terminal/connector kit
QLxxB500D ~ QLxxB1K0D	-	These models are UL recognised components. Separate cable landing busbars may be required within the electrical cabinet when terminating cables sized according to the National Wiring Code (NEC) regulations

ASTAT XB - XBm - XL

Soft Start Methods

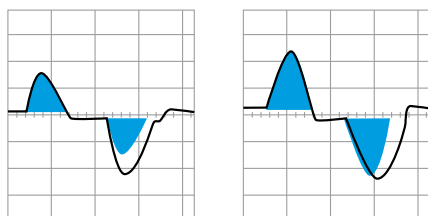
Balanced Vector Control

In the past soft starters using 2 phase control caused extra heating in the motor and required higher starting currents because the output waveform was not symmetrical.

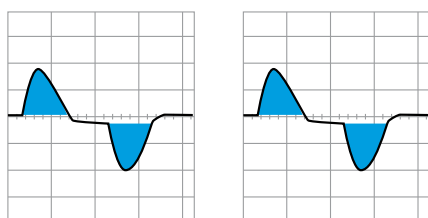
ASTAT XB and XBm soft starters control only two phases, but include balanced vector control technology that balances the output waveform to make it symmetrical. By balancing the waveform the ASTAT XB and XBm provides 3 phase like performance with compact soft starter technology.

This eliminates previous limitations of 2 phase controllers such as:

- Limited starts per hour
- Limited to light loads only
- Limited to motor < 55kW at 400Vac, 75HP at 460Vac



Typical two phase waveforms



Balanced Vector Control

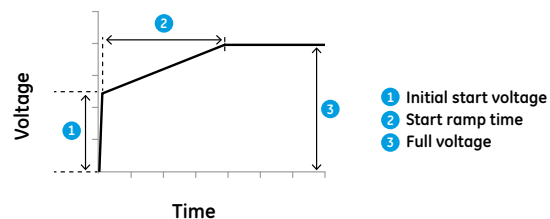
Three phase starting waveform

Start methods

Voltage Ramp (ASTAT XB)

Voltage ramp soft starting raises the voltage from a specified starting level (1) to full voltage over an extended period of time (2).

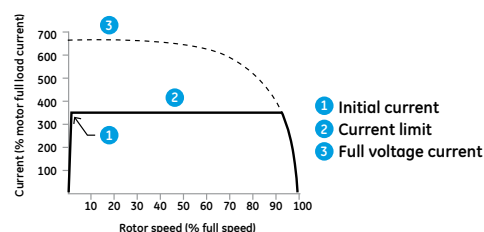
Voltage ramp starting is the simplest way to influence start current and torque.



Constant Current (ASTAT XBm)

Constant current is the traditional form of soft starting, which raises the current from zero to a specified level and keeps the current stable at that level until the motor has accelerated.

Constant current starting is ideal for applications where the start current must be kept below a particular level.

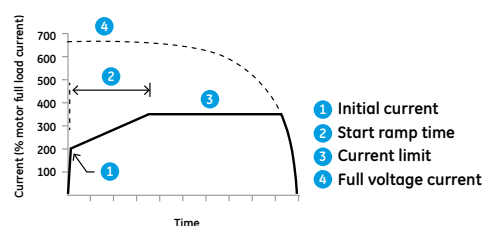


Current Ramp (ASTAT XBm)

Current ramp soft starting raises the current from a specified starting level (1) to a maximum limit (3), over an extended period of time (2).

Current ramp starting can be useful for applications where:

- the load can vary between starts
- the load breaks away easily, but starting time needs to be extended
- the electricity supply is limited



Easy configuration (ASTAT XB)

- 1 Select initial voltage (%) and start ramp time

Select stop ramp time (up to 20 seconds)

- 2 TVR stop adds inertia to the load and allows the motor to slow down gradually

For coast to stop, set Stop Ramp Time = No softstop



Easy configuration (ASTAT XBm)

- 1 Select current limit (% FLC)
Select initial current and start ramp time
Use current ramp for limited supplies (e.g. generator sets) and installations where the motor may start with varying loads

- 2 Motor FLC - Affects all protection and start settings.
Minimum FLC setting is 50% of the nameplate rating.

- 3 Soft stop - Select stop ramp time (up to 20 seconds)

Timed Voltage Ramp stop adds inertia to the load and allows the motor to slow down gradually

For coast to stop, set Stop Ramp Time = No soft stop

- 4 Protections - Motor Trip Class
Excess Start Time – selectable up to 20 seconds, plus built-in limit of 120 seconds ; Phase Sequence (combined with Aux Relay)





Everything is under control



Order codes

				Mains voltage: 200 to 440Vac ; Control voltage: 110 to 240Vac ⁽¹⁾				Mains voltage: 200 to 575Vac ; Control voltage: 110 to 240Vac ⁽¹⁾			
NORMAL DUTY		HEAVY DUTY		ASTAT XB		ASTAT XBm		ASTAT XB		ASTAT XBm	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.	Cat. No.	Ref. No.
AC53b 4-6:354		AC53b 4-20:340									
40°C	50°C	40°C	50°C								
18A	17A	17A	15A	QS11B018XA1	872411	QC11B018XA1	872869	QS31B018XA1	872078	QC31B018XA1	872153
34A	32A	30A	28A	QS11B034XA1	872858	QC11B034XA1	872870	QS31B034XA1	872080	QC31B034XA1	872154
42A	40A	36A	33A	QS11B042XA1	872859	QC11B042XA1	872871	QS31B042XA1	872085	QC31B042XA1	872155
48A	44A	40A	36A	QS11B048XA1	872861	QC11B048XA1	872872	QS31B048XA1	872090	QC31B048XA1	872159
60A	55A	49A	45A	QS11B060XA1	872862	QC11B060XA1	872873	QS31B060XA1	872099	QC31B060XA1	872173
AC53b 4-6:594		AC53b 4-20:580									
40°C	50°C	40°C	50°C								
75A	68A	65A	59A	QS11B075XA1	872863	QC11B075XA1	872874	QS31B075XA1	872118	QC31B075XA1	872175
85A	78A	73A	67A	QS11B085XA1	872864	QC11B085XA1	872875	QS31B085XA1	872123	QC31B085XA1	872183
100A	100A	96A	87A	QS11B100XA1	872865	QC11B100XA1	872876	QS31B100XA1	872124	QC31B100XA1	872184
140A	133A	120A	110A	QS11B140XA1	872866	QC11B140XA1	872877	QS31B140XA1	872125	QC31B140XA1	872185
170A	157A	142A	130A	QS11B170XA1	872867	QC11B170XA1	872878	QS31B170XA1	872135	QC31B170XA1	872186
200A	186A	165A	152A	QS11B200XA1	872868	QC11B200XA1	872879	QS31B200XA1	872146	QC31B200XA1	872187

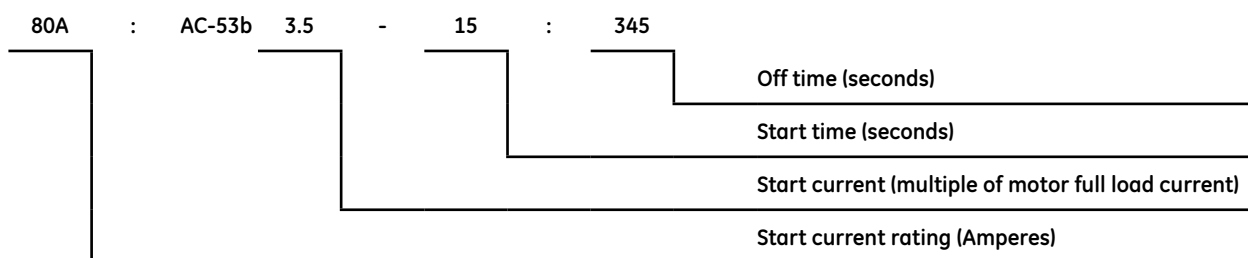
(1) control voltage: 24Vac/dc is also available, please consult GE.

Above values are for altitude < 1000m/3300ft

ASTAT XB and XBm Options

Description	Cat. No.	Ref. No.
Ethernet Communication module	QOEIP	872378
DeviceNet Communication module	QODEV	872379
Modbus RTU Communication module	QOMB	872383
Modbus TCP Communication module	QOMBTCP	872384
Profibus Communication module	QOPDP	872386
Profinet Communication module	QOPRT	872387
USB module	QOUSB	872388
Remote Control Panel	QORCPXB	872392
IP20 finger protection 140 to 200A	QOFPROTXB	872394

AC53b Utilisation Code



Starter Current Rating: The full load current rating of the soft starter given the parameters detailed in the remaining sections of the utilization code.

Start Current: The maximum available start current.

Start Time: The maximum allowable start time.

Off Time: The minimum allowable time between the end of one start and the beginning of the next start.



Order codes

Current ratings for bypass operation

In-line connection

				Mains voltage: 200 to 525Vac ; Control voltage: 110 to 240Vac ⁽¹⁾		Mains voltage: 380 to 690Vac ; Control voltage: 110 to 240Vac ⁽¹⁾	
LIGHT DUTY	NORMAL DUTY	HEAVY DUTY	SEVERE DUTY	ASTAT XL		ASTAT XL	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
AC53b 3.0-10:350	AC53b 3.5-15:345	AC53b 4.0-20:340	AC53b 4.5-30:330				
40°C							
23A	20A	17A	15A	QL21B023DA1	872221	QL41B023DA1	872337
43A	37A	31A	26A	QL21B043DA1	872239	QL41B043DA1	872338
50A	44A	37A	30A	QL21B050DA1	872241	QL41B050DA1	872339
53A	53A	46A	37A	QL21B053DA1	872243	QL41B053DA1	872340
AC53b 3.0-10:390	AC53b 3.5-15:385	AC53b 4.0-20:580	AC53b 4.5-30:570				
40°C							
76A	64A	55A	47A	QL21B076DA1	872245	QL41B076DA1	872342
97A	82A	69A	58A	QL21B097DA1	872246	QL41B097DA1	872343
100A	88A	74A	61A	QL21B100DA1	872247	QL41B100DA1	872344
105A	105A	95A	78A	QL21B105DA1	872248	QL41B105DA1	872346
145A	123A	106A	90A	QL21B145DA1	872249	QL41B145DA1	872347
170A	145A	121A	97A	QL21B170DA1	872256	QL41B170DA1	872351
200A	189A	160A	134A	QL21B200DA1	872258	QL41B200DA1	872352
220A	210A	178A	148A	QL21B220DA1	872274	QL41B220DA1	872353
255A	231A	201A	176A	QL21B255DA1	872276	QL41B255DA1	872354
255A	231A	201A	176A	QL21X255DA1	872312	QL41X255DA1	872364
350A	329A	284A	244A	QL21B350DA1	872284	QL41B350DA1	872356
360A	360A	310A	263A	QL21X360DA1	872318	QL41X360DA1	872365
380A	380A	359A	299A	QL21X380DA1	872320	QL41X380DA1	872366
425A	411A	355A	305A	QL21B425DA1	872292	QL41B425DA1	872357
430A	430A	368A	309A	QL21X430DA1	872322	QL41X430DA1	872368
500A	445A	383A	326A	QL21B500DA1	872294	QL41B500DA1	872358
580A	492A	425A	364A	QL21B580DA1	872296	QL41B580DA1	872359
620A	620A	540A	434A	QL21X620DA1	872324	QL41X620DA1	872369
650A	650A	561A	455A	QL21X650DA1	872328	QL41X650DA1	872370
700A	592A	512A	438A	QL21B700DA1	872302	QL41B700DA1	872360
790A	790A	714A	579A	QL21X790DA1	872330	QL41X790DA1	872371
820A	705A	606A	516A	QL21B820DA1	872303	QL41B820DA1	872361
920A	804A	684A	571A	QL21B920DA1	872304	QL41B920DA1	872362
930A	930A	829A	661A	QL21X930DA1	872332	QL41X930DA1	872372
1000A	936A	796A	664A	QL21B1K0DA1	872306	QL41B1K0DA1	872363
1200A	1200A	1200A	1071A	QL21X1K2DA1	872333	QL41X1K2DA1	872373
1410A	1410A	1319A	1114A	QL21X1K4DA1	872334	QL41X1K4DA1	872374
1600A	1600A	1600A	1353A	QL21X1K6DA1	872336	QL41X1K6DA1	872376

(1) control voltage: 24Vac/dc is also available, please consult GE.
Above values are for altitude < 1000m/3300ft

Order codes

Current ratings for bypass operation Inside delta connection

				Mains voltage: 200 to 525Vac ; Control voltage: 110 to 240Vac ⁽¹⁾		Mains voltage: 380 to 690Vac ; Control voltage: 110 to 240Vac ⁽¹⁾	
LIGHT DUTY	NORMAL DUTY	HEAVY DUTY	SEVERE DUTY	ASTAT XL		ASTAT XL	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
AC53b 3.0-10:350	AC53b 3.5-15:345	AC53b 4.0-20:340	AC53b 4.5-30:330				
40°C							
34A	30A	26A	22A	QL21B023DA1	872221	QL41B023DA1	872337
64A	59A	51A	44A	QL21B043DA1	872239	QL41B043DA1	872338
75A	66A	55A	45A	QL21B050DA1	872241	QL41B050DA1	872339
79A	79A	69A	55A	QL21B053DA1	872243	QL41B053DA1	872340
AC53b 3.0-10:390	AC53b 3.5-15:385	AC53b 4.0-20:580	AC53b 4.5-30:570				
40°C							
114A	96A	83A	70A	QL21B076DA1	872245	QL41B076DA1	872342
145A	123A	104A	87A	QL21B097DA1	872246	QL41B097DA1	872343
150A	132A	112A	92A	QL21B100DA1	872247	QL41B100DA1	872344
157A	157A	143A	117A	QL21B105DA1	872248	QL41B105DA1	872346
218A	184A	159A	136A	QL21B145DA1	872249	QL41B145DA1	872347
255A	217A	181A	146A	QL21B170DA1	872256	QL41B170DA1	872351
300A	283A	241A	200A	QL21B200DA1	872258	QL41B200DA1	872352
330A	315A	268A	223A	QL21B220DA1	872274	QL41B220DA1	872353
382A	346A	302A	264A	QL21B255DA1	872276	QL41B255DA1	872354
382A	346A	302A	264A	QL21X255DA1	872312	QL41X255DA1	872364
525A	494A	427A	366A	QL21B350DA1	872284	QL41B350DA1	872356
540A	540A	465A	395A	QL21X360DA1	872318	QL41X360DA1	872365
570A	570A	539A	449A	QL21X380DA1	872320	QL41X380DA1	872366
638A	617A	533A	458A	QL21B425DA1	872292	QL41B425DA1	872357
645A	645A	552A	464A	QL21X430DA1	872322	QL41X430DA1	872368
750A	668A	575A	490A	QL21B500DA1	872294	QL41B500DA1	872358
870A	738A	637A	546A	QL21B580DA1	872296	QL41B580DA1	872359
930A	930A	810A	651A	QL21X620DA1	872324	QL41X620DA1	872369
975A	975A	842A	683A	QL21X650DA1	872328	QL41X650DA1	872370
1050A	889A	768A	658A	QL21B700DA1	872302	QL41B700DA1	872360
1185A	1185A	1071A	868A	QL21X790DA1	872330	QL41X790DA1	872371
1230A	1058A	910A	774A	QL21B820DA1	872303	QL41B820DA1	872361
1380A	1206A	1026A	857A	QL21B920DA1	872304	QL41B920DA1	872362
1395A	1395A	1244A	992A	QL21X930DA1	872332	QL41X930DA1	872372
1500A	1404A	1194A	997A	QL21B1K0DA1	872306	QL41B1K0DA1	872363
1800A	1800A	1800A	1606A	QL21X1K2DA1	872333	QL41X1K2DA1	872373
2115A	2115A	1979A	1671A	QL21X1K4DA1	872334	QL41X1K4DA1	872374
2400A	2400A	2400A	2030A	QL21X1K6DA1	872336	QL41X1K6DA1	872376

(1) control voltage: 24Vac/dc is also available, please consult GE.
Note: Models QLxxX__DA1 must be externally bypassed
Above values are for altitude < 1000m/3300ft



Current ratings for continuous operation (not bypassed)

In-line connection

				Mains voltage: 200 to 525Vac ; Control voltage: 110 to 240Vac ⁽¹⁾		Mains voltage: 380 to 690Vac ; Control voltage: 110 to 240Vac ⁽¹⁾	
LIGHT DUTY	NORMAL DUTY	HEAVY DUTY	SEVERE DUTY	ASTAT XL		ASTAT XL	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
AC53b 3-10:50-6	AC53b 3.5-15:50-6	AC53b 4-20:50-6	AC53b 4.5-30:50-6				
40°C							
255A	222A	195A	171A	QL21X255DA1	872312	QL41X255DA1	872364
360A	351A	303A	259A	QL21X360DA1	872318	QL41X360DA1	872365
380A	380A	348A	292A	QL21X380DA1	872320	QL41X380DA1	872366
430A	413A	355A	301A	QL21X430DA1	872322	QL41X430DA1	872368
620A	614A	515A	419A	QL21X620DA1	872324	QL41X620DA1	872369
650A	629A	532A	437A	QL21X650DA1	872328	QL41X650DA1	872370
790A	790A	694A	567A	QL21X790DA1	872330	QL41X790DA1	872371
930A	930A	800A	644A	QL21X930DA1	872332	QL41X930DA1	872372
1200A	1200A	1135A	983A	QL21X1K2DA1	872333	QL41X1K2DA1	872373
1410A	1355A	1187A	1023A	QL21X1K4DA1	872334	QL41X1K4DA1	872374
1600A	1600A	1433A	1227A	QL21X1K6DA1	872336	QL41X1K6DA1	872376

(1) control voltage: 24Vac/dc is also available, please consult GE.
Above values are for altitude < 1000m/3300ft

Inside delta connection

				Mains voltage: 200 to 525Vac ; Control voltage: 110 to 240Vac ⁽¹⁾		Mains voltage: 380 to 690Vac ; Control voltage: 110 to 240Vac ⁽¹⁾	
LIGHT DUTY	NORMAL DUTY	HEAVY DUTY	SEVERE DUTY	ASTAT XL		ASTAT XL	
				Cat. No.	Ref. No.	Cat. No.	Ref. No.
AC53b 3-10:50-6	AC53b 3.5-15:50-6	AC53b 4-20:50-6	AC53b 4.5-30:50-6				
40°C							
382A	334A	293A	257A	QL21X255DA1	872312	QL41X255DA1	872364
540A	527A	455A	388A	QL21X360DA1	872318	QL41X360DA1	872365
570A	570A	522A	437A	QL21X380DA1	872320	QL41X380DA1	872366
645A	620A	533A	451A	QL21X430DA1	872322	QL41X430DA1	872368
930A	920A	773A	628A	QL21X620DA1	872324	QL41X620DA1	872369
975A	943A	798A	656A	QL21X650DA1	872328	QL41X650DA1	872370
1185A	1185A	1041A	850A	QL21X790DA1	872330	QL41X790DA1	872371
1395A	1395A	1200A	966A	QL21X930DA1	872332	QL41X930DA1	872372
1800A	1800A	1702A	1474A	QL21X1K2DA1	872333	QL41X1K2DA1	872373
2115A	2033A	1780A	1535A	QL21X1K4DA1	872334	QL41X1K4DA1	872374
2400A	2400A	2149A	1840A	QL21X1K6DA1	872336	QL41X1K6DA1	872376

(1) control voltage: 24Vac/dc is also available, please consult GE.
Above values are for altitude < 1000m/3300ft

Minimum and Maximum Current settings

In-line connection			Inside delta connection	
Model	Minimum	Maximum	Minimum	Maximum
QLxxB023D	5A	23A	5A	34A
QLxxB043D	9A	43A	9A	64A
QLxxB050D	10A	50A	10A	75A
QLxxB053D	11A	53A	11A	79A
QLxxB076D	15A	76A	15A	114A
QLxxB097D	19A	97A	19A	145A
QLxxB100D	20A	100A	20A	150A
QLxxB105D	21A	105A	21A	157A
QLxxB145D	29A	145A	29A	217A
QLxxB170D	34A	170A	34A	255A
QLxxB200D	40A	200A	40A	300A
QLxxB220D	44A	220A	44A	330A
QLxxB255D	51A	255A	51A	382A
QLxxX255D	51A	255A	51A	382A
QLxxB350D	70A	350A	70A	525A
QLxxX360D	72A	360A	72A	540A
QLxxX380D	76A	380A	76A	570A
QLxxB425D	85A	425A	85A	638A
QLxxX430D	86A	430A	86A	645A
QLxxB500D	100A	500A	100A	750A
QLxxB580D	116A	580A	116A	870A
QLxxX620D	124A	620A	124A	930A
QLxxX650D	130A	650A	130A	975A
QLxxB700D	140A	700A	140A	1050A
QLxxX790D	158A	790A	158A	1185A
QLxxB820D	164A	820A	164A	1230A
QLxxB920D	184A	920A	184A	1380A
QLxxX930D	186A	930A	186A	1395A
QLxxB1K0D	200A	1000A	200A	1500A
QLxxX1K2D	240A	1200A	240A	1800A
QLxxX1K4D	282A	1410A	282A	2115A
QLxxX1K6D	320A	1600A	320A	2400A

ASTAT XL Options

Description	Cat. No.	Ref. No.
Ethernet Communication module	QOEIP	872378
DeviceNet Communication module	QODEV	872379
Modbus RTU Communication module	QOMB	872383
Modbus TCP Communication module	QOMBTCP	872384
Profibus Communication module	QOPDP	872386
Profinet Communication module	QOPRT	872387
USB module	QOUSB	872388
Remote Control Panel	QORCPXL	872391
IP20 finger protection 145 to 220A	QOFPROTXL2	872395
IP20 finger protection 255 to 425A	QOFPROTXL3	872396
IP20 finger protection 500 to 1000A	QOFPROTXL4	872399

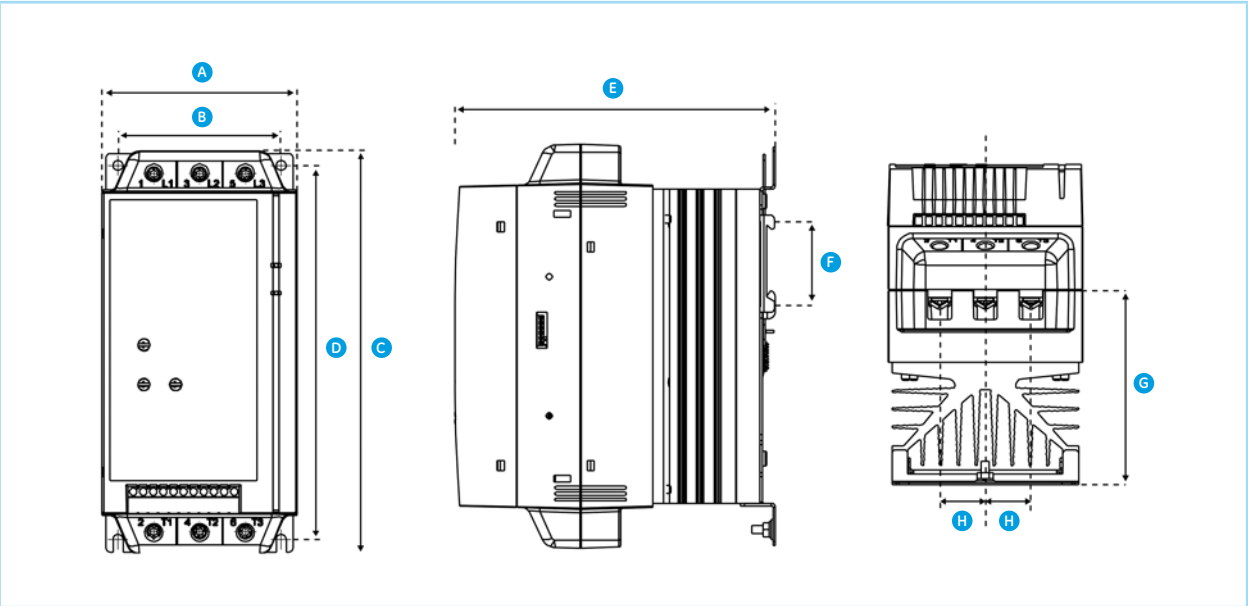


Everything is under control



ASTAT XB - XBm - XL

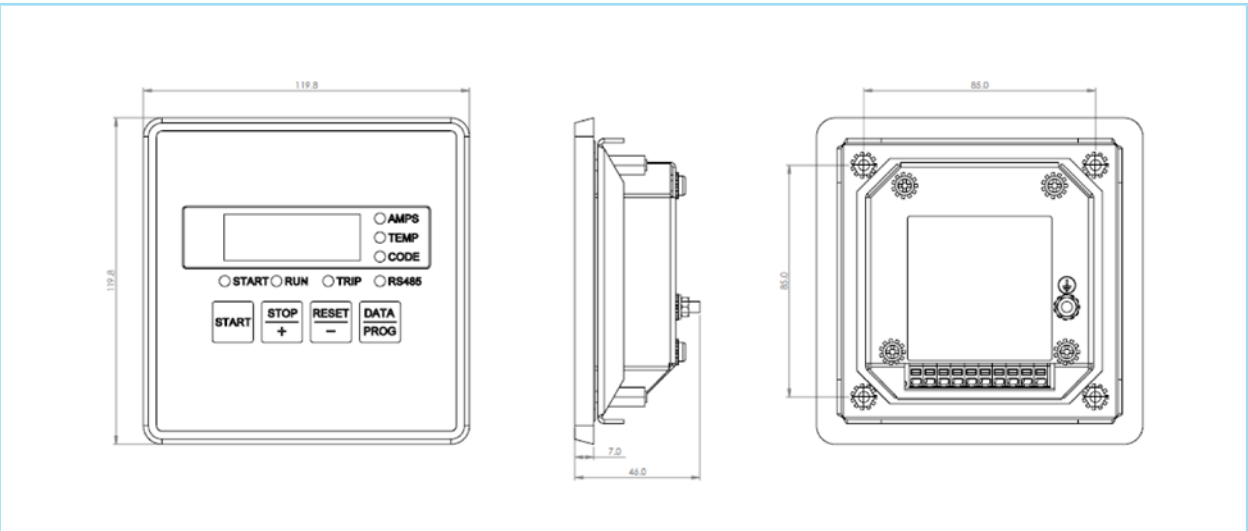
Dimensions ASTAT XB and XBm



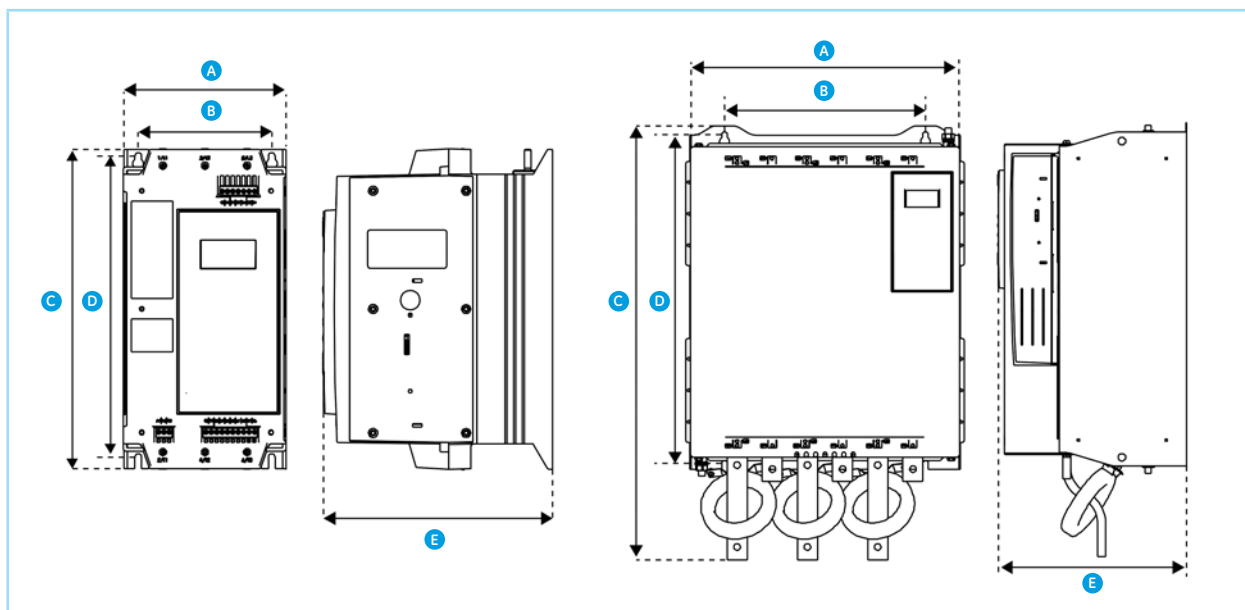
Dimensions in mm (inch)

Model	A (Width)	B (Width)	C (Height)	D (Height)	E (Depth)	F	G	H	Weight kg (lb)
QS/QCxxB018X	98 (3.85)	82 (3.22)	201 (7.91)	188 (7.40)	165 (6.49)	55 (2.16)	90,5 (3.6)	23 (0.9)	2.1 (4.6)
QS/QCxxB034X									
QS/QCxxB042X									
QS/QCxxB048X									
QS/QCxxB060X									
QS/QCxxB075X	145 (5.70)	124 (4.88)	215 (8.46)	196 (7.71)	193 (7.59)		110,5 (4.4)	37 (1.5)	3.8 (8.4)
QS/QCxxB085X									
QS/QCxxB100X									
QS/QCxxB140X	200 (7.87)	160 (6.29)	240 (9.44)	216 (8.50)	214 (8.42)		114,5 (4.5)	51 (2.0)	6.1 (13.5)
QS/QCxxB170X									
QS/QCxxB200X									

Remote operator of ASTAT XB and XBm



Dimensions ASTAT XL



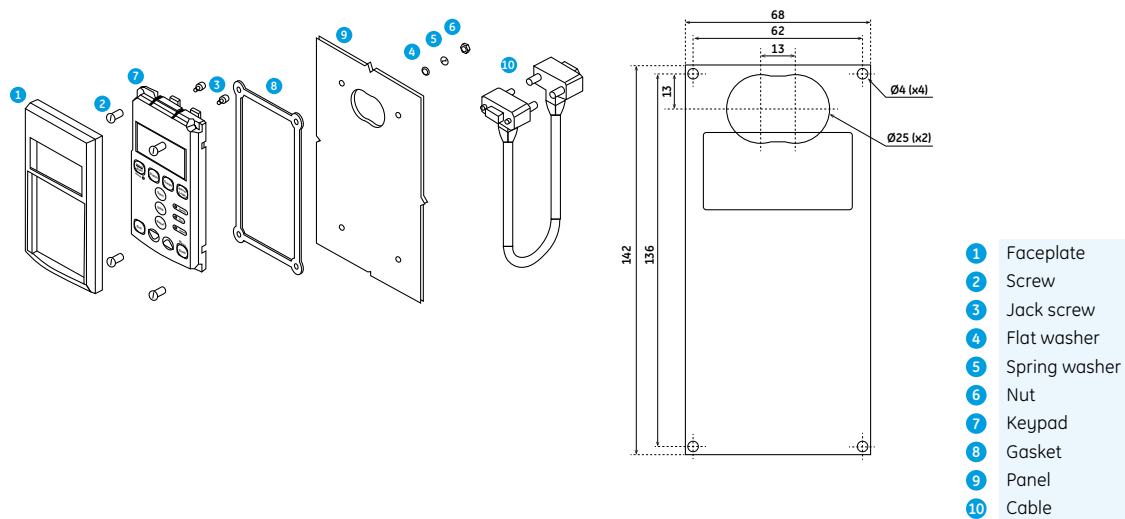
Dimensions in mm (inch)

Model	A (Width)	B (Width)	C (Height)	D (Height)	E (Depth)	Weight kg (lb)	
QLxxB0023D	150 (5.9)	124 (4.9)	295 (11.6)	278 (10.9)	183 (7.2)		
QLxxB0043D							
QLxxB0050D							
QLxxB0053D					213 (8.4)		
QLxxB0076D							
QLxxB0097D							
QLxxB0100D					4.9 (10.8)		
QLxxB0105D							
QLxxB0145D	275 (10.8)	250 (9.8)	438 (17.2)	380 (15.0)	248 (9.8)	13.6 (30.0)	
QLxxB0170D						13.8 (30.4)	
QLxxB0200D							
QLxxB0220D					14.6 (32.2)		
QLxxB0255D							
QLxxB0350D					424 (16.7)	376 (14.8)	440 (17.3)
QLxxB0425D	29.4 (64.8)						
QLxxB0500D							
QLxxB0580D	49 (108.0)						
QLxxB0700D	293 (11.5)	62.5 (137.8)					
QLxxB0820D							
QLxxB0920D			63 (138.9)				
QLxxB1000D							
QLxxX0255D	390 (15.4)	320 (12.6)	460 (18.1)	400 (15.7)	278 (10.9)	23 (50.7)	
QLxxX0360D	430 (16.9)	320 (12.6)	689 (27.1)	522 (20.6)	301 (11.9)		
QLxxX0380D							
QLxxX0430D							
QLxxX0620D							
QLxxX0650D						39.5 (87.1)	
QLxxX0790D							
QLxxX0930D						51.5 (113.5)	
QLxxX1200D						128.5 (283.3)	
QLxxX1410D	574 (22.6)	500 (19.7)	860 (33.9)	727 (28.6)	362 (14.3)	130 (286.6)	
QLxxX1600D						140 (308.6)	

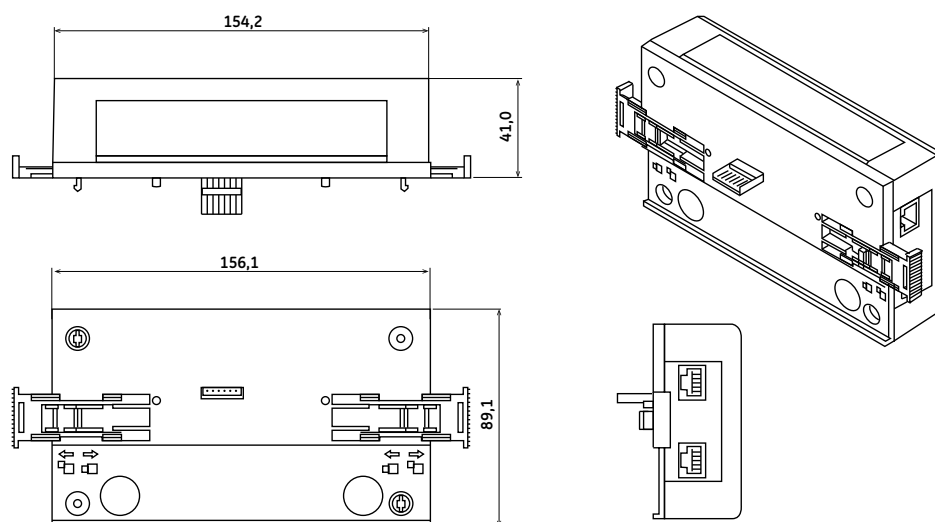
ASTAT XB - XBm - XL

Dimensions

ASTAT XL remote control panel

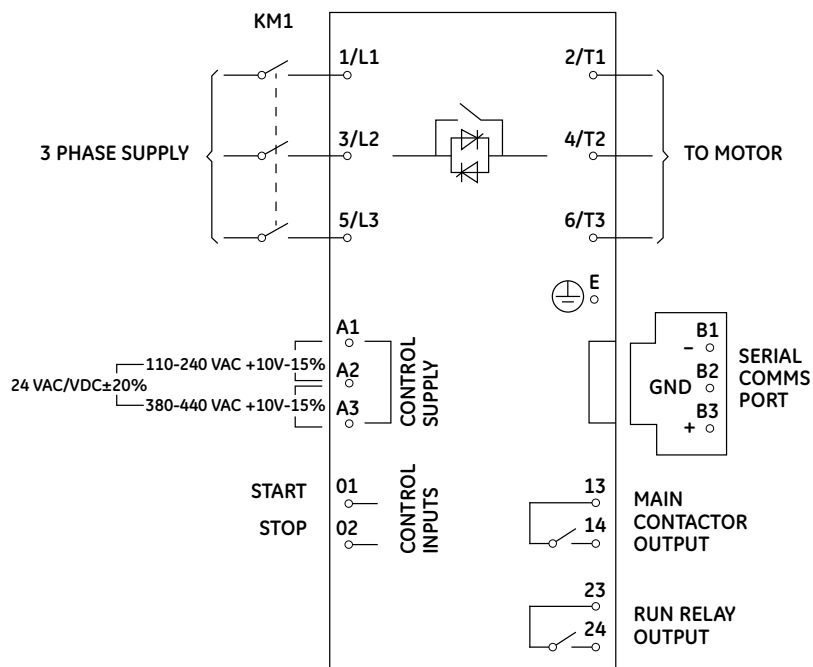


Communication modules



Basic wiring diagrams

ASTAT XB



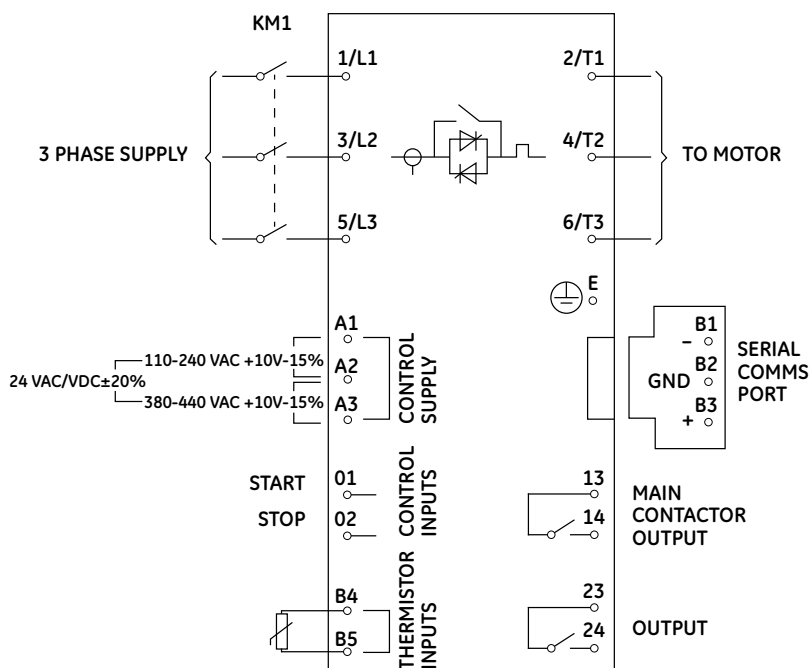
Technical data

A

B

C

ASTAT XBm



Semiconductor Fuses

Semiconductor fuses can be used with ASTAT XB and XBm soft starters to reduce the potential for damage to SCRs from transient overload currents and for Type 2 coordination. ASTAT XB and XBm soft starters have been tested to achieve Type 2 coordination with semiconductor fuses. Suitable Bussmann and Ferraz/Mersen semiconductor fuses are detailed below:

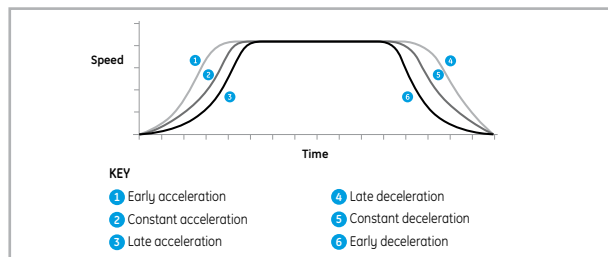
Model	SCR I ² t (A ² s)	Ferraz/Mersen Fuse European/IEC style (North American style)	Bussmann Fuse Square body	Bussmann Fuse British style (BS88)
QS/QCxx018	1150	6.6URD30xxxA0063 (A070URD30xxx0063)	170M-1314	63 FE
QS/QCxx034	8000	6.6URD30xxxA0125 (A070URD30xxx0125)	170M-1317	160 FEE
QS/QCxx042	10500	6.6URD30xxxA0160 (A070URD30xxx0160)	170M-1318	160 FEE
QS/QCxx048	15000	6.6URD30xxxA0160 (A070URD30xxx0160)	170M-1318	180 FM
QS/QCxx060	18000	6.6URD30xxxA0160 (A070URD30xxx0160)	170M-1319	180 FM
QS/QCxx075	51200	6.6URD30xxxA0250 (A070URD30xxx0250)	170M-1321	250 FM
QS/QCxx085	80000	6.6URD30xxxA0315 (A070URD30xxx0315)	170M-1321	250 FM
QS/QCxx100	97000	6.6URD30xxxA0315 (A070URD30xxx0315)	170M-1321	250 FM
QS/QCxx140	168000	6.6URD31xxxA0450 (A070URD31xxx0450)	170M-1322	500 FMM
QS/QCxx170	245000	6.6URD31xxxA0450 (A070URD31xxx0450)	170M-3022	500 FMM
QS/QCxx200	320000	6.6URD31xxxA0450 (A070URD31xxx0450)	170M-3022	500 FMM

ASTAT XL: see pages 69 to 75 from User Manual of ASTAT XL.

ASTAT XL - Adaptive Control

New soft start control type that allows the selection of different acceleration and deceleration profiles according to application needs.

Gradual and shock free acceleration can benefit all motor applications, but many situations need more precise control over acceleration and/or deceleration. Ideal for pump stopping: Match the deceleration profile to the unique hydraulic characteristics of the individual system.



Two algorithms

Adaptive control is based on two algorithms, one for measuring (learning) the motor characteristics and one for controlling the motor

Starting and stopping profiles

The control algorithm defines starting and stopping profiles which relate motor speed to elapsed time.

Comparison

During each start and stop, adaptive control compares the motor's estimated speed with the selected profile.

Refining the model

The algorithm refines its model with data from every subsequent start and stop.

First soft start

During the first soft start the measuring algorithm measures the motor's characteristics at zero speed and at maximum efficiency

Up to six profiles

ASTAT XL allows for control with three acceleration and three deceleration profiles.

Adjustment

The soft starter then adjusts the power to the motor to achieve the selected profile (more power if the estimated speed is too low, less power if the speed is too high).

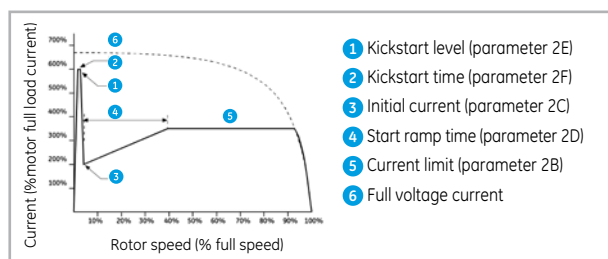
Fine tuning

The user can fine tune the adaptive control gain for smoother performance.

Kickstart (ASTAT XL)

Provides a short boost of extra torque at the beginning of a start, and can be used in conjunction with current ramp or constant current starting.

Kickstart can be useful to help start loads that require high breakaway torque but then accelerate easily (for example: flywheel loads such as presses).



Other features

Emergency Run Mode (Fire mode)

In some cases, the equipment must run at all costs (eg ventilation fans in high rise buildings must run in case of fire, regardless of the risk to the

starter). It initiates a start and deactivates all protections, allowing the motor to run as long as possible.

Dual Parameter Set

Supports two sets of motor data and start/stop profile:

- duty-standby pumps
- different start performance for varying load conditions
- soft braking

PowerThrough

The starter can operate in two-phase control if one SCR is damaged. This allows continued operation while arranging repairs.

Auto-Reset

Auto-reset selected trips. It allows uninterrupted safe operation of un-manned installations.

You can select which trips to reset, reset delay and maximum resets.

DC Brake

Electrically brakes high inertia loads. It increases productivity of machines such as band-saws

and chippers by reducing the time needed to replace saw bands or cutting heads. The starter pulses the DC over all three phases and does not require an external contactor.

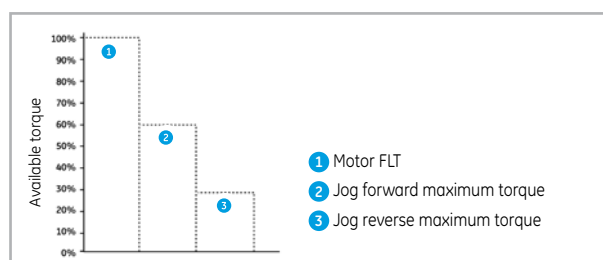
24 VDC Output

Provides an in-built 24 VDC auxiliary power supply, removing the cost of a separate supply.

Jog

Run the motor at part speed (approx 11%). The maximum torque is approx 60% of motor FLT in forward and 45% FLT in reverse.

Ideal to position loads such as mixers or hopper bins ready for unloading



UL Compliance: Terminal/Connector Parts

For models QLxxB145D~QLxxB425D and QLxxX255D~QLxxX1K6D to be UL compliant, you must use the recommended pressure terminal/connector as detailed in the table below.

Model	FLC (A)	No. of wires	Recommended lugs part No.
QLxxB145D	145	1	OPHD 95-16
QLxxB170D	170	1	OPHD 120-16
QLxxB200D	200	1	OPHD 150-16
QLxxB220D	220	1	OPHD 185-16
QLxxB255D	255	1	OPHD 240-20
QLxxB350D	350	1	OPHD 400-16
QLxxB425D	425	2	OPHD 185-16
QLxxX255D	255	1	OPHD 240-20
QLxxX360D	360	2	1 x 600T-2
QLxxX380D	380		
QLxxX430D	430		
QLxxX620D	620		
QLxxX650D	650	4	2 x 600T-2
QLxxX790D	790		
QLxxX930D	930		
QLxxX1K2D	1200		
QLxxX1K4D	1410	4	1 x 750T-4
QLxxX1K6D	1600	5	1 x 750T-4 and 1 x 600T-3



Basic wiring diagrams

- 1 x programmable input
where you can connect transducers and probes, simpler control circuits and lower installation cost.
- 3 x remote digital inputs
- 3 x programmable outputs
- 1 x Analog output

Adjustable Busbars

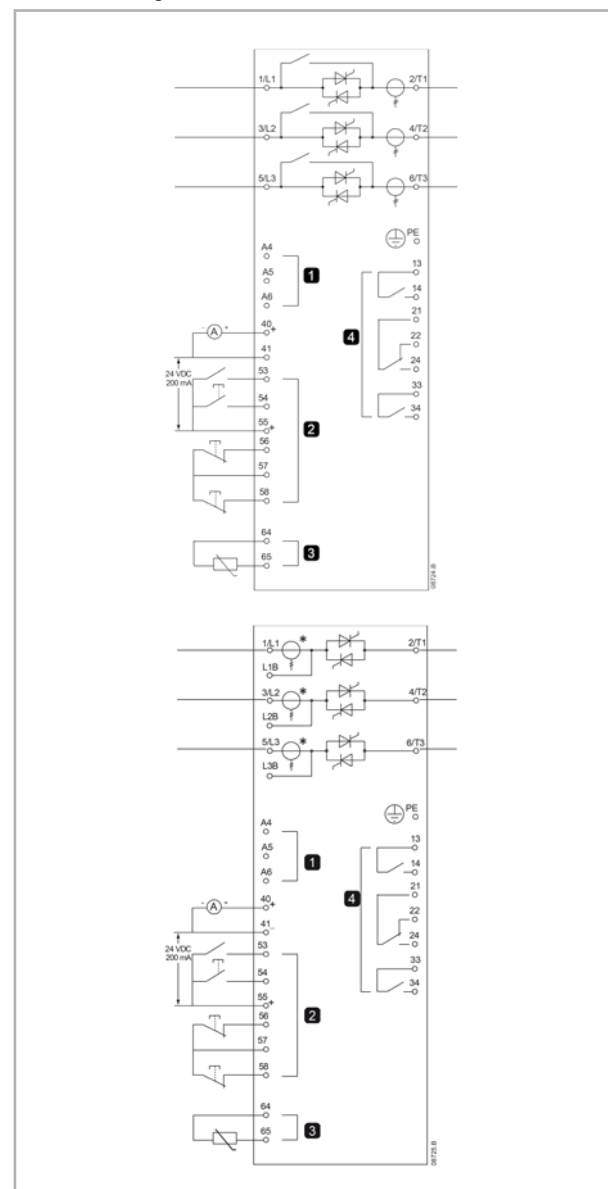
Cabling or busbar work for higher power installations can be costly and require significant panel space. ASTAT XL soft starters ≥ 360 A reduce cable costs and panel space requirements because they allow for top or bottom connection of both input and output cabling.

Easy access of Control terminals

Pluggable terminal blocks make wiring easy. Separate terminal blocks for control and I/O ensure tidier wiring.



Schematic diagrams



1	Control voltage (model dependent)
2	Remote control inputs
3	Motor thermistor input
4	Relay outputs
40, 41	Analog output
55, 41	24 VDC output
54, 55	Start
56, 57	Stop
58, 57	Reset
53, 55	Programmable input A
13, 14	Relay output A
21, 22, 24	Relay output B
33, 34	Relay output C

NOTE

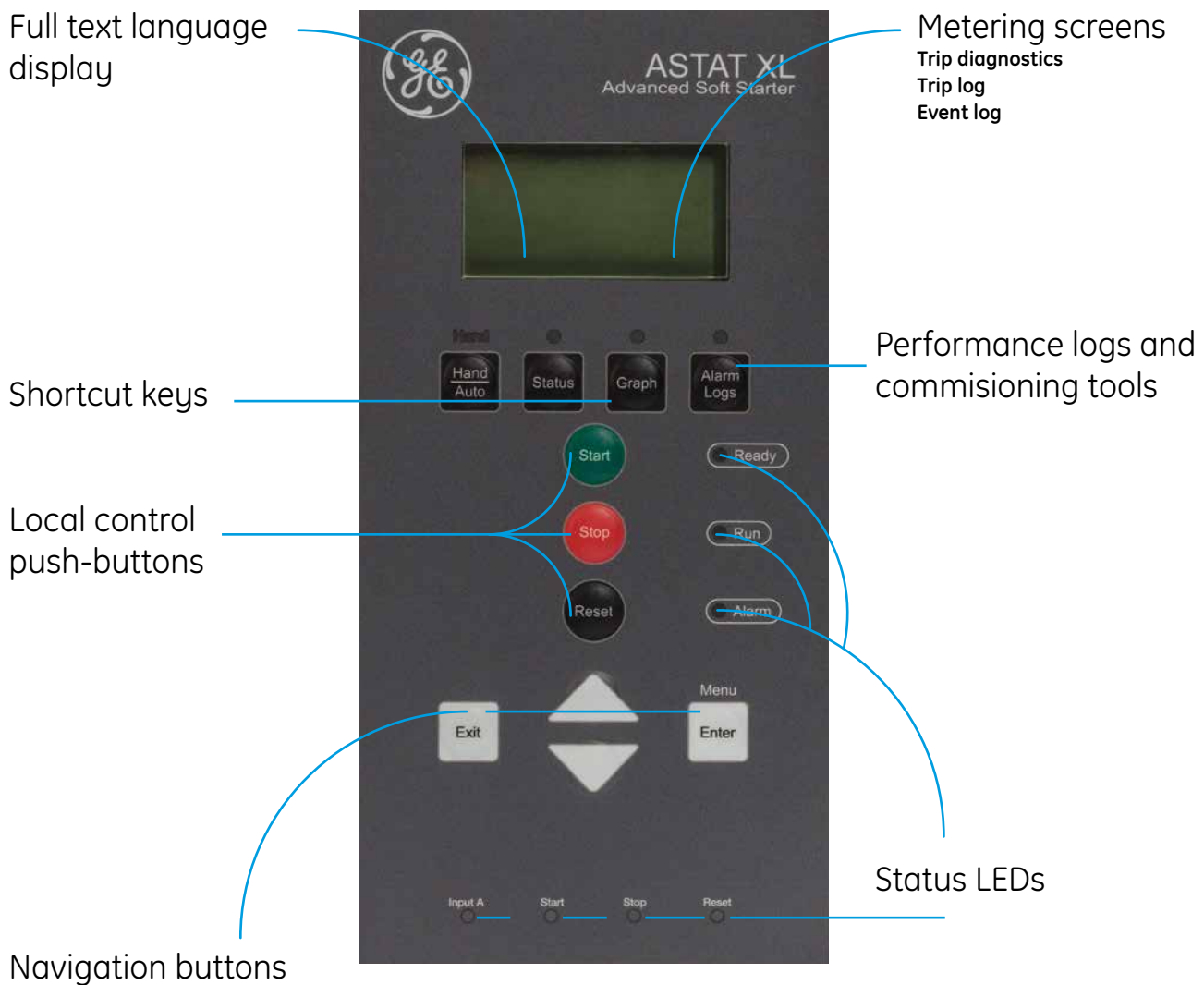
Different models require control voltage to different terminals:

- 1 (110–120 VAC) A5, A6
- 1 (220–240 VAC) A4, A6
- 2 (24 VAC/VDC) A5, A6

NOTE

* QLxxX255D current transformers are located on the output. Bypass terminals are labelled T1B, T2B and T3B.

Control Panel



Quick Setup

1. Select your application
2. Starter suggests typical parameters and values
3. Review and adjust as required

Quick Setup		
Pump centrifugal ->	-> Pump centrifugal	
Pump submercible fan, damped Fan, undamped Compressor, screw Compressor, reciprocating Conveyor Crusher, rotary Chusher, jaw	Parameter Motor FLC Stat mode Adaptive Start Profile Start ramp time Stop mode Adaptive stop profile Stop time	Suggested value Model dependent Adaptive control Early acceleration 10 seconds Adaptive control Late decelartion 15 seconds

ASTAT XB - XBm - XL

Accessories XB - XBm

Remote Operator

(only for ASTAT XB and XBm) , QORCPXB , 872392

The remote operator controls and monitors motor performance via a communication module including:

- Operational control (start, stop, reset)
- Status monitoring (start, run and trip)
- Performance monitoring (motor current and temperature)
- Trip Code display
- 4-20 mA analog output



Accessories XL

Remote Control Panel

Beside the control panel located on the soft starter ASTAT XL, it is possible to have a remote control panel that replicates display functionality and content, while operating in parallel. This control panel is hot removable and it has function the copycat function. Remote mountable keypad with IP65 and supplied with 3m cable



Common accessories XB - XBm - XL

Communication Modules

Supports USB and many network communication such as Profibus, Profinet, Ethernet, DeviceNet and Modbus RTU protocols, via an easy-to-install Plug & Play communication interface modules.



IP20 Protection Kit

This option ensures personnel safety by preventing accidental contact with live terminals. Provide IP20 protection when used with cable of diameter 22 mm or greater.

ASTAT Setup Tool ed.3

With this new edition, exclusive for ASTAT XB, XBm and XL series, you can control and monitor your soft starter from your desktop computer.



GE Industrial Solutions is a first class global supplier of low and medium voltage products including wiring devices, residential and industrial electrical distribution components, automation products, enclosures and switchboards. Demand for the company's products comes from wholesalers, installers, panelboard builders, contractors, OEMs and utilities worldwide.

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