CMG

SOLUTIONS, not just products

AURORA Soft Starters

LPRA & LPRB series

SOLUTIONS, not just products

Specialists in Electric Motors, AC Drives & Soft Starters

At CMG we offer customised packages to the most demanding industrial markets. Our success is built on a strong commitment to our customers' needs and a willingness to find the best solution possible. We have been in business since 1948 so you can be confident our experience and knowledge is second to none.

Over the past 62 years, CMG Pty Ltd has enjoyed a solid reputation as a quality supplier for electric motors, variable speed drives and soft starters.

CMG's commitment to quality products is supported by our ISO 9001 and NATA laboratory accreditations.

Our electric motor range now covers low voltage motors up to 1400kW, medium voltage up to 2.5MW and high voltage up to 13MW.

Additionally, we can supply variable speed drives up to 5MW and soft starters up to 1MW.

Our company has extensive experience in providing tailored solutions for even the most difficult of applications.

From design concept through to technical evaluation of your specific requirements, our dedicated team is with you every step of the way.

In April 2010, CMG and its group of companies joined the Regal Beloit Corporation (RBC). RBC is an international manufacturer of electrical and mechanical motor control components with head quarters in Beloit, Wisconsin. RBC's strength is in its market diversity as it serves an expansive array of markets from heavy industry to high technology.

"We convert power into motion to help the world run more efficiently."

REGAL BELOIT
BUSINESS PURPOSE
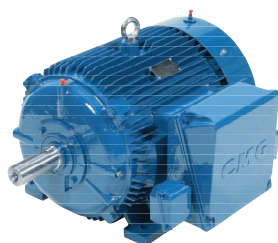
» **Electric Motors** » **AC Drives** » **Soft Starters**

WHY BUY FROM CMG

At CMG, we ensure our clients achieve maximum efficiency and productivity by utilising products such as Aurora Soft Starters. We have the experience, knowledge and facilities to customise and combine products to suit your operational needs.

By incorporating our high efficiency, world class Electric Motor range with CMG Aurora Soft Starters you can save on production costs and maximise production output.

24 HOUR TECHNICAL SUPPORT
1800 67 67 22

Our 24 hour technical support, installation and connection services - including swift commissioning procedures, ensure our clients get the complete package. At CMG we believe in providing *solutions, not just products.*

WHY USE A SOFT STARTER

When an AC motor has mains power supply applied directly to the motor terminals, it will try to reach its nominal speed as quickly as possible. This results in high current draw and mechanical stress, as the motor tries to accelerate its own inertia and the driven loads inertia instantly.

Rarely do driven loads require instant acceleration.
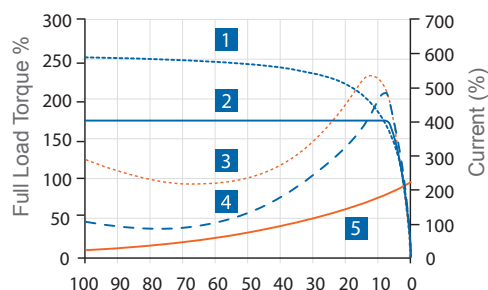
1: DOL Current
2: Soft Starter Current
3: DOL Torque
4: Soft Starter Torque
5: Required Torque

Soft Starters, in combination with AC Electric Motors, control the acceleration during startup. This process temporarily reduces the load and torque in the powertrain of the motor. The benefit of such a process is the improved lifespan of your system as the mechanical stress on the motor and load has been reduced, as well as the electro dynamic stresses on power cables and the electrical distribution network.

Combining your electric motors with a Soft Starter not only reduces risk, breakage and maintenance downtime, but also increases your production efficiency and results.

SOFT STARTERS VS ELECTRO MECHANICAL STARTERS

Starting Characteristics	AURORA Soft Starter	DOL	Star / Delta
Current	Controlled	Excessive	High
Mechanical Stress	Greatly Reduced	Excessive	High
Start Time	Selectable	No Control	Partial Control
Protection	Full	TO Only*	TO Only*
Stopping / Braking	Yes	No	No
Monitoring / Feedback	Full	Trip Only	Trip Only

TO*: Thermal Overload.

AURORA LPRA
ADVANCED DIGITAL SOFT STARTER

The Aurora LPRA is a fully featured current control Soft Starter with an advanced digital interface, making it versatile and easy to use.

Voltage	Current	Power
200 - 525 VAC	23 - 1600A	7.5 - 850kW
380 - 690 VAC	23 - 1600A	7.5 - 1500kW

FLEXIBILITY IN EASE OF SET UP

For simple installations, commissioning is as straight forward as setting just one parameter. The quickstart menu structure provides access to commonly used parameters allowing basic configuration of the Aurora LPRA simply and quickly.
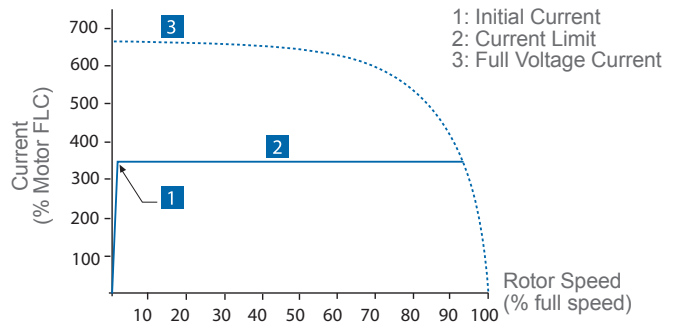
For advanced applications, an extensive range of parameters are available in the extended menu. This allows full customisation of the Aurora LPRA for the most unique applications.
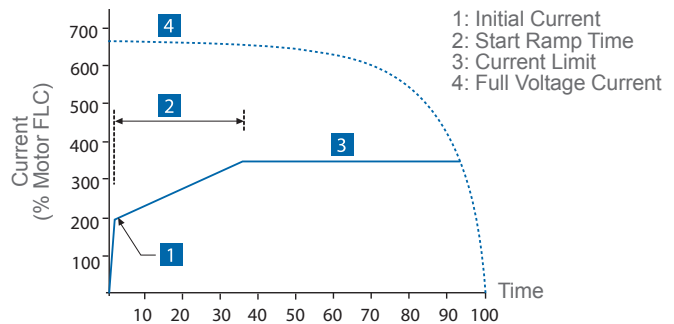

MOTOR STARTING SOLUTIONS

Constant Current

Ideal for applications where starting current must be kept below a particular level.
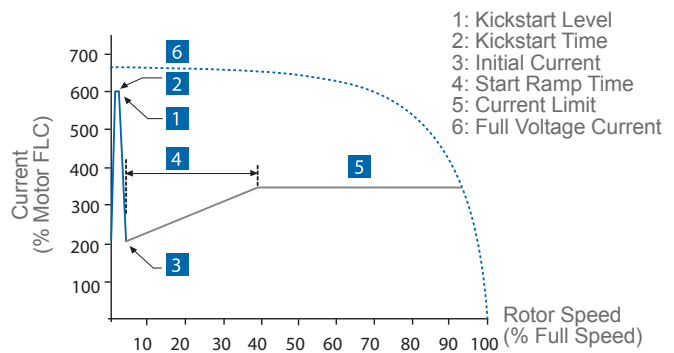

Current Ramp

Used where loads vary or breakaway easily but starting time needs to be extended (eg. conveyors) or where electricity supplies are limited.
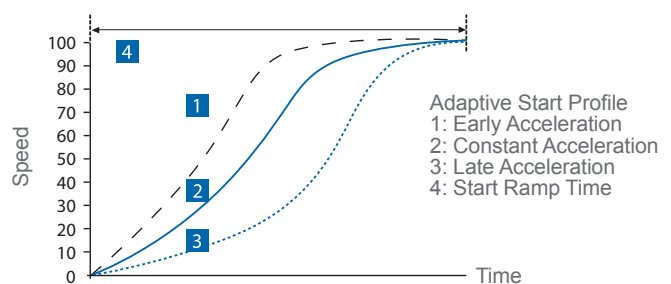

Kick Start

To help start loads that require high breakaway torque, but then accelerate easily (eg. flywheels, presses).
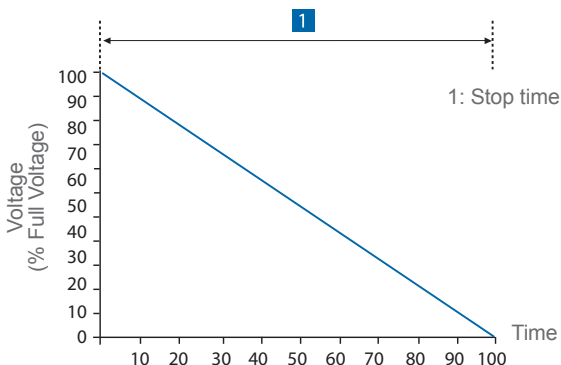

AAC Adaptive Acceleration Control

An intelligent motor control technique that adjusts the current in order to start the motor within a specified time and using a selected acceleration profile.

MOTOR STOPPING SOLUTIONS

TVR Soft Stop

Timed voltage ramp reduces the voltage to the motor over a defined time. This is ideal where stopping times need to be extended.


1: Stop time

Brake

When Brake stopping is selected the Aurora LPRA uses DC injection to slow the motor. Stopping time of high inertia loads can be dramatically reduced.

1: Stop time
2: Brake time
3: Cost to stop time
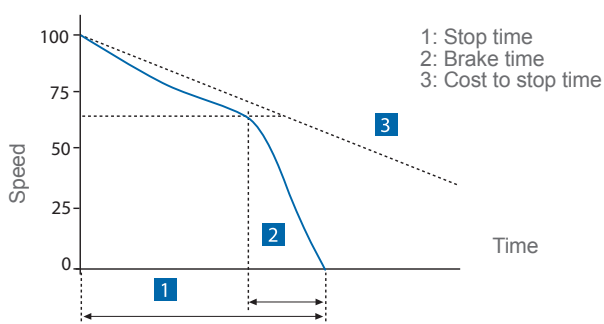
Adaptive Deceleration Control

Controls the current within a defined time and using a selected deceleration profile. ADC is used to extend the stopping time of low inertia loads and is ideal tool for pumping applications to reduce the effects of water hammer.

1: Early Deceleration
2: Constant Deceleration
3: Late Deceleration
4. Stop Time
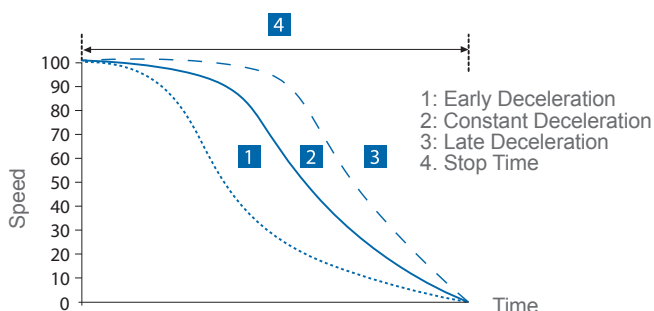
Coast To Stop

Lets the motor slow at its natural rate, with no control from the starter.

JOG OPERATION

Runs the motor at reduced speed, to allow alignment of the load or to assist servicing. The motor can be jogged in either forward or reverse direction.

1: Jog Forward
2: Jog Reverse
3: Normal Operation
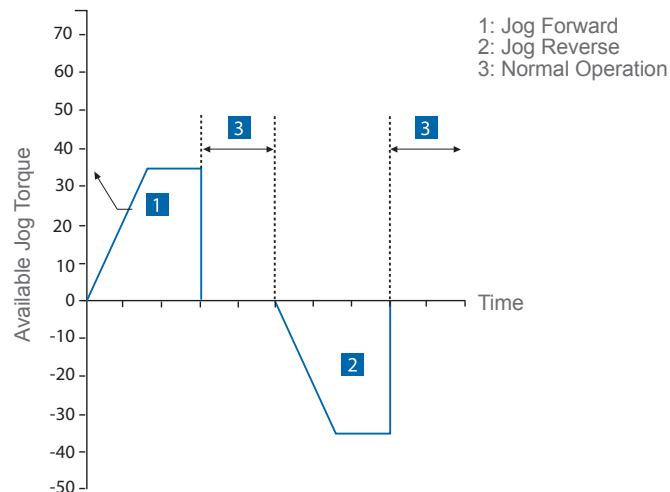
COMMUNICATION AND INTEGRATION INTO YOUR PLANT

• Choice of 2 Wire, 3 Wire or 4 Wire Control
• 3 x Programmable Relays
• DeviceNet, Modbus, Profibus and USB communication modules optional

2 Wire Control

3 Wire Control

4 Wire Control

Relay Output

A: Start
B: Stop
C: Reset

A: Relay Outputs NO
B: Relay Outputs CO
C: Relay Outputs NO
T: Thermistor Input
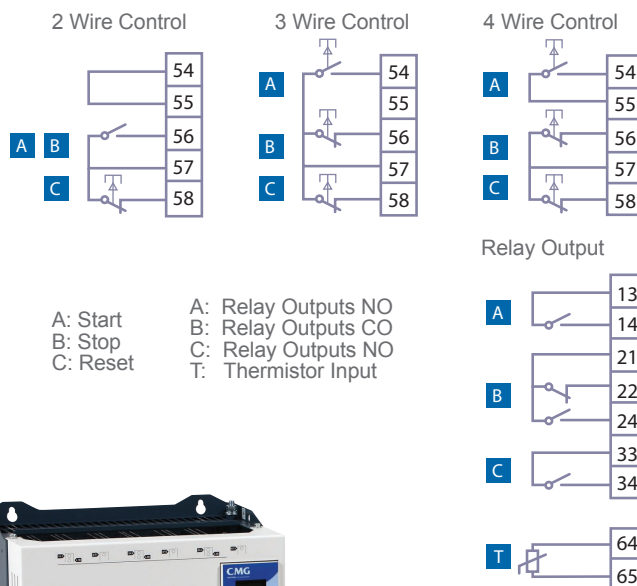
AURORA LPRA
ADVANCED DIGITAL SOFT STARTER

METERING AND MONITORING

Use your Aurora LPRA starter to monitor, graph and log information without the need for extra equipment.

Status

Press the Status Button and the scroll ▲▼ to monitor:

- Starter Status
- Current
- Power - in kW, kV or Hp
- Power Factor
- Voltage
- Last Start Information
- Date and Time
- SCR Conduction

Graph

Press the Graph Button and the scroll ▲▼ to monitor:

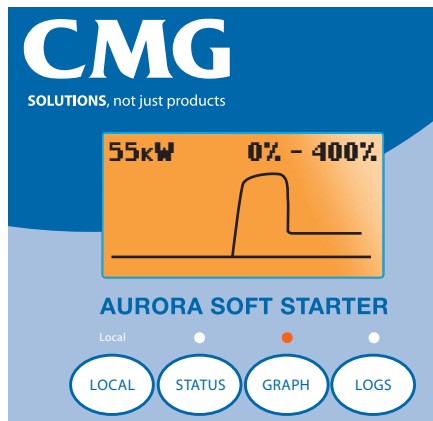- Current / Time
- Motor Temperature
- Motor kW
- Motor kVA
- Motor Power Factor

LOG

Press the Log Button and the scroll ▲▼ to monitor:

- Trip Log - to see details of the 8 most recent trips including the reason for the trip along with the time and date.
- Event Log - to see details of the 99 most recent events, including actions, warnings and trips with the time and date.
- Performance Counters - stores statistics on the starter operation including hours Run, number of Starts, Motor kWH and number of times the thermal model has been reset.
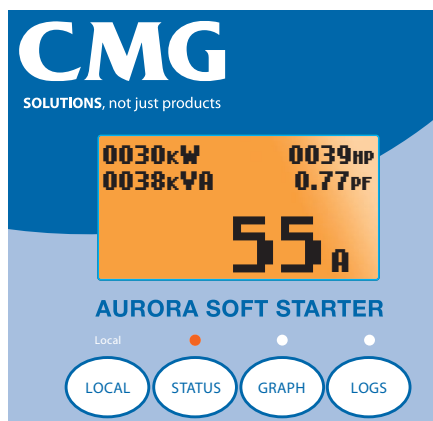
User Programmable Screen

Select four different units to monitor on the one screen. The Unit and position on the screen are defined by the user. Choose from: Starter State, Motor Current, Motor PF, Mains frequency, Motor kW, Motor temp, kWH, Hours Run.

APPLICATION TABLE

Application	x FLC	Start (sec.)
Fan		
Axial Damped	3.5	15
Axial Undamped	4.5	30
Certrifugal Damped	3.5	15
Certrifugal Undamped	4.5	30
High Pressure	4.5	30
Pump		
Bore	3	10
Centrifugal	3.5	15
Positive Displacement	4	20
Slurry	4.5	30
Conveyor		
Roller	3.5	15
Belt	4.5	30
Screw	4	20

Application	x FLC	Start (sec.)
Compressor		
Reciprocating - Unloaded	4	20
Reciprocating - Loaded	4.5	30
Screw - Unloaded	3.5	15
Screw - Loaded	4	20
Mill		
Mill	4.5	30
Ball	4.5	30
Hammer	4.5	30
Roller	4.5	30
Crusher		
Cone	3.5	15
Jaw	4.5	30
Rotary	3.5	15

Application	x FLC	Start (sec.)
Saw		
Circular	3.5	15
Band	4.5	30
Various		
Rotary Table	4	20
Press	3.5	15
Mixer	4.5	30
Grinder	3.5	15
Shredder	4.5	30
Agitator	4	20
Centrifuge	4.5	30

QUICK SELECTION FOR 415V

Motor kW	Motor FLC (I)	Start I = < FLC x 3 Start Time ≤ 10 sec.	Start I = < FLC x 3.5 Start Time ≤ 15 sec.	Start I = < FLC x 4 Start Time ≤ 20 sec.	Start I = < FLC x 4.5 Start Time ≤ 30 sec.
7.5	15	0023B511	0023B511	0023B511	0043B511
11	24	0043B511	0043B511	0043B511	0043B511
15	28	0043B511	0043B511	0043B511	0053B511
18.5	33	0043B511	0043B511	0053B511	0053B511
22	38	0043B511	0053B511	0053B511	0076B511
30	53	0053B511	0053B511	0076B511	0097B511
37	64	0076B511	0097B511	0097B511	0105B511
45	77	0097B511	0097B511	0105B511	0145B511
55	94	0097B511	0105B511	0145B511	0200B511
75	127	0145B511	0170B511	0200B511	0255C511
90	150	0170B511	0200B511	0255C511	0255C511
110	180	0200B511	0255C511	0255C511	0380C511
132	229	0255C511	0380C511	0380C511	0380C511
150	260	0380C511	0380C511	0380C511	0380C511
185	309	0380C511	0380C511	0380C511	0620C511
200	363	0380C511	0380C511	0620C511	0620C511
220	380	0380C511	0380C511	0620C511	0620C511
250	428	0430C511	0620C511	0620C511	0790C511
280	502	0620C511	0620C511	0650C511	0790C511
315	540	0620C511	0620C511	0790C511	0790C511
355	603	0620C511	0790C511	0790C511	0930C511
400	684	0790C511	0790C511	0930C511	1200C511
450	764	0790C511	0790C511	1200C511	1200C511
500	845	0930C511	0930C511	1200C511	1200C511
560	962	1200C511	1200C511	1200C511	1600C511
630	1080	1200C511	1200C511	1410C511	1600C511
750	1357	1410C511	1600C511	1600C511	NA
850	1537	1600C511	1600C511	1600C511	NA

QUICK SELECTION FOR 690V

Motor kW	Motor FLC (I)	Start I = < FLC x 3 Start Time ≤ 10 sec.	Start I = < FLC x 3.5 Start Time ≤ 15 sec.	Start I = < FLC x 4 Start Time ≤ 20 sec.	Start I = < FLC x 4.5 Start Time ≤ 30 sec.
7.5	8.9	0023B711	0023B711	0023B711	0023B711
11	14	0023B711	0023B711	0023B711	0023B711
15	17.3	0023B711	0023B511	0023B711	0043B711
18.5	21.3	0023B711	0043B711	0043B711	0043B711
22	25	0043B711	0043B711	0043B711	0043B711
30	34	0043B711	0043B711	0053B711	0053B711
37	42	0043B711	0053B711	0053B711	0076B711
45	49	0053B711	0053B711	0076B711	0097B711
55	61	0076B711	0076B711	0097B711	0105B711
75	82	0097B711	0100B711	0105B711	0145B711
90	98	0100B711	0105B711	0145B711	0200B711
110	118	0145B711	0145B711	0200B711	0200B711
132	140	0145B711	0170B711	0200B711	0255C711
150	159	0170B711	0200B711	0255C711	0255C711
185	200	0255C711	0255C711	0380C711	0380C711
200	215	0255C711	0255C711	0380C711	0380C711
220	235	0255C711	0380C711	0380C711	0380C711
250	274	0380C711	0380C711	0380C711	0380C711
280	305	0380C711	0380C711	0380C711	0620C711
315	337	0380C711	0380C711	0430C711	0620C711
355	370	0380C711	0380C711	0620C711	0620C711
400	410	0430C711	0620C711	0620C711	0650C711
450	460	0620C711	0620C711	0620C711	0790C711
500	515	0620C711	0620C711	0790C711	0790C711
560	570	0620C711	0620C711	0790C711	0930C711
650	677	0790C711	0790C711	0790C711	1200C711
800	833	0930C711	0930C711	1200C711	1200C711
900	937	1200C711	1200C711	1200C711	1200C711
1000	1041	1200C711	1200C711	1200C711	1410C711

Note: All part numbers are prefixed by LPRA -
Selection tables assume bypassed operation, duty cycle of ≤10 starts per hour, maximum ambient temperature of 40° and altitude of 1000m or less..

AURORA LPRB
BASIC SOFT STARTER

The Aurora LPRB is a compact soft starter that monitors input current to limit motor current during starting and stopping. Setup is via simple screw driver selectors allowing you to customise the starting of your load within seconds.

Voltage	Current	Power
200 - 440 VAC	18 - 200A	7.5 - 110kW
380 - 575 VAC	18 - 200A	7.5 - 132kW

Using balanced vector control on two phases, the Aurora LPRB produces symmetrical output waveforms, providing similar performance to three phase starters. Compared with many other two-phase starters Aurora LPRB can handle heavier loads and more starts per hour.

For severe applications, Aurora LPRB can provide starting currents of up to 4.5 x FLC and ramp times of up to 15 seconds. Built-in bypass overload protection safeguards the starter from severe operating overloads while running.

COMPACT DESIGN, ADVANCED FEATURES

Advanced I/O Functionality
- Relay Output (Line Contactor)
- Auxiliary Relay Output (Run or Trip)
- Comms Options - Modbus, DeviceNet, Profibus
- 4 - 20mA Output*
- Numeric Display*

* With Remote Operator

Motor Protection Features
- Overload
- Phase Sequence
- Phase Imbalance
- Thermistor Input
- Excess Start Time
- Supply Fault
- Internal Bypass Overload
- Shearpin (6 x FLC)

EASY TO OPERATE INTERFACE

$$= \frac{\text{Motor FLC}}{\text{Aurora LPRB FLC}} \times 100$$

Trip matches the motor design to the soft starter.

The trip class reflects the maximum time in seconds that a motor can run at locked rotor current. This is referred to as tE time in CMG motor catalogues.

APPLICATION TABLE

Application	x FLC	Start (sec.)
Fan		
Axial Dampled	3.5	15
Axial Undamped	4.5	15
Certifugal Damped	3.5	15
Certifugal Undamped	4.5	15
High Pressure	4.5	15
Pump		
Bore	3	15
Centrifugal	3.5	15
Positive Displacement	4	15
Slurry	4.5	15
Conveyor		
Roller	3.5	15
Belt	4.5	15
Screw	4	15

Application	x FLC	Start (sec.)
Compressor		
Reciprocating - Unloaded	4	15
Reciprocating - Loaded	4.5	15
Screw - Unloaded	3.5	15
Screw - Loaded	4	15
Mill		
Mill	4.5	15
Ball	4.5	15
Hammer	4.5	15
Roller	4.5	15
Crusher		
Cone	3.5	15
Jaw	4.5	15
Rotary	3.5	15

Application	x FLC	Start (sec.)
Saw		
Circular	3.5	15
Band	4.5	15
Various		
Rotary Table	4	15
Press	3.5	15
Mixer	4.5	15
Grinder	3.5	15
Shredder	4.5	15
Agitator	4	15
Centrifuge	4.5	15

QUICK SELECTION FOR 415V

Motor kW	Motor Amps (I)	Start I = < FLC x 3 Start Time ≤ 10 sec.	Start I = < FLC x 3.5 Start Time ≤ 15 sec.	Start I = < FLC x 4 Start Time ≤ 15 sec.
7.5	15	0018B410	0018B410	0018B410
11	24	0034B410	0034B410	0034B410
15	28	0034B410	0034B410	0042B410
18.5	33	0034B410	0042B410	0042B410
22	38	0042B410	0042B410	0060B410
30	53	0060B410	0075B410	0075B410
37	64	0075B410	0085B410	0100B410
45	77	0085B410	0100B410	0100B410
55	94	0100B410	0140B410	0140B410
75	127	0140B410	0170B410	0200B410
90	150	0170B410	0200B410	NA
110	180	0200B410	NA	NA

QUICK SELECTION FOR 525V

Motor kW	Motor Amps (I)	Start I = < FLC x 3 Start Time ≤ 10 sec.	Start I = < FLC x 3.5 Start Time ≤ 15 sec.	Start I = < FLC x 4 Start Time ≤ 15 sec.
7.5	11	0018B610	0018B610	0018B610
11	16	0018B610	0018B610	0018B610
15	22	0034B610	0034B610	0034B610
18.5	26	0034B610	0034B610	0034B610
22	31	0034B610	0034B610	0034B610
30	43	0048B610	0048B610	0048B610
37	50	0060B610	0060B610	0060B610
45	60	0060B610	0060B610	0075B610
55	73	0060B610	0085B610	0100B610
75	99	0100B610	0100B610	0140B610
90	120	0140B610	0140B610	0170B610
110	133	0140B610	0140B610	0170B610
132	171	0140B610	0200B610	NA

Note: All part numbers are prefixed by LPRB -
Selection tables assume bypass operation, duty cycle of ≤10 starts per hour, maximum ambient temperature of 40° and altitude of 1000m or less.

AURORA
MODEL SELECTION GUIDE

TO SELECT A MODEL

You must know the motor nameplate details, the application and duty cycle.

Starting Torque / Current

Is set by the current limit setting. This is expressed as a percentage of motor FLC. Applications that require more starting torque may require a starter with a greater capacity.

Start Time

Longer start times generate more heat from the Soft Starter. An extended start time may require a greater capacity starter.

Starts Per Hour / Duty Cycle

More starts per hour will generate more heat within the starter. Less starts per hour may result in a greater output capacity.

Bypassed or Non Bypassed

Starters in by-pass mode generate less internal heat, therefore higher output may be achieved with the inclusion of a bypass Contactor.

Selection Methods

- Rating standards are represented in the AC53 utilisation codes. AC53 tables are available from CMG and cover all the variables above.
- The tables on pages 7 and 9 give set basic options using common variable selections.
- The Aurora Start Selection Tool gives you the most flexible method of selection.

PART NUMBER LOGIC

The product code is composed in accordance with the following example:

L P R	A	- 0 0 2 3	B	5	1	1	
1-3	4	5-9	10	11	12	13	Suffix

Position 1 - 3
LPR = Aurora Soft Starters

Position 4
Series
A = Advanced Digital Model
B = Basic Compact Model

Position 5 - 9
Rated Current
- XXXX = Starter FLC Rating

Position 10
Bypass
B = Integral Bypass
C = Continuous Connection

Positions 11
Supply Voltage
4 = 200 - 440 VAC
5 = 200 - 525 VAC
6 = 380 - 575 VAC
7 = 380 - 690 VAC

Position 12
Control Voltage
1 = LPRA 110 - 240 VAC
** LPRB 110 - 440 VAC**

Position 13
Interface
0 = No HMI
1 = HMI included

AURORA START SELECTION TOOL

Visit *www.cmggroup.com.au* and follow the prompts to download the *Aurora Start* Software Selection Tool. Install the software by following the prompts.

Starters Tab

Click on to choose LPRA or LPRB for your application.

Select Model Tab

Allows you to select a starter based on motor size and application. Choose from a comprehensive list of applications. *Aurora Start* Software will suggest a suitable Soft Starter model to meet torque requirements.

Calculate Max FLC Tab

Allows you to work back from a model number to determine what motor current you can achieve by varying Start Current, Ramp Time, Starts Per Hour and others. A dissipated power value is also provided.

Ventilation Tab

Allows you to calculate the air flow required, based on your cabinet dimensions and the dissipated power value drived from the Calculate Max FLC. Calculations can be copied or printed into a report.

The *Aurora Master* Software tool enables you to program, monitor and control an Aurora LPRA and monitor and control an Aurora LPRB from your computer. Download *Aurora Master* Software from *www.cmggroup.com.au*. Connection is via the USB interface or ModBus communication module.

File
Select the following operational modes.
- Offline
- Online
- Simulation

Set passwords, copy parameters to clip boards, print parameters.

Group
- Create a starter group
- Send a group command
- Enable / disable a group
- Rename a starter group
- Save a starter group to file
- Load a starter group from file

Starter
- Send a command
- Simulate trip
- Enable starter comms
- Create a new starter
- Edit starter settings
- Reset starter to default parameters
- Save / load parameters to file
- Download / upload parameters
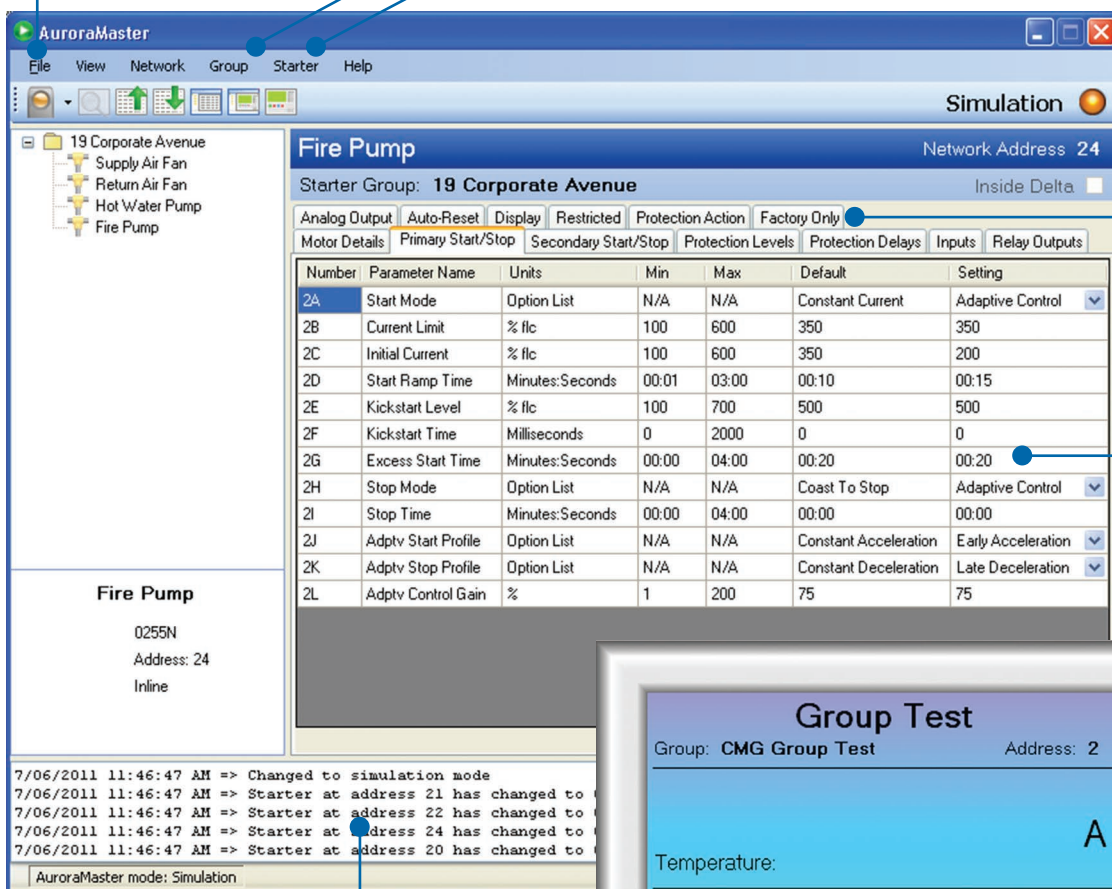
Parameter Groups
Select your parameter group and enter / view values directly into the setting column.

Log
Records all events - run status, trip details, changes to program etc, with a date and time. Go the view tab for an extended view.

Control Panel
Use to simulate or operate and monitor the Starter and Motor from your PC.

AURORA
OPTIONS & ACCESSORIES
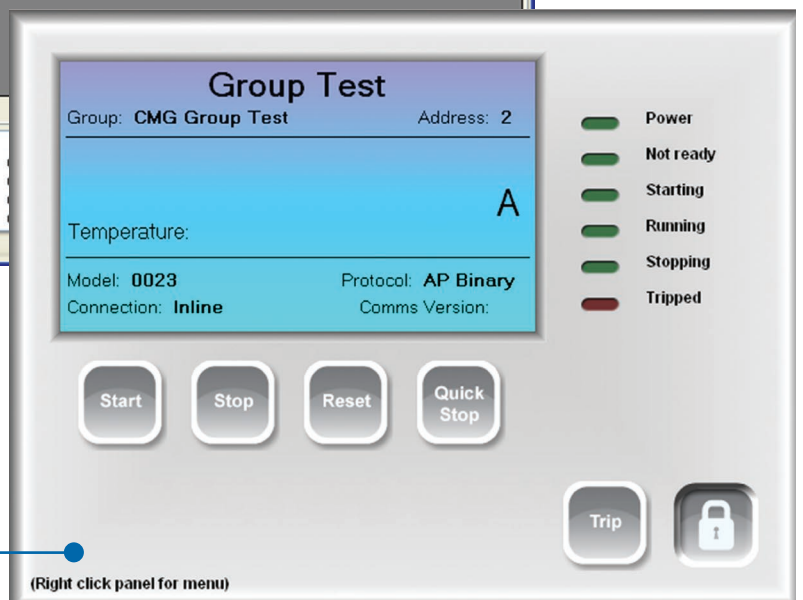
REMOTE OPERATOR LPRA

Part Number – LPR - RCM01

This is a user friendly panel mounted human interface for remote operating and monitoring.

Features

- Operational control push buttons for Stop, Start, Reset and Emergency Stop.
- Status indication LEDs for Starting, Running and Trip.
- Motor performance readout for Motor Current, Motor Temperature, Trip Codes.
- Analogue output (4 - 20ma) for Motor Current.
- IP54 front protection when panel mounted.
- Easy to read 15mm LED display.
- Universal 92mm 2 panel cut out RS485 serial activity LED display.

In order to use the Remote Operator with Aurora LPRA Soft Starters, a Modbus Module must also be installed.

In order to use the Remote Operator with Aurora LPRB Soft Starters, a Remote Operator Module or a Modbus Module must also be installed.

REMOTE OPERATOR MODULE

Part Number - LPR - PIM - RZ - 01 (LPRB Only)

USB INTERFACE MODULE

Part Number – LPR - PIM - USB - 01

The USB module can be used in conjunction with the *Aurora Master* software to manage CMG Aurora Soft Starters.

COMMUNICATIONS MODULES

DeviceNet

Part number – LPR - PIM - DN - 01

Profibus

Part number – LPR - PIM - PB - 01

Modbus

Part number – LPR - PIM - MB - 01

FINGER GUARD KIT

This option provides personal safety by preventing accidental contact with the terminals. Rated to IP20 when used with a 22mm dia. plus cables.

LPRA - Part Number – 995-09452-00

     (145AMP - 220 AMP)

**LPRB - Part Number – 995-03503-00**

     (140AMP - 200 AMP)

MAINS CONTACTOR

Both Aurora LPRA and LPRB Soft Starters provide relay output terminals (13 + 14) to control the mains contactor KM1.

- Soft Starters can be installed with or without main contactors.
- Provide physical isolation when the starter is not in use and in the event of a Soft Starter trip.
- Protects the Soft Starter from severe overvoltage situations – like lightning strikes.
- May be required to meet local electrical regulations.
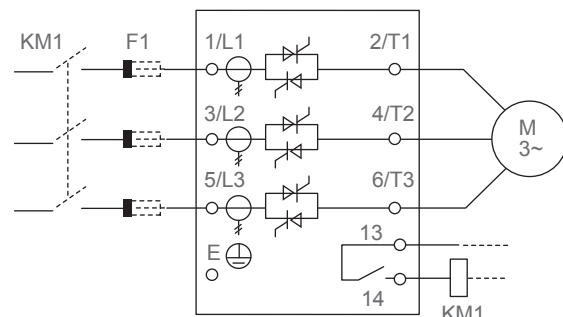
KM1: Main contactor
F1: Semiconductor fuses (optional)

BYPASS CONTACTORS

The Aurora Soft Starters can be selected and installed to run with or without a bypass contactor.

- Greater output may be obtained from a Soft Starter.
- Bridging out the Soft Starters SCRs when the motor is running, eliminates heat dissipation from the SCRs.
- Aurora LPRA Soft Starters for 23A to 220A have built-in bypass contactors.
- Aurora 225A to 1600CA require an external bypass contactor if sized to run in bypass. Relay outputs 33 +34 control the bypass relay KM2.
- All Aurora LPRB Soft Starters have internal bypass contactors.
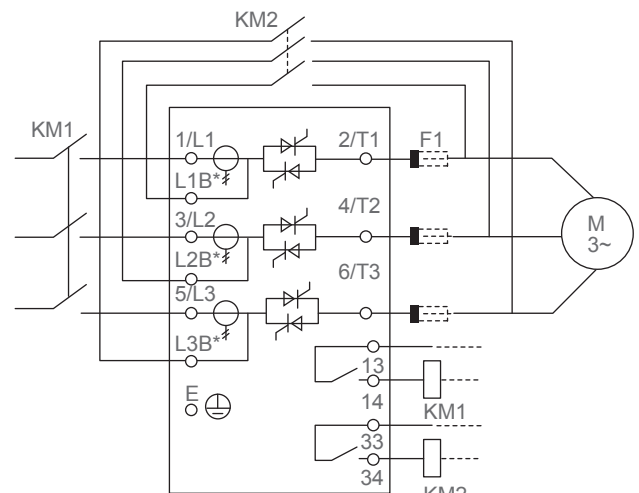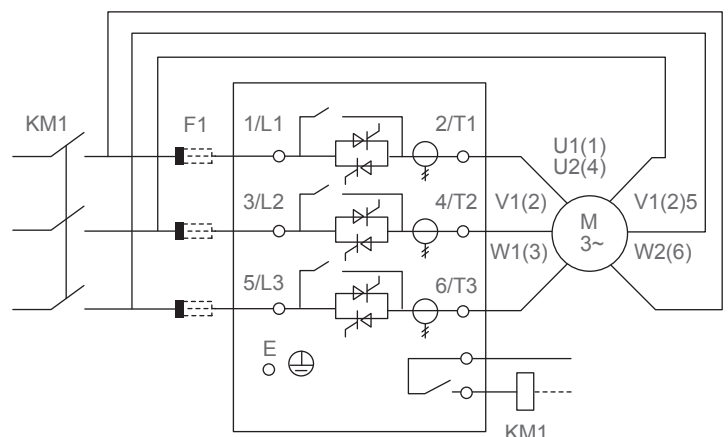

KM1: Main contactor
KM2: Bypass contactor (external)
F1: Semiconductor fuses (optional)

INSIDE DELTA CONNECTION

The Aurora LPRA can be used Inside Delta connection, also referred to as six wire connection.

- This places the Soft Starter SCRs in series with each motor winding.
- The Soft Starter carries only phase current, not line current.
- Allows a Soft Starter to control a motor of larger than normal current.
- Simplifies replacement of star/delta, as the existing wiring can be used.
- May reduce the rating and cost of the Soft Starter. Additional costs may be incurred for cabling and installation. Evaluate on a case by case basis
- Consult the *Aurora Start* software application for Inside Delta sizing.

KM1: Main contactor
F1: Semiconductor fuses (optional)
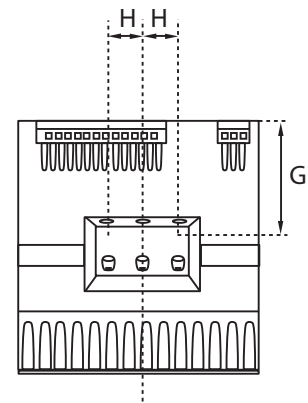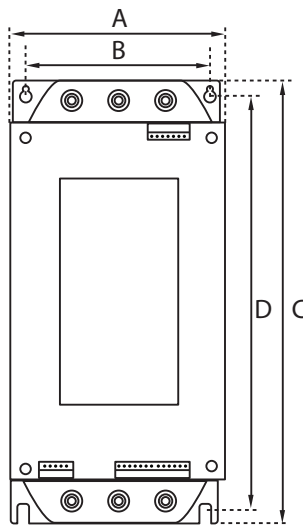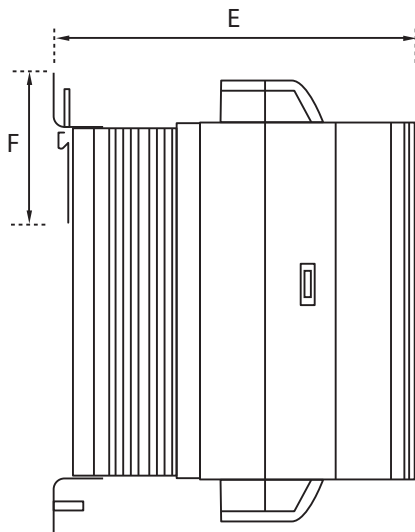
Note:
All weight are in kg.
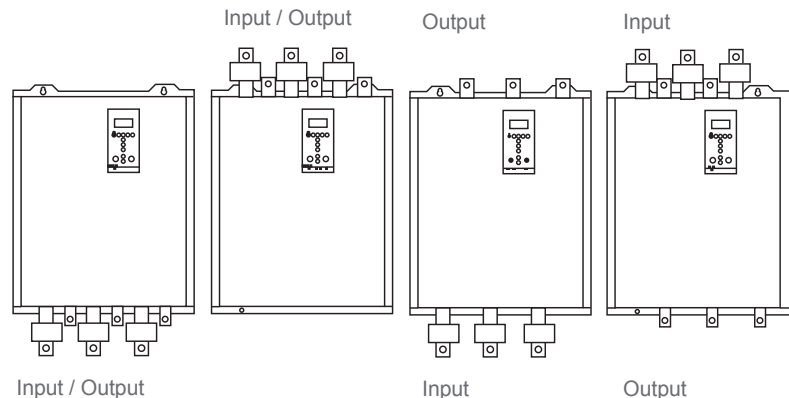All measurements in mm.

LPRA DIMENSION TABLE

Model	A	B	C	D	E	Weight
0023BX11	150	124	295	278	183	4.3
0043BX11	150	124	295	278	183	4.3
0050BX11	150	124	295	278	183	4.3
0053BX11	150	124	295	278	183	4.3
0076BX11	150	124	295	278	183	4.5
0097BX11	150	124	295	278	213	5
0100BX11	150	124	295	278	213	5
0105BX11	150	124	295	278	213	5
0145BX11	275	250	438	380	250	15
0170BX11	275	250	438	380	250	15
0200BX11	275	250	438	380	250	15
0220BX11	275	250	438	380	250	15
0255CX11	390	320	460	400	280	24
0360CX11	430	320	689	522	300	45
0380CX11	430	320	689	522	300	45
0430CX11	430	320	689	522	300	45
0620CX11	430	320	689	522	300	45
0650CX11	430	320	689	522	300	45
0790CX11	430	320	689	522	300	45
0930CX11	430	320	689	522	300	53
1200CX11	585	500	856	727	364	117
1410CX11	585	500	856	727	364	117
1600CX11	585	500	856	727	364	130

LPRB DIMENSION TABLE

| Model	A	B	C	D	E	F	G	H	Weight
0018BX10	98	82	201	188	165	55	90.5	23	2.2
0034BX10	98	82	201	188	165	55	90.5	23	2.2
0042BX10	98	82	201	188	165	55	90.5	23	2.2
0048BX10	98	82	201	188	165	55	90.5	23	2.2
0060BX10	98	82	201	188	165	55	90.5	23	2.2
0075BX10	145	124	215	196	193	NA	110.5	37	4.0
0085BX11	145	124	215	196	193	NA	110.5	37	4.0
0100BX10	145	124	215	196	193	NA	110.5	37	4.0
0140BX10	200	160	240	216	214	NA	114.5	51	6.5
0170BX10	200	160	240	216	214	NA	114.5	51	6.5
0200BX10	200	160	240	216	214	NA	114.5	51	6.5

CONFIGURATION BUS BAR

The bus bars on models LPRA-0380C_11 ~ LPRA1600C_11 can be adjusted for top or bottom input and output as required.

AURORA FEATURES AND SPECIFICATIONS

Feature	LPRA	LPRB
Current Range	23A ~ 1600A	18A ~ 200A
Motor Connection	In line - consult sizing software or sales team for Inside Delta connection ratings.	In line
Control Type	Three phase	Two phase
Bypass	Internal bypass up to LPRA - 0220B411 External bypass requried for LPRA - 0255C411 and above. For non bypass rating consult sizing software or consult sales team.	Internal - all sizes
Supply Voltage	LPRA - XXXXB/C511 = 3 x 200 ~ 525 VAC (±10%) LPRA - XXXXB/C711 = 3 x 380 ~ 690 VAC (±10%)	LPRB - XXXB410 = 3 x 200 ~ 440 VAC (±10%/ - 15%) LPRB - XXXB610 = 3 x 380 ~ 575 VAC (±10%/ - 15%)
Control Voltage	110 ~ 120 VAC or 220 ~ 240 VAC (±10%/ -15%) 24VDC on request	110 ~ 240VAC or 380 ~ 440VAC (±10%/ - 15%) 24VDC on request
Inputs	Active 24VDC, 8mA Approx. 2 x NO (start + programmable input) 2 x NC (stop and reset). Motor thermistor input.	1 x NO (start) + 1 x NC (stop) 300 VAC max Motor thermistor input
Outputs	2 x NO relay, 1 x change over relay - Programmable 10A @250VAC resistive, 5A @ 250VAC AC15 pf 0.3 Analog output: 4 - 20mA, 0 - 20mA, 24VDC@200mA.	1 x Main contactor relay 1 x Auxiliary Relay (run or trip)
Protection Rating	LPRA - 0023B4/511 > LPRA - 0105B4/511 = IP20 LPRA - 0145B4/511 > LPRA - 1600C4/511 = IP00	LPRB - 0018B410 > LPRB - 0100B411 = IP20 LPRB - 0140B410 > LPRB - 0200B411 = IP00
Operating Temperature	-10°C ~ 60°C Max. rating at 40°C - Consult sizing software or sales team for derating of outputs.	-10°C ~ 60°C Max. rating at 40°C - Consult sizing software or sales team for derating of outputs.
Approvals	CE	CE
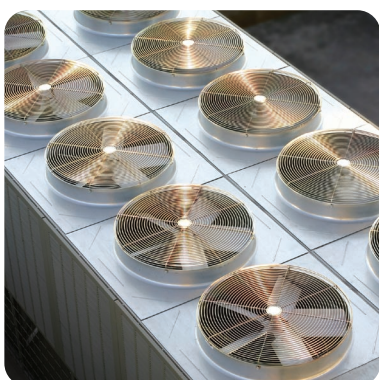
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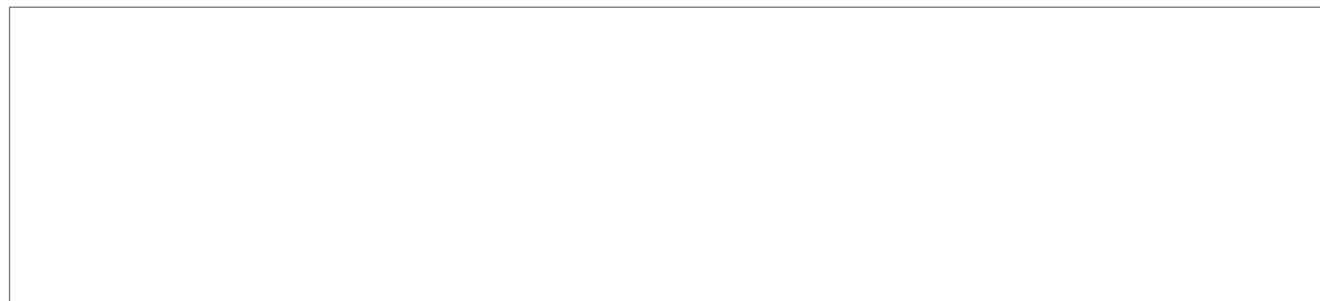Fax: +27 (0)13 246 1205

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