



Digistart

Soft starters for 3 phase
induction motors

7.5 to 800kW (18 to 1600A)

200V, 400V, 575V, 690V

Digistart

Digistart is Control Techniques' flexible soft starter range for motor control and protection in constant speed applications. The Digistart range combines advanced control features with simple installation and commissioning. Digistart forms an integral part of our comprehensive product range which covers all of your motor control needs.

Benefits of using a soft starter

Soft starters are a simple and economic method of controlling AC motors for fixed speed applications. Traditional methods of starting motors such as direct-on-line (DOL) or star-delta result in increased machine wear through rapid acceleration and very high peak currents. Soft starters solve this problem through controlling the acceleration and deceleration phases of operation.



Digistart CS



Digistart IS

Digistart meets your application requirements

Control Techniques' Digistart family offers two levels of functionality to meet all your soft starter requirements.

- **Digistart CS**
Digistart CS is a compact soft starter for motors up to 110kW (200A). The Digistart CS offers comprehensive motor protection features and is quickly commissioned using simple rotary switches.
- **Digistart IS**
Digistart IS is an intelligent soft starter offering many advanced features for motors up to 800kW (1600A). These features include 'Adaptive control' which provides an unprecedented level of acceleration and deceleration control, and an intuitive plain language display for configuration, monitoring and diagnostics.

All around the world, just around the corner

Control Techniques' Drive and Application Centres in 53 locations in 31 countries offer local technical sales, service and design expertise. Many also offer a comprehensive system design, build and commissioning service. A network of distributors covers a further 35 countries.

Engineers like to talk to engineers

Our global network of Drive Centres and highly skilled Distributors gives us a deep insight into the requirements of a wide range of motor control applications and industries. Market research has shown that customers choose Control Techniques because they have confidence in our ability to provide solutions where product performance and quality support are most highly valued.

Industrial solutions

Digistart can be used in a wide range of industries and applications including:

- Pumps
- Compressors
- Fans
- Material handling
- Machinery automation
- Mining and aggregate
- Forestry



RoHS
Compliant



Digistart CS

7.5kW to 110kW (18A to 200A)
200V, 400V, 575V





Compact installation

The Digistart CS is among the most compact constant current/current ramp soft starters available. The built in bypass contactor eliminates heat dissipation and energy losses by bridging out the power devices once the motor is at full speed. This eradicates the need for external bypass contactors saving panel space, simplifying installation and allowing the use of non-ventilated enclosures.

Digistart CS units can be mounted side-by-side and are DIN rail mountable up to 60A. This is ideal where multiple soft starters are required such as in motor control centres.

Ease of use

Digistart CS is a digital soft starter that is configured by simple rotary switches. Commissioning is easy, allowing you to get your system up and running quickly.

Cost effective design

In addition to the space saving built-in bypass contactor, the Digistart CS allows the control voltage to be taken directly from the mains power. This means there is no need for an external power supply, thus reducing your costs and cubicle space.

Motor protection

Digistart CS provides comprehensive motor protection, such as overload, phase loss, phase sequence, excess start time, motor thermistor and supply fault. These features eliminate the need for external motor protection relays or controls.

Flexible interfacing

Digistart CS supports network communications using either PROFIBUS-DP, DeviceNet or Modbus RTU protocols via an easy-to-install communication interface. Software allows you to control and monitor your soft starter remotely.

Digistart CS options

Order code	Description
Digistart CS - Remote Keypad	IP54 rated, panel mountable keypad and display for soft starter operation and monitoring.
Digistart CS - Pump Apps Module	Provides 3 digital inputs that can be configured to detect low pressure, high pressure and low water levels. A PT100 input is available for monitoring pump temperature. If any unwanted system conditions occur, the soft starter will trip thus preventing damage. This option also reduces the need for other external equipment, simplifying system design and requirements.
Digistart CS - Finger Guard Kit	Finger guards are available to provide IP20 protection for models CS3x140 to CS3x200.



Digistart CS - Remote Keypad

Digistart IS

7.5kW to 800kW (23A to 1600A)
200V, 400V, 575V, 690V



M

- Mains input*
- 5 x Digital inputs
- 4 x Relay outputs
- 1 x Motor thermistor input
- 1 x PT100 RTD input
- 1 x 24Vdc output
- Removeable keypad/display
- Field-fit option card location
 - I/O Expansion card
 - PT100 RTD and Ground fault card
 - Volt measurement card
- Motor output*

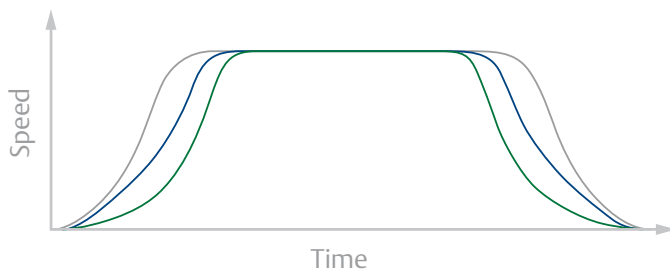
* Above 160kW (360A), power inputs and outputs can be configured for either top or bottom connection



Advanced motor control

Digistart IS provides industry leading motor control, featuring constant current, current ramp and adaptive control start methods. Adaptive control is an innovative control method that not only controls motor current but also acceleration. It allows the user to select between early, constant or late acceleration/deceleration depending upon the application requirements. Adaptive control then monitors motor performance by analysing each start and adjusting accordingly to maintain optimum control.

Adaptive control can benefit many applications. A principle example is pumping where it can be used to eliminate water hammer by allowing the engineer to select the most appropriate deceleration profile for the system.



- Early acceleration / Late deceleration
- Constant acceleration / Constant deceleration
- Late acceleration / Early deceleration

Compact and flexible installation

The compact Digistart IS features an internal bypass (on models up to 110kW [220A]), reducing space and costs through eliminating the need for external components. In addition, higher power units from 160kW (360A) allow the power connections to be configured on the top or bottom of the unit for both input and output, simplifying the cabling. Units can be mounted side-by-side to further reduce cabinet space.

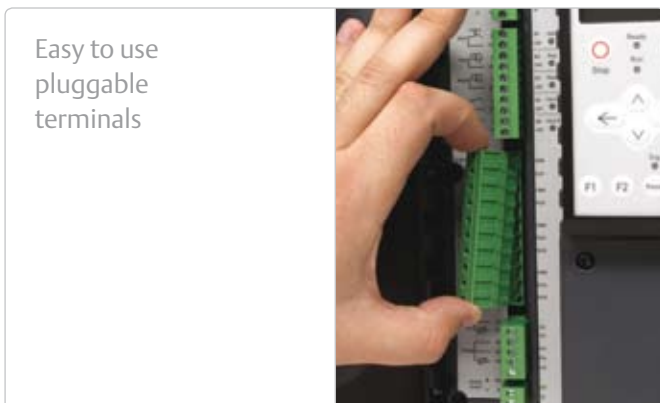
Easy configuration and monitoring

The Digistart IS keypad has a multi-language graphical display, allowing you to easily set-up and monitor your soft starter. Start-up wizards guide the user through common application configurations and reduce commissioning time. The customisable display also provides real-time performance monitoring and time stamped event logs that can be used for maintenance and diagnostics, helping to improve plant availability.

Parameters are viewed in engineering units, in real-time, and can be displayed numerically or graphically. The keypad is IP65 rated and can be either mounted on the soft starter itself, or remotely, such as on the cabinet door.



Digistart IS





Fire mode

Digistart IS has an in-built fire mode. This is used in HVAC applications to help protect building occupants in the case of fire by pressurising escape routes to maintain a smoke free environment. Activation of this feature disables the soft starter protection ensuring it continues to run for as long as possible.

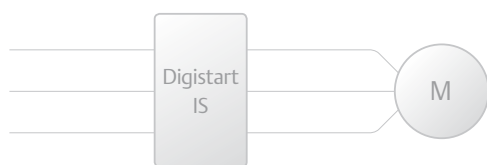
Powerthrough operation

Digistart IS's powerthrough operation ensures the soft starter will continue to operate using 2 phases if one of the power devices is damaged. This allows you to keep your plant running whilst a long term fix is found.

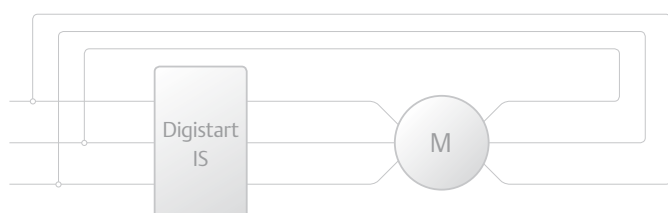
Increased output

The Digistart IS allows the motor to be connected either in-line (three wire) or using an inside delta configuration (six wire). Inside delta configuration increases the power of the soft starter, meaning a smaller unit can be used. This is a compact, cost efficient solution when replacing star/delta starters where existing wiring can be used.

In-line connection



Inside delta connection*



Other advanced features

- Forward/reverse jog for low speed manual machine positioning
- DC braking to electrically brake high inertia machines
- Profibus, DeviceNet and Modbus RTU communications
- Expandable I/O

Digistart IS options

Order code	Description
Digistart IS - Keypad mount kit	This allows the keypad to be remote mounted up to 3m from the soft starter. When panel mounted the keypad is IP65 rated.
Digistart IS - Fingerguard	Finger guards are available to provide IP20 protection for models IS2x0145B to IS2x0220B.
Digistart IS - I/O Expansion	Provides additional 2 x digital inputs, 3 x relay outputs, 1 x analog input and 1 x analog output.
Digistart IS - RTD & GND Fault Card	The RTD (resistive temperature device) and GND (ground fault protection) card provides additional 6 x PT100 RTD inputs and 1 x ground fault input.
Digistart IS - Volt Measure Card	Allows real-time monitoring of mains voltage, eliminating the need for external devices. The volt measure card also enables under voltage and over voltage protection.

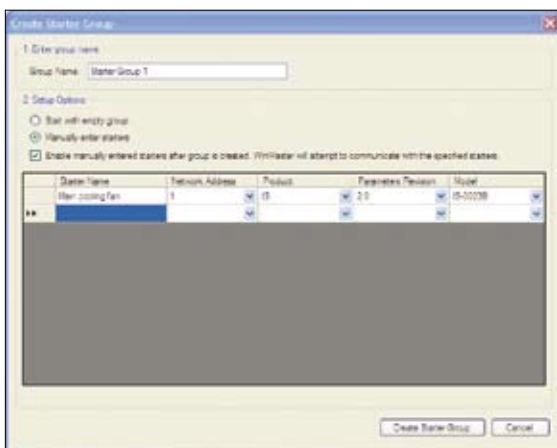
*The inside delta ratings are stated in the User Guide.

Supporting software tools and fieldbus options

DSSoft



Digistart IS can be configured using the DSSoft commissioning software. It allows you to read, save and load soft starter configuration settings. (A Modbus or USB interface is required.)



The software is supplied free of charge. Download the full version from www.controltechniques.com.



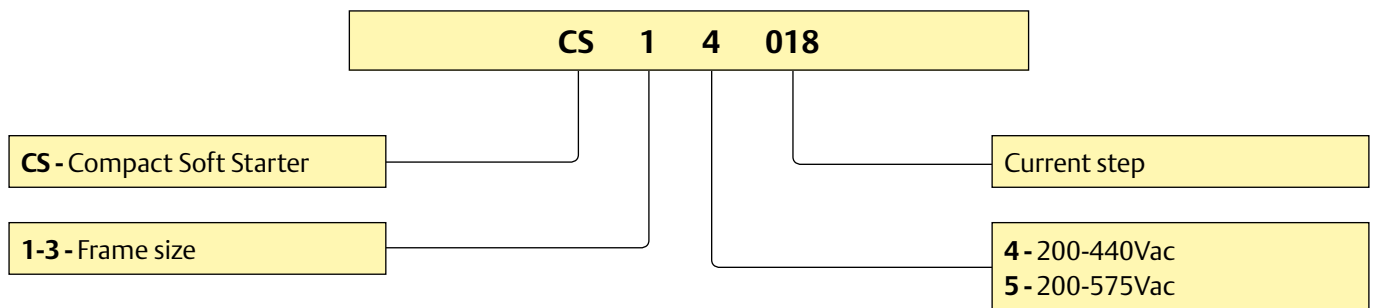
Fieldbus options

Order code	Description
Digistart - Modbus Interface	Modbus RTU Interface for Digistart IS and Digistart CS
Digistart - PROFIBUS Interface	PROFIBUS Interface for Digistart IS and Digistart CS
Digistart - DeviceNet Interface	DeviceNet Interface for Digistart IS and Digistart CS
Digistart - USB Interface	USB Interface for Digistart IS and Digistart CS



Digistart IS

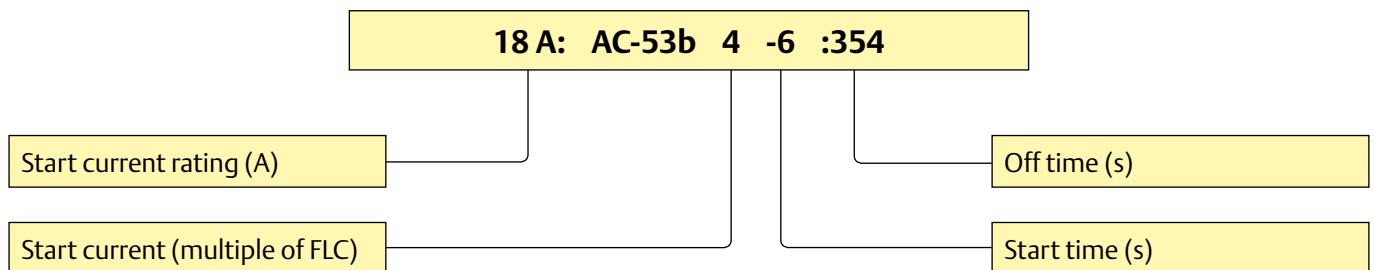
Digistart CS model numbers and ratings



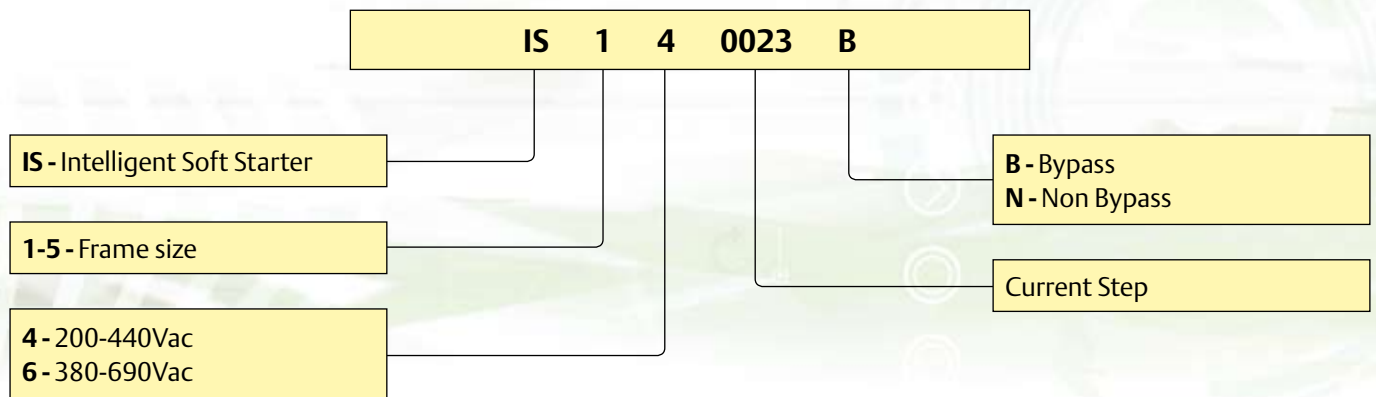
Ratings are given at 40°C at <1000m

Size	Model	Nominal AC53b 4-6:354		Heavy AC53b 4-20:340
		kW @ 400V	A	A
1	CS1x018	7.5	18	17
	CS1x042	18.5	42	36
	CS1x060	30	60	49
Size	Model	Nominal AC53b 4-6:594		Heavy AC53b 4-20:580
		kW @ 400V	A	A
2	CS2x085	45	85	73
	CS3x140	75	140	120
3	CS3x170	90	170	142
	CS3x200	110	200	165

Ratings are detailed using the AC53b utilisation code specified by IEC60947-4-2



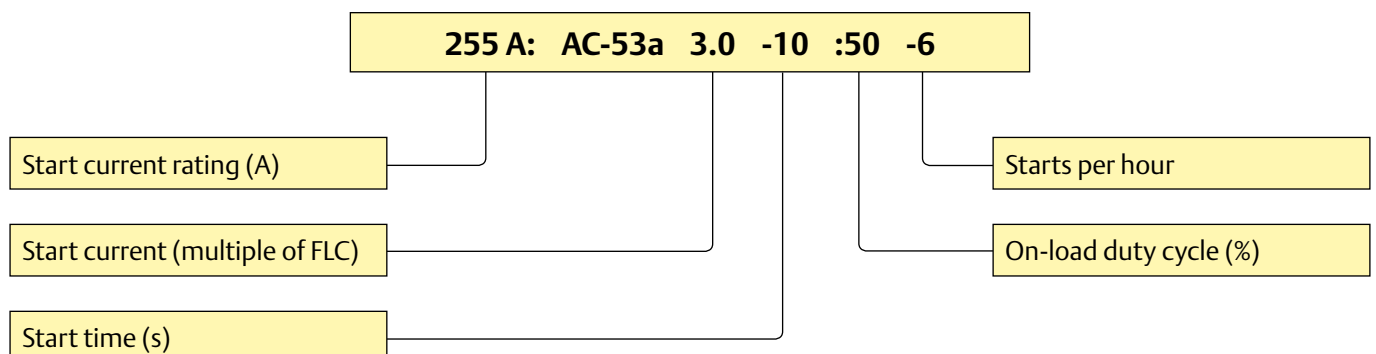
Digistart IS model numbers and ratings



Ratings are given at 40°C at <1000m

Size	Model	Medium kW @ 400V AC53b 3.5-15:345	Nominal	Medium	Heavy	Severe
			AC53b 3.0-10:350	AC53b 3.5-15:345	AC53b 4.0-20:340	AC53b 4.5-30:330
1A	IS1x0023B	7.5	23A	20A	17A	15A
	IS1x0043B	15	43A	37A	31A	26A
	IS1x0053B	22	53A	53A	46A	37A
Size	Model	kW @ 400V AC53b 3.5-15:585	AC53b 3.0-10:590	AC53b 3.5-15:585	AC53b 4.0-20:580	AC53b 4.5-30:570
			A	A	A	A
1B	IS1x0076B	30	76A	64A	55A	47A
	IS1x0097B	37	97A	82A	69A	58A
	IS1x0105B	55	105A	105A	95A	78A
2	IS2x0145B	60	145A	123A	106A	90A
	IS2x0170B	75	170A	145A	121A	97A
	IS2x0200B	90	200A	189A	160A	134A
	IS2x0220B	110	220A	209A	177A	147A
Size	Model	kW @ 400V AC53a 3.5-15:50-6	AC53a 3.0-10:50-6	AC53a 3.5-15:50-6	AC53a 4.0-20:50-6	AC53a 4.5-30:50-6
3	IS3x0255N	132	255A	222A	195A	171A
	IS4x0360N	160	360A	351A	303A	259A
4	IS4x0430N	220	430A	413A	355A	301A
	IS4x0650N	315	650A	629A	532A	437A
	IS4x0790N	400	790A	790A	694A	567A
	IS4x0930N	500	930A	930A	800A	644A
5	IS561200N	600	1200A	1200A	1135A	983A
	IS561410N	700	1410A	1355A	1187A	1023A
	IS561600N	800	1600A	1600A	1433A	1227A

Ratings for Digistart IS models IS3x0255N and above are detailed using the AC53a utilisation code specified by IEC60947-4-2



Digistart specifications

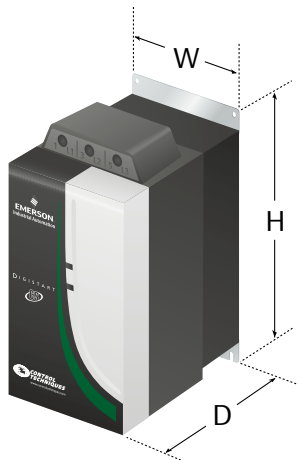
Digistart CS	
Start modes	
Constant current/Current limit	
Current ramp	
Stop modes	
Coast to stop	
TVR soft stop	
General	
Current Range	18A to 200A (nominal)
Motor connection	In-line
Bypass	Internal
Supply	
Mains Voltage	
CSx4xxx	200 to 440Vac (+10% / -15%)
CSx5xxx	200 to 575Vac (+10% / -15%)
Control Voltage	110 to 240Vac (+10% / -15%) or 380 to 440Vac (+10% / -15%)
Mains Frequency	45Hz to 66Hz
Inputs	
Start	Normally Open, 300Vac max
Stop	Normally Closed, 300Vac max
Motor Thermistor	
Relay Outputs	
Main Contactor	Normally Open, 6A, 30 Vdc resistive / 2A, 400Vac, AC11
Programmable Relay	Normally Open, 6A, 30 Vdc resistive / 2A, 400 Vac, AC11
Environmental	
RoHS compliant	As standard
Protection	
CSxx018 to CSxx085	IP20
CSxx140 to CSxx200	IP00
Operating temperature	-10°C to +40°C, max 60°C with derating
Storage temperature	-25°C to + 60°C
Humidity	5% to 95% Relative Humidity
Conformal Coating	As standard

Digistart IS	
Start modes	
Constant current/Current limit	
Current ramp	
Adaptive	
Kickstart	
Stop modes	
Coast to stop	
TVR soft start	
Adaptive	
General	
Current Range	23A to 1600A (nominal)
Motor connection	In-line or inside delta
Bypass	Integrated internal or external
Supply	
Mains Voltage	
ISx4xxxxx	200 to 440Vac ($\pm 10\%$)
ISx6xxxxx	380 to 690Vac ($\pm 10\%$)
Control Voltage	110 to 210Vac (+10% / -15%) or 220 to 440Vac (+10% / -15%)
Mains Frequency	45Hz to 66Hz
Inputs	
Inputs	Active 24Vdc, 8mA approx
Start	Normally Open
Stop	Normally Closed
Reset	Normally Open or Closed
Programmable Inputs	
Input A	Normally Open or Closed
Input B	Normally Open or Closed
Motor Thermistor	
RTD/PT100	
Outputs	
Relay outputs	10A at 250Vac resistive 5A at 250Vac, AC15 pf 0.3
Run Relay	Normally Open
Programmable Outputs	
Relay A	Normally Open
Relay B	Changeover
Relay C	Changeover
Analog Output	0-20 mA or 4-20 mA
24 Vdc Output	
Environmental	
RoHS compliant	As standard
Protection	
IS1x0023B to IS1x0105B	IP20
IS2x0145B to IS5x1600N	IP00
Operating temperature	-10°C to +40°C, max 60°C with derating
Storage temperature	-25°C to 60°C
Humidity	5% to 95% Relative Humidity
Conformal coating	As standard



Digistart dimensions

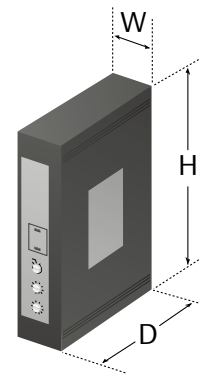
Digistart CS



Digistart IS



Fieldbus option



Digistart CS dimensions				
Size	Width (W)	Height (H)	Depth (D)	Weight
1	98mm (3.86in)	203mm (7.99in)	168mm (6.61in)	2.1kg (4.63lb)
2	145mm (5.71in)	215mm (8.46in)	196mm (7.72in)	4.1kg (9.04lb)
3	202mm (7.95in)	240mm (7.99in)	217mm (8.54in)	6.5kg (14.33lb)

Fieldbus option dimensions				
Option	Width (W)	Height (H)	Depth (D)	Weight
Fieldbus	35mm (1.38in)	157mm (6.18in)	90mm (3.54in)	0.25kg (0.6lb)

Digistart IS dimensions				
Size	Width (W)	Height (H)	Depth (D)	Weight
1A	156.4mm (6.16in)	294.6mm (11.60in)	196mm (7.72in)	3.2kg (7.1lb)
1B			226mm (8.90in)	4.8kg max (10.6lb)
2	282mm (11.10in)	438mm (17.24in)	254mm (10.00in)	16kg (35.3lb)
3	394mm (15.51in)	460mm (18.11in)	284mm (11.18in)	25kg (55.1lb)
4	430mm (16.93in)	694mm* (27.32in)*	302mm (11.89in)	53.5kg max (118lb)
5	574mm (22.60in)	862mm* (33.94in)*	364mm (14.33in)	140kg (308.7lb)

*Maximum height inclusive of busbar