

The Eaton logo is displayed in white, bold, sans-serif font. The letters 'E', 'A', and 'T' are connected, and the 'O' and 'N' are separate. A small dot is positioned between the 'A' and 'T'. The logo is set against a dark blue background that features a close-up of a hand interacting with a control panel containing several buttons with directional arrows and an 'ESC' key.

Intelligent Technologies IT Soft Starters

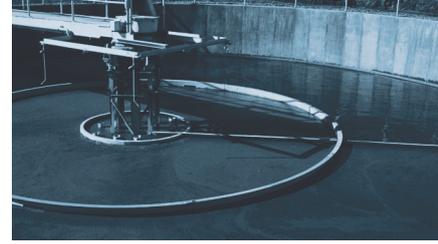
Product Focus

- Built-in bypass contactor
- Diagnostic displays
- Communications
- IEC 60947-4-2

The background of the advertisement is a collage of industrial scenes. The top section shows a large piece of machinery, possibly a motor or a pump, with a large circular component and a mesh grille. The middle section shows a large circular tank or basin with a complex mechanical structure in the center, likely a water treatment component. The bottom section shows a conveyor belt system with a person standing nearby, suggesting a factory or industrial setting. The entire image has a blue color cast.

Intelligent, space-saving solutions
for reduced voltage starting,
control and protection of motors.

IT. Intelligent soft starting solutions.



Eaton offers soft starters that extend the life of your mechanical components, provide the safety and reliability of 24V DC control power, and retrofit into existing enclosures and Motor Control Centre compartments. Not only that, but Eaton's IT. Soft Starters' small size and ride-through capability will meet the most demanding design and system expectations.

With a direct focus on control system design and customer profitability, Eaton is proud to offer the Intelligent Technologies (IT.) Soft Starters for reduced voltage applications – a complete offering for the OEM and end-user customers.

Our S752, S801 and S811 Soft Starters provide controlled acceleration and

deceleration of single and three-phase motors and offer a range of control and application flexibility to meet the needs of most OEM and end-user applications.

The low cost solutions to reduced voltage starting applications, the IT. solid-state soft starters have all the features and options you value.

Eaton gives you the choice

With an impressive line of soft starters designed with small and large motor applications in mind, Eaton gives you choices. Whether it's the S752, S801 or the communicating S811 line of Soft Starters, you are guaranteed to find an Eaton solution to fit your application needs.

Small size and easy configuration make these soft starters ideal for use in the most demanding and sophisticated commercial and industrial applications. We have IT. for every application, offering a complete range of solid-state reduced voltage starters optimised to satisfy your application requirements.

From advanced starting and stopping control, to integrated functions and motor protection and communication capabilities, the IT. line of soft starters provides a unique combination of soft starting and flexible protective features along with the technological advances you've come to expect from Eaton's products.

Why choose soft starting?

An Eaton IT. Soft Starter uses Silicon Controlled Rectifiers (SCRs) to electronically reduce the voltage output to the motor, allowing for a ramp up to the line voltage.

Soft starting a motor will reduce mechanical component shock, minimising coupling and shaft damage, preventing rotor and winding failure,

and stopping drive belt squeal and breakage. With an IT. Soft Starter, mechanical system components can be significantly reduced in size because of lower starting torque values (250-500% FLA), which also prolongs their life.

Soft starting can also prevent damage to loads by eliminating sudden system

acceleration and violent speed variations – contributing to fewer mechanical breakdowns, improving the quality of the product and process. The reduced inrush currents will also decrease stress on the electrical distribution system, increasing the life of electrical components.



Applications

Aggregate

- Reduced starting torque lowers stress on the mechanical drive and driven load, avoiding injury and machinery damage
- Overload protection along with other sophisticated trip features increase reliability and uptime
- Low and medium voltage solutions for aggregate-duty applications with simplified mounting for the needed flexibility
- Communications allow for real-time system monitoring
- Customer service and technical support when you need it

Pumping/Wastewater

- Reduces snapping of belts, extending the life of the belt 2-6 times
- Pump control algorithm limits pressure surges, maximising the life of pumping and piping systems while minimising costs associated with system downtime. It also eliminates “water hammer” so applications require fewer pipe hangers, which contribute to fewer leaks, increasing pump life
- Communications give you the flexibility associated with the real-time monitoring of process and diagnostic data and insight into the condition of equipment and processes without a site visit
- Reduced torque decreases stress on equipment, lowering failure rates

HVAC

- Communication capabilities enable integration into building management systems for easy monitoring and troubleshooting
- Small size permits the use of smaller panels and enclosures, allowing you to capitalise on significant space savings

Conveyors

- Smooth starts and stops
- No sliding or tilting of goods
- No snapping of chains or belts
- Communication capability with IT. SNAP Modules

Compressors

- Reduces starting currents by 40-50% compared to direct-on-line starters
- Provides fast start of the compressor

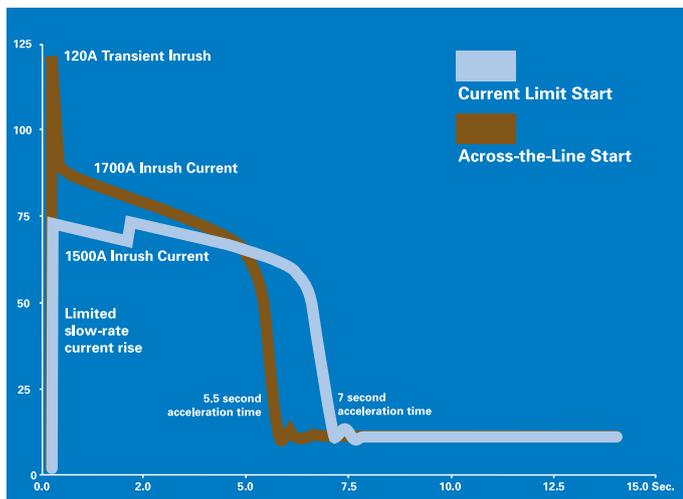
Fans & Pumps

- Reduces squealing or snapping of belts, extending the life 2 to 6 times
- Reduces inrush currents
- Unlimited starts and stops
- Soft Stop minimises “water hammer”

Elevators

- Smooth starts and stops
- Reduced wear on belts, gears, chains, clutches, shafts and bearings – decreasing required maintenance and extending the life
- Reduced inrush currents to minimise voltage disturbances

Soft starting vs. direct-on-line starting



Other benefits include:

- Soft stopping where a stop time is greater than coast to rest time — a feature that is beneficial in material handling, conveyor and pumping applications.
- Reducing line brown-outs and reducing or eliminating the costs associated with power distribution violations. An IT. Soft Starter controls peak power demand while a full-voltage starter can apply from 600 up to 800% FLA on start-up.

What value do Eaton IT. Soft Starters offer your business?

Keeping heat under control

All the IT. Soft Starters featured here have run bypass mode, designed to significantly reduce the heat generated by the starter, minimising enclosure sizes and costs. The sophisticated design removes the soft starter SCRs from the circuit after the contacts close during the bypass operation. This reduces the internal heating created by the SCRs, while the bypass contactor directly connects the motor to the line and improves system efficiency by reducing internal power losses. On top of that, the bypass contactor is internal to the soft starter,

eliminating the need for additional devices and further reducing enclosure sizes and minimising installation time.

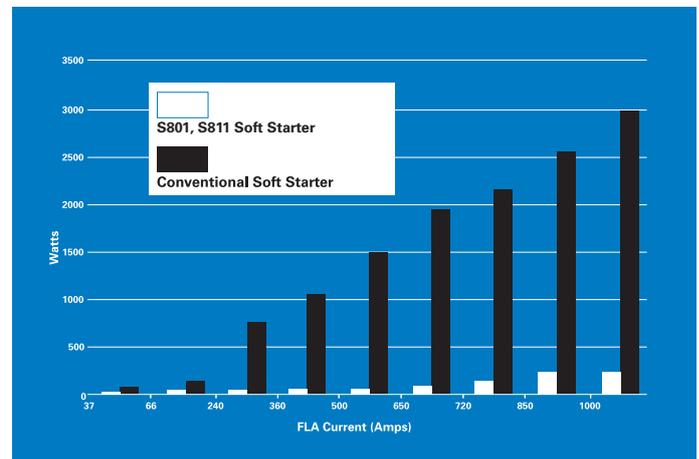
Packaged IT. Soft Starters give you more motor current in dramatically reduced enclosures. This is possible because IT. has fewer parts and generates less heat, which gives you more power per MCC section or square mm of wall space. IT. gives you the maximum performance in the smallest package.

The graph illustrates the typical heat loss from conventional Soft Starters

compared to that of Eaton's IT. Soft Starters. What does less heat mean? It means substantial cost savings

when it comes to enclosure sizes and enclosure ventilating requirements.

Soft starter heat lost comparison



No need to worry when IT. is at work

Eaton IT. Soft Starters feature IP20 rated finger-safe terminals, with 24V DC control. When your personnel and equipment are at risk, nothing but the safest, most reliable soft starter will do – IT. is the answer.

The hazards of human contact with AC current are well known; low voltage DC control power eliminates

hazards for personnel while working on control systems. From a global perspective, one DC voltage bypasses the need to transform the variety of AC input voltages used worldwide. Again, improving safety conditions and reducing system costs.

The S752, S801 and S811 use a 24V DC pulse width modulated coil control for the bypass contactor that

results in minimum power, only 5.0W steady state. 24V DC control reduces the risk of injury and damage from electrical shock and short circuit faults. The PWM coils in combination with an efficient IT. Power Supply, work to reduce or eliminate the negative effects of electrical system disturbances, brown-outs and protect against power loss. Also, the removable

and lockable control terminal block eliminates control wiring errors when replacing a device, providing yet another level of safety.

Nothing is more costly than system downtime – why not choose an IT. Soft Starter and be confident in the safety and integrity of your control system?

The perfect fit

The small size of IT. Soft Starters make them the perfect option for existing soft starting or retrofitting applications. At sizes that are 55-91% smaller than leading competitors' soft starters of the same ratings, IT. is the answer.

The S752, S801 and S811 combine the overload and bypass contactor into one device for fast and easy installation. Functions traditionally provided by multiple devices are now offered in one compact package. With their small size, they can easily fit in place of existing soft starters, star-delta starters or direct-on-line IEC starters. This feature allows easy upgrades to existing systems.

Often an application may call for variable motor speed, requiring the use of a drive. In critical applications, a direct-on-line starter may be used as a bypass in the event that the drive fails. The small footprint of the IT. Soft Starter enables it to fit in the enclosure with the drive, filling the role of the bypass while your system reaps the benefits of reduced voltage starting.



Maintaining your integrity

What better way to protect your system's integrity than by improving the ride-through capability of your control products?

Nothing is more costly than system downtime – why not choose an IT. Soft Starter with the appropriately matched Eaton 24V DC power supply and be confident in the integrity of your control system?



Integral run bypass and overload protection. A small but complete package.

IT. S752 Soft Starter

The IT. S752 is very compact, multi-functional, easy to install and easy to program. The device is available in configurations to be applied either in the line of the motor, or in the delta windings of the motor. The in-line device is available for current ranges from 0.25 to 50 amps. The inside-the-delta device is available for current ranges from 0.44 to 86 amps.

With its integral solid-state overload protection and run bypass contactor, the IT. S752 eliminates the need to purchase additional devices – reducing component, wiring, panel and enclosure costs. The S752 is available as a component for panel mounting.

Key features

- Advanced selectable protective features safeguard the motor and system against a variety of system faults.
- Run bypass mode greatly reduces internal heating created by the power dissipation across the SCRs. The bypass contactor directly connects the motor to the line and improves system efficiency by reducing internal power losses. Less heat minimises enclosure size and cooling requirements and maximises the life of all devices in the enclosure.
- Internal run bypass contactor and overload protection eliminate the need for additional devices, thereby reducing enclosure sizes, minimising installation and wiring time and reducing overall assembly size and cost.
- Wide range of overload FLA settings (31 – 100% of rated current) and selectable trip class (10, 20, 30) offers users the flexibility to fine tune the starter to match specific application requirements.
- 24V DC control module enhances personnel and equipment safety.
- Communications enabled with the addition of a SNAP (Starter Network Adapter Product).



IT. S752

Control functions

Initial torque control	0–95%
Soft start	0.5–30 seconds
Soft stop	0–30 seconds

Electrical ratings (standard duty ratings)

Operating voltage (Ue)	200–600 V AC
In-line current capacity	50A
Inside-the-delta current capacity	78A
Control steady state current	200mA
Inrush current (during bypass)	3.63A @ 50mS
Max in-line power	@ 440V AC – 30kW
Max inside-the-delta power	@ 440V AC – 45kW
Operating frequency	47–63 Hz

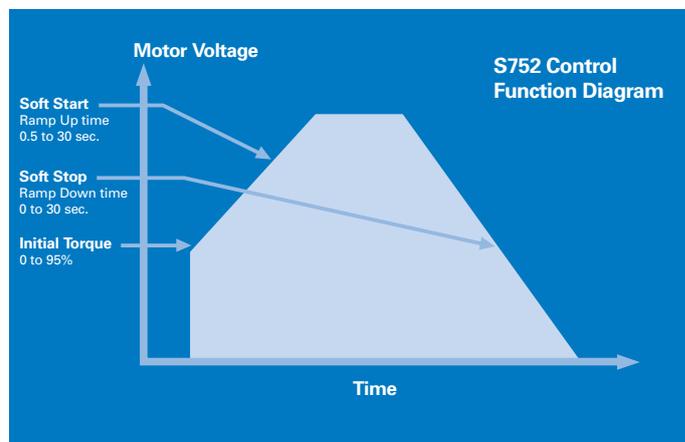
Environmental ratings

Operating temperature	-35 to 40°C
Storage temperature	-40 to 80°C
Altitude	2000m
Humidity	95% Non-condensin\g
Vibration	IEC 68–2–6 3g 10–150 Hz

Standards and Certifications

IEC 60947-4-2	UL Listed (NMFT)
EN 60947-4-2	CSA Certified (321106)
CE Marked	CSA Elevator Duty (241103)

Initial torque control, soft start and soft stop



Control, monitor, protect.

The S801 and the communicating IT. S811 Soft Starter

Eaton's IT. S801 revolutionised the reduced voltage motor control marketplace with its advanced feature set and small size. The S811 offers all the popular features as the S801, but adds enhanced functionality with the new

DIM (Digital Interface Module) and communications capabilities. Designed to control the acceleration and deceleration of 3-phase motors up to 690V, the S811 is available from 11 amps through 1,000 amps.

IT. S801/S811

Control functions

Voltage ramp start

Initial torque control	0–85%
Soft start	0.5–180 seconds

Current limit start

Maximum current	0–85%
Soft start	0.5–180 seconds

Kick-start

0–85%, 0–2 sec

Soft stop

0–60 seconds

Electrical ratings

Operating voltage (Ue)	200–600 V AC 690V option T–V Frames
Max current capacity	1000A
Steady state current	1.0A N–T Frames 1.4A V–Frame
Inrush current Amps	10
Operating frequency	47–63Hz

Environmental ratings

Operating temperature	-30 to 40°C
Storage temperature	-50 to 70°C
Altitude	2000m
Humidity	95% Non-condensing

Standards and Certifications

IEC 60947-4-2	cULus Listed (File # E202571)
EN 60947-4-2	UL Listed (NMFT)–Frame N37 to V85
CE Marked	CSA Elevator (2411 01)
CSA Certification	

Key features S801/S811

- Internal run bypass contactors and overload protection eliminate the need for additional devices, thereby reducing enclosure sizes, minimising installation and wiring time and reducing overall assembly size and cost.
- Kick-start feature enables soft starting of high friction loads.
- Pump control option with sophisticated pump algorithms on both starting and stopping that minimize the pressure surges that cause water hammer. The pump control option will maximise the life of the pump and piping systems while minimising the downtime caused by system failure.

Key features S811

- The DIM (Digital Interface Module) on the S811 provides an intuitive, easy to use human interface with powerful configuration tools to maximise system performance.
- Door or device mounted, the DIM enables users to safely configure, commission, monitor and troubleshoot the system at the electrical panel without opening the enclosure door.
- System operating parameters can be monitored enterprise-wide through a communications network. Increase process uptime by providing data for process management and preventive diagnostics.
- Built-in communications capabilities through Eaton QC (Quick Connect) Port. The QCPort allows the soft starter to be connected to a variety of networks, including DeviceNet, EtherNet/Modbus and Profibus. The S811 communication parameters can be configured with the DIM or through the network using CH Studio.

S811 monitoring capabilities

Phase currents	Control voltage
Average current	Device temperature
Current as a % of FLA	Start count
Thermal memory	Breaker status
Phase voltage	Fault queue
Average voltage	

S811 protective features

Electronic motor overload	Automatic or manual reset
Short circuit coordination with Eaton circuit breakers or with fuses	Phase reversal
Jam	Shorted SCR detection
Stall	Open SCR detection
SCR over temperature	Under current
Phase loss	Under voltage
Phase imbalance	Over voltage
	Diagnostics fault queue



Eaton Corporation is a diversified industrial manufacturer ranked among the largest Fortune 500 companies. The electrical group is Eaton's largest division and is a global leader in electrical control, power distribution, power quality, automation, and monitoring products and services. Eaton's electrical products include brands such as Cutler-Hammer®, MGE Office Protection Systems, Powerware®, Holec®, and MEM®. Eaton provides PowerChain Management® solutions to serve the needs of the industrial, institutional, IT, data center, mission critical, utility, residential and OEM markets worldwide.

PowerChain Management solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle. With Eaton's distribution, generation and power quality equipment; full-scale engineering services; and information management systems, the power system is positioned to deliver powerful results: greater reliability, operating cost efficiencies, effective use of capital, enhanced safety, and risk mitigation.

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