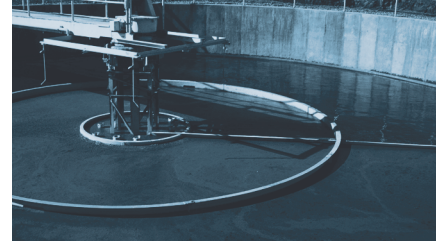


IT. Intelligent soft starting solutions.



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

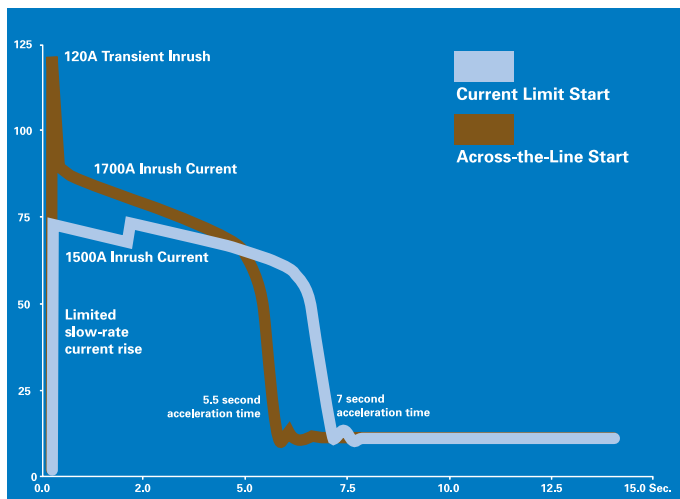
Fans & Pumps

- 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.

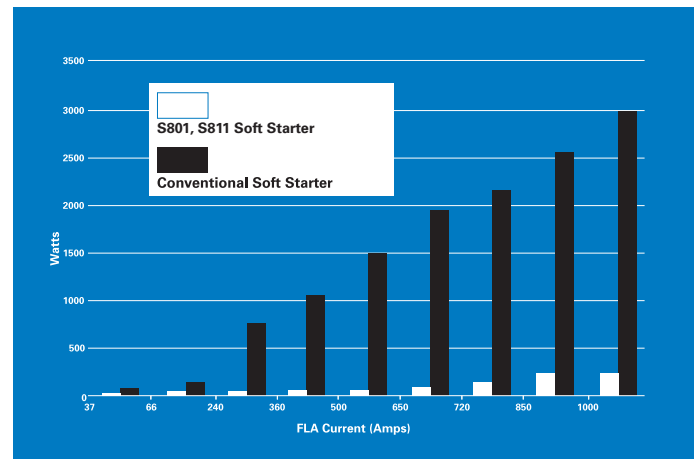
Packaged IT. Soft Starters give you more motor current in dramatically reduced enclosures. This is possible because IT. has fewer parts and generates less heat, which gives you more power per MCC section or square mm of wall space. IT. gives you the maximum performance in the smallest package.

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 |

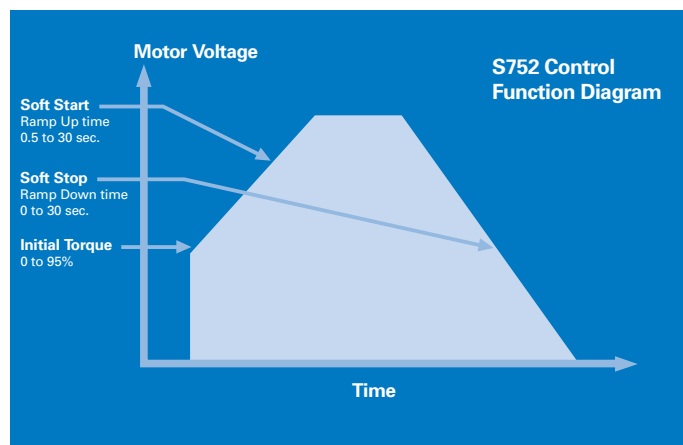
Environmental ratings

| | |
|-----------------------|-------------------------|
| 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 |

