

# SOFTSTART UK



## MOTOR CONTROL AND AUTOMATION PRODUCTS



# Your partner for control and automation products and systems

Softstart UK is all about being the best in class for motor control and automation. Best technology; best equipment; best expertise.

All products are manufactured to ISO 9001 and are rigorously assessed against Softstart's own criteria for quality, reliability and applicability. This includes compliance with many standards and directives, such as RoHS (Restriction of Hazardous Substances) and WEEE (Waste Electrical and Electronic Equipment).



In addition to supplying and stocking a comprehensive range of products from global companies such as Delta Electronics, Hitachi, ASEM, Power Electronics and MTE-Deltron, Softstart also has in-house panel building capabilities and manufactures complete motor control systems and medium voltage soft starters at its factories here in the UK.

With expertise going back to the dawn of modern automation technologies, design and technical support is comprehensive, from application evaluation and concept design through to detail design, system build, installation and commissioning. This is supported with maintenance programmes, training and other services.



Softstart UK has served British industry and British exporters for over a decade and is the preferred choice in a great range of industries from water, steel, mining and tunnelling, marine and offshore, petrochem and waste management to packaging, food and confectionary, automotive and aerospace.

## SOFT STARTERS

DC injection brakes  
Low voltage analogue and digital soft starters  
Medium voltage digital soft starters

## VARIABLE SPEED DRIVES

Delta variable speed drives Hitachi variable speed drives  
HIVERT Medium Voltage variable speed

## DELTA IP SERIES DRIVES

Delta IP55 CFP Series  
Delta IP54 Cabinet Series

## PROGRAMMABLE CONTROLLERS

Delta PLCs  
Hitachi PLCs  
Delta motion controllers

## OPERATOR INTERFACES AND HMI

Delta HMIs  
Delta touch panels

## POWER SUPPLIES

Delta DIN rail and panel mounting power supplies

## AC REACTORS

MTE line/load reactors

## TRANSFORMERS

Liquid-filled transformers  
Dry transformers  
Cast coil transformers

## PANEL BUILDING

Control panels, MCCs, HV/LV distribution boards  
Automation and systems integration  
Drives cabinet hire service  
ATEX-compliant systems

## SERVICE AND SUPPORT

On-site and offsite training  
Technical support  
Repairs and maintenance

# SOFT STARTERS

Softstart UK has unrivalled expertise in the area of soft starting and stopping, and has a wide portfolio of products to meet industry requirements, covering both off-the-shelf low voltage and custom designed medium voltage systems. Soft starters provide a vastly more cost-effective solution than a variable speed drive in simple start-stop applications, and save energy by stopping intermittent duty motors when they are not needed, rather than leaving them idling between duty cycles.

Keeping motors ticking over has traditionally helped to reduce the wear and tear on the mechanical and electromechanical elements of a drive system at start-up. But soft starters bring you the best of both worlds: reduced energy usage and the ability to bring the motor up to speed far more smoothly than direct-on-line starting.

Softstart UK offers the world's largest low voltage soft starter range, from 4kW to 800kW, plus a bespoke line of medium voltage digital soft starters from 2,300 to 15,000V and to 20MW

## LOW VOLTAGE SOFT STARTERS

Softstart UK offers a wide range of soft starters and DC injection brakes, in both analogue and digital formats, with or without built-in bypass functionality. All of the products are characterised by ease of operation and a highly compact design.

Our miniature soft starters cover AC motors from 4-30kW, 230-690V AC. In addition to the simple analogue designs, heavy-duty digital soft starters are available with advanced start-stop functionality. Transformer soft starters are also available for every type of transformer.

For operation in hazardous areas, Softstart UK can also produce low voltage Ex-rated soft starter cabinets up to 400A.



### EMX4i Series

The EMX4i is our new compact advanced soft starter available to 1250A C/W by-pass and 1600A without. Currently with one of the smallest footprints available on the market.

Built in by-pass (B), programmable I/O, smart option slots, USB input for smart updates keep starter to up to date with latest features.

QR Code data readings, copy function.



### CSXi

The CSXi is a compact analogue soft starter with current limit, covering voltages from 200-575V AC three-phase. Functions such as current ramp, current limit, motor trip class, motor FLC, soft stop time, excess start time, auxiliary relay function and phase sequence protection are all easily set from the front panel analogue controls. The CSXi is easy and economic to install, and is simple to configure. It provides soft start/stop plus motor/system protection, all in a compact design that minimises panel space.



### VSII 400 Series

The VSII series is a micro soft starter complete with built in by-pass analogue set up and no requirement for auxiliary control voltage. Available in ratings from 12A to 45A in slimline design.



## MV DS MEDIUM VOLTAGE SOFT STARTER

Designed, developed and custom manufactured by Softstart UK, MV DS digital soft starters provide controlled starting and stopping of large, medium voltage motors up to 11kV. Softstart UK builds each cabinet to order, with a host of options enabling it to be customised to meet a customer's precise requirements.

Large, medium voltage motors generate huge torques and draw enormous currents when started direct-on-line. Auto-transformer starting is expensive, bulky and rarely provides a completely satisfactory solution. The MV DS addresses these technology failings.

## ADAPTIVE CONTROL

Digital soft starters now feature next generation 'Adaptive Control' technology, offering the smoothest motor starting characteristics with the ability to tune itself to the requirements of the load, improving control for future starts.

Adaptive Control technology adjusts the current in order to start the motor within a specified time and using a selected acceleration profile. Three different profiles are available, providing either early acceleration, constant acceleration or late acceleration to best meet the needs of the application.

When Adaptive Control is engaged for the first time, the first start will be a constant current start. This allows the soft starter to learn the characteristics of the connected motor. This motor data is used during subsequent Adaptive Control starts. And because the motor's performance is monitored during every start, control is continuously improved.



### MV DS Medium voltage soft starter

The MV DS is a heavy-duty, fully rated design, allowing a start capacity of up to 600% FLC for 30 seconds at a rated temperature of 50°C without derating. Designed for arduous environments, a comprehensive motor protection package is included and a motor insulation test facility is offered as an option.

Variations in the supply voltage are catered for by a 45-65Hz tracking capability and the construction is designed for corrosive environments. Tacho feedback enables

uneven torque loads, such as those encountered on crushers and long conveyors, to be smoothly controlled, protecting the plant. Optional PLC control and touch screen, multi-lingual IPC enables programming, diagnostics, system monitoring and data event recording. The graphical interface allows the operator to see statistical data such as the last start time, current, power and more.

The compartmentalised construction separates the medium voltage section from the low voltage compartment and motor



connection terminals. 100% isolation between the LV and MV areas is provided using fibre optic connections.

The MV-DS is designed for simple integration, operation and maintenance. A low voltage test mode enables testing of all functions using a 3-phase mains supply and a small motor. Different simulation modes assist with setup, configuration and maintenance. A dual parameter set enables the soft starters to control two different motors with independent start/stop configurations.



# VARIABLE SPEED DRIVES

With end-user industries demanding machines that are ever more sophisticated, drives users are consistently calling for more dynamic performance, higher peak torques, and products that offer more flexible integration and are easier to use. Softstart UK offers variable speed drives from Hitachi, Delta and Power Electronics, meeting the performance requirements across the spectrum of industrial applications.

With a raft of different control algorithms delivering superior characteristics in any operating mode, these drives push the boundaries of control capability in both open-loop and closed-loop operation, with the best closed-loop systems even offering near servo performance for demanding machinery control applications.

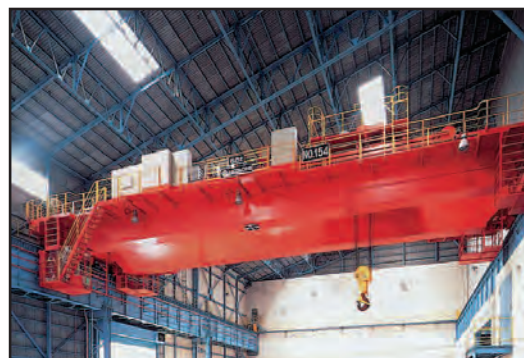
## DELTA VARIABLE SPEED DRIVES

Drives, motion and control specialist Delta Electronics has formed a strategic partnership with Softstart UK which combines the market leading products of Delta with the unrivalled reach and experience of Softstart's dedicated team of specialist automation engineers.

Delta's automation capability is quality-driven, providing customers with cost-effective and reliable products. Delta's innovation in development has delivered one of the broadest and most capable ranges of drives, motion and control products, along with associated technologies including switching power supplies, power management products, components, visual displays, networking products and complete industrial automation solutions.

Softstart UK has unrivalled experience in a wide range of industries, with a proven track record in all the multiple needs of the most demanding applications. This new partnership with Delta Electronics extends the Softstart portfolio, bringing the benefits of these products to a raft of new markets.

Delta is probably the world's biggest manufacturer of variable speed drives by volume, with innovative new designs emerging constantly to keep the products at the cutting edge of technology.



A cost-effective, classical field-oriented drive, the C2000 sets the bar high in features and benefits including built-in PLC functionality, self-diagnostics, long-life design, CANOpen and Modbus communications. Standard models cover the power range from 0.75kW to 90kW at 230V AC, and 0.75kW to 355kW at 460V AC.

The CP2000 extends the benefits of the C2000 with a sensorless vector control algorithm, making it ideal for applications such as HVAC, constant pressure pumps, building automation, conveyors and materials handling.

For more demanding applications, such as food packaging, textiles and wood-working machines, the C200 closes the loop to ensure



high precision operation consistently over time. It is available in a wide range of different models to suit the needs of different industries, and has a built-in PLC.

The active front end of the AFE2000 replaces traditional brake resistors to provide massive energy savings, particularly in applications involving high speed, high inertia loads.

The VFD-MS is a micro type multifunction drive that is packed with features and performance. It is suitable for side-by-side DIN rail mounting and covers powers up to 22kW.

### Variable speed drives

Delta's huge manufacturing capacity means it can offer the widest possible range of drive technologies to match every possible application requirement. Variable speed drives are now ubiquitous throughout all industries, helping to save energy, ensure the highest levels of product quality, synchronise machines and boost productivity.

# VARIABLE SPEED DRIVES



## HITACHI VARIABLE SPEED DRIVES

The Hitachi variable speed drives family offers a variety of new and enhanced functions, delivering unprecedented performance, simplicity, reliability and flexibility. A high degree of commonality between models, plus user-friendly configuration software, makes the drives easy to install, program and maintain.

With products that address applications all the way from fans and pumps to highly dynamic tasks such as packaging, printing, textiles, machine tools, lifts, cranes, centrifuges and extruders, Hitachi variable speed drives deliver class-leading performance in some of the industry's most compact and cost-effective packages.



Hitachi variable speed drives offer a raft of innovative features, such as patented power switching technology to reduce dVdT, high speed RISC processors for superior dynamic response, high starting torques, and a range of fieldbus interfaces for easy integration into a variety of networks.

The drives are also eco-friendly, reducing the power consumed by motors driving centrifugal pumps, fans and other rotating equipment. Hitachi AC variable speed drives control the speed of a motor and optimise the amount of energy used by the machinery, resulting in reduced carbon emissions.



### Hitachi P1

Available in powers from 0.75kW to 400kW, the P1 represents a dramatic step change in inverter technology, being the first off-the-shelf unit with integral easy sequence programmable functionality. Other features include precise positioning, and safe stop according to EN standards.

### Hitachi P1

Featuring an improved sensorless vector algorithm, the P1 develops 150% torque at 0.5Hz up to 400kW

The new EZSQ (easy sequence) built in programming function provides the functionality of a PLC built into the inverter. The drive features an automatic energy saving function for fans and pumps.

### Hitachi NE-S1

The Hitachi NE-S1 is an economical and simple inverter covering powers from 0.2kW to 4kW. Ideal for OEMs and systems integrators, it offers an ultra-compact design and is pre-configured for out-of-the-box



integration in most applications. PID, logic and time delay functions are built-in as standard.

**Hitachi WJ-C1** The WJ-C1 provides enhanced high starting torque and dramatically improved speed load thanks to advanced sensorless vector control with new simplified autotuning procedure. It also includes a dynamic braking transistor. A high starting torque of 200% or greater suits the WJ-C1 to a wide variety of applications. Single- and three-phase models are available.



# Medium Voltage Variable Frequency Drives

For the most demanding applications, Softstart UK offers the MVH2.0 this series of Medium Voltage VFD is divided into two types: the General VFD and the High-performance VFD. The General VFD realizes energy-saving by adjusting the motor's rotator speed, and is mainly used for fans and pumps in Power, Mining, Petrol-chemical, Metallurgy, Cement, Municipal industries, etc. The High-performance VFD, with the use of the vector control and regenerative technology,

## MVH Series

The MVH VFD has a number of power cells connected in series, the independent phase-shift power is supplied to each power cell by the isolated transformer. Changing the power cells number in each phase you can get different output voltage conveniently without the limitation for the components' withstand voltage. For example, the 6kV VFD has 5 cells in each phase, the rated voltage of each power cell is 690V, the phase voltage is 3460V (the line voltage is 6kV); the 10kV VFD has 9 cells in each phase, the rated voltage of each cell is 690V, the working voltage is 640V.

## High-Quality Power Input Section

The MVH general MV VFD adopts the isolated transformer with the phase-shifted secondary windings, which can provide the isolated power supply for the power cells with multi-pulse diode rectifier (30 pulses for 6kV, 54 pulses for 10kV), the harmonic current of power cells effectively reduced. Please refer to the current/voltage waveform with the 30-pulse rectifier



MVH is available from 3.3kV to 13.8kV and in power ranges from 400kW to 28MW, in basic VFD or Regenerative Sensorless Vector configurations.

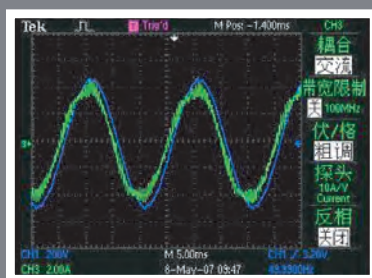
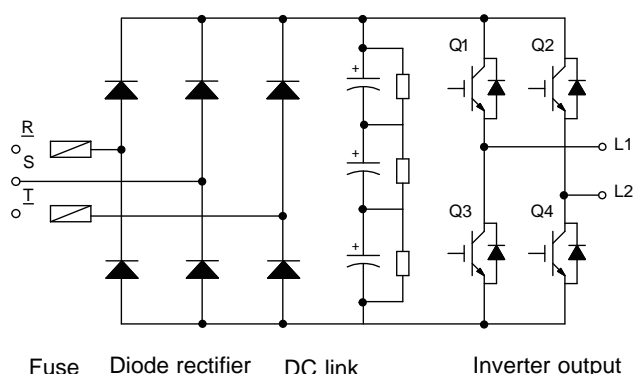


Figure 1:  
30-pulse wave form of input  
voltage/current

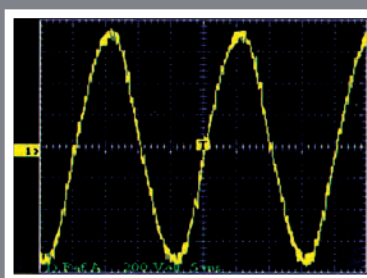


Figure 2:  
wave form of output line-voltage

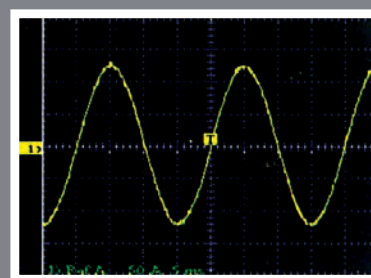


Figure 3:  
wave form of output current



# Delta IP55 Enclosed Drives

## Delta IP55 CFP2000 Inverter Drive

Delta's CFP2000 series is an AC motor drive specially designed for HVAC, fans & pumps, and water treatment applications. It is designed with an IP55 enclosure to provide effective protection from dust and other particles and to offer a good level of protection from water. In addition, it includes many outstanding features and built-in functions that reduce setup and tuning time in operation and provide higher efficiency.

The CFP2000 is equipped with a built-in EMC filter and a DC choke. This design replaces the need for an electrical distribution cabinet and saves space for other devices, while providing the benefits of harmonic suppression and better power quality to the system. Various parameter groups are also included, which allow you to simply select the needed application in the parameter group setting and the system setup is ready. If a higher safety standard is required, an optional main switch function is also available upon selection. Other outstanding features include support for both IM/PM motors, a real time clock, built-in 10k steps PLC capacity and various optional extension cards. The CFP2000 series integrates all of your needs into one drive. It is the friendliest and smartest choice available in the industry.



## Technical Features

### Technical Features

IP55 enclosure protections  
Optional built-in mains switch for IP55 models  
Built-in EMC filter; IEC61800-3 C2, C1 standard  
Built-in DC reactor effectively lowers harmonic distortion; IEC61000-3-12 standard  
PCB (Printed Circuit Board) enhances drive durability; Class 3C3 standard  
Built-in application selections and a quick start function simplify installation and setup and save parameter setting time  
Fire mode provides PID control and a bypass alarm function that ensures uninterrupted drive operation to extract smoke, supply water, and balance pressure at the emergency exit  
Built-in PLC function 10k steps and Real Time Clock (RTC)  
2 sets of PID controller functions  
Built-in Safe Torque Off (STO) SIL2 function  
Built-in MODBUS and BACnet MS/TP communication

## IP54 Cabinet Series C2000 and CP2000 to 400kW

Also available on short lead times cabinet versions from 132kW to 400kW CP2000 and C2000 with MCCB or Fuses, Isolator and EMC

Filter C3, front door mounted key pad.

kW	90	110	132	160	185	220	280	315	355	400
C2000	Basic with Fuses									
	Basic with MCCB									
	Standard*									
CP2000	Basic with Fuses									
	Basic with MCCB									
	Standard*									

# PROGRAMMABLE CONTROLLERS

Where features such as performance, reliability, flexibility and a compact form factor are vital, Softstart UK offers the Delta and Hitachi ranges of PLCs, covering everything from simple web controllers to fully featured modular designs.

These highly regarded programmable controllers deliver performance that belies their modest size, with high levels of expansion flexibility, increased program capacity, an extensive set of application commands, impressive in-built I/O and comprehensive communications possibilities that include Profibus, DeviceNet, Modbus and Ethernet.

## DELTA PLCs

Delta has developed a wide and flexible range of PLCs, each of which can be customised to bespoke applications such as motion control, product counting, colour recognition and temperature monitoring.

The range covers everything from compact brick-style PLCs for simple sequence control right up to advanced modular designs for advanced machine control applications. Models also include innovative slimline units that save on space without compromising on performance. These advanced, next-generation PLCs set new benchmark standards, offering high-speed, stable and highly reliable control across the spread of industrial automation tasks.

Some PLCs can accommodate both left-side and right-side expansion modules, with left-side modules taking advantage of a faster communications bus to offer the increased performance needed for the most demanding applications. Expansion modules and cards are available providing analogue I/O, temperature measurement, motion control, communications and more.

The range also includes advanced motion controllers that meet the needs of applications such as flying shears, rotary cutting and electronic cams.



### AH500 Series PLC

The next-generation AH500 Series PLC provides automation solutions for high-level applications. The combination of a modular hardware structure, advanced functions and the highly integrated software provides a system solution for process control applications.

In addition to various function blocks, excellent price/performance and an abundant selection of extension modules, the AH500 Series PLC also provides exceptional system expandability, greatly reducing the system cost for a broad range of applications.



### DVP Series PLCs

Highly cost-effective yet with the highest levels of performance and functionality, DVP Series PLCs offer high-speed, stable and reliable control across a whole spread of industrial applications.

The range includes the DVP-E series, which sets new benchmark standards for nano controllers. For more demanding applications, the DVP-S series micro controllers offer increased program capacity and data register size, along with high execution speeds, impressive in-built functionality and flexible expandability.

### DVP Series motion controllers

The DVP range also includes a number of high-performance motion controllers, meeting the needs of everything from general purpose motion to the most sophisticated applications. These include models for standalone motion control and also for networked motion control. Both can take advantage of left-side and right-side DVP series expansion modules

For ease of programming, Softstart UK provides the PM Soft programming software for G-Code editing, motion trajectory simulation, positioning route instruction and electronic cam setup.



# PROGRAMMABLE CONTROLLERS



## HITACHI PLCs

At the lowest end of the range, the Hitachi web controller is a miniature PLC with built-in web server and SMTP capabilities. Up to 16 web pages can be stored within the unit, enabling remote users to monitor, report and interact with their connected equipment from anywhere in the world.

Being a PLC at heart, it is programmable using standard Windows ladder editor software, and provides enough I/O for simple control applications. The built-in RS232 port means the web controller can also act as a simple interface between existing PLC installations and the worldwide web.



Where more fully featured PLC capabilities are required, the Hitachi Micro-EH series controllers provide maximum power at minimum size. Various expansion modules deliver increased flexibility to fine-tune the PLC to the required level of automation.

At the top of the range, the EH-150 series of modular PLCs are used the world over in applications where performance, expandability, reliability and communications flexibility are key. With 32-bit RISC processors and a comprehensive range of I/O modules, the EH-150 can be readily tailored to match the needs of even the most demanding application.



### Hitachi EHV-150 series

The five CPUs in the EHV-150 series offer up to 192Kb program memory (16k steps), up to 0.1μs cycle time, and offer up to 3520 I/O. The base CPU includes a single- or two-channel high-speed counter, and either a single axis or four axis positioning module. The CPU can be expanded with a range of input and output modules (analogue and digital). Serial, Profibus-DP and DeviceNet slave communications are provided as standard, with additional modules providing DeviceNet and Profibus-DP master, as well as Ethernet.

### Hitachi Micro-EHV series

The seven CPUs in the Micro-EHV series PLCs range from 10 I/O up to 64 I/O, with the ability to add expansion modules for further I/O (up to 176 maximum I/O count). An integrated RS485 interface provides connection to serial networks, while an integrated high-speed counter and the in-built I/O means a single compact controller can be used to realise small- to medium-scale automation applications. All models in the range provide pulse interrupt inputs, and both pulse and PWM outputs.



### Hitachi web controller

This compact unit is small enough to sit on the palm of the hand, making it a simple addition to new and existing installations. The web server can store up to 16 HTML pages. In addition, the built-in SMTP protocol allows it to send emails in response to up to 16 different triggers. As a PLC, the web controller incorporates a 32-bit RISC processor and offers up to 32Kbyte of program memory, up to 26 I/O as standard, and the ability to add up to four expansion units. The controller can be DIN rail or wall mounted.

# TOUCH SCREENS AND HMI

Visual representation has long been proven to be the best way to understand a process or system. Softstart UK offers a wide range of HMIs allowing this to be achieved on the shop floor or other industrial environment. Whether touchscreen or pushbutton, programming and resetting of the host machinery can be achieved locally using an HMI, which if networked to the overall control system can provide a window into the complete production environment.

## DELTA HMIs AND TEXT PANELS

Delta DOP series HMIs provide various touchscreens with numerous screen sizes and colours, providing fast and convenient control functions for industrial automation machines.

Moreover, programming the whole DOP series is done using Delta's Windows-based and user-friendly Screen Editor software. By using this software, the user can quickly edit images and graphs and set suitable communication protocols through macro commands.

Delta's text panels provide a range of monochrome text and graphical panels in different sizes and with different combinations of numerical and user-defined function keys where people and machines work together. The text panels meet the needs of applications that require flexible machine interaction, but without the cost or additional functionality of a full HMI.

Delta's text panels are renowned for their simple operation and control functionality. The whole series supports various communication protocols. It has the advantages of light weight, cost-effective price and good flexibility in use, which can help the user to quickly control the system and improve working efficiency.



### NEW DOP-100 series HMIs

Delta DOP-100 series HMIs combine excellent control and visualisation capability with an innovative widescreen design. The HMIs are available in screen sizes from 4.7in to 10in, with features including built-in Ethernet communications, the ability to display over 65,000 colours, three sets of COM ports, a USB port, support for audio output and support for SD card program loading and backup.

Sealed to IP65 for use in challenging plant floor environments, the DOP-B series HMIs offer fast and convenient control of



manufacturing automation, replacing traditional control panels that need extensive wiring. They are available in both blue scale and colour display versions, with standard and windscreen versions, and with resolutions up to 1024x600 pixels.

Different configurations provide touchscreen only or a combination of pushbutton and touchscreen control.

### TP series text panels

For applications that need basic operator input and feedback functionality without the added cost and complexity of a full HMI, the

TP series provides a range of text panels with numerical keypads and function keys. The text panels are available in formats from two lines of text up to eight lines of text, up to 12 system keys and up to 24 user-defined function keys.

All models feature an STN LCD backlit monochrome display, in sizes from 2.8in up to 4.1in, and with resolutions from 160x32 pixels up to 192x64 pixels. Communications options include RS232, RS422 and RS485. All models feature a built-in memory card slot for backing up and copying programs, and a built-in real-time clock.





In automatic production processes, the power supply is an essential component, delivering not simply power but also high stability and safety protection functions.

Softstart UK offers market leading power supplies from Delta Electronics – the world's largest manufacturer of power supplies. Offering several distinct ranges, these innovative components – combined with Softstart UK's experience and professional design services – can meet every need of every industry.



## DELTA POWER SUPPLIES

Power supplies are available with nominal output voltages of 24V and 12V DC, and they operate over wide temperature ranges from  $-20^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$ .

Delta ensures the power supplies are ruggedly built to withstand shock and vibration to IEC 60068-2, yet are ultra compact. The power supplies provide overvoltage, overload and thermal protection. The wide input voltages range from 85-264V AC (single phase) and 320-575V AC (three phase). The multiple output terminals allow fast wiring.



### DIN rail power supplies

DVP and CliQ series power supplies offer a nominal output voltage of 12V or 24V, a wide temperature range from  $-20^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$  and a minimum holdup time of 20ms. A total of eleven models are available in powers from 24W to 480W in 24V versions, and a further four models in powers from 15W to 100W in 12V versions.

The state-of-the-art design is made to withstand harsh industrial environments. The rugged, ultra-compact case material is shock- and vibration-resistant according to IEC 60068-2. Both black plastic and aluminium case versions are available according to applications requirements.



The power supply provides overvoltage, overload and thermal protection. The wide input voltage ranges from 85 to 264VAC (1 phase) and 320 to 575VAC (3 phase), and the multiple terminals enable fast wiring and easy installation.

Features include advanced overload protection, overvoltage protection, short-circuit protection and thermal protection. Two power supplies can be connected in parallel to provide redundancy. On 24V supplies, the output can be adjusted between 22V and 28V.

### Panel mounting power supplies

The tablet power supply is currently the most widely adopted device in the power distribution panel market. Delta's PMC series industrial power supply offers users DC24V (35W, 50W and 100W) and DC12V (35W, 50W



and 100W) models with enhanced safety, efficiency and the best power quality.

PMC 24V single phase power supplies are available in six models including dual output models, while PMC 12V models are available in three versions. All feature full aluminium casing for lightweight and corrosion-resistant handling, universal AC input and high efficiency. Features include overload protection, overvoltage protection and thermal protection.

The power supplies have an MTBF of greater than 700,000 hours and an expected lifetime in excess of ten years. The power supplies are RoHS-compliant.

# LINE/LOAD REACTORS

AC line/load reactors from Softstart UK will help keep your equipment running longer by absorbing many of the power line disturbances, which otherwise damage or shut down an inverter, variable speed controller, or other sensitive equipment. They are the modern technology solution to inverter and drive application problems.

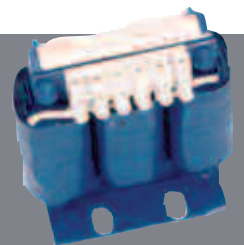
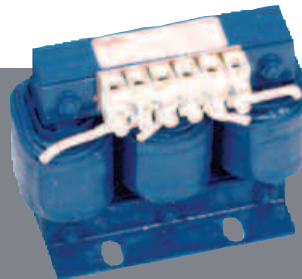
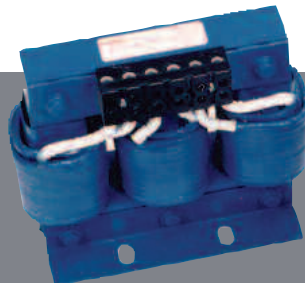
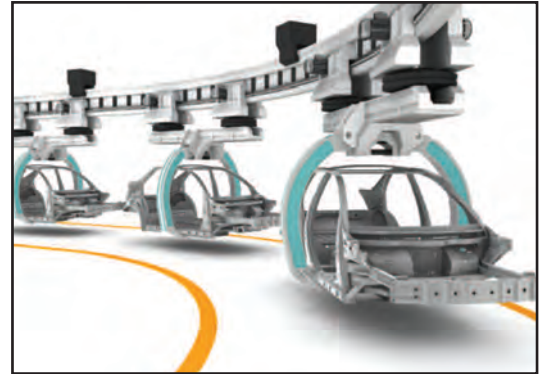
AC reactors are harmonic compensated and IGBT protected to assure optimum performance in the presence of harmonics. They are very effective at reducing harmonics produced by inverters and drives, and in most cases will help you to meet IEEE 519. Use our harmonic compensated reactors on either the input or output of an adjustable speed drive/inverter. There is no need to derate 'harmonic compensated' reactors for harmonics.

Softstart UK offers a comprehensive range of AC reactors manufactured by MTE. These reactors offer numerous user benefits. They protect motors from long lead effects, reduce output voltage dVdT, virtually eliminate nuisance tripping and extend semiconductor life for increased system reliability.

MTE AC line and load reactors are designed to reduce harmonic distortion, reduce surge currents, reduce motor temperatures, reduce audible noise and improve true power factor.

These AC reactors are available with impedance ratings of 3% and 5%. A 3% impedance reactor is typically sufficient to absorb power line spikes and motor current surges. They will prevent nuisance tripping of drives or circuit breakers in most applications. A 5% impedance reactor is best for reducing harmonic currents and frequencies. They should be used when you need to comply with IEEE 519, to reduce motor operating temperature, or to reduce motor noise.

MTE line/load reactors are available in a variety of enclosures with different IP ratings to meet the needs of different applications.



## MTE RL/RLW AC reactors

Standard MTE reactors may be applied up to 690V AC with compatible impedance ratings. Harmonic compensation makes them suitable for use on either the drive input or drive output. They are designed to carry full rated fundamental current and will also handle current and frequencies associated with harmonics up to 50% over the fundamental.

This robust design allows MTE reactors to be used on the output of variable frequency drives including IGBT types with switching

frequencies up to 20kHz. A premium dielectric system is designed to protect the reactor's coils from the potentially high peak voltages and fast dVdT that may be experienced when used for motor protection with long leads between inverter and motor.

MTE three-phase reactors may be applied to single phase drives to provide transient protection as well. Epoxy impregnation minimises audible noise in the reactor and enhances structural and moisture integrity for improved performance.

The high saturation current of MTE reactors maximises their surge current protection capability. MTE reactors absorb many of the powerline disturbances which cause nuisance trips on voltage source units.

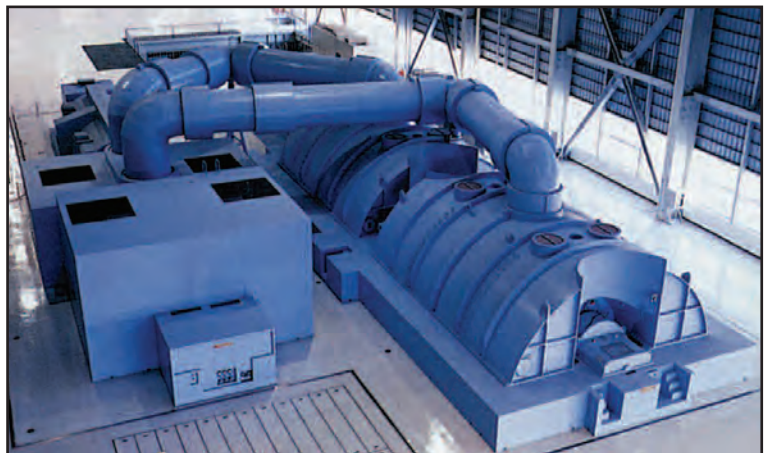
Terminals are standard and save installation cost by minimising panel space. Finger-proof (IP20) terminals are provided up to 45A. Solid copper box lugs are provided from 45A up to 160A. Copper tab type B14 or B1 flag terminals are used for applications above 160A.





Softstart UK has expanded its product portfolio to include a highly cost-effective range of medium voltage transformers. Designed for use in demanding industrial applications, the range includes oil-filled transformers and cast resin transformers.

Typical applications are found in the industrial, power distribution, railway, marine, solar energy or photovoltaic, and wind energy markets.



## Cast resin transformers

EMG cast resin EMG transformers are designed and manufactured according to CEI 14-32 and IEC 60076-11, CENELEC HD 464 and CENELEC HD528th. On request, additional standards can be applied. The core of the transformer is made of cold rolled grain-oriented steel sheet with low loss. The surface is insulated to reduce eddy current losses. A special technology makes it possible to minimise the losses and Gräusche Vibration.

The Ns windings are made of aluminium or copper tape (the default UNI 4507). They are insulated by coating with a special resin film. The impregnation of the windings is carried out under vacuum in order to prevent moisture absorption. As a result, these transformers can be used in



the most challenging environmental conditions. The winding is made of brass, aluminium or copper strip, surrounded by an insulation material of thermal class F, and aligned in a special form. After heat treatment it is potted with epoxy resin under vacuum. Protection under time- and temperature-controlled polymerisation and relaxation gives a compact unit, with an appropriate thickness of the resin. This technology creates Ns windings which are protected against fire, moisture and condensation.

## Oil transformers

EMG oil transformers are designed and manufactured according to CEI 14-32 and IEC 60076-11, CENELEC HD 464 and CENELEC HD528th. On request, additional standards can be applied. The core of these transformers is created from grain-



oriented magnetic steel for low losses. The joints between the columns and yokes are constructed at an angle of 45°. The windings are made of electrolytic copper. Upon request, they can also be made with aluminium windings.

The tanks are made of welded steel plate, with reinforcement to prevent oil leakage. The tanks are tested for leaks with liquid (UV light inspection). After sandblasting, the tanks are internally coated with a special protective oil paint, and externally with a specific anti-rust paint and RAL 7031 enamel.

Special terminal blocks on the Ns side allow change in the ratio when the transformer is disconnected. EMG transformers are usually filled with dielectric oil or with dielectric silicone oil.

# PANEL BUILDING AND HIRE UNITS

Panel building means much more than simply putting components in a box. Value is added through the expertise of the systems engineers and designers who keep up to date with all the latest developments in electrical and control technology, and are skilled at applying these to various industries.

Softstart UK combines an unparalleled understanding of the demands of modern industry, with an unrivalled capability in automation systems design and installation. This helps to raise productivity, reduce costs and ensure reliability.

We don't simply fulfill orders: we form two-way partnerships with our customers so that we fully appreciate the subtleties and nuances of their particular industry, and develop solutions that increase the functional performance of the machinery or system.

Today's panels are increasingly sophisticated, often combining many functions in a single cabinet. There is also the need for data communication between panels and to and from supervisory control systems. This predicates a need for panel builders who are multi-skilled and able to work across many disciplines efficiently and accurately.

Softstart UK is adept at meeting the panel requirements of the broadest spread of industries including:

- Manufacturing
- Utilities
- Oil and gas
- Minerals
- Refining
- Aerospace
- Processing
- Staging and theatre

## HIRE PANELS

Available on weekly hire periods.

- IP55
- Stainless Steel Skids
- VFD's and Soft Starters
- Available up to 160kW VFD
- Available up to 400kW Soft Start







## DRIVE CABINET HIRE SERVICE

Softstart UK has built a fleet of variable speed drive control cabinets which it is making available for hire to address a growing need across many sectors of industry. In particular, this new service meets increasing demand for prompt solutions to immediate situations.

The drive cabinet hire service is ideal for companies that need to add capacity very quickly to meet seasonal increases in customer demand or to cope with unexpected events. The service also helps in breakdown scenarios, where critical plant must be brought back online as soon as possible.

Then there is scheduled maintenance of a hardworking plant, where hiring in a variable speed drive unit will enable production to be maintained while control panels are out of service. They can also be used for evaluation purposes, perhaps to assess the energy savings or productivity improvements achieved by introducing variable speed capabilities to a system.

Further, there are many possibilities with conveying and materials handling, air-conditioning, ventilation and air handling, and non-emergency aspects of the water industry.

Softstart has built cabinets ranging from 22kW to 220kW, covering the vast majority of potential applications. Requirements for larger units can also be accommodated. All the cabinets are built to IP56 environmental standard, with techniques in place to upgrade this if required. They are configured to be ready to run – users just wheel them to the location, plug them in and switch them on.



# TRAINING

Softstart UK offers comprehensive training options to meet customer requirements. From on-site assistance to formal classroom training at our own facilities, the quality and standard of the courses and associated learning materials is first class.

Training covers: installation and programming of variable speed drives; programming and commissioning of PLCs; installation and use of soft starters; the programming and use of HMI products including panel PCs. Softstart UK also offers a dedicated training course that explores the fundamentals of variable speed drive technology.



## ON-SITE TRAINING

Softstart UK supports its customers on-site at times convenient to the user. Assistance during commissioning is extended to operator training and even assistance for design or controls engineers needing to understand how best to employ products in their machine or system designs.

On-site training is always practical and is formulated to get customers up and running fast and effectively – leaving staff with all the knowledge they need to program and run their products. The training is usually performed using the actual drives, PLCs, machines and programs the trainees will encounter in their daily routines, and as such is always relevant and useful.

## OFF-SITE TRAINING

Off-site training is usually carried out at Softstart UK's own facilities, but can be at the customer's site if training rooms are available. The courses are more wide-reaching than traditional on-site training and may include a certain amount of theoretical training as well as the practical aspects of the technology.

Most courses are semi-bespoke, so that exactly the training required by the customer or individual is catered for. Courses are supported by professional notes that have been designed to be easy to read, simple to understand and act both as a reinforcement for the course attended and as a quick reference source for the future.

Training is carried out by experienced and practising engineers from Softstart UK's technical support team, so trainees are assured of up-to-date information from a true 'hands-on' perspective.





Softstart UK is committed to offering the highest levels of service and technical support. We provide technical support by telephone and on-site, where necessary. We go to extraordinary lengths in support of the customer including late night and weekend site visits when downtime is critical. We know that in many control applications, downtime simply is not an option.

Technical support is complemented by a full repair service, delivering repaired products back to the customer at a significantly reduced cost compared with replacement.

## TECHNICAL SUPPORT

Users can call Softstart UK and get a fast response to their queries. Whether it is relatively simple procedural guidance that is needed, or a complicated programming or application headache, customers can be assured that they will get an answer quickly.

Where new applications are encountered, Softstart UK emulates the technical requirements of the application in our test laboratory to ensure correct product specification and configuration before shipment to the customer. If necessary, testing is also carried out at the customer's site before commissioning the actual products to be used.

## REPAIRS AND MAINTENANCE

Softstart UK also provides a full maintenance and repair service which delivers products back to the customer as good as new and with a full warranty covering the work completed.

Knowing that control products are usually needed in a hurry, our turnaround times on service and repairs are as short as possible. In some instances, replacement products can be loaned to customers to overcome short-term problems.





**SOFTSTART**UK

**Softstart UK Ltd**  
Unit 14 Brinell Way  
Great Yarmouth  
Norfolk NR31 0LU  
Tel: 01493 660510  
Fax: 01483 660511  
Email: [sales@softstartuk.com](mailto:sales@softstartuk.com)  
[www.softstartuk.com](http://www.softstartuk.com)