

THE SPECIALIST IN POWER CONVERSION AND DISPLAYS



STANDARD IS JUST THE BEGINNING

WHO WE ARE

STANDARD IS JUST THE BEGINNING

RELEC Electronics Limited was established in 1978 with the aim of providing specialist power conversion and display products to support professionals in the electronics industry.

If you want a 'standard' solution, we can of course provide one. RELEC has an expert understanding of applications and resulting specifications, combined with the ability to source the most appropriate products.

But standard is just the beginning.
A RELEC solution doesn't only give you what you want, it gives you what you need.

Our aerospace background means we will consistently and meticulously deliver the best-performing and most robust power and display solutions available. This sometimes means going the extra mile to customize a product or a feature to achieve optimum performance and service delivery.

We have continued with this philosophy and operate in specific fields, specialising in AC DC power supplies, DC DC Converters, displays and EMC filters.

We were also one of the first companies in our industry to be granted ISO9002 in 1991. This was achieved in-house by existing personnel without the use of consultants.



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HOW WE WORK

1

REQUEST

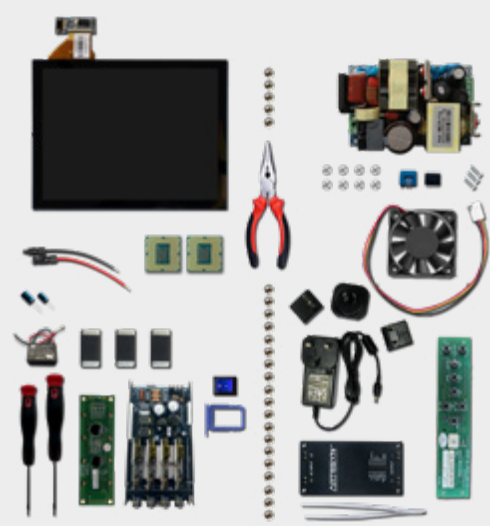


Tell us what you are looking for by phone, email or webform. RELEC's sales and technical support personnel are all qualified engineers and are committed to fully understanding your application before talking through a possible solution.

THAT'S JUST
THE BEGINNING...

2

REFINE



Because a standard solution is just the beginning, where appropriate, we will refine our initial recommendations to include bespoke features and benefits.

3

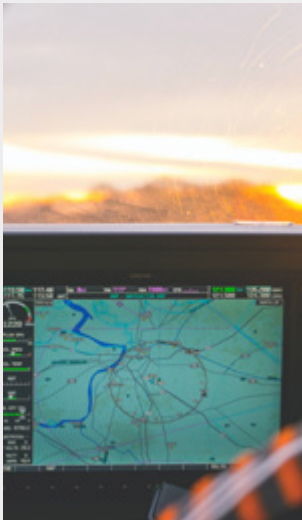
RESULT



Power and displays for monitoring systems



All weather touch screens



Touch sensitivity with gloves

RELEC's goal is to make a measurable difference to every project by achieving optimum performance and service delivery for your power conversion or display applications.

**ANY
REQUESTS?**

01929 555 800

Discover more
www.RELEC.co.uk/how-we-work/



REQUEST

**“WE WANT A DC DC
CONVERTER TO
PROTECT OUR HULL
FROM CORROSION”**

POWER CONVERSION

An AC DC power supply is a key component in the design of nearly all mains powered electrical and electronic equipment.

We can source and supply the widest range of AC DC PSUs from a 5W plugtop, desktop or PCB mounting device, through to very large battery backed standby systems that can be 19" rack mounted.

RELEC can provide you with a variety of chassis mounting power supplies, including single, dual and quad output industry standard modules, with configurable power supplies, starting at 300W and going up to 24kW in output power.

We can also supply in-depth technical advice on a range of specialist AC DC power supplies for medical, industrial, IT, household, railway and DIN rail mounting applications.

If we cannot fulfil your demands from our standard range of AC DC power supplies, we work closely with our suppliers to develop full custom and variant solutions.

Our DC DC converters cover power ranges from 1 to 1000W, input ranges from 3 to 1200Vdc and output voltages from 0.8Vdc upwards. If you cannot find the perfect DC DC converter, we would again be happy to discuss custom specifications.

We offer a wide range of fully regulated converters with fixed input and wide inputs (2:1 range through to 10:1 input range) as well as industry standard brick formats.

REFINE

**"YOU NEED A
CONVERTER WITH
0 - 100% CONTROL OF
THE OUTPUT VOLTAGE"**

NEIL PAIN
RELEC power conversion specialist



Neil specialises in bespoke power conversions, dedicated to creating solutions that go the extra mile.

Standard is just the beginning.

TALK TO NEIL
01929 555 800

E: NEIL.PAIN@RELEC.CO.UK

AC DC CONVERTERS



SCAN ME

DIN RAIL MOUNT

DIN rail mounted power supplies offer a simple, uncomplicated method of integrating power conversion to both equipment and installations.

Typical applications include process control panels, machinery, building automation, outdoor telemetry, ticketing machines and network security equipment.

Let's begin as we mean to go on!

We carry extensive stocks for next day delivery, but we are more than happy to customise and schedule to your requirements. Let us have as much application information as possible and we will take care of the rest based on price, reliability and availability.



RANGE		FEATURES	OPTIONS
Inputs	AC single phase / three phase DC 90 – 375V / 480 – 820V	Low profile (building automation) High density (process control) Pulse load capability UL / cUL / TUV / CE approvals Wide temperature range Parallel operation	Conformal coating Field bus solutions Custom labelling Screw terminals / Cage clamp solutions EN/UL 62368 and 61010 approvals
Outputs	5V to 56V		
Power rating	5 to 960W		
Temperature	-40 to +60 degrees (typical)		





**WE CARRY EXTENSIVE
STOCKS FOR NEXT
DAY DELIVERY
AND ARE MORE THAN HAPPY
TO CUSTOMISE AND SCHEDULE
TO YOUR REQUIREMENTS.**

Discover the full range at
<https://www.RELEC.co.uk/power-type/ac-dc-power-supplies/>

We can take you through the pros and cons for forced air,
conduction or convection cooling your product.



**LET'S CREATE YOUR IDEAL
DIN RAIL POWER SOLUTION
01929 555 800**

AC DC CONVERTERS



DIN RAIL SUPPLEMENTARY MODULES

Whilst the power supply is the heart of any process control system, RELEC can help add extra functionality to your design.

Typical applications include remote telemetry, emergency lighting and access control systems.

Our range includes maintenance free capacitive buffer modules, fully protected DC UPS chargers and controllers, redundancy modules for N+1 systems as well as options for field bus monitoring.

There's no such thing as standard!

Our extensive stock means that we can react to your demands quickly. We are always happy to schedule your orders, so you can call off your stock as and when you need it.



RANGE	FEATURES	OPTIONAL FEATURES
<ul style="list-style-type: none">Redundancy modulesBattery chargers / temperature sensorsDC UPS controllersBuffer modulesSurge / transient protectionField programmable modules	<ul style="list-style-type: none">Low profile (building automation)High density (process control)Pulse load capabilityUL / cUL / TUV / CE approvalsWide temperature rangeParallel operation	<ul style="list-style-type: none">Battery packsConformal coatingField bus solutionsCustom labelling





SCAN ME

CHASSIS MOUNT CASED / CONVECTION COOLED

High efficiency, low cost cased converters ideal for process control and other industrial applications. We have a range of units which can operate down to -40 degrees and altitudes in excess of 5000m.

Typical applications include information terminals, vending / gaming machines, office equipment and control panels.

The latest generation products are designed to meet the latest ErP standards for high average efficiency and low standby power.

As well as standard industrial options we can also supply medical grade products, including solutions for 2 x MOPP applications.

Tell us what you need your power supply to do and we will find a solution for you. Samples are generally available for next day delivery.



RANGE		FEATURES	OPTIONAL FEATURES
Inputs	AC single phase 85 – 264Vac (Typ) DC 120 – 380Vdc (Typ)	Up to 5 year warranty High average efficiency Low standby power UL / cUL / TUV / CE approvals Wide temperature range Active PFC (>100W)	Conformal coating Output voltage adjustment Medical – EN60601 Remote on / off
Outputs	5V to 48V		
Power rating	5 to 750W		
Temperature	-40 to +71 degrees		



AC DC CONVERTERS



CHASSIS MOUNT OPEN FRAME

Ultra-miniature, high efficiency AC DC converters for systems which already have a circulating airflow. We have a range of products starting at 10W. Highlights are 120W in a 3" x 2" package, right the way through to 750W in a 5" x 3" footprint.

These products are ideal for telecom, datacom, instrumentation and other industrial applications requiring high power density.

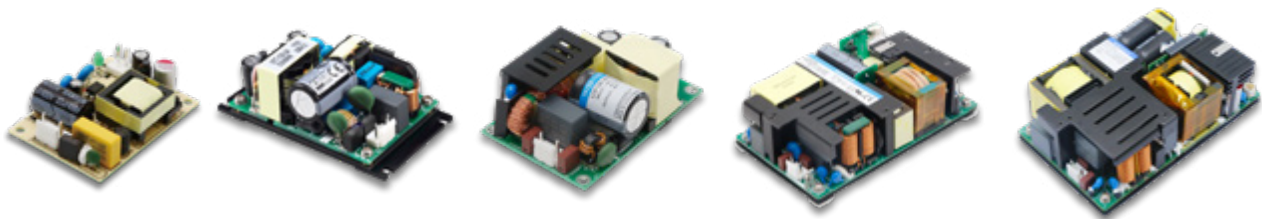
We also offer an extensive range of medical versions (EN60601) including 2 x MOPP isolation.

Designed in. Shipped out!

Our technical sales team will talk you through all stages of designing these products into your equipment. Call us today and we'll be happy to advise.



RANGE		FEATURES	OPTIONAL FEATURES
Inputs	AC single phase 85 – 305Vac (max)	High efficiency	Output voltage adjustment
Outputs	3V to 55V	Active PFC	Medical – EN60601 (2 x MOPP)
Power rating	10 to 750W	UL / cUL / TUV / CE approvals	Remote on / off
Temperature	-40 to +70 degrees	Industry standard footprints	Class II options
		Low height profile (<0.75")	Screw terminals / Molex connection
		Low standby power	





SCAN ME

CHASSIS MOUNT RUGGED

Ultra-reliable and robust power supplies from an industry leader for applications which are mission critical. Modules can be either chassis or 19" rack mounted with a full range of accessories available from stock.

We have active projects in the military (naval, land-based vehicles and avionic) sectors, railway signalling, radar and high integrity communication systems.

These power supplies are extremely well protected against surges and transients and also come conformally coated as standard. They are suitable for applications which are susceptible to high shock and vibration, local lightning strikes and high levels of moisture and other contaminants.

Whatever you're looking for, you've just found it!

If you're struggling to find a product to meet all of your requirements, please call us. We may just have the perfect product.



RANGE		FEATURES	OPTION / ACCESSORIES
Inputs	AC single phase 85 – 264Vac (Typ) DC 88 – 372Vdc (Typ)	High galvanic isolation Isolated outputs UL / cUL / TUV / CE approvals Excellent transient immunity Fully short circuit protected	Convection or conduction cooled options Output / input voltage monitoring Inrush current limitation Mating connectors Front panels Base plates Anti vibration clips DIN rail mounting
Outputs	5V to 56V		
Power rating	50 to 300W		
Temperature	-40 to +70 degrees		





CHASSIS MOUNT

FAN COOLED

Whether you need simple bulk power or the ability to remotely control the output voltage or current we have an ideal product for you. Either through analogue control or via an I²C, PMBus, CAN bus or RS232 interface we can find a solution which meets your requirements.

Typical applications include automotive test, battery chargers, cathodic protection and medical perfusion equipment.

Tough products. Easy choices.

All of our products are extremely rugged in terms of temperature, EMC performance and vibration and come with a 5 year warranty as standard.



RANGE		FEATURES	OPTIONS
Inputs	AC single phase 90 – 264Vac (Typ) DC 127 – 370Vdc (Typ)	Programmable voltage Programmable current I ² C, PMBus, CAN Bus or RS232 CC current limit Selectable standby voltages 1U footprints Remote on / off	EN60601 medical versions Convection cooled options Extended warranty Redundancy ORing PMBus Conformal coating
Outputs	12V to 60V		
Power rating	800 to 3000W		
Temperature	-40 to +60 degrees		





SCAN ME

CHASSIS MOUNT

IP6X RATED

A series of fully enclosed, conduction cooled AC DC Converters which are sealed to IP68 ingress ratings. These units are extremely reliable and can be used in both indoor and outdoor applications.

These rugged units are suitable for outdoor lighting, road signs, food production, medical instruments, and communication systems, both commercial and defence.

Intended for ease of connection and installation, units are ruggedized to allow operation over a wide -40°C to +85°C baseplate operating temperature range.

Your seal of approval

The ultimate fit and forget solutions. Whatever your application we can find the perfect solution. Call Relec today for the ultimate in power advice.



RANGE		FEATURES	OPTIONS
Inputs	AC single phase 85 – 264Vac (Typ) DC 88 – 372Vdc (Typ)	Sealed up to IP68 Compact designs – No fans	Remote on / off Active current sharing
Outputs	5V to 56V	Low standby power	Medical approvals
Power rating	up to 1200W	Very high reliability	Digital control via I ² C or PMBus
Temperature	-40 to +85 degrees	Active PFC standard 5 year warranty	Fully sealed control signal cable





RACK MOUNT FRONT ENDS

A wide range of front ends and rack mounted solutions suitable for high power density industrial, datacom or telecom applications.

Our front ends are used anywhere where bulk DC power is required. Primarily designed for the datacom market, we also have applications in the military and super computer sectors.

Systems can be configured for 12V / 24V or 48V outputs and we can even offer solutions with mixed DC Voltages (24V / 48V).

Our modules cover the range 400W to 3000W. They can either be integrated into your equipment or simply slid into our own bespoke subracks.



Tailored to your needs!

Systems are fully scalable and hot swappable and can be tailored to your needs quickly and easily – just call for more information.

RANGE		FEATURES	OPTIONS
Inputs	AC single phase / three phase DC 180 – 350V (Typ)	Very high efficiency (Platinum level) 12V, 24V or 48V outputs Hot pluggable I ² C communication Active current sharing Active PFC	PMBus control Mixed output voltage racks Scalable systems Ethernet / SNMPv3 comms DC distribution DC power shelves
Outputs	12V to 56V		
Power rating	400 to 12kW		
Temperature	-20 to +60 degrees		





**WE PRIDE OURSELVES
ON FINDING THE
BEST SOLUTION FOR
YOUR APPLICATION
WHATEVER YOUR
DRIVING MOTIVATION.**

**BE IT PRICE, DELIVERY OR
SPECIFICATION, WE CAN HELP.**

Discover the full range at
<https://www.RELEC.co.uk/power-type/ac-dc-power-supplies/>

We can take you through the pros and cons for forced air,
conduction or convection cooling your product.



**LET'S CREATE YOUR IDEAL
AC DC POWER SOLUTION
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AC DC CONVERTERS



BATTERY CHARGERS
RACK MOUNT

High efficiency battery chargers and power distribution systems for both telecom (48V) and industrial (24V) applications. Our racks can be integrated into both 19" and 23" cabinets as standard.

Applications include street side cabinets, exchanges, data centres, radar systems or other critical systems which cannot be affected by power outages.

All of our solutions are modular and based around standard subracks, high efficiency rectifiers and cross platform controllers. Configuration of your system is easy. We just need to understand your requirements based on your connected loads and battery size. We can do the rest. Our solutions start at 400W and can grow up to 30kW through the addition of extra subracks.



Go figure!

We have over 20 years' experience configuring these products. Give us a call and let's see what we can do for you.

RANGE		FEATURES	OPTIONS
Inputs	AC single phase 85 – 264Vac (Typ) AC three phase (with neutral)	>95% efficiency Field replaceable controller LED status / alarms Modular DC distribution 19" / 23" all in one package 3 year warranty	Modular DC breaker panels
Outputs	24V or 48V nominal		Choice of battery breakers
Power rating	400W to 30kW		GMT fuse option
Temperature	-20 to +60 degrees		Partial load disconnect Ethernet / SNMPv3 comms Interface with DC AC inverters





SCAN ME

BATTERY CHARGERS INDUSTRIAL

A range of industrial grade battery chargers and DC UPS controllers which can be used as stand alone chargers or as part of a standby battery backed solution.

Typical applications include automotive, radio communications and telemetry systems.

Our products feature 3 or 4 stage charging characteristics (float / boost modes) depending on the battery type and technology you choose. All units have reverse polarity protection as standard and those designed for standby applications are also provided with deep discharge protection.

You talk. We listen!

We would love to discuss your application and find the ideal solution for you. Just pick up the phone and speak to one of our experienced technical sales team. It begins by being good listeners.



RANGE		FEATURES	OPTIONS
Inputs	AC single phase 85 – 264Vac (Typ)	Li-ion, lead-acid batteries	RS232 control
Outputs	12V, 24V or 48V batteries	Automatic boost / float modes	Variable fan speeds
Power rating	100 to 1000W	LVD and polarity protection	Temperature compensation
Temperature	-25 to +70 degrees	Rugged construction	Terminal block / connector / faston
		Automatic changeover	Base plate / DIN rail options
		Alarm contacts	





EXTERNAL POWER SUPPLIES

High quality external power supplies covering power levels from 5W to 300W (All convection cooled) with outputs up to 56V. Modules can be easily customized with your choice of IEC inlet, cable length and DC termination.

Our external power supplies are suitable for a wide variety of applications including chargers, set top boxes, motor control and other office automation products.

We have plugtop style products starting at 5W and desktop modules going up to 300W with outputs available from 3V3 up to 56V.

It's all about you!

Our warehouse carries extensive stock to help you with prototyping, but we really want you to tell us more about your application. Call us with your power requirements as well as cable length and termination type and we'll provide a competitive quote and fast turn around on samples.



RANGE		FEATURES	OPTIONS
Inputs	AC single phase 100 – 240Vac (Typ)	CEC Level VI compliant	Active PFC
Outputs	3V3 to 56V	RoHS / REACH compliant	C6, C8, C14 and C18 input options
Power rating	5 to 300W	UL / cUL, TUV, CB, CE,	Choice of barrels
Temperature	-10 to +40 degrees	FCC, CCC certified	Locking connectors





SCAN ME

CONFIGURABLE

Are you looking for a power supply with multiple rails or maybe a unit with an odd output voltage? Our configurable power supplies provide solutions in a single, low profile chassis mounting enclosure. Products are available which meet both industrial and medical standards.

Typical applications are widespread include ticketing machines, medical, military, broadcast and industrial. In fact anywhere that needs unusual voltages or multiple outputs can be built quickly and easily.

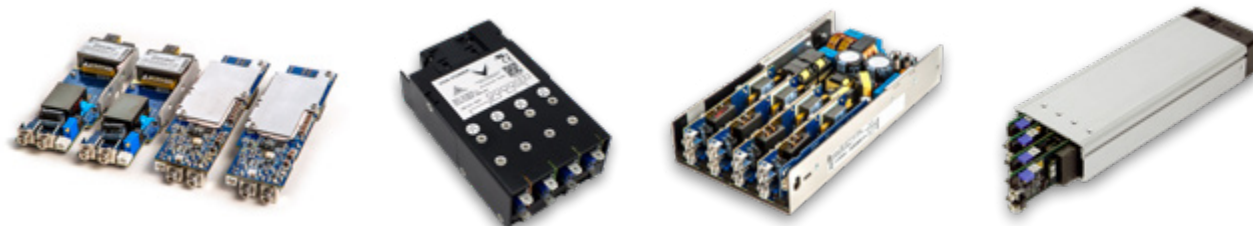
We can supply units which are either fan or convection cooled (fanless = silent) with chassis options available between 200W and 1400W.



Fast enough for you?

We will configure solutions for next day delivery with up to 12 outputs. Just give us a call. We're sure you won't be disappointed with our reactions.

RANGE		FEATURES	OPTIONS
Inputs	AC single phase 85 – 264Vac (Typ) AC three phase (with neutral)	EN/UL62368 and 60601 approvals User and field configurable Very high efficiency Series and parallel connection 5V isolated standby voltage <1U height profile Low acoustic noise Fully floating outputs <1U or 19" rack mounting options	Convection or fan cooled Conformal coating Reverse air flow Additional ruggedisation
Outputs	1 to 300V per output		
Power rating	400W to 24kW		
Temperature	-40 to +60 degrees		



AC DC CONVERTERS



PCB MOUNT

Component level AC DC converters for integration into a broad range of equipment and applications. All of the products are approved to the latest safety and EMC standards, but we are on hand to support you at every step through the design process.

Typical applications include home automation, motor control, ventilation, pumps, signalling etc. In fact, any applications where the PSU has to be integrated onto the main PCB.

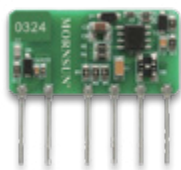
Products start with low profile single in line solutions from 1W to 5W and dual in line modules from 3W through to 700W.

PCB? PSU? AOK....

Samples are generally available from stock. Simply give us a call and we could have a converter on your desk the next day.



RANGE		FEATURES	OPTIONS
Inputs	AC single phase 85 – 264Vac (Typ) DC 120 – 380 (Typ)	Low cost UL / cUL / TUV / CE approvals	Custom outputs Chassis / DIN rail mount
Outputs	5V to 48V / $\pm 5V$ to $\pm 24V$	EN55022 Class B	Heatsinks
Power rating	1 to 700W	Industry standard footprints	Active PFC
Temperature	-40 to +70 degrees	Low standby power	





SCAN ME

PFC FRONT ENDS

Very high power density power bricks providing a near unity power factor, high voltage DC output. Products are low profile, high efficiency (Typ >96%) and are designed to be used in conjunction with complementary high input voltage DC DC converters, to produce high density, conduction cooled systems.

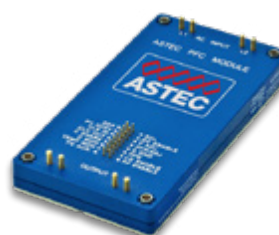
Typical applications include digital signage, transmission systems, unmanned aerial vehicles, as well as rugged communication and networking systems.

Let us do the up front work.

Our experienced team will talk you through the choices of front end and downstream modules, as well as providing best advice on EMC filtering.



RANGE		FEATURES	OPTIONS
Inputs	AC single phase 85 – 264Vac (Typ)	EN/UL62368-1 approvals	PMBus control
Outputs	330 to 400Vdc	Power factor >0.99 (Typ)	Heatsinks
Power rating	750 to 4000W	Very high efficiency	Customised output voltages
Temperature	-40 to +70 degrees	Low profile, conduction cooled	
		Industry standard brick formats	
		Over-temperature protection	



AC DC CONVERTERS



PROGRAMMABLE
LABORATORY POWER SUPPLIES

Programmable DC power supplies with a single output that offers output power to 600 watts and 1500 watts. With 12-bit D/A & A/D converters embedded, the power supplies come with the capability of reporting voltage and current very accurately.

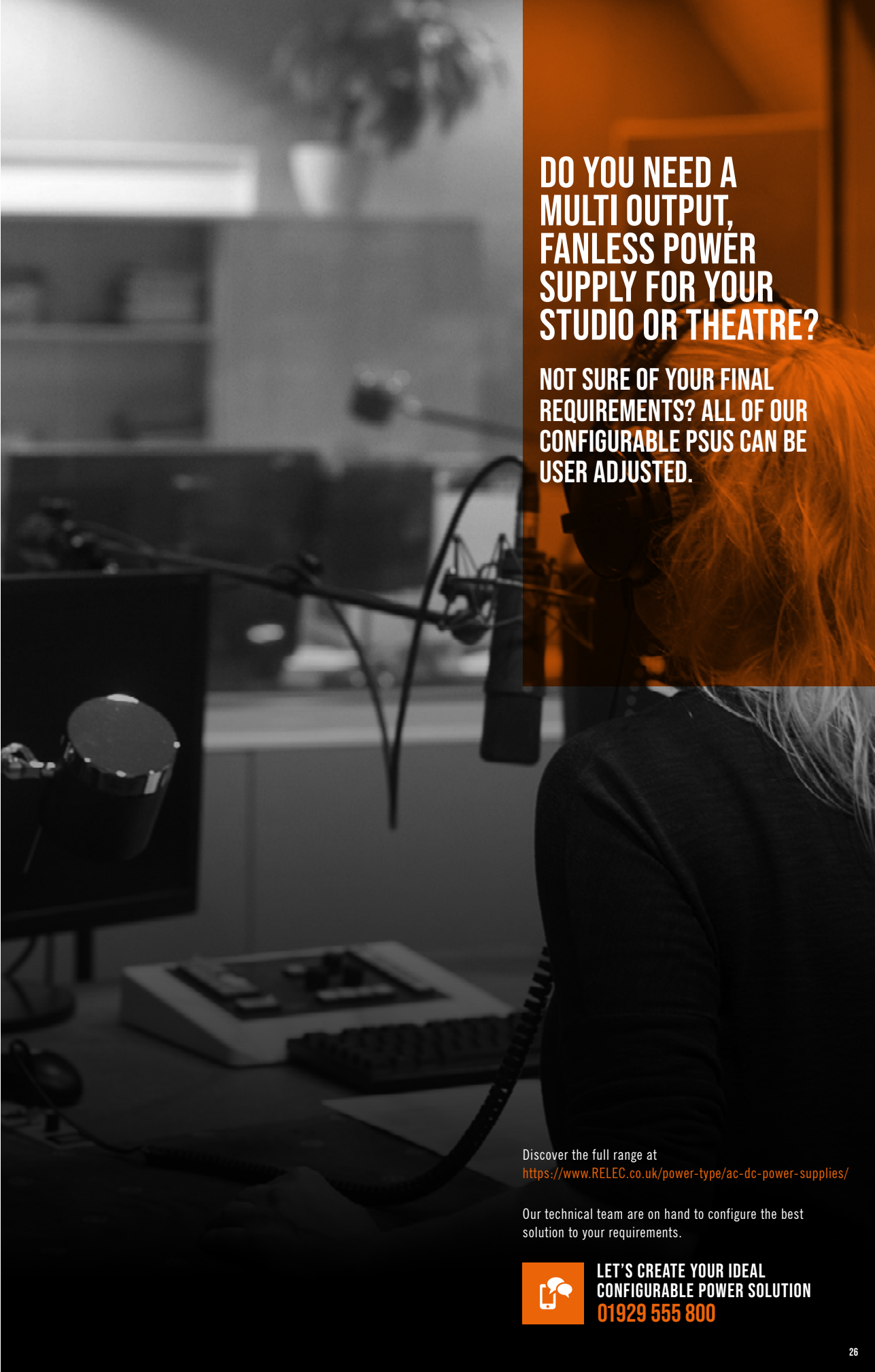
Typical applications include laboratory and workshop solutions, automatic test equipment (ATE) and research stations. Units come with options for both desktop and 19" rack mounting.



Too good to be on the bench, add us to your starting line up.
We've been doing this for a long time. When you need to get a good result, we are the people to call on.

RANGE		FEATURES	OPTIONS
Inputs	AC single phase 85 – 264Vac (Typ)	LXI Certified	19" or desktop options
Outputs	0 to 400Vdc / 0 – 70Adc	High density 1U package	Scripting support available
Power rating	600 to 1500W	Wireless digital remote control	5 output ranges available
Temperature	-0 to +40 degrees	Built in current and voltage measurement	
		Full OVP and OCP	
		Series and parallel operation allowed.	





DO YOU NEED A MULTI OUTPUT, FANLESS POWER SUPPLY FOR YOUR STUDIO OR THEATRE?

**NOT SURE OF YOUR FINAL
REQUIREMENTS? ALL OF OUR
CONFIGURABLE PSUS CAN BE
USER ADJUSTED.**

Discover the full range at
<https://www.RELEC.co.uk/power-type/ac-dc-power-supplies/>

Our technical team are on hand to configure the best
solution to your requirements.



**LET'S CREATE YOUR IDEAL
CONFIGURABLE POWER SOLUTION
01929 555 800**



FIXED INPUT
UNREGULATED

An extensive range of high quality, low cost, low power DC DC converters available with very short production lead-times. Our modules are designed to operate from a fixed input DC source with either single or bipolar outputs. Outputs are regulated to + / - 10% over a 10 - 100% load range.

Typical applications include RS232 / RS485 interfaces and OP amp supplies. Anywhere a simple isolation barrier is required. Standard products start with 1500V isolation, with options for 3000V and 6000V as off the shelf solutions.

We're only just scratching the surface!
Surface mount or through hole? Single or Dual in line? We can supply solutions in whatever package you need.



RANGE		FEATURES	OPTIONS
Inputs	DC 3V3, 5V, 12V, 15V, 24V + / - 10%	No external components	1.5kV, 3kV or 6kV isolation
Outputs	3V3 to 24V / $\pm 5V$ to $\pm 24V$	High efficiency	Reinforced isolation
Power rating	0.2 to 3W	Standard pin outs	Single or dual outputs
Temperature	-40 to +105 degrees	Short circuit protection	Wide choice of inputs
		Low cost	Through hole or surface mount
		Short delivery time	





SCAN ME

FIXED INPUT REGULATED

Similar to the unregulated products on the previous page, but there are occasions where tighter regulation is required for more sensitive loads.

Typical applications include remote monitoring, RS232 / RS485, communications and biometrics.

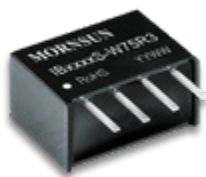
We can offer a range of 1W and 2W products with 3% load regulation with options for single in line through hole, or low profile surface mount.

We think we're the perfect match!

If you're at all unsure about what you think you might need, please call us and we'll help you specify the right product to match your application.



RANGE		FEATURES	OPTIONS
Inputs	DC 5V, 12V, 15V, 24V + / - 10%	No external components	1.5kV, 3kV isolation
Outputs	3V3 to 48V / $\pm 5V$ to $\pm 24V$	High efficiency	Single or dual outputs
Power rating	1 to 2W	Standard pin outs	Wide choice of inputs
Temperature	-40 to +85 degrees	Short circuit protection	Choice of footprint
		Low cost	
		Short delivery time	



DC DC CONVERTERS



WIDE INPUT 2:1 LOW POWER

Industry standard footprint DC DC converters with wide 2:1 inputs and tightly regulated outputs. We have a choice of 3 input ranges all based around standard battery voltages of 12V (9 – 18V), 24V (18 – 36V) and 48V (36 – 75V).

Typical applications include instrumentation, breaker control, fire detection and numerous industrial control systems.

Products come in a wide variety of industry standard footprints including SIP8, SMD24, DIP24 1" x 1", 2" x 1" packages with options to chassis or DIN rail mount many of the modules.

All of our families are available with a choice of output voltages and currents with isolation options up to 3kV on standard products.



Fast and furious

Simply pick up the phone. It's the quickest way to find the best fit and to talk to one of our highly experienced engineers.

RANGE		FEATURES	OPTIONS
Inputs	DC 4.5 – 9V, 9 – 18V, 18 – 36V, 36 – 75V	No external components	Heatsinks
Outputs	3V3 to 24V / $\pm 5V$ to $\pm 24V$	High efficiency	1.5kV, 3kV isolation
Power rating	1 to 50W	Standard pin outs	Single or dual outputs
Temperature	-40 to +105 degrees	Class A EMC without filters	Wide choice of inputs
		Short circuit protection	Choice of footprint
		Low no load power	Chassis / DIN rail options
		Short delivery time	Remote on / off





SCAN ME

WIDE INPUT

4:1 LOW POWER

A complementary range of products but with wider inputs often covering 2 battery ranges. Our three ranges cover 12 & 24V (9 – 36V), 24 & 48V (18 – 75V) as well as 72 & 110V (40 – 160V).

Typical applications include emergency lighting, railway information systems, instrumentation, audio and access control systems.

Footprints including SMD16, DIP24 1" x 1", 2" x 1" with options to chassis or DIN rail mount many of the modules.

In addition to the above choices we can also support a wide range of output voltages and currents and isolation requirements up to 3kV with standard products.

Let's hear it...

We want to hear everything there is about your requirements. That's when we can be sure to find a solution to fit both your commercial and technical need.



RANGE	FEATURES	OPTIONS
Inputs Outputs Power rating Temperature	No external components High efficiency Standard pin outs Class A EMC without filters Short circuit protection Low no load power Short delivery time	Heatsinks 1.5kV, 3kV isolation Single or dual outputs Wide choice of inputs Choice of footprint Chassis / DIN rail options Remote on / off



DC DC CONVERTERS



WIDE INPUT BRICKS (OPEN FRAME)

High efficiency, high power density bricks with ultra-low profiles in industry standard 1/16, 1/8, 1/4 and 1/2 brick formats. All feature wide input voltage ranges, high input-transient withstand capabilities and start-up into pre-biased loads. Models are compliant with the DOSA standards.

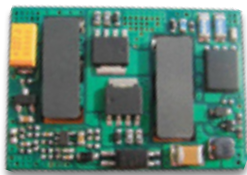
Typical applications include super computers, avionic systems, datacom and communication systems.

Background checks

With a little background we will help you design in the optimum product for your application. We have solutions with tightly regulated as well as intermediate bus converters. If you are looking to generate a localised lower voltage DC bus for downstream point of load devices, look no further.



RANGE		FEATURES	OPTIONS
Inputs	DC range 9 to 154V	4:1 input voltage ranges	Through hole or surface mount
Outputs	1V to 54V	No minimum load	Heatsink options available
Power rating	Up to 1000W	Up to 1000g shock	+ve and -ve control options
Temperature	-40 to +85 degrees	Remote sense	EMC filters
		Very high power density	Avionic versions
		Wide trim ranges	





**WE CAN SUPPORT
A WIDE RANGE OF
OUTPUT VOLTAGES
AND CURRENTS
AND ISOLATION
REQUIREMENTS
UP TO 6kV WITH
STANDARD PRODUCTS.**

Discover the full range at
<https://www.RELEC.co.uk/power-type/dc-dc-converters/>

Tell us what you want and we can use our
experience to provide what you need.



**LET'S CREATE YOUR
IDEAL DC DC SOLUTION
01929 555 800**



WIDE INPUT

BRICKS (CONDUCTION COOLED) 50 - 1000 WATTS

Industry standard DC DC converters in conduction cooled, 1/4, 1/2 and full brick formats. Products are designed to be PCB mounted with cooling provided either from an extensive range of standard heatsinks, or cold wall mounted for optimal thermal performance.

Typical applications include passenger information, rugged communication or solar powered control systems to name a few.

Products are available with a choice of 2:1, 4:1, 8:1 and even 10:1 inputs as well as high isolation levels and excellent efficiency.

Expert-to-expert (that's you!)

Our expert sales team are standing by waiting to hear from you. We want to know all about your application and what you want to achieve. We will walk you through the design process with all of the tools you'll ever need.



RANGE		FEATURES	OPTIONS
Inputs	DC 9 – 18V, 18 – 36V, 36 – 75V 9 – 36V, 18 – 75V, 40 – 160V & 18 – 160V	Very high efficiency Excellent thermal performance Short circuit protection Five side metal case EN / UL62368-1 approved Trimable output voltage Remote on / off	Heatsinks / thermal pads Single or dual outputs Customised output voltages Chassis / DIN rail kits
Outputs	3V3 to 48V		
Power rating	50 to 1000W		
Temperature	-40 to +105 degrees		





SCAN ME

WIDE INPUT

10:1

Optimized for harsh environments in industrial/ railway applications, dc dc converters with a 10:1 input range offer a one stop solution to cover all inputs from 24V to 110Vdc.

Primarily designed for the railway sector, but can also be used in industrial application requiring very wide dc input voltage.

High, very wide and handsome. One size definitely fits all in this case.

These units might not suit every application, but when you don't want to worry about what input voltage is fed into the unit, then this is the part for you.



RANGE		FEATURES	OPTIONS
Inputs	DC 16 – 160Vdc (Single range)	Single input for 24V, 36V, 48V, 72V and 110Vdc systems	Heatsinks / thermal pads
Outputs	5V to 48Vdc	EN50155 / EN62368-1 Compliant	Single or dual outputs
Power rating	10 to 250W	Fire and smoke EN45545-2 compliant	Customised output voltages
Temperature	-40 to +105 degrees	Remote on / off	Chassis / Din rail kits available
		Short circuit protection	
		Trimable output voltage	



DC DC CONVERTERS



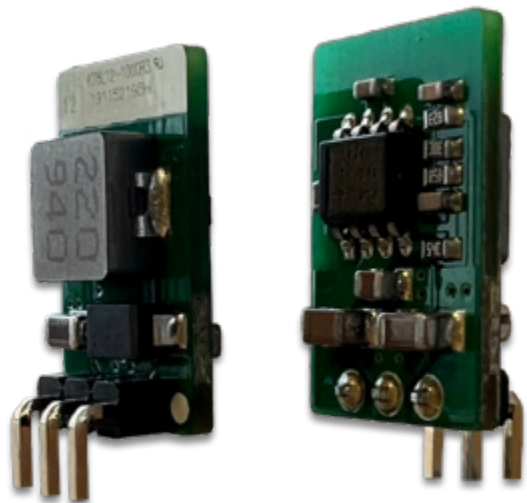
NON ISOLATED POINT OF LOADS

Point of load (POL) converters are the ideal solution for providing tightly regulated voltages for individual ICs, circuits or sub-assemblies. We have a range of products optimised for intermediate bus architectures or for wide inputs up to 72V.

Typical applications include alarm systems, remote monitoring, instrumentation, robotics and control systems.

Let us stick to the point

Our extensive range of POLS is available in a choice of industry standard footprints and options. Our experts are waiting to find the best solution for you. And there are lots of them.



RANGE		FEATURES	OPTIONS
Inputs	DC 5V, 12V, 9 – 36V, 18 – 72V	Industry standard footprints	Through hole or surface mount
Outputs	0.5V to 24V	Convection cooled	Heatsink options available
Power rating	500mA to 100A	Remote sense	+ve and –ve control options
Temperature	-40 to +105 degrees	Wide trim ranges	EMC Filters
		Thermal protection	Avionic versions
		Short circuit protection	





SCAN ME

CHASSIS MOUNT AND EUROCASSETTE

A range of high reliability DC DC converters for railway / transportation and other demanding industrial applications running from DC system voltages.

Typical applications include trainborne wifi, lighting, windscreen wipers and HVAC control systems.

Power ranges from 20 to 1000W are available with inputs covering all standard battery voltages of 12, 24, 48, 72 and 110Vdc. Products are also available with a 10:1 range allowing operation on any system voltage between 24 – 110Vdc.

We have extensive experience in the railway industry with full understanding of railway norms EN50121 / EN50155 and RIA12. Call us today for a detailed proposal which will meet your requirements.

Keeping you on track...

Our extensive experience in the railway industry is backed up by a full understanding of railway norms EN50121 / EN50155 and RIA12 to keep you pointed in the right direction.



RANGE		FEATURES	OPTIONS
Inputs	DC range 9 to 154V	Extremely rugged designs	Convection or conduction cooled options
Outputs	5V to 96V	EN45545 fire and smoke compliant	Output / input voltage monitoring
Power rating	20 to 1000W	EN50155 / EN50121	Inrush current limitation
Temperature	-40 to +100 degrees	Wide output trim range	Mating connectors
		External inhibit	Front panels
		Low inrush currents	Base plates
			Anti vibration clips
			DIN rail mounting



DC DC CONVERTERS



AUTOMOTIVE AND BI-DIRECTIONAL

DC DC converters designed to be at the heart of electric vehicle drive chains. Increased electronics content in vehicles and the rise in adoption of electric powertrains in vehicles has led to an increased interest in rugged DC-DC converters to manage the different loads and maintain batteries.

Products for multiple segments of the Electric Vehicle market, including, mild hybrid vehicles, autonomous vehicles, recreational vehicles, electric industrial vehicles and agriculture vehicles.

Steering you in the right direction.

It might be new technology but we have all of the application data available at our finger tips. Our expert team are available right now to help drive you towards the optimum solution.



RANGE		FEATURES	OPTIONS
Inputs	DC 12 – 58Vdc (bi-directional) or 400Vdc AC 100 – 240Vac (charging systems)	Very high efficiency converters	Water cooling
Outputs	12 – 58Vdc (bi-directional) or 350 – 400Vdc	Conduction cooled	Fan cooling
Power rating	Up to 6.6kW	Thermal protection	12V /24Vdc battery systems
Temperature	-40 to +85 degrees	CANbus control	
		Reverse polarity protection	
		Excellent shock and vibration performance.	





SCAN ME

ULTRA WIDE, HIGH INPUT VOLTAGE

A range of wide input DC DC converters originally designed for the photovoltaic industry. They provide a regulated supply voltage used for linking multiple panels together in series, helping reduce copper losses in the interconnecting wiring.

These modules can also be used with rectified mains voltages to provide solutions for low power DC systems operating from both single phase and three phase supplies. As well as PV projects, typical applications include telemetry, process control and signaling systems.

Ready when you are!

Our technical team are on hand, ready to talk you through designing these modules into your system.



RANGE		FEATURES	OPTIONS
Inputs	DC to 3300Vdc	100 to 1000V or	PCB mounting
Outputs	5V to 24V / 150V – 3300Vdc	200 to 1500V inputs	Chassis or DIN rail options
Power rating	Up to 350W	4000Vac isolation	Optional EMC filters
Temperature	-40 to +70 degrees	UL / CSA / CE approvals	
		Output short circuit protection	
		Input under voltage protection	





RACK MOUNT INVERTERS

19" rack mounted DC to AC inverters with power outputs from 1kVA to 6.4kVA. They have a host of features making them extremely versatile in a number of applications. Typically used where a battery provides the primary source of supply and mains output is required or can be used as part of the DC backed UPS system.

Typical applications include telecom exchanges and server rooms, military grade UPS systems and track side signalling equipment.

We have a choice of inverters in 1U and 2U formats with options for static transfer switches and / or parallel / 3 phase operation. We also have the ability to offer hot swappable configurations rated at 6400VA, which can be parallel connected up to 51kVA.



It's all about communication

Speak to us and we'll have your inverter talking to the rest of your system. With RS232 / 485 or SNMP option you'll always know what your inverter is doing. We also have the ability to offer hot swappable configurations in a 2U rack rated at 6400VA, which can be parallel connected for systems up to 51kVA.

RANGE		FEATURES	OPTIONS
Inputs	DC 24V or 48V	Positive or negative ground systems	Hot swappable
Outputs	115Vac or 230Vac	True sine wave outputs	Static transfer switches
Power rating	Up to 6400VA	Parallelable configurations	3 phase configurations
Temperature	-25 to +55 degrees	RS485 / RS232 / SNMP control	Integration with rack mount battery chargers
		High efficiency	





SCAN ME

INDUSTRIAL INVERTERS

A series of industrial / transportation grade DC to AC inverters rated from 4500 to 6400 VA. Designed for the harshest environments, the units come conformally coated as standard and can be used both in mobile and static environments.

Typical applications include, HVAC control, 'at seat' power on trains and buses, network security systems.

When the going gets tough...

In addition to the usual 24V and 48V inputs we also supply inverters which run from 12V, 36V, 72V or 110V battery systems, with approvals available to international rail standards EN50155 and EN50121-3-2.

Need a prototype? We hold stock of many of the items highlighted below.

We will go through all the mounting options with you to ensure you get the right product for your application. Call us today.



RANGE		FEATURES	OPTIONS
Inputs	DC 12V, 24V, 36V, 48V, 72V, 110V	True sinewave output	Base plates
Outputs	115Vac, 230Vac or 400V 3ph	Adjustable output voltage	DIN rail mount
Power rating	250 to 6400VA	Output failure alarm	Connectors / cage clamp / faston
Temperature	-25 to +70 degrees	Remote inhibit	19" rack mount
		Railway versions (EN50155)	RIA12 compliant products
		Fire and smoke to EN45545	
		Input polarity protection	





EMC FILTERS

PCB, PANEL & CHASSIS MOUNT

With over 30 years experience supplying EMC filters we are pleased to be able to offer a wide range of modules with different form factors to suit your application.

Power entry modules

Available in C8, C14, C18 or C20 formats we have a products starting at 1A through to 16A with options for fuses, switches and circuit breakers integrated within them.

PCB mount modules, chokes & inductors

Rated from 0.6A to 16A and ideal to complement our AC DC converters

Chassis mount filters

Single phase (up to 36A), and three phase (up to 550A) filters with varying degrees of attenuation. Our portfolio includes 1 stage, 2 stage and 3 stage filters ensuring we can find you the optimum filter for your application and budget.



RANGE		FEATURES	OPTIONS
Inputs	115V / 230Vac / three phase (with or without neutral)	High attenuation	1, 2 or 3 stage filtering
Current rating	1A to 1100A	Large current range	PCB, chassis or panel mounting
Temperature	-50 to +85 degrees	Short lead-times	Screw terminal, faston or cabled terminations.
			RIA12 and Mil 1275 surge filters





**PROBLEMS WITH
NOISY NEIGHBOURS?
DO YOU HAVE EMC
IMMUNITY OR
EMISSION ISSUES?**

**WE CAN FIND THE OPTIMAL
SOLUTION FOR YOU FROM OUR
EXTENSIVE PORTFOLIO**

Discover the full range at
<https://www.relec.co.uk/power-type/emc-filters/>



**LET'S CREATE YOUR IDEAL
EMC FILTER SOLUTION
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REQUEST

**“WE WANT A
BRIGHTER
SCREEN FOR
DAYLIGHT HOURS”**



DISPLAYS

We believe a proud 40 year history in the displays' business constitutes a 'specialist'!

It means RELEC is able to listen, advise and recommend the best products sourced from a wide range of display technologies.

We have supplied literally millions of custom mono displays, standard mono displays and modules to many industries and types of customer.

We believe our range of TFT panels and touch panels, combined with our service, is unrivalled. Working closely with specialist

partners, we can easily provide the panel or monitor you need. We are very happy to develop custom solutions for whatever the application, be it light industrial or heavily ruggedised for the harshest of environments.

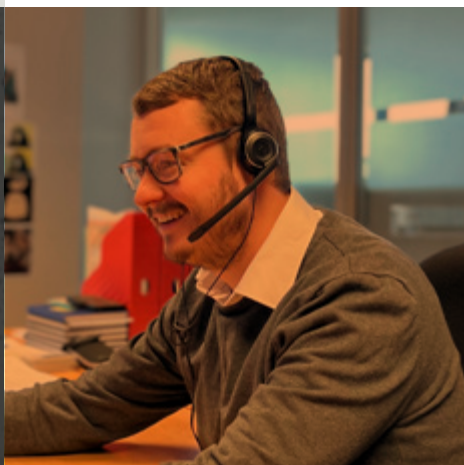
We have an on-line brochure that gives a comprehensive view of our capabilities, alternatively call us for a chat, or complete a contact form and we will call you straight back.



REFINE

**“YOU ALSO
NEED TOTAL
ENVIRONMENTAL
PROTECTION”**

MATHEW REHM
BUSINESS MANAGER - DISPLAYS



TALK TO MAT
01929 555 800

E : MATHEW.REHM@RELEC.CO.UK

DISPLAY TECHNOLOGY

TFT DISPLAYS



SCAN ME



TFT

SIZE 1.77" TO 31.5"

RELEC's standard TFT display products are available in a wide range of sizes from small 1.77" up to 31.5". These cover all industry standard resolutions, sizes and interfaces. Standard units are available with brightness levels exceeding 1500 cd / m².

In addition to supplying standard panels, we also have the ability to offer a range of enhancements to improve the optical, mechanical and environmental performance of your display.

These may include:

- Addition of a touch panel
- Improving the readability in bright and direct sunlight
- Ruggedising
- Improving the optical characteristics by use of treatments, filters and optical bondings
- Increasing the backlight brightness
- Improve the viewing angles
- Custom cover lenses
- Mounting frames





**ARE YOU TIRED
OF PLAYING
DOCTOR WITH
YOUR UNRELIABLE
EQUIPMENT?**

**WHY NOT UPGRADE YOUR
MEDICAL EQUIPMENT AND
FINALLY PUT AN END TO THOSE
PAINFUL MONITORS?**

Discover the full range at
<https://www.RELEC.co.uk/display-type/tft-displays/>

Our technical team are on hand match the best solution to
your requirements.



**LET'S CREATE YOUR IDEAL
TFT DISPLAY SOLUTION
01929 555 800**



HDMI 4.3" TO 21.5"

RELEC's next-generation of TFT Displays include a direct HDMI (High Definition Multi-media Interface) input, offering a simple and fast method to integrate a display into your products. These displays have an integrated LVDS-to-HDMI bridge on board, with all EDID's pre-installed, meaning you simply connect the display with any SBC (Single Board Computer) or computer device with a HDMI output.

RELEC's standard sizes are available from 4.3" to 21.5" modules. With our knowledge and access to a wide range of display technologies, we can enhance our standard units to best suit the application and improve the optical, mechanical and environmental performance.

These options include:

- Addition of a touch panel
- Improving the readability in bright and direct sunlight
- Ruggedising
- Improving the optical characteristics by use of treatments, filters and optical bonding
- Custom cover lenses
- Mounting frames



IPS PANELS



SCAN ME

IPS (In-Plane Switching) was designed to solve the main limitation with conventional TN TFTs of restricted viewing angles and grey scale inversion when viewed away from the preferred viewing direction.

IPS provides true viewing angles from any direction. The technology involves arranging and switching the alignment of the crystal molecules between the glass substrates. This change reduces the amount of light scattered in the matrix.

The benefits not only include having the perfect colour balance from every point, but also allows the LCD to be mounted in either landscape or portrait orientation.

RELEC's range of IPS panels cover all the popular sizes, from 2.4" all the way up to 31.5" and above.

CALL OUR SALES TEAM

AND FIND OUT HOW OUR IPS PANELS CAN
HELP YOU SOLVE YOUR PROBLEMS



CALL
01929 555 800

DISPLAY TECHNOLOGY

PANEL PC



Panel PCs incorporate both a SBC (Single Board Computer) and TFT display, with or without touch, within an enclosure, producing an all-in-one solution.

Typical applications include military, rail, marine, medical, industrial and food industries.

RELEC's wide range of standard Panel PCs range from 10.1" to 23.8" and consists of the most advanced TFT display, touch panel technology and CPU technology, along with memory, storage and I/O ports. RELEC's range of Panel PCs include options for sealing to IP65 on the front face, or fully enclosed solutions that meet IP69K.



PANEL PCS 10.1" TO 23.8"



In addition to the standard Panel PCs, RELEC can customise assemblies to improve and enhance the performance of your system. Options include:

- Additional USB, Comms, Ethernet and/or other I/O connections
- Food grade Stainless Steel enclosure
- Loading Windows or Linux operating software
- Higher memory and storage capacity
- -40°C to +80°C Operating Temperatures
- Optical Bonding
- High bright backlights

RELEC'S PANEL PCS ARE SUITABLE FOR ALL APPLICATIONS, AND ARE TESTED AND APPROVED TO VARIOUS STANDARDS INCLUDING:

EN50155

IEC60945

EN/UL60601

RUGGED TABLETS



RELEC's rugged tablets are designed to provide the user with portable computing solutions, comprising of TFT display, single board computer (SBC) and battery, whilst enduring the harshest of environments. RELEC's rugged tablets are sealed up to IP67 and tested to MIL-STD-810G shock and vibration withstand standards. Units are available fitted with a rugged Gorilla Glass cover lens as standard.

Typical applications include medical, retail, warehouse management, entertainment & gaming, and food industries.



RUGGED TABLETS

5" TO 12.1"

RELECs rugged tablets are the ideal choice for mobile computing in rugged and harsh environments. Options also available with EN60601 certification, making it a perfect solution for medical applications. Further options include:

- Up to 8GB memory
- Up to 512GB SSD storage
- Communication includes WIFI, Bluetooth and Near Field Communication (NFC) reader
- Integrated with light sensor and camera
- Battery life of up to 9 hours
- USB 3.0, USB-C, RJ45 & HDMI I/O ports
- Up to -20° to +60°C operating temperature
- Supports Windows 10 IoT & Android 8.1 OS
- High brightness up to 1000cd/m2

Further options and accessories include:

- Barcode scanner
- Fingerprint scanner
- Smart Card Reader
- Docking Cradle
- Shoulder and hand strap
- Charging station for up to 3 units
- IP rated all in one cable assemblies



LET'S CREATE YOUR IDEAL
TOUCH SCREEN SOLUTION
01929 555 800

INDUSTRIAL MONITORS

ENCLOSED MONITORS



RELEC's 40 years of expertise in displays means we are able to offer not just components, but also a range of ultra rugged monitors.

Aimed at the extremely harsh environment market, RELEC can provide monitors sealed from IP65 through IP67, IP68 and even IP69K.

Truly meeting these specifications is a difficult requirement but every single monitor built is subjected to testing to the required rating ensuring that when installing in typically high value applications the user can have confidence that the monitor will perform as required.

Typical applications include military, rail, offshore, marine, construction and harsh industrial environments.

RELEC's enclosed monitors are suited for applications, and are tested and approved to various standards...

- EN50155
- IEC60945
- EN/UL60601

RELEC's standard range of enclosed monitors range from 10.1" to 23.8" in size and resolutions up to FHD 1920x1080. The monitors have a choice of video interface, including VGA, Display Port and HDMI and have very wide operating temperatures of -40°C to +80°C.



ENCLOSED MONITORS
10.1" TO 23.8"

RELEC'S OFFERING OF ENCLOSED MONITORS INCLUDE THE FOLLOWING OPTIONS:

- Touch screen options
- High brightness
- Optical Bonding
- Anti-vandal proof glass
- Stainless Steel Enclosure

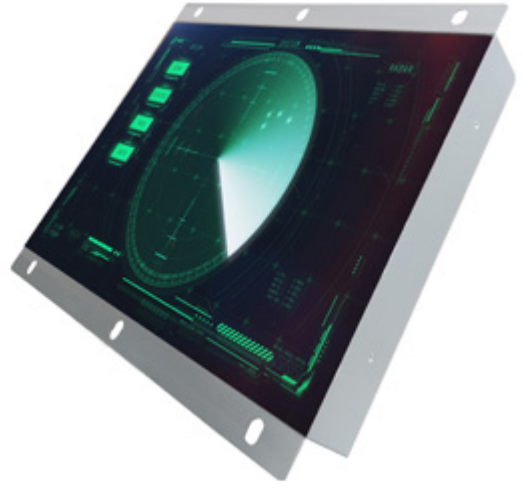


OPEN FRAME MONITORS



Relec's line of Daylight Readable Open Frame Monitors are the ideal solution for manufacturers or integrators, looking for a quick and easy installation of a display into their equipment.

Suitable for indoor, outdoor, and rugged environments, these monitors have been designed as daylight readable, by incorporating high brightness backlights, high contrast ratios, & optical bonding for optimal outdoor viewing.



OPEN FRAME MONITORS 5" TO 21.5"

Ranging from 5" to 21.5", all models use IPS technology and anti-vandal PCAP touch panel. The monitors use HDMI as their video input and include an audio line out and ambient light sensor for automatic dimming.

Open frame monitors provide a quick solution to mount within existing equipment. These specific monitors have both VESA and flange brackets, to suit different methods of mounting.



CALL OUR SALES TEAM

AND WE WILL WORK WITH YOU TO PRODUCE
A VERY SPECIAL MONITOR TAILORED TO
YOUR EXACT REQUIREMENTS.



CALL
01929 555 800

TOUCH PANELS

PROJECTED CAPACITIVE



SCAN ME

RELEC is proud to offer a comprehensive range of PCAP touch panels with a variety of options. These include custom cover glass graphics as well as apertures for LEDs or USB ports. We can also incorporate capacitive switches behind the cover glass for more bespoke solutions.

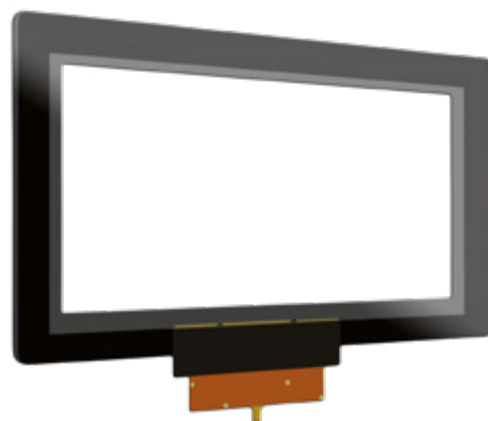
RELEC's range of touch panels are suitable for applications from commercial grade to high end automotive and military. We have solutions with noise immunity up to 32V/m which suit medical, automotive and avionic applications. In fact anywhere where operation and reliability are mission critical.

Projective capacitive touch panels (PCAP) offer the most responsive, sensitive and durable type of touch screen technology.

The PCAP sensor is constructed from a grid of conductive material which is layered on sheets of glass.

An electrostatic field is then created once a voltage is applied. When a conductive object (e.g. finger) comes into contact with the sensor, the PCAP controller measures the change in capacitance at that point which is then accurately converted to the X and Y coordinates.

Because a PCAP panel senses a touch by projection through an outer layer, this means that the top cover lens can be constructed from strengthened glass. This makes it the perfect solution for outdoor or harsh applications.



PCAP 2.4" TO 31.5"

Solutions designed with quality and performance as the main priority. We use a proprietary chip which has the highest possible signal-to-noise ratio available on the market.

Features and benefits

- Improved EMC immunity (Up to 32V/m)
- Up to 10 points of touch
- Operation with nearly all types of gloves
- Water rejection
- Full operation with water
- Choice of interface; USB, RS232 and I²C
- Driver support for all major operating systems
- Assembly with a TFT display

MORE THAN ONE TOUCH CAN BE SENSED SIMULTANEOUSLY

HIGH ACCURACY TOUCH POINT

EXTREMELY DURABLE

IMPROVED EMC PERFORMANCE

BESPOKE SOLUTIONS THAT WORK WITH THICK GLOVES

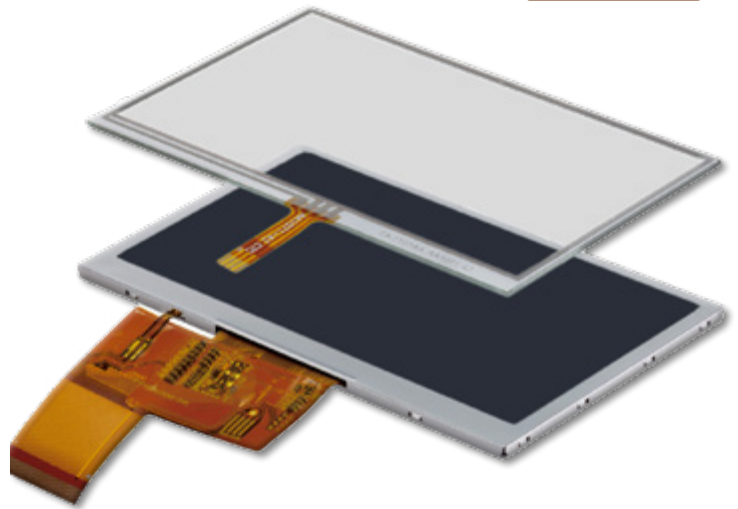
RESISTIVE TOUCH PANELS



Resistive touch panels (RTP) have traditionally been the most common touch panel technology in the industrial market.

There are two main types of resistive touch panel, 4-wire and 5-wire RTP. Each consists of a two layer construction for determining the X and Y coordinates.

Typical applications include handheld devices or any product that requires a low cost single touch solution.



4-WIRE RESISTIVE TOUCH PANEL

The most cost effective touch panel is the 4-wire RTP. These have an Indium Tin Oxide (ITO) resistive coating on the inner side of each layer to create the X axis and the Y axis. Voltage is then applied to each layer individually. Once touched both layers make a contact, the co-ordinates for the X and Y axis are then calculated using a voltage divider.

One disadvantage to the 4-wire RTP is that the flexible coversheet (top layer) acts as one of the axes as well as a uniform voltage gradient. Certain factors can cause the linearity and accuracy on this axis to decrease, including for example environmental conditions and high frequency of operation.

Occasional re-calibration may be required to maintain a level of touch point accuracy. A typical life time durability for repeated touch on a single spot is 1 million times, based on a finger touch.

5-WIRE RESISTIVE TOUCH PANEL

The 5-wire resistive touch panel offers a similar construction and design concept to the 4-wire RTP. The 5-wire RTP only uses the bottom layer to create both X and Y axis coordinates and the top layer acts as a voltage probe. This results in excellent stability, durability, sensitivity and reliability due to the top layer not being used for one of the axes.

The 5-wire RTP is an ideal touch panel solution for applications where touch durability and reliability are crucial or the touch input is potentially from an inanimate object.

A few benefits of the 5-wire RTP are:

A CONSTANT LEVEL OF ACCURACY, EVEN IF THE TOP LAYER IS DAMAGED

TOUCH RESPONSE AND ACCURACY IS UNAFFECTED BY HARSH ENVIRONMENTAL CONDITIONS

CALIBRATION ONLY REQUIRED AFTER INITIALISATION OF THE SYSTEM

We aim to provide everything you need to integrate your display and touch panel into your system. We can supply controller boards that allow you to easily interface to your systems and equipment. Interface examples include USB, RS232 and PS/2. Operating systems supported include Windows, CE and Linux.

**A TYPICAL LIFE TIME
DURABILITY FOR REPEATED
TOUCH ON A SINGLE SPOT IS
30 MILLION**



**LET'S CREATE YOUR IDEAL
TOUCH SCREEN SOLUTION
01929 555 800**

SCREEN ENHANCEMENTS

SURFACE TREATMENTS



ANTI-FINGERPRINT SURFACE TREATMENT

Anti-fingerprint (AF) surface treatments reduce finger print marking when directly handling the display. This is most commonly combined with a touch panel.

The AF treatment is a spray coating which is applied to the front on the module and uses fluoride nano-molecules within the coating. This isolates any natural oil on a person's finger and greatly reduces finger prints being transferred to the display.

The AF treatment also significantly increases the touch panel's sensitivity and accuracy when used in high moisture environments and as a by-product, also provides a softer feel to the panel when touched.

The AF coating has no effect on the optical characteristics on the display or the sensitivity when combined with a touch panel.

ANTI-BACTERIAL SURFACE TREATMENT

The anti-bacterial (AB) surface treatment is a coating that is applied to the cover glass.

Nano-silver technology is widely used in the medical world, and when combined with a SiO₂ layer, breaks down the bacterial cell wall and reduces bacteria reproduction by 99.999%.

The AB coating has no effect on any optical characteristics of the display nor does it affect the sensitivity when used with a touch panel. Popular applications of this surface treatment include:

MEDICAL

POINT OF SALE

MULTI-USER

ANTI-GLARE SURFACE TREATMENT

The anti-glare (AG) surface treatment is a cost effective solution to reducing glare and any unwanted reflections. In normal circumstances light reflects in a predictable way. This is either specular or diffused.

Once light strikes an AG coated display, it is dispersed in different directions hence reducing the glare. The AG coating has no effect on the optical characteristics or sensitivity when used with a touch panel.



ANY REQUESTS?

TALK TO US ABOUT YOUR SCREEN
ENHANCEMENT REQUIREMENTS.



TALK TO US
01929 555 800

E : ENQUIRIES@RELEC.CO.UK

OPTICAL BONDING



TFT LCDs are susceptible to glare and reflection from either bright light or direct sunlight. This can be dramatically improved by optical bonding.

In almost all displays there is an air gap between the TFT panel and the cover lens. This causes refraction in each level: cover lens, air gap and TFT panel.

Optical bonding is where an optical compound is inserted in the air gap between the cover glass and the TFT LCD, creating a single level of refraction. By reducing the internal reflection, the contrast and view-ability is increased. This in turn makes the display more readily seen in bright conditions, without the need to increase the brightness and the corresponding higher power consumption.



OPTICAL BONDING HAS MANY OTHER KEY FEATURES WHICH MAKES IT A POPULAR OPTION, THESE FEATURES INCLUDE:

- Improved sunlight readability
- Reduced reflections and refractions
- Greatly improved durability and ruggedness
- Increased contrast ratios
- Improved resistance to vibration and moisture
- Suitable for harsh temperature environments
- Enhances the backlight performance
- Prevents condensation and other contamination ingress
- High impact absorption

OPTICAL BONDING IS AN IDEAL OPTION FOR THE FOLLOWING APPLICATIONS:

OUTDOOR

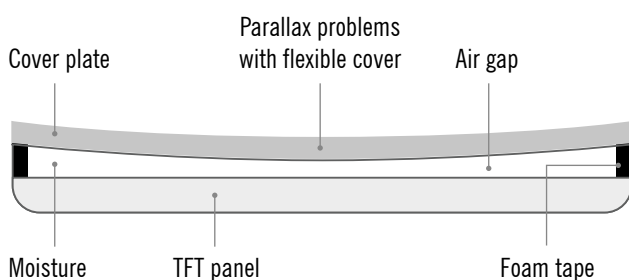
BRIGHT AMBIENT LIGHT CONDITIONS

WHERE A MORE RUGGEDISED DISPLAY IS REQUIRED

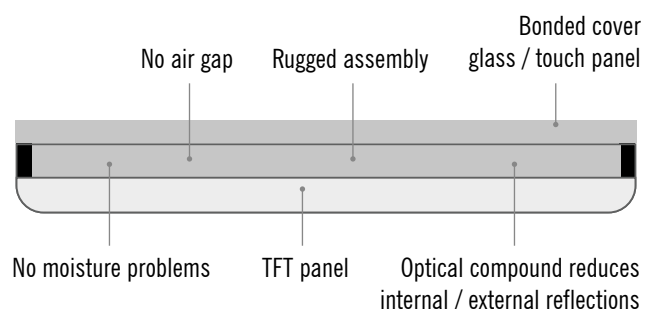
MARINE

MILITARY

WITHOUT OPTICAL BONDING

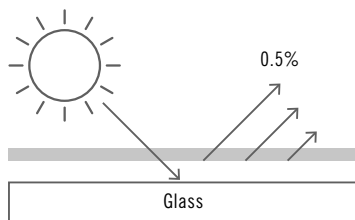


WITH OPTICAL BONDING

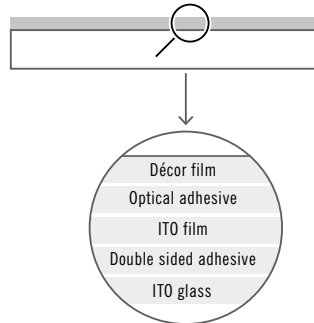


SCREEN ENHANCEMENTS

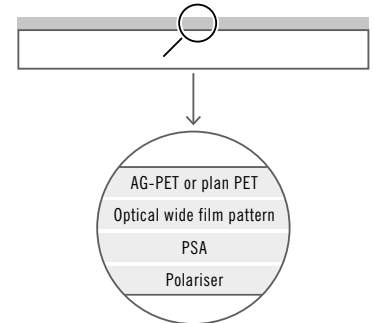
FILMS



Reflection of AR film
(based on 3 x AR coatings)



Touch panel FPC make up



Optical film

ANTI-REFLECTIVE POLARISER

The anti-reflective (AR) polariser is a clear film that is applied to the panel which reduces the amount of reflection created by external bright light.

In a typical TFT display there are three layers which light passes through. These are the cover lens, an air gap, (which can be optionally filled using an optical compound) and the LCD TFT panel.

Within each of these there is a reflection of approximately 5% under direct light, which equals a total of 15%. With the anti-reflective polariser, the reflection is reduced to approximately 9%.

Up to three layers can be applied to a single display to further reduce the reflection. With 2 layers the reflection is reduced to 5% and with three layers the reflection is further reduced to 0.5%.

The AR polarisers can be applied to the top and bottom of the cover glass or both to further reduce reflection. With a display that comes with PCAP (projective capacitive touch panel) the AR polariser can only be applied to the top of the cover glass due to the sensor film.

DÉCOR FILM

Décor film is an individual design option that is available for displays fitted with 4 wire resistive touch panels. The décor film is a customisable decorative surround, framing the TFT module.

The key features of the décor film mean that it can be mounted directly to the touch panel surface and allow the customer to have a flat product design. The film can be supplied with rounded corners for example or formed to a custom shape.

The whole décor film can be customised to allow for different colours, cut outs, indentations and printing with your logo.

This construction is based on a film-film-glass panel. Typically the décor film with a 4-wire resistive touch panel will have the upper ITO film manufactured larger than the bottom ITO glass. This allows for the extra space needed to bend the FPC if applicable.

OPTICAL FILM

The optical film (O-film) polariser increases the viewing angle up to 80° and improves grey scale inversion.

Most TFT LCDs have narrow viewing angles. Without an O-film, viewing the display from an unconventional angle the image would either have a wash out effect (the lighter colours become more visible) or greyscale inversion (the darker colours become more visible).

Both of these effects make the display almost unreadable. With the O-film polariser applied to the TFT LCD from almost all angles it will show the ideal colour balance.

CUSTOM DESIGNS

MOUNTING FRAMES & BACKLIGHTS



SCAN ME



MOUNTING FRAMES SHOCK RESISTANT

TFT display components are designed to be embedded into equipment, but this often can create challenges when it comes to mounting, bringing additional development time, resources, assembly time and associated costs.

RELEC has the answer to this, with our mounting frame design service. RELEC will work with you to fully understand how the display will be installed, fitted and viewed within your equipment. We will propose the most suitable mounting frame design for your application.

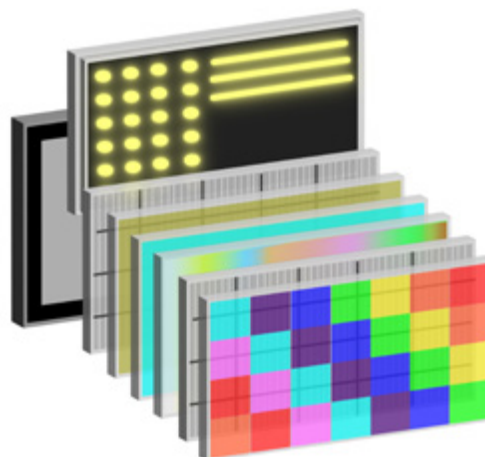
Made from a durable steel material, our frames provide additional support and resistance to shock and vibration. They are produced using an in-house Numerical Control Turret press (NCT) process, making them suitable for fast prototypes and shorter production runs.

CALL OUR SALES TEAM

AND WE WILL WORK WITH YOU TO PRODUCE
A VERY SPECIAL MONITOR TAILORED TO
YOUR EXACT REQUIREMENTS.



CALL
01929 555 800



BACKLIGHTS OUTDOOR APPLICATIONS

Specifying the correct backlight for your TFT display is as important as choosing right resolution or signal interface. The range of ambient light levels in your application will determine the brightness of the backlight and Relec can help with a variety of options over and above our standard TFT panels:

- Addition of extra LEDs
- Use of high brightness LEDs
- Long life LEDs for high reliability applications
- Built in PWM LED driver circuits for dimming / brightness control

Relec Electronics can supply very high brightness backlight panels up to 2000 cd/m² for marine and other outdoor applications. Our display experts are available to talk you through specifying the optimum backlight for your TFT display.

ACCESSORIES

AD BOARDS AND COVER LENS OPTIONS



AD BOARDS

An AD board is a TFT LCD controller board which provides an analogue connection for the TFT panel. Acting as an interface between the TFT panel and PC systems, the AD board transfers the image created from the PC to the TFT.

RELEC'S OFFERING OF AD BOARDS INCLUDE THE FOLLOWING OPTIONS

- Input connections for VGA, DVI, HDMI, DP or a combination of all 4
- Resolutions from VGA to FHD
- Automatic image scaling
- OSD keypads for basic control settings (e.g. brightness & contrast control and input selection)
- LED driver boards (if not already built in to the TFT)
- All cables



CUSTOM COVER LENS

Available across our entire TFT range, RELEC offers a custom cover lens service. This can be included on any of our products, with or without a touch panel. Suitable when specific mounting methods are required, or custom graphics / logos.

THE CUSTOM COVER LENS CAN INCLUDE THE FOLLOWING

- Cover lens material of either glass or PMMA
- Custom design, size and shape
- Printing graphics in multiple colours (i.e. custom logo)
- Apertures for other connections (i.e. USB sockets or mechanical switches)
- Thick & strengthened cover for rugged & harsh environments
- An array of capacitive switches
- Optical bonding

FUTURE PROOFING PROVIDING CONTINUITY

FUTURE PROOFING NEW DESIGNS

It is a well-known problem that TFT displays can have a limited production life and it is understandably a major cause for concern for anyone selecting a TFT panel.

Problems are often more acute with smaller displays, typically below 3.5". This is because there are effectively two grades of TFT panel, consumer and industrial. Below 3.5" displays are aimed at the consumer market which of course itself has a short lifespan.

There are a limited number of foundries manufacturing TFT panels. Their capacity is huge but production is driven by the needs of high volume consumer products. Technology changes and requests for cost down mean production of older panels can stop with little or no notice.

All of the above impacts on the supply chain and potentially your product.

**"RELEC HAS
THE ANSWER
TO HELPING
INDUSTRIAL
COMPANIES
ENSURE
CONTINUED
SUPPLY."**

WE CONTROL ALL THE HARDWARE AND CIRCUITRY OF OUR MODULES.

1. We have agreements in place with our suppliers to minimise the effects of component obsolescence. We will firstly give you 6 months' notice of any planned changes. This initially gives us both time to arrange a last time buy and the holding of suitable buffer stocks.
2. We will then source and replace the panel component with an alternative. Often this means other changes to the PCB, bezel and other components to accommodate the new panel. We then build a sample for you to test.

It will be a form, fit and function identical part, meaning that you don't need to make any changes to your design. The engineering work and sample is supplied free of charge.

This stage is very important and one of the areas which set RELEC apart. We aim to support all of our customers this way rather than simply replacing a panel with an alternative which is not 100% compatible with the old.
3. After approval we will start supplying the replacement panel. This should allow uninterrupted production of your product.

HELP WITH OBSOLETE PANELS

We have helped many customers who have found themselves in the unfortunate position where the panel they have been buying is no longer available. They have been told that there is either no replacement or the suggested replacement requires the customer to spend huge amounts of time and money to redesign their circuits and hardware.

RELEC can work with you to provide a drop in replacement. When provided with a specification of your obsolete panel we will endeavour to recreate every aspect including cable position, pin out, mechanical constraints, and perhaps even offer to upgrade your equipment by offering a brighter backlight for example.



**TALK TO US ABOUT FUTURE
PROOF SOLUTIONS
01929 555 800**

MONO LCDS

STANDARD AND CUSTOM



SCAN ME

MONO ALPHANUMERIC AND GRAPHICS DISPLAY INCLUDING CUSTOM DESIGNS

RELEC has been providing standard and custom mono displays for nearly 40 years. We have been involved in countless projects supplying everything from simple glass through to full modules and complete products using our factories in Asia. We are proud of our quality, we have many long running projects where we have zero failures.

We are able to work with you to develop to your needs. Technologies include TN, STN, IBN, fast response ISTN and BCD. We can also add touch panels where required.

Any design can incorporate other features. For example, to save space we can include other components and circuitry on any PCB. If serial numbering, date coding or use of bar codes is required these can all be included. The aim is to provide a ship to line part, fully tested and meeting your production needs without any further intervention.



CALL OUR SALES TEAM

IF YOU ARE LOOKING FOR EITHER A
STANDARD PART, OR WOULD LIKE TO
CONSIDER SOMETHING FOR YOUR OWN
DESIGN WE'LL BE PLEASED TO HELP.



CALL
01929 555 800

GLOSSARY

AB	Anti-Bacterial – See page 54
AD Board	Analogue to Digital Board – See page 58
AF	Anti-Fingerprint – See page 54
AG	Anti-Glare – See page 54
AR	Anti-Reflective – See page 56
IPS	In Plane Switching – See page 47
UV + IR	Ultra Violet and Infrared - Used to reduce TFT temperatures in high temperature environments
BCD	Bi-stable Cholesteric - An LCD technology that requires no power to maintain an image, power is only required to change the image.
COF	Chip on Film
DVI	Digital Visual Interface – used to get connect a digital source such as a computer to a monitor
FPC	Flexible Printed Circuit
HDMI	High Definition Multimedia Interface - Proprietary audio visual interface
IBN	Improved Black Nematic – An LCD technology for monochrome applications providing exceptional contrast ratio and viewing angles
ISTN	Improved STN – Provides better contrast and viewing angles than STN
ITO	Indium Tin Oxide – a compound used for conductive tracks in LCDs and touch panels
KVM	Keyboard Video Mouse – allows the control of multiple computers from one keyboard video monitor and mouse
LCD	Liquid Crystal Display
MVA	Multi Viewing Angle – Display can be viewed from all angles without loss of contrast
OSD	On Screen Display
PCAP	Projective Capacitive – See page 52
PET	Terephthalate – A polyester film, a version of which is often used in optical applications such as enhancement films for displays.
PSA	Pressure Sensitive Adhesive – an adhesive which forms a bond when pressure is applied
PWM	Pulse Width Modulation
SNR	Signal to Noise Ratio
STN	Super Twisted Nematic – An LCD technology used for passive displays allowing greater multiplexing than TN therefore allowing more rows and columns
TFT	Thin Film Transistor
TN	Twisted Nematic – A passive LCD technology used for simple displays such as calculators
4-WIRE RTP	4 wire resistive touch panel – See page 53
5-WIRE RTP	5 wire resistive touch panel – See page 53

RESOLUTION	PIXELS
QQVGA	160 x 128
QVGA	320 x 240
WQVGA	480 x 272
HVGA	480 x 320
VGA	640 x 480
WVGA	800 x 480
SVGA	800 x 600
WSVGA	1024 x 600
XGA	1024 x 768
SXGA	1280 x 1024
HD	1280 x 720
WXGA	1280 x 800
UXGA	1600 x 1200
WSXGA	1680 x 1050
FHD	1920 x 1080
WUXGA	1920 x 1200
UHD	3840 x 2160