



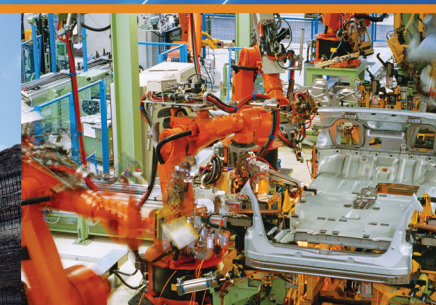
Offshore



Rail



Mining



Industrial

[www.ft-transformers.co.uk](http://www.ft-transformers.co.uk)



**FT Transformers Ltd**  
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Transforming Our  
Customers' Wishes  
into Reality





# transforming our customers' wishes into reality...

FT Transformers, formerly known as Forrest Transformers, was established in 1937, currently based in Kings Norton – Birmingham, supplies an extensive range of transformers and chokes throughout the world.

**FT Transformers** manufacture bespoke transformers and reactors for a wide range of applications. The range extends from 50VA to 5MVA rating, voltage levels up to 13.8kV air cooled, 33kV oil cooled.

All manufacturing and testing is completed at our 18,000 sq ft factory in Kings Norton, Birmingham, conforming to BS ISO 9001 approved quality systems.

## Applications

<b>Rail:</b>	Signalling Transformers & Isolating Transformers - Network Rail Approved
<b>Mining:</b>	Air Cooled Low Loss Transformers 100kVA – 5.0MVA
<b>Offshore &amp; Marine:</b>	A wide range of Dry Type Power Transformers to Marine Standards
<b>Drives:</b>	Various Chokes, Reactors & Transformers
<b>Glass Making:</b>	Furnace Boost Transformers Oil & Air cooled
<b>Panel Builders:</b>	Comprehensive Range of Air Cooled Control Circuit Transformers
<b>Voltage Optimisation:</b>	Full Range of Air Cooled Auto Wound Transformers 50 – 4000 Amps



# bespoke transformers

- All Voltages are available
- Open style or encased in a sheet steel enclosure
- Indoor or Outdoor Use
- Fast Turnaround
- Full UK Design and Build

Along with our standard range of transformers, we also provide a wide range of bespoke transformers and reactors, to suit the individual requirements of our clients.

From low voltage transformers with a high current capacity, or high voltage with just a few amps, to single phase, three phase 3 limb and 5 limb hexaphase arrangements, FT Transformers offers the full range of top quality bespoke transformers - all designed and built in the UK.

Insulation classes can range from class A through to class C, using high quality insulation materials. Low loss and super low loss amorphous core steel is available, together with various cooling mediums, including air cooled, mineral oil and synthetic fluids.







Our bespoke transformers and reactors can be designed to meet all IEC and marine standards and are fully supported by an approved BSI ISO 9001 quality system.








# transformer rewind & repair

-  Air Cooled and Oil Cooled Transformers
-  Fast Turnaround
-  Full UK Design and Build
-  On-site Services are Available

Before Transformer Repair

FT Transformers understand the importance of returning a transformer back into service with the upmost urgency.

**We offer a comprehensive service which includes:**

-  Inspection & Report
-  Repair
-  Rewind
-  Full Tests



After Transformer Repair



All of our transformer rewind and repairs can be carried out as part of our breakdown service, which is available seven days a week.



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## voltage optimisation

A complete range of air-cooled auto-wound transformers for use in Voltage Optimisation technology is available.

More Details Can Be Found On P13

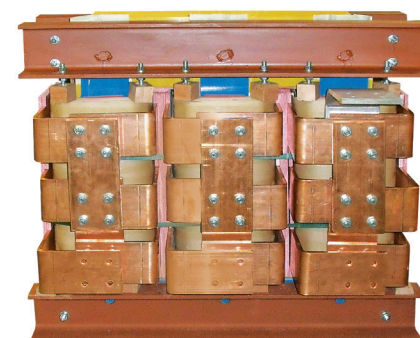


Whatever your application,  
FT Transformers'  
experienced design team  
can provide a proven,  
bespoke solution, which is  
second to none.

## contents

Evidence of FT Transformers' technical and innovation skills can be seen throughout the world. From rail to offshore and from mining to manufacturing, our extensive product range covers the whole spectrum.

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All electrical and mechanical  
designs are carried out by  
our experienced  
in-house design team.





# railway signalling transformers

## CLASS H

### Class 1 Transformers 400/650V

#### CLASS 1 - IP23

- Signalling Transformer for Indoor Use
- 1PH & 3PH 400/650V  
± 2.5/5/7.5% via switch
- Rating 5KVA up to 300KVA
- Inrush - 5 times
- All built to Network Rail Standards  
BR924A and NR/L2/SIG30007



Our continued support and relationship with many key rail customers has given FT Transformers Ltd an extensive knowledge of the challenges within the signalling industry.

#### CLASS 1 - IP55

- Signalling Transformer for Outdoor Use
- 1PH & 3PH 400/650V  
± 2.5/5/7.5% via switch
- Rating 5KVA up to 300KVA
- Inrush - 5 times
- All built to Network Rail Standards  
BR924A and NR/L2/SIG30007

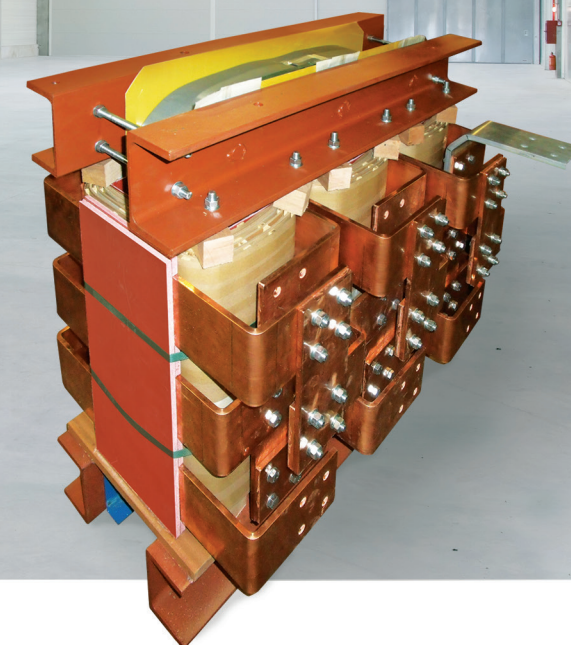
Our experience with the design and manufacture of signalling transformers puts us as a key supplier to many rail companies. We can always ensure maximum service at competitive prices.

We also have network rail approval for signalling transformers (650v, 400v Class I and 650v Class II).

History of previous projects: Newport, East London, Didcot, Reading, Sleaford, Toton, Trent, KO2, Bromsgrove  
Re-signalling projects are just a few that have been completed.

# voltage optimisation

## VARIOUS INSULATION CLASSES AVAILABLE

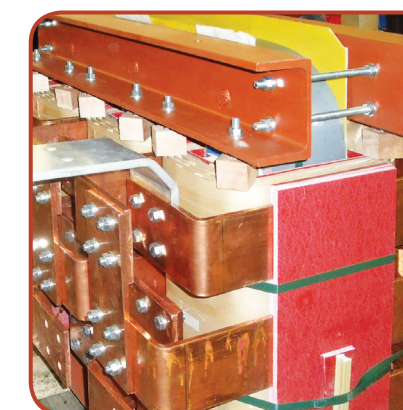
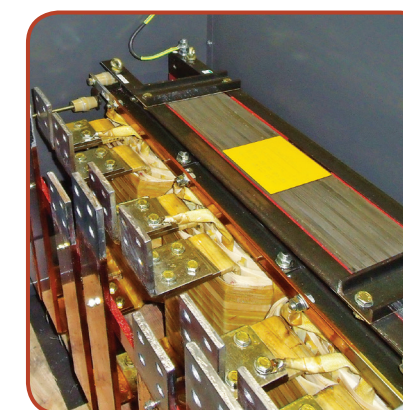
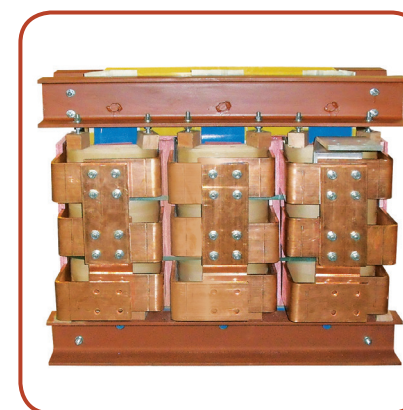


- Nominal Voltage 415V  
3PH 50/60Hz
- Secondary Voltage Range  
Between 4.0% to 10.0%
- Encased in a Substantial  
Sheet Steel Enclosure
- Indoor or Outdoor Use

A complete range of air-cooled auto-wound transformers for use in Voltage Optimisation technology is available.



Built to the latest IEC standards, using high quality low loss core steel and Class H insulating materials, a wide range of ratings are available from 50 amps to 4000 amps.



Our range of transformers can be configured with either manual or automatic bypass switches if required.



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#### About FT Transformers

FT Transformers operate from an 14,500 sq ft factory (soon to become 18,000sq ft), manufacturing bespoke transformers and reactors, the range currently extends to 5.0MVA rating, voltage levels up to 13.8kV air cooled, 33kV oil cooled.

More Details Can Be Found On P2-3

#### Transformer Rewind and Repair

FT Transformers understand the importance of returning a failed transformer back into service with the upmost urgency.

More Details Can Be Found On P14

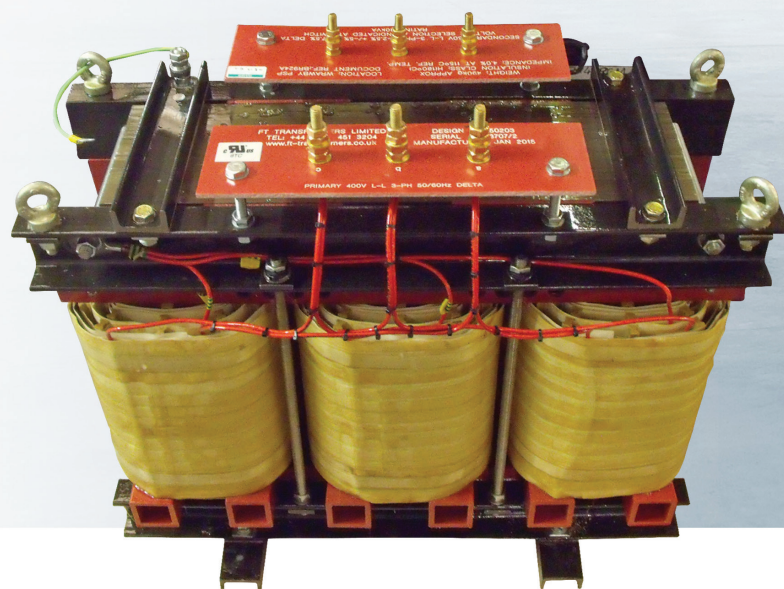




# UL range

## CLASS H-180

- Air Cooled Transformers
- Ratings up to 100KVA (600V) 3PH
- Ratings up to 60KVA (600V) 1PH
- Wide Range of Applications



A versatile range of transformers, up to a max of 600V and ratings up to 60kVA 1 phase & 100kVA 3 phase, can be provided for projects in the USA, Canada and other parts of the world that require UL approvals.

Our UL certified transformers have undergone exhaustive tests in order to meet the requirements of UL, the insulation systems that we use meets the highest quality for manufacturing and reliability to satisfy the standards.

As in all our products, our UL range can be supplied quickly to satisfy the needs of our customers and are provided complete with the UL approved marked clearly on the transformers.

FT Transformers UL Recognition for USA & Canada	
Product Category	XQNX2
Product Category	XQNX8 (For Canada)
File Number	E2208721
Insulation System	OBJY2. Class 180 (H) DV-180-1
Maximum Impedance	5% (Transformers rate 2kVA and above)
Maximum Voltage	600V RMS
Product Range (equivalent size)	Single Phase: 100VA to 60kVA Three Phase: 100VA to 100kVA
Catalogue Number (model number)	Transformers: Frame size number Inductors: Frame size number followed by the letter c

## CLASS II HYBRID TRANSFORMER RANGE

### ZERO INRUSH

This allows for a smaller FSP/Loc fuse and therefore smaller cables in some instances. An assessment of five major projects has shown that using FT's Class II hybrid transformers over competitor's Class II hybrid's would have saved over £200,000 (2011 prices) by cable size reduction. This is up to 10% of the total cable cost.

### INSULATED TO 20kV (Patented Coating No. GB2496062)

The unique insulating coating and the application process has been patented by FT Transformers. It adds another layer of protection to the Class II hybrid system up to 20kV.

### HIGH EFFICIENCY

Up to 95% efficiency is expected on all our units.

### BACKWARDS COMPATIBLE

FT has ensured that the footprint design of the transformer is backward compatible to existing installations on the rail infrastructure.

### LEGACY COMPATIBLE

The ONLY RANGE that complies with both new and old voltages

## CLASS II HYBRID INSULATED RANGE



Product Acceptance Number PA05/05765

### Zero Inrush Range - 250VA-3000VA

THE ONLY RANGE WITH A 20kV INSULATED BOX!

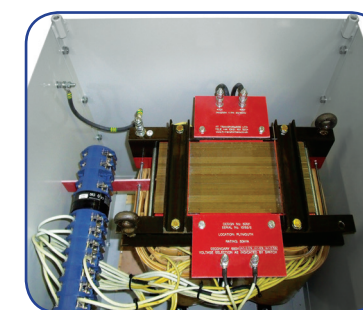
Primary	0 - 10 - 25 - 600 - 650 - 700V
Secondary	0 - 5 - 10 - 110 - 120 - 140V
Ratings	250 - 500 - 1000 - 1400 - 2000VA - 3000VA
Insulation	Class H
Construction	Built in accordance with NR/L2/SIG30007



Product Acceptance Number PA05/05765

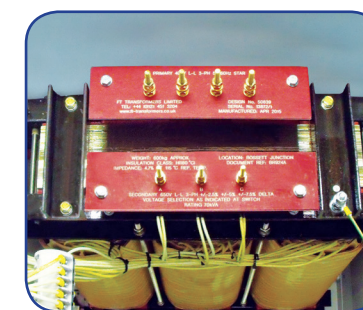
### Powder Coat Range

Primary	0 - 10 - 25 - 600 - 650 - 700V
Secondary	0 - 5 - 10 - 110 - 120 - 140V
Ratings	250 - 500 - 1000 - 1400 - 2000VA - 3000VA
Insulation	Class H
Construction	Built in accordance with NR/L2/SIG30007



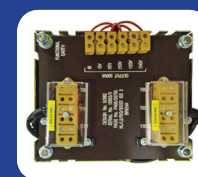
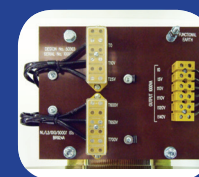
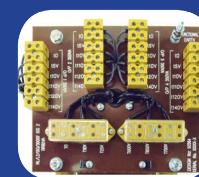
### Single Phase Railway Signalling Transformer

Primary	400v 1PH 50/60Hz
Secondary	650v +/-2.5/5/7.5% taps via off load tapping switch (lockable)
Rating	50kVA
Insulation	Class H
Construction	Built in accordance with BR924A & NR/L2/SIG30007



### Three Phase Railway Signalling Transformer

Primary	400v 3PH 50/60Hz
Secondary	650V ±2.5/5/7.5% taps via off load tapping switch (lockable)
Rating	40kVA
Insulation	Class H
Construction	Built in accordance with BR924A & NR/L2/SIG30007



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### Inductors and Chokes

FT Transformers is one of the UK's leading manufacturers of Power Transformers, Line Reactors, Chokes and Power supplies.

More Details Can Be Found On P11

### Class II Hybrid Standard Rectifier Range

Class I Transformers for use in PSP and FSP Applications

More Details Can Be Found On P6





## CLASS II HYBRID STANDARD RECTIFIER RANGE



Product Acceptance Number PA05/06003

### Rectifier Range

**THE ONLY RANGE WITH A 20KV INSULATED BOX!**

Primary	0 - 10 - 25 - 600 - 650 - 700V
Secondary	0 - 110 - 120vDC
Ratings	2x5 ADC - 2x8 ADC - 1x10 ADC
Insulation	Class F
Construction	Built in accordance with NR/L2/SIG30007



Product Acceptance Number PA05/06003

### Powder Coat Range

Primary	0 - 10 - 25 - 600 - 650 - 700V
Secondary	0 - 110 - 120vDC
Ratings	2x5 ADC - 2x8 ADC - 1x10amp ADC
Insulation	Class F
Construction	Built in accordance with NR/L2/SIG30007

## ZERO INRUSH

This allows for a smaller FSP/Loc fuse and therefore smaller cables in some instances. An assessment of five major projects has shown that using the FT's Class II hybrid transformers over competitor Class II hybrid's would have saved over £200,000 (2011 prices) by cable size reduction. This is up to 10% of the total cable cost.

## INSULATED TO 20kV

(Patented Coating No. GB2496062)

The unique insulating coating and the application process has been patented by FT Transformers. It adds another layer of protection to the Class II hybrid system up to 20kV.

# inductors & chokes

- Iron and Air Cored Reactors
- Various Ratings Available
- Custom Input and Output Line Reactors
- Various Insulation Class Levels Available
- Choice of either Air Cooled or Oil Cooled



FT Transformers is one of the UK's leading manufacturers of Power Transformers, Line Reactors, Chokes and Power supplies.

Due to close contact between our product engineers and the drive manufacturers, we have developed ranges of Iron and Air Cored reactors to suit particular ranges of drives.

## CLASS I TRANSFORMERS FOR USE IN PSP AND FSP APPLICATIONS



### Single Phase Railway Signalling Transformer

Primary	400v 1PH 50/60Hz
Secondary	650v +/-2.5/5/7.5% taps via off load tapping switch (lockable)
Rating	5KVA - 200 KVA
Insulation	Class H
Construction	Built in accordance with BR924A & NR/L2/SIG30007



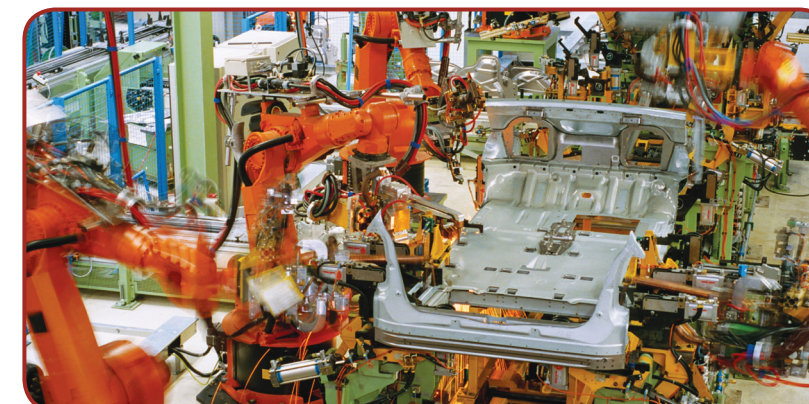
### Three Phase Railway Signalling Transformer

Primary	400v 3PH 50/60Hz
Secondary	650v +/-2.5/5/7.5% taps via off load tapping switch (lockable)
Rating	5KVA - 200 KVA
Insulation	Class H
Construction	Built in accordance with BR924A & NR/L2/SIG30007



## CLASS I - IP55

Primary	400V 1PH 50/60Hz
Secondary	650V +/-2.5/5/7.5% via tapping links
Rating	100KVA
Insulation	Class H
Construction	Built in accordance with BR924A & NR/L2/SIG30007



We also offer a full range of custom built input and output line reactors, interbridge reactors, DC link and swinging chokes.



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## Railway Signalling Transformers - Class I & Class II

Our continued support and relationship with many key rail customers has given FT Transformers Ltd an extensive knowledge of the challenges within the signalling industry.

More Details Can Be Found On P4-5

## UL Range Transformers

A versatile range of transformers, up to a max of 600V and ratings up to 60kVA 1 phase & 100kVA 3 phase, can be provided for projects in the USA, Canada and other parts of the world that require UL approvals.

More Details Can Be Found On P12





# power transformers

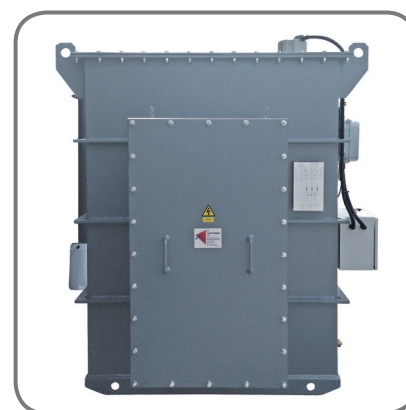
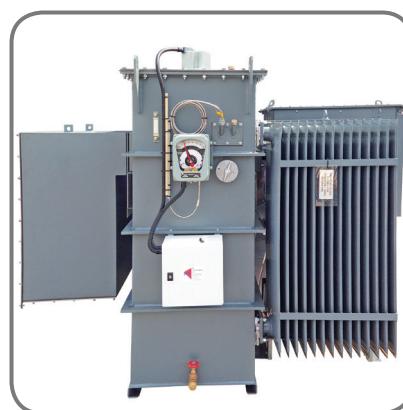
- Air Cooled and Oil Cooled Transformers
- Robust Construction
- Full UK Design and Build
- On-site Services are Available

3PH Oil Cooled Furnace Transformer  
Complete with motorised On-load Tap Change for Output Voltage  
Adjustment 20kV/90-210v in 29 steps @ 3300Amps/Phase.

FT Transformers supply a wide range of Power Transformers with ratings from 50kVA up to 5000kVA.

Our Air Cooled Units can be specified with voltage levels up to 13.8kV, and our Oil Cooled Units can be ordered with voltage levels up to 33kV. Our units are available with either mineral oil or synthetic fluid coolants.

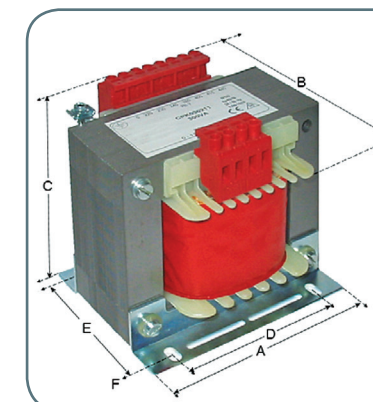
All units are designed, built and tested in our factory in Kings Norton – Birmingham and all procedures are backed up by a strict approved quality system.



## cpk control transformers

### CLASS B

Control transformers designed and manufactured in accordance with EN61558-2-2 (BS3535,VDE 0550/0551)



- Multi-tapped standard input voltages - 220/230/240/380/400/415/440V, 50/60Hz.
- Standard output voltages, See table below
- Safety Class 1
- IP00, Screw terminals to IP20 (Cable Cage)
- Minimum 3KV flash tested
- Dip impregnation
- Ambient temperature 40°C max.
- Mounting brackets to DIN 41307
- Nylon bushes fitted for lower core-loss and higher efficiency.

VA	PART NO	OUTPUT VOLTS	DIMENSIONS IN MM						WEIGHT KGS
			A	B	C	D	E	F	
50	CPK 005212 CPK 005224 CPK 005255 CPK 005211	0 - 12, 0 - 12 (24) 0 - 24, 0 - 24 (48) 55 - 0 - 55 (110) 0 - 115, 0 - 115 (230)	75	78	83	56	53	4.5 x 9	1.25
63	CPK 006 XXX	AS ABOVE	84	68	93	64	48	4.5 x 9	1.50
100	CPK 010 XXX	"	84	84	93	64	63	"	2.10
150	CPK 015 XXX	"	96	98	112	84	73	5.5 x 11	2.80
200	CPK 020 XXX	"	96	112	112	84	87	5.5 x 11	3.65
300	CPK 030 XXX	"	120	97	120	90	80	"	5.00
500	CPK 050 XXX	"	120	117	120	90	100	"	6.35
750	CPK 075 XXX	"	150	143	152	122	107	7 x 13	10.40
1000	CPK 100 XXX	"	150	163	152	122	127	7 x 13	13.50
-	-	-	-	-	-	-	-	-	-
1500	CPK 150 255 CPK 150 211	55 - 0 - 55 (110) 115 - 0 - 115 (230)	192	140	175	128 / 161	98	6.8	15.50
2000	CPK 200 XXX	AS ABOVE	192	156	175	128 / 161	112	6.8	20.00
3000	CPK 300 XXX	"	192	182	189	128 / 161	132	6.8	26.50
4000	CPK 400 XXX	"	255	185	235	170 / 210	120	8.0	33.50
5000	CPK 500 XXX	"	255	225	235	170 / 210	160	8.0	43.80

- OPTIONS:
- Screwless terminals ( Spring cage )
  - Fuse / Thermal protection
  - 35mm DIN rail Mounting ( TS35 )

N.B. Dimensions and weights are approximate and may be changed without prior notice.

We have the capability to respond quickly to all enquires, offering a competitive price and delivery, along with a high build quality and after sales service.



FT Transformers design and manufacture control transformers with bespoke ratings and voltages on request.

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### Offshore and Marine Transformers

FT Transformers supply transformers for Shipboard use and Offshore Oil & Gas Facilities.

More Details Can Be Found On P9

### Mining Transformers

FT Transformers manufacture a wide range of Air Cooled transformers for Mining applications. Designed and manufactured using materials to Class C (220) - suitable for use in all mining applications above and below ground.

More Details Can Be Found On P8

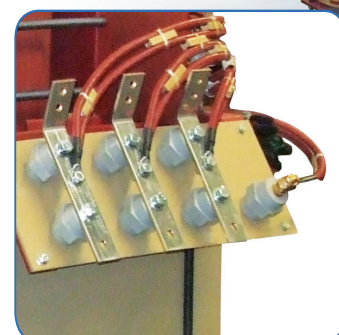




# mining

## CLASS C-220

- Air Cooled Transformers
- Ratings up to 5MVA (13.8kV)
- Robust Construction
- Suitable for Above and Below Ground
- 3 Limb and 5 Limb Designs for Reduced Height
- Low Loss Cores



FT Transformers manufacture a wide range of Air Cooled transformers for Mining applications.

Designed and manufactured using materials to Class C (220)  
- suitable for use in all mining applications above and below ground.



Reduced height 3 Limb and 5 Limb designs are available with ratings up to 5MVA (13.8kV).



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### cpk Control Transformers

Control transformers designed and manufactured in accordance with EN61558-2-2 (BS3535,VDE 0550/0551).

More Details Can Be Found On P7

# offshore & marine

## CLASS H-180

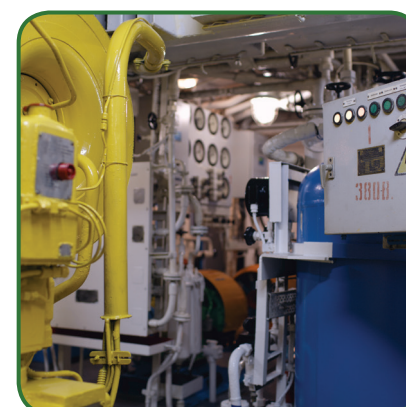
- Designed To Marine Standards - Lloyds', DNV, ABS etc.
- Certified Designs
- Fast Turnaround for Retro-fit Projects
- Supplied to Ships and Oil Rigs Worldwide
- Wide Range Available - Rating up to 4MVA (13.8kV)



FT Transformers supply transformers for Shipboard use and Offshore Oil & Gas Facilities.

Built to meet the latest marine standards, (Lloyds, DNV, ABS) with ratings up to 4.0MVA and voltage levels up to 13.8kV.

Each unit is encased in a sheet steel IP rated enclosure, with a specialist paint finish to satisfy the harshest environments.



### Power Transformers

FT Transformers supply a wide range of Power Transformers with ratings from 50kVA up to 5000kVA.

More Details Can Be Found On P10

