

# XFE – Optimising Soft Starters 4A - 2800 Amp

The XFE Soft Starter range provides a combination of competitive prices, flexible start duty capability and overload protection. It benefits from having the same underlying engineering and pedigree as the QFE and has a variety of ratings and functions, including the option to use an external bypass contactor and a choice of Energy Optimising or non-Optimising modes. The XFE also has a number of ratings to match your specific application.



## Case Study

### **XFE 320 K Soft Starter – used in conjunction with large fan moving wood chippings through a kiln.**

Two off XFE 320 K Soft Starters supplied rated at 950 Amp Class 30 duty.

These Soft Starters were sold to Norbord Limited, a company who manufacture kitchen units for a nationwide retailer of kitchen and bedroom furniture.

The Soft Starter controls a 420kW Flender ATB Loher motor – ANSA-400MD-04A driving a large High Inertia Fan sucking wood chippings through a large kiln to be deposited in various silos for the next point in the process.

The Soft Starter supplied 2520 Amps for 64 seconds to accelerate the fan to full speed. The Soft Starter replaced an existing star delta system that failed on a regular basis to deliver enough torque to accelerate the fan up to speed due to different loadings of material in the kiln.

Use of the XFE's unique automatic features helped in the various different loadings placed upon the fan at the start, as it was always able to automatically deliver the correct torque to start to accelerate the load.

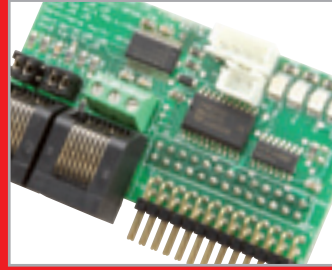


# XFE – Accessories



## 4MC Gold Card

A retrofit replacement for old 3MC and 4MC Control Cards fitted to many Soft Starters as supplied by: Fairford, BSL, GEC, Moeller(MST), Saftronics, Siemens (3RW10), Sprecher + Schuh.



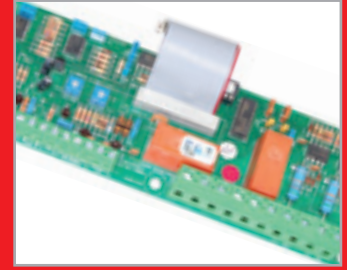
## Modbus Communication - RS485

The ability to set up, control and monitor single or multiple XFE Soft starters. The serial card allows control to be switched between an integral keypad or alternately an external isolated Modbus network.



## Remote Keypad

- Can be used on a one to one basis or one keypad can control several soft starters
- Seven buttons with individual Start and Stop
- Display via a 2 line 32 character LCD
- Eliminates panel mounted Start and Stop push buttons, Ammeters, Run, Top of Ramp and Alarm Lamps



## Auxiliary Function Card

- Add on card with additional I/O
- Two 0-10V analogue outputs
- One 0-21V DC input
- One 4-20mA input
- One Thermistor input
- Two programmable output relays
- Two programmable input relays

For more information on how the XFE from Fairford Electronics can reduce your running costs and lower maintenance bills contact us today.

tel: +44 (0) 1752 894554 or visit our website  
[www.fairford.com](http://www.fairford.com)



FAIRFORD  
ELECTRONICS

# XFE



**The cost effective  
starter for all AC  
induction motors  
from 4A – 2800A**  
The choice for  
small to medium  
industrial  
applications

# XFE

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It benefits from having the same underlying engineering and pedigree as the QFE and has a variety of ratings and functions, including the option to use an external bypass contactor and a choice of Energy Optimising or non-Optimising modes.

The XFE also has a number of ratings to match your specific application.

## Features and Benefits

### Auto Set Up

Caters for the starting and stopping ramp profile for specific application with no further adjustment needed, plus programming of all the relays, inputs and outputs etc.

### Patented "Fairford System" of Energy Optimising

Improves partial load power factor (cos phi) saving energy, carbon emissions from generating source and cost on lightly loaded applications.

### Manual Adjustment

Enables Soft Starter to be rapidly tailored to any application, saving time.

### Smooth Step Less Acceleration of Motors to Full Speed with Reduction of Inrush Currents

Prevents or reduces breakages of belts, gears, chains, motor mountings and eliminates shock loading on equipment.

### Unit Records History of Last 5 Trips

Assists in determining causes of any failure, saving on investigation time.

### Adjustable Over Current "Shear Pin" Protection

Can significantly reduce the maintenance time in comparison to mechanical "shear pins" reducing down time and replacement costs.

### Adjustable Overload

Protects the Soft Starter against damage due to overloads and therefore replacement or repair costs.

### Six Button Keypad, 2 Line 32 Character LCD Display

Saves time programming and fault finding because it displays in English rather than short codes. Start/Stop capability, continuous display of motor phase current and control status - starting, stopping, full volts, current limitation, overload indication and fault indication.



### Option of Modbus Comms or Remote Keypad Operation

Can be linked to a PLC for remote control using Modbus comms. One remote keypad has the capacity to control up to eight units yielding a cost saving.

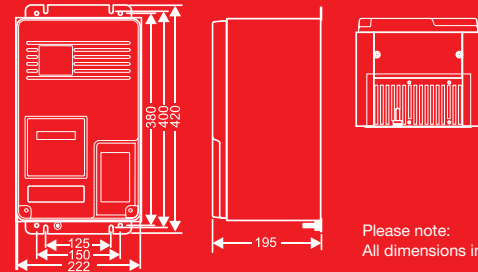
### In The Delta Capability

Could allow a smaller unit to be used on an application saving costs.

# XFE – Technical data

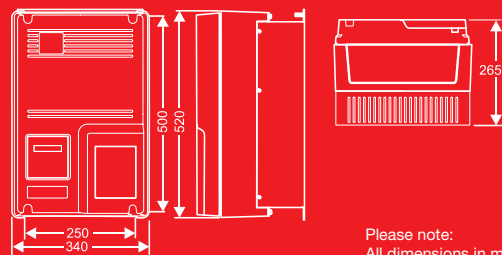
<b>Operational Voltage (Ue)</b>	230 - 460, 400 - 575 and 500 - 690V (-15% +10%)
<b>Rated Frequency</b>	50 - 60Hz +/- 2Hz
<b>Index Rating</b>	<p><b>Core Duty</b></p> <p>Class 10B: AC53a: 3.5-12: 75-5 AC53a: 3.5-12: 60-3 AC53b: 3.5-12: 708 AC53b: 3.5-12: 1188</p> <p><b>Standard Duty</b></p> <p>Class 10: AC53a: 3-23: 75-5 AC53a: 3-23: 60-3 AC53b: 3-23: 708 AC53b: 3-23: 1188</p> <p><b>Medium Duty</b></p> <p>Class 20: AC53a: 4-19: 75-5 AC53a: 4-19: 60-3 AC53b: 4-19: 708 AC53b: 4-19: 1188</p> <p><b>Heavy Duty</b></p> <p>Class 30: AC53a: 4-29: 75-5 AC53a: 4-29: 60-3 AC53b: 4-29: 708 AC53b: 4-29: 1188</p>
<b>Start Time</b>	1 to 255 Seconds
<b>Stop Time</b>	0 to 255 Seconds
<b>Control Supply Us</b>	X1, X2 115V or 230V AC rms (-15% +10%)
<b>Control Supply Uc</b>	S0, S1 12V/24V DC or 115/230VAC.
<b>Ingress Protection</b>	IP20 or IP00
<b>Ambient Temperature</b>	0°C to 40°C. Above 40°C de-rate linearly by 2% of unit FLC per °C to a maximum of 40% at 60°C.
<b>Transport and Storage</b>	-25°C to +60°C (continuous), -25°C to +75°C (not exceeding 24 hours).
<b>Altitude</b>	Above 1000m de-rate linearly by 1% of unit FLC per 100m to a maximum altitude of 2000m.
<b>Humidity</b>	max. 85% non-condensing, not exceeding 50% at 40°C.
<b>Design Standards and Approvals</b>	IEC 60947-4-2; EN 60947-4-2 'AC Semiconductor Motor Controllers and Starters' CE.

## 100 Series IP20



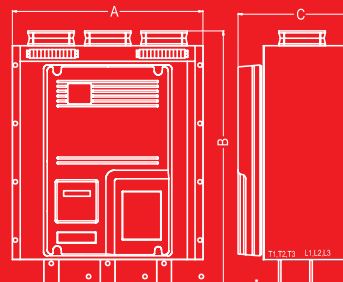
Please note:  
All dimensions in mm

## 200 Series IP20



Please note:  
All dimensions in mm

## 300 Series IP00



Please note:  
All dimensions in mm

XFE 300 Series Range Approximate Dimensions (mm)			
	A	B	C
XFE 302 to XFE 308	490	648	285
XFE 310	508	738	282
XFE 312 to XFE 318	635	746	322
XFE 320	635	782	322
XFE 322 to XFE 328	775	775	475

M10 fixing mounting  
holes Dimensions in mm

CORE	STANDARD	MEDIUM	HEAVY	CORE	STANDARD	MEDIUM	HEAVY
Air compressor - equalised • Chillers • Conveyor - unloaded Escalator • Lathe machines • Mixer - unloaded Plastic and textile machines • Pump - centrifugal Transformers, voltage regulators	Default • Agitator • Fan low inertia <85A • Feeder - screw Pump - positive displacement unloaded • Saw - band Tumblers	Heavy • Air compressor - loaded • Ball mill • Conveyor - loaded Grinder • Hammer mill • Mills - flour etc • Mixer - loaded Pelletisers • Press, flywheel • Rolling mill • Saw - circular Screen - vibrating	Centrifuge - extended start needed for sizing Crusher • Fan high inertia >85A • Wood chipper	Air compressor - equalised • Chillers • Conveyor - unloaded Escalator • Lathe machines • Mixer - unloaded Plastic and textile machines • Pump - centrifugal Transformers, voltage regulators	Default • Agitator • Fan low inertia <85A • Feeder - screw Pump - positive displacement unloaded • Saw - band Tumblers	Heavy • Air compressor - loaded • Ball mill • Conveyor - loaded Grinder • Hammer mill • Mills - flour Etc • Mixer - loaded Pelletisers • Press, flywheel • Rolling mill • Saw - circular Screen - vibrating	Centrifuge - extended start needed for sizing Crusher • Fan high inertia >85A • Wood chipper

IN LINE			IN DELTA			CONTINUOUS RATING AC53a				EXTERNALLY BYPASSED AC53b			
le (A) 400 V	kW 400 V	HP 460 V	le (A) 400 V	kW 400 V	HP 460 V	Trip Class 10B 3.5-12:XX-X	Trip Class 10 3-23:XX-X	Trip Class 20 4-19:XX-X	Trip Class 30 4-29:XX-X	Trip Class 10B 3.5-12:XX	Trip Class 10 3-23:XX	Trip Class 20 4-19:XX	Trip Class 30 4-29:XX
4.9 A	2.2 kW	3 HP	8 A	3 kW	5 HP	XFE 104	XFE 104	XFE 104	XFE 104	XFE 102	XFE 104	XFE 104	XFE 104
6.5 A	3 kW	4 HP	11 A	5 kW	6 HP	XFE 106	XFE 106	XFE 106	XFE 106	XFE 104	XFE 104	XFE 104	XFE 106
11.5 A	5.5 kW	7.5 HP	19 A	9 kW	12 HP	XFE 108	XFE 108	XFE 110	XFE 110	XFE 106	XFE 106	XFE 108	XFE 110
15.5 A	7.5 kW	10 HP	26 A	12 kW	17 HP	XFE 110	XFE 110	XFE 110	XFE 110	XFE 108	XFE 108	XFE 110	XFE 110
22 A	11 kW	15 HP	38 A	19 kW	25 HP	XFE 112	XFE 112	XFE 112	XFE 114	XFE 110	XFE 110	XFE 112	XFE 112
29 A	15 kW	20 HP	50 A	25 kW	34 HP	XFE 116	XFE 116	XFE 116	XFE 116	XFE 112	XFE 112	XFE 114	XFE 114
35 A	19 kW	25 HP	60 A	32 kW	43 HP	XFE 118	XFE 118	XFE 120	XFE 122	XFE 114	XFE 114	XFE 116	XFE 116
41 A	22 kW	30 HP	71 A	38 kW	51 HP	XFE 120	XFE 120	XFE 122	XFE 122	XFE 116	XFE 116	XFE 122	XFE 122
55 A	30 kW	42 HP	95 A	51 kW	72 HP	XFE 124	XFE 124	XFE 124	XFE 126	XFE 122	XFE 122	XFE 122	XFE 124
66 A	37 kW	54 HP	114 A	64 kW	93 HP	XFE 126	XFE 126	XFE 128	XFE 130	XFE 124	XFE 122	XFE 124	XFE 128
80 A	45 kW	60 HP	138 A	77 kW	103 HP	XFE 130	XFE 128	XFE 132	XFE 132	XFE 124	XFE 124	XFE 130	XFE 132
97 A	55 kW	75 HP	168 A	95 kW	129 HP	XFE 132	XFE 130	XFE 134	XFE 136	XFE 132	XFE 130	XFE 134	XFE 134
132 A	75 kW	106 HP	228 A	129 kW	183 HP	XFE 136	XFE 136	XFE 140	XFE 140	XFE 136	XFE 134	XFE 138	XFE 138
160 A	90 kW	150 HP	277 A	155 kW	259 HP	XFE 140	XFE 138	XFE 202	XFE 202	XFE 138	XFE 136	XFE 140	XFE 202
195 A	110 kW	175 HP	337 A	190 kW	303 HP	XFE 202	XFE 202	XFE 204	XFE 206	XFE 140	XFE 140	XFE 204	XFE 204
230 A	132 kW	200 HP	398 A	228 kW	346 HP	XFE 204	XFE 204	XFE 206	XFE 208	XFE 204	XFE 202	XFE 206	XFE 206
280 A	160 kW	250 HP	484 A	277 kW	433 HP	XFE 206	XFE 206	XFE 212	XFE 212	XFE 206	XFE 206	XFE 210	XFE 212
350 A	200 kW	300 HP	606 A	346 kW	467 HP	XFE 208	XFE 210	XFE 302	XFE 302	XFE 208	XFE 210	XFE 302	XFE 302
382 A	220 kW	300 HP	661 A	381 kW	519 HP	XFE 212	XFE 212	XFE 302	XFE 302	XFE 210	XFE 212	XFE 302	XFE 302
430 A	250 kW	360 HP	744 A	433 kW	554 HP	XFE 212	XFE 302	XFE 302	XFE 306	XFE 212	XFE 212	XFE 302	XFE 302
540 A	315 kW	400 HP	935 A	545 kW	649 HP	XFE 304	XFE 306	XFE 308	XFE 310	XFE 304	XFE 304	XFE 308	XFE 308
610 A	355 kW	550 HP	1056 A	614 kW	814 HP	XFE 306	XFE 306	XFE 310	XFE 312	XFE 306	XFE 306	XFE 308	XFE 312
690 A	400 kW	600 HP	1195 A	692 kW	935 HP	XFE 308	XFE 308	XFE 312	XFE 314	XFE 308	XFE 308	XFE 308	XFE 312
850 A	500 kW	750 HP	1472 A	866 kW	1160 HP	XFE 312	XFE 312	XFE 316	XFE 318	XFE 312	XFE 312	XFE 314	XFE 314
950 A	560 kW	820 HP	1645 A	969 kW	1299 HP	XFE 314	XFE 314	XFE 318	XFE 322	XFE 314	XFE 314	XFE 316	XFE 320
1060 A	630 kW	915 HP	1835 A	1091 kW	1420 HP	XFE 316	XFE 316	XFE 322	XFE 326	XFE 316	XFE 316	XFE 320	XFE 324
1190 A	711 kW	1000 HP	2061 A	1229 kW	1558 HP	XFE 320	XFE 320	XFE 324	XFE 326	XFE 318	XFE 318	XFE 324	XFE 326
1346 A	800 kW	1165 HP	2331 A	1385 kW	1732 HP	XFE 322	XFE 322	XFE 326	Call	XFE 320	XFE 320	XFE 326	Call
1518 A	900 kW	1200 HP	2629 A	1558 kW	2078 HP	XFE 324	XFE 324	Call	Call	XFE 324	XFE 324	XFE 326	Call
1673 A	1000 kW	1300 HP	2879 A	1732 kW	2251 HP	XFE 326	XFE 326	Call	Call	XFE 326	XFE 326	Call	Call