

## Description

The FE-346-CA is a dual channel carrier amplifier for use with inductive LVDT type transducers. Designed for data acquisition and processing applications, the unit is presented as a printed circuit card with amplifier fine gain and balance controls brought to the front edge of the card. Internal jumpers set gain, filter and transducer configuration.

## Specification

<b>Oscillator section</b>	Common Oscillator supply	
Frequency	5kHz $\pm$ 1% Sinewave	
Amplitude	1V, 2V or 3V RMS $\pm$ 1%, Link Selectable	
Output Drive	1V rms into 20 $\Omega$ 3V rms into 60 $\Omega$	
Stability	0.01%/°C.	
Distortion	<0.2%	
<b>Bridge Section</b>		
Balance	Front edge control by screwdriver operated potentiometer, jumper selectable shunt or voltage injection balance. Balance resistor mounted on turret lugs	
Completion	Turret lug positions for 1/2 bridge completion resistors. Internal jumpers select full or 1/2 bridge transducers.	
<b>Amplifier section</b>		
	Two identical amplifiers and filters, each individually configurable	
Gain	Selection	Internal jumper links to give gains from 1 to 50 in 1, 2, 5 steps.
	Vernier	Front card edge control x1 to x2.5.
	Accuracy	Step accuracy $\pm$ 0.5%. T.C.<50ppm/°C.
	Linearity	Better than 0.01%.
Input	Impedance	>100K $\Omega$ single ended (>200k $\Omega$ differential.)
	Offset Voltage	<50 $\mu$ V.
Noise	Input	<20 $\mu$ V pk-pk dc-500Hz
	Output	<1mV rms dc - 500Hz.
Bandwidth	dc - 1000Hz (-3dB)	
Output	Voltage	Capability $\pm$ 10V into 2k $\Omega$ , 5000pF max. Offset $\leq$ $\pm$ 25 mV
Filter	Type	3 pole, preset by plug-in resistor network (5Hz - 1kHz)
	Gain	Unity
	Roll Off	18dB/ Octave, 60dB/decade
	Offset	$\pm$ 5mV
	Characteristic	Butterworth standard, Bessel or Tchebychev to order.
Environment	Temp. Range	0°C to 50°C operating
Physical	Card size	7" x 2.65". 2u high format (180mm x 67mm).

Issue	Date	Change History
1	14/11/01	New Drawing
2	28/3/12	Redrawn for SMT version
3	18/12/12	N,R were w.w.r

**Gain Potentiometer.**

Clockwise rotation increases the gain by approximately x 2.5. When fully anticlockwise, the gain depends only on the two gain jumpers.

**Balance Potentiometer.**

This control works together with jumper positions VBal, Sbal1, and Sbal2 to offset the output voltage. It is normally used to set the datum (zero) position.

**Output Stage Gain Jumper**

A jumper link selects the indicated output stage gain.

**Sync Transmit Jumper**

When several FE-346-CA modules are fitted to adjacent slots in the enclosure, this jumper provides a synchronisation signal to the module nearest to this module's top (component) side.

A jumper in the 'master' position provides the synchronisation signal.

A jumper in the 'solo' position disables synchronisation to the next module.

**Transducer Supply Jumper**

A jumper selects the amplitude of the 5 kHz Transducer Supply Voltage

**Sync Receive Jumper**

When several FE-346-CA modules are fitted to adjacent slots in the enclosure, this jumper enables receiving a synchronisation signal from the module next to this module's bottom (connector) side.

A jumper in the 'slave' position receives the synchronisation signal.

A jumper in the 'solo' position disables synchronisation reception.

**Phase Adjust Network Components**

This RC network compensates for the phase change in the transducer and input stage.

If the output is not linear in relation to the transducer action, it may be necessary to change these components.

**Transducer Type Configuration Jumper**

'Full' : Selects the Full Bridge configuration.  
 'Half' : Selects the Half bridge configuration  
 'VBal' : The Balance Potentiometer provides a balancing voltage to offset the channel's output.  
 Sbal1 : The Balance Potentiometer operates as a shunt balance control  
 Sbal2 : The Balance Potentiometer operates as a shunt balance control  
 Note that Sbal1 provides less shunt balance than Sbal2

**Phase Reverse Jumper**

This jumper reverses the output polarity of both channels.

'N' : Normal  
 'R' : Reverse.

**Input Stage Gain Jumper**

A jumper link selects the indicated input stage gain.

**FYLDE FE-346-CA Dual Carrier Amplifier**

Channel a gain x 2.5

Channel a

x1

x10

Full  
Half  
VBal  
Sbal1  
Sbal2

Channel a

Channel a balance

Channel b

x1

x10

Full  
Half  
VBal  
Sbal1  
Sbal2

Channel b

Channel b gain x 2.5

Channel b balance

x5 x2 x1

1 2 3V RMS

solo

slave

Oscillator