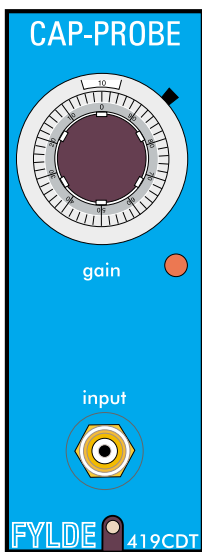


FE-419 CDT, 411-OSC capacitive displacement amplifier and oscillator



Capacitive displacement transducers require instrumentation to convert the proportional capacitance signal into a voltage output.

Various techniques exist for such conversion but the FE-419-CDT has particular advantages regarding the application with higher capacitance cables, and is especially suited to triaxial installations.

The principle of measurement produces a linear output relationship to distance in the range 0 to 10 volts. The capacitance amplifier operates together with a 16 or 32kHz oscillator, and only one oscillator is required for multi-channel operation.

The transducers required to operate with these amplifiers are of a guard ring design where the guard is driven from within the amplifier.

Linearity in the measurement depends on the transducer design and the distance to be measured, but amplifier performance involving bandwidth, linearity and stability are important factors in maintaining a measurement standard. Many proprietary transducers are now available for use with these amplifiers.

The integral mains power supply provides isolation of signal earths. The isolation may be maintained when operating from a d.c. battery supply, using a Fylde FE-605-DCC. converter in place of the mains transformer.

- * SYSTEMS FROM 1 to 16 CHANNELS
- * MINIATURE 2U COMPACT SYSTEM
- * MAINS OR DC ENERGISATION
- * ± 10V OUTPUTS
- * WIDE BAND STABLE MEASUREMENTS

The FE-419-CDT and its complementary oscillator FE-411-OSC, form an accurate capacitance measuring system for guarded transducers. Multi channel systems may be produced - each oscillator will power up to 16 amplifiers. Significant attention has been paid to factors involving the input impedance and the gain / bandwidth product (which affects usable cable length and transducer size), the synchronous rectifier which affects linearity and noise rejection, and the active filter which determines dynamic accuracy.

The module provides a voltage proportional to capacitance output; this signal is routed through a precise analogue 1/X converter circuit thus providing an accurate voltage proportional to distance output. This output is linearly proportional to distance between the probe and the grounded surface to be measured. Scaling of probe outputs is a straight forward adjustment and may be preset to suit the capacity range of a given probe.

Presentation of the Fylde equipment is in modular form, with plug in oscillator and matching amplifier modules.

Inputs are to the front panels of the miniature amplifiers using sub-miniature micro-dot coaxial connectors. Outputs are normally made available on the rear panels of assemblies using BNC connectors. Analogue and digital display monitors are available if required for multi-channel systems.

Modules in the system are compatible with other standard modules in the Fylde miniature signal conditioning system and may be mains (230 V or 115 V) energised. Alternatively, modules suitable for use on 12 V DC power may be obtained on request or modules may be retrofitted with FE-605-DCC converters for dc operation.

SPECIFICATION - FE-419-CDT CAPACITANCE DISPLACEMENT MEASURING SYSTEM

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OSCILLATOR FE-411-OSC	Frequency	16 kHz standard, (32 kHz special order).
	Level	Variable 5V, 2V, 1V, 0.5V, 0.2V, 0.1V RMS
	Power	Sufficient to power up to 16 channels.
	Distortion	<0.5% harmonic distortion.
	Amplitude Stability	<100 ppm/°C.
	Indication	'run' led
AMPLIFIER FE-419-CDT	Target Capacitance Range	standard 2.5 pF full scale - will set to 0.25 pF full scale and is capable of useful measurements to below 0.025 pF. alternative 4 pF full scale - will set to 0.4 pF full scale and is capable of useful measurements to below 0.04 pF. (alternative ranges available - please contact factory)
	Indication	LED indicates normal operation and limit condition.
	Scaling	10 turn Dial allows full scale output to be developed from 10% to 110% of maximum target capacitance.
	Rectifier	synchronous
	Filter type	3 pole Butterworth customer programmable (Bessel option)
	Cut off frequency.	preset as required (factory option is 1 kHz when using a 16 kHz oscillator)
	rise time	300 µs (1kHz filter option)
	Capacitance Output	Gives 10 V output for maximum target capacitance
	Distance Output	Gives 100 mV for maximum target capacitance and is linearly related to target distance.
	Stability	<0.1%/°C.
	Input Connector	micro-dot.
	Power requirement	230 V 50Hz (or 115 V 60Hz). 12 V DC when fitted with FE-605-DCC.