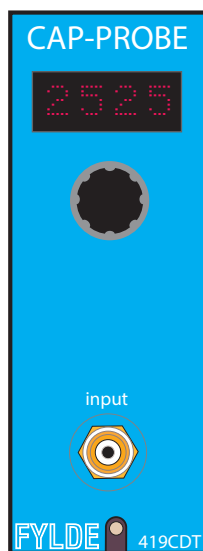


FE-419-CDT capacitive displacement amplifier and oscillator



- * MODULAR ASSEMBLY COMPRISING :-
- * INTERNAL HI STABILITY OSCILLATOR
- * DIGITAL DISPLAY OF DISTANCE
- * INTERNAL SCALING & LINEARISATION
- * SYSTEMS FROM 1 TO 16 CHANNELS
- * MINIATURE 2U COMPACT SYSTEM
- * MAINS OR DC POWER
- * 10V OUTPUT
- * WIDE BAND STABLE MEASUREMENTS
- * DESIGNED AND PRODUCED IN THE UK

The measurement of displacement using capacitive displacement transducers is an established principle based on the variation of capacity between a transducer probe and an electrically conductive and grounded surface.

The FE-419-CDT is designed for longer cable lengths (up to 10 m) and higher temperature cables (up to 250 deg C). A similar module is the Fylde FE-420-CD which uses a different principle to give a more sensitive amplifier with short cables (up to 3m) and normal temperatures.

The principle of measurement demands the application of a highly stable high frequency oscillator, together with a special high impedance amplifier which detects the spacing between the probe and the movable target area.

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.

The amplifier's menu driven control system provides simple but flexible set up with the ability to calibrate and display distance measurements on the unit's front panel.

Mains or DC powered versions are available.

Output voltage from the amplifier is in the range 0 to 10 volts. The normal output from this amplifier is the "distance" output, proportional to distance between the probe and the grounded surface to be measured. An option is to use the "capacitance" output which is inversely proportional to distance for an ideal parallel plate capacitor. Scaling of probe outputs is a simple menu selection which sets the zero distance and full scale or mid scale distance.

The module is suitable for measuring both dynamic and static distance to an electrically earthed target. Fylde can supply suitable probes and typical measuring distance can extend from zero to approximately 10 mm or further depending upon probe area. (We recommend that probe to target distance is limited to the probe's inner diameter.)

Cable lengths can extend to 10 meters of low noise carbon filled coaxial cable.

Presentation of the the equipment is in modular form. Fylde supply instrument enclosures to accept 2,4,8,or 16 modules. All analog outputs are on the rear panels of instrument cases.

A Microdot coaxial connector on the front panel connects to the capacitance probe. A menu based system is provided that allows scaling of the analog output as well as inputing data so that the digital display may provide a linear readout of distance.

User interface is via a front panel rotary control with an integrated push button, or by remote RS232C control.

Modules in the system are compatible with other standard modules in the Fylde miniature signal conditioning system and may be mains (230V or 115V) energised. Alternatively, 12V DC power may be obtained on request.

Oscillator frequency	16 kHz (built in).
Capacitance Range	0.01 pF to 4 pF minimum.
Rectifier	Full wave precision.
Filter type	4 pole Butterworth programmed by plug in resistor network.
Max Cut off frequency	8 kHz.
Rise time	300 μ s (1 kHz cut off freq.) 50 μ s (8 kHz cut off freq.)
Output	0 to +10V at 5 mA.
Scale	Automatic by setting Zero and Mid or Full scale distance.
Gain stability	< 0.1% per °C.
Noise	4mm diameter probe set for 4mm full scale: 13.8 mV RMS at full scale (Filter set to 1.8 kHz) Noise reduces linearly as probe to target distance decreases.
Input connector	micro-dot.
Cable length	up to 10 metres recommended.
Power requirement	Mains or 12V DC when using FE-605-DCC.
Front Panel Control	Rotary Control with Push Button
Digital readout	4 digit display of Distance, calibrated using a 10 point calibration table. Menu system allows calibration of Analog Output and Front Panel Digital Display
Serial output	Optional RS232 digital output