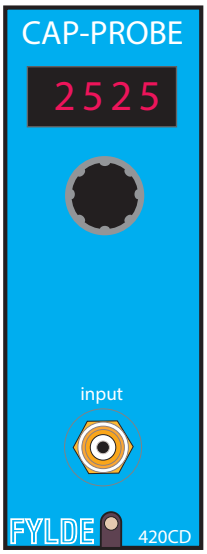
FYLDE

MODULAR INSTRUMENTATION

FE-420-CD
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 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.

In the FYLDE system a very precise & stable sinewave oscillator energises the probe via a low noise screened cable. Amplification of the resulting signal is developed in the amplifier module which comprises:-

a. A high impedance input stage
b. A precision rectifier
c. 3 pole active filter
d. Automatic scaling stage.

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. Internal scaling and linearisation are available to allow for a more precise display of distance

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.

Output voltage from the amplifier is in the range 0 to 10 volts. The output is inversely proportional to capacitance and therefore proportional to distance between the probe and the grounded surface to be measured. 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 3 mm. (We recommend that probe to target distance is limited to the probe's innerdiameter.) Cable lengths can extend to 3 meters (2m is the recommended cable length.)

Presentation of the the equipment is in modular form. Fylde supply instrument enclosures to accept 2,4,8,or 16 modules.

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.

All analog outputs are on the rear panels of instrument cases.

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	16kHz (built in).
Capacitance Range	0.03pF to 3pF typical.
Rectifier	Full wave precision.
Filter type	3 pole Butterworth programmed by plug in resistor network.
Max Cut off frequency	8 kHz.
Rise time	300μs (1kHz cut off freq.)
	50μs (8 kHz cut off freq.)
Output	0 to +10V at 5 mA.
Scale	Automatic by settingZero and Mid or Full scale distance.
Gain stability	< 0.1% per °C.
Input connector	micro-dot.
Cable length	2 metres recommended.
Power requirement	Mains 240V 50Hz or 110 60Hz 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 a10pt calibration table.
	Menu system allows calibration of Analog Output and Front Panel Digital Display
Serial output	Optional RS232 digital output.