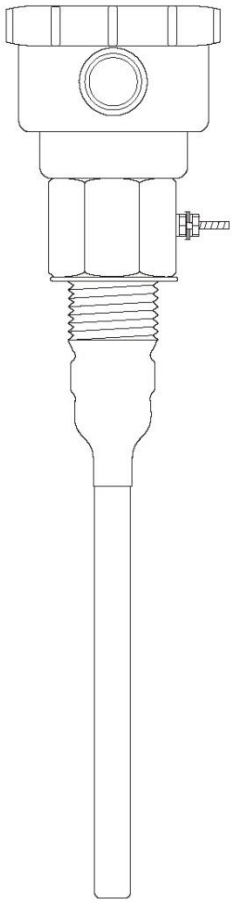
# FLEXICAP 4-20

A Loop Powered
Capacitance Transmitter for
Continuous Level Measurement



- A loop powered “stand-alone” sensor
- Two wire 4-20mA operation for PLC’s and PC’s
- Zero & Span adjustment in the termination head
- For applications where zero & span can easily be adjusted in situ
- Suitable for relatively clean non-coating liquids including acids, chemical, oils aqueous solutions, & non-hygroscopic solids
- No moving parts
- 1” BSP mounting thread
- Unaffected by pressure or vacuum

## Principle of Operation

The media in a metallic vessel acts as a dielectric, and if an electrode is immersed in it, a capacitor is formed of a certain capacitance value. As the level rises or falls this capacitance varies linearly, and the value can be converted into a usable 4-20mA output, proportional to the depth.

## Electrode Types

All Flexicap 4-20 Electrodes Comprise:- A termination head (generally polyproylene) containing the plug-in encapsulated module, potentiometers for adjusting the zero & span, terminals, and an electrode of specified length extending from stainless steel mounting boss. The maximum length manufactured is 3m, longer lengths being supplied in the form of cable electrodes. If the media is electrically conducting insulated electrodes are required. These are generally 8mm stainless steel rod insulated with polypropylene. If the media is non-conducting bare electrodes are required. These are generally 8mm stainless steel rod (or other materials to order).

## Application Notes

1. Where plastic tanks are concerned, or where the dielectric constant is low, (e.g. oils),an earth reference is required. This can often be in the form of a concentric tubular electrode. (generally in stainless steel).
2. Due to the varied nature, and varying moisture content possible with granular and powered material, advice should be sought from our technical department, before specifying.
3. Note that if non-conducting media is contaminated (e.g. water in oil), the output will be driven to full scale, regardless of the actual level.

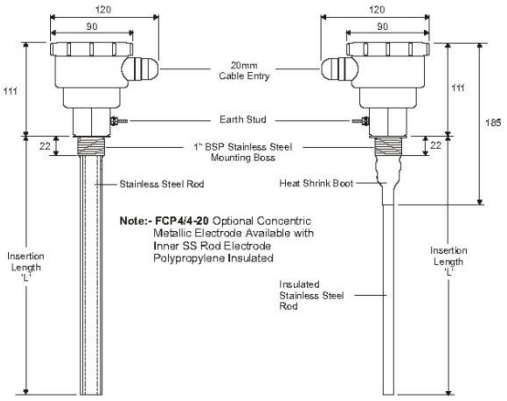
## Flexible Cable Electrode

Are used for lengths in excess of 3m. The light duty type generally comprises of a length of insulated borehole cable, but un-insulated wire cables can be used. In large hoppers containing solid media the forces on the cable are often very great, and a heavy duty woven galvanized or stainless steel cable is required with specially designed gravity weight and termination head.

## Technical Specification

| | |
|---|---|
| Supply: | 24Vdc loop (16Vdc) |
| Output: | 4-20mA into 500 ohms Max at 24Vdc supply. |
| Insertion Length: | 3m Max rigid electrodes<br>10m Max flexible electrodes |
| Process Connection: | 1" BSP as standard (other process threads & flanges to order). |
| Process Temperature: | 100$^0$C Max |
| Ambient Temperature: | -20$^0$C to +60$^0$C |
| Process Pressure: | 300psi @ 20$^0$C |
| Electrode Type: | For conducting media fully insulated rod or cable, for non-conducting media un-insulated rod or cable |
| Electrode Material: | 316 stainless steel as standard (monel or titanium to order) |
| Electrode Insulation: | Polypropylene as standard (PTFE & others to order). |
| Termination Housing: | Polypropylene as standard (others to order) |
| Electrical Connections: | 2 core screened cable |

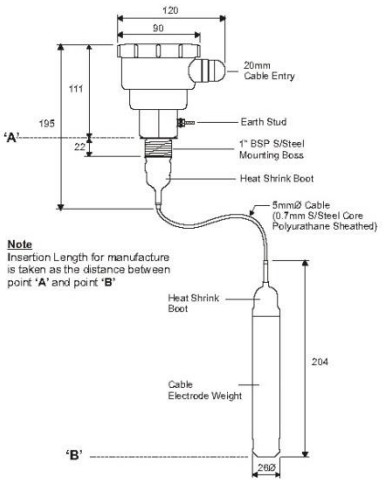
FCP 3/4-20 Concentric Electrode




FCP 2/4-20 Insulated Rod Electrode



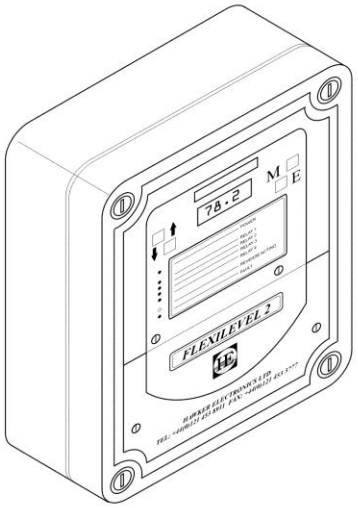

FCP 201/4-20 Flexible Cable Electrode



# *The Digital Flexilevel 2*

Level Indicator/Controller for Capacitive,
Ultrasonic, Hydrostatic Level Transducers

- Programmable display
- 4 control relays
- AC or DC supply
- Sensor failure alarm
- 24V isolated supply




***The FXL2 Flexilevel 2*** provides digital indication with 4 control/alarm relays for use with loop powered transmitters, such as the Hawker Flexicap, Sondaloop, and Pressure transmitter. It will accept most milliamp signals from self powered systems, an integral 4 button keypad and display allows the user to programme the various functions to suit the application in hand. No programming experience is necessary. Using a simple 'menu' procedure calibration and mode operation are programmed as follows

***Zero and Span*** similar to analogue instruments. These are set using the milliamp signal generated by the transducer when the vessel is empty and full, or as near full a possible.

***Scaling*** the digital display can be scaled 0-100% or in engineering units to provide any numerical display commencing from 0000 to 9999, e.g. 0000-2500. The decimal point can be positioned as required.

***Control/Alarm Relay*** each of the four relays has fully adjustable hysteresis such that it can be energised at any point of the range and de-energised at any point thus providing a wide differential for pump or valve control, or small differential for alarms or close control. Fail safe high or fail safe low is determined by the de-energised level being set higher, or lower than the energising level.

***Re-transmission*** isolated milliamp and voltage signals commencing from low scale are provided. These can be used to drive an analogue indicator or graphics for VDU etc. The re-transmission signals can be made reverse acting i.e. decreasing for increasing input signal such as maybe required for depths below datum as often used for borehole applications.

***Failure Relay*** this de-energises should the milliamp input signal rise above or fall below the programmed zero and span values, allowing an alarm to be raised for short or open circuits in the loop powered systems.

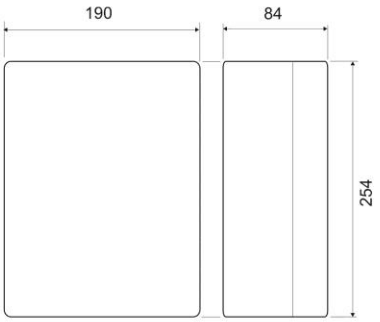
## *Technical Data*

| | |
|---|---|
| Display: | 4 digit 9mm LCD configurable between 0.100 and 9999. The decimal point can be positioned to suit |
| Input: | Within the range 0-25mA (min span 2mA) input circuit fully isolated. |
| Input resistance: | 12-54ohms depending on range. |
| Zero suppression: | A live zero can be set anywhere within the range. |
| Accuracy: | Better than 1% for 4-20mA input. |
| Resolution; | 0.1% |
| Input supply: | 110V/230V,50Hz or nominal 24VDC |

## *Outputs*

| | |
|---|---|
| Sensor supply: | Nominal 24V for loop powered transducer fully isolated from input and supply. Current limiting at 30mA. |
| Four control relays: | Each having fully adjustable hysteresis with programmable fail to safe action. |
| One failure relay: | De-energised on loss of, or excess current in a loop powered system. De-energised for lost echo when used with Hawker Sondaloop. All relays provide volt free changeover contacts rated 240VAC,5amp resistive. |
| L.E.D.'s: | 4 off 'relay energised'<br>1 off 'supply on'<br>1 off 'reverse acting' re-transmission signal<br>1 off 'fault' (flashing on failure condition) |
| Re-transmission: | Programmable within 0-21mA. Max loop resistance 1000 ohms. Voltage output 1-5V when set for 4-20mA. Outputs are fully isolated from input and supply. |
| Enclosure: | Weather resistant to IP66, clear polycarbonate, polystyrene base, (254H x 190W x 84D). Weight: 1.3Kg |

## *Flexilevel 2*
### Enclosure Details




## *Ordering Information*

| Model | Voltage |
|---|---|
| FXL2 | 110VAC/230VAC /24VDC |

### *Compatible Products*

| Product | Data sheet No |
|---|---|
| Sondaloop | 283 |
| Sondaloop Remote | 299 |
| Flexicap | 254 |
| Flexicap 4-20 | 278 |
| PTX 1830 | 234 |
| Series 360 | 249 |
| Series H500 | 285 |
| HPTX 23 | 286 |

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