Penny & Giles

Universal Signal-Conditioning Module

UCM Sensor

- **Designed for use with any analogue inductive transducer**
- **Supply voltage: 10-30Vdc unregulated**
- **Output signal: 0.5 to 4.5Vdc**
- **Optional range of voltage output signals by using VM card**
- **Optional 4-20mA output signal by using CM card**
- **Optional PWM output signal by using PWM card**
- **IP68 metal enclosure**
- **User-adjustable gain and zero settings**
- **CE approved**

The UCM is a low powered Universal Conditioning Module designed to operate with a wide range of LVDTs, RVDTs and other analogue inductive transducer types. The set-up is simple and flexible, allowing user adjustment of excitation voltage and frequency, operating mode, span output and zero position, as well as configuration for multiple unit synchronisation

The UCM has a low current requirement of less than 10mA and can be synchronised with up to 50 modules in one network for multiple channel measurement systems.

The UCM provides a simple 0.5 to 4.5Vdc analogue signal output. By using additional plug-in module cards, a variety of different voltage ranges, a current output or a digital PWM output can be obtained. The module normally operates from an unregulated 10 - 30Vdc supply.

The UCM module is housed in a rugged die-cast aluminium alloy housing, suitable for harsh environmental conditions and electrically noisy installations, with EMC Immunity to 100V/m. The housing features an impressive environmental performance, with dust and fluid protection to IP68 and submersion to 2m.

SPECIFICATIONS

ELECTRICAL		
SUPPLY VOLTAGE RANGE		10 to 30Vdc unregulated
SUPPLY CURRENT		10mA maximum (plus transducer current). Additional 9mA with VM card fitted, additional 2.6mA (plus output current) with CM card fitted or additional 3mA with PWM card fitted
REVERSE POLARITY PROTECTION		Yes
MISCONNECTION		Any terminal can be connected to ground without damage. Any terminal (except transducer primary excitation output) can be connected to positive supply without damage.
OPTIONS		Module is designed to operate 4, 5 or 6 wire differential LVDTs, ratiometric LVDTs and 3 wire inductive half bridge transducers (or RVDT equivalents). Can also be configured to work with potentiometers
PRIMARY VOLTAGE		1 or 3Vrms (link selectable)
PRIMARY FREQUENCY		2.5kHz, 5k or 10k (link selectable)
PRIMARY IMPEDANCE		>50Ω @ 1Vrms or >150 @ 3Vrms
VOLTAGE RANGE		60 to 5000mVrms
PRIMARY/SECONDARY PHASE SHIFT		<±45° in differential mode. No restriction in ratiometric mode
CIRCUIT LOADING ON TRANS. SECONDARY COILS		>70k any connection
OUTPUT VOLATGE – RANGE		0.5 to 4.5Vdc
OUTPUT CURRENT – SOURCING		<1mA
OUTPUT CURRENT – SINKING		<20µA
OUTPUT IMPEDANCE		<1Ω
OUTPUT LOAD		>5kΩ resistive to 0V line (when CM module is fitted, should be between 20Ω and 400Ω for best linearity)
LINE REGULATION		<0.001% span/Volt
TEMPERATURE STABILITY		<200ppm/°C
POWER ON SETTLEMENT TIME		<100 to within 0.25% of final reading
NON-LINEARITY (CIRCUIT ONLY)		<±0.01% full stroke
OUTPUT FILTER		3 pole low pass
FREQUENCY RESPONSE		250Hz (-3dB)
OUTPUT RIPPLE AND NOISE		<3mVrms
OUTPUT ADJUSTMENT RANGE	:ZERO :GAIN	Electrical null may be set anywhere within the output range Coarse adjustment by links, fine adjustment by potentiometer
GAIN/ZERO INTERACTION		Non interactive if zero adjusted first
VM CARD		0 to 5 & -5 to 0, 0 to 10 & -10 to 0, ±2.5, ±5, ±7.5, ±10Vdc
CM CARD		4 to 20mA
PWM CARD		TTL level compatible signal with a 10 - 90% duty cycle. User selectable frequencies of 100, 130, 310 and 1000Hz. Logic signals: LOW <0.4Vdc HIGH 4.5 ±0.5Vdc
SYCHRONISATION		Up to 50 modules can be synchronized in one network
LVDT/RVDT CABLE LENGTH		25m maximum (best linearity is achieved with lowest acceptable input frequency when using longer cables)
MECHANICAL		
ENCLOSURE		Powder coated aluminium alloy
WEIGHT		320g maximum
MOUNTING		Bulkhead mounting via M5 fixing holes
CABLE EXIT		Via glands – cable diameter must be between 3.0 and 8.0mm diameter to seal to IP68
ENVIRONMENTAL		
PROTECTION CLASS		IP68 to 2m for 1 hour duration – subject to user cable diameters 3-8mm and securely locked in glands
OPERATIONAL TEMP. / STORAGE TEMP.		-40 to +85°C / -40 to +100°C
EMC IMMUNITY LEVEL		>100V/m with 1m maximum distance to sensor

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