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OG4007
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OPERATING GUIDE

MODEL 4007

FOUR-CHANNEL SENSOR CONDITIONER

NOTE:

Model 4007 Four-Channel Sensor Conditioner has four sensor conditioners packaged on a single PC Board operating from a common power supply. Each channel has two outputs labeled AC and DC. DC output is proportional to the RMS input. Each channel is equipped with a variable low pass filter of 3 kHz or 10 kHz. Channel 1 features logical output.

This manual contains:

- 1) Specifications, Series 4007**
- 2) Outline/Installation drawing 127-4007**

SPECIFICATIONS

MODEL 4007 FOUR-CHANNEL SENSOR CONDITIONER

INPUT (4 CHANNELS)

TRANSDUCER EXCITATION CURRENT	2 – 6 (adjustable)*	mA
COMPLIANCE VOLTAGE	>20	VDC
FULL SCALE INPUT, MAX.	2.0	V rms
INPUT IMPEDANCE	>100	kOhm
BOARD SUPPLY VOLTAGE REQUIRED	20-36	VDC
CONNECTOR	Two Terminals	

CONDITIONING

GAIN (AC OUTPUT) $\pm 0.05\%$	1	
FREQ RESPONSE -3 dB (3kHz Low Pass)	0.5 - 3000	Hz
(10kHz Low Pass)	0.5- 10000	Hz
LOW PASS FILTER CUTOFF	-24	dB/octave
COUPLING TIME CONSTANT	>5	SEC
FREQUENCY RESPONSE (BEFORE FILTERS)	20	kHz

OUTPUT (AC)

MAXIMUM OUTPUT	2.0	V rms
CURRENT	5.0	mA
IMPEDANCE	50	Ohm
OFFSET $\pm 50\text{mV}$	0	mV
CONNECTOR	Two Terminals	

OUTPUT (DC)

GAIN	2.66**	mVDC/mVRMS
MAXIMUM OUTPUT	5	VDC
CURRENT	5	mA
IMPEDANCE	10	Ohm
OFFSET $\pm 0.05\text{V}$	1	VDC
CONNECTOR	Two Terminals	

LOGICAL OUTPUT (CHANNEL 1 ONLY)

SIGNAL VOLTAGE	5***	VDC
SIGNAL CURRENT	30	mA

*- The calibration is performed with 4 mA supply current.

** - Gain factor can be adjusted per customer's request.

*** - There is a logical switch allowing to select the desired logical output (either 0 or 5 VDC) if the sensor on the channel 1 is disconnected.

OPERATING GUIDE

MODEL 4007 FOUR-CHANNEL SIGNAL CONDITIONER

INTRODUCTION

Dytran Model 4007 is packaged on a single printed circuit board indented for installation in OEM applications. This unit may be used to power up to four IEPE type transducers. Its output DC levels are proportional to the RMS amplitudes of the transducers' signals. The excitation current is factory set to 2.5 mA, and may be set from 2.5 to 6 mA by a potentiometer on each channel. Signal amplitudes up to 2 V rms are converted to a DC level between 1 and 5 VDC with a true-RMS conversion circuit. Each channel has an LED to indicate current and the current for each channel can be turned off by a switch. An input sensing circuit on channel 1 provides a logic output for an open or short condition at the input.

Two switchable low pass filter cutoffs for each channel are 3 kHz – LO, and 10 kHz – HI. Other filter cutoff frequencies can be provided. Both AC and DC output signals are via the selected low pass filter. The full scale AC output is 2.00 V rms.

PHYSICAL

Consult the Outline/Installation drawing 127-4007, supplied with this operating guide, for physical configuration and pinouts.

The physical configuration of this instrument is basically a 5 inch long by 4 inch wide printed circuit board with four standoffs each 0.5 inch high. Each standoff allows standard 10-32 screw through.

POWERING

Model 4007 operates from constant voltage power units and requires 20 – 36 VDC.

Only one constant voltage supply is required for all four channels.

LOW FREQUENCY RESPONSE

The discharge time constant of the models is set nominally, at 5 seconds. This yields a lower -3db frequency of 0.03 Hz and a lower 5% down frequency of 1.6 Hz. Both AC and DC outputs are affected by the high pass filter.

HIGH FREQUENCY RESPONSE

There are two settings for the low pass filtering in this model. A user can choose to use either 3 kHz cutoff frequency or 10 kHz cutoff frequency. The switch labeled as LO and HI corresponds to 3 kHz and 10 kHz respectively. The signal decay is -24 dB/octave. Both AC and DC outputs are affected by a chosen filter.

LOGIC

The logic output on the channel 1 of the 4007 model is designed to be used in control applications. There are two possible scenarios of operation. Scenario one: the IEPE sensor is connected to channel 1 and turned on. This condition provides 5 VDC and 30 mA of current on the logic output. In case the IEPE sensor is disconnected or shorted the logic output turns to zero. Scenario two: the IEPE sensor is connected to channel 1 and turned on. This condition provides 0 VDC and 0 mA of current on the logic output. In case the IEPE sensor is disconnected or shorted the logic output turns to 5 VDC and 30 mA of current. Depending on user's need, either of those scenarios can be selected by the switch located next to the logic output.

DC OUTPUT

When there is no signal coming into the conditioner, there is a 1 VDC offset on the DC output of each channel. When a signal comes in, it is converted through the true-RMS converter, the gain of 2.667 is applied, and the resultant voltage is added on top of the initial 1 VDC offset.

AC OUTPUT

There are no conditioning being introduced to the AC output.

MAINTENANCE AND REPAIR

These instruments are not field repairable. If you detect a problem with the measurement system, call the Dytran factory to talk with one of our service engineers. If the instrument must be returned for evaluation and/or repair, you will be assigned an RMA (Returned Material Authorization) number to help us track the unit through the evaluation process.