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INNOVATIONS IN FORCE MEASUREMENT
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TELEMETRY TRANSMITTER
MODEL: 90305

Operators Manual

The transmitter consists of a strain gage amplifier, a 4 pole low pass butterworth filter, analog to digital converter, control electronics, and a 900MHz radio transmitter. Operation of the transmitter is as follows:

1. Connect the strain gage sensor to the sensor-input pins as shown in figure 1.

2. Connect the required gain resistor to the gain pins as shown in figure 1. This resistor sets the full-scale input range of the transmitter. See "Selecting the Gain Resistor" on the next page for more information.

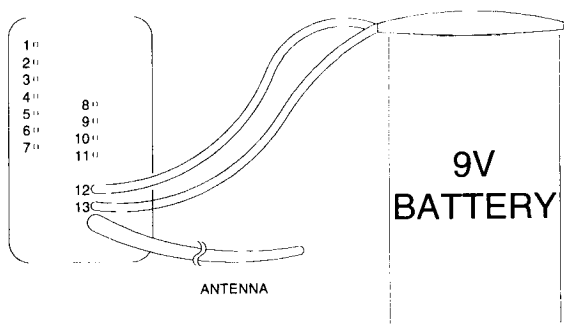
3. Select the desired channel by the proper pin combination as shown in table 1. Use figure 1 for a reference. Grounding the pin inputs a 0. Leaving it unconnected inputs a 1.

4. Connect power to the power input pins as shown in figure 1. Polarity does not matter. Maximum input voltage is 20 volts DC.

When powered up, the unit will transmit the sensor information to the receiver on the same channel. For proper operation the antenna must be kept away from the transmitter. To obtain maximum range, place the antenna far from other metal objects and insure that it is fully extended.

Sensor Inputs
1 +Excitation
2 +Signal
3 -Signal
4 -Excitation
5 Gain resistor
6 Gain resistor
7 Shield

Battery Connection
12 Input #1
13 Input #2



Channel Selection
8 Ground
9 CS0

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10 CS1
11 CS2

Fig. 1 – Transmitter Connections

Freq.(MHz)	CS2	CS1	CS0
903.3	0	0	0
906.3	0	0	1
907.8	0	1	0
909.3	0	1	1
912.3	1	0	0
915.3	1	0	1
919.8	1	1	0
921.3	1	1	1

Table 1 - Channel Selections

Selecting the Gain Resistor

Select the gain resistor using the following equation;

Rg = (250 x full scale output in mV/V) / (.88 – (.005 x full scale output in mV/V))

Example;

For a 2mV/V full-scale sensor output, using the equation above, we have…

Rg = (250 x 2mV/V) / (.88 – (.005 x 2mV/V)) = 500 / (.88 - .01) = 500 / .87 = 575 ohms.

Choose the standard resistor value closest to the calculated value. Do not go under the calculated value by more than 2%, as this will cause the transmitter to overrange with a full-scale load on the sensor. Choose good quality, low temperature drift resistors. See table 2 for a list of standard 1% resistors to use for gain and the corresponding input ranges.

Resistor (ohms)	Full Scale Input (mV/V)	Resistor (ohms)	Full Scale Input (mV/V)
174	.6	698	2.4
226	.8	750	2.6
287	1.0	806	2.8
340	1.2	866	3.0
402	1.4	931	3.2
464	1.6	976	3.4
523	1.8	1050	3.6
576	2.0	1100	3.8
634	2.2	1150	4.0

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Table 2 – Input Ranges from Gain Resistors

FCC NOTICE

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in the particular installation. If this device does cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the computer and receiver.
3. Connect the computer into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

Caution Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Specifications

General

Sensor input	Full Bridge Strain Gage
Sensor input range	+/-.2mV/V to +/-10mV/V
Gain	adjustable with external resistor
Excitation	+5VDC
Resolution	12 bits (11 bits plus sign)
Accuracy	.05% of Full Scale
Sample rate	1250 samples/second
Low pass filter cutoff	300Hz
Power supply input	6 – 20VDC
Power supply current (w/o sensor)	xxxx mA

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Temperature

Operation ..... 0 – 70 deg C
Sensor input Drift ..... .01% per deg C

Recommended Battery

Type ..... 9VDC alkaline
Approximate battery life (350 ohm sensor) xx hrs.

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