Tech Note 4

24apr13

Field wiring

H11-LIN Wiring – Current

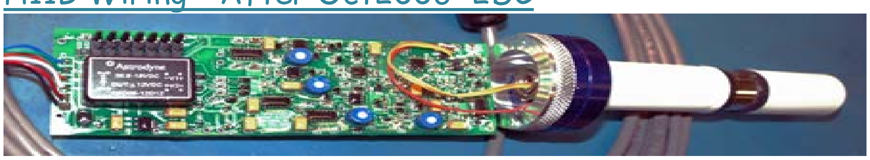
Outputs

- BROWN KE (mass) – 240uS TTL/CMOS compatible positive pulse
- WHITE PC (particle counts) – 700uS TTL/CMOS compatible positive pulse
- GREEN GAIN - tie to +12=Gain10x, tie to GND=Gain1X
- BLUE PHA 50uS, Pulse height varies linearly w/KE impact energy/ impact

Power

- RED Power + 12VDC @ 70ma
- BLACK Ground

H11B Wiring - After Oct2006 2DC



Outputs

- BROWN KE (mass) - pulse
- WHITE PC (particle counts) – pulse

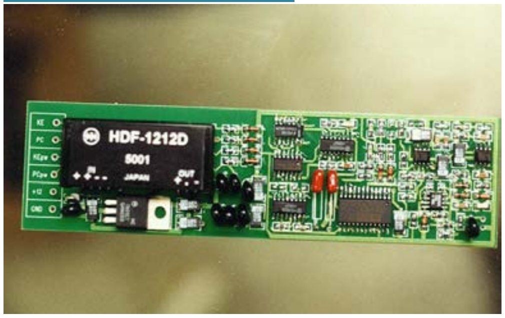
Alternate outputs (seldom used)

- GREEN KE (mass) - variable pulse width
- BLUE PC (particle counts) -variable pulse width

Power

- RED Power + 12VDC @ 70ma
- BLACK Ground

H11A 1999 S/N 211



Power

- RED=+12V
- SHEILD & BLK(16ga)=Gnd

H11A Outputs

- BLK(18ga)=SigGnd
- BRN(18ga)=KE
- YEL(18ga)=PC
- GRN(18ga)=Kepw
- BLU(18ga)=PCpw

H10 Wiring 1996 S/N 190

Power

- RED=+12V
- SHEILD & BLK(16ga)=Gnd

H10 Outputs

- BLK(18ga)=SigGnd
- BRN(18ga)=KE
- YEL(18ga)=PC
- GRN(18ga)=Kepw
- BLU(18ga)=PCpw

H9 – Wiring 999 Starting S/N 213 to November 2006 PCB H9

Outputs

- BROWN KE (mass) - pulse
- RED PC (particle counts) - pulse

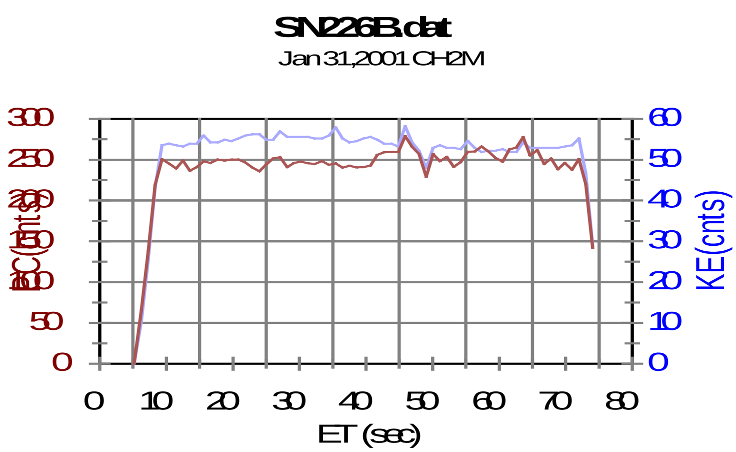
Alternate outputs (seldom used)

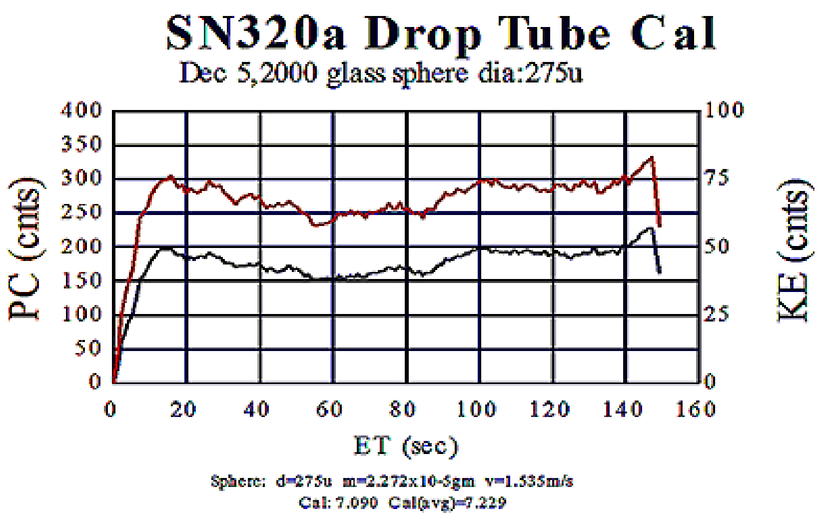
- GREEN KE (mass) - variable pulse width
- BLUE PC (particle counts) -variable pulse width

Power

- WHITE Power + 12VDC @ 90ma
- BLACK Ground

H9 Outputs 1999 Starting S/N 213





Outputs

- (brown) KE (mass) - pulse
- (red) PC (particle counts) - pulse

Alternate outputs (seldom used)

- (green) KE (mass) - variable pulse width
- (blue) PC (particle counts) -variable pulse width

Power

- (white) Power + 12VDC @ 90ma
- (black) GroundH11B Outputs (prior to November 2006)

H7X Wiring 1993 S/N 123 X means clear heat shrink on post

Power

- BLK(18ga)=Gnd
- RED(18ga)=+12VDC

Outputs

- BLK(22ga)=KE
- RED(22ga)=PC
- GRN(22ga)=Kepw
- WHT(22ga)=PCpw

H7 - Wiring 1992 S/N 92

(Early)

Power

- BLK(18ga)=GND
- WHT(18ga)=+12VDC

Outputs

- BRN(22ga)=KE
- RED(22ga)=PC
- GRN(2ga)=Kepw
- BLU(22ga)=PCpw

H7 Wiring (early) S/N 125

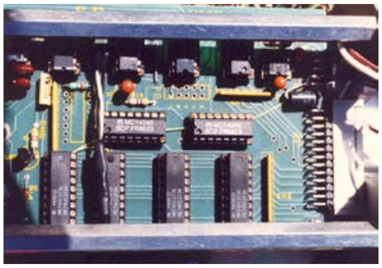
Power

- WHT(18ga)=+12VDC
- BLK(18ga)=Gnd

Outputs

- BRN(22ga)=KE
- RED(22ga)=PC
- GRN(22ga)=Kepw
- BLU(22ga)=PCpw

H7 – Wiring 1991 S/N 77



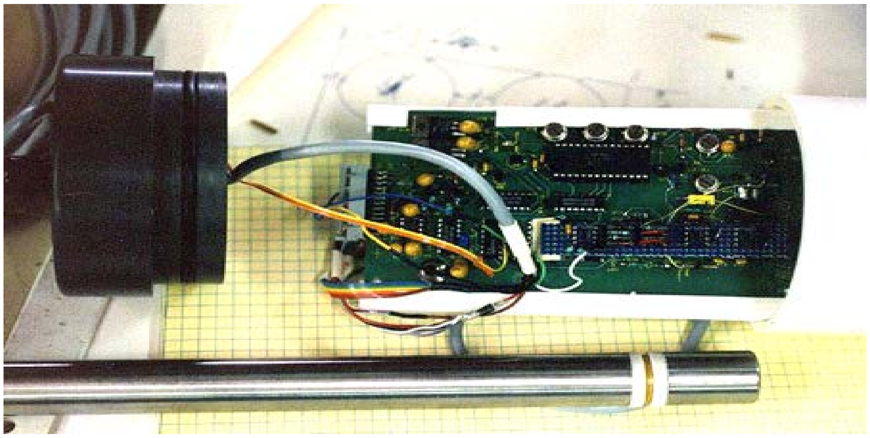
Power(Early-Alternate cable)

- BLK(18ga)=GND
- RED(18ga)=+12VDC

Outputs

- RED(22ga)=KE
- GRN(22ga)=PC
- BLK(2ga)=Kepw
- WHT(22ga)=PCpw

H3 Outputs 16feb1988 S/N 4



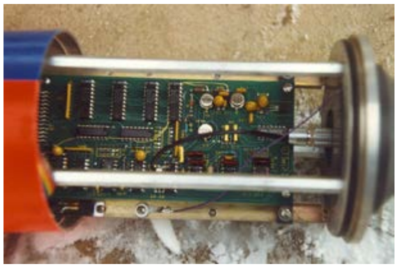
Power

- RED=+12V
- SHEILD & BLK(16ga)=Gnd

H3 Outputs (Not sure)

- BLK(18ga)=SigGnd
- BRN(18ga)=KE
- YEL(18ga)=PC
- GRN(18ga)=Kepw
- BLU(18ga)=PCpw

H1 – Wiring 1987 S/N 1->76



Power

- RED +12V
- BLACK Ground (16ga)
- SHIELD Ground

Outputs

- BLACK Signal Ground (18ga)
- BROWN KE (18ga)
- YELLOW PC (18ga)
- GREEN KE (18ga) (mass) - variable pulse width
- BLUE PC (18ga) (particle counts) -variable pulse width

The “gain” control wire should be connected to +12VDC power for maximum sensitivity. It is highly unlikely that any erosion will saturate the sensor.

This increased sensitivity provides extremely good data for movement studies. Sensit has recently announced (Jan. 2013) a new flat plate sensor model FP5 dedicated to threshold of movement detection. The standard vertical sensor model H11-LIN can be used for threshold determination but is not as accurate as the new FP5 sensor. After reviewing the field data, the “gain” control wire may be connected to ground if the data appears too sensitive. This adjustment is useful when operating the sensor in environments where blowing light debris such as leaves may cause erroneous reading or heavy rain.

Slight impacts may trigger the particle count (PC) output and create false values for threshold of sand. If this is seen in the data, the lower gain may be used by connecting the control wire to ground or left open. Connection to ground is preferable. The lower gain setting will still respond to saltating sand but keep in mind that the minimum detectable particle size will increase. The normal minimum detectable particle diameters for a typical saltation event at the low gain setting is about 75 microns where it is about 50 microns at the high gain setting (at comparable particle velocities). A prominent limiting factor is the particles coefficient of drag which can cause the particle to tend to follow the airstream around the sensor. This varies considerably with particle density.

Once you chose the desired gain setting, you may want to keep this setting throughout the length of your project at this particular erosion site. If you mix data of different gain settings, the data sets will not be relatable for obvious reasons. Sometime the details regarding field data can be easily overlooked.