

SENSOR DATA SHEET

ZED24

Noncontact
high-precision
proximity
measuring
system



ZED24

FEATURES

- > Outstanding precision: static resolution to 12 micrometers
- > Low cost
- > Excellent performance with ferrous targets
- > Variable voltage input from 12 to 24 volts DC
- > Compact rugged electronics, sensors
- > Adjustable gain for up to 22 volts output (with 24 Vdc input)
- > Temperature tolerant sensors (to 400°F)
- > High speed (10 KHz) level adjustable switched output for process control
- > Very low switching hysteresis, < 1% on ferrous targets
- > RoHS compliant

ZSY's Model ZED24 is a noncontact proximity measuring system. This low-cost, easy-to-use system makes precision static and dynamic measurements of metal targets.

THEORY OF OPERATION

The ZED24 system operates on a traditional Colpitts oscillator circuit where the sensor acts as the resonating coil for the oscillator. The proximity of the target to the sensor face pulls the oscillator, changing its frequency and amplitude of modulation, and controlling a variable gain oscillator section within the electronic circuit.

The signal is half-wave rectified and filtered to obtain an analog voltage proportional to the target position or displacement. The analog voltage output can be varied by adjustment of the gain. The input power is diode protected and regulated to provide a clean low-noise signal. The output is short-circuit current protected.

APPLICATIONS

The ZED24 may be used in a variety of applications using target materials such as ferrous or stainless steel or aluminum. Applications include displacement, vibration, sorting and event capture. With its good sensitivity to small targets, and high speed switching, it is ideal for RPM sensing in harsh environments. The opto-isolated switched output makes the ZED24 ideal for interfacing to PLC inputs, counters, timers or alarm circuits.

ZED24 SYSTEM

The ZED24 system consists of two sub-assemblies: the sensor, with integral cable, and the signal conditioning or electronics module. The ZED24 electronics is housed in a DIN rail mount enclosure with terminal connections for +12 Vdc to +24 Vdc input power and the variable voltage and switched outputs. ZSY offers either the P-3410 or P-3450 power supplies. The system comes standard with one of two production sensor configurations — the 24C or the 24CM. Both of these sensors are rated for continuous operation up to 400°F (205°C).

EMI PERFORMANCE

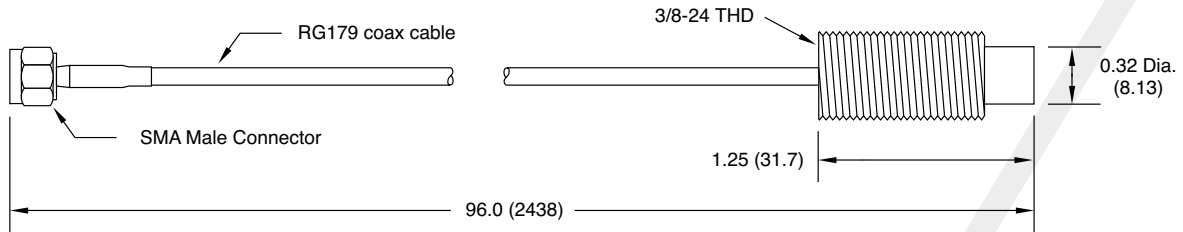
The ZED24 conforms with the applicable standards of Council Directive for *Generic for Light Industrial and Commercial Use*. Under some EMI environments, at specific frequencies, the ZED24 unit may experience a change in output voltage. In general, when exposed to those environments covered by the EMC directive, the user can expect less than 5% deviation of output. As always, contact ZSY Instrumentation for specific data or for recommended solutions to problems you are having with the ZED24.

SENSOR DATA SHEET

ZED24

ZED24 SENSORS

24C SENSOR AND SPECIFICATIONS



Dimensions shown
are in inches (mm)

ORDERING INFORMATION

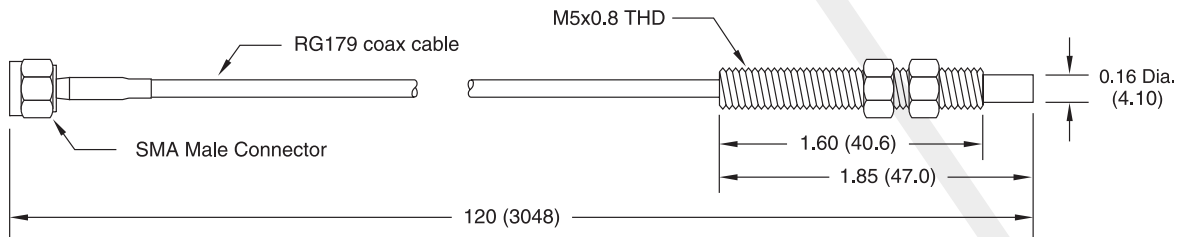
ZED24-24C	Complete system, sensor and electronics	P/N 855776-9CMT
	Sensor only	P/N 851166-008
	Electronics only	P/N 855765-001G

TARGET MATERIAL

24C SENSOR MEASURING RANGE

Non-ferrous (aluminum)	0 - 0.175 in. (0 - 4.45 mm)
Non-magnetic steels (304 stainless)	0.025 - 0.200 in. (0.64 - 5.08 mm)
Magnetic steels (4130)	0.040 - 0.275 in. (1.02 - 6.99 mm)

24CM SENSOR AND SPECIFICATIONS



Dimensions shown
are in inches (mm)

ORDERING INFORMATION

ZED24-24CM	Complete system, sensor and electronics	P/N 855776-5CM
	Sensor only	P/N 851520-004
	Electronics only	P/N 855765-001G

TARGET MATERIAL

24CM SENSOR MEASURING RANGE

Non-ferrous (aluminum)	0 - 0.100 in. (0 - 2.54 mm)
Non-magnetic steels (304 stainless)	0.010 - 0.125 in. (0.254 - 3.18 mm)
Magnetic steels (4130)	0.015 - 0.150 in. (0.38 - 3.81 mm)

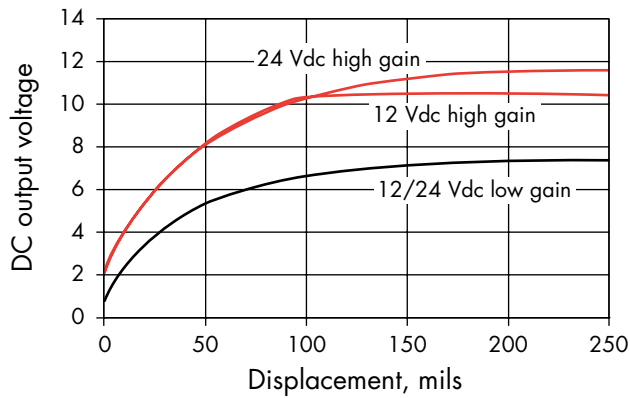
SENSOR DATA SHEET

ZED24

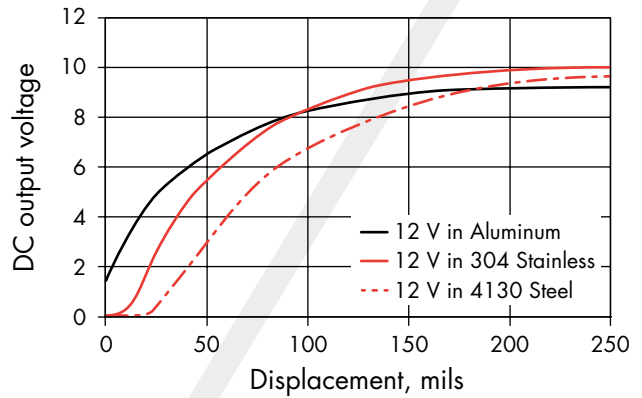
ZED24 SENSORS

24C SENSOR RESPONSE DATA

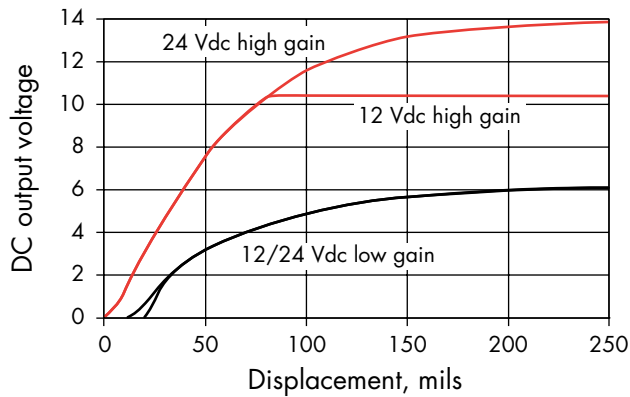
Aluminum output for 12 and 24 volt inputs



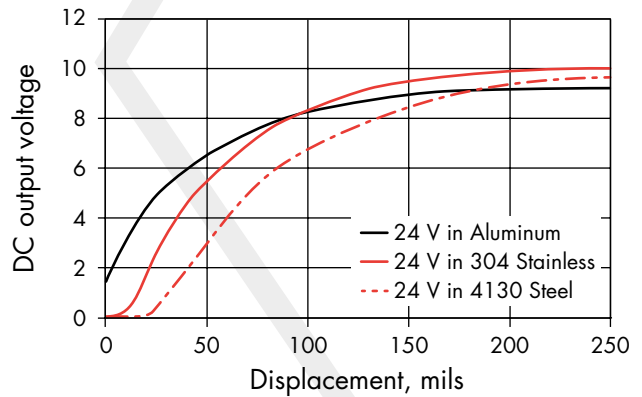
Outputs at medium gain and 12 volt input



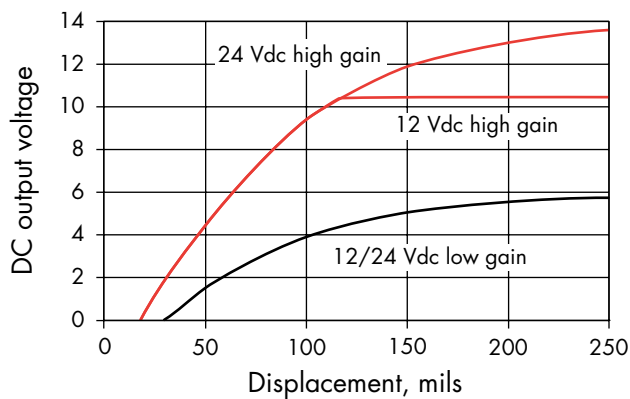
304 SS output for 12 and 24 volt inputs



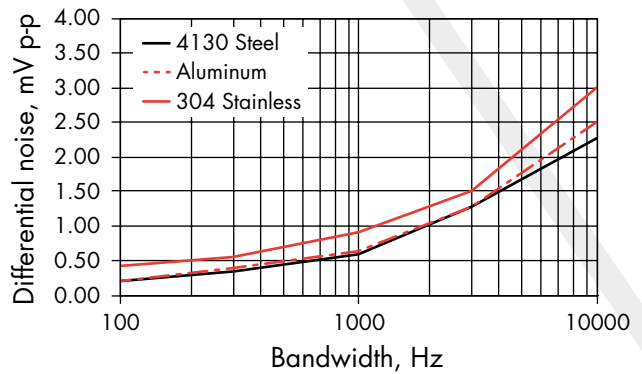
Outputs at medium gain and 24 volt input



4130 steel output for 12 and 24 volt inputs



Example output noise @ 12 Vdc input, mid gain, medium displacement



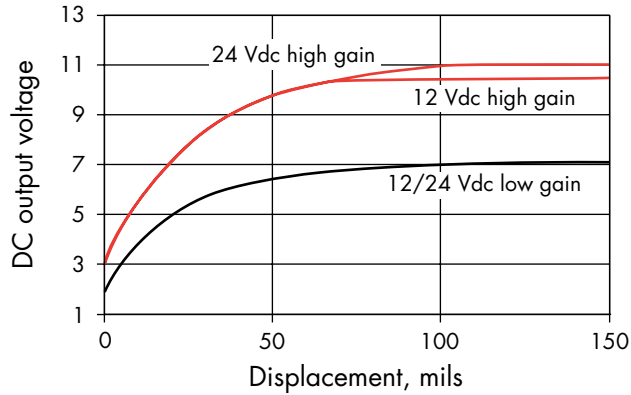
SENSOR DATA SHEET

ZED24

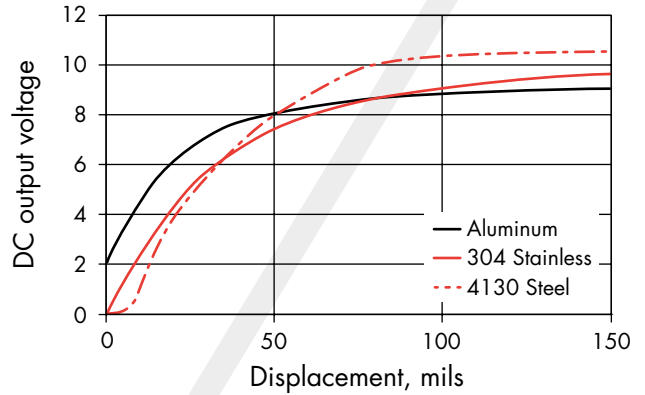
ZED24 SENSORS

24CM SENSOR RESPONSE DATA

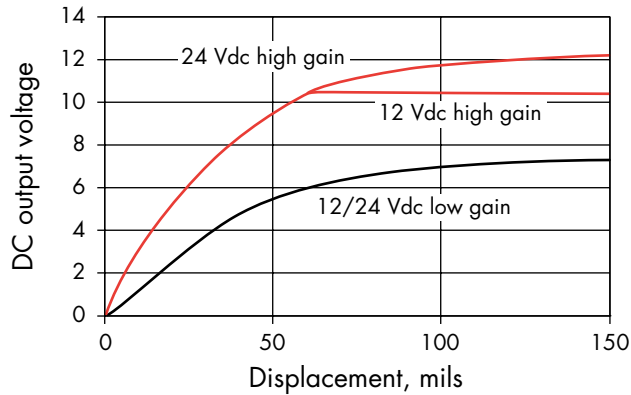
Aluminum output for 12 and 24 volt inputs



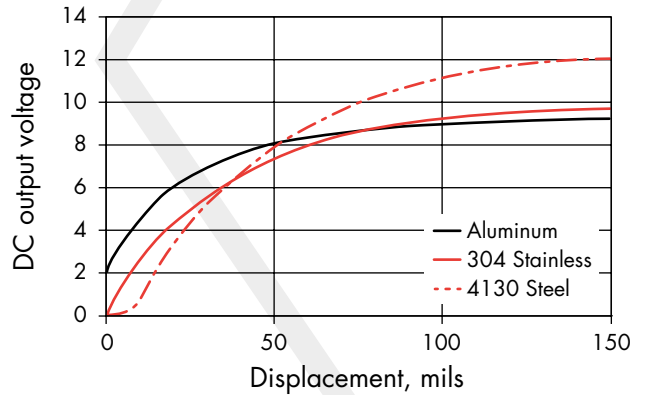
Outputs at medium gain and 12 volt input



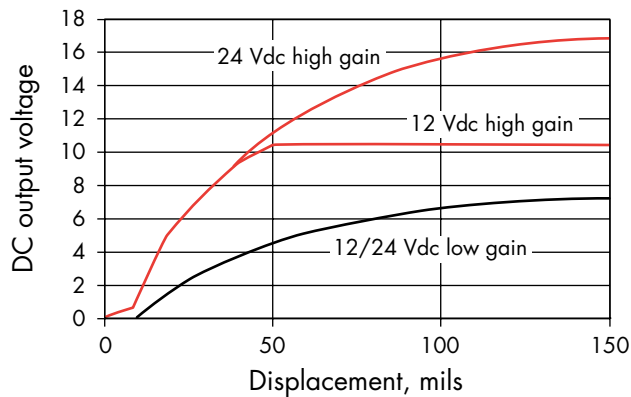
304 SS output for 12 and 24 volt inputs



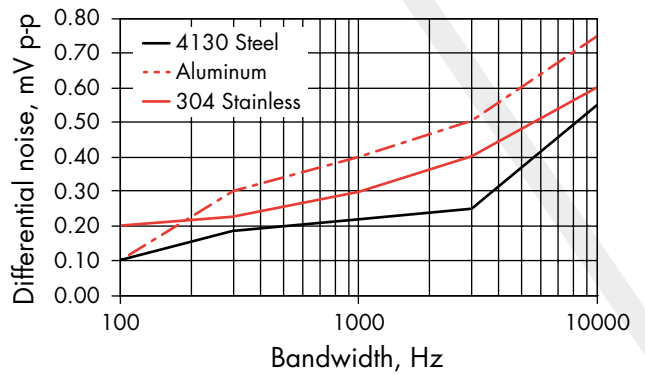
Outputs at medium gain and 24 volt input



4130 steel output for 12 and 24 volt inputs



Example output noise @ 12 Vdc input, mid gain, medium displacement



SENSOR DATA SHEET

ZED24

SPECIFICATIONS

ELECTRICAL

INPUT

Voltage Regulated 12 Vdc to 24 Vdc.
Fuse limit input current from power source to 11 mA, 0.28 W maximum at full load.

ANALOG OUTPUT

Voltage 0-22 Vdc minimum with 24 Vdc input; 0-10 Vdc minimum with 12 Vdc input. The 0-22 Vdc and 0-10 Vdc are maximum voltages with the defined input voltage.

Current (full load) 4.2 mA maximum
Impedance 50 ohms
Frequency response 0-10 KHz (± 3 db)

SWITCHED OUTPUT

Load current 100 mA maximum AC or DC
Load voltage 30 V r.m.s., 42.4 V peak, or 60 Vdc

On resistance 30 ohms minimum / 50 ohms maximum

Switch point hysteresis 0.56% of full scale for 24C sensor, and 0.97% of full scale for 24CM sensor using 24 Vdc input on 4130 steel

Frequency response 3.3 KHz

RESOLUTION

Less than .008% of measuring range using a 24CM sensor on a 4130 steel target at mid scale, mid gain, and 12 Vdc input

ENVIRONMENTAL

OPERATING TEMPERATURE RANGE

Sensor and cable 0°F to +400°F (-18°C to +205°C)
Electronics +32°F to +150°F (0°C to +66°C)

STORAGE TEMPERATURE RANGE

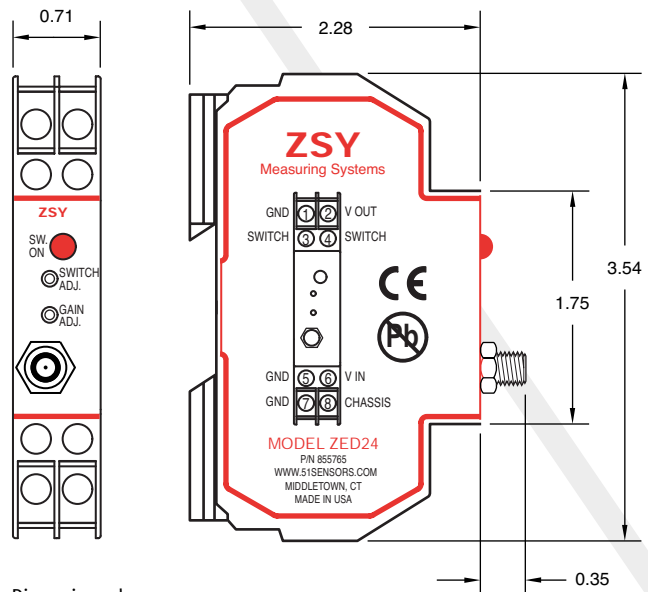
Sensor and cable -60°F to +400°F (-52°C to +205°C)
Electronics -58°F to +212°F (-50°C to +100°C)

THERMAL DRIFT

Less than 0.22% per °C of full scale for sensor, electronics or system

IP RATING

Sensor IP67
Electronics IP40



Dimensions shown are in inches

UK Headquarter :

Asia:

ZSY GROUP LTD

ZHENSHANGYOU TEC HNOLOGIES CO.,LTD .

TEL: 0044 2084323088

TEL: +86 755 26528100 / 26528011 / 26528012

FAX: 0044 2084323087

FAX: +86 755 26528210

ADD: RM101, MAPLE HOUSE 118

ADD: RM 2210, ZHONGYOU HOTEL

HIGH STREET, PURLEY, LONDON,

1110 NANSHAN ROAD, NANSHAN DISTRICT

ENGLAND, CR8 2AD

518054 SHENZHEN, CHINA

EMAIL:info@zsygroup.com

EMAIL:info@51sensors.com

WEB: <http://www.zsygroup.com>

WEB: <http://www.51sensors.com>