

## Product Data Sheet

# N-E11 and N-E13 Series Nuclear Electronic Pressure Transmitters



These transmitters measure absolute pressure, gauge pressure, or differential pressure, and transmit a proportional 4 to 20 or 10 to 50 mA dc signal. They are 2-wire transmitters that have been type-tested for applications under seismic, radiation, aging, and loss-of-cooling accident (LOCA) environments of Nuclear Power Plants per IEEE 323-1974 and 344-1975 requirements.

### QUALIFIED FOR NUCLEAR APPLICATIONS

A Design Control and Quality Assurance Program has been established which complies with ANSI N45.2 and Code of Federal Regulations 10CFR50, Appendix B. Certificates of Testing are provided with each transmitter relating to nuclear cleaning, hydrostatic testing, and calibration. Production transmitters have been type tested to demonstrate their performance, under typical accident conditions, for Class IE, in-containment applications of Nuclear Power Generating Stations. Type test reports (user documents) are available.

### SERVICEABILITY

The complete line of N-E11 and N-E13 Series transmitters are supplied with detailed instructions and parts lists that provide the user considerable flexibility and capability for field repair.

### FIELD INTERFACE

Optional junction box allows quick and easy field wiring to terminal blocks without the need for nuclear splices or seals. Optional seismic mounting brackets allow vertical or horizontal pipe mounting, or wall mounting.

**OPERATING CONDITIONS**

<b>Influence</b>	<b>Reference Operating Conditions</b>	<b>Normal Operating Conditions Limits (OBE)</b>	<b>Operative Limits (DBE)</b>
Ambient Temperature (Topworks with Amplifier)	24 ± 2°C (75 ± 3°F)	0 and 80°C (32 and 180°F)	-18 and + 216°C <sup>(a)</sup> (0 and 420°F)
Process Temperature	24 ± 2°C (75 ± 3°F)	0 and 80°C (32 and 180°F)	-18 and +120°C <sup>(a)</sup> (0 and 250°F)
Relative Humidity	50 ± 10%	No Limit	No Limit
Ambient Pressure	101 kPa (14.7 psi) (Atmospheric)	94 and 108 kPa (13.7 and 15.7 psi)	586 kPa (85 psi)
Vibration and Seismic ("g" load in any plane)	Negligible	Per OBE Test Profile (See Figure 1)	Per SSE Test Profile (See Figure 2)
Position	Upright	0° to 90° tilt in any plane	No Limit
Radiation Rate (Gamma)	Negligible	0.2 rad/h	3 X 10 <sup>6</sup> rad/h <sup>(b)</sup>
Total Integrated Dose (TID) (Gamma-Air Equivalent)	Negligible	3.5 x 10 <sup>4</sup> rad	2.0 x 10 <sup>8</sup> rad <sup>(c)</sup>

(a)LOCA peak is 216°C (420°F) for a 3-minute duration, and 176°C (350°F) for a 10-minute duration. Refer to LOCA/HELB test profile Figure 6.

(b)Accident dose rate is 3 x 10<sup>6</sup> rad/h for 2 hours, then 1 x 10<sup>6</sup> rad/h.

(c)TID includes 1.5 x 10<sup>8</sup> rad accident dosage plus 0.3 x 10<sup>8</sup> rad gamma equivalent for a beta TID of 1.5 x 10<sup>9</sup> rad. Margin also included in TID.

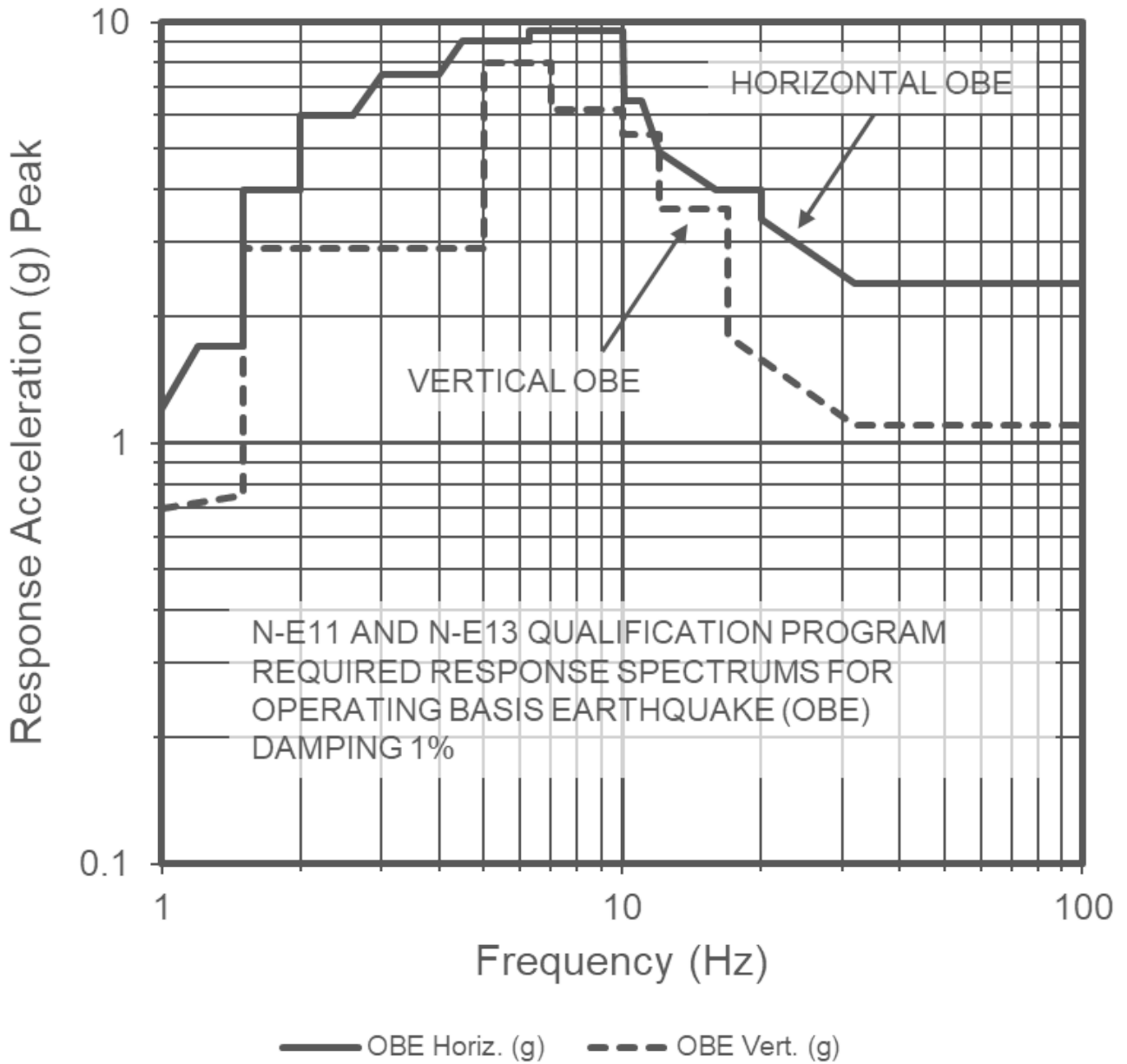


Figure 1, REQUIRED RESPONSE SPECTRUMS (RRS) FOR OPERATING BASIS EARTHQUAKE (OBE), 1% DAMPING

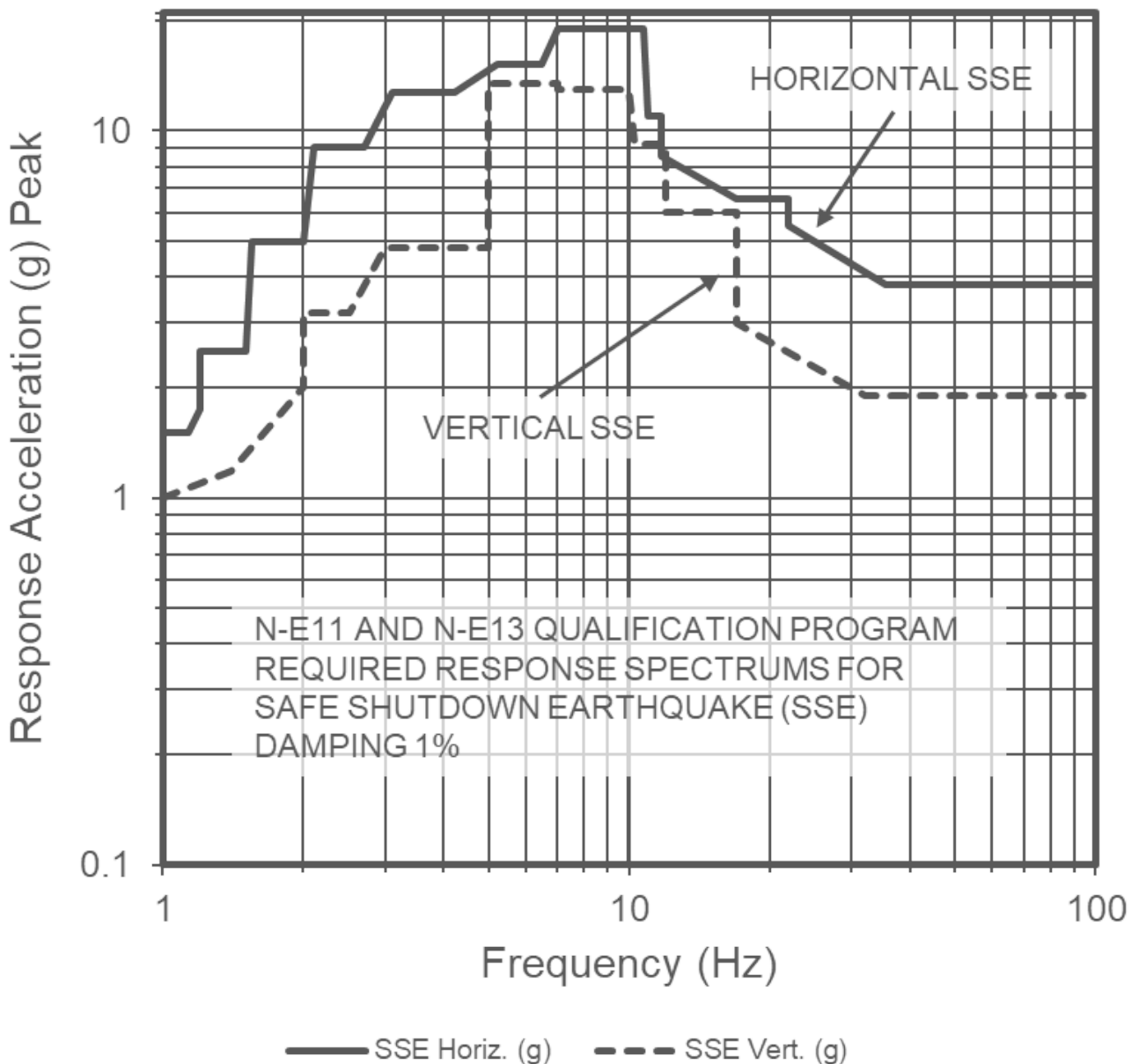


Figure 2, REQUIRED RESPONSE SPECTRUMS (RRS) FOR SAFE SHUTDOWN EARTHQUAKE (SSE), 1% DAMPING

**FUNCTIONAL SPECIFICATIONS**

**N-E11AH Series Absolute Pressure Transmitters**

Span, Range, and Maximum Overrange Pressure

Transmitter Series	Sensor Code (Capsule)	Span Limits (psia)	Range Limits <sup>(a,b)</sup> (psia)	Maximum Overrange Pressure <sup>(c)</sup> (psia)
N-E11AH	A	10 and 80 psia	0 and 90 psia	90
	B	20 and 200 psia	0 and 350 psia	350
	C	40 and 400 psia	0 and 750 psia	750

(a)Suppressed-zero ranges require optional zero suppression kit so that ranges within upper range limit can be obtained. Sum of lower range value and calibrated span must not exceed upper range limit. Also, for the N-E11AH only, the lower range value cannot exceed nine times the minimum span for each

capsule.

(b)Maximum operating pressure may not exceed the maximum range limits listed.

(c)Transmitters have been factory-tested at the maximum overrange pressure for one minute with no degradation of performance.

**N-E11DM Series Differential Pressure Transmitters**

Span, Range, and Maximum Differential Pressure

Transmitter Series	Sensor Code (Capsule)	Span Limits (psid)	Range Limits <sup>(a,b)</sup> (psid)	Maximum Differential Pressure <sup>(c)</sup> (psid)
N-E11DM	B	20 and 200	-180 and + 350	350
	C	40 and 400	-360 and +750	750
	D	100 and 1000	-900 and + 1500	1500
	E	200 and 2000	-1800 and + 3000	2000

(a)Nonzero based ranges require optional zero elevation-suppression kit. With this optional kit, zero may be elevated or suppressed to as much as nine times the minimum span for each capsule. Upper and lower range values must not exceed the range limits of the capsule.

(b)Negative values indicate that the higher of the two measured pressures is on the normal “low side” (body side) of the transmitter. Positive values indicate a higher pressure on the “high side”.

(c)Maximum operating pressure (static + differential) = 21 MPa (3000 psi). CAUTION: During startup and shutdown do not damage sensor by exceeding applicable maximum differential pressure.

**N-E11GM Series Gauge Pressure Transmitters**

Span, Range, and Maximum Overrange Pressure

Transmitter Series	Sensor Code (Capsule)	Span Limits (psi)	Range Limits <sup>(a,b)</sup> (psi)	Maximum Overrange Pressure <sup>(c)</sup> (psi)
N-E11GM	A	10 and 80	-15 and + 100	100
	B	20 and 200	-15 and + 350	500
	C	40 and 400	-15 and +750	1000
	D	100 and 1000	-15 and + 1500	2000
	E	200 and 2000	-15 and + 3000	4000

(a)Nonzero based ranges require optional zero elevation-suppression kit. With this optional kit, zero may be suppressed to a maximum of nine times the minimum span for the N-E11GM capsules. However, the sum of zero suppression plus calibrated span must not exceed the upper range limit. Zero may be elevated to the lower range limit (full vacuum) with the kit.

(b)Maximum operating pressure may not exceed the maximum range limits listed.

(c)Transmitters have been factory-tested at the maximum overrange pressure for one minute with no degradation of performance.

**N-E13DL, DM, and DH Series Differential Pressure Transmitters**

Span, Range, and Maximum Static Pressure

Transmitter Series	Sensor Code (Capsule)	Span Limits (inH2O)	Range Limits <sup>(a)</sup> (inH2O)	Maximum Differential Pressure (psia)
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N-E13DL	L	5 and 25	-25 and +25	500
N-E13DM	M H	20 and 205 200 and 850	-205 and +205 -850 and +850	2000 2000
N-E13DH	M H	20 and 205 200 and 850	-205 and +205 -850 and +850	3000 3000

(a) Nonzero based ranges require optional zero elevation-suppression kit. Upper and lower range values must not exceed range limits.

### **SUPPLY VOLTAGE AND EXTERNAL LOAD LOOP RESISTANCE**

The supply voltage limits are shown in Figures 3 and 4 for both LOCA and non-LOCA applications. Figure 3 is for Class IE Transmitters (Nuclear Classification Code CS-N/SRC) per IEEE 323-1974 and IEE 344-1975. Figure 4 is for Class II Transmitters (Nuclear Classification Code CS-N/SRD), structural integrity only per IEEE 344-1975. However, for a given supply voltage, the limits of the transmitter external loop resistance are set. To determine the actual loop resistance, add the series resistance of each component\* in the loop.

\*Transmitter without a junction box is considered as 0 ohm; transmitter with junction box has 10-ohm resistance for the 10 to 50 mA version, or 25 ohms for resistance for the 4 to 20 mA version.

## Supply Voltage and External Load Loop Resistance

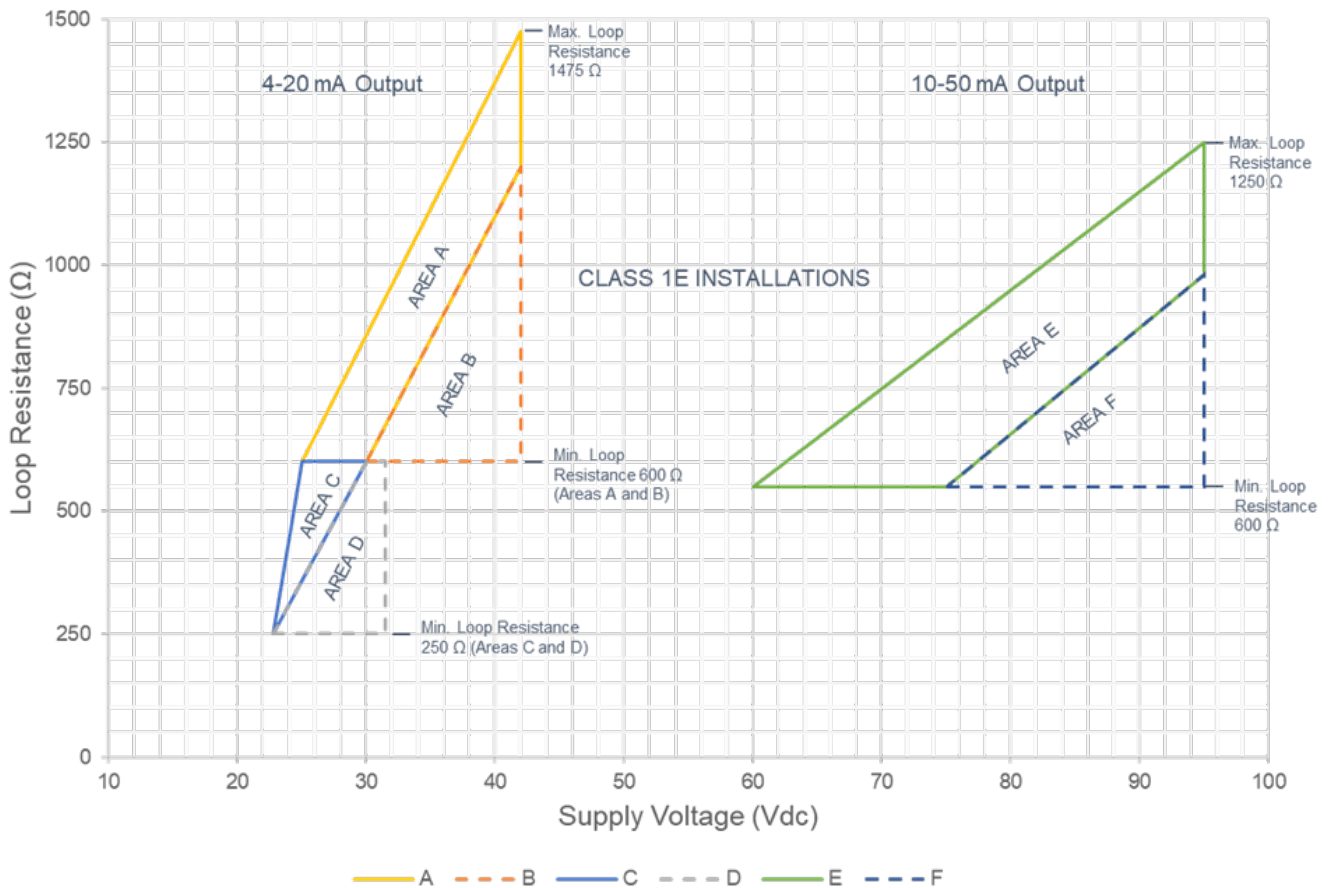


Figure 3, Supply Voltage vs Loop Resistance for Class 1E Transmitters

### 4-20 mA Output

Area A — Operating Area requirements for non-LOCA/HELB applications of transmitters up to 80°C (180°F) ambient. Transmitters powered by a separate power supply and not from a system module.

Area B — Operating Area requirements for non-LOCA/HELB and LOCA/HELB applications of transmitters up to 216°C (420°F) ambient. Transmitters powered by a separate power supply and not from a system module.

Area C — Operating Area requirements for non-LOCA/HELB applications of transmitters up to 80°C (180°F) ambient. Transmitters powered thru a system module using a field bus supply or other system source. Reference SPEC 200 System Input/Output Components N-2AI-12V and N-2AI-13V Converters. Loop resistances set by loop configuration internally in the I/O component.

Area D — Operating Area requirements for non-LOCA/HELB and LOCA/HELB applications of transmitters up to 216°C (420°F) ambient. Transmitters powered thru a system module using a field bus supply or other system source. Reference SPEC 200 System Input/Output Components N-2AI-12V and N-2AI-13V Converters as in Area C.

### 10-50 mA Output

Area E — Operating Area for transmitters in non-LOCA/HELB applications up to 80°C (180°F) maximum.

Area F — Operating Area for transmitters in LOCA/HELB applications up to 216°C (420°F) maximum and non-LOCA/HELB applications.

## Supply Voltage and External Load Loop Resistance

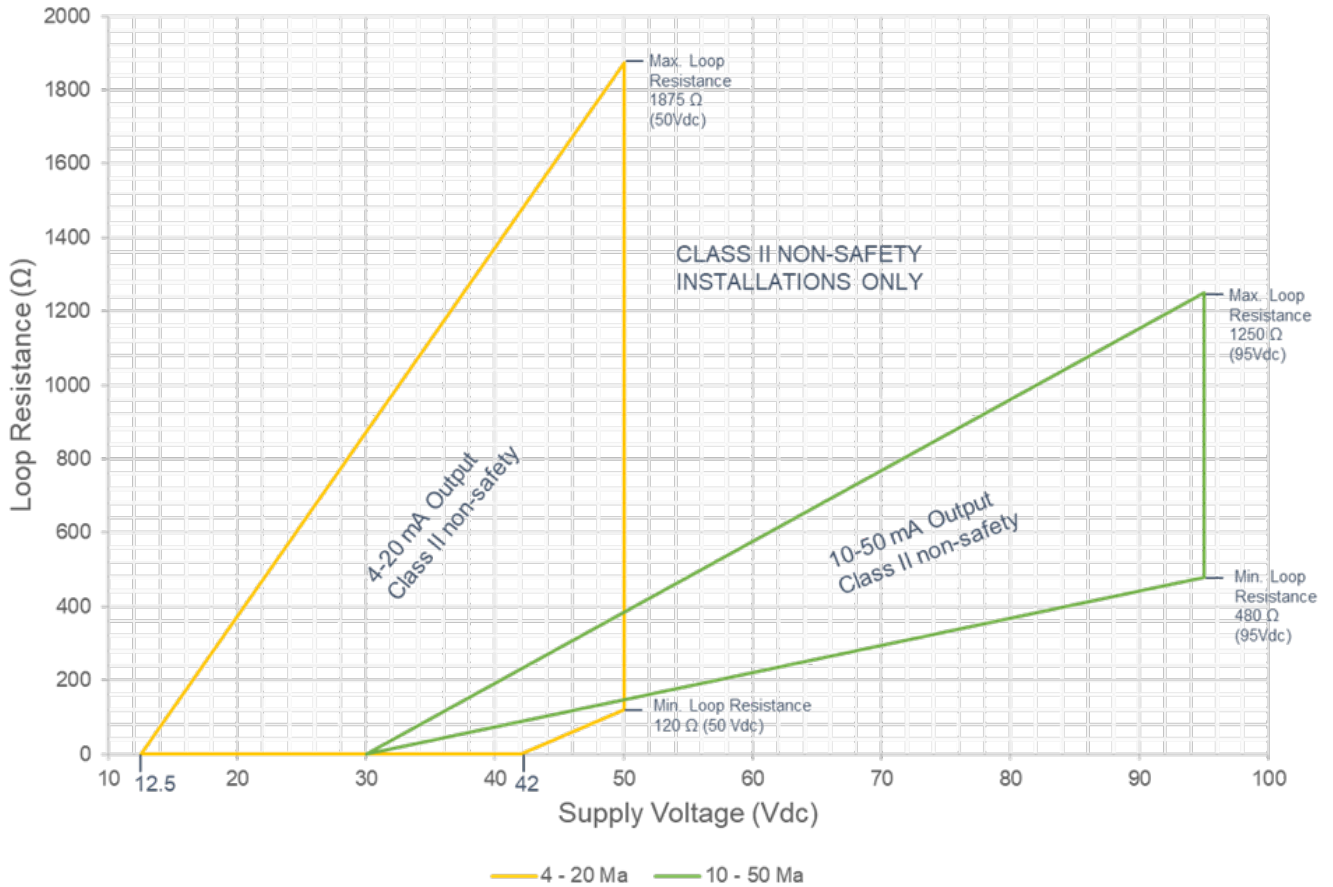


Figure 4, Supply Voltage vs Loop Resistance for Class II Transmitters

### PERFORMANCE SPECIFICATIONS

#### Performance<sup>(a)</sup> at Reference Operating Conditions in % of Calibrated Span

Transmitter Series	Sensor Code (Capsule)	Span Between (inH <sub>2</sub> O or psi)	Accuracy	Repeatability	Hysteresis <sup>(b)</sup>	Dead Band	Reproducibility <sup>(c)</sup>	Drift/year
N-E11AH	A	10 and 80 psia	± 0.5	0.1	0.15	0.05	0.2	0.33
	B	20 and 200 psia	± 0.5	0.1	0.1	0.05	0.15	0.25
	C	40 and 400 psia	± 0.5	0.1	0.1	0.05	0.15	0.25
N-E11DM	B	20 and 200 psi ΔP	± 0.5	0.1	0.1	0.05	0.15	0.25
	C	40 and 400 psi ΔP	± 0.5	0.1	0.1	0.05	0.15	0.25
	D	100 and 1000 psi ΔP	± 0.5	0.1	0.1	0.05	0.15	0.25
	E	200 and 2000 psi ΔP	± 0.5	0.1	0.2	0.05	0.25	0.40



N-E11GM	A	10 and 80 psi	± 0.5	0.1	0.1	0.05	0.15	0.25
	B	20 and 200 psi	± 0.5	0.1	0.1	0.05	0.15	0.25
	C	40 and 400 psi	± 0.5	0.1	0.1	0.05	0.15	0.25
	D	100 and 1000 psi	± 0.5	0.1	0.1	0.05	0.15	0.25
	E	200 and 2000 psi	± 0.5	0.1	0.2	0.05	0.25	0.40
N-E13DL	L	5 and 25 inH2O ΔP	± 0.5	0.15	Note <sup>(b)</sup>	0.05	0.2	0.33
N-E13DM	M	20 and 205 inH2O ΔP	± 0.5	0.1	Note <sup>(b)</sup>	0.05	0.15	0.25
	H	200 and 525 inH2O ΔP	± 0.5	0.1	0.1	0.05	0.15	0.25
	H	525 and 850 inH2O ΔP	± 0.75	0.1	0.1	0.05	0.15	0.25
N-E13DH	M	20 and 205 inH2O ΔP	± 0.5	0.1	Note <sup>(b)</sup>	0.05	0.15	0.25
	H	200 and 525 inH2O ΔP	± 0.5	0.1	0.1	0.05	0.15	0.25
	H	525 and 850 inH2O ΔP	± 0.75	0.1	0.1	0.05	0.15	0.25

(a) Performance specifications listed are not applicable after a seismic, radiation, aging, or LOCA/HELB event.

(b) Hysteresis is 0.10% of span (0.05 inH2O), whichever is larger.

(c) Reproducibility includes effects of hysteresis, repeatability, dead band, and drift over a one-hour period.

#### DBE PERFORMANCE SPECIFICATION

	Max. Output Shift, % of Calibrated Span at USL. See Note A.	
<b>Normal Radiation</b>		
TID $3.5 \times 10^4$ rad (gamma)	± 0.5	± 0.5
<b>Accident Radiation</b>		
TID $2.0 \times 10^8$ rad (gamma); (Includes $0.3 \times 10^8$ rad gamma equivalent for beta TID of $1.5 \times 10^9$ rad plus $0.2 \times 10^8$ rad for margin)	± 2.5	± 6
<b>Seismic</b> (Refer to Figures 1 and 2, OBE and SSE Response Spectrums)		

During OBE's and SSE's	± 5	± 5
After OBE' s and SSE's	± 1	± 1
<b>LOCA/HELB</b> (See Figure 5 and Note B)		
First 3 hours of Test Profile	± 3	± 8
From 3 hours to 24 hours of Test Profile	± 2	± 6
From 24 hours to 30 days (30 days at 176°F = 1 year at 120°F)	± 1	± 3

Notes:

A. The DBE performance specifications were derived from type testing transmitters at approximately 25% of upper span limit (USL) or greater. The table below lists the minimum acceptable span for the errors listed above at the extremes of the DBE conditions.

Model	Sensor Code	Minimum Acceptable Span for Extremes of DBE Conditions	Model	Sensor Code	Minimum Acceptable Span for Extremes of DBE Conditions
N-E11AH	A B C	20 psia 50 psia 100 psia	N-E13DL	L	10 inH2O
N-E11GM	A B C D E	20 psi 50 psi 100 psi 250 psi 500 psi	N-E13DM or N-E13DH	M	50 inH2O
N-E11DM	B C D E	50 psi 100 psi 250 psi 500 psi			

Output shifts at approximately 25% of USL may be used for all applications between the spans shown above and less than the USL. A more accurate analysis, based upon specific applications (or for spans less than shown above), can be provided by the factory.

B. The output shift for gauge pressure transmitters does not include ambient pressure effects.

# Qualified Life vs Service Temperature

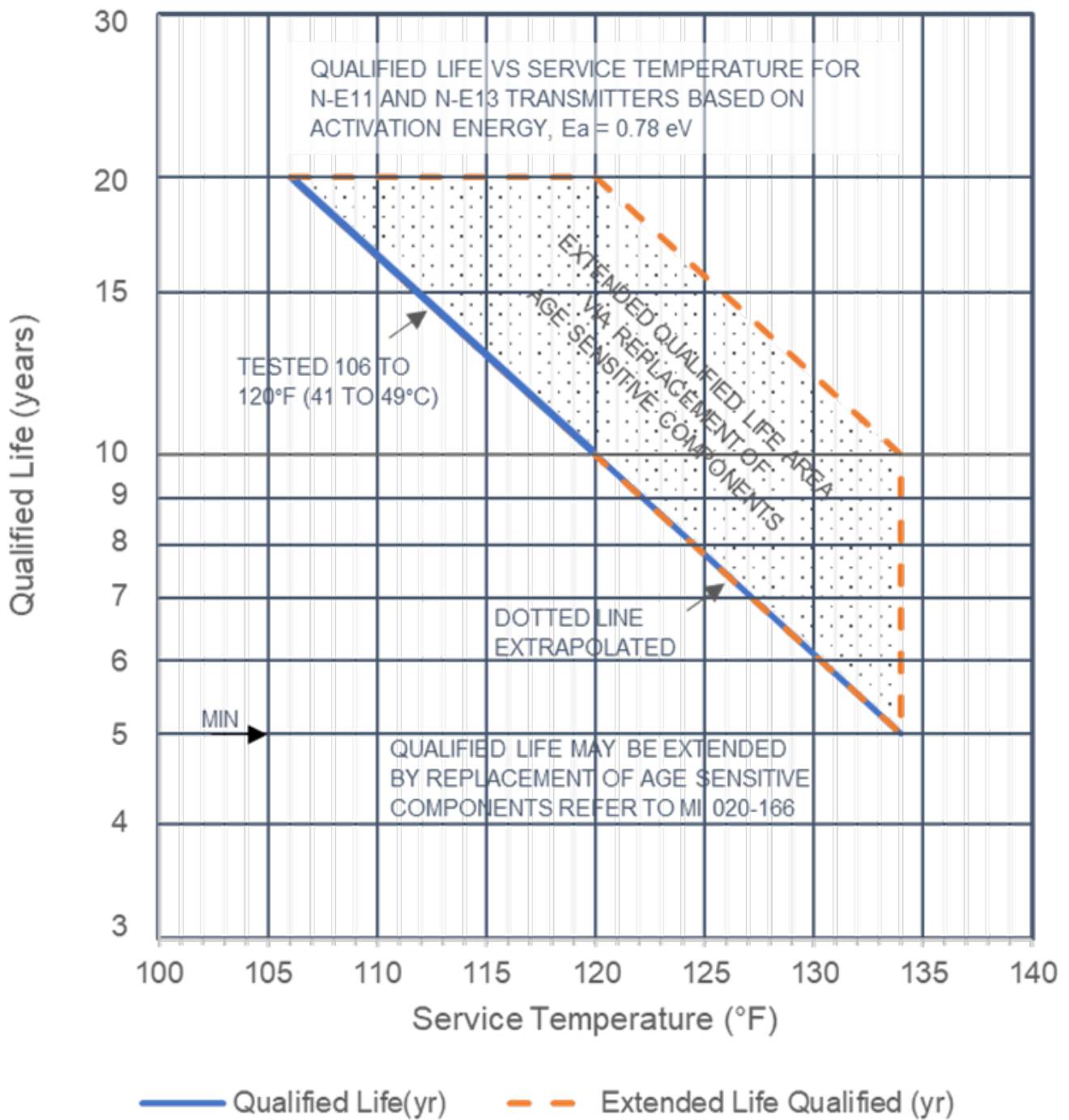


Figure 5, Qualified Life vs Service Temperature

See Ultra Energy Document 0010-001-0024 "Addendum to N-E10 Qualification Report Q0AAC11 Effects on Qualified Life from Internal Self-Heating of Electronic Components".

# LOCA/HELB Profile, 1<sup>st</sup> Transient to Assure Performance Margin

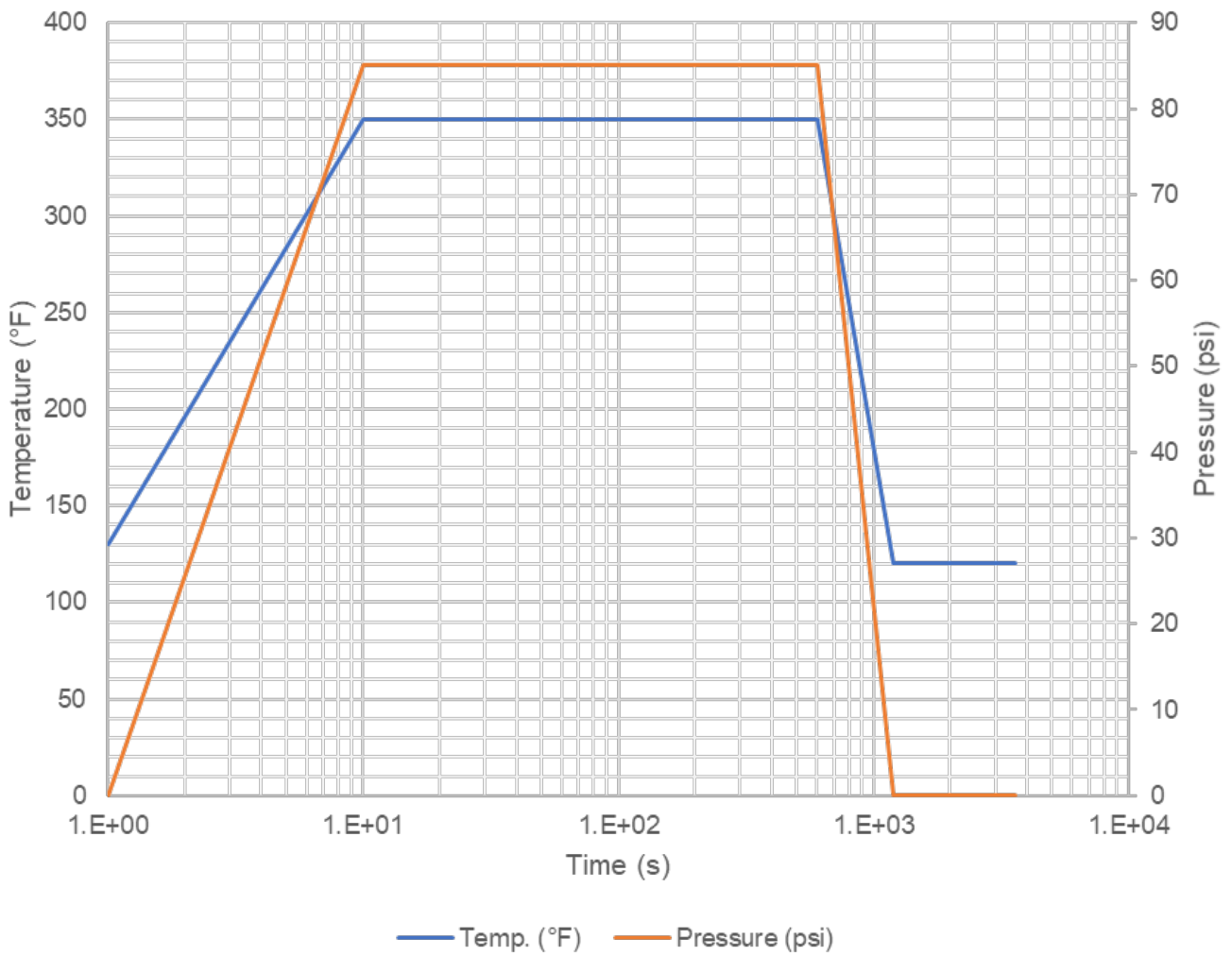


Figure 6, LOCA/HELB Test Profile, 1st Transient to Assure Performance Margin

## LOCA/HELB Profile, DBE Event

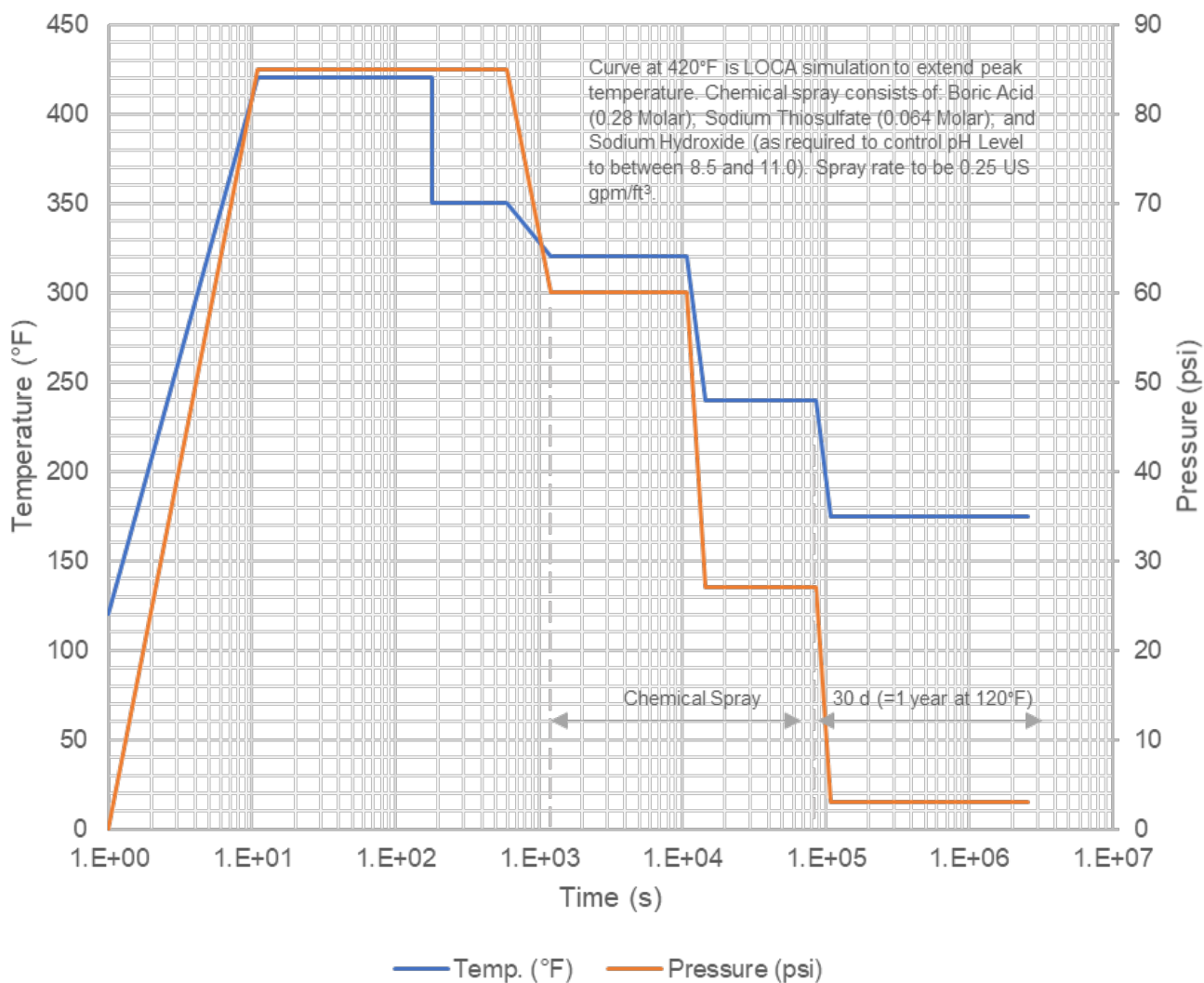


Figure 7, LOCA/HELB Test Profile, DBE Event

### PHYSICAL SPECIFICATIONS

Enclosure Classification Meets IEC IP65 and provides the environmental protection of NEMA Type 4.

### Topworks Cover and Base Material

**Code I:** Cast iron per ASTM A48-64, Class 30, with Amercoat® 66 finish.

**Code A:** Low copper aluminum alloy with vinyl paint finish.

**Application:** The aluminum cover and base meet the same requirements as the nuclear transmitter with cast iron cover and base for seismic, radiation, aging, and LOCA/HELB, except where chemical sprays are present.

**Instrument Mounting:** Mounting is on a vertical or horizontal DN 50 or 2 in pipe, or on a surface. A set of parts is optionally available for this purpose. Refer to Optional Features section for mounting selection.

**Approximate Mass:** Refer to table below.

Transmitter Series	With Cast Iron Topworks <sup>(a,c)</sup>		With Aluminum Topworks <sup>(b,c)</sup>	
	Kg	Lb	Kg	lb
N-E11AH	16	35	8	18
N-E11DM	16	35	8	18
N-E11GH	18	39	10	22
N-E13DL	23	50	16	35
N-E13DM	19	42	11	25
N-E13DH	25	55	18	39

(a)When optional cast iron, non-indicating junction box is used, add 2.3 kg (5 lb) to total mass.

(b)When optional aluminum, non-indicating junction box is used, add 0.8 kg (1.8 lb) to total mass.

(c)Also add 3.0 kg (6,7 lb) when optional seismic mounting bracket is used with N-E11AH, N-E11DM; add 1.4 kg (3.0 lb) with N-E11GH; and add 3.4 kg (7.5 lb) with N-E13DL, N-E13DM, and N-E13DH.

**Bottomworks Materials:** Refer to table below.

Transmitter Bottomworks Non-Process-Wetted and Process-Wetted Materials <sup>(a)</sup>						
Bottomworks Part Description	N-E11AH	N-E11DM	N-E11DL	N-E13DL	N-E13DM	N-E13DH
Body Bolts	* Zinc plated AISI 4142 high strength steel per ASTM A193-B7; for all transmitters.					
Body	316 ss	316 ss	Cast Iron *	316 ss	316 ss	316 ss
Process Connector	316 ss	316 ss	316 ss	316 ss	316 ss	316 ss
Sensor	316 ss	316 ss	Ni-Span C	316 ss	316 ss	316 ss
Lower Force Bar	316 ss	316 ss	316 ss *	316 ss	316 ss	316 ss
Force Bar Diaphragm(b)	Cu-Ni alloy	Cu-Ni alloy	CU-Ni* alloy	Cu-Ni alloy	Cu-Ni alloy	Cu-Ni alloy
Process Connector Gasket	316 ss	—	—	316 ss	316 ss	316 ss
Sensor Gasket	Silicone Elastomer	Silicone Elastomer	—	316 ss	316 ss	316 ss
Force Bar Gasket	Silicone Elastomer	Silicone Elastomer	Silicone* Elastomer	Silicone Elastomer	Silicone Elastomer	Silicone Elastomer

(a)All asterisked materials are non-process wetted. All other listed materials are process wetted.

(b)The force bar diaphragm is made from a cobalt-nickel-chromium alloy.

## STANDARD PROCEDURES, TESTS, AND CERTIFICATES

### **Standard Procedures**

**Design Control** In accordance with ANSI N45.2 and Code of Federal Regulation 10CFR50, Appendix B.

**Quality Assurance Program** In accordance with: 10CRF21; 10CFR50, Appendix B; ANSI/ASME N45.2, Quality Assurance Program Requirements for Nuclear Plants; ANSI/ASME NQA-1-2015; CSA-N299.1 (formerly Z299.1), Canadian Quality Assurance Program – Category 1; RCC-E A-5000, Quality Assurance; IAEA50-C-QA (Rev. 1), Code on the Safety of Nuclear Power Plants: Quality Assurance.

### **Qualification Program**

**Class IE** Per IEEE 323-1974 and IEEE 344-1975.

**Class II** Per IEEE 344-1975 (Structural integrity only).

### **Standard Tests and Certificates**

**Nuclear Cleaning** To 1 ppm chloride content.

**Hydrostatic Test** At 150% of rated pressure.

**Calibration Certificate** is provided.

### **Certificate of Compliance**

**Class IE** (Safety related: tested per IEEE 323-1974, IEEE 344-1975; Qualified to IEEE 323-1974/1983 and IEEE 344-1975/1987 by Equipment Qualification Similarity Certificate).

**Class II** (Structural integrity: to IEEE 344-1975/1987).

## **DESIGN QUALIFICATION**

These transmitters have been designed to meet the requirements of applicable Product Qualification Standards. The applicable standards provide the methodology for proving device performance under generic environments as established in the Foxboro® Transmitter Qualification Program (QOAC10). This includes Design Basis Event (DBE) environments. User documents, supporting the qualification tests, are available as required.

## **NUCLEAR QUALIFICATION DOCUMENTS**

The Foxboro® N-E10 Series (N-E11 and N-E13) are qualified to IEEE 323-1974 and 344-1975 per:

1. Foxboro® Nuclear Qualification Test Report Plan/Procedure Q0MC10 Rev. A.
2. Test Report QOAC11 Rev. A, Foxboro® Corporate QA Laboratory Test Report 83-6076 Rev. A (includes Wyle Laboratories Report 45592-4) dated 05/18/1983.
3. Ultra Electronics Document 0010-001-0024-PRC Rev. 0 Addendum to N-E10 Qualification Report QOAC11 Rev. A Effects on Qualified Life from Internal Self-Heating of Electronic Components dated 09/26/2019.
4. Foxboro® Similarity Analysis QOAC12 Rev. D dated January 1992.
5. Qualified to IEEE 323-1974/1983 and IEEE 344-1975/1987 by Equipment Qualification Similarity Certificate.

Type test reports (user documents), supporting qualification of these transmitters to IEEE Standards 323-1974 and 344-1975 (aging, seismic, LOCA, and radiation), are available on an as-needed basis. They are not routinely provided with every transmitter.

## **MODEL CODES**

### **Model Code; N-E11AH Series Transmitters**

N-E11AH = Nuclear Electronic Absolute Pressure Transmitter—High Range

#### Output Signal

-H = 10 to 50 mA, 60 to 95 V dc

-I = 4 to 20 mA, 25 to 42 V dc

#### Base and Cover Material

I = Cast Iron (For caustic spray environment)

A = Aluminum

Sensor Code—Span Limits

A = 70 and 560 kPa abs (10 and 80 psia)

B = 140 and 1400 kPa abs (20 and 200 psia)

C = 280 and 2800 kPa abs (40 and 400 psia)

Process Connections

2 = Tapped for 1/2 NPT

4 = Tapped for R ½

**Model Code; N-E11DM Series Transmitters**

N-E11DM = Nuclear Electronic Differential Pressure Transmitter—Medium Range

Output Signal

-H = 10 to 50 mA, 60 to 95 V dc

-I = 4 to 20 mA, 25 to 42 V dc

Base and Cover Material

I = Cast Iron (For caustic spray environment)

A = Aluminum

Sensor Code—Span Limits

B = 0.14 and 1.4 MPa ΔP (20 and 200 psi ΔP)

C = 0.28 and 2.8 MPa ΔP (40 and 400 psi ΔP)

D = 0.70 and 7.0 MPa ΔP (100 and 1000 psi ΔP)

E = 1.40 and 14.0 MPa ΔP (200 and 2000 psi ΔP)

Process Connection

1 = Tapped for 1/4 NPT

2 = Tapped for 1/2 NPT

3 = Tapped for R 1/4

4 = Tapped for R ½

**Model Code; N-E11GM Series Transmitters**

N-E11GM = Nuclear Electronic Gauge Pressure Transmitter —Medium Range

Output Signal

-H= 10 to 50 mA, 60 to 95 V dc

-I = 4 to 20 mA, 25 to 42 V dc

Base and Cover Material

I = Cast Iron (For caustic spray environment)

A = Aluminum

Sensor Code—Span Limits

A = 0.07 and 0.56 MPa (10 and 80 psi)

B = 0.14 and 1.4 MPa (20 and 200 psi)

C = 0.28 and 2.8 MPa (40 and 400 psi)

D = 0.7 and 7.0 MPa (100 and 1000 psi)



E = 1.4 and 14.0 MPa (200 and 2000 psi)

Process Connections

- 1 = Tapped for 1/4 NPT
- 2 = Tapped for 1/2 NPT
- 3 = Tapped for R 1/4
- 4 = Tapped for R 1/2
- 5 = Machined to accept 9/16-18 AMINCO fitting  
(Do not use with Sensor Code A)

**Model Code; N-E13DL Series Transmitters**

N-E13DL = Nuclear Electronic Differential Pressure Transmitter—Low Range

Output Signal

- H = 10 to 50 mA, 60 to 95 V dc
- I = 4 to 20 mA, 25 to 42 V dc

Base and Cover Material

- I = Cast Iron (For caustic spray environment)
- A = Aluminum

Sensor Code—Span Limits

L = 1.3 and 6 kPa  $\Delta$ P (5 and 25 inH<sub>2</sub>O  $\Delta$ P)

Process Connections

- 0 = None (Body tapped for 1/4 NPT)
- 1 = 1/4 NPT
- 2 = 1/2 NPT
- 3 = R 1/4
- 4 = R 1/2

**Model Code; N-E13DM Series Transmitters**

N-E13DM = Nuclear Electronic Differential Pressure Transmitter—Medium Range

Output Signal

- H = 10 to 50 mA, 60 to 95 V dc
- I = 4 to 20 mA, 25 to 42 V dc

Base and Cover Material

- I = Cast Iron (For caustic spray environment)
- A = Aluminum

Sensor Code—Span Limits

M = 5 and 51 kPa  $\Delta$ P (20 and 205 inH<sub>2</sub>O  $\Delta$ P)  
H = 5 and 210 kPa  $\Delta$ P (200 and 850 inH<sub>2</sub>O  $\Delta$ P)

Process Connections

- 0 = None (Body tapped for 1/4 NPT)
- 1 = 1/4 NPT
- 2 = 1/2 NPT

3 = R 1/4

4 = R 1/2

### Model Code; N-E13DH Series Transmitters

N-E13DH = Nuclear Electronic Differential Pressure Transmitter—High Range

#### Output Signal

-H = 10 to 50 mA, 60 to 95 V dc

-I = 4 to 20 mA, 25 to 42 V dc

#### Base and Cover Material

I = Cast Iron (For caustic spray environment)

A = Aluminum

#### Sensor Code—Span Limits

M = 5 and 51 kPa ΔP (20 and 205 inH2O ΔP)

H = 5 and 210 kPa ΔP (200 and 850 inH2O ΔP)

#### Process Connections

0 = None (Body tapped for 1/4 NPT)

1 = 1/4 NPT

2 = 1/2 NPT

3 = R 1/4

4 = R 1/2

5 = Machined to accept 9/16-18 AMINCO fitting

### OPTIONAL MODEL CODE SELECTIONS

Optional Feature	Description	Model Code Suffix <sup>(a)</sup>
Mounting Bracket	Seismic mounting kit, for horizontal pipe mounting. Seismic mounting kit, for vertical pipe mounting. Seismic mounting kit, for wall (surface) mounting.	-A -B -C <sup>(e)</sup>
Integral Mounted Non-Indicating Junction Box	Cast iron, with 1 ohm resistor for 10 to 50 mA output. Cast iron, with 10 ohm resistor for 10 to 50 mA output. Cast iron, with 25 ohm resistor for 4 to 20 mA output. Aluminum, with 1 ohm resistor for 10 to 50 mA output. Aluminum, with 10 ohm resistor for 10 to 50 mA output. Aluminum, with 25 ohm resistor for 4 to 20 mA output.	-D <sup>(c)</sup> -E <sup>(c)</sup> -F <sup>(c)</sup> -G <sup>(d)</sup> -H <sup>(d)</sup> -I <sup>(d)</sup>
Reverse Output	20 to 4 mA output signal 50 to 10 mA output signal	-J <sup>(f)</sup> -K <sup>(f)</sup>
Range Kit Elevated or Suppressed Zero	Allows for suppressed-zero or elevated-zero ranges. The elevated-zero kit is not applicable to the N-E11AH Series transmitters, since they are absolute pressure instruments and can have suppressed-zero ranges only.	-L

<sup>(a)</sup>The optional feature suffix codes are added to the instrument Model Code as follows:

N-E13DM-HIM1-AEK (Note that in the example given, three options were selected, -A, -E and -K.)

<sup>(c)</sup>Not available with aluminum cover and base (Material code "A").

<sup>(d)</sup>Not available with cast iron cover and base (Material code "I").

<sup>(e)</sup>Documentation and mounting hardware are identical to that provided for seismic mounting kit for the DN 50 or 2 in vertical pipe mounting.

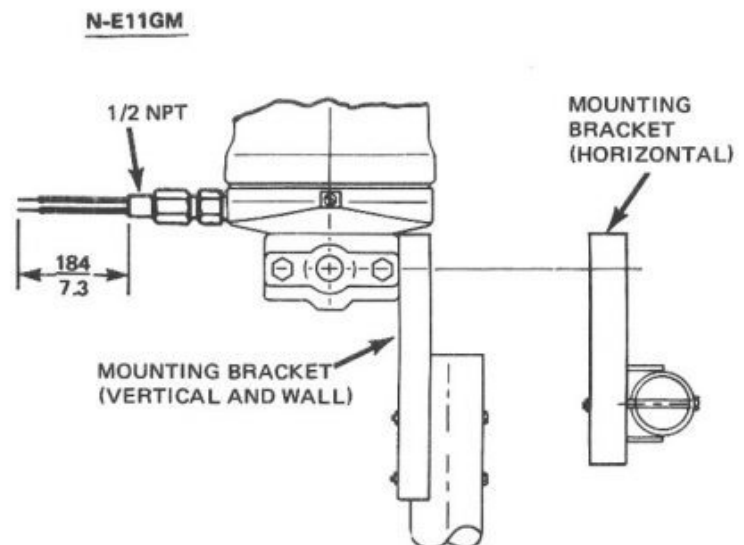
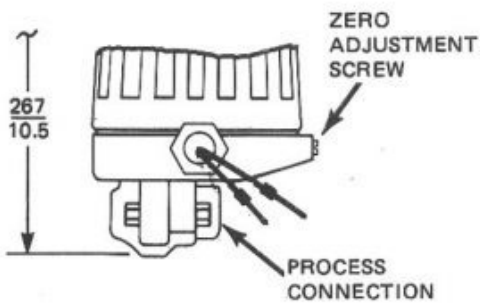
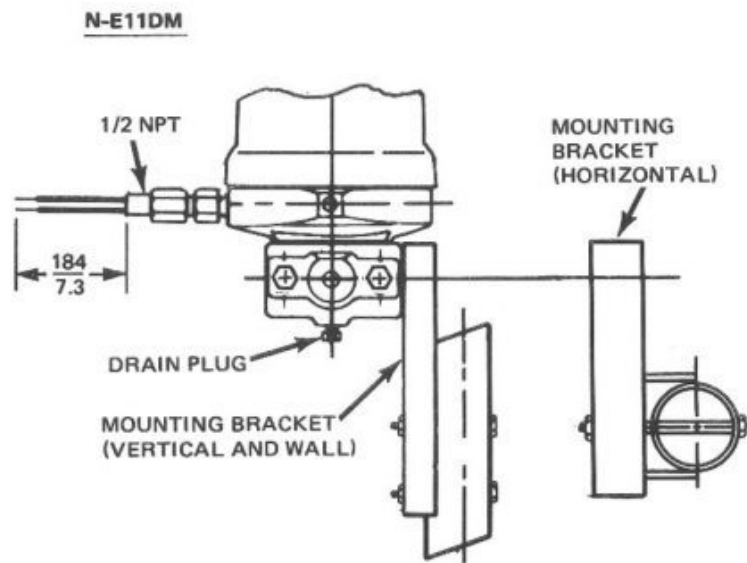
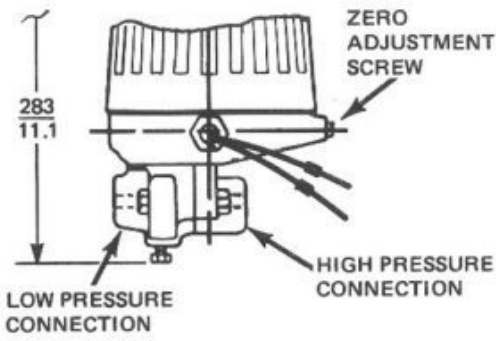
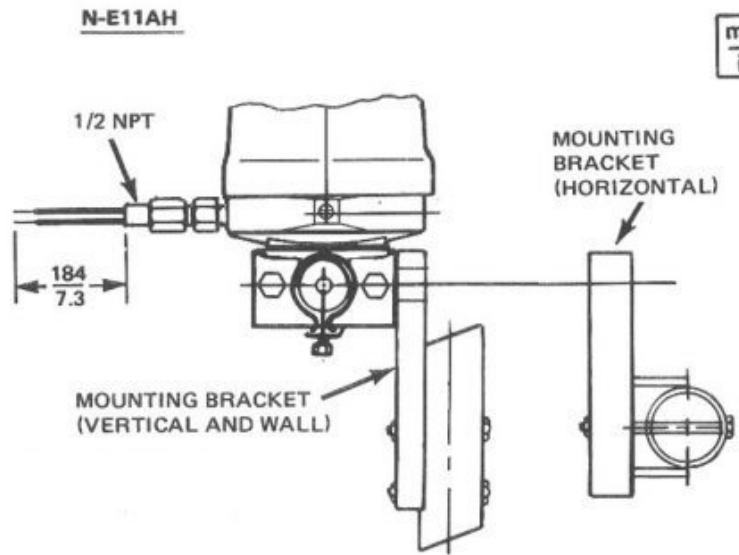
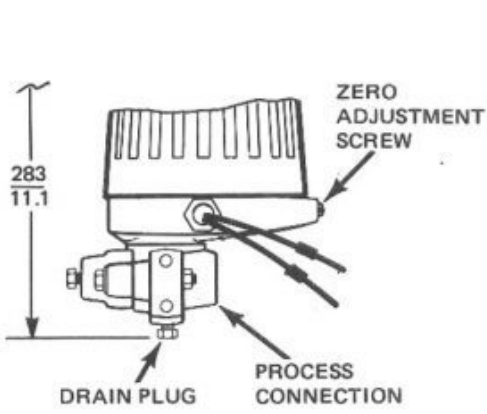
<sup>(f)</sup>Includes Model Code Suffix -L, Range Kit Option.

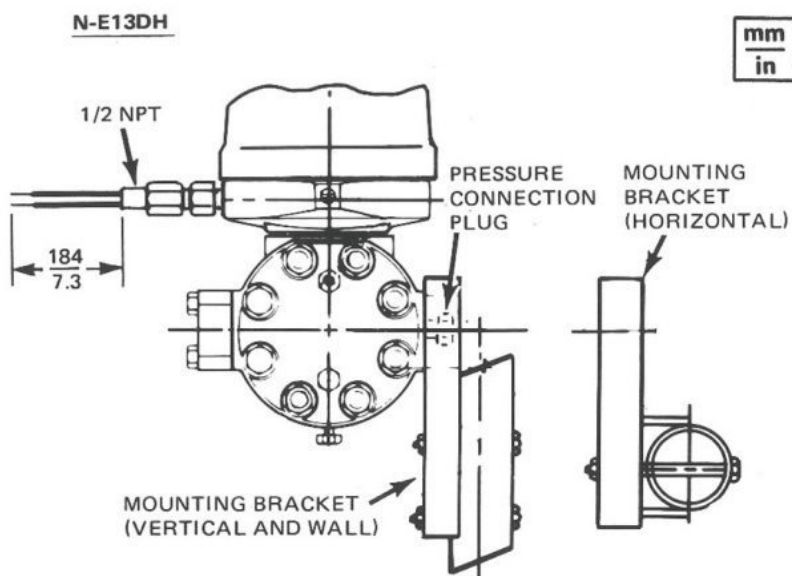
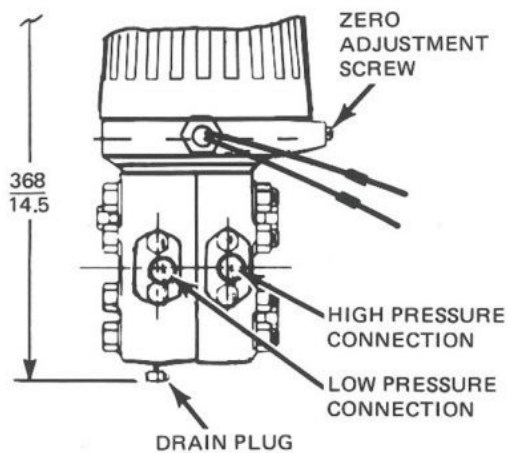
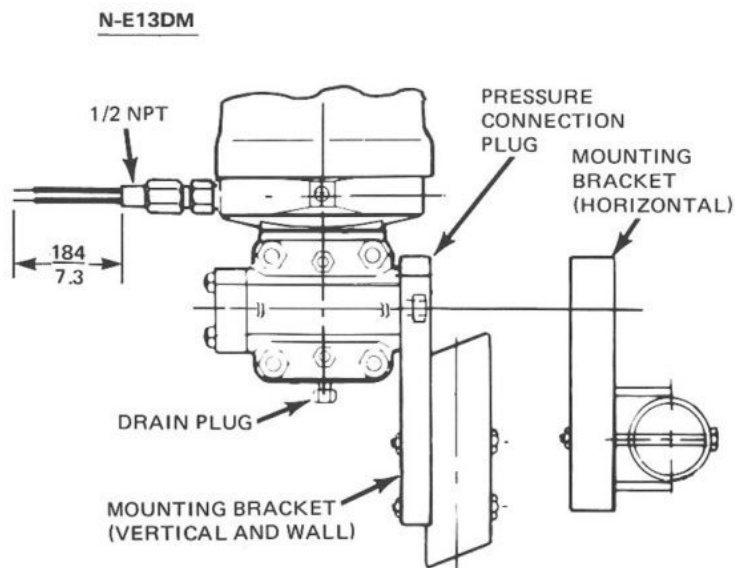
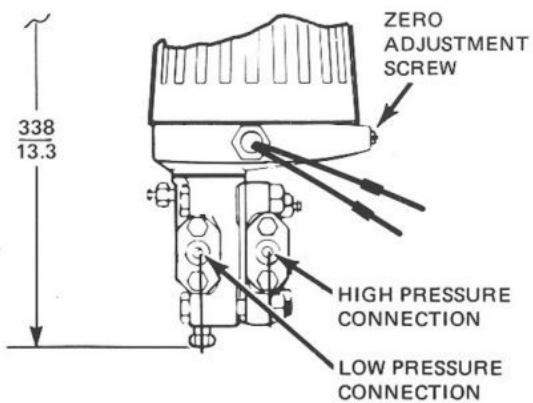
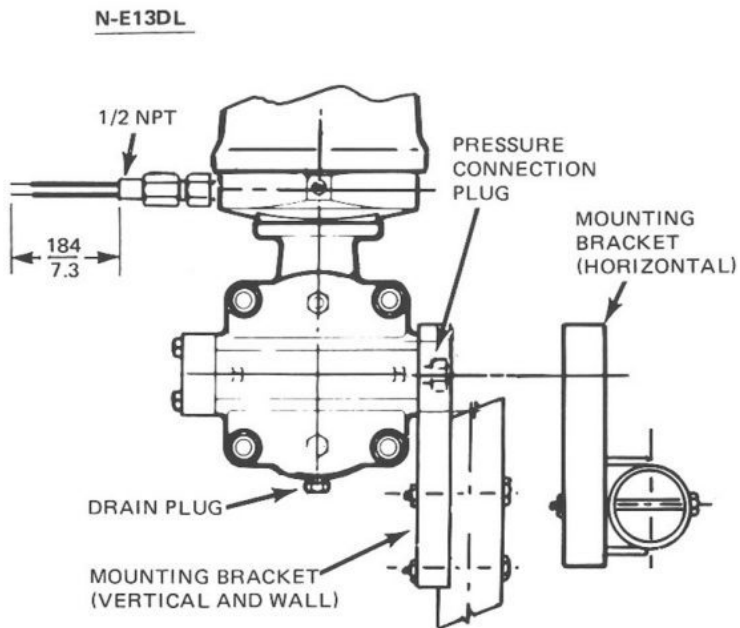
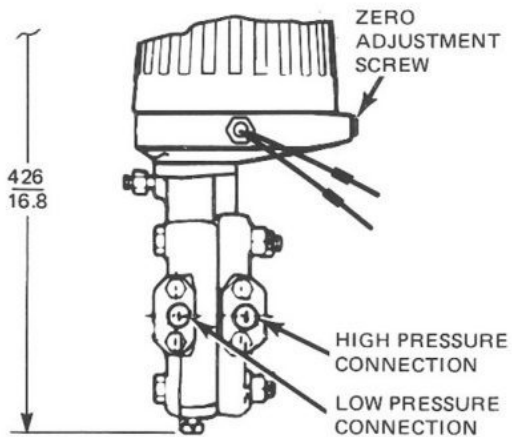
## **ACCESSORY**

**Calibration Accessory** A calibration accessory (0342-008-0060 TEST COVER, CAST IRON, N-E10 P/N B0137AZ) is offered for transmitters having a cast iron base and cover (Material code "I").

## **DIMENSIONS - NOMINAL**

mm  
in





mm  
in

## ORDERING INSTRUCTIONS

1. Model Number
2. Calibrated Range
3. Optional Features and Accessories
4. User Documents as required
5. Tag and Application

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Product Specifications

PSS 9-1B1 A

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# Documents

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