Product Data Sheet
00813-0100-4769, Rev CA
Catalog 2002 – 2003

Model 3244MV MultiVariable™ Temperature Transmitter with FOUNDATION™ Fieldbus

- *Communicates digitally using FOUNDATION™ fieldbus*
- *Control in the field capability with regulatory control suite feature*
- *Sensor Drift Alert and Hot Backup® features improve measurement reliability over time*
- *5-year stability reduces maintenance costs*
- *Dual-compartment housing provides the highest reliability in harsh industrial environments*

Content

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The Ultimate Temperature Transmitter for Control and Safety Applications

The Model 3244MV MultiVariable™ Temperature Transmitter with FOUNDATION fieldbus provides superior accuracy, stability, and reliability, making it the industry–leading temperature transmitter used in control and safety applications

The Model 3244MV has dual-sensor input capability that allows the transmitter to accept simultaneous inputs from two independent sensors. You can use this transmitter for measuring differential temperatures, averaging temperature or redundant temperature measurement.

BEST IN CLASS RELIABILITY

Provides industry-leading five year stability, which reduces maintenance costs. The Transmitter-Sensor Matching feature eliminates interchangeability error, which improves accuracy by 75%.

SUPERIOR HOUSING DESIGN

Designed with dual-compartment housing that provides the highest reliability in harsh environments. The dual-compartment housing provides isolation between the electronics and terminal compartments.

HOT BACKUP CAPABILITY

By automatically switching to the backup sensor if the primary sensor fails, the Hot Backup feature can reduce the risk of losing important temperature measurements by 80%.

OUTPUT PROTOCOL FLEXIBILITY

Communicates digitally using FOUNDATION fieldbus and has many function blocks to meet control strategy needs. With several control loops, including temperature cascade and feed forward, control in the field can be performed using one Model 3244MV with FOUNDATION fieldbus.

ADVANCED DIAGNOSTICS

Sensor Drift Alert enables continuous monitoring of the differential temperature for two sensors. This differential temperature measurement should change when the sensors drift. If this change exceeds defined limits, the user is alerted of an unreliable measurement

Rosemount Temperature Solutions

Model 3144P Temperature Transmitter
Field mount style available with HART® protocol.

Model 3244MV Temperature Transmitter
Field mount style available with FOUNDATION fieldbus and Profibus-PA protocols.

Model 644 Smart Temperature Transmitter
Head or rail mount styles available with HART protocol.

Model 848T Eight Input Temperature Transmitter
Eight input transmitter available with FOUNDATION fieldbus protocol.

Model 244E Temperature Transmitters
Head or rail mount styles that are PC-programmable.

Model 144H Temperature Transmitters
PC-programmable head mount style for 2- and 3-wire RTD sensor inputs.

Rosemount sensors, thermowells, and extensions
Rosemount has a broad offering of RTD and thermocouples that are designed to meet plant requirements.

Specifications

FOUNDATION FIELDBUS

Schedule Entries	10
Links	20
Virtual Communications Relationships (VCR)	12

TABLE 1. Function Block Information

Block	Execution Time (milliseconds)
Resource	—
Transducer	—
Analog Input 1	50
Analog Input 2	50
Analog Input 3	50
Input Selector	30
PID 1	100
PID 2	100
Arithmetic	100
Signal Characterizer	100

TRANSMITTER

Functional

Inputs

User-selectable. See Table 2.
(sensor terminals are rated to 42.4 V dc.)

Outputs

Manchester-encoded digital signal that conforms to IEC 1158-2 and ISA 50.02.

Isolation

Input/output isolation tested to 500 V rms (707 V dc).

Power Supply

External power supply required. Transmitter operates between 9.0 and 32.0 V dc, 17.5 mA maximum. Transmitter power terminals are rated to 42.4 V dc.

Status

If self-diagnostics detect a sensor burnout or a transmitter failure, the status of the measurement will be updated accordingly. Status may also send the PID output to a safe value.

Humidity Limits

0–100% relative humidity.

Alarms

The AI block allows the user to configure the alarm to HI-HI, HI, LO, or LO-LO, with a variety of priority levels and hysteresis

Update Time

Approximately 0.5 seconds for a single sensor (1.0 second for two sensors).

Turn-on Time

Performance within specifications is achieved less than 30.0 seconds after power is applied to the transmitter.

Temperature Limits

	Operating Limit	Storage Limit
With LCD Meter	–4 to 185 °F –20 to 85 °C	–50 to 185 °F –45 to 85 °C
Without LCD Meter	–40 to 185 °F –40 to 85 °C	–60 to 250 °F –50 to 120 °C

Local Display

Optional five-digit LCD meter includes display options for engineering units (°F, °C, °R, K, ohms, and millivolts) and milliamps. The display can alternate between selected measurements, including sensor 1, sensor 2, differential, and terminal temperatures. Digits are 0.4 inches (8 mm) high. Display settings are preconfigured at the factory according to the transmitter configuration. The display settings can be reconfigured in the field using a FOUNDATION fieldbus configuration tool.

Transient Protection Option

The transient protector helps to prevent damage to the transmitter from transients induced on the loop wiring by lightning, welding, heavy electrical equipment, or switch gears. The transient protection electronics are contained in an add-on assembly that attaches to the standard transmitter terminal block. The transient terminal block is not polarity insensitive. The transient protector has been tested to the following standard:

- ASME B 16.5 (ANSI)/IEEE C62.41-1991 (IEEE 587), Location Categories A2, B3.
  1kV peak (10 × 1000 mS Wave)
  6kV / 3kA peak (1.2 × 50 mS Wave 8 × 20 mS Combination Wave)
  6kV / 0.5kA peak (100 kHz Ring Wave)
  4kV peak EFT (5 × 50 nS Electrical Fast Transient)
- Loop resistance added by protector: 22 ohms max.
- Nominal clamping voltages:90 V (common mode), 77 V (normal mode)

Physical

Conduit Connections

1/2–14 NPT, M20 x 1.5 (CM20), PG13.5 (PG11), or JIS G 1/2 conduit. The M20 x 1.5, PG 13.5, and JIS G 1/2 conduit threads are provided by an adapter.

Materials of Construction

Electronics Housing

- Low-copper aluminum or CF-8M (cast version of 316 Stainless Steel).

Paint

- Polyurethane.

Cover O-rings

- Buna-N.

Mounting

Transmitters may be attached directly to the sensor. Optional mounting brackets permit remote mounting (see “Optional Transmitter Mounting Brackets”).

Weight

Material	Weight(1)
Aluminum	3.2 lb (1.4 kg)
SST	7.9 lb (3.6 kg)

(1) Add 0.3 lb (0.1 kg) for M5 options. Add 0.7 lb (0.3 kg) for B4 options. Add 1.5 lb (0.7 kg) for B5 options

Enclosure Ratings

NEMA 4X, CSA Enclosure Type 4X, IP66, and IP68.

Performance

The transmitter maintains a specification conformance of at least 3σ.

Stability

±0.1% of reading or 0.1 °C (0.18 °F), whichever is greater, for 2 years for RTDs.

±0.1% of reading or 0.1 °C (0.18 °F), whichever is greater, for 1 year for thermocouples.

Five-Year Stability

± 0.15% of reading or 0.15 °C (0.27 °F), whichever is greater, for 5 years for RTDs

±0.5% of reading or 0.5 °C (0.9 °F), whichever is greater for 5 years for thermocouples.

Vibration Effect

Transmitters tested to the following specifications with no effect on performance:

Frequency	Acceleration
10–60 Hz	0.21 mm peak displacement
60—2000 Hz	3 g

Self Calibration

When reading the temperature measurement, the analog-to-digital circuitry automatically self-calibrates for each temperature update by comparing the dynamic measurement to extremely stable and accurate internal reference elements.

RFI Effect

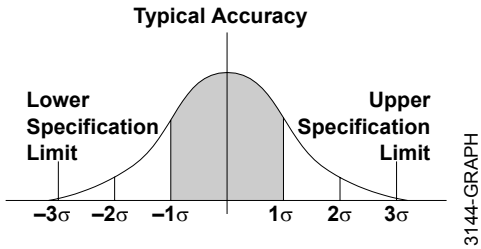
Worst case RFI Effect is equivalent to the transmitter nominal accuracy specification per Table 2 when tested in accordance with EN 61000-4-3, 10 V/m, 80 to 1000 MHz, and 30 V/m, 26-500 MHz (Increased NAMUR), with twisted shielded cables (Type A FOUNDATION fieldbus type)

Rosemount Conformance to Specifications

A Rosemount product not only meets its published specifications, but most likely exceeds them. Advanced manufacturing techniques and the use of Statistical Process Control provide specification conformance to at least ± 3σ(1). Our commitment to continual improvement ensures that product design, reliability, and performance will improve annually.

For example, the Reference Accuracy distribution for the Model 3244MV is shown to the right. Our Specification Limits are ± 0.10 °C, but, as the shaded area shows, approximately 68% of the units perform three times better than the limits. Therefore, it is very likely that you will receive a device that performs much better than our published specifications.

Conversely, a vendor who “grades” product without using Process Control, or who is not committed to ± 3σ performance, will ship a higher percentage of units that are barely within advertised specification limits.



Accuracy distribution shown is for the Model 3244MV, Pt 100 RTD sensor, Range 0 to 100 °C

(1) Sigma (σ) is a statistical symbol to designate the standard deviation from the mean value of a normal distribution.

Accuracy

TABLE 2. Accuracy/Input Options

Sensor Options	Sensor Reference	Input Ranges		Accuracy Over Range(s)	
		°C	°F	°C	°F
2-, 3-, 4-Wire RTDs					
Pt 100 (α = 0.00385)	IEC 751, 1995 (α = 0.00385)	–200 to 850	–328 to 1562	± 0.10	± 0.18
Pt 100 (α = 0.003916)	JIS 1604, 1981 (α = 0.003916)	–200 to 645	–328 to 1193	± 0.10	± 0.18
Pt 200	IEC 751, 1995 (α = 0.00385)	–200 to 850	–328 to 1562	± 0.22	± 0.40
Pt 500	IEC 751, 1995 (α = 0.00385)	–200 to 850	–328 to 1562	± 0.14	± 0.25
Pt 1000	IEC 751, 1995 (α = 0.00385)	–200 to 300	–328 to 572	± 0.08	± 0.14
Ni 120	Edison Curve No. 7	–70 to 300	–94 to 572	± 0.08	± 0.14
Cu 10	Edison Copper Winding No. 15	–50 to 250	–58 to 482	± 1.00	± 1.80
Thermocouples(1)					
Type B(2)	NIST Monograph 175, IEC 584	100 to 300 301 to 1820	212 to 572 573 to 3308	± 3.0 ± 0.75	± 5.4 ± 1.35
Type E	NIST Monograph 175, IEC 584	–50 to 1000	–58 to 1832	± 0.20	± 0.36
Type J	NIST Monograph 175, IEC 584	–180 to 760	–292 to 1400	± 0.25	± 0.45
Type K(3)	NIST Monograph 175, IEC 584	–180 to 1372	–292 to 2502	± 0.50	± 0.90
Type N	NIST Monograph 175, IEC 584	0 to 1300	32 to 2372	± 0.40	± 0.72
Type R	NIST Monograph 175, IEC 584	0 to 1768	32 to 3214	± 0.60	± 1.08
Type S	NIST Monograph 175, IEC 584	0 to 1768	32 to 3214	± 0.50	± 0.90
Type T	NIST Monograph 175, IEC 584	–200 to 400	–328 to 752	± 0.25	± 0.45
Millivolt Input(4)		–10 to 100 mV		± 0.015 mV	
2-, 3-, 4-Wire Ohm Input		0 to 2000 ohms		±0.35 ohm	

(1) Total digital accuracy for thermocouple measurement: sum of digital accuracy +0.5 °C.

(2) Digital accuracy for NIST Type B T/C is ±3.0 °C (±5.4 °F) from 100 to 300 °C (212 to 572 °F.)

(3) Digital accuracy for NIST Type K T/C is ±0.70 °C (±1.26 °F) from –180 to –90 °C (–292 to –130 °F.)

(4) Not approved for use with CSA option code I6.

Accuracy Notes

Differential capability exists between any two sensor types.

- For all differential configurations, the input range is X to +Y where

  X = Sensor 1 minimum – Sensor 2 maximum

Accuracy for differential configurations:

- If sensor types are similar, the accuracy is 1.5 times worst case accuracy of either sensor type.
- If sensor types are dissimilar, the accuracy = Sensor 1 Accuracy + Sensor 2 Accuracy.

Using Thermocouples in monitoring and differential temperature applications:

Two independently-grounded thermocouples could create ground loops and could result in measurement errors. Avoid using two independently grounded thermocouples.

Ambient Temperature Effect

Transmitters may be installed in locations where the ambient temperature is between –40 and 85 °C (–40 and 185 °F).

Each transmitter is individually characterized over this ambient temperature range at the factory in order to maintain excellent accuracy performance in dynamic industrial environments.

This special manufacturing technique is accomplished through extreme hot and cold temperature profiling with individual adjustment factors programmed into each transmitter. Transmitters automatically adjust for component drift caused by changing environmental conditions.

TABLE 3. Ambient Temperature Effects

Sensor Option	Accuracy per 1.0 °C (1.8 °F) Change in Ambient Temperature[1]	Temperature Range (°C)
2-, 3-, and 4-wire RTDs		
Pt 100 (α = 0.00385)	0.0015 °C (0.0027 °F)	
Pt 100 (α = 0.003916)	0.0015 °C (0.0027 °F)	
Pt 500	0.0015 °C (0.0027 °F)	
Pt 200	0.0023 °C (0.0041 °F)	
Pt 1000	0.0015 °C (0.0027 °F)	
Ni 120	0.0010 °C (0.0018 °F)	
Cu 10	0.015 °C (0.027 °F)	
Thermocouples		
Type B	0.014 0.029 °C – (0.0021% of (R – 300)) 0.046 °C – (0.0086% of (R –100))	R ≥ 1000 300 ≤ R < 1000 100 ≤ R < 300
Type E	0.004 °C + (0.00043% of R)	All
Type J	0.004 °C + (0.00029% of R) 0.004 °C + (0.0020% of |R|)	R ≥ 0 R < 0
Type K	0.005 °C + (0.00054% of R) 0.005 °C + (0.0020% of |R|)	R ≥ 0 R < 0
Type N	0.005 °C + (0.00036% of R)	All
Type R, S	0.015 °C 0.021 °C – (0.0032% of R)	R ≥ 200 R < 200
Type T	0.005 °C 0.005 °C + (0.0036% of |R|)	R ≥ 0 R < 0
Millivolt	0.00025 mV	
2-, 3-, and 4-wire Ohm	0.007 Ω	

(1) Change in ambient is with reference to the calibration temperature of the transmitter 68 °F (20 °C) from factory.

Temperature Effects Example

When using a Pt 100 (α = 0.00385) sensor input with a 30° C ambient temperature, temperature effects would be 0.0015 °C × (30 – 20) = 0.015 °C.

Worst case error would be Sensor Accuracy + Temperature Effects = 0.10 °C + 0.015 = 0.115 °C

Total Probable Error

= $\sqrt{0.10^2 + 0.015^2} = 0.101$ °C

Hazardous Locations Certifications

Factory Mutual (FM) Approvals

E5 Explosion Proof for Class I, Division 1, Groups A, B, C, and D. Dust-Ignition Proof for Class II, Division 1, Groups E, F, and G. Dust-Ignition Proof for Class III, Division 1 hazardous locations. Non-Incendive for Class I, Division 2, Groups A, B, C, and D (T4A). Explosion Proof approval when connected in accordance with Rosemount drawing 03144-0220. For Group A, seal all conduits within 18 inches of enclosure; otherwise, conduit seal not required for compliance with NEC 501-5a(1).

I5 Intrinsically Safe for Class I, II, and III, Division 1, Groups A, B, C, D, E, F, and G. Temp Code T4 (T_{amb} = –50 to 60 °C). Non-Incendive for Class I; Division 2, Groups A, B, C, and D (T_{amb} = –50 to 60 °C). Intrinsically safe and Non-Incendive when installed in accordance with Rosemount drawing 03144-0221.

K5 Combination of E5 and I5

American Bureau of Shipping (ABS) Type Approval

ABS Type Approval for temperature measurements in hazardous locations on ABS Classed Vessels, Marine, and Offshore Installations. Type Approval is based on Factory Mutual (FM) Approvals; therefore specify option code E5 or K5.

FM and CSA Combinations of Approvals

KB Combination of K5 and C6

Canadian Standards Association (CSA) Approvals

E6 Explosion Proof for Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1 hazardous locations. Suitable for Class I, Division 2, Groups A, B, C, and D. Conduit seal not required. Ambient Temperature Limit: –50 to 85 °C.

I6 Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1 hazardous locations when installed in accordance with Rosemount drawing 03144-0222.
Ambient Temperature Limit: –60 to 60 °C

C6 Combination of E6 and I6

Institut Scientifique de Service Public (ISSeP)/CENELEC Flameproof Approval

E9 EEx d IIC T6 (T_{amb} = –20 to 60 °C).
Cert No. 95D.103.1211.

British Approvals Service for Electrical Equipment in Flammable Atmospheres (BASEEFA)/CENELEC Approvals

N1 CENELEC Type n
ATEX Category II 3 G
EEx nL IIC T5 (T_{amb} = –40 to 70 °C)
Cert No. BAS98ATEX 3358 X

Special Conditions for Safe Use (x):

The apparatus is not capable of withstanding the electrical strength test required by Clause 9.1 of EN 50021: 1998. This condition must be taken into account during installation.

I1 CENELEC Intrinsic Safety
ATEX Category II 1 G
EEx ia IIC T4 (T_{amb} = –60 to 60 °C)
Cert. No. BAS98ATEX 1357 X

TABLE 4. Input Entity Parameters

Power/Communications	Sensor Connections
U_i = 30 V dc	U_o = 24.3 V
I_i = 300 mA	I_o = 12 mA
P_i = 1.30 W	P_o = 0.06 W
C_i = 0.005 µF	C_o = 0.108 µF
L_i = 20 µH	L_o = 179 mH

Special Conditions for Safe Use (x):

The apparatus is not capable of withstanding the 500V insulation test required by Clause 6.4.12 of EN 50020: 1994. This must be taken into account when installing the apparatus.

Standard Australia Quality Assurance Services (SAA) Approvals

E7 Flameproof Approval
EX d IIC T6 (T_{amb} = –20 to 60 °C)

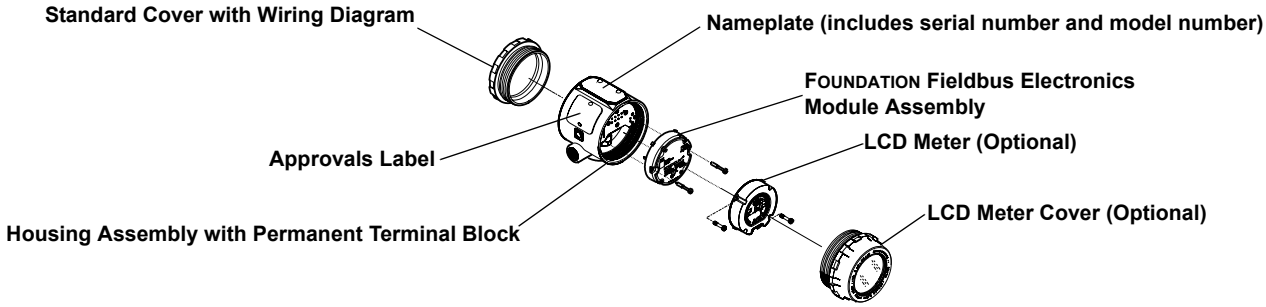
Japanese Industrial Standard (JIS) Flameproof Certification

E4 Without optional meter:
Ex d IIB T6 (T_{amb} = 60 °C)
With optional meter:
Ex d IIB T4 (T_{amb} = 60 °C)

Dimensional Drawings

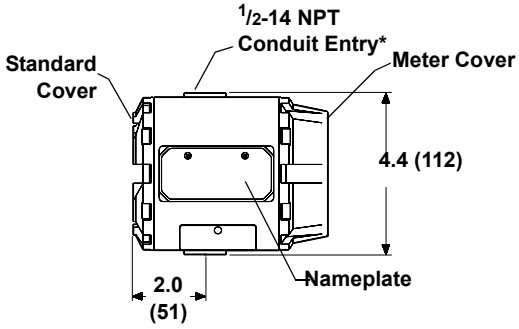
Transmitter Dimensional Drawings

Exploded View

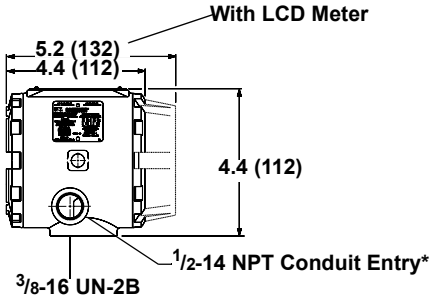


3244-000A03A

Top View



Side View

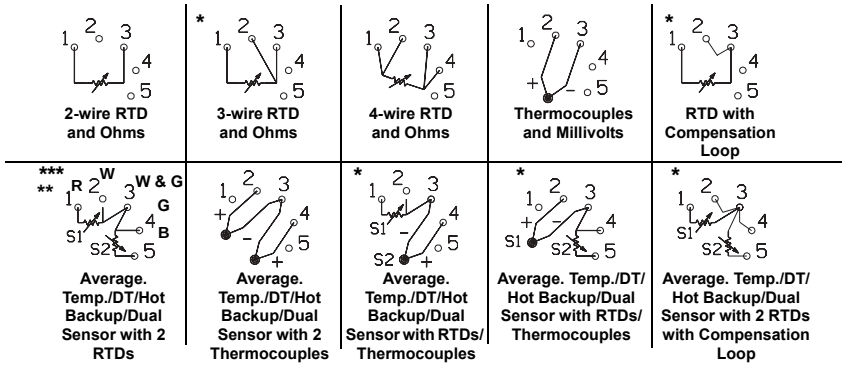


3144-0204B02A, 0000A07A

** M20 x 1.5 (CM20) PG13.5 (PG11), and JIS G1/2 threads are made with adapters that extend approximately 1-in. from the housing.*

Dimensions are in inches (millimeters)

Model 3244MV Sensor Connections Diagram



144-0000F05A

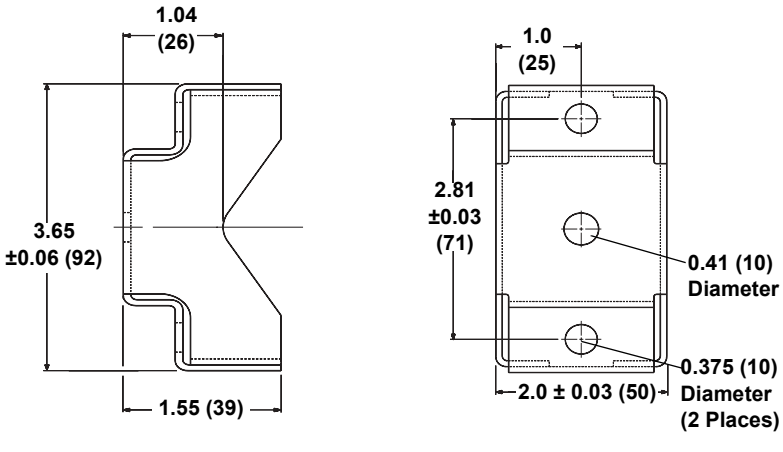
* *Transmitter must be configured for a 3-wire RTD in order to recognize an RTD with a compensation loop.*

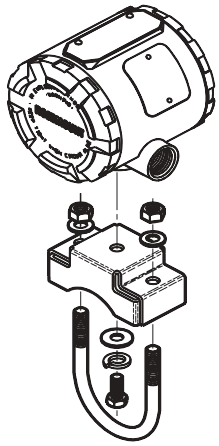
** *Rosemount provides 4-wire sensors for all single-element RTDs. You can use these RTDs in 3-wire configurations by leaving the unneeded leads disconnected and insulated with electrical tape.*

*** *Typical wiring configuration of a Rosemount dual-element RTD is shown (R=Red, W=White, G=Green, B=Black*

Optional Transmitter Mounting Brackets

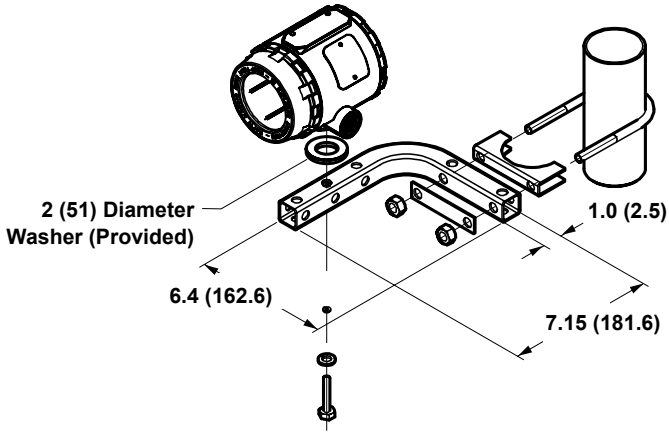
Option Code B4 Bracket





3044-2101A01A; B01B, 3144-3144A14A,

Option Code B5 Bracket



3144- 1081A01A

Dimensions are in inches (millimeters)

Ordering Information

Model	Product Description	
3244MVF	Temperature Transmitter with dual sensor input and FOUNDATION™ fieldbus digital signal. Includes 3 AI blocks, 1 ISEL block, and Backup Link Active Scheduler	
Code	**Housing**	**Conduit Thread**
1	Aluminum	½–14 NPT
2	Aluminum	M20 × 1.5 (CM20)
3	Aluminum	PG 13.5 (PG 11)
4	Aluminum	JIS G ½
5	SST	½–14 NPT
6	SST	M20 × 1.5 (CM20)
7	SST	PG 13.5 (PG 11)
8	SST	JIS G ½
Code	**Hazardous Approvals[1]**	
NA	No approval required	
E5	FM explosion-proof and non-incendive approval	
I5	FM intrinsic safety and non-incendive field circuit approval	
K5	FM intrinsic safety, explosion-proof, and non-incendive approval combination	
KB	FM and CSA intrinsic safety, explosion-proof, and non-incendive approval combination	
E6	CSA explosion-proof and non-incendive approval	
I6	CSA intrinsic safety and non-incendive field circuit approval	
C6	CSA intrinsic safety, explosion-proof, and non-incendive approval combination	
E9	ISSeP/CENELEC flameproof approval	
N1	BASEEFA/CENELEC type n approval	
I1	BASEEFA/CENELEC intrinsic safety approval	
E7	SAA flameproof approval	
E4	JIS flameproof approval requires either housing option code 4 or 8.	
Code	**Options**	
	PlantWeb Software Functionality	
A01	Regulatory control suite: 2 PIDs, 1 signal characterizer, and 1 arithmetic function blocks	
	Accessory	
B4	Universal mounting bracket for 2-inch pipe mounting and for panel mounting—SST bracket and bolts	
B5	Universal “L” mounting bracket for 2-inch pipe mounting—SST bracket and bolts	
M5	LCD meter	
G1	External ground lug assembly	
T1	Integral transient protector	
	Custom Configuration	
U1[2]	Hot backup	
U4	Two independent sensors	
U5	Differential temperature	
U6[2]	Average temperature	
U7[2]	First good temperature	
U8[2]	Minimum temperature	
U9[2]	Maximum temperature	
C1	Factory configuration of date, descriptor, and message fields–CDS required	
C2	Transmitter-Sensor Matching–trim to specific Rosemount RTD calibration schedule	
C4	5-point calibration (use option code Q4 to generate a calibration certificate)	
C7	Trim to special non-standard sensor (special sensor - customer must provide sensor information),	
F5	50 Hz line voltage filter	
	Assembly	
X1[3]	Assemble transmitter to a sensor assembly (hand tight, *Teflon*® (PTFE) tape where appropriate, fully wired)	
X2	Assemble transmitter to a sensor assembly (hand tight, no *Teflon* (PTFE) tape, unwired)	
X3[3]	Assemble transmitter to a sensor assembly (wrench tight, *Teflon* (PTFE) tape where appropriate, fully wired)	
	Calibration Certification	
Q4	Calibration certificate (3-point standard; use C4 with Q4 option for a 5-point calibration certificate)	
Typical Model Number: 3244MVF 1 K5 A01 B4 M5 U1		

(1) Additional approvals pending.– contact Rosemount Inc. for additional information.

(2) Option codes U1, U6, U7, U8, and U9 will have drift alert enabled on AI block #3.

(3) Options X1 and X3 are not available with CSA approvals.

External Ground Screw Assembly

The external ground screw assembly can be ordered by specifying option code G1 when an enclosure is specified. However, some approvals include the ground screw assembly in the transmitter shipment, hence it is not necessary to order option code G1. See below to determine which approval options include the external ground screw assembly.

Approval Type	External Ground Screw Assembly Included?
E5, E6, K5, KB, I5, I6, C6, NA	No–Order option code G1
N1, I1, E9	Yes

Hardware Tag

- no charge
- tagged in accordance with customer requirements
- stainless steel construction
- permanently attached to transmitter
- character height is $^{1}/_{16}$-in. (1.6 mm)

Software Tag

- no charge
- transmitter can store up to 30 characters. If no such characters are specified, the first 30 characters of the hardware tag are used as the default.

Configuration

The transmitter is available from the factory with either the standard configuration or one of the custom configuration options when specified in the model number. Use the Configuration Data Sheet (CDS - 00806-0100-4769) if any modifications are needed to the selected configuration. The configuration settings and block configuration may be changed in the field using any Foundation fieldbus compliant host, such as the DeltaV system with *AMSinside* from Fisher-Rosemount, or configuration tool. Unless otherwise specified, the transmitter will be shipped as follows:

Standard Configuration Settings	
Sensor Type	4-wire Pt 100 (α = 0.00385 RTD)
Damping	2.0 seconds
Measurement Unit	°C
Line Voltage Filter(1)	60 Hz
Software Tag	See “Hardware Tag” and “Software Tag”
Function Block Tags:	
AI Blocks	AI1, AI2
ISEL Block	(Not applicable)
Transducer Block	TB
Resource Block	RB
Alarm Range	1 to 100 °C (32 to 212 °F)
Alarm Limits of AI1 and AI2:	
HI–HI	100 °C (212°F)
HI	95 °C (203 °F)
LO	5 °C (41 °F)
LO–LO	0 °C (32 °F)
Local Display(1) (when installed)	Engineering Units

(1) These configuration setting can only be changed using the Siemens Profibus-PA Class 2 host.

Model 3244 Custom Configuration

To configure the transmitter for one of the applications described below, indicate the appropriate option code in the model number. If you do not order one of these option codes, the transmitter will be shipped with its standard configuration.

Control and Safety Applications — Option Code U1 (Hot Backup)

This configuration optimizes the transmitter for use in applications involving control, safety interlocks, or any type of critical monitoring points. A dual-element sensor should be used with this option. AI3 is used to detect sensor drift.

When this option is ordered, the transmitter will be shipped with the standard configuration settings with the following changes/additions:

Option Code U1 Custom Configuration Settings	
Sensor Type	
Sensor 1(1)	3-wire Pt 100 α = 0.00385 RTD
Sensor 2(2)	3-wire Pt 100 α = 0.00385 RTD
Function Block Tags	
AI Blocks	AI1, AI2, and AI3
Input Selector Block	ISEL
Transducer Block	TB
Resource Block	RB
ISEL Block Configuration	Hot Backup
Alarm Range	
Sensor 1	0 to 100 °C (32 to 212 °F)
Sensor 2	0 to 100 °C (32 to 212 °F)
Sensor Drift Alert Configuration: AI3, DT Limit)	3.0 °C (5.4 °F)

(1) Primary element

(2) Secondary element

Option Code U4 (Monitoring Applications–Two Independent Sensors)

This configuration optimizes the transmitter for use in applications involving basic process monitoring. Two single-element sensors are used with this option.

When this option is ordered, the transmitter will be shipped with the standard configuration settings with the following changes/additions:

Option Code U4 Custom Configuration Settings	
Sensor Type	
Sensor 1(1)	3-wire Pt 100 α = 0.00385 RTD
Sensor 2(2)	3-wire Pt 100 α = 0.00385 RTD
Function Block Tags	
AI Blocks	AI1, AI2, and AI3
ISEL Block	Not applicable
Transducer Block	TB
Resource Block	RB
Alarm Range	
Sensor 1	0 to 100 °C (32 to 212 °F)
Sensor 2	0 to 100 °C (32 to 212 °F)

(1) Primary element

(2) Secondary element

Option Code U5 (Differential Temperature)

This configuration is used to measure the differential between two process temperatures. When this option is ordered, the transmitter will be shipped with the standard configuration settings with the following changes/additions:

Option Code U5 Differential Temperature	
Sensor Type	
Sensor 1(1)	3-wire Pt 100 α = 0.00385 RTD
Sensor 2(2)	3-wire Pt 100 α = 0.00385 RTD
Function Block Tags	
AI Blocks	AI1, AI2, and AI3
Input Selector Block	Not applicable
Transducer Block	TB
Resource Block	RB
Alarm Range	
Sensor 1	0 to 100 °C (32 to 212 °F)
Sensor 2	0 to 100 °C (32 to 212 °F)

(1) Primary element

(2) Secondary element

Option Code U6 (Average Temperature)

This configuration is used to measure the average between two process temperatures. AI3 is used to detect sensor drift.

Option Code U7 (First Good Temperature)

This configuration is used to output the first sensor measurement with a status of “GOOD”. AI3 is used to detect sensor drift.

Option Code U8 (Minimum Temperature)

This configuration is used to output the minimum temperature between two sensors. AI3 is used to detect sensor drift.

Option Code U9 (Maximum Temperature)

This configuration is used to output the maximum temperature between two sensors. AI3 is used to detect sensor drift.

When options U6, U7, U8, and U9 are ordered, the transmitter will be shipped with the standard configuration settings with the following changes/additions:

Option Codes U6, U7, U8, and U9 Custom Configuration Settings	
Sensor Type	
Sensor 1(1)	3-wire Pt 100 α = 0.00385 RTD
Sensor 2(2)	3-wire Pt 100 α = 0.00385 RTD
Function Block Tags	
AI Blocks	AI1, AI2, and AI3
Input Selector Block	ISEL
Transducer Block	TB
Resource Block	RB
ISEL Block Configuration	
Option code U6	Average
Option code U7	First Good
Option code U8	Minimum
Option code U9	Maximum
Sensor Drift Alert Configuration: AI#, DT Limit)	3.0 °C (5.4 °F)
Alarm Range	
Sensor 1	0 to 100 °C (32 to 212 °F)
Sensor 2	0 to 100 °C (32 to 212 °F)

(1) Primary element

(2) Secondary element

Option Code	Requirements/ Specification
C1: Factory Data(1)	Date: day/month/year Descriptor: 16 alphanumeric character Message: 32 alphanumeric character
C2: Transmitter Sensor Matching	The transmitters are designed to accept Callendar-van Dusen constants from a calibrated RTD schedule and generate a custom curve to match any specific sensor curve. Specify a Series 65, 65, or 78 RTD sensor on the order with a special characterization curve (V or X8Q4 option). These constants will be programmed into the transmitter with this option.
C4: Five Point Calibration	Transmitter is calibrated and verified at 0, 25, 50, 75, and 100% digital output points. Use with Rosemount Calibration Certificate Q4 to generate a 5-point calibration certificate.
C7: Special Sensor	For use with non-standard sensors, adding a special sensor, or expanding the sensor input ranges listed in “Accuracy”. If Option Code C7 is ordered, the customer must supply the non-standard sensor information. May be used as sensor input for either sensor 1 or sensor 2.

(1) CDS required

Configuration Data Sheet

Customer Information

Customer ____________ Model No. ____________

P.O. No. ____________ Line Item ____________

Input/Output Information

Sensor Type

Sensor 1

- ☐ **Pt 100 α = 0.00385 ★**
- ☐ Pt 200 α = 0.00385
- ☐ Pt 500 α = 0.00385
- ☐ Pt 1000 α = 0.00385
- ☐ Pt 100 α = 0.03916
- ☐ Cu 10
- ☐ Ni 120
- ☐ Transmitter-Sensor Matching (C2 option)
- ☐ Nonstandard (C7 option)-Attach calibration schedule
- ☐ Ohms
- ☐ NIST Type B T/C
- ☐ NIST Type E T/C
- ☐ NIST Type J T/C
- ☐ NIST Type K T/C
- ☐ NIST Type R T/C
- ☐ NIST Type S T/C
- ☐ NIST Type T T/C
- ☐ NIST Type N T/C
- ☐ mV

No. of Leads

- ☐ 2-Wire
- ☐ 3-Wire
- ☐ **4-Wire ★**

Sensor 2

- ☐ Pt 100 α = 0.00385
- ☐ Pt 200 α = 0.00385
- ☐ Pt 500 α = 0.00385
- ☐ Pt 1000 α = 0.00385
- ☐ Pt 100 α = 0.03916
- ☐ Cu 10
- ☐ Ni 120
- ☐ Transmitter Sensor Matching (C2 Option)
- ☐ Nonstandard (C7 option)-Attach calibration schedule
- ☐ Ohms
- ☐ NIST Type B T/C
- ☐ NIST Type E T/C
- ☐ NIST Type J T/C
- ☐ NIST Type K T/C
- ☐ NIST Type R T/C
- ☐ NIST Type S T/C
- ☐ NIST Type T T/C
- ☐ NIST Type N T/C
- ☐ mV

No. of Leads

- ☐ 2-Wire
- ☐ 3-Wire

Damping (for all AI blocks) ☐ **2 Seconds ★** ☐ Other ________(Value must be less than 32 seconds)

Units (for all blocks) _______**°C ★** _______°F _______K _______ R _______mV _______ohm

Alarm Range (for all applicable AI blocks)

Sensor 1	**Sensor 2**	**Sensor 1 and 2**
__________HI–HI	__________HI–HI	__________**HI–HI ★**
__________LO–LO	__________LO–LO	__________LO–LO

Tagging

Hardware Tag
__ __
__ __
(2 lines x 28 character max.)

Software Tag
__ __
(32 character max.)

Transmitter Information

Descriptor (C1 Option)
__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
(16 characters max.)

Message (C1 Option)
__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __
(2 lines x 16 characters max.)

Date (C1 Option) ☐ Day __ __ (numeric) __ __ __ Month (alphabetic) __ __ Year (numeric)

Switch Selection

Write Protect (Security) ☐ **Off ★** ☐ On

★ = Default Configuration

Product Data Sheet
00813-0100-4769, Rev CA
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Model 3244MV

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