



Control drawings for installations in hazardous locations that conform to US and Canadian standards

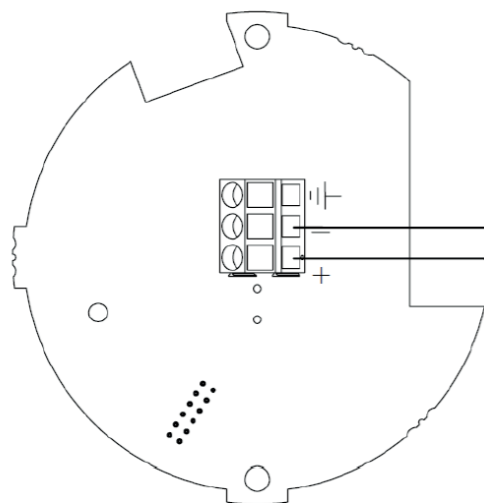


Last update: 18 December 2013

HAZARDOUS LOCATION

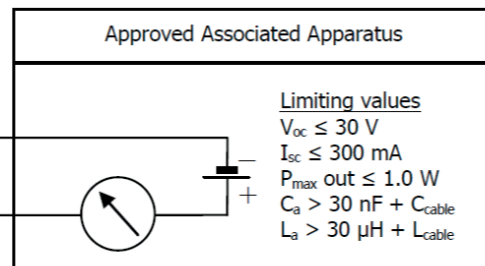
CL. I, DIV 1, GPS A, B, C, D
 CL. II, DIV 1, GPS E, F, G
 CL. III, DIV 1
 CL. I, ZONE 1 (probe suitable for zone 0), IIC
 ZONE 21 (probe suitable for zone 20), IIIC

Entity Parameters:
 $V_{max} = 30\text{ V}$
 $I_{max} = 300\text{ mA}$
 $P_{max} = 1.0\text{ W}$
 $C_i = 30\text{ nF}$
 $L_i = 30\text{ }\mu\text{H}$



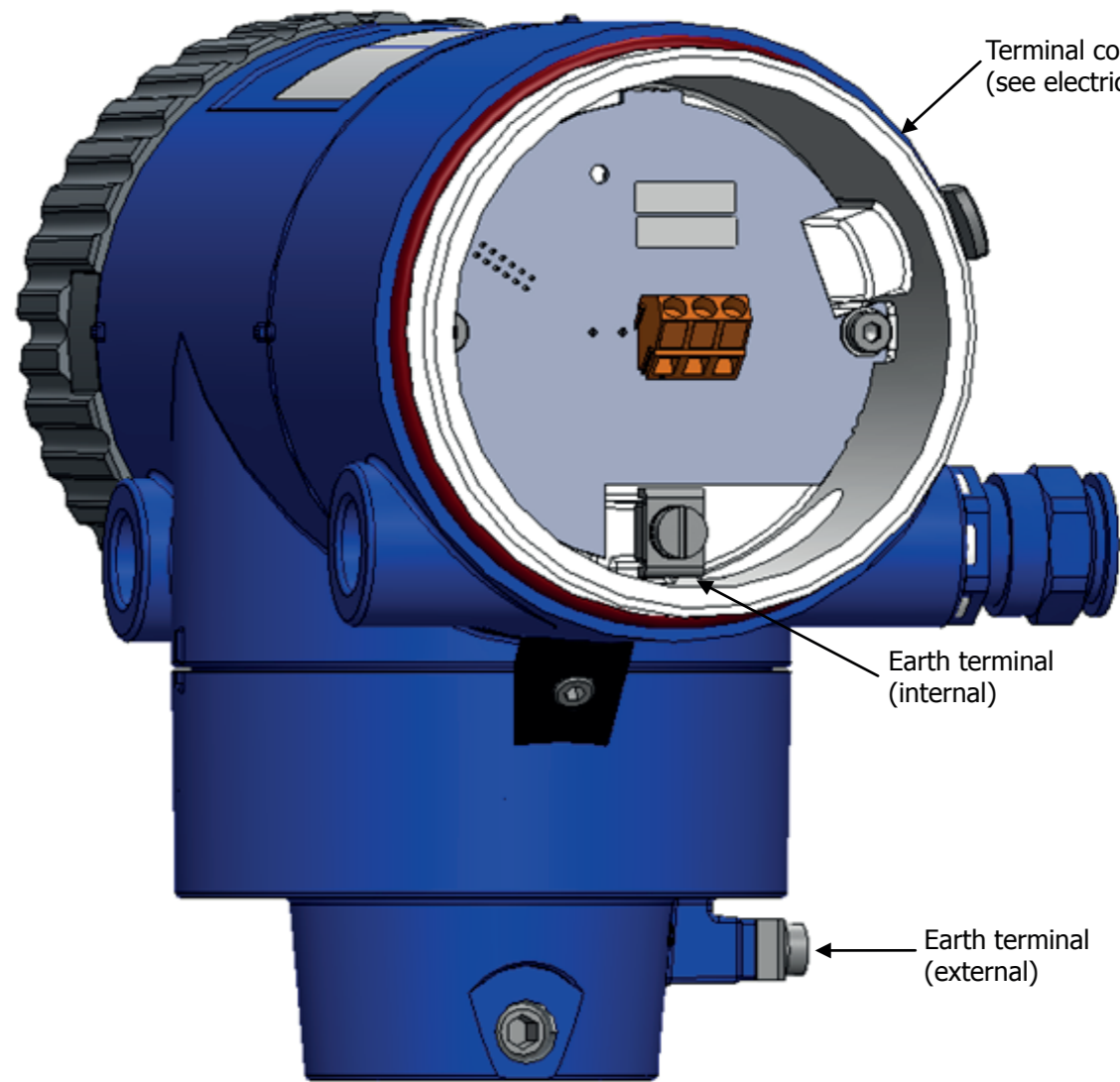
ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



Limiting values
 $V_{oc} \leq 30\text{ V}$
 $I_{sc} \leq 300\text{ mA}$
 $P_{max\ out} \leq 1.0\text{ W}$
 $C_a > 30\text{ nF} + C_{cable}$
 $L_a > 30\text{ }\mu\text{H} + L_{cable}$

TRANSMITTER INSTRUMENT OVERVIEW



Terminal compartment (see electrical connections)

Earth terminal (internal)

Earth terminal (external)

NOTES:

- 1) Installation should be in accordance with ANSI / ISA RP 12.6, "Installation of Intrinsically Safe Systems for Hazardous (classified) locations" and the National Electric Code ANSI / NFPA 70. For Canadian market, the installation must be in accordance with the Canadian Electrical Code, section 18
- 2) No revision to this drawing without prior agency approval.
- 3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
- 4) To determine proper matching of I.S. Equipment and the maximum cable length use the following entity parameter matching formulas:
 $U_o \text{ or } V_{oc} \leq U_i \text{ or } V_{max}$
 $I_o \text{ or } I_{sc} \leq I_i \text{ or } I_{max}$
 $C_a \geq \Sigma C_i + C_{cable}$
 $L_a \geq \Sigma L_i + L_{cable}$
- 5) Temperature Classes as a function of ambient temperature and flange temperature - see table 1

Table 1

Temperature class	Maximum ambient temperature			Maximum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6	52°C	54°C	53°C	60°C
	42°C	51°C	45°C	85°C
T5	67°C	69°C	68°C	75°C
	57°C	66°C	60°C	100°C
T4	77°C	79°C	78°C	85°C
	67°C	76°C	70°C	110°C
T3	57°C	73°C	62°C	135°C
	51°C	71°C	57°C	150°C
T2, T1	Not allowed	68°C	Not allowed	180°C
	Not allowed	65°C	Not allowed	200°C
T2, T1	Not allowed	60°C	Not allowed	250°C
	Not allowed	54°C	Not allowed	300°C

Temperature class	Minimum ambient temperature			Minimum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6-T1	-40°C	-40°C	-40°C	-40°C
	-36°C	-39°C	-37°C	-50°C

FOR FURTHER CONDITIONS AND LIMITATIONS SEE INSTRUCTION MANUAL

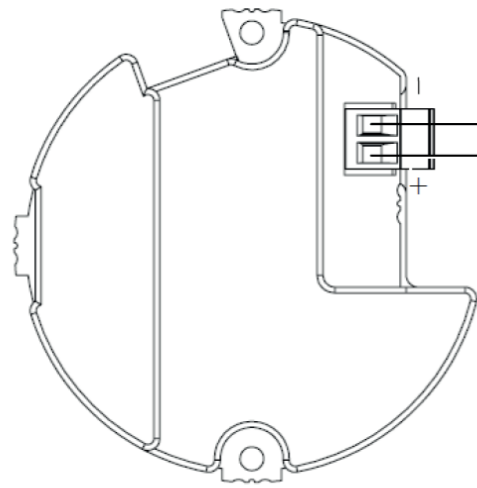
WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE

Rev.	Code	Rev. by	Standard checked	Released by
Engineer	---			
Drawn	27/06/13	ATH		
Standard checked	27/06/13	VPI		
Norm				Sensible Ex
Released by	27/06/13	ATH	Material	Scale
				Sheet 1/6
FOXBORO ECKARDT			CONTROL DRAWING	Article code
			LG01 COMPACT 4-20 mA/HART IS/Ex ia	Doc. type Doc. key Rev. APPR F0821010641 - Status released 000

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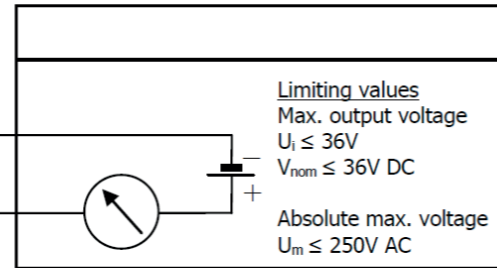
HAZARDOUS LOCATION

CL. I, DIV 1, GPS A, B, C, D (B, C, D for Canada)
 CL. II, DIV 1, GP E, F, G
 CL. III, DIV 1
 CL. I, ZONE 1 (probe suitable for zone 0), IIC
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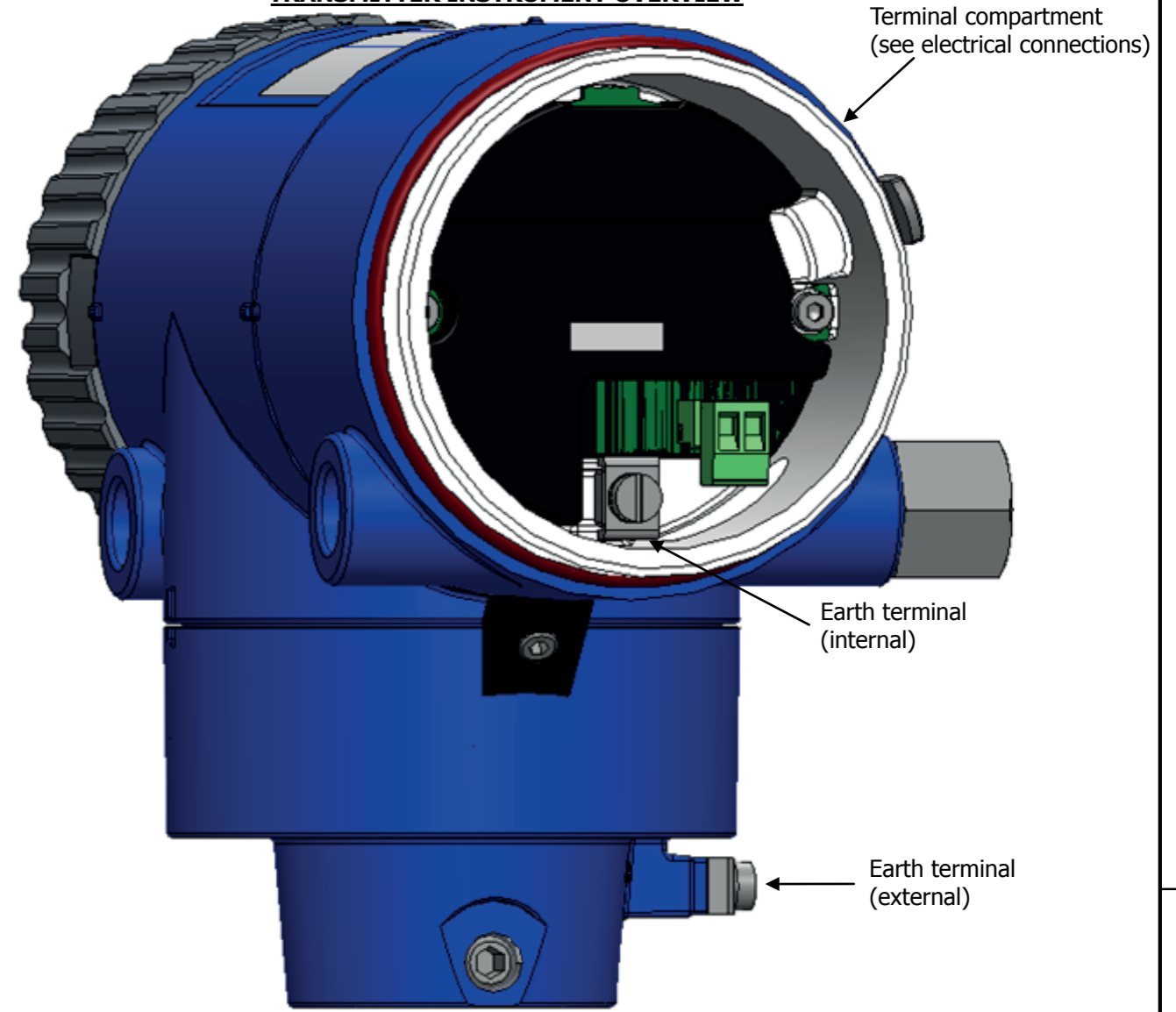
ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



Limiting values
 Max. output voltage
 $U_i \leq 36V$
 $V_{nom} \leq 36V$ DC
 Absolute max. voltage
 $U_m \leq 250V$ AC

TRANSMITTER INSTRUMENT OVERVIEW



Terminal compartment
(see electrical connections)

Earth terminal
(internal)

Earth terminal
(external)

NOTES:

- 1) Cable entry must be sealed within 18" conduit of enclosure (divisions) or at the enclosure (zones).
- 2) The earth terminal shall be connected to an appropriate intrinsically safe ground in accordance the National Electrical Code ANSI / NFPA 70. For Canadian market, the installation must be in accordance with the Canadian Electrical Code, section 18.
- 3) No revision to this drawing without prior agency approval.
- 4) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C.
- 5) Temperature Classes as a function of ambient temperature and flange temperature - see table 1.
- 6) Not for use with Ketone atmosphere.

Table 1

Temperature class	Maximum ambient temperature			Maximum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6	52°C	54°C	53°C	60°C
	42°C	51°C	45°C	85°C
T5	67°C	69°C	68°C	75°C
	57°C	66°C	60°C	100°C
T4	77°C	79°C	78°C	85°C
	67°C	76°C	70°C	110°C
T3	57°C	73°C	62°C	135°C
	51°C	71°C	57°C	150°C
T2, T1	Not allowed	68°C	Not allowed	180°C
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T2, T1	Not allowed	60°C	Not allowed	250°C
	Not allowed	54°C	Not allowed	300°C

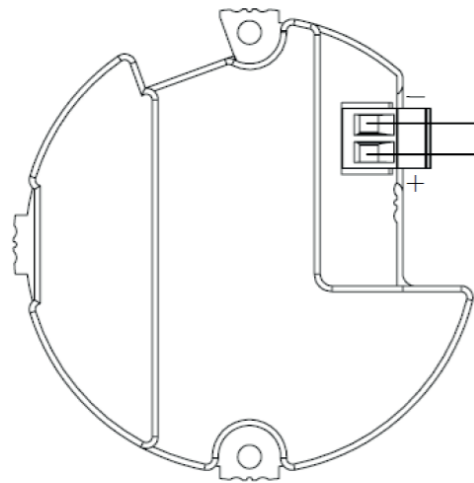
Temperature class	Minimum ambient temperature			Minimum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6-T1	-40°C	-40°C	-40°C	-40°C
	-36°C	-39°C	-37°C	-50°C

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Rev.	Code	Rev. by	Standard checked	Released by
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FOXBORO ECKARDT			CONTROL DRAWING	Article code
			LG01 COMPACT 4-20 mA/HART XP/DIP/Ex d/Ex tb	Doc. type Doc. key Rev. APPR F0821010641 - Status released 000

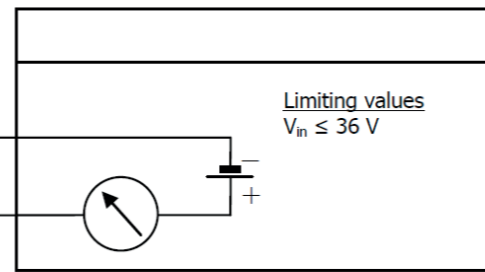
HAZARDOUS LOCATION

CL. I, DIV 2, GPS A, B, C, D
 CL. II, DIV 2, GPS E, F, G
 CL. III, DIV 2
 CL. I, ZONE 2, IIC

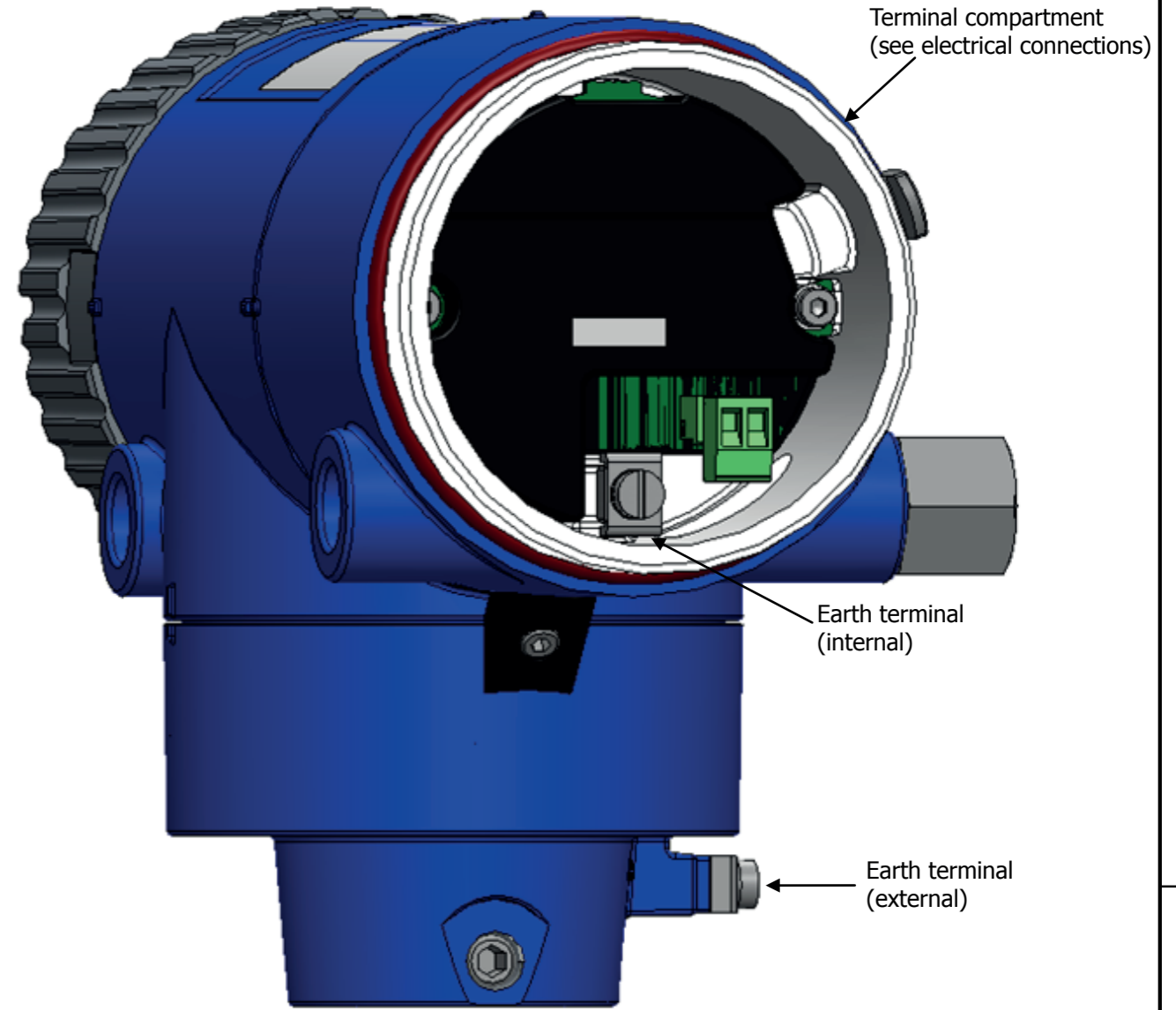


ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



TRANSMITTER INSTRUMENT OVERVIEW



NOTES:

- 1) No revision to this drawing without prior agency approval.
- 2) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
- 3) Temperature Classes as a function of ambient temperature and flange temperature - see table 1
- 4) Not for use with Ketone atmosphere

Table 1

Temperature class	Maximum ambient temperature			Maximum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6	52°C 42°C	54°C 51°C	53°C 45°C	60°C 85°C
T5	67°C 57°C	69°C 66°C	68°C 60°C	75°C 100°C
T4	77°C 67°C 57°C	79°C 76°C 73°C	78°C 70°C 62°C	85°C 110°C 135°C
T3	51°C Not allowed Not allowed	71°C 68°C 65°C	57°C Not allowed Not allowed	150°C 180°C 200°C
T2, T1	Not allowed Not allowed	60°C 54°C	Not allowed Not allowed	250°C 300°C

Temperature class	Minimum ambient temperature			Minimum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6-T1	-40°C -36°C	-40°C -39°C	-40°C -37°C	-40°C -50°C

**FOR FURTHER CONDITIONS AND LIMITATIONS
 SEE INSTRUCTION MANUAL**

WARNING: EXPLOSIVE HASARD. DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR AREA IS KNOWN TO BE NON-HAZARDOUS. SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR USE IN DIV. 2
AVERTISSEMENT: RISQUE D'EXPLOSION. AVANT DE DEBRANCHER L'EQUIPEMENT COUPEZ LE COURANT OU ASSUREZ-VOUS QUE L'EMPLACEMENT EST NON DANGEREUX. LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIEL INACCEPTABLE POUR LA DIV 2

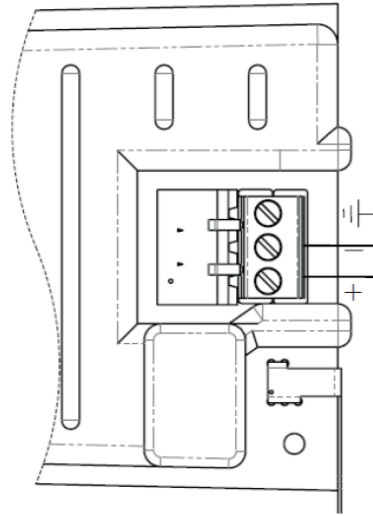
Rev.	Code	Rev. by	Standard checked	Released by
Engineer		---		
Drawn		27/06/13	ATH	
Standard checked		27/06/13	VPI	
Norm				
Released by		27/06/13	ATH	Material
FOXBORO ECKARDT				Article code
CONTROL DRAWING				Doc. type Doc. key Rev.
LG01 COMPACT 4-20 mA/HART NI/Ex nA				APPR F0821010641 -
				Status released 000

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HAZARDOUS LOCATION

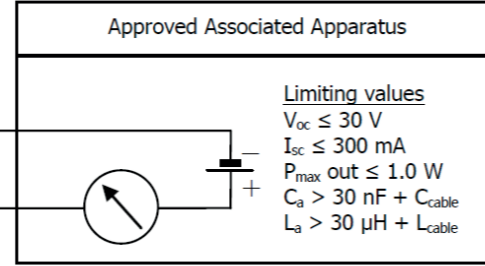
CL. I, DIV 1, GPS A, B, C, D
 CL. II, DIV 1, GPS E, F, G
 CL. III, DIV 1
 CL. I, ZONE 1 (probe suitable for zone 0), IIC
 ZONE 21 (probe suitable for zone 20), IIC

Entity Parameters:
 $V_{max} = 30\text{ V}$
 $I_{max} = 300\text{ mA}$
 $P_{max} = 1.0\text{ W}$
 $C_i = 30\text{ nF}$
 $L_i = 30\text{ }\mu\text{H}$



ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



NOTES:

- 1) Installation should be in accordance with ANSI / ISA RP 12.6, "Installation of Intrinsically Safe Systems for Hazardous (classified) locations" and the National Electric Code ANSI / NFPA 70. For Canadian market, the installation must be in accordance with the Canadian Electrical Code, section 18
- 2) No revision to this drawing without prior agency approval.
- 3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
- 4) To determine proper matching of I.S. Equipment and the maximum cable length use the following entity parameter matching formulas:
 $U_o \text{ or } V_{oc} \leq U_i \text{ or } V_{max}$
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 $C_a \geq \Sigma C_i + C_{cable}$
 $L_a \geq \Sigma L_i + L_{cable}$
- 5) Temperature Classes as a function of ambient temperature and flange temperature - see table 1

Table 1

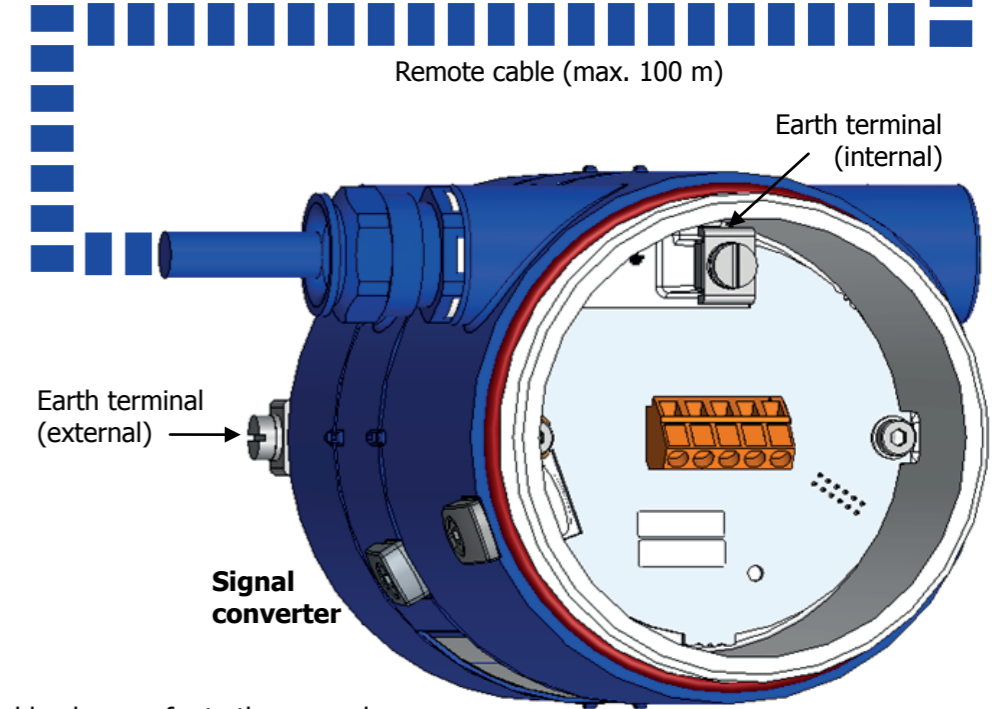
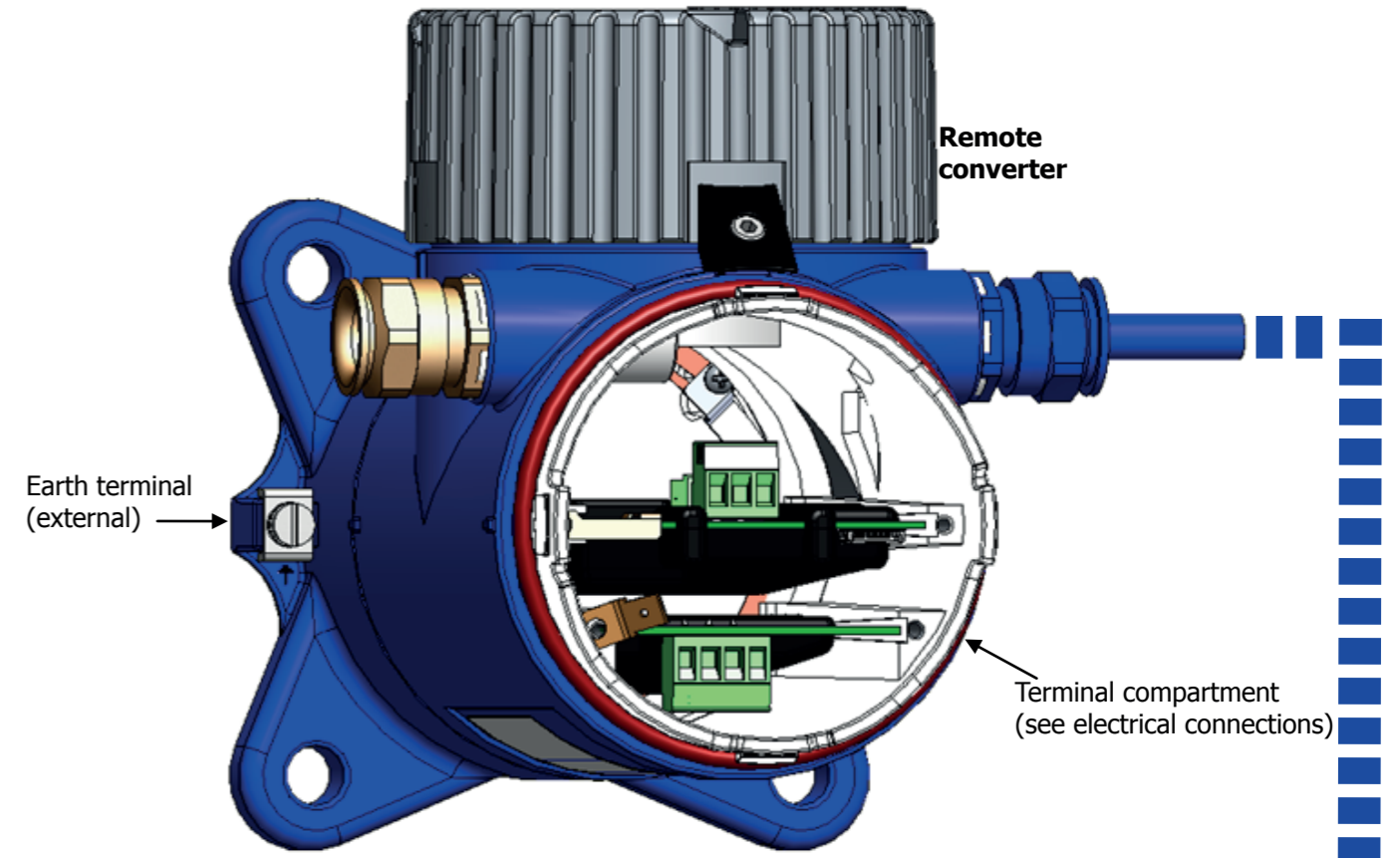
Temperature class	Maximum ambient temperature			Maximum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6	49°C	51°C	49°C	60°C
	39°C	50°C	43°C	85°C
T5	64°C	66°C	64°C	75°C
	54°C	65°C	58°C	100°C
T4	77°C	79°C	78°C	85°C
	64°C	75°C	68°C	110°C
T3	51°C	71°C	59°C	135°C
	43°C	69°C	54°C	150°C
T2, T1	Not allowed	65°C	Not allowed	180°C
	Not allowed	62°C	Not allowed	200°C
T2, T1	Not allowed	54°C	Not allowed	250°C
	Not allowed	47°C	Not allowed	300°C

Temperature class	Minimum ambient temperature			Minimum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6-T1	-40°C	-40°C	-40°C	-40°C
	-35°C	-39°C	-36°C	-50°C

FOR FURTHER CONDITIONS AND LIMITATIONS SEE INSTRUCTION MANUAL

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE

TRANSMITTER INSTRUMENT OVERVIEW

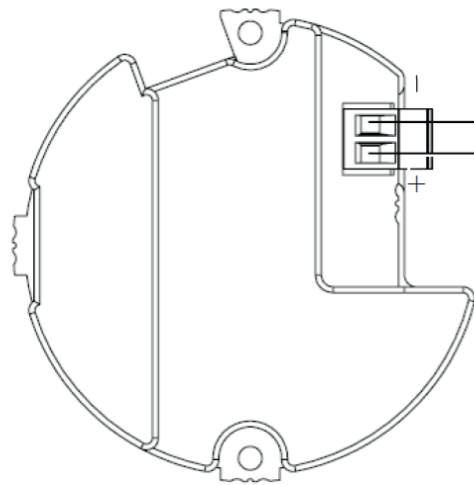


Note: to connect the remote cable please refer to the manual

Rev.	Code	Rev. by	Standard checked	Released by
Engineer	---			
Drawn	27/06/13	ATH		
Standard checked	27/06/13	VPI		
Norm				
Released by	27/06/13	ATH	Material	
FOXBORO ECKARDT				Article code
CONTROL DRAWING				Doc. type Doc. key Rev.
LG01 REMOTE 4-20 mA/HART IS/Ex ia				APPR F0821010641 -
				Status released 000

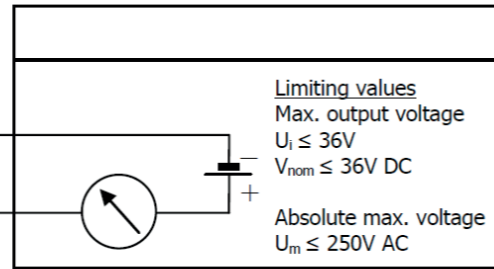
HAZARDOUS LOCATION

CL. I, DIV 1, GPS A, B, C, D (B, C, D for Canada)
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 CL. I, ZONE 1 (probe suitable for zone 0), IIC
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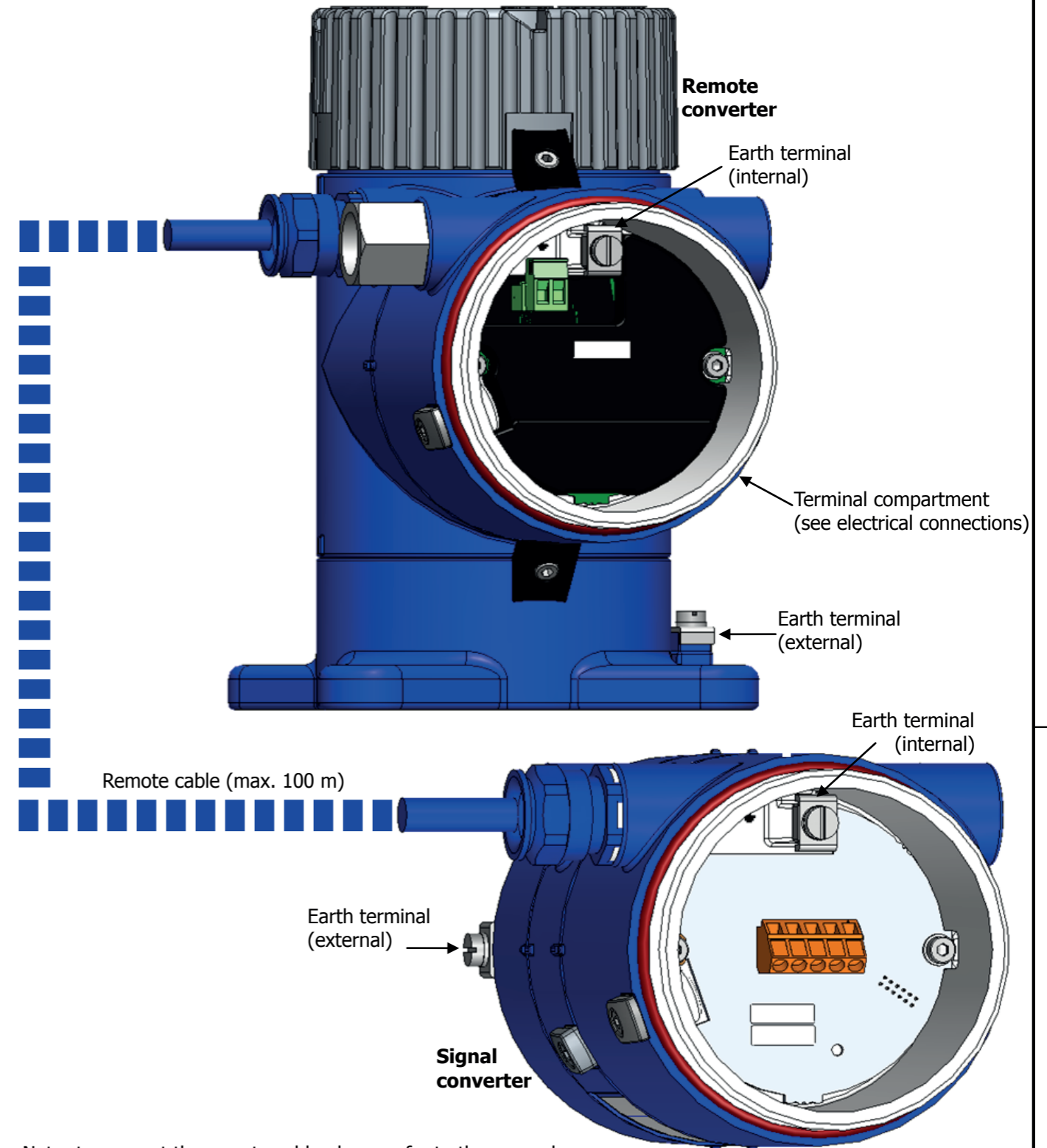


ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



TRANSMITTER INSTRUMENT OVERVIEW



NOTES:

- 1) Cable entry must be sealed within 18" conduit of enclosure (divisions) or at the enclosure (zones).
- 2) The earth terminal shall be connected to an appropriate intrinsically safe ground in accordance the National Electrical Code ANSI / NFPA 70. For Canadian market, the installation must be in accordance with the Canadian Electrical Code, section 18.
- 3) No revision to this drawing without prior agency approval.
- 4) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C.
- 5) Temperature Classes as a function of ambient temperature and flange temperature - see table 1.
- 6) Not for use with Ketone atmosphere.

Table 1

Temperature class	Maximum ambient temperature			Maximum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6	49°C	51°C	49°C	60°C
	39°C	50°C	43°C	85°C
T5	64°C	66°C	64°C	75°C
	54°C	65°C	58°C	100°C
T4	77°C	79°C	78°C	85°C
	64°C	75°C	68°C	110°C
T3	51°C	71°C	59°C	135°C
	43°C	69°C	54°C	150°C
T2, T1	Not allowed	65°C	Not allowed	180°C
	Not allowed	62°C	Not allowed	200°C
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	Not allowed	47°C	Not allowed	300°C

Temperature class	Minimum ambient temperature			Minimum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6-T1	-40°C	-40°C	-40°C	-40°C
	-35°C	-39°C	-36°C	-50°C

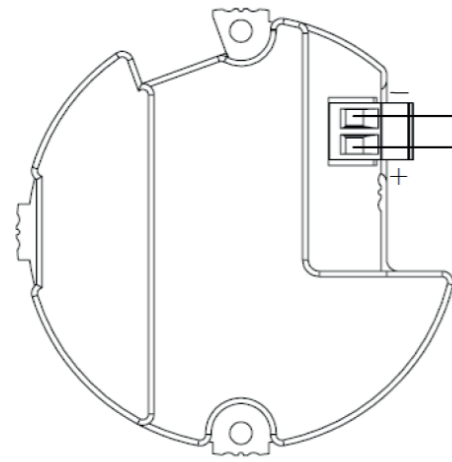
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Note: to connect the remote cable please refer to the manual

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Engineer	---			
Drawn	27/06/13	ATH		
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Norm				
Released by	27/06/13	ATH	Material	
FOXBORO ECKARDT				Article code
CONTROL DRAWING				Doc. type Doc. key Rev.
LG01 REMOTE 4-20 mA/HART XP/DIP/Ex d/Ex tb				APPR F0821010641 -
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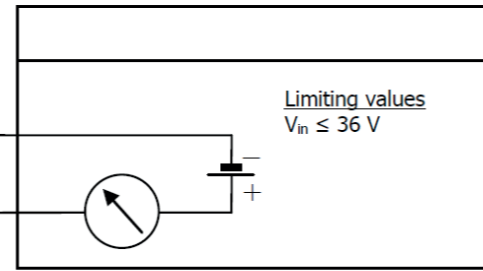
HAZARDOUS LOCATION

CL. I, DIV 2, GPS A, B, C, D
 CL. II, DIV 2, GPS E, F, G
 CL. III, DIV 2
 CL. I, ZONE 2, IIC

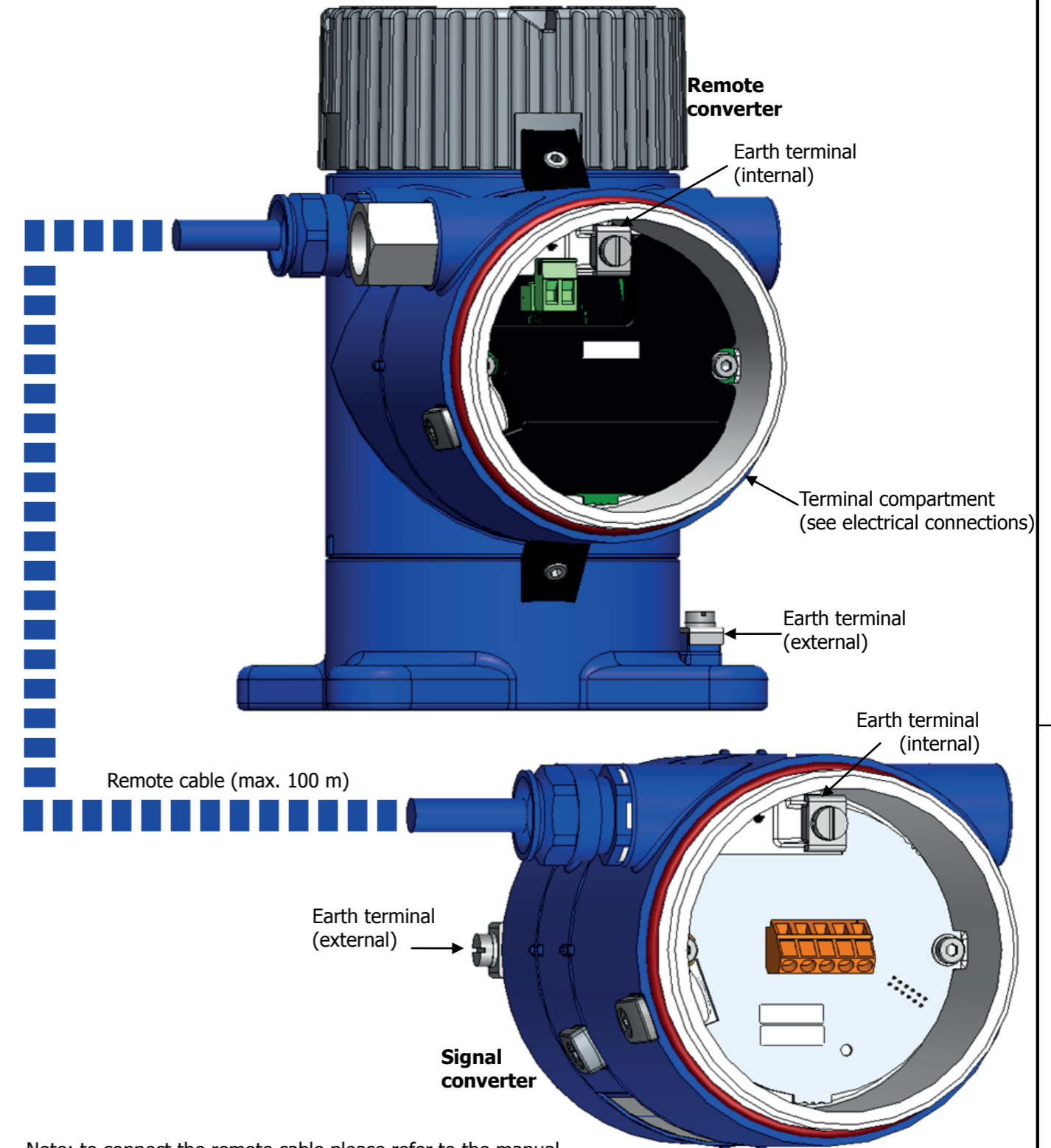


ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



TRANSMITTER INSTRUMENT OVERVIEW



NOTES:

- 1) No revision to this drawing without prior agency approval.
- 2) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
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Table 1

Temperature class	Maximum ambient temperature			Maximum flange temperature
	2mm probe	2mm probe + HT extension	Other probes	
T6	49°C	51°C	49°C	60°C
	39°C	48°C	43°C	85°C
T5	64°C	66°C	64°C	75°C
	54°C	65°C	58°C	100°C
T4	77°C	79°C	78°C	85°C
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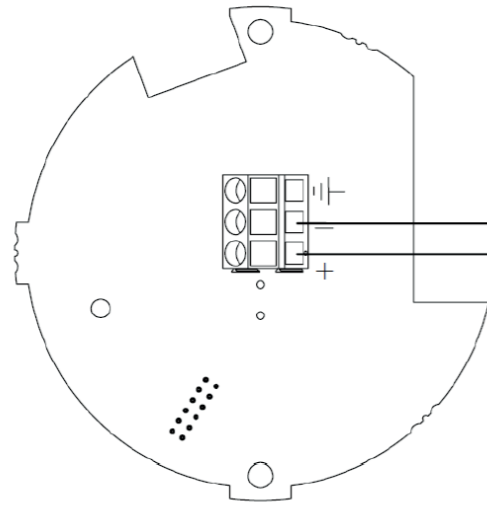
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HAZARDOUS LOCATION

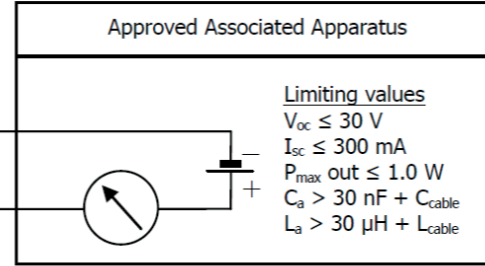
CL. I, DIV 1, GPS A, B, C, D
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 CL. III, DIV 1
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 ZONE 21 (antenna suitable for zone 20), IIIC

Entity Parameters:
 $V_{max} = 30\text{ V}$
 $I_{max} = 300\text{ mA}$
 $P_{max} = 1.0\text{ W}$
 $C_i = 30\text{ nF}$
 $L_i = 30\text{ }\mu\text{H}$



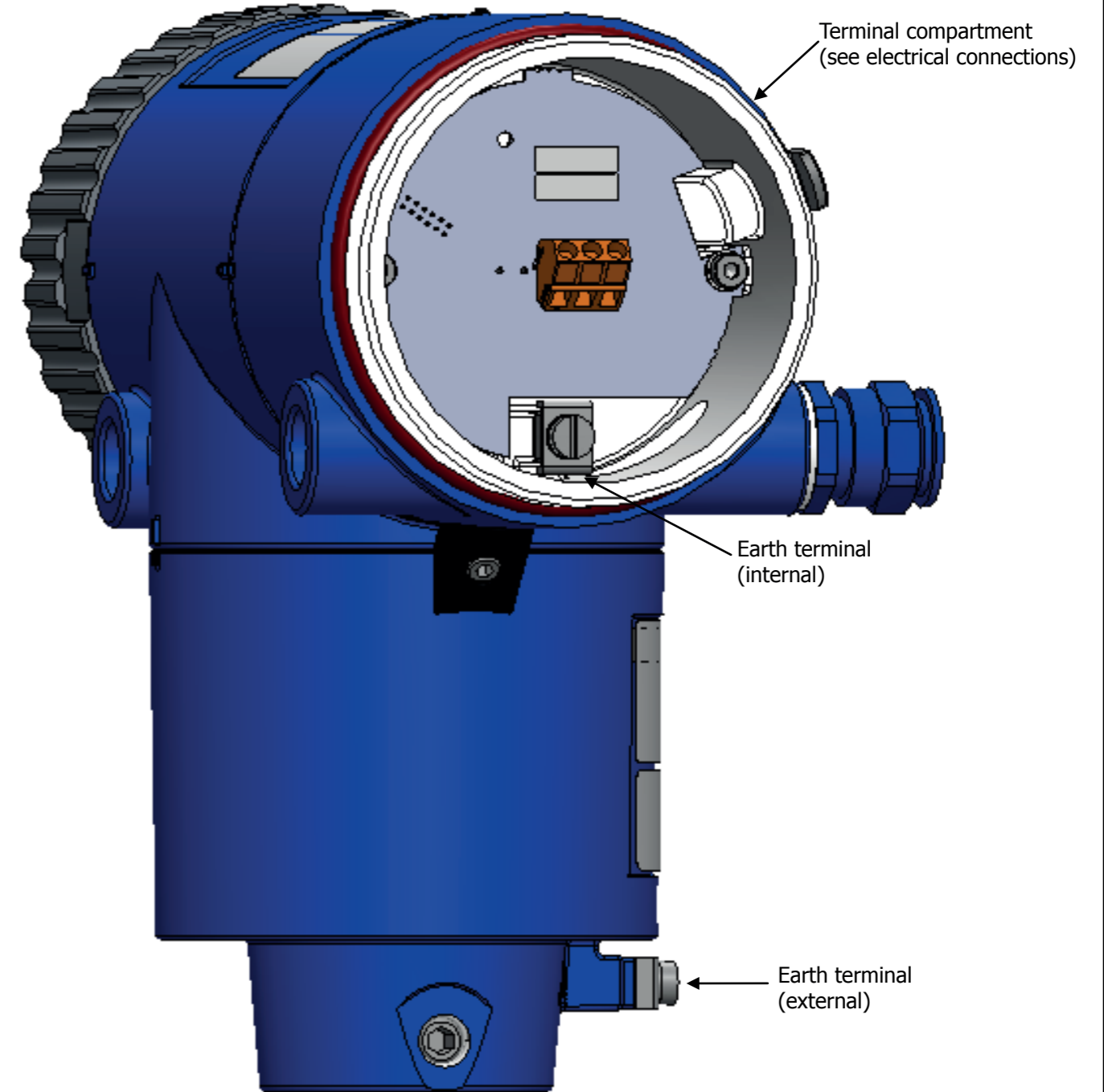
ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



Limiting values
 $V_{oc} \leq 30\text{ V}$
 $I_{sc} \leq 300\text{ mA}$
 $P_{max\text{ out}} \leq 1.0\text{ W}$
 $C_a > 30\text{ nF} + C_{cable}$
 $L_a > 30\text{ }\mu\text{H} + L_{cable}$

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Terminal compartment (see electrical connections)

Earth terminal (internal)

Earth terminal (external)

NOTES:

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 $C_a \geq \Sigma C_i + C_{cable}$
 $L_a \geq \Sigma L_i + L_{cable}$
- 5) Temperature Classes as a function of ambient temperature and flange temperature - see table 1

Table 1

T class	Maximum ambient temperature				Maximum process temperature
	Wave horn PP	Wave horn PTFE & Wavestick	Metallic horn without HT extension	Metallic horn with HT extension	
T6	46°C	46°C	46°C	46°C	45°C
	41°C	42°C	41°C	44°C	55°C
	38°C	40°C	39°C	43°C	60°C
T5	53°C	55°C	54°C	58°C	75°C
	40°C	44°C	43°C	54°C	100°C
T4	77°C	77°C	77°C	79°C	85°C
	69°C	71°C	70°C	76°C	100°C
	Not allowed	57°C	54°C	71°C	135°C
T3	Not allowed	50°C	48°C	68°C	150°C
	Not allowed	Not allowed	Not allowed	64°C	180°C
	Not allowed	Not allowed	Not allowed	61°C	200°C
T2, T1	Not allowed	Not allowed	Not allowed	53°C	250°C

T class	Minimum ambient temperature				Minimum flange temperature
	Wave horn PP & Wavestick	Wave horn PTFE	Metallic horn without HT extension	Metallic horn with HT extension	
T6-T1	-40°C	-40°C	-40°C	-40°C	-40°C
	Not allowed	-36°C	-35°C	-38°C	-50°C
	Not allowed	Not allowed	Not allowed	-37°C	-60°C

FOR FURTHER CONDITIONS AND LIMITATIONS SEE INSTRUCTION MANUAL

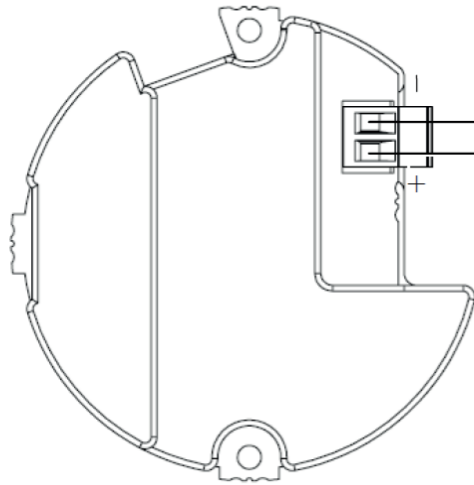
WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE

Rev.	Code	Rev. by	Standard checked	Released by
Engineer	---			
Drawn	27/06/13	ATH		
Standard checked	27/06/13	VPI		
Norm				
Released by	27/06/13	ATH	Material	
FOXBORO ECKARDT				
CONTROL DRAWING			Article code	
LR01 COMPACT 4-20 mA/HART IS/Ex ia			Doc. type	Doc. key
			APPR	F0821010651
			Status	released
			Rev.	000

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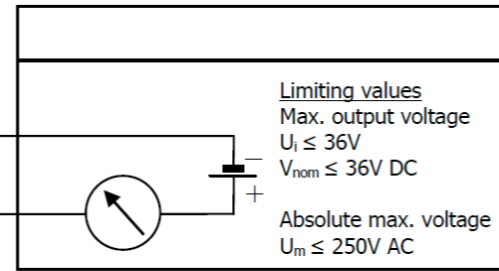
HAZARDOUS LOCATION

CL. I, DIV 1, GPS A, B, C, D (B, C, D for Canada)
 CL. II, DIV 1, GP E, F, G
 CL. III, DIV 1
 CL. I, ZONE 1 (antenna suitable for zone 0), IIC
 ZONE 21 (antenna suitable for zone 20), IIIC



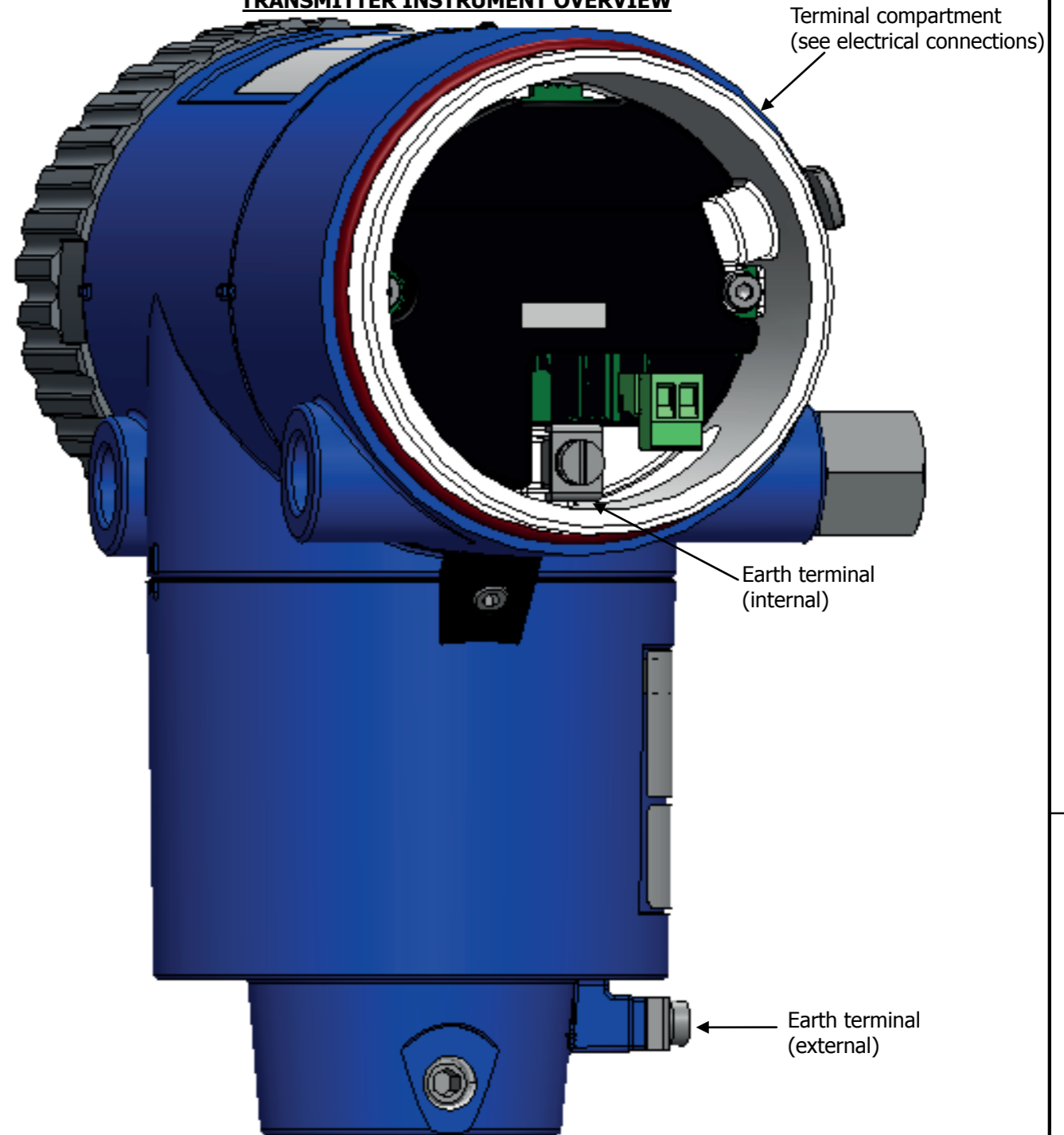
ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



Limiting values
 Max. output voltage
 $U_i \leq 36V$
 $V_{nom} \leq 36V$ DC
 Absolute max. voltage
 $U_m \leq 250V$ AC

TRANSMITTER INSTRUMENT OVERVIEW



Terminal compartment (see electrical connections)

Earth terminal (internal)

Earth terminal (external)

NOTES:

- 1) Cable entry must be sealed within 18" conduit of enclosure (divisions) or at the enclosure (zones).
- 2) The earth terminal shall be connected to an appropriate intrinsically safe ground in accordance the National Electrical Code ANSI / NFPA 70. For Canadian market, the installation must be in accordance with the Canadian Electrical Code, section 18.
- 3) No revision to this drawing without prior agency approval.
- 4) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C.
- 5) Temperature Classes as a function of ambient temperature and flange temperature - see table 1.
- 6) Not for use with Ketone atmosphere.

Table 1

T class	Maximum ambient temperature				Maximum flange temperature
	Wave horn PP	Wave horn PTFE & Wavestick	Metallic horn without HT extension	Metallic horn with HT extension	
T6	46°C 41°C 38°C	46°C 42°C 40°C	46°C 41°C 39°C	46°C 44°C 43°C	45°C 55°C 60°C
T5	53°C 40°C	55°C 44°C	54°C 43°C	58°C 54°C	75°C 100°C
T4	77°C 69°C Not allowed	77°C 71°C 57°C	77°C 70°C 54°C	79°C 76°C 71°C	85°C 100°C 135°C
T3	Not allowed Not allowed Not allowed	50°C Not allowed Not allowed	48°C Not allowed Not allowed	68°C 64°C 61°C	150°C 180°C 200°C
T2, T1	Not allowed	Not allowed	Not allowed	53°C	250°C

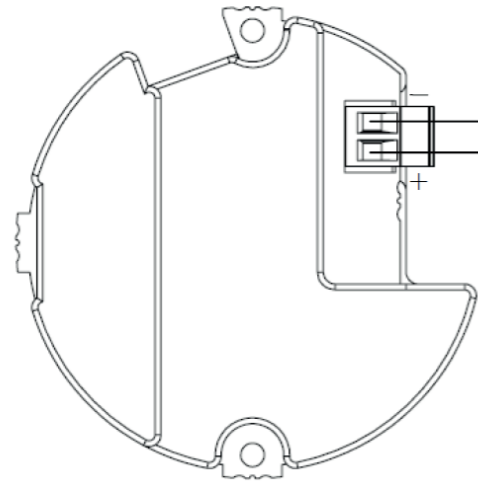
T class	Minimum ambient temperature				Minimum flange temperature
	Wave horn PP & Wavestick	Wave horn PTFE	Metallic horn without HT extension	Metallic horn with HT extension	
T6-T1	-40°C Not allowed Not allowed	-40°C -36°C Not allowed	-40°C -35°C Not allowed	-40°C -38°C -37°C	-40°C -50°C -60°C

FOR FURTHER CONDITIONS AND LIMITATIONS SEE INSTRUCTION MANUAL

Rev.	Code	Rev. by	Standard checked	Released by
Engineer	---			
Drawn	27/06/13	ATH		
Standard checked	27/06/13	VPI		
Norm				
Released by	27/06/13	ATH	Material	
FOXBORO ECKARDT			CONTROL DRAWING	Article code
			LR01 COMPACT 4-20 mA/HART XP/DIP/Ex d/Ex tb	Doc. type Doc. key Rev. APPR F0821010651 - Status released 000

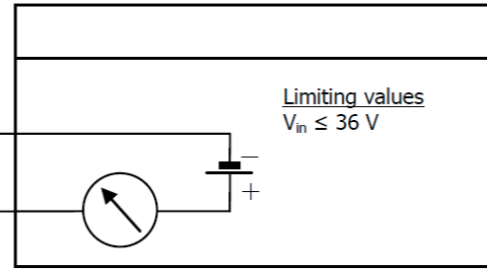
HAZARDOUS LOCATION

CL. I, DIV 2, GPS A, B, C, D
 CL. II, DIV 2, GPS E, F, G
 CL. III, DIV 2
 CL. I, ZONE 2, IIC

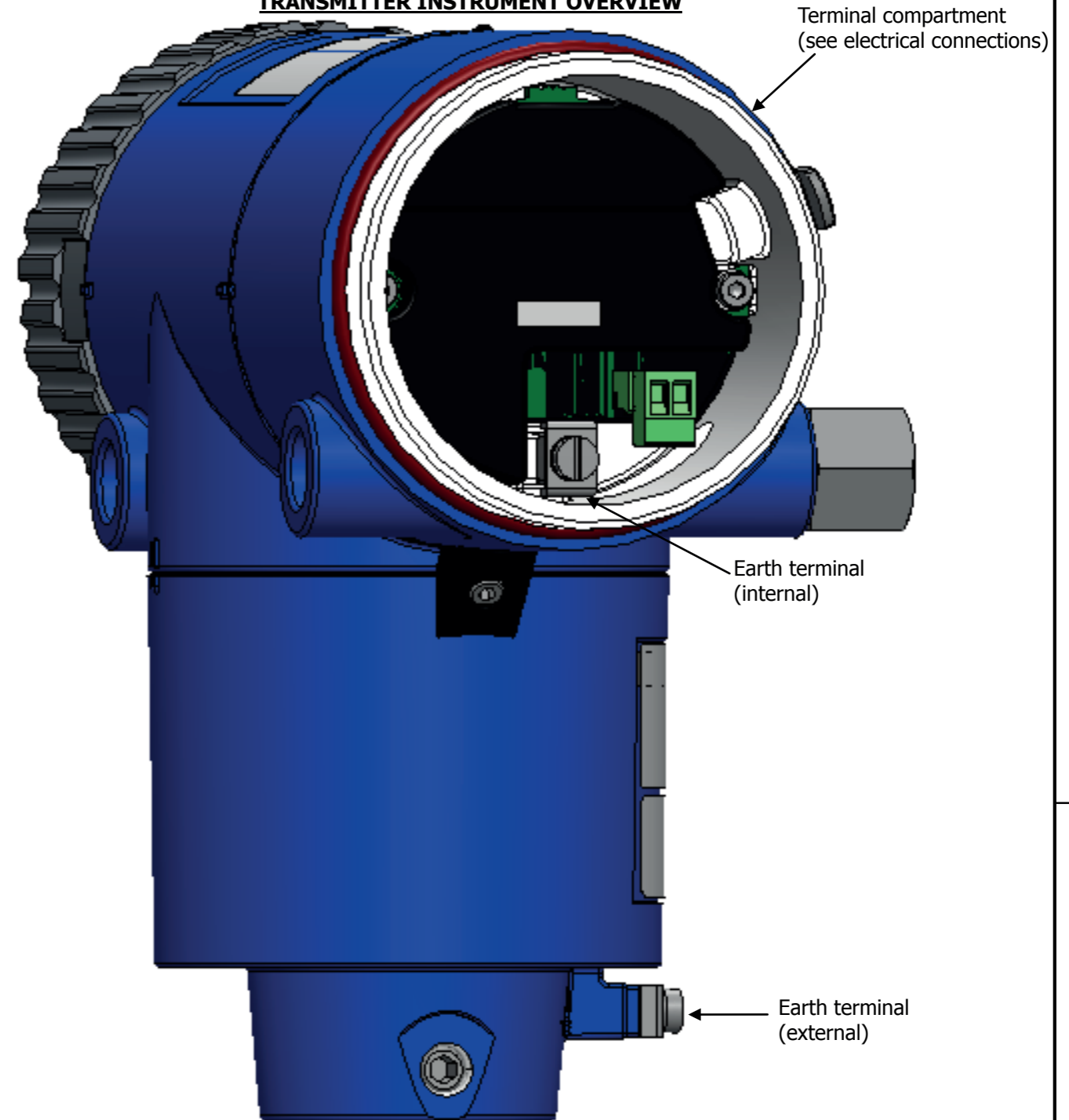


ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



TRANSMITTER INSTRUMENT OVERVIEW



Terminal compartment (see electrical connections)

Earth terminal (internal)

Earth terminal (external)

NOTES:

- 1) No revision to this drawing without prior agency approval.
- 2) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
- 3) Temperature Classes as a function of ambient temperature and flange temperature - see table 1
- 4) Not for use with Ketone atmosphere

Table 1

T class	Maximum ambient temperature				Maximum flange temperature
	Wave horn PP	Wave horn PTFE & Wavestick	Metallic horn without HT extension	Metallic horn with HT extension	
T6	46°C	46°C	46°C	46°C	45°C
	41°C	42°C	41°C	44°C	55°C
	38°C	40°C	39°C	43°C	60°C
T5	53°C	55°C	54°C	58°C	75°C
	40°C	44°C	43°C	54°C	100°C
T4	77°C	77°C	77°C	79°C	85°C
	69°C	71°C	70°C	76°C	100°C
	Not allowed	57°C	54°C	71°C	135°C
T3	Not allowed	50°C	48°C	68°C	150°C
	Not allowed	Not allowed	Not allowed	64°C	180°C
	Not allowed	Not allowed	Not allowed	61°C	200°C
T2, T1	Not allowed	Not allowed	Not allowed	53°C	250°C

T class	Minimum ambient temperature				Minimum flange temperature
	Wave horn PP & Wavestick	Wave horn PTFE	Metallic horn without HT extension	Metallic horn with HT extension	
T6-T1	-40°C	-40°C	-40°C	-40°C	-40°C
	Not allowed	-36°C	-35°C	-38°C	-50°C
	Not allowed	Not allowed	Not allowed	-37°C	-60°C

FOR FURTHER CONDITIONS AND LIMITATIONS SEE INSTRUCTION MANUAL

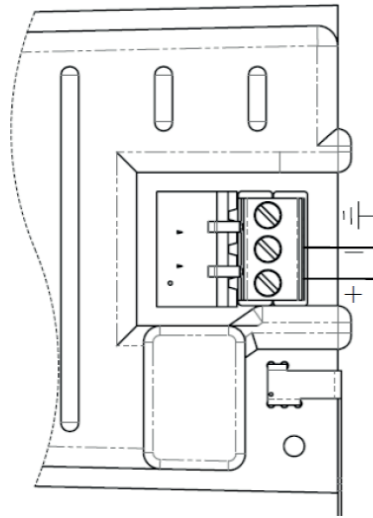
WARNING: EXPLOSIVE HASARD. DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR AREA IS KNOWN TO BE NON-HAZARDOUS. SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR USE IN DIV. 2
AVERTISSEMENT: RISQUE D'EXPLOSION. AVANT DE DEBRANCHER L'EQUIPEMENT COUPEZ LE COURANT OU ASSUREZ-VOUS QUE L'EMPLACEMENT EST NON DANGEREUX. LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIEL INACCEPTABLE POUR LA DIV 2

Rev.	Code	Rev. by	Standard checked	Released by
Engineer	---			
Drawn	27/06/13	ATH		
Standard checked	27/06/13	VPI		
Norm				
Released by	27/06/13	ATH	Material	Sensible Ex
FOXBORO ECKARDT				Scale
CONTROL DRAWING			Article code	Sheet 3/6
LR01 COMPACT 4-20 mA/HART NI/Ex nA			Doc. type	Rev.
			Doc. key	
			F0821010651	-
			Status	000
			released	

HAZARDOUS LOCATION

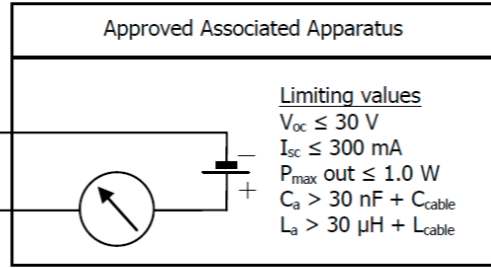
CL. I, DIV 1, GPS A, B, C, D
 CL. II, DIV 1, GPS E, F, G
 CL. III, DIV 1
 CL. I, ZONE 1 (antenna suitable for zone 0), IIC
 ZONE 21 (antenna suitable for zone 20), IIIC

Entity Parameters:
 $V_{max} = 30\text{ V}$
 $I_{max} = 300\text{ mA}$
 $P_{max} = 1.0\text{ W}$
 $C_i = 30\text{ nF}$
 $L_i = 30\text{ }\mu\text{H}$



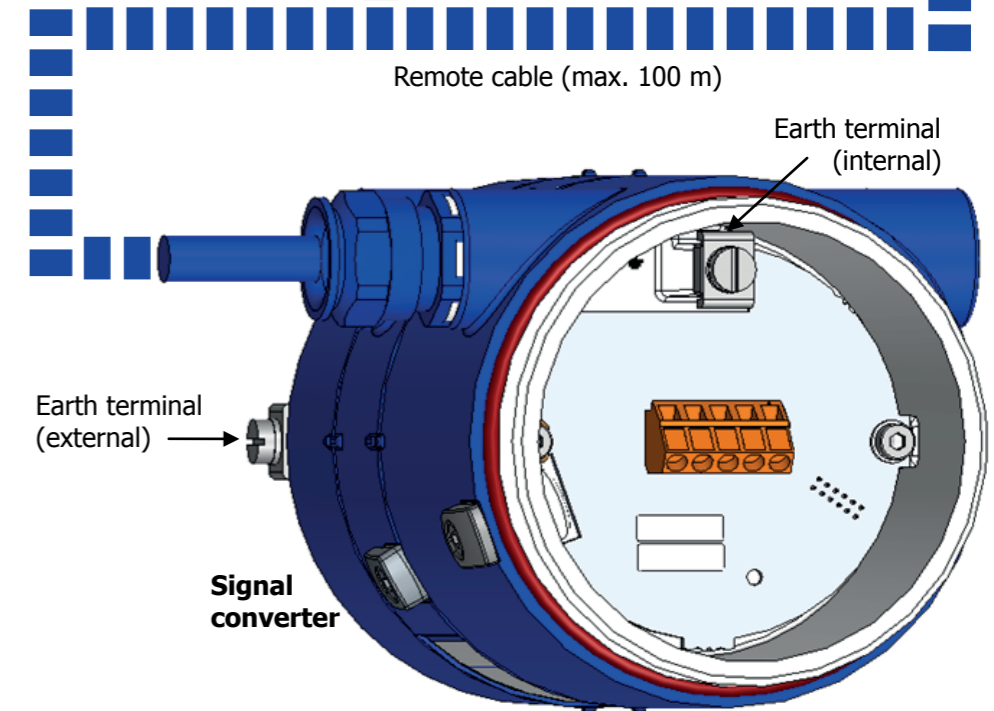
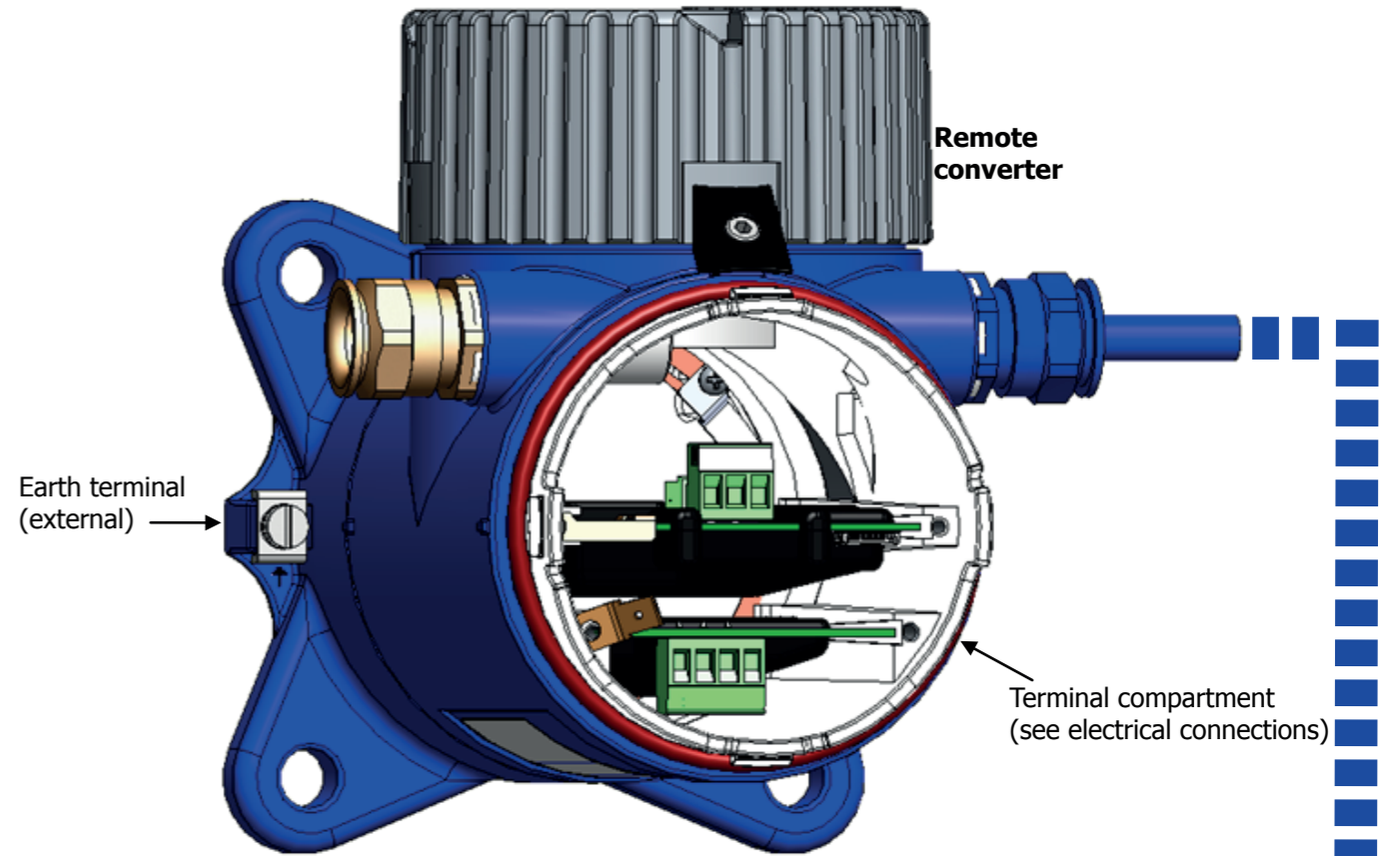
ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



Limiting values
 $V_{oc} \leq 30\text{ V}$
 $I_{sc} \leq 300\text{ mA}$
 $P_{max\ out} \leq 1.0\text{ W}$
 $C_a > 30\text{ nF} + C_{cable}$
 $L_a > 30\text{ }\mu\text{H} + L_{cable}$

TRANSMITTER INSTRUMENT OVERVIEW



NOTES:

- 1) Installation should be in accordance with ANSI / ISA RP 12.6, "Installation of Intrinsically Safe Systems for Hazardous (classified) locations" and the National Electric Code ANSI / NFPA 70. For Canadian market, the installation must be in accordance with the Canadian Electrical Code, section 18
- 2) No revision to this drawing without prior agency approval.
- 3) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
- 4) To determine proper matching of I.S. Equipment and the maximum cable length use the following entity parameter matching formulas:
 $U_o \text{ or } V_{oc} \leq U_i \text{ or } V_{max}$
 $I_o \text{ or } I_{sc} \leq I_i \text{ or } I_{max}$
 $C_a \geq \Sigma C_i + C_{cable}$
 $L_a \geq \Sigma L_i + L_{cable}$
- 5) Temperature Classes as a function of ambient temperature and flange temperature - see table 1

Table 1

T class	Maximum ambient temperature				Maximum flange temperature
	Wave horn PP	Wave horn PTFE & Wavestick	Metallic horn without HT extension	Metallic horn with HT extension	
T6	46°C 41°C 39°C	46°C 41°C 39°C	46°C 41°C 39°C	46°C 44°C 43°C	45°C 55°C 60°C
T5	54°C 43°C	54°C 43°C	54°C 41°C	59°C 55°C	75°C 100°C
T4	77°C 70°C Not allowed	77°C 71°C 55°C	77°C 70°C 53°C	79°C 77°C 72°C	85°C 100°C 135°C
T3	Not allowed	48°C	45°C	66°C	150°C
	Not allowed	Not allowed	Not allowed	63°C	180°C
	Not allowed	Not allowed	Not allowed	57°C	200°C
T2, T1	Not allowed	Not allowed	Not allowed	53°C	250°C

T class	Minimum ambient temperature				Minimum flange temperature
	Wave horn PP & Wavestick	Wave horn PTFE	Metallic horn without HT extension	Metallic horn with HT extension	
T6-T1	-40°C	-40°C	-40°C	-40°C	-40°C
	Not allowed	-36°C	-35°C	-39°C	-50°C
	Not allowed	Not allowed	Not allowed	-37°C	-60°C

FOR FURTHER CONDITIONS AND LIMITATIONS SEE INSTRUCTION MANUAL

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE

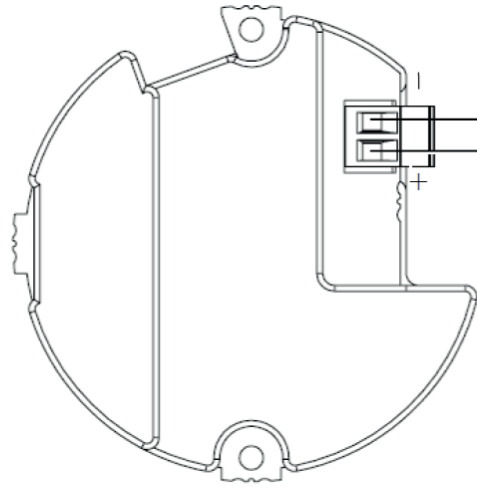
Note: to connect the remote cable please refer to the manual

Rev.	Code	Rev. by	Standard checked	Released by
Engineer	---			
Drawn	27/06/13	ATH		
Standard checked	27/06/13	VPI		
Norm				
Released by	27/06/13	ATH	Material	
FOXBORO ECKARDT			CONTROL DRAWING	Article code
			LR01 REMOTE 4-20 mA/HART IS/Ex ia	Doc. type Doc. key Rev. APPR F0821010651 - Status released 000

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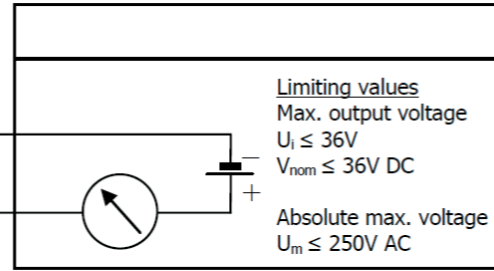
HAZARDOUS LOCATION

CL. I, DIV 1, GPS A, B, C, D (B, C, D for Canada)
 CL. II, DIV 1, GP E, F, G
 CL. III, DIV 1
 CL. I, ZONE 1 (antenna suitable for zone 0), IIC
 ZONE 21 (antenna suitable for zone 20), IIIC



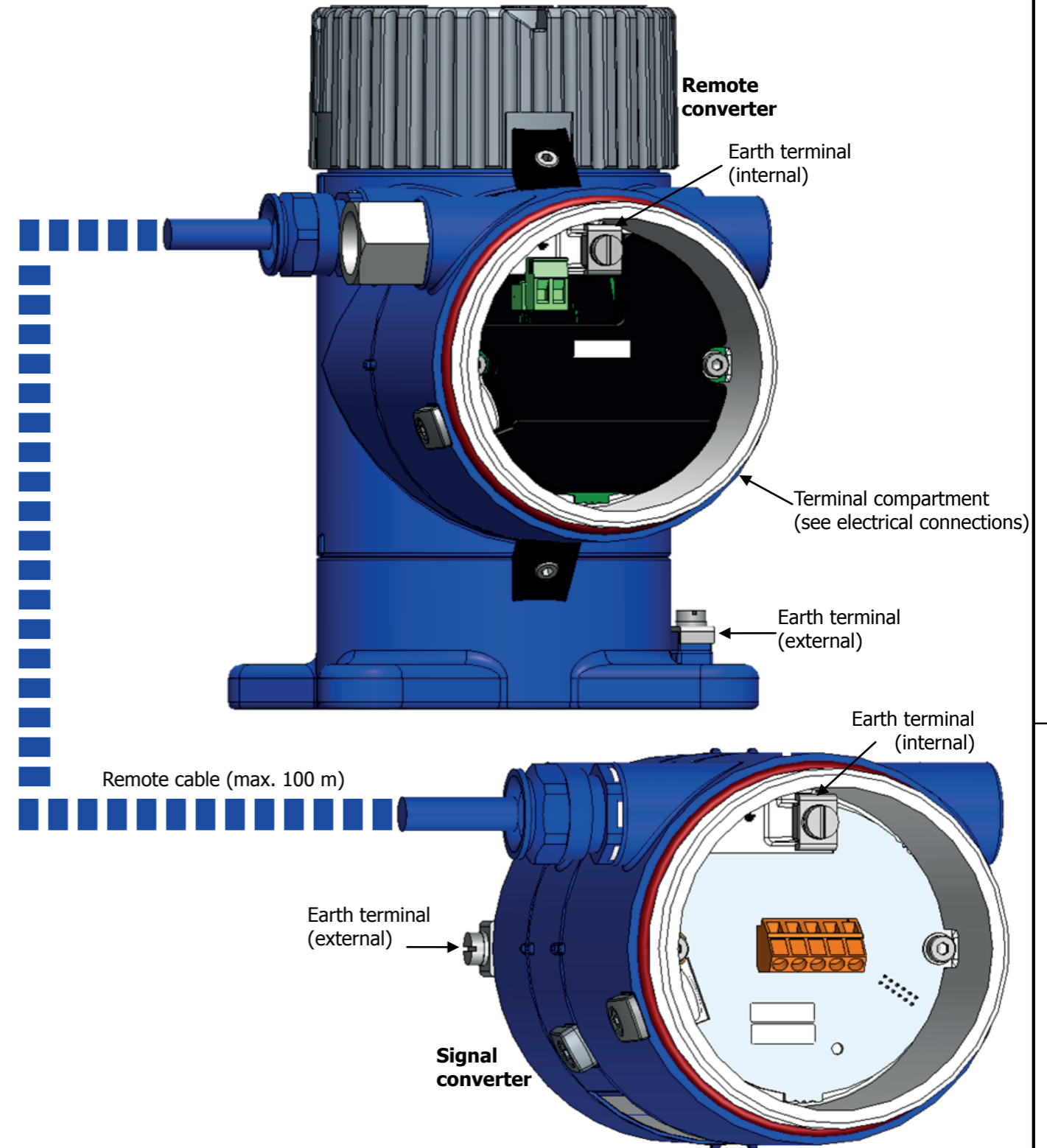
ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



Limiting values
 Max. output voltage
 $U_i \leq 36V$
 $V_{nom} \leq 36V$ DC
 Absolute max. voltage
 $U_m \leq 250V$ AC

TRANSMITTER INSTRUMENT OVERVIEW



NOTES:

- 1) Cable entry must be sealed within 18" conduit of enclosure (divisions) or at the enclosure (zones).
- 2) The earth terminal shall be connected to an appropriate intrinsically safe ground in accordance the National Electrical Code ANSI / NFPA 70. For Canadian market, the installation must be in accordance with the Canadian Electrical Code, section 18.
- 3) No revision to this drawing without prior agency approval.
- 4) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C.
- 5) Temperature Classes as a function of ambient temperature and flange temperature - see table 1.
- 6) Not for use with Ketone atmosphere.

Table 1

T class	Maximum ambient temperature				Maximum flange temperature
	Wave horn PP	Wave horn PTFE & Wavestick	Metallic horn without HT extension	Metallic horn with HT extension	
T6	46°C	46°C	46°C	46°C	45°C
	41°C	41°C	41°C	44°C	55°C
	39°C	39°C	39°C	43°C	60°C
T5	54°C	54°C	54°C	59°C	75°C
	43°C	43°C	41°C	55°C	100°C
T4	77°C	77°C	77°C	79°C	85°C
	70°C	71°C	70°C	77°C	100°C
	Not allowed	55°C	53°C	72°C	135°C
T3	Not allowed	48°C	45°C	66°C	150°C
	Not allowed	Not allowed	Not allowed	63°C	180°C
	Not allowed	Not allowed	Not allowed	57°C	200°C
T2, T1	Not allowed	Not allowed	Not allowed	53°C	250°C

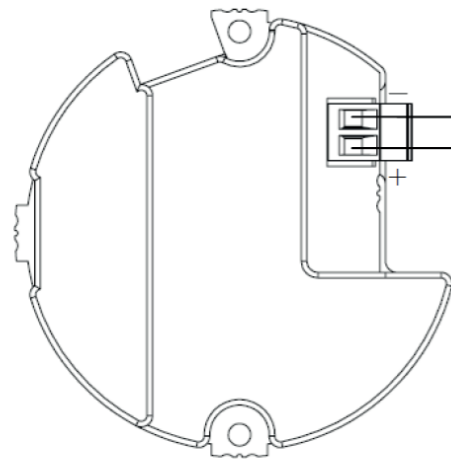
T class	Minimum ambient temperature				Minimum flange temperature
	Wave horn PP & Wavestick	Wave horn PTFE	Metallic horn without HT extension	Metallic horn with HT extension	
T6-T1	-40°C	-40°C	-40°C	-40°C	-40°C
	Not allowed	-36°C	-35°C	-38°C	-50°C
	Not allowed	Not allowed	Not allowed	-37°C	-60°C

**FOR FURTHER CONDITIONS AND LIMITATIONS
 SEE INSTRUCTION MANUAL**

Rev.	Code	Rev. by	Standard checked	Released by
Engineer	---			
Drawn	27/06/13	ATH		
Standard checked	27/06/13	VPI		
Norm				
Released by	27/06/13	ATH	Material	
FOXBORO ECKARDT			CONTROL DRAWING	Article code
			LR01 REMOTE 4-20 mA/HART XP/DIP/Ex d/Ex tb	Doc. type Doc. key Rev. APPR F0821010651 - Status released 000

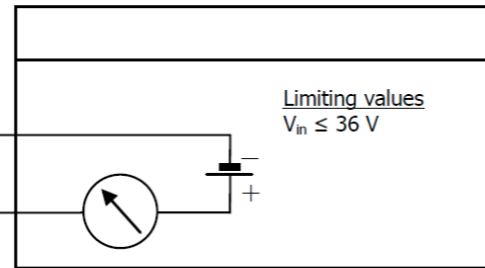
HAZARDOUS LOCATION

CL. I, DIV 2, GPS A, B, C, D
 CL. II, DIV 2, GPS E, F, G
 CL. III, DIV 2
 CL. I, ZONE 2, IIC

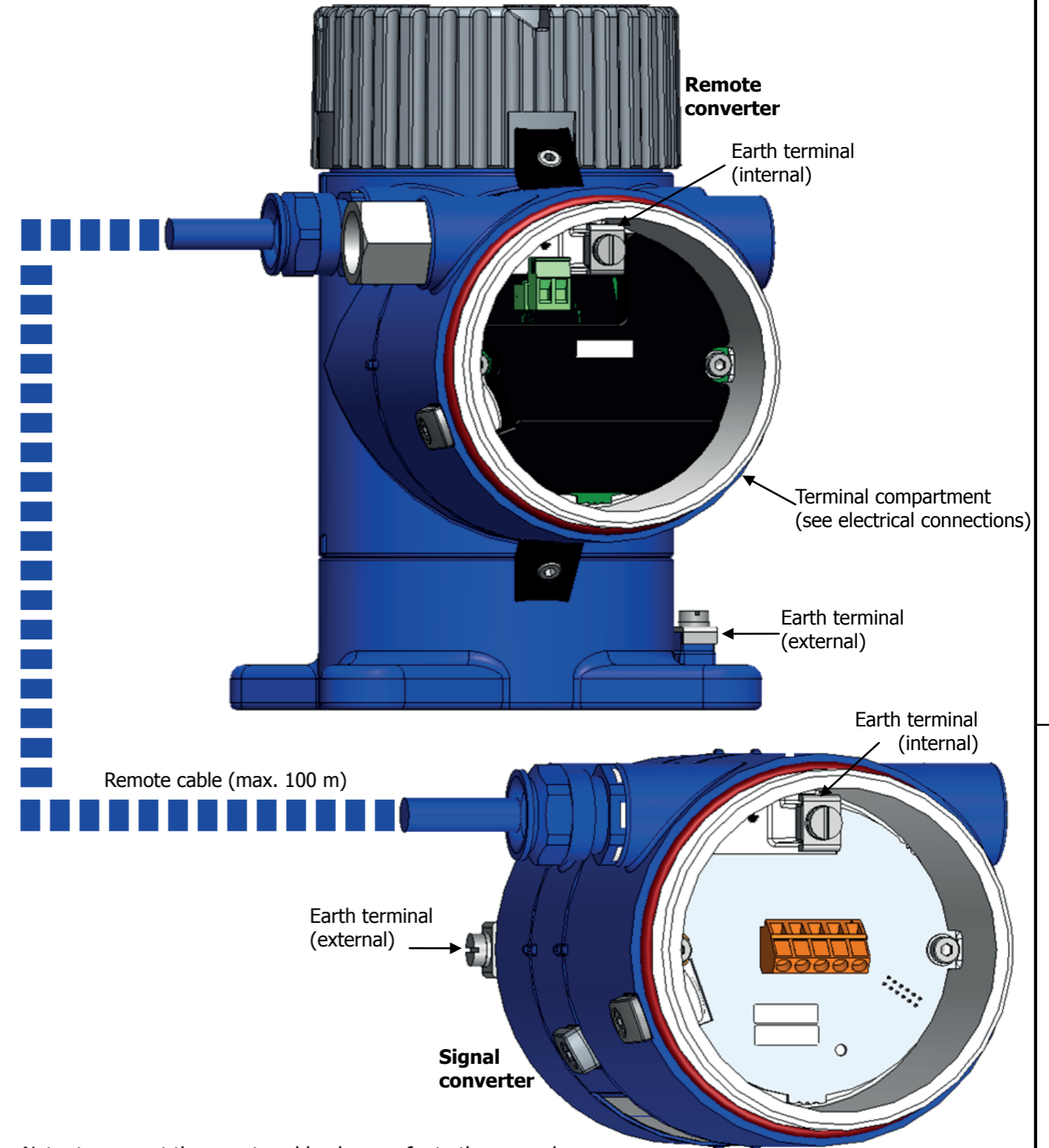


ELECTRICAL CONNECTIONS

NON HAZARDOUS LOCATION



TRANSMITTER INSTRUMENT OVERVIEW



NOTES:

- 1) No revision to this drawing without prior agency approval.
- 2) If ambient temperature > 65°C, use heat-resistant cable certified for continuous operation above +80°C
- 3) Temperature Classes as a function of ambient temperature and flange temperature - see table 1
- 4) Not for use with Ketone atmosphere

Table 1

T class	Maximum ambient temperature				Maximum flange temperature
	Wave horn PP	Wave horn PTFE & Wavestick	Metallic horn without HT extension	Metallic horn with HT extension	
T6	46°C	46°C	46°C	46°C	45°C
	41°C	41°C	41°C	44°C	55°C
	39°C	39°C	39°C	43°C	60°C
T5	54°C	54°C	54°C	59°C	75°C
	43°C	43°C	41°C	55°C	100°C
T4	77°C	77°C	77°C	79°C	85°C
	70°C	71°C	70°C	77°C	100°C
	Not allowed	55°C	53°C	72°C	135°C
T3	Not allowed	48°C	45°C	66°C	150°C
	Not allowed	Not allowed	Not allowed	63°C	180°C
	Not allowed	Not allowed	Not allowed	57°C	200°C
T2, T1	Not allowed	Not allowed	Not allowed	53°C	250°C

T class	Minimum ambient temperature				Minimum flange temperature
	Wave horn PP & Wavestick	Wave horn PTFE	Metallic horn without HT extension	Metallic horn with HT extension	
T6-T1	-40°C	-40°C	-40°C	-40°C	-40°C
	Not allowed	-36°C	-35°C	-38°C	-50°C
	Not allowed	Not allowed	Not allowed	-37°C	-60°C

FOR FURTHER CONDITIONS AND LIMITATIONS SEE INSTRUCTION MANUAL

WARNING: EXPLOSIVE HASARD. DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR AREA IS KNOWN TO BE NON-HAZARDOUS. SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR USE IN DIV. 2
AVERTISSEMENT: RISQUE D'EXPLOSION. AVANT DE DEBRANCHER L'EQUIPEMENT COUPEZ LE COURANT OU ASSUREZ-VOUS QUE L'EMPLACEMENT EST NON DANGEREUX. LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIEL INACCEPTABLE POUR LA DIV 2

Note: to connect the remote cable please refer to the manual

Rev.	Code	Rev. by	Standard checked	Released by
Engineer	---			
Drawn	27/06/13	ATH		
Standard checked	27/06/13	VPI		
Norm				
Released by	27/03/13	ATH	Material	
FOXBORO ECKARDT				Article code
CONTROL DRAWING				Doc. type Doc. key Rev.
LR01 REMOTE 4-20 mA/HART NI/Ex nA				APPR F0821010651 -
				Status released 000

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ECKARDT