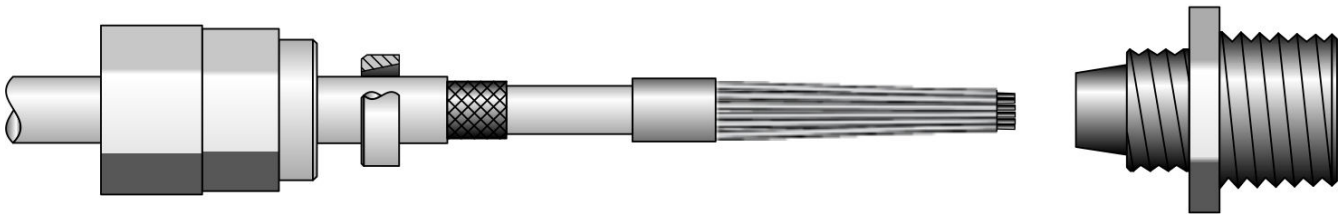
Installation Manual
20001969, Rev BC
April 2023

Micro Motion™ UL-D-IS Installation Instructions, 9-wire

Preparation



MICRO MOTION™

EMERSON™

Safety messages

Safety messages are provided throughout this manual to protect personnel and equipment. Read each safety message carefully before proceeding to the next step.

Safety and approval information

This Micro Motion product complies with all applicable European directives when properly installed in accordance with the instructions in this manual. Refer to the EU Declaration of Conformity for directives that apply to this product. The following are available: the EU Declaration of Conformity, with all applicable European directives, and the complete ATEX installation drawings and instructions. In addition, the IECEx installation instructions for installations outside of the European Union and the CSA installation instructions for installations in North America are available at Emerson.com or through your local Micro Motion support center.

Information affixed to equipment that complies with the Pressure Equipment Directive, can be found at Emerson.com. For hazardous installations in Europe, refer to standard EN 60079-14 if national standards do not apply.

Other information

Troubleshooting information can be found in the Configuration Manual. Product data sheets and manuals are available from the Micro Motion website at Emerson.com.

Return policy

Follow Micro Motion procedures when returning equipment. These procedures ensure legal compliance with government transportation agencies and help provide a safe working environment for Micro Motion employees. If you fail to follow Micro Motion procedures, then Micro Motion will not accept your returned equipment.

Return procedures and forms are available on our web support site at Emerson.com, or by calling the Micro Motion Customer Service department.

Emerson Flow customer service

Email:

- Worldwide: flow.support@emerson.com
- Asia-Pacific: APflow.support@emerson.com

Contents

1 Before you begin

1.1 About this document

Use this manual to ensure that any applicable Micro Motion flow meter installation complies with Underwriter Laboratories (UL) safety standards.

The information in this document assumes that users understand basic transmitter and sensor installation concepts and procedures.

This manual provides only information associated with installation of transmitters through UL-D-IS, 9-wire instructions. For complete information on flow meter installation, see the documentation provided with your sensor and transmitter.

1.2 Hazard messages

This document uses the following criteria for hazard messages based on ANSI standards Z535.6-2011 (R2017).

DANGER
Serious injury or death will occur if a hazardous situation is not avoided.

WARNING
Serious injury or death could occur if a hazardous situation is not avoided.

CAUTION
Minor or moderate injury will or could occur if a hazardous situation is not avoided.

NOTICE
Data loss, property damage, hardware damage, or software damage can occur if a situation is not avoided. There is no credible risk of physical injury.

Physical access

WARNING
Unauthorized personnel can potentially cause significant damage and/or misconfiguration of end users' equipment. Protect against all intentional or unintentional unauthorized use.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access to protect users' assets. This is true for all systems used within the facility.

1.3 Hazardous area installations

If your cable will be installed in a hazardous area, ensure that it meets the hazardous area requirements.

WARNING
Failure to maintain intrinsic safety in a hazardous area could cause an explosion resulting in injury or death.

To keep sensor wiring intrinsically safe:

- Keep intrinsically safe (IS) sensor wiring separate from power supply wiring and output wiring.
- Do not install power cable in the same conduit or cable tray as flow meter cable.
- Use this document with the appropriate approvals documentation. These manuals are shipped with the flow meter or available at Emerson.com.
- For hazardous area installations in Europe, refer to standard EN 60079-14 if national standards do not apply.

2 1700 and 2700 transmitters

2.1 1700 and 2700 transmitter outputs

List of drawings

Transmitter	Drawing
1700/2700 mA Outputs	EB-3600478, Revision DA
1700/2700 intrinsically safe outputs	EB-3600630, Revision EA
2700 configurable inputs and outputs	EB-3600666, Revision CA
1700/2700 FOUNDATION™ fieldbus outputs	EB-3600475, Revision G
1700/2700 fieldbus (FISCO)	
1700/2700 Profibus-PA outputs	EB-3600472, Revision G
2750 configurable inputs and outputs	EB-20011794, Revision A

2.1.1 1700/2700 mA Outputs

MODEL 1700/2700
WITH ANALOG OUTPUTS

Installation Instructions
Type UL-D-IS

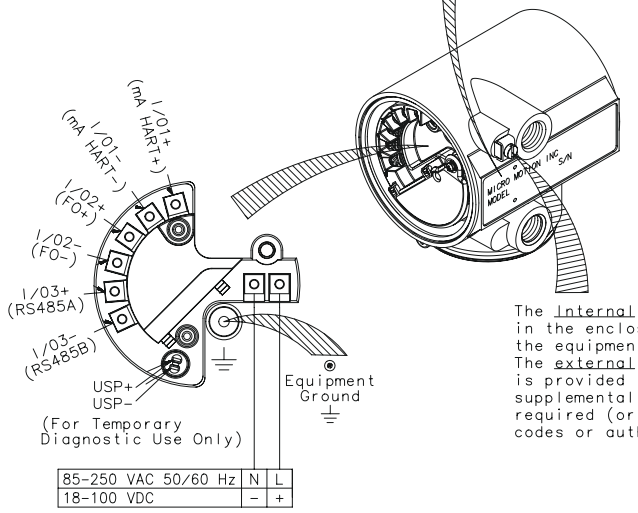
MODEL 1700/2700 WITH ANALOG OUTPUTS IN HAZARDOUS LOCATION

(WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR DIVISION 2 OR INTRINSIC SAFETY)

DIV 2 NON-INCENDIVE PARAMETERS		mA HART	FO	RS485
Voc (Vdc)		24	24	3.1
Isc (mA)		25	11	1.0
Po (W)		–	–	–
Ca (μF)	A,B	0.345	0.345	–
	C	2.06	2.06	–
	D	8.25	8.25	–
La (H)	A,B	0.128	0.661	–
	C	0.384	1	–
	D	1	1	–
Vmax (Vdc)		–	30	12
Imax (mA)		–	500	250
Ci (μF)		–	0.0	0.0005
Li (μH)		–	0.0	0.0

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D
Class II Groups E,F,G
Temp. Code T4A
Or Unclassified Locations

Note:
Hazardous area classification on an integrally mounted 1700/2700 transmitter can be limited by hazardous area classification of the sensor. Refer to sensor tag.



The Internal Ground Screw provided in the enclosure must be used for the equipment grounding connection. The external ground (if provided) is provided for use only as a supplemental connection where required (or permitted) by local codes or authorities.

	N	L
85-250 VAC 50/60 Hz		
18-100 VDC	–	+

Note:
300V insulation is required between power circuits and communication circuits. For field wiring, use 14/22 AWG wire with an 11 in-lb. torque value.

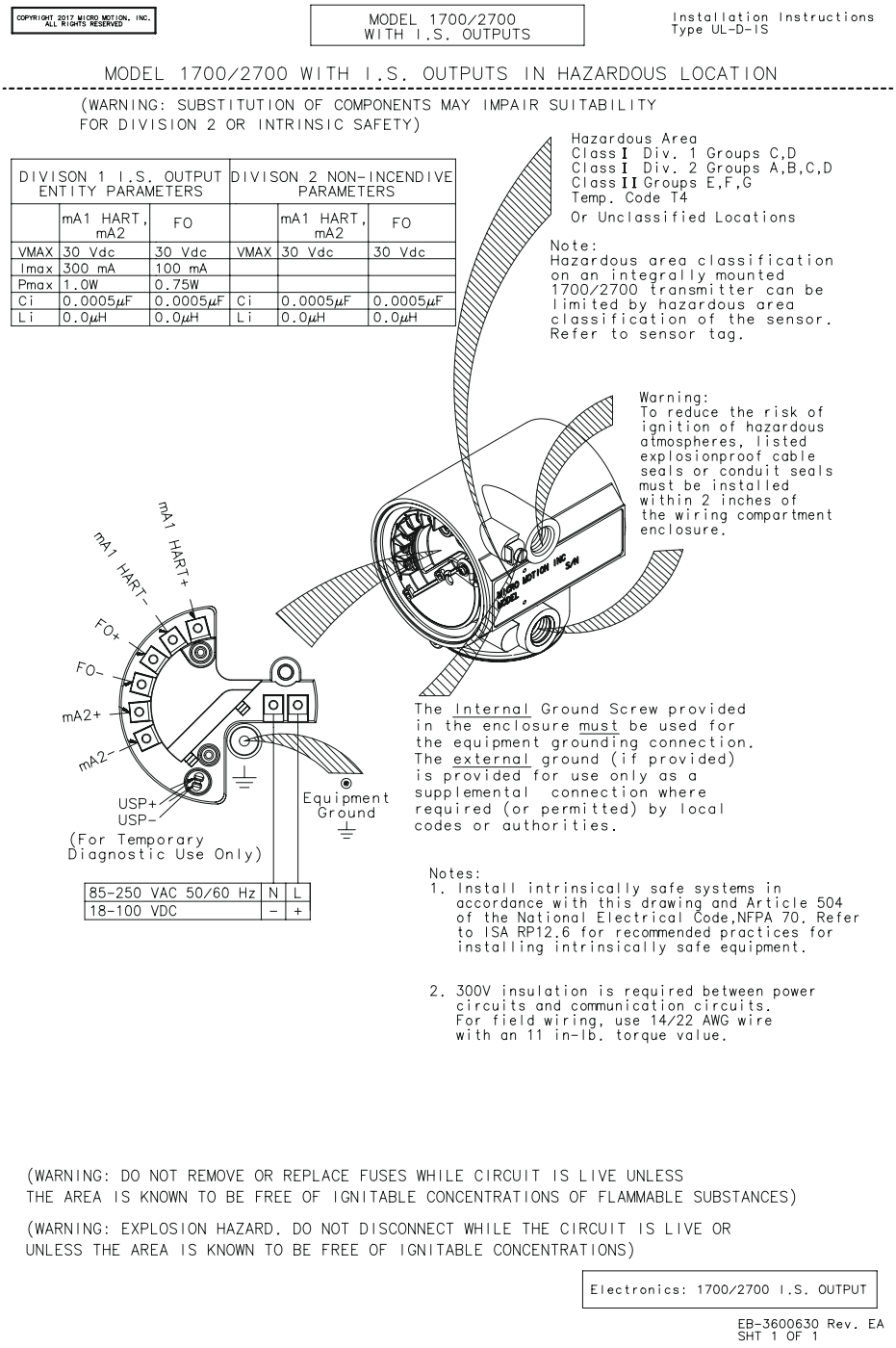
(WARNING: DO NOT REMOVE OR REPLACE FUSES WHILE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS OF FLAMMABLE SUBSTANCES)

(WARNING: EXPLOSION HAZARD. DO NOT DISCONNECT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS)

Electronics: 1700/2700 ANALOG

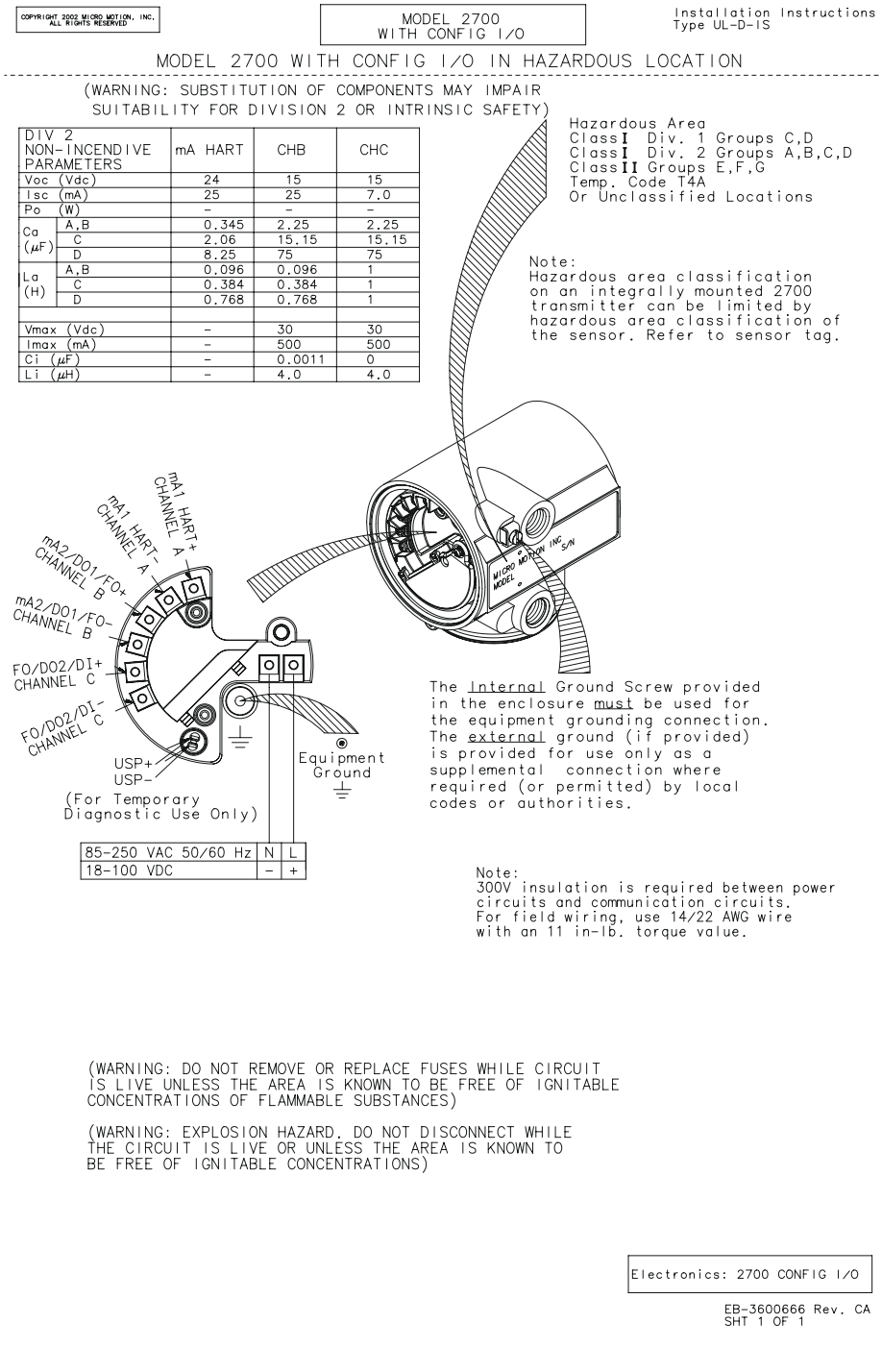
EB-3600478 Rev. DA
SHT 1 OF 1

2.1.2 1700/2700 intrinsically safe outputs



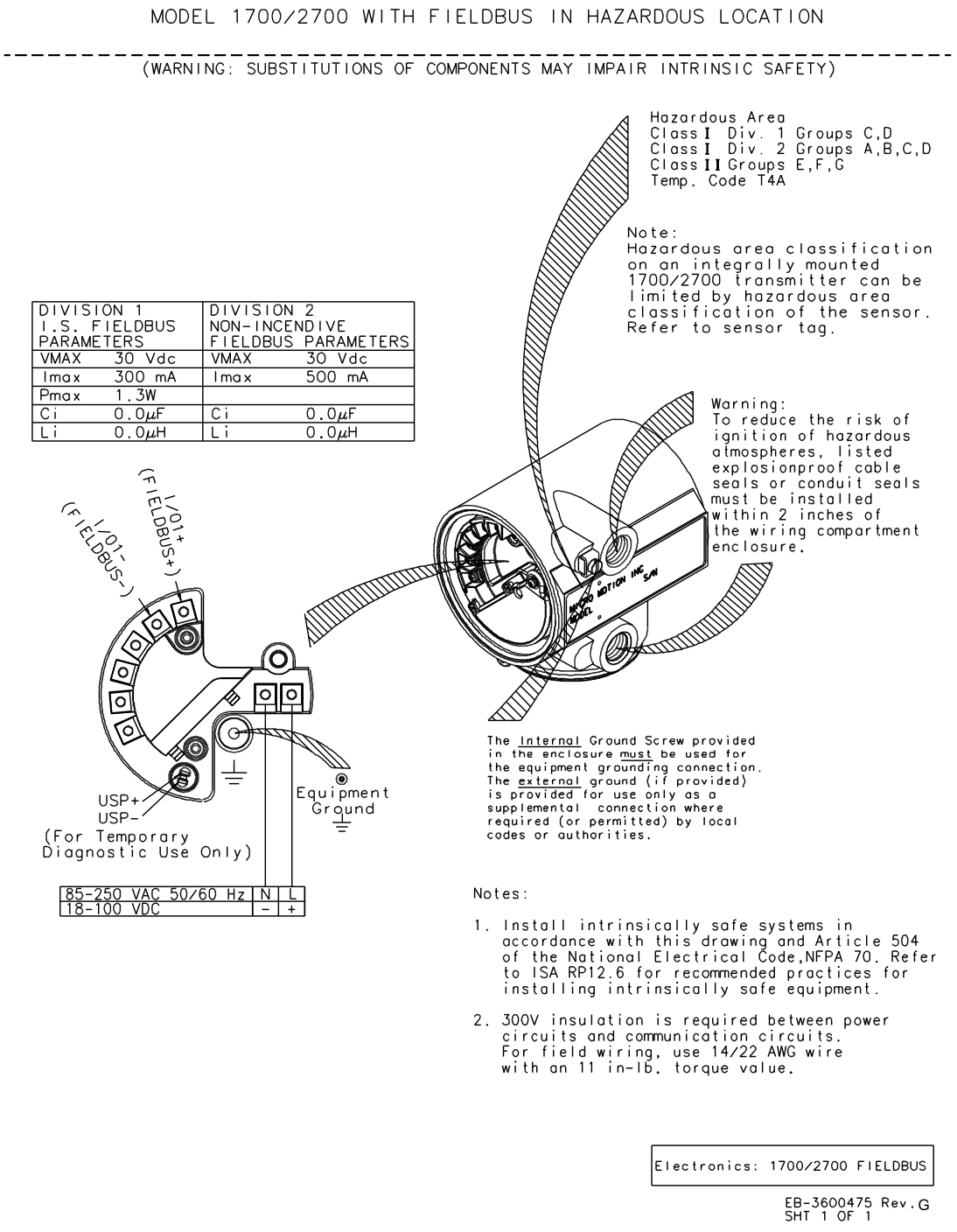
DIVISON 1 I.S. OUTPUT ENTITY PARAMETERS			DIVISON 2 NON-INCENDIVE PARAMETERS		
	mA1 HART, mA2	FO		mA1 HART, mA2	FO
VMAX	30 Vdc	30 Vdc	VMAX	30 Vdc	30 Vdc
Imax	300 mA	100 mA			
Pmax	1.0W	0.75W			
Ci	0.0005µF	0.0005µF	Ci	0.0005µF	0.0005µF
Li	0.0µH	0.0µH	Li	0.0µH	0.0µH

2.1.3 2700 configurable inputs and outputs



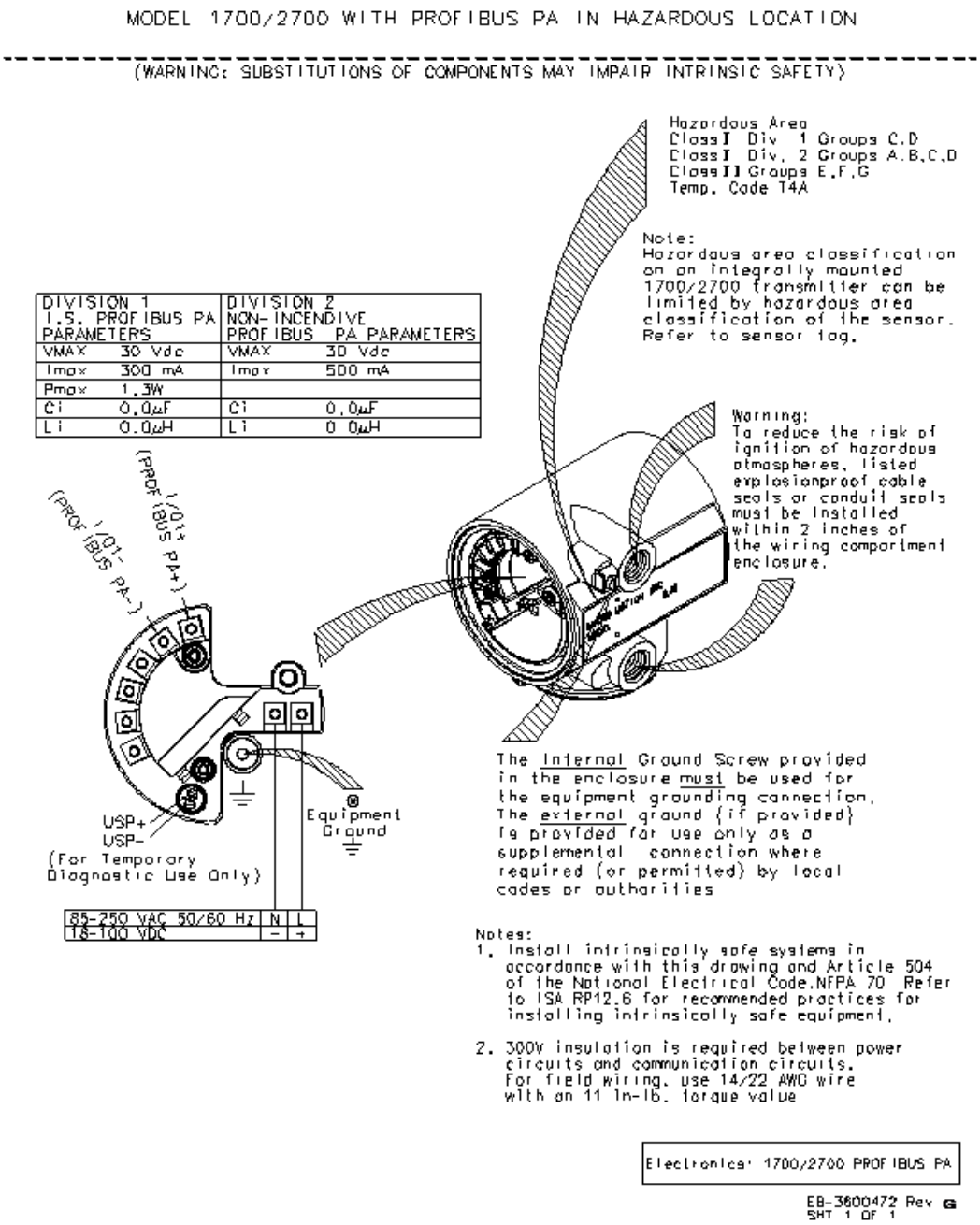
DIV 2 NON-INCENDIVE PARAMETERS		mA HART	CHB	CHC
Voc (Vdc)		24	15	15
Isc (mA)		25	25	7.0
Po (W)		-	-	-
Ca (μF)	A,B	0.345	2.25	2.25
	C	2.06	15.15	15.15
	D	8.25	75	75
La (H)	A,B	0.096	0.096	1
	C	0.384	0.384	1
	D	0.768	0.768	1
Vmax (Vdc)		-	30	30
Imax (mA)		-	500	500
Ci (μF)		-	0.0011	0
Li (μH)		-	4.0	4.0

2.1.4 1700/2700 FOUNDATION™ fieldbus outputs



2.1.5 1700/2700 fieldbus (FISCO)

2.1.6 1700/2700 Profibus-PA outputs



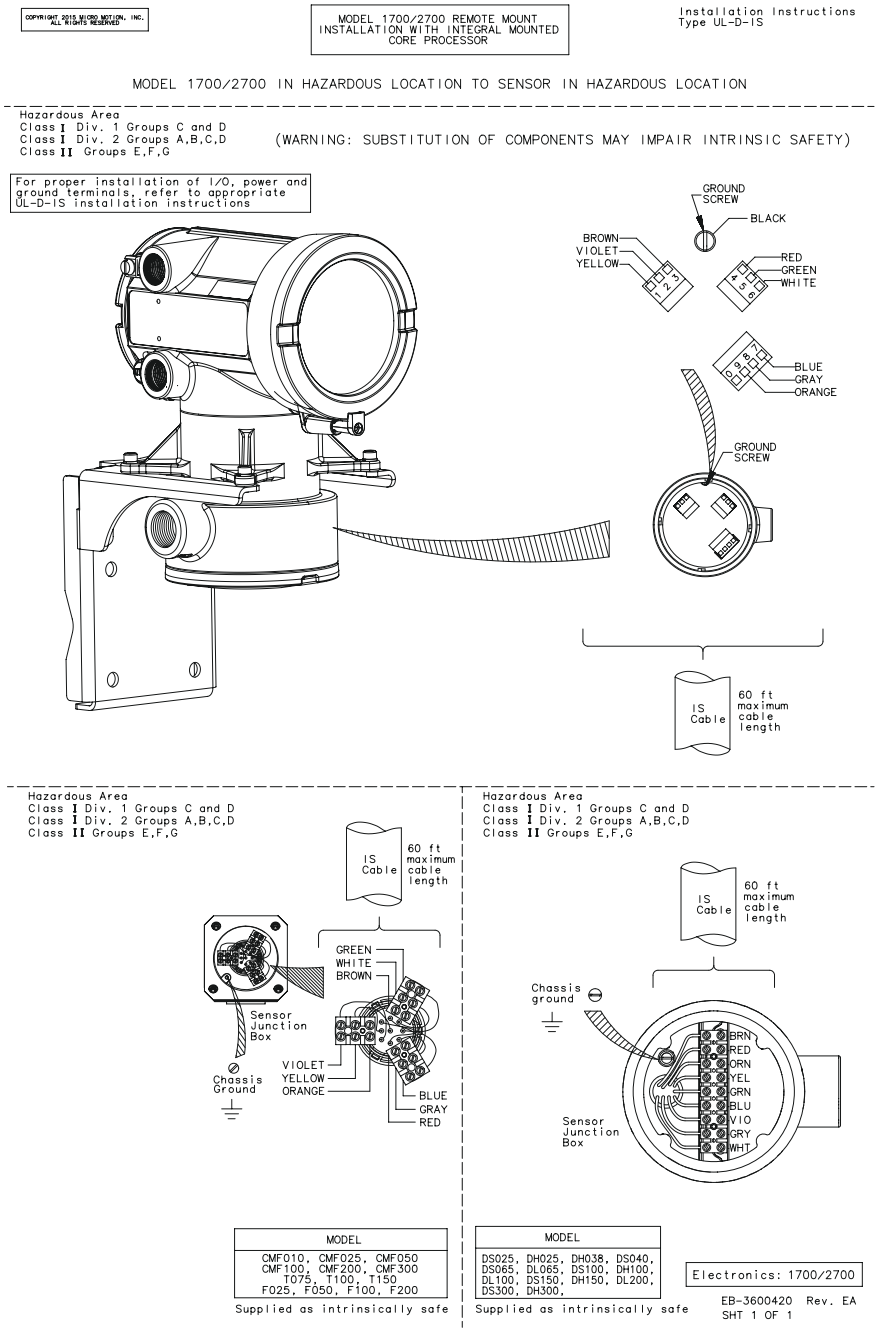
2.2 1700/2700 integral core processor installations

List of drawings

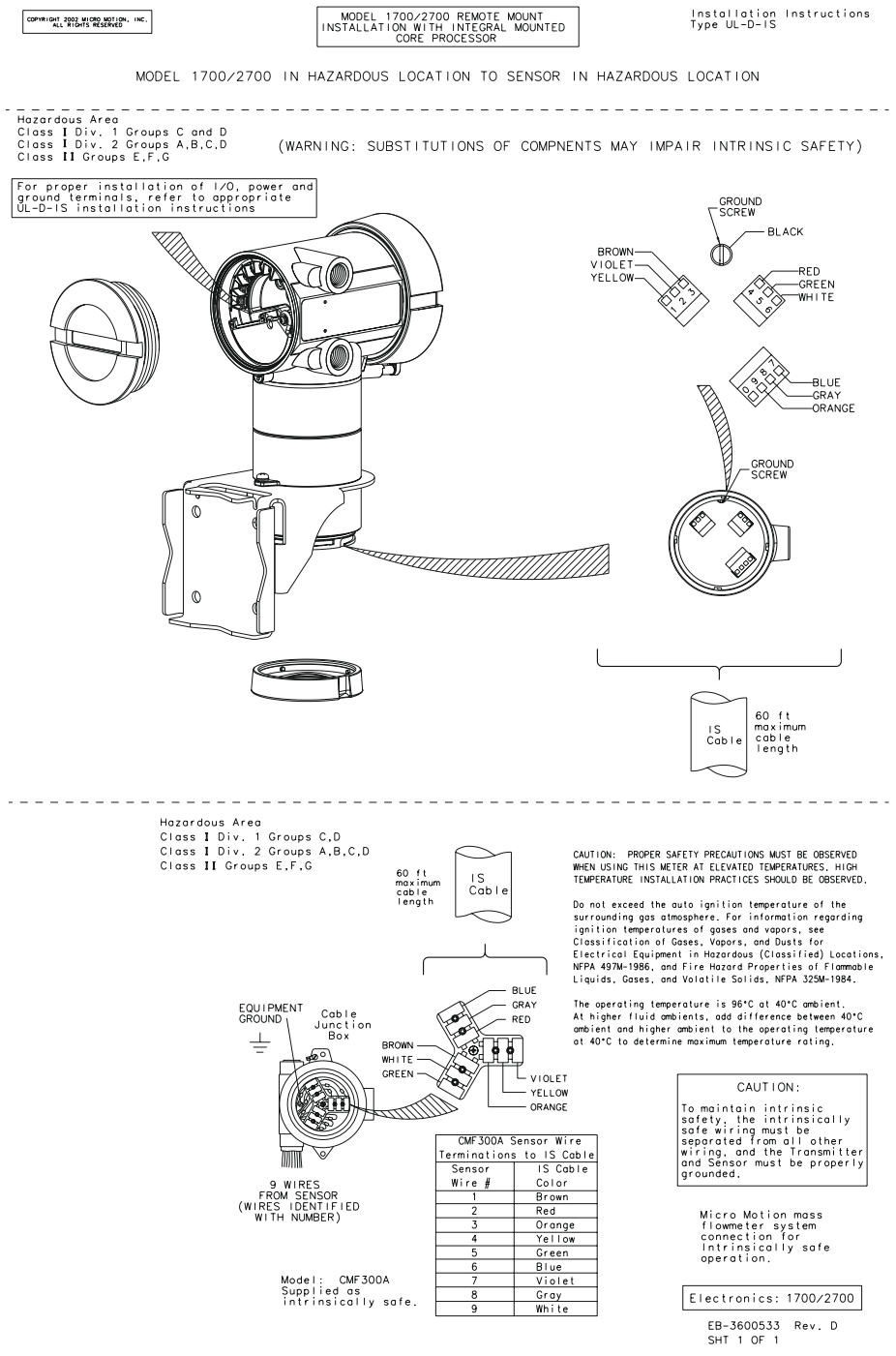
Installation	Drawing
1700/2700 with integral core processor and CMF, F, T, D, or DL sensors	EB-3600420, Rev EA
1700/2700 with integral core processor and CMF300A sensor	EB-3600533, Revision D
1700/2700 with integral core processor and CMF400 sensor with booster amplifier	EB-3006198, Revision C
1700/2700 with integral core processor and D600 sensor	EB-1005116, Revision B
1700/2700 with integral core processor and DT sensor	EB-3600532 Rev D

2.2.1 1700/2700 with integral core processor and CMF, F, T, D, or DL sensors

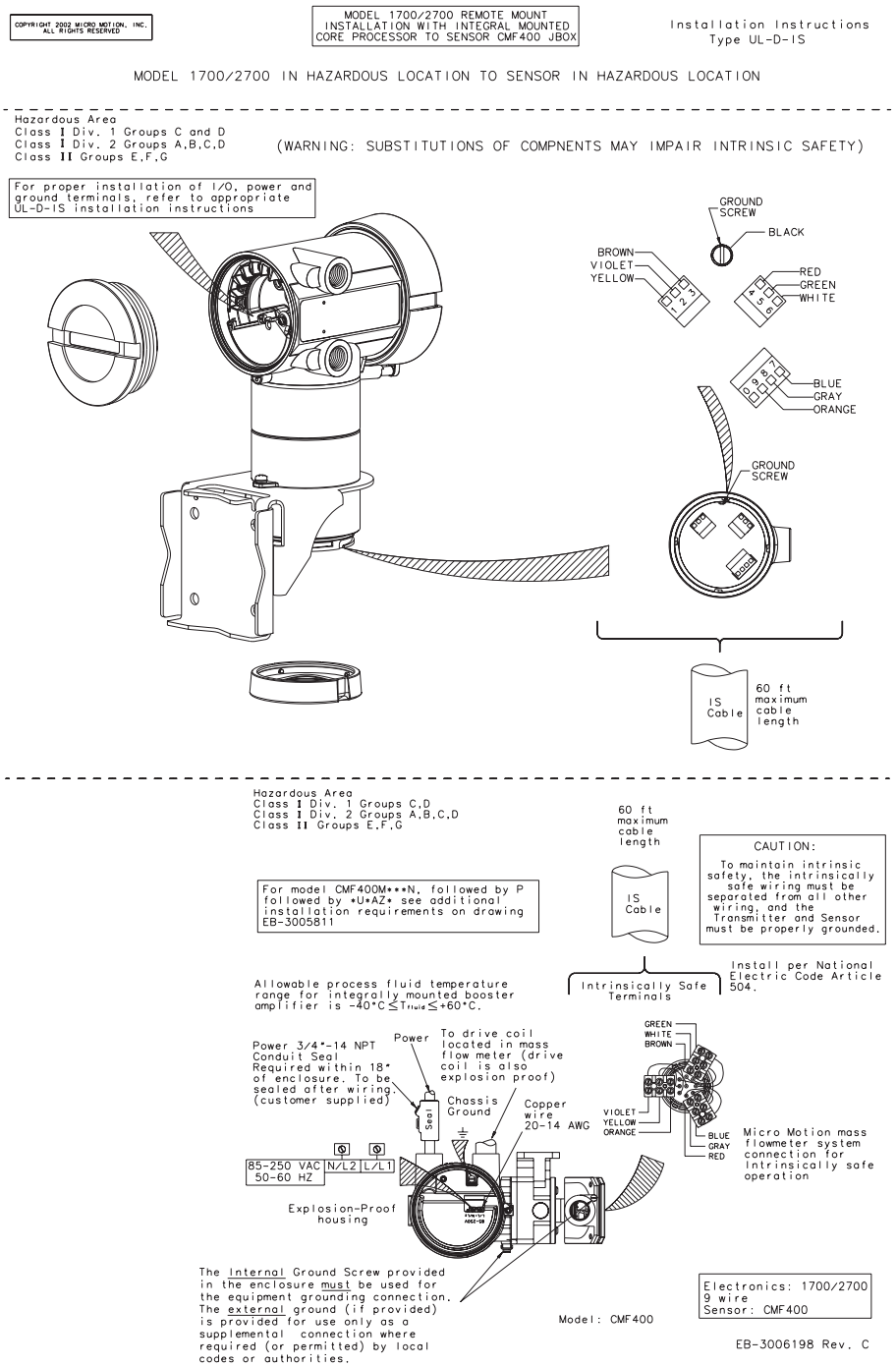
This drawing does not apply to the D600, DT, CMF300A, or CMF400 with booster amplifier sensors.



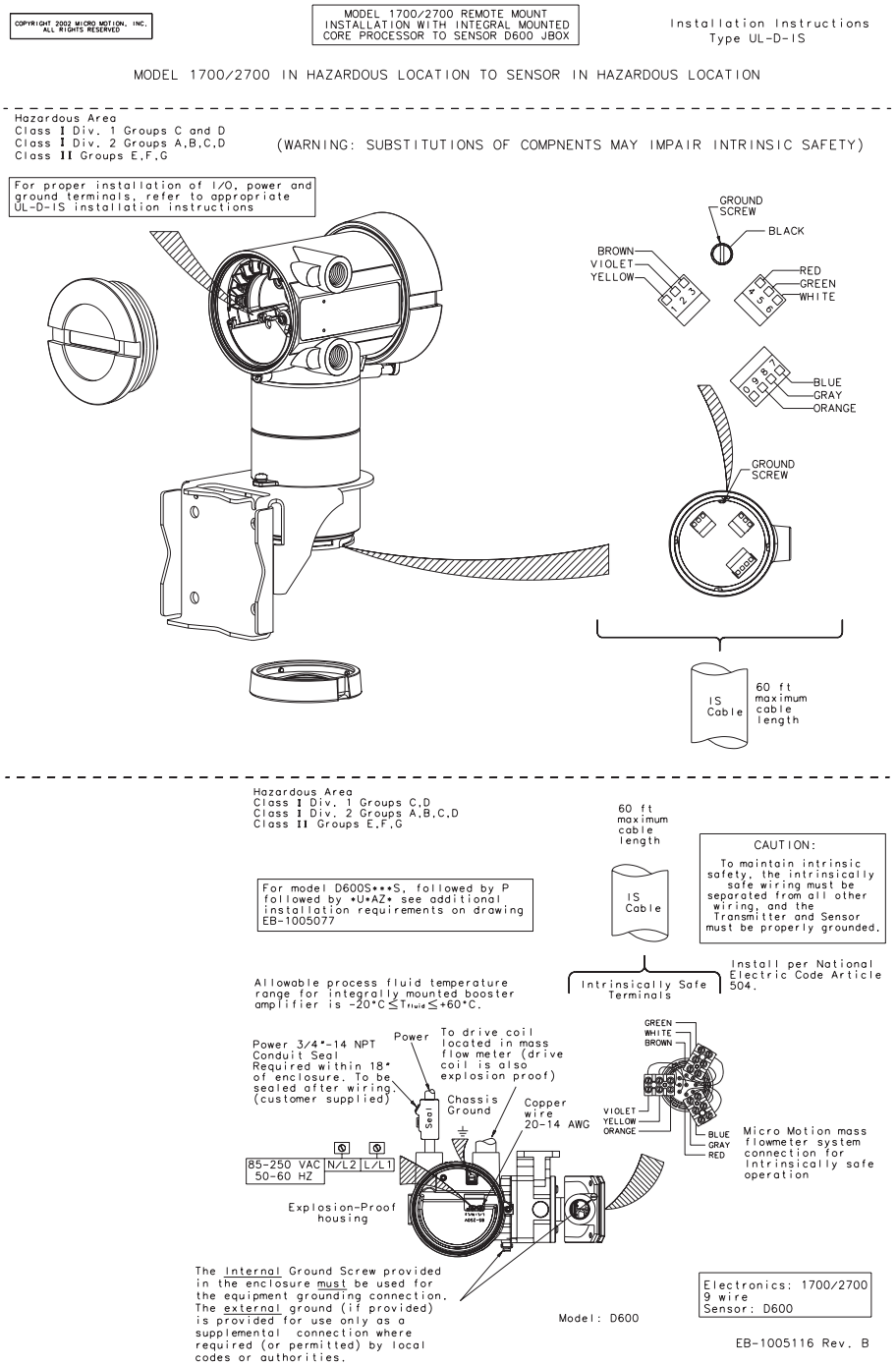
2.2.2 1700/2700 with integral core processor and CMF300A sensor



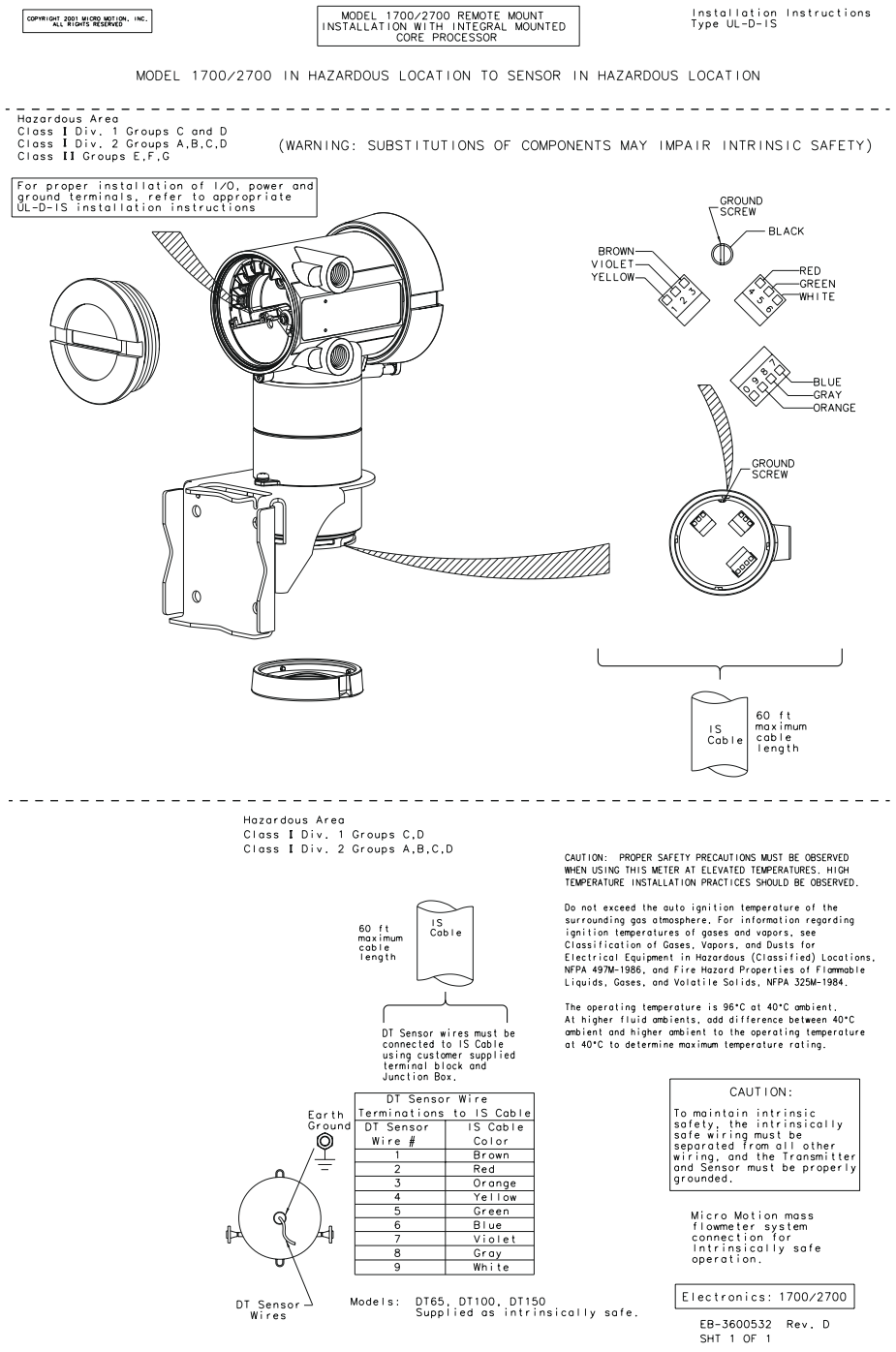
2.2.3 1700/2700 with integral core processor and CMF400 sensor with booster amplifier



2.2.4 1700/2700 with integral core processor and D600 sensor



2.2.5 1700/2700 with integral core processor and DT sensor



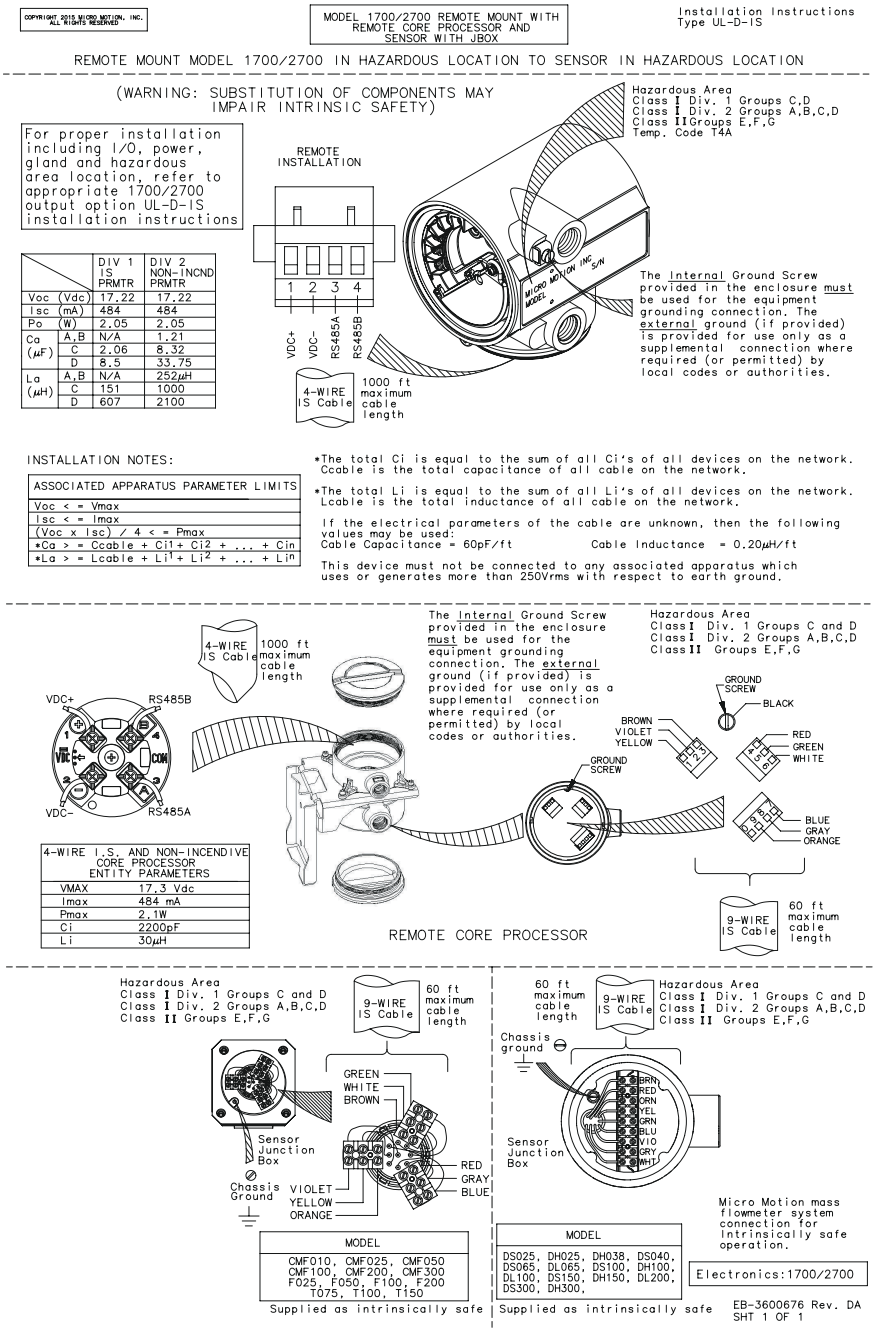
2.3 1700/2700 remote core processor installations

List of drawings

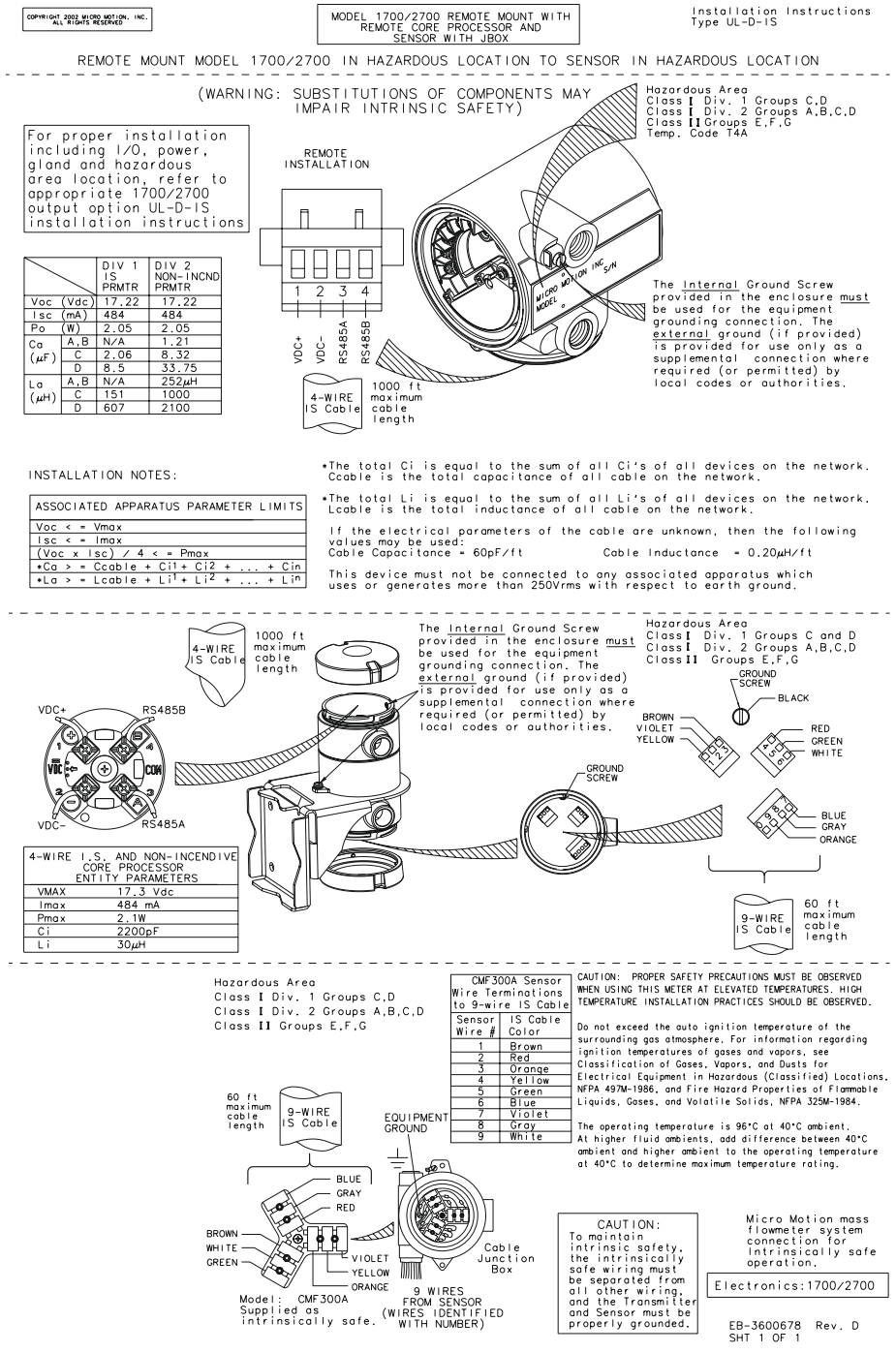
Installation	Drawing
1700/2700 with remote core processor and CMF, F, T, D, or DL sensors	EB-3600676 Revision DA
1700/2700 with remote core processor and CMF300A sensor	EB-3600678, Revision D
1700/2700 with remote core processor and CMF400 sensor with booster amplifier	EB-3007060, Revision C
1700/2700 with remote core processor and D600 sensor	EB-1005118, Revision B
1700/2700 with remote core processor and DT sensor	EB-3600677, Revision C

2.3.1 1700/2700 with remote core processor and CMF, F, T, D, or DL sensors

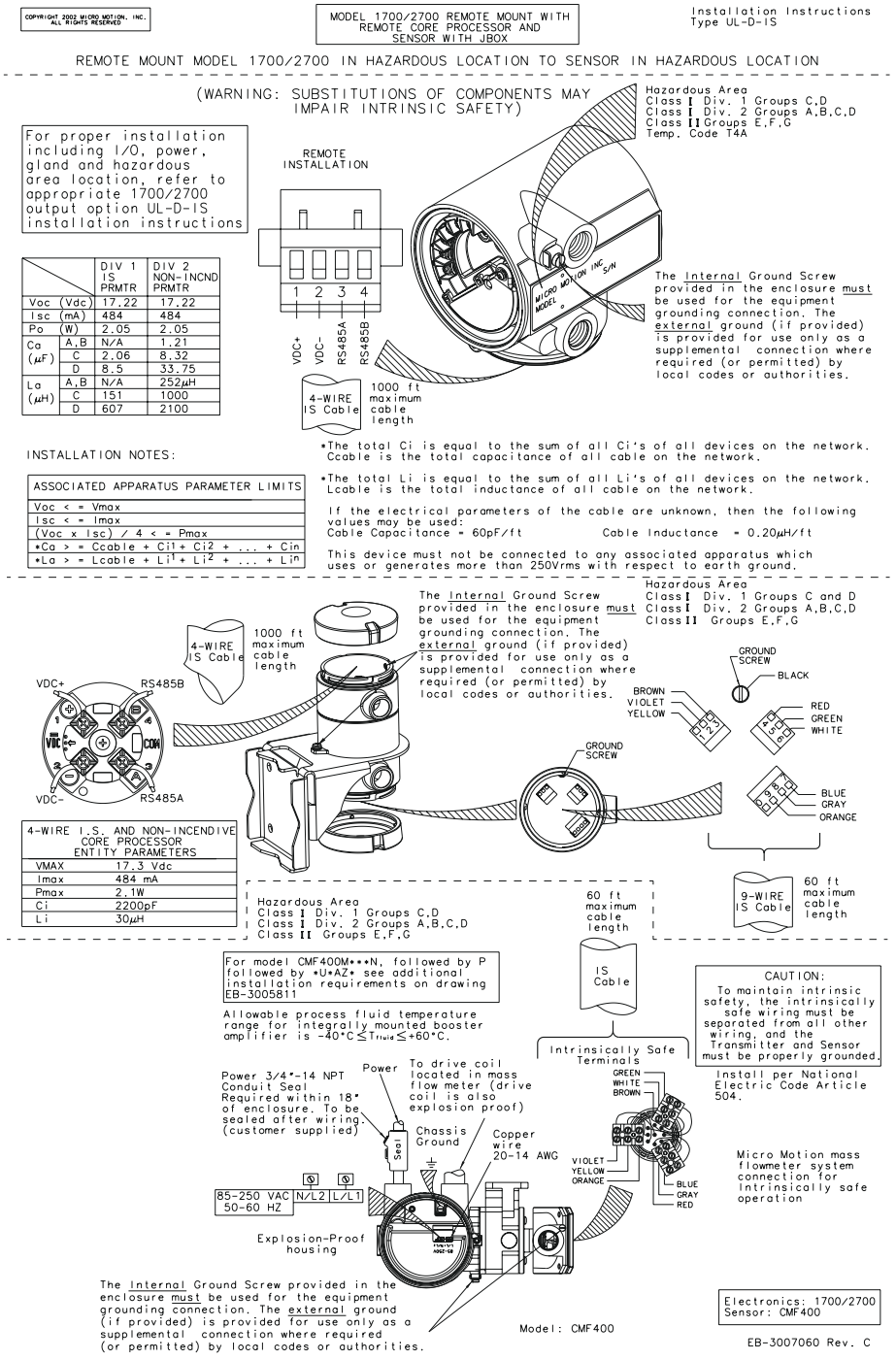
This drawing does not apply to the D600, DT, CMF300A, or CMF400 with booster amplifier sensors.



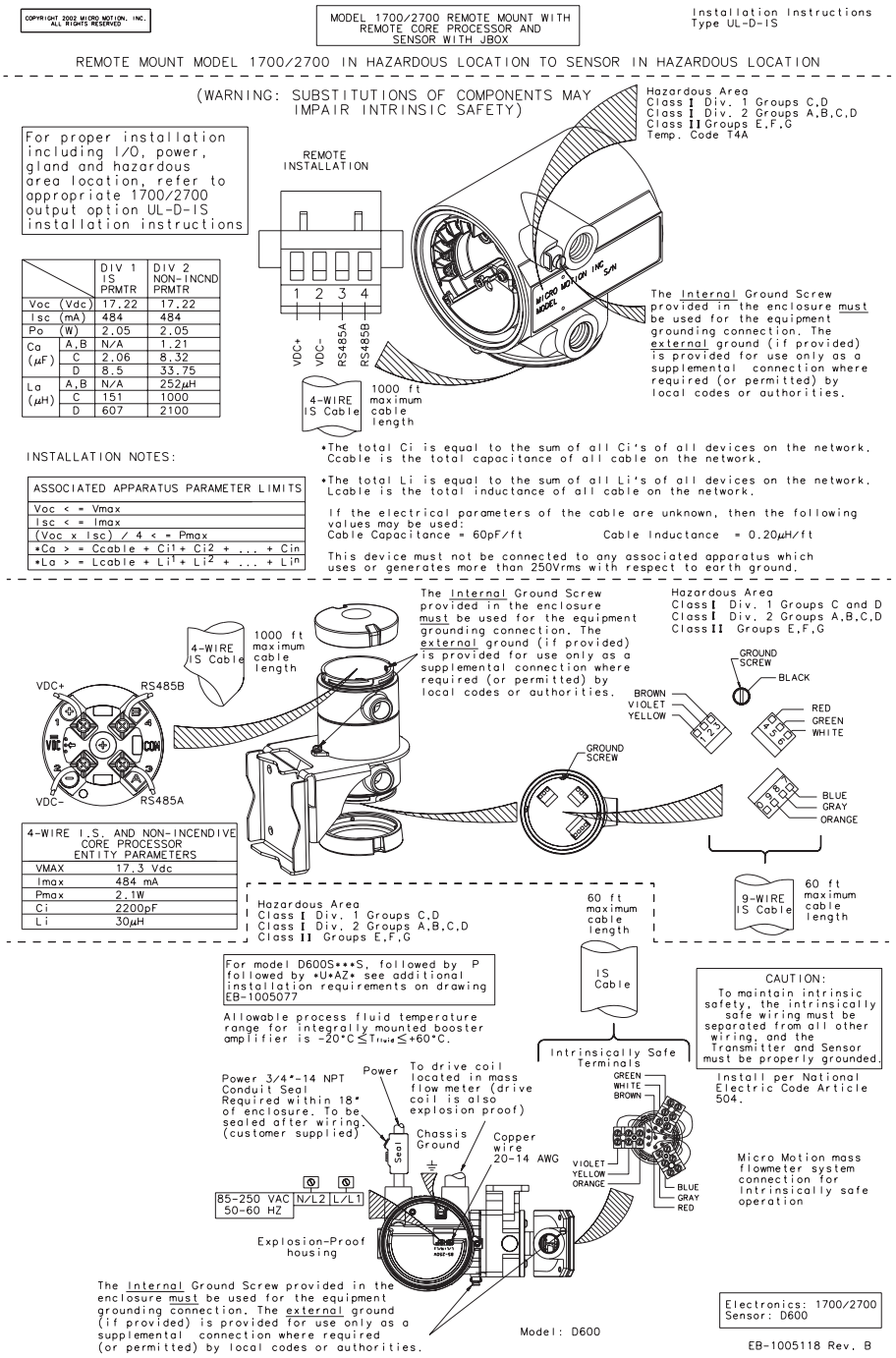
2.3.2 1700/2700 with remote core processor and CMF300A sensor



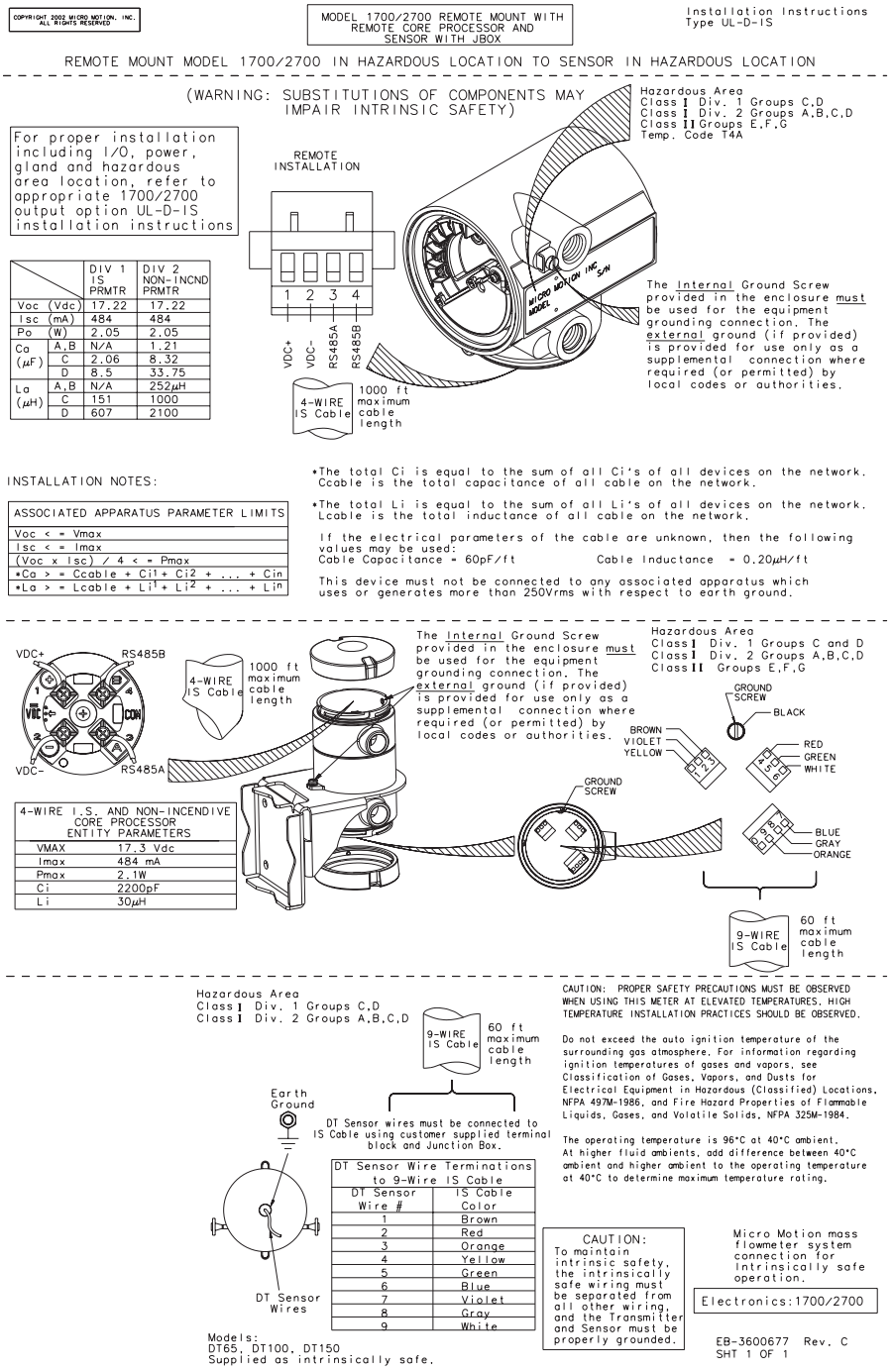
2.3.3 1700/2700 with remote core processor and CMF400 sensor with booster amplifier



2.3.4 1700/2700 with remote core processor and D600 sensor



2.3.5 1700/2700 with remote core processor and DT sensor



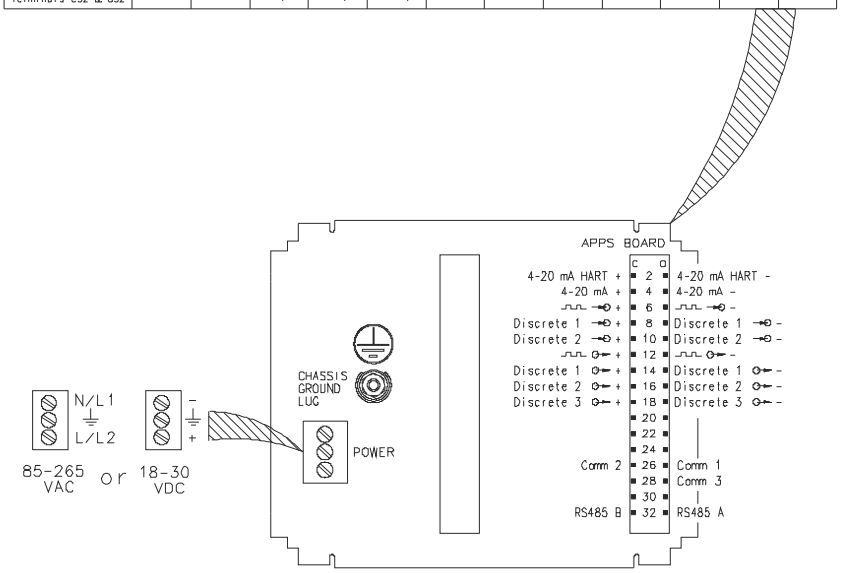
3 3300 transmitters

Nonincendive parameters

Hazardous Area
Class I Div. 2 Groups A,B,C,D

Division 2 nonincendive Parameters

INPUT / OUTPUT Terminal numbers	V_{oc}	I_{sc}	C_a			L_a			V_{max}	I_{max}	C_i	L_i
			A,B	C	D	A,B	C	D				
4-20 mA HART Terminals c2 & a2	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
4-20 mA Terminals c4 & a4	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
Terminals c6 & a6	5 V	6 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	1.5 mA	0 F	0 H
Discrete 1 Terminals c8 & a8	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Discrete 2 Terminals c10 & a10	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Terminals c12 & a12	24 V	16 mA	0.12 µF	0.93 µF	3.35 µF	100 mH	500 mH	1 H	30 V	500 mA	0 F	0 H
Discrete 1 Terminals c14 & a14	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 2 Terminals c16 & a16	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 3 Terminals c18 & a18	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
RS485 A/B Terminals c32 & a32	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	5 V	250 mA	0 F	0 H



EB-3300491 Rev. C

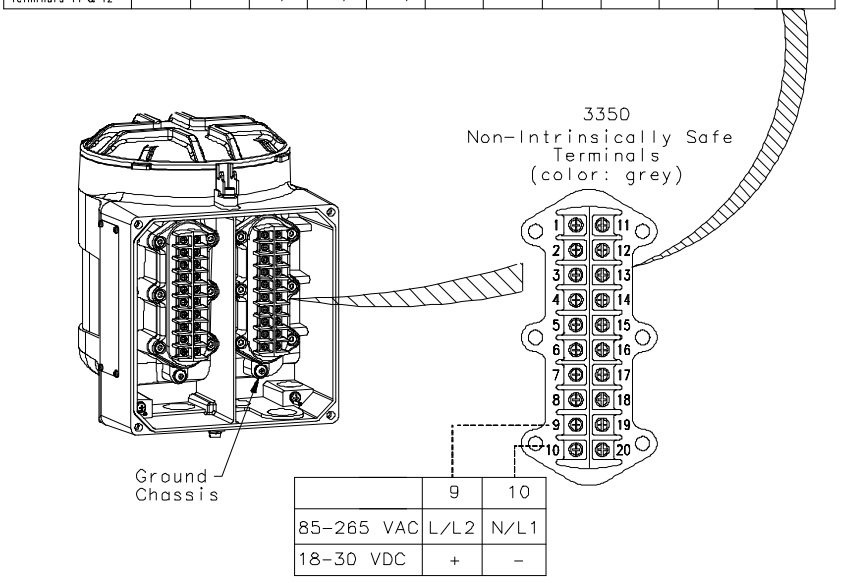
4 3350 transmitters

Nonincendive parameters

Hazardous Area
Class I Div. 2 Groups A,B,C,D
Class II Groups F,G

Division 2 nonincendive Parameters

INPUT / OUTPUT Terminal numbers	V_{oc}	I_{sc}	C_a			L_a			V_{max}	I_{max}	C_i	L_i
			A,B	C	D	A,B	C	D				
4-20 mA HART Terminals 1 & 2	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
4-20 mA Terminals 3 & 4	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
Terminals 5 & 6	5 V	6 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	1.5 mA	0 F	0 H
Discrete 1 Terminals 5 & 7	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Discrete 2 Terminals 5 & 8	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Terminals 19 & 20	24 V	16 mA	0.12 µF	0.93 µF	3.35 µF	100 mH	500 mH	1 H	30 V	500 mA	0 F	0 H
Discrete 1 Terminals 18 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 2 Terminals 17 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 3 Terminals 16 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
RS485 A/B Terminals 11 & 12	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	5 V	250 mA	0 F	0 H



	9	10
85-265 VAC	L/L2	N/L1
18-30 VDC	+	–

EB-3300817 Rev. B

5 3500 transmitters

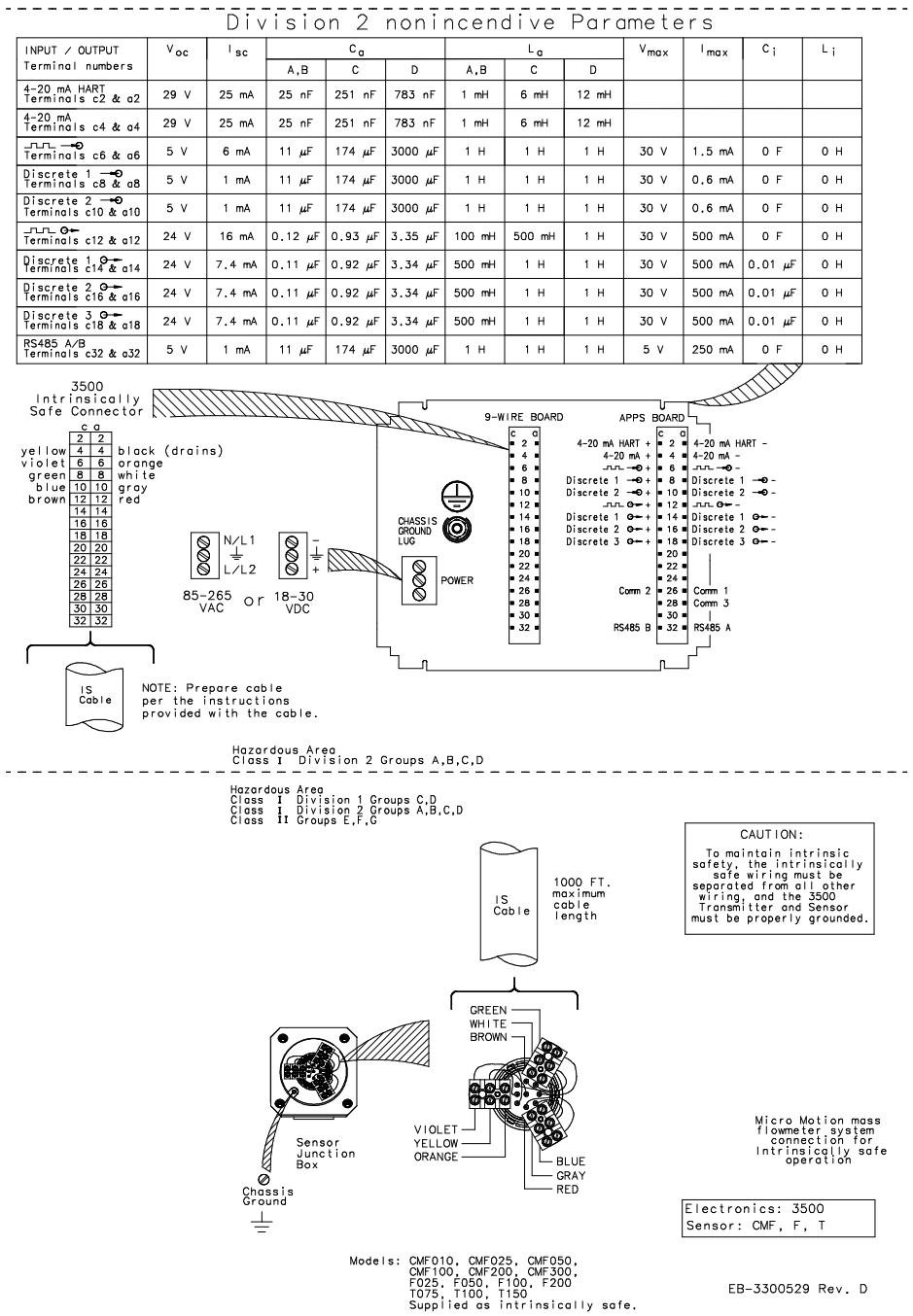
5.1 3500 core processor installations

List of drawings

Installation	Drawing
3500 with core processor and CMF, F, or T sensors	EB-3300529, Revision D
3500 with core processor and CMF300A sensor	EB-3002933, Revision F
3500 with core processor and CMF400 sensor with booster amplifier	EB-3005807, Revision C
3500 with core processor and D600 sensor	EB-1005073, Revision B
3500 with core processor and D or DL sensors	EB-3300553, Revision D
3500 with core processor and DT sensor	EB-3300554, Revision C

5.1.1 3500 with core processor and CMF, F, or T sensors

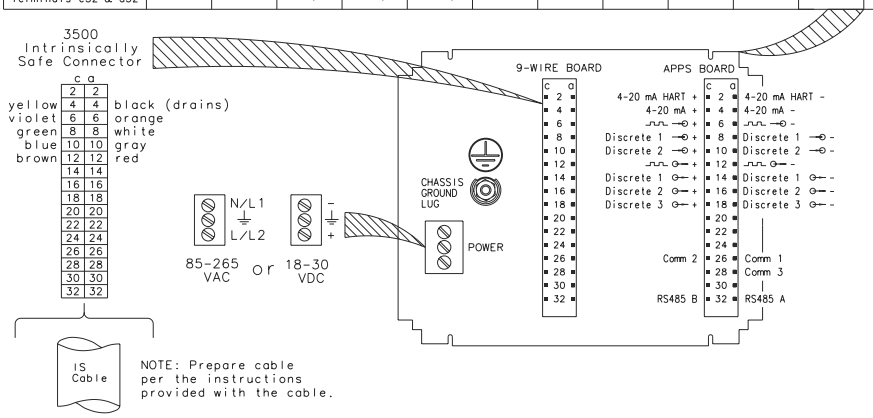
This drawing does not apply to the CMF300A sensor or to the CMF400 sensor with booster amplifier.

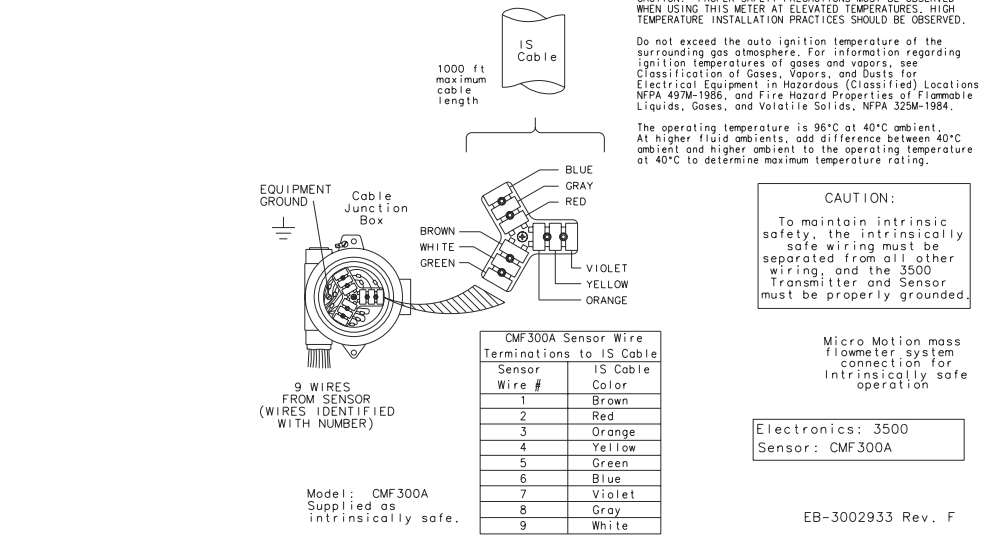


5.1.2 3500 with core processor and CMF300A sensor

Division 2 nonincendive Parameters

INPUT / OUTPUT Terminal numbers	V_{oc}	I_{sc}	C_a			L_a			V_{max}	I_{max}	C_i	L_i
			A,B	C	D	A,B	C	D				
4-20 mA HART Terminals c2 & a2	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
4-20 mA Terminals c4 & a4	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
Terminals c6 & a6	5 V	6 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	1.5 mA	0 F	0 H
Discrete 1 Terminals c8 & a8	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Discrete 2 Terminals c10 & a10	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Terminals c12 & a12	24 V	16 mA	0.12 µF	0.93 µF	3.35 µF	100 mH	500 mH	1 H	30 V	500 mA	0 F	0 H
Discrete 1 Terminals c14 & a14	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 2 Terminals c16 & a16	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 3 Terminals c18 & a18	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
RS485 A/B Terminals c32 & a32	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	5 V	250 mA	0 F	0 H



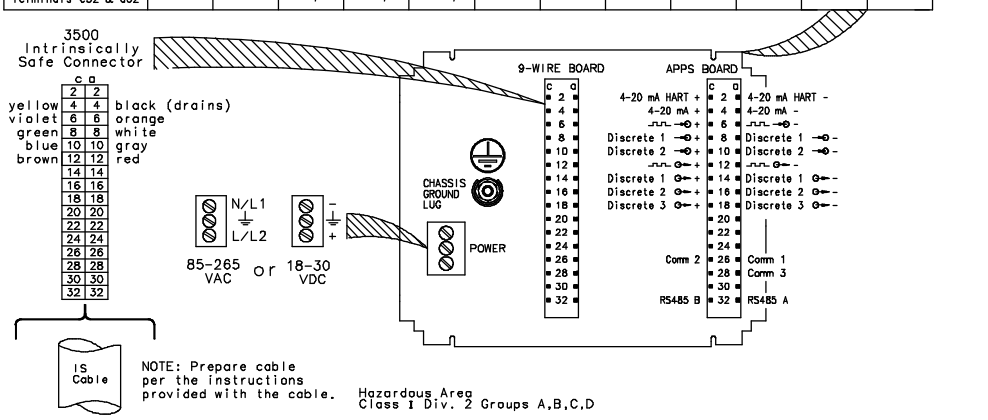


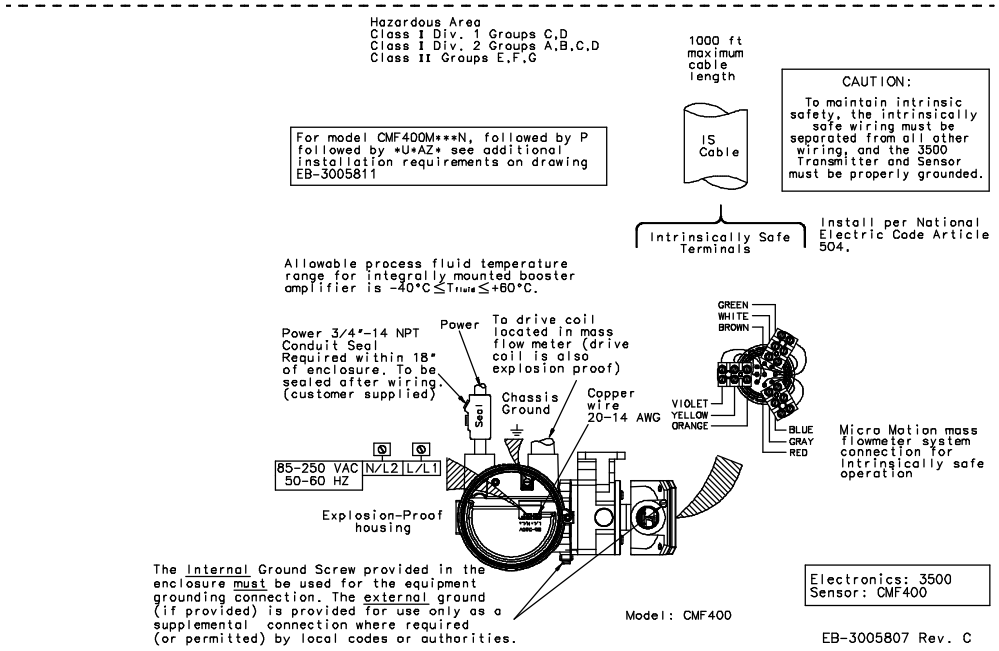
CMF300A Sensor Wire Terminations to IS Cable	
Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

5.1.3 3500 with core processor and CMF400 sensor with booster amplifier

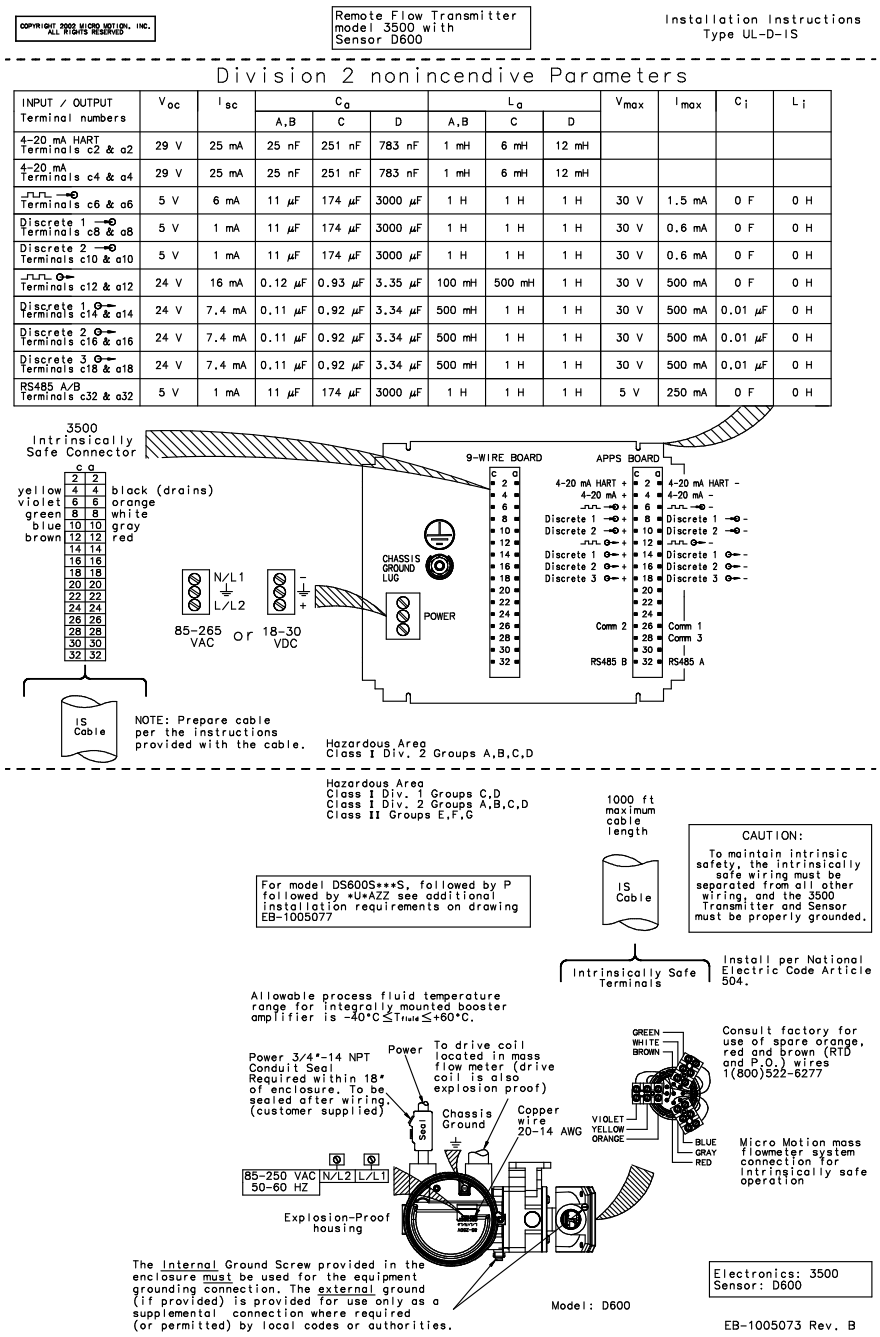
Division 2 nonincendive Parameters

INPUT / OUTPUT Terminal numbers	V_{oc}	I_{sc}	C_a			L_a			V_{max}	I_{max}	C_i	L_i
			A,B	C	D	A,B	C	D				
4-20 mA HART Terminals c2 & a2	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
4-20 mA Terminals c4 & a4	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
Terminals c6 & a6	5 V	6 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	1.5 mA	0 F	0 H
Discrete 1 Terminals c8 & a8	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Discrete 2 Terminals c10 & a10	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Terminals c12 & a12	24 V	16 mA	0.12 µF	0.93 µF	3.35 µF	100 mH	500 mH	1 H	30 V	500 mA	0 F	0 H
Discrete 1 Terminals c14 & a14	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 2 Terminals c16 & a16	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 3 Terminals c18 & a18	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
RS485 A/B Terminals c32 & a32	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	5 V	250 mA	0 F	0 H





5.1.4 3500 with core processor and D600 sensor

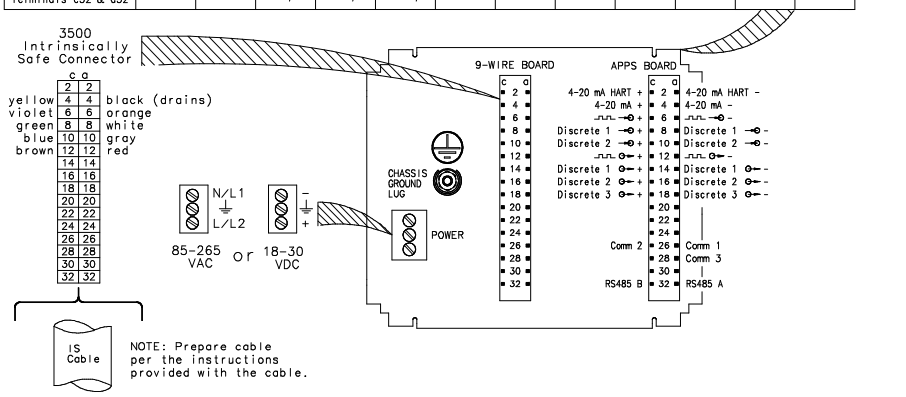


5.1.5 3500 with core processor and D or DL sensors

This drawing does not apply to D600 or DT sensors.

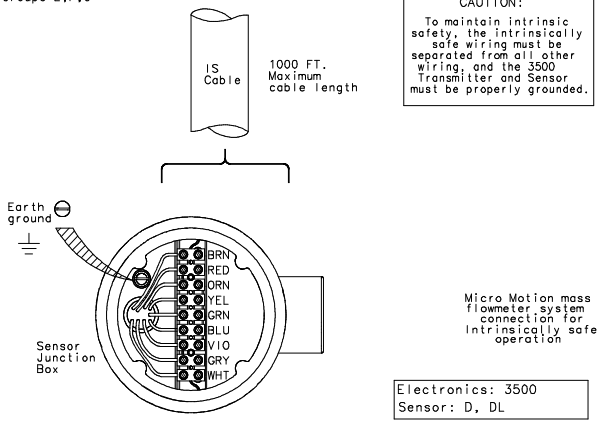
Division 2 nonincendive Parameters

INPUT / OUTPUT Terminal numbers	V_{oc}	I_{sc}	C_a			L_a			V_{max}	I_{max}	C_i	L_i
			A,B	C	D	A,B	C	D				
4-20 mA HART Terminals c2 & a2	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
4-20 mA Terminals c4 & a4	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
Terminals c6 & a6	5 V	6 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	1.5 mA	0 F	0 H
Discrete 1 Terminals c8 & a8	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Discrete 2 Terminals c10 & a10	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Terminals c12 & a12	24 V	16 mA	0.12 µF	0.93 µF	3.35 µF	100 mH	500 mH	1 H	30 V	500 mA	0 F	0 H
Discrete 1 Terminals c14 & a14	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 2 Terminals c16 & a16	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 3 Terminals c18 & a18	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
RS485 A/B Terminals c32 & a32	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	5 V	250 mA	0 F	0 H



Hazardous Area
Class I Division 2 Groups A,B,C,D

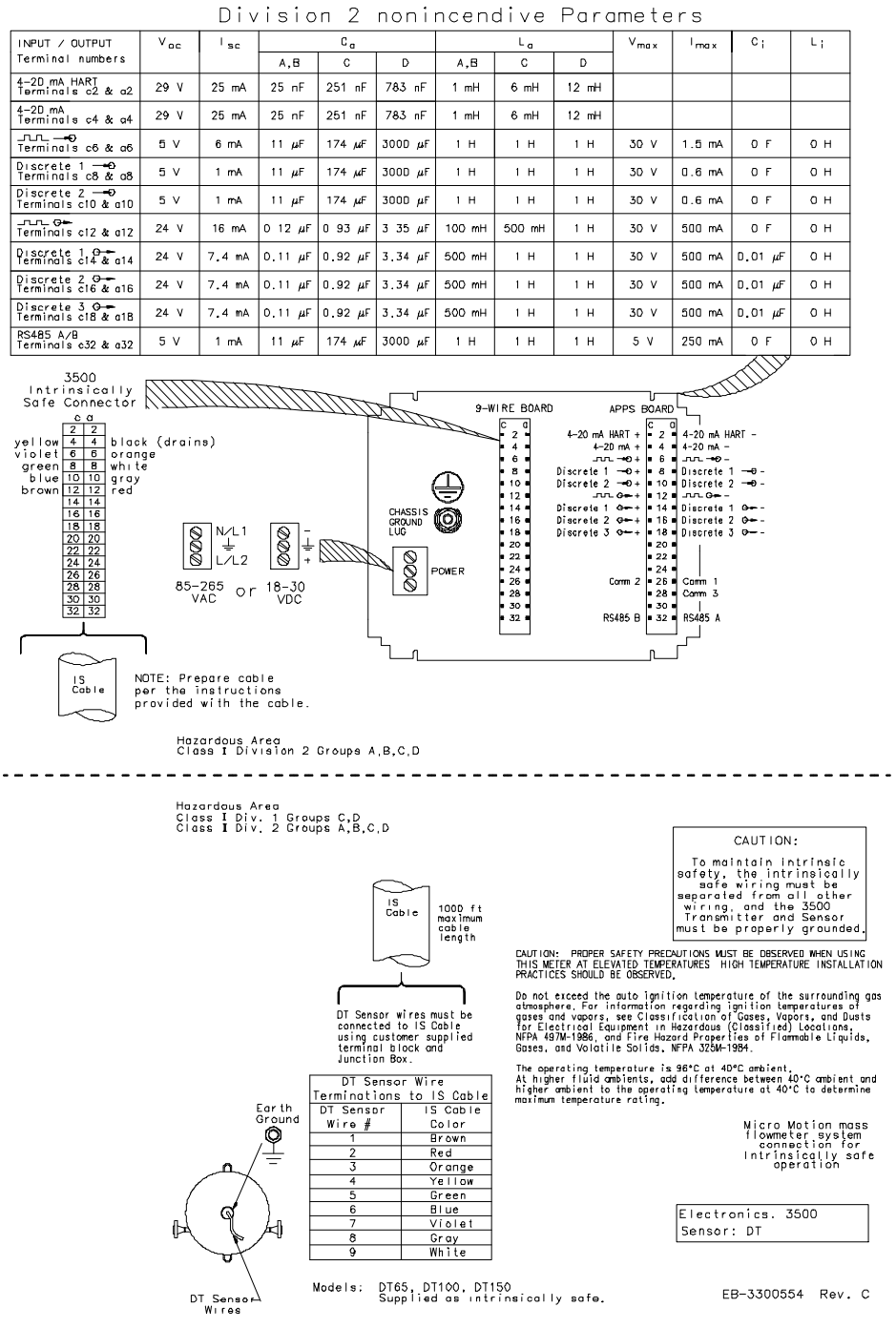
Hazardous Area
Class I Division 1 Groups C,D
Class I Division 2 Groups A,B,C,D
Class II Groups E,F,G



Models: D6, D12, D25, D38, D40
D65, D100, D150, D300
DL50, DL65, DL100, DL200
Supplied as intrinsically safe.

EB-3300553 Rev. D

5.1.6 3500 with core processor and DT sensor



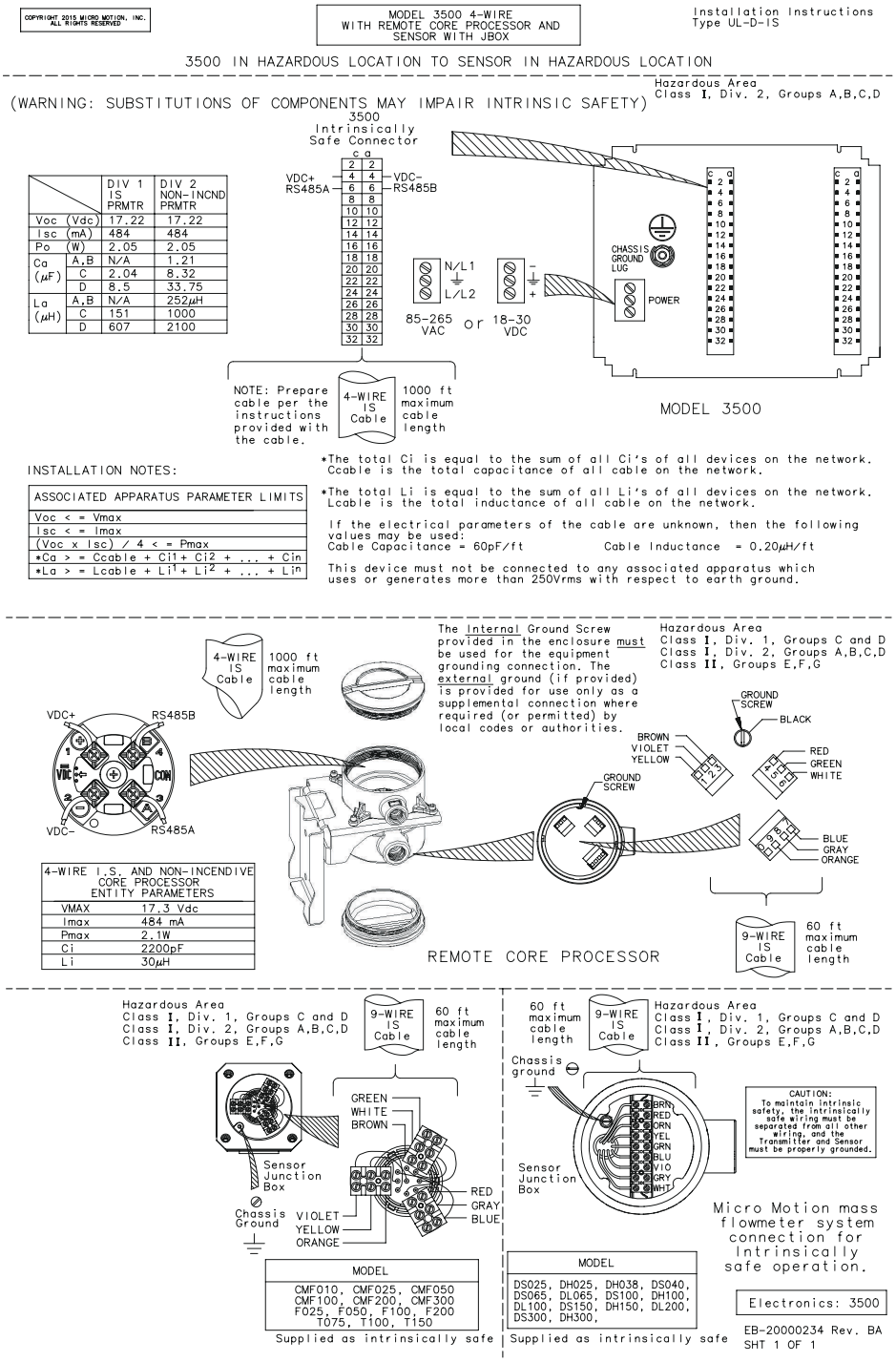
5.2 3500 remote core processor installations

List of drawings

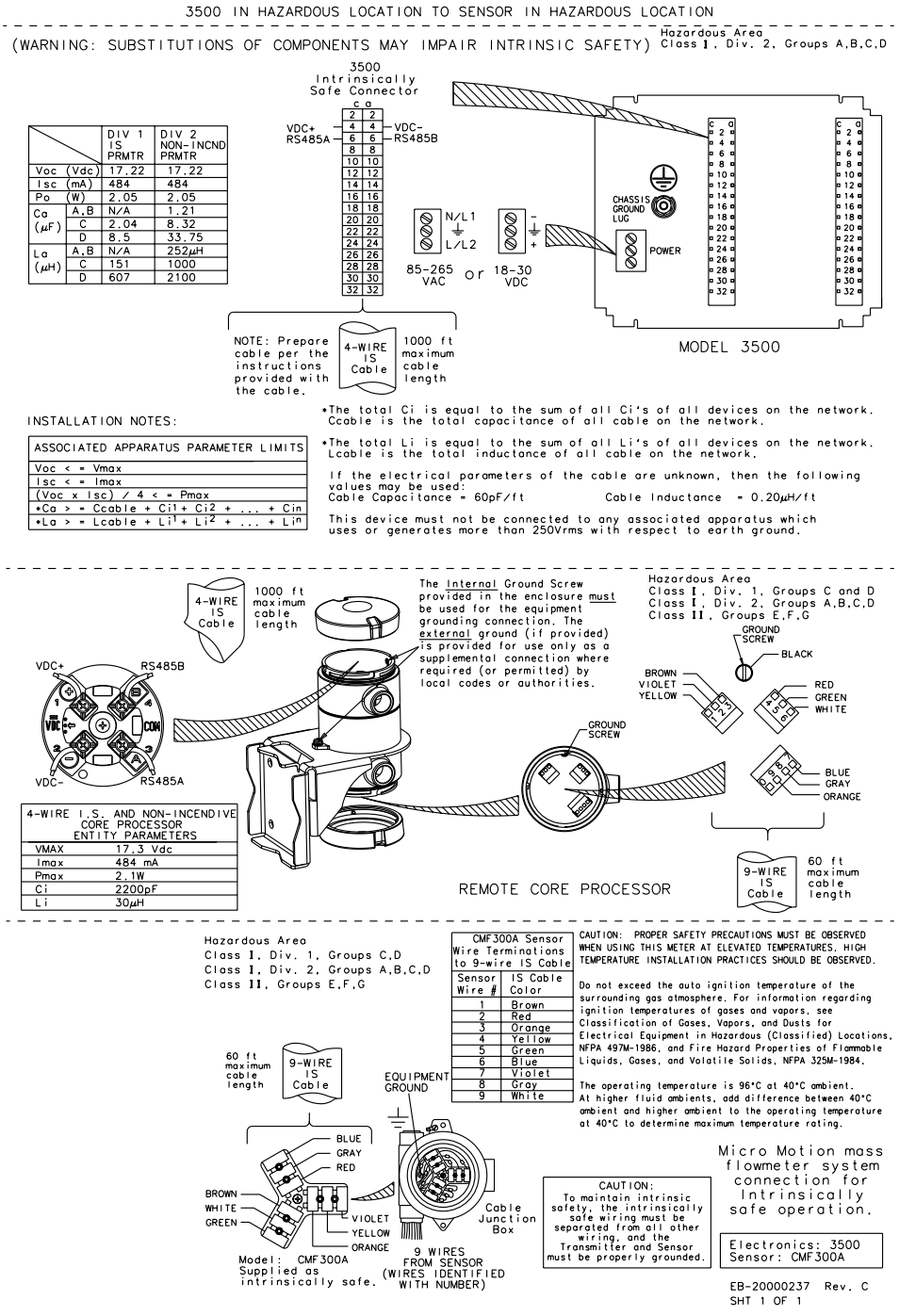
Installation	Drawing
3500 with remote core processor and CMF, D, DL, F, or T sensors	EB-20000234, Revision BA
3500 with remote core processor and CMF300A sensor	EB-20000237, Revision C
3500 with remote core processor and CMF400 sensor with booster amplifier	EB-20000228, Revision B
3500 with remote core processor and D600 sensor	EB-20000231, Revision B
3500 with remote core processor and DT sensor	EB-20000240, Revision B

5.2.1 3500 with remote core processor and CMF, D, DL, F, or T sensors

This drawing does not apply to the D600, DT, CMF300A, or CMF400 with booster amplifier sensors.



5.2.2 3500 with remote core processor and CMF300A sensor



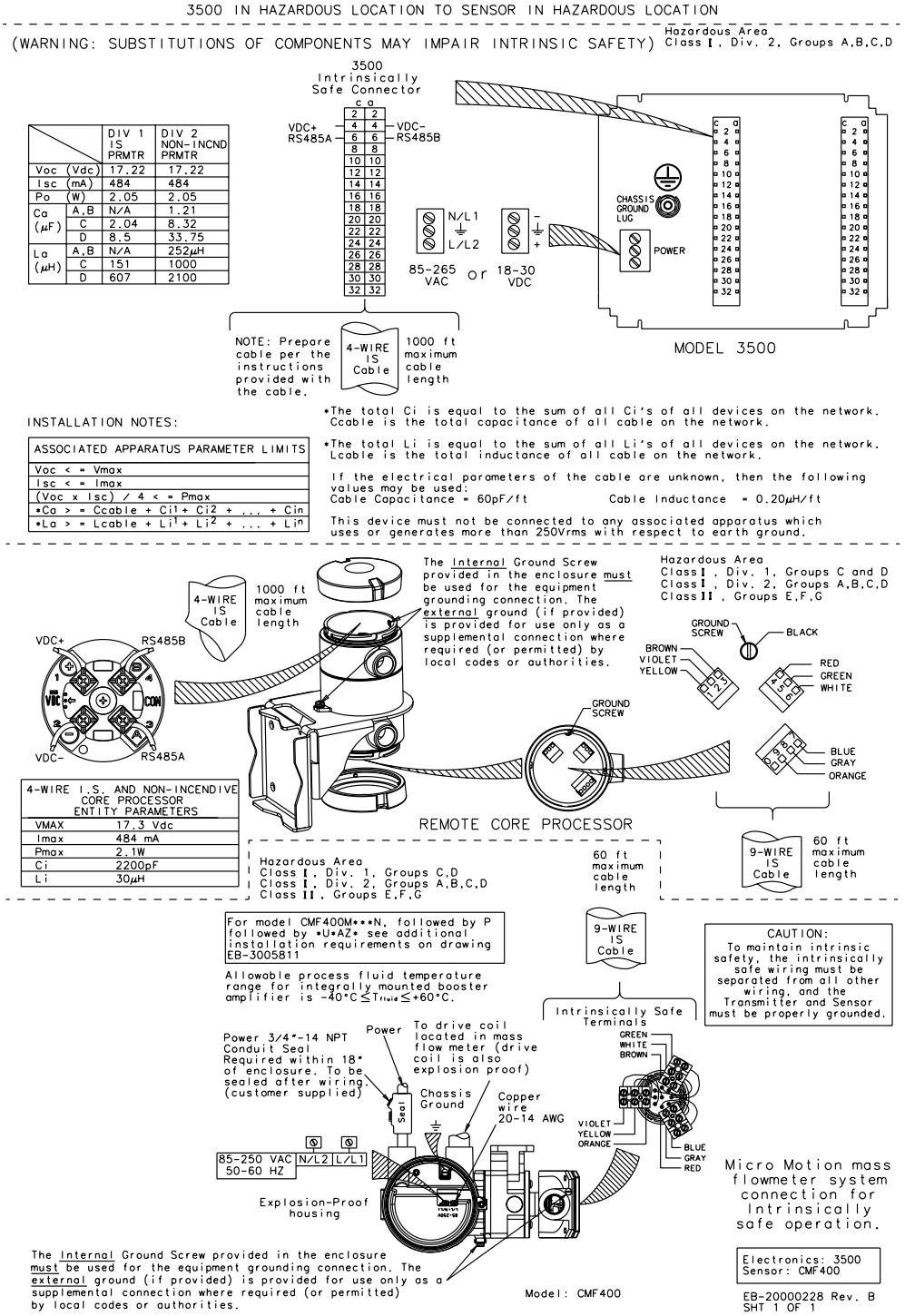
		DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)		17.22	17.22
Isc (mA)		484	484
Po (W)		2.05	2.05
Ca (µF)	A,B	N/A	1.21
	C	2.04	8.32
	D	8.5	33.75
La (µH)	A,B	N/A	252µH
	C	151	1000
	D	607	2100

ASSOCIATED APPARATUS PARAMETER LIMITS
Voc < = Vmax
Isc < = Imax
(Voc x Isc) / 4 < = Pmax
*Ca > = Ccable + Ci1 + Ci2 + ... + Cin
*La > = Lcable + Li1 + Li2 + ... + Lin

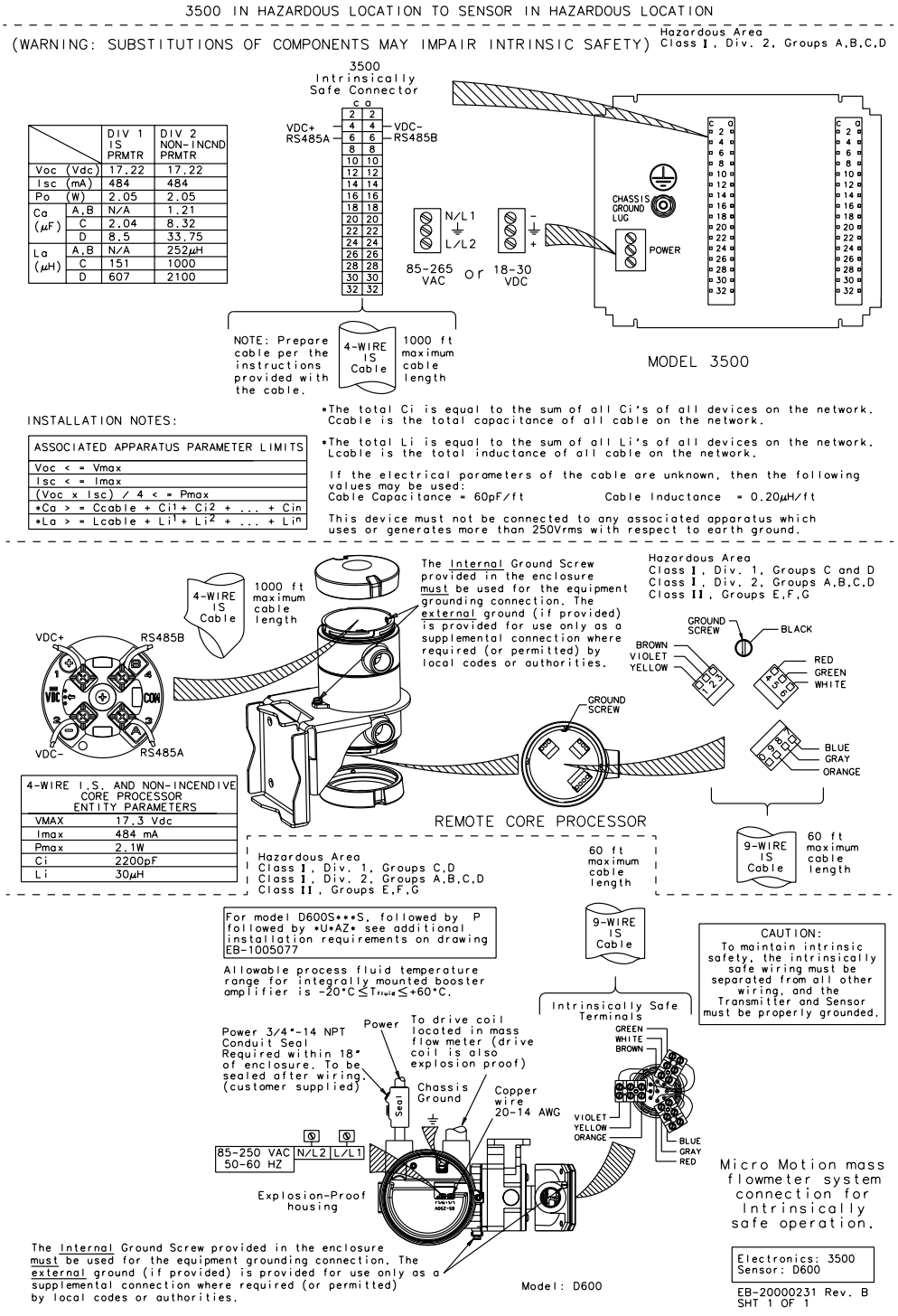
4-WIRE I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30µH

CMF300A Sensor Wire Terminations to 9-wire IS Cable	
Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

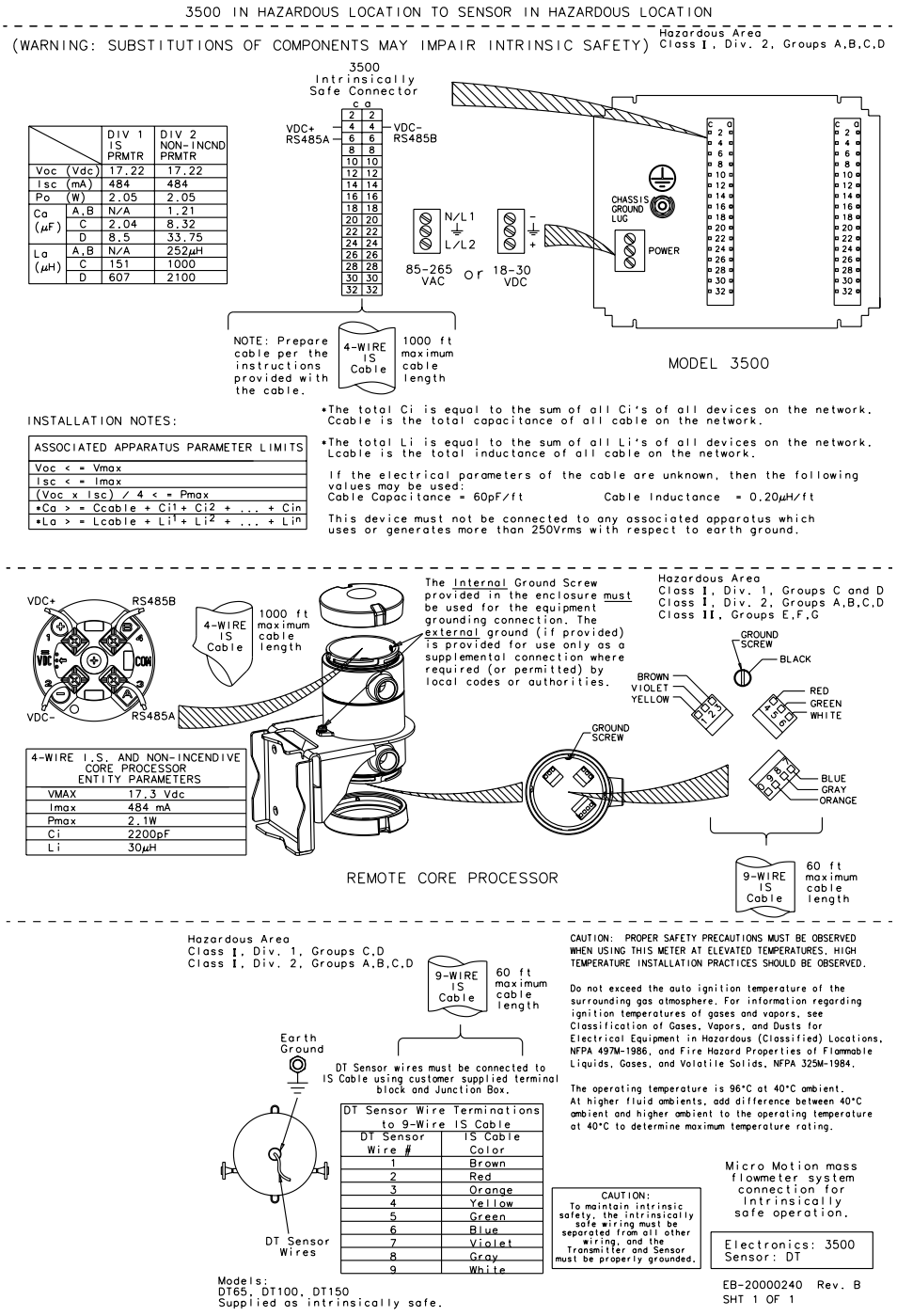
5.2.3 3500 with remote core processor and CMF400 sensor with booster amplifier



5.2.4 3500 with remote core processor and D600 sensor



5.2.5 3500 with remote core processor and DT sensor



		DIV 1 IS PRMTR	DIV 2 NON-INCND PRMTR
Voc (Vdc)		17.22	17.22
Isc (mA)		484	484
Po (W)		2.05	2.05
Ca (µF)	A,B	N/A	1.21
	C	2.04	8.32
	D	8.5	33.75
La (µH)	A,B	N/A	252µH
	C	151	1000
	D	607	2100

ASSOCIATED APPARATUS PARAMETER LIMITS
Voc < = Vmax
Isc < = Imax
(Voc x Isc) / 4 < = Pmax
*Ca > = Ccable + Ci[1] + Ci2 + ... + Cin
*La > = Lcable + Li[1] + Li[2] + ... + Lin

4-WIRE I.S. AND NON-INCENDIVE CORE PROCESSOR ENTITY PARAMETERS	
VMAX	17.3 Vdc
Imax	484 mA
Pmax	2.1W
Ci	2200pF
Li	30µH

DT Sensor Wire Terminations to 9-Wire IS Cable	
DT Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

6 3700 transmitters

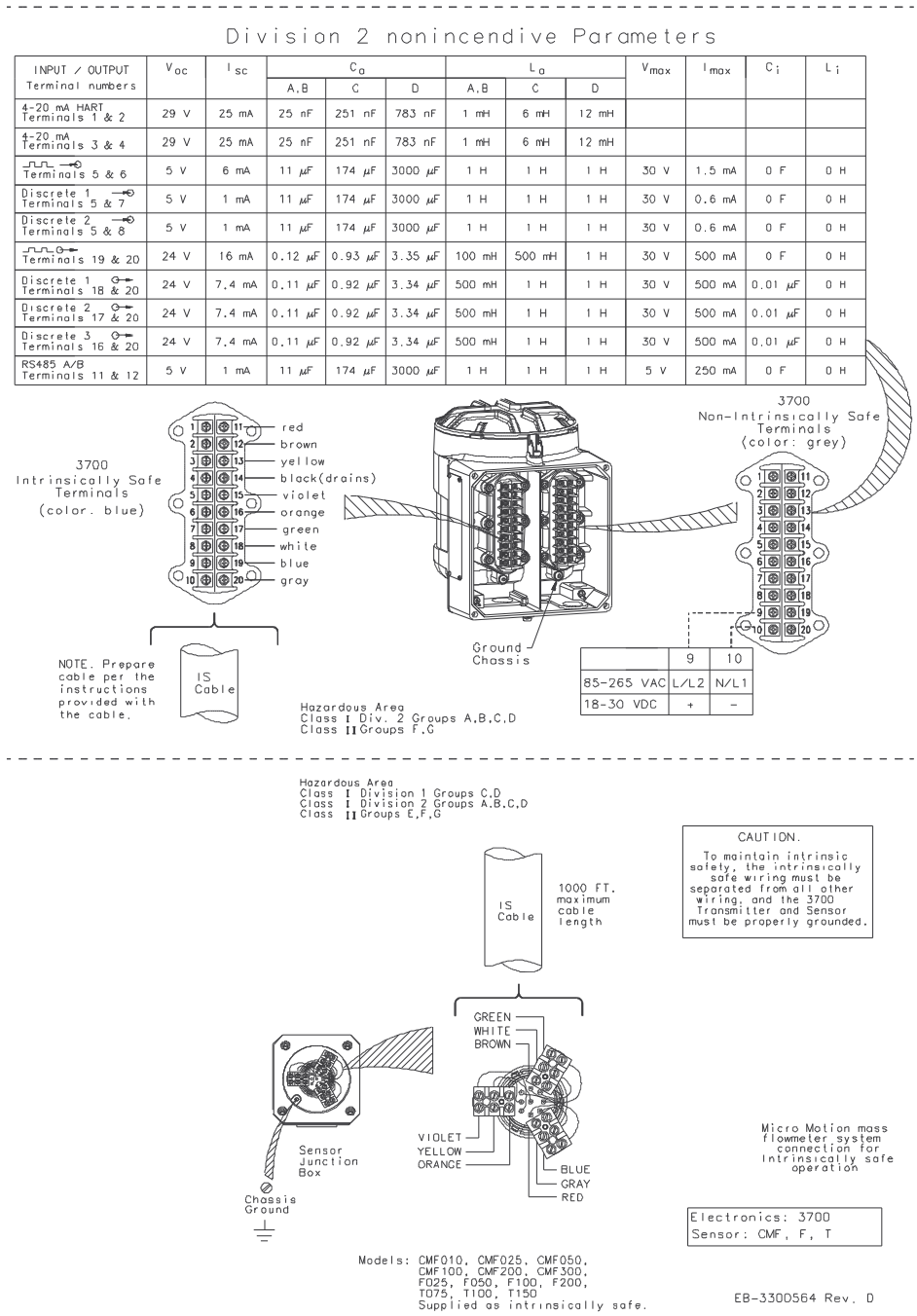
6.1 3700 core processor installations

List of drawings

Installation	Drawing
3700 with core processor and CMF, F, or T sensors	EB-3300564, Revision D
3700 with core processor and D or DL sensors	EB-3300572, Revision D
3700 with core processor and D600 sensor	EB-1005074, Revision B
3700 with core processor and DT sensor	EB-3300574, Revision C

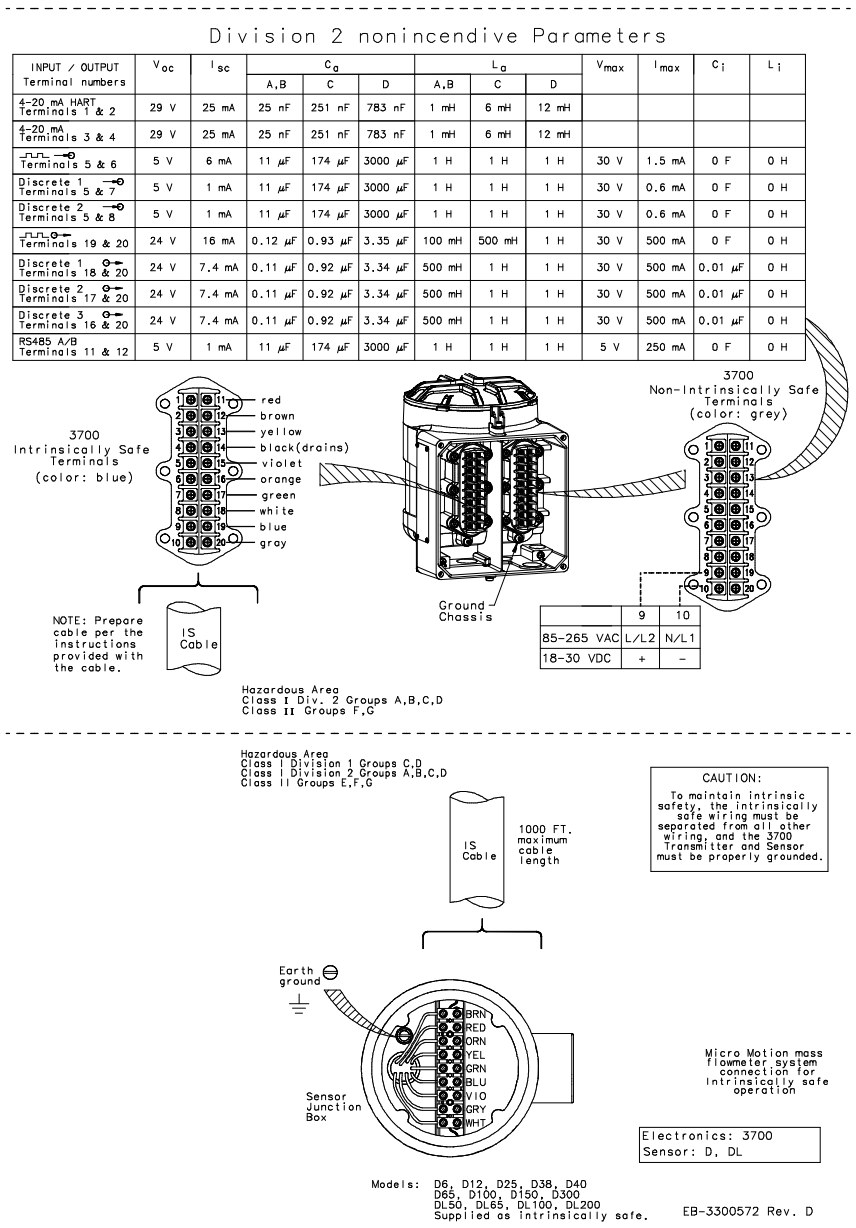
6.1.1 3700 with core processor and CMF, F, or T sensors

This drawing does not apply to the CMF300A sensor or to the CMF400 sensor with booster amplifier.



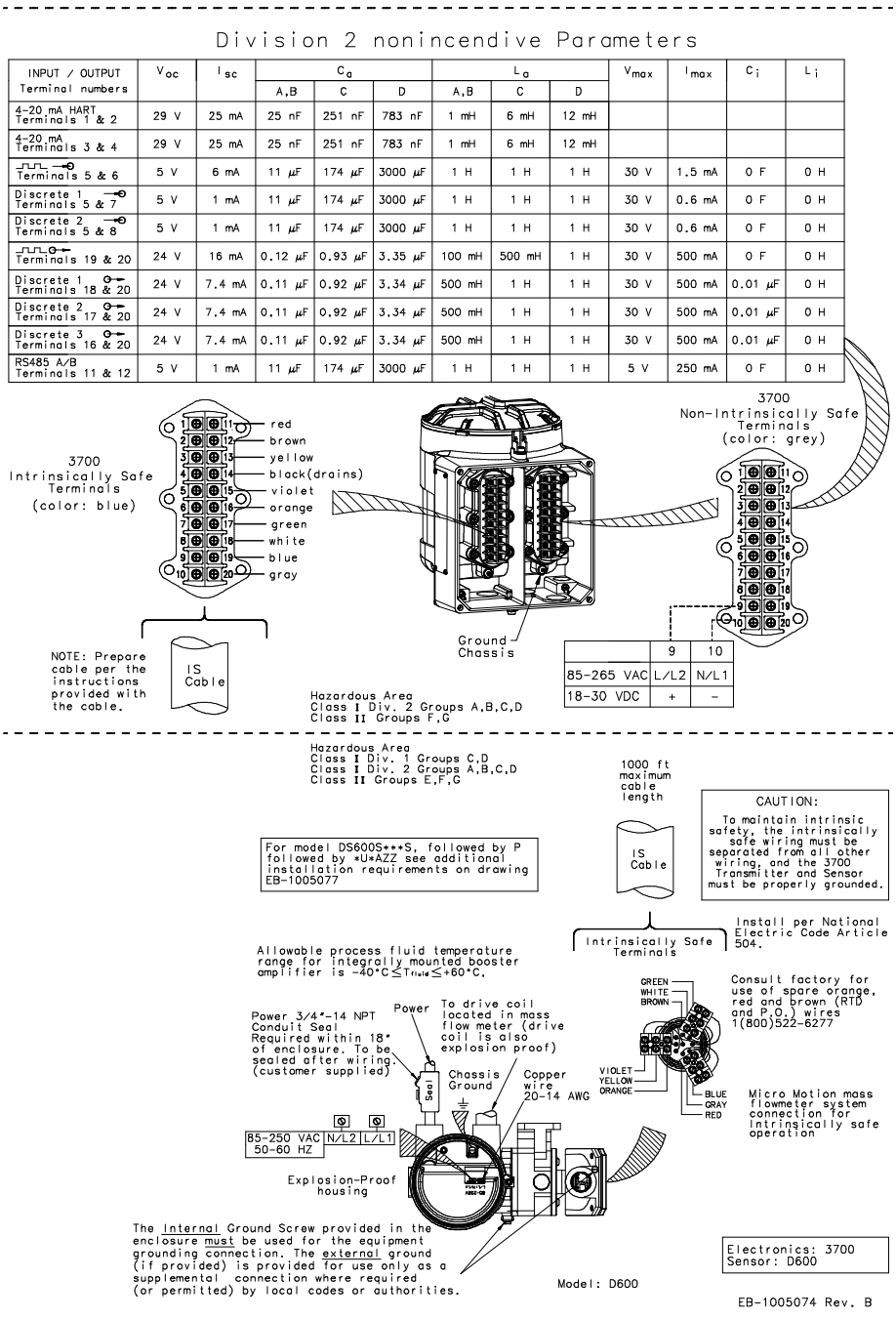
6.1.2 3700 with core processor and D or DL sensors

This drawing does not apply to D600 or DT sensors.



INPUT / OUTPUT Terminal numbers	V_{oc}	I_{sc}	C_a			L_a			V_{max}	I_{max}	C_i	L_i
			A,B	C	D	A,B	C	D				
4–20 mA HART Terminals 1 & 2	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
4–20 mA Terminals 3 & 4	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
Terminals 5 & 6	5 V	6 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	1.5 mA	0 F	0 H
Discrete 1 Terminals 5 & 7	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Discrete 2 Terminals 5 & 8	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Terminals 19 & 20	24 V	16 mA	0.12 µF	0.93 µF	3.35 µF	100 mH	500 mH	1 H	30 V	500 mA	0 F	0 H
Discrete 1 Terminals 18 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 2 Terminals 17 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 3 Terminals 16 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
RS485 A/B Terminals 11 & 12	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	5 V	250 mA	0 F	0 H

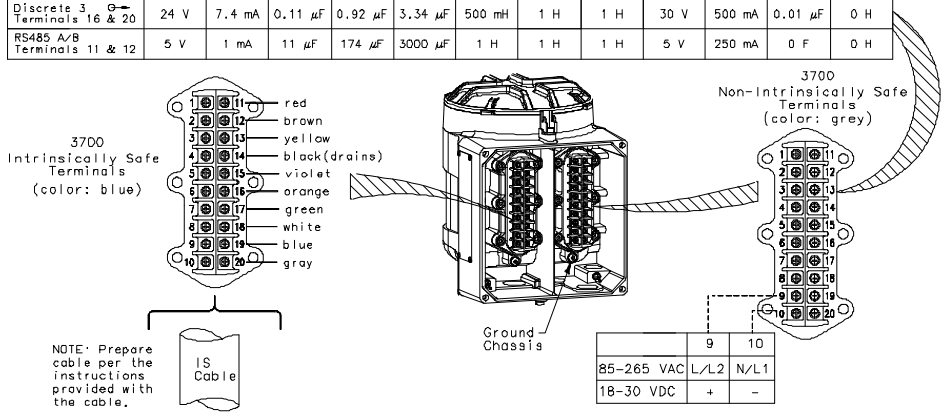
6.1.3 3700 with core processor and D600 sensor



6.1.4 3700 with core processor and DT sensor

Division 2 nonincendive Parameters

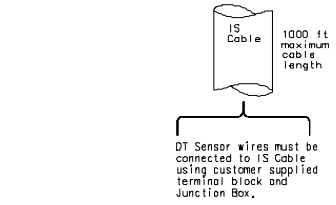
INPUT / OUTPUT Terminal numbers	V_{oc}	I_{sc}	C_a			L_a			V_{max}	I_{max}	C_i	L_i
			A,B	C	D	A,B	C	D				
4-20 mA HART Terminals 1 & 2	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
4-20 mA Terminals 3 & 4	29 V	25 mA	25 nF	251 nF	783 nF	1 mH	6 mH	12 mH				
Terminals 5 & 6	5 V	6 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	1.5 mA	0 F	0 H
Discrete 1 Terminals 5 & 7	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Discrete 2 Terminals 5 & 8	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	30 V	0.6 mA	0 F	0 H
Terminals 19 & 20	24 V	16 mA	0.12 µF	0.93 µF	3.35 µF	100 mH	500 mH	1 H	30 V	500 mA	0 F	0 H
Discrete 1 Terminals 18 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 2 Terminals 17 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
Discrete 3 Terminals 16 & 20	24 V	7.4 mA	0.11 µF	0.92 µF	3.34 µF	500 mH	1 H	1 H	30 V	500 mA	0.01 µF	0 H
RS485 A/B Terminals 11 & 12	5 V	1 mA	11 µF	174 µF	3000 µF	1 H	1 H	1 H	5 V	250 mA	0 F	0 H



Hazardous Area
Class I Div. 2 Groups A,B,C,D
Class II Groups F,G

Hazardous Area
Class I Div. 1 Groups C,D
Class I Div. 2 Groups A,B,C,D

CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the 3700 Transmitter and Sensor must be properly grounded.



DT Sensor Wire Terminations to IS Cable	
DT Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

CAUTION: PROPER SAFETY PRECAUTIONS MUST BE OBSERVED WHEN USING THIS METER AT ELEVATED TEMPERATURES. HIGH TEMPERATURE INSTALLATION PRACTICES SHOULD BE OBSERVED.

Do not exceed the auto ignition temperature of the surrounding gas atmosphere. For information regarding ignition temperatures of gases and vapors, see Classification of Gases, Vapors, and Dusts for Electrical Equipment in Hazardous (Classified) Locations, NFPA 497M-1986, and Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids, NFPA 325M-1984.

The operating temperature is 96°C at 40°C ambient. At higher fluid ambients, add difference between 40°C ambient and higher ambient to the operating temperature at 40°C to determine maximum temperature rating

Micro Motion mass flowmeter system connection for Intrinsically safe operation

Electronics: 3700
Sensor: DT

Models: DT65, DT100, DT150
Supplied as intrinsically safe

EB-3300574 Rev. C

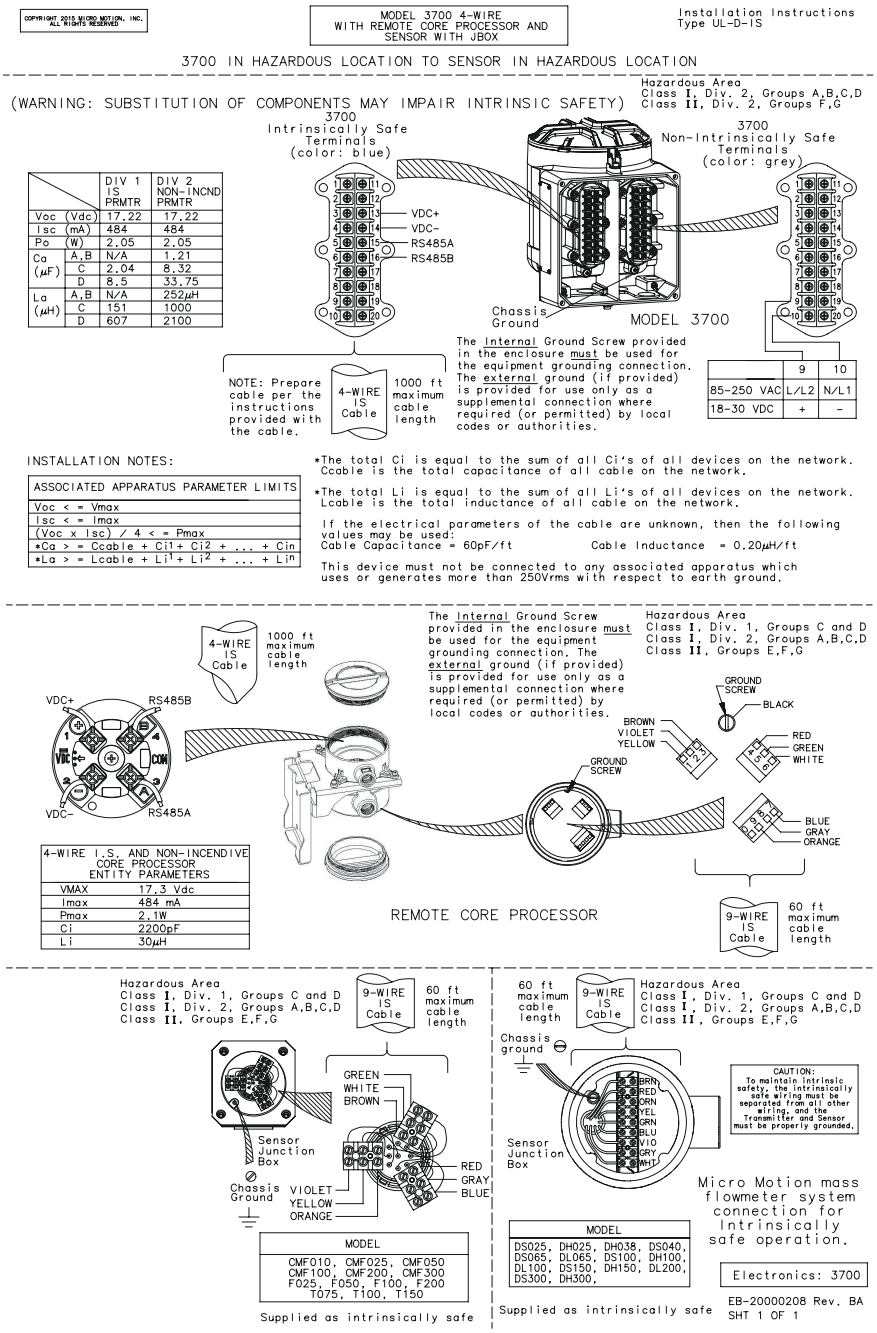
6.2 3700 remote core processor installations

List of drawings

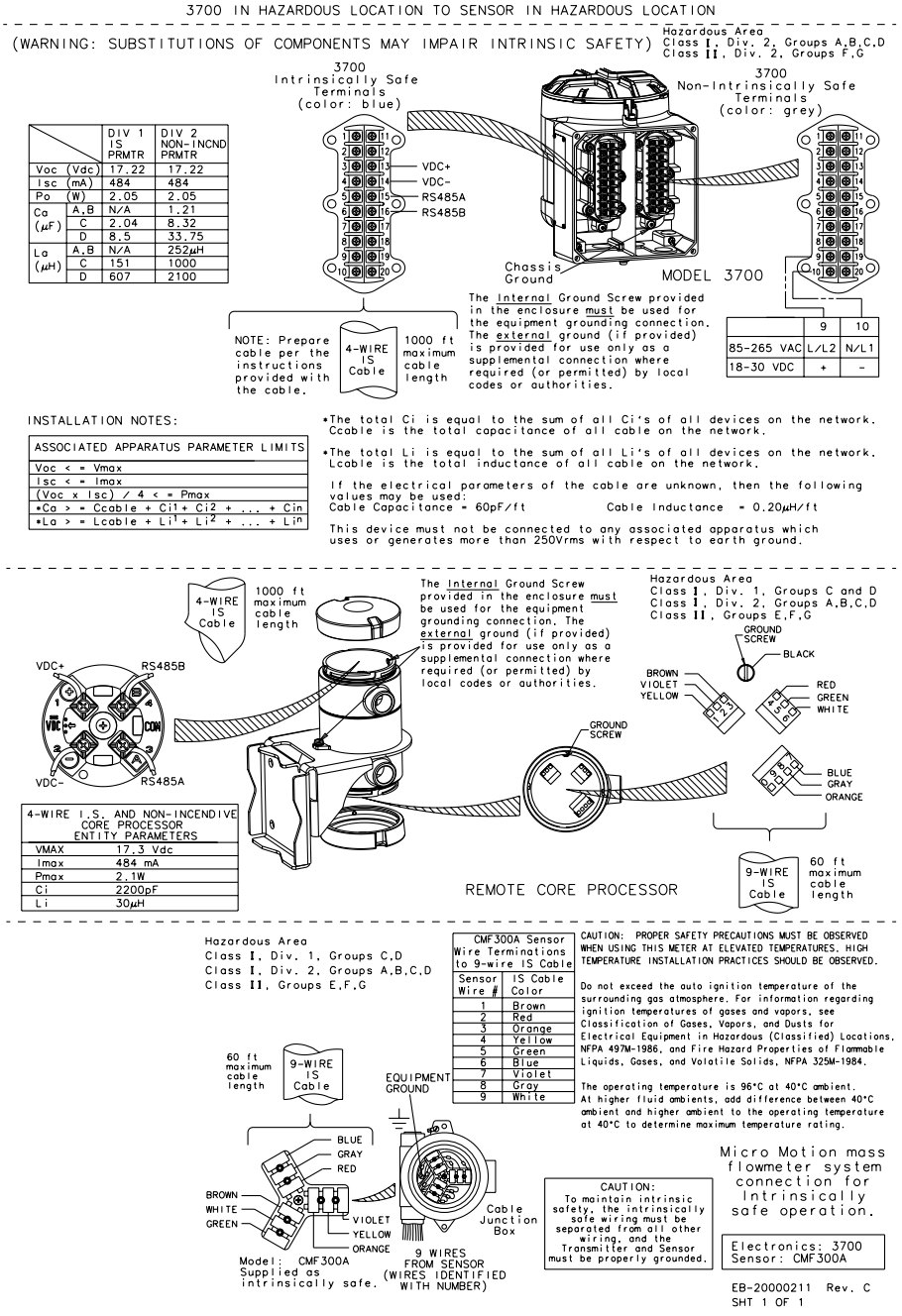
Installation	Drawing
3700 with remote core processor and CMF, D, DL, F, H, or T sensors	EB-20000208, Revision BA
3700 with remote core processor and CMF300A sensor	EB-20000211, Revision C
3700 with remote core processor and CMF400 sensor with booster amplifier	EB-20000202, Revision B
3700 with remote core processor and D600 sensor	EB-20000205, Revision B
3700 with remote core processor and DT sensor	EB-20000214, Revision B

6.2.1 3700 with remote core processor and CMF, D, DL, F, H, or T sensors

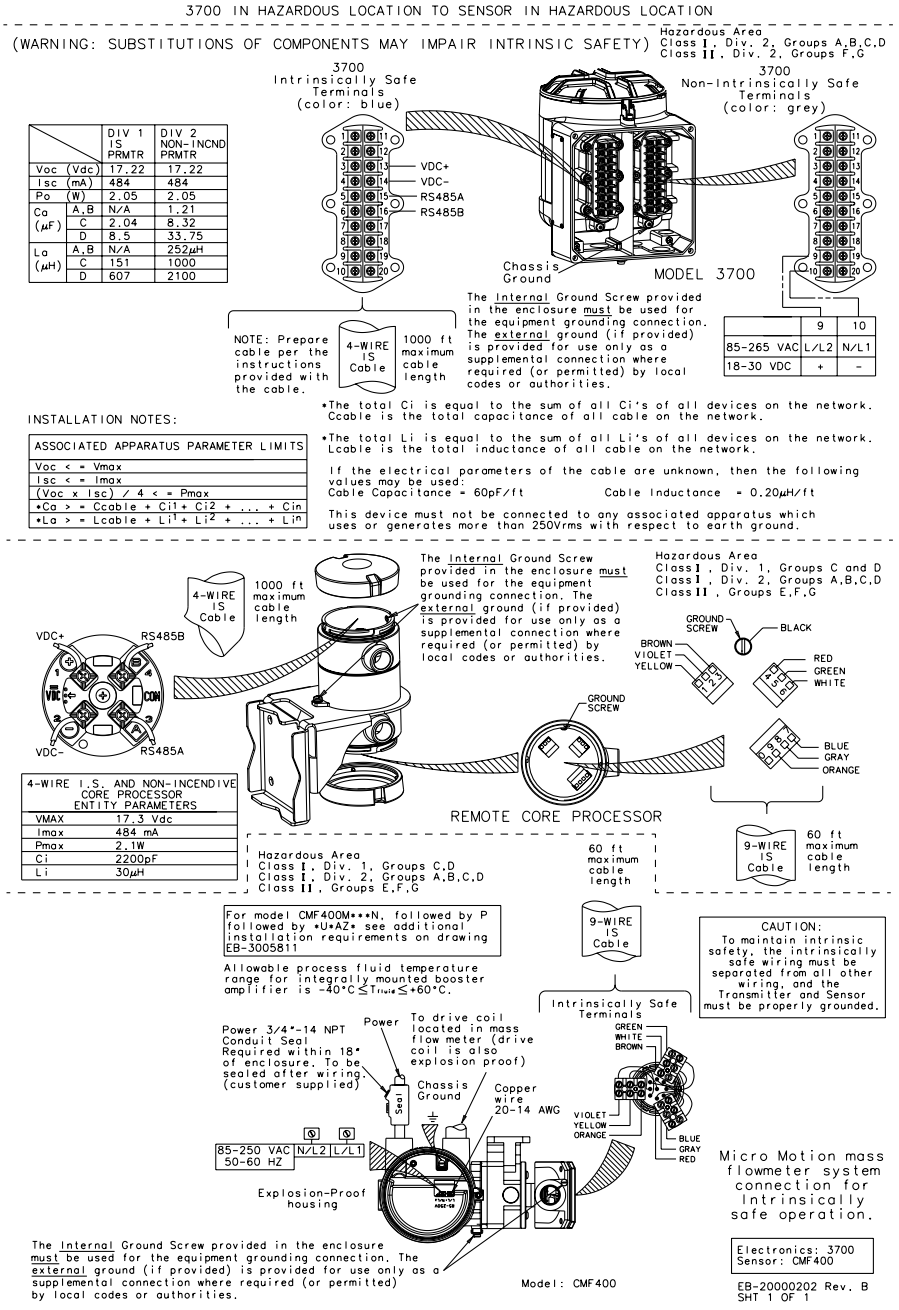
This drawing does not apply to the D600, DT, CMF300A, or CMF400 with booster amplifier sensors.



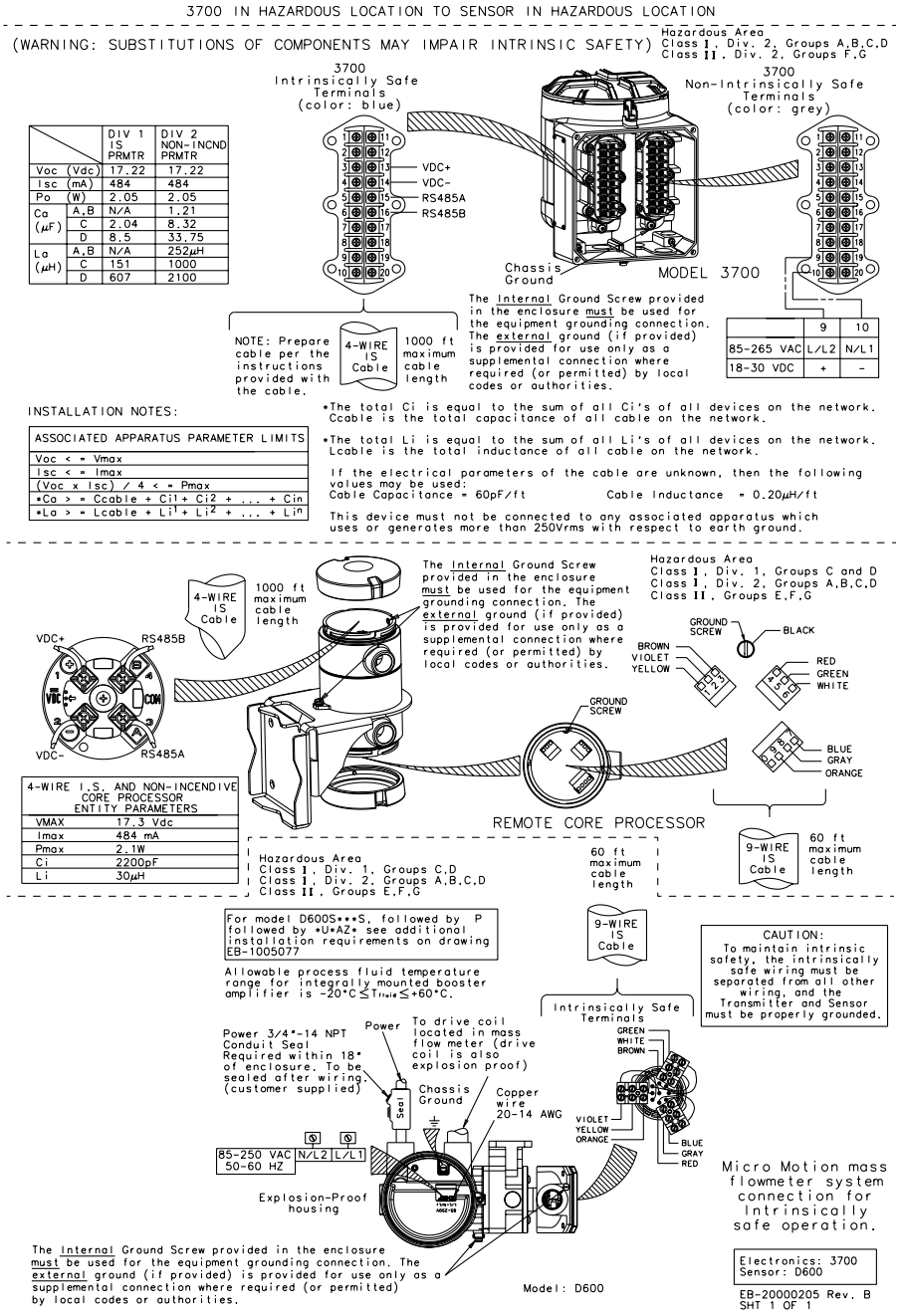
6.2.2 3700 with remote core processor and CMF300A sensor



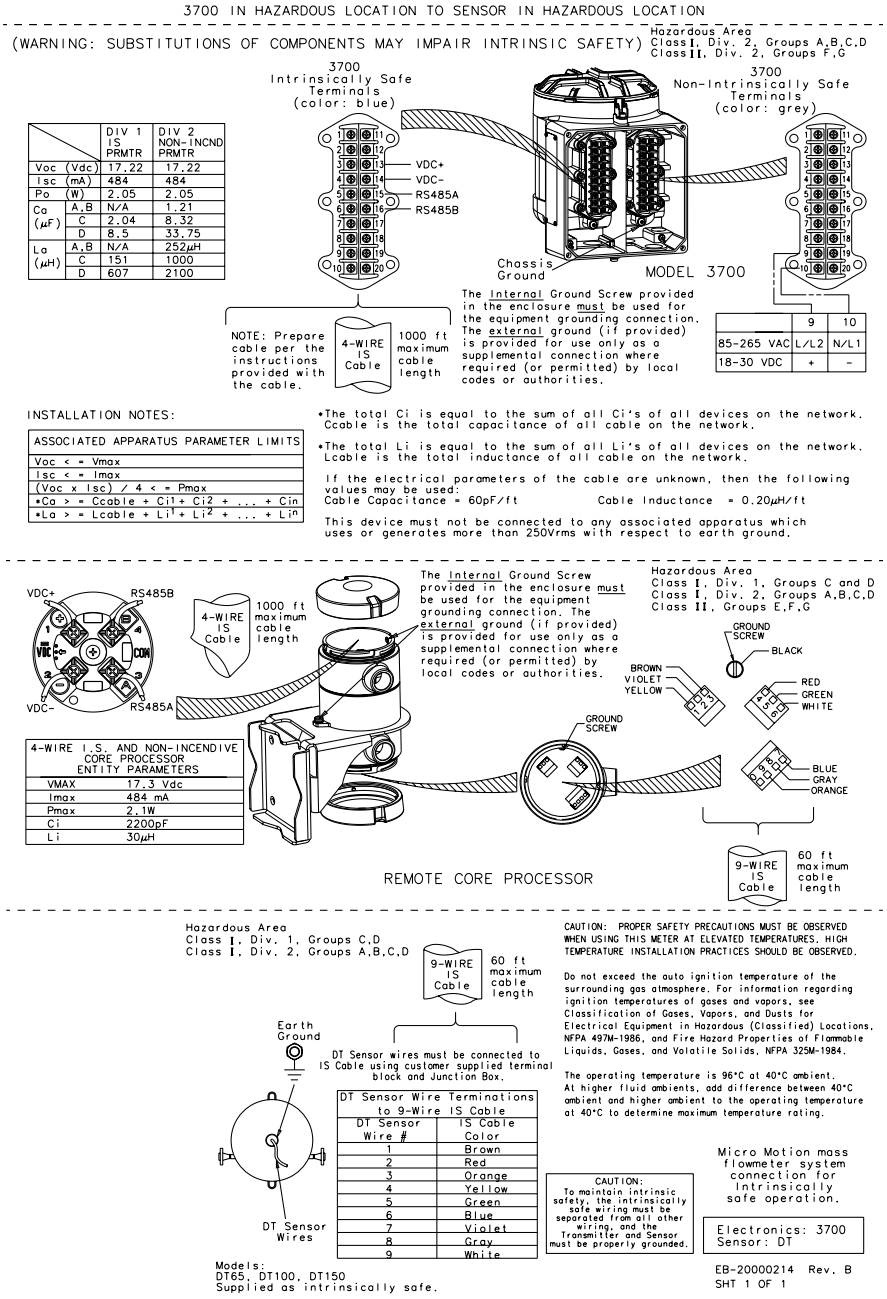
6.2.3 3700 with remote core processor and CMF400 sensor with booster amplifier



6.2.4 3700 with remote core processor and D600 sensor



6.2.5 3700 with remote core processor and DT sensor



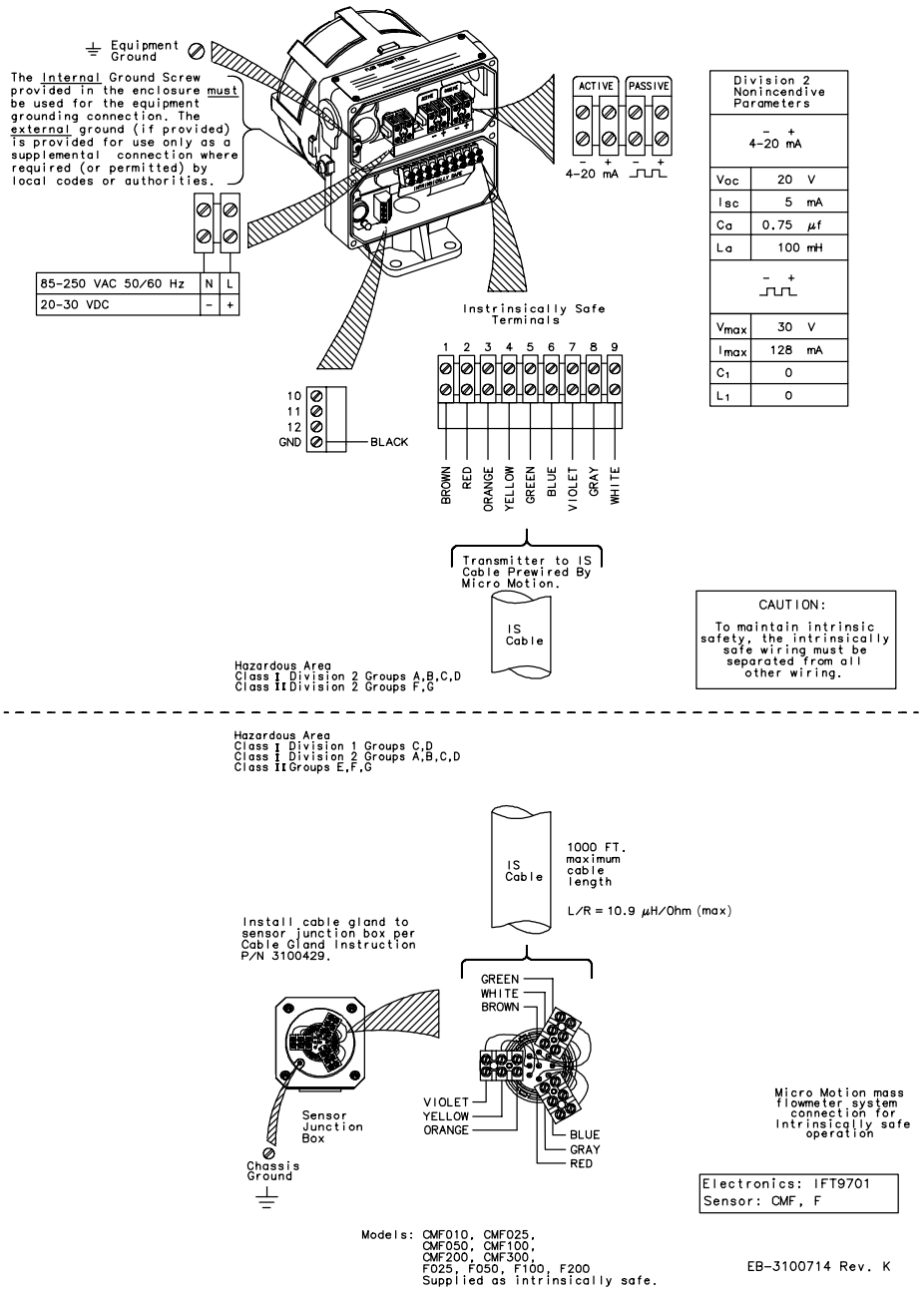
7 9701 transmitters

List of drawings

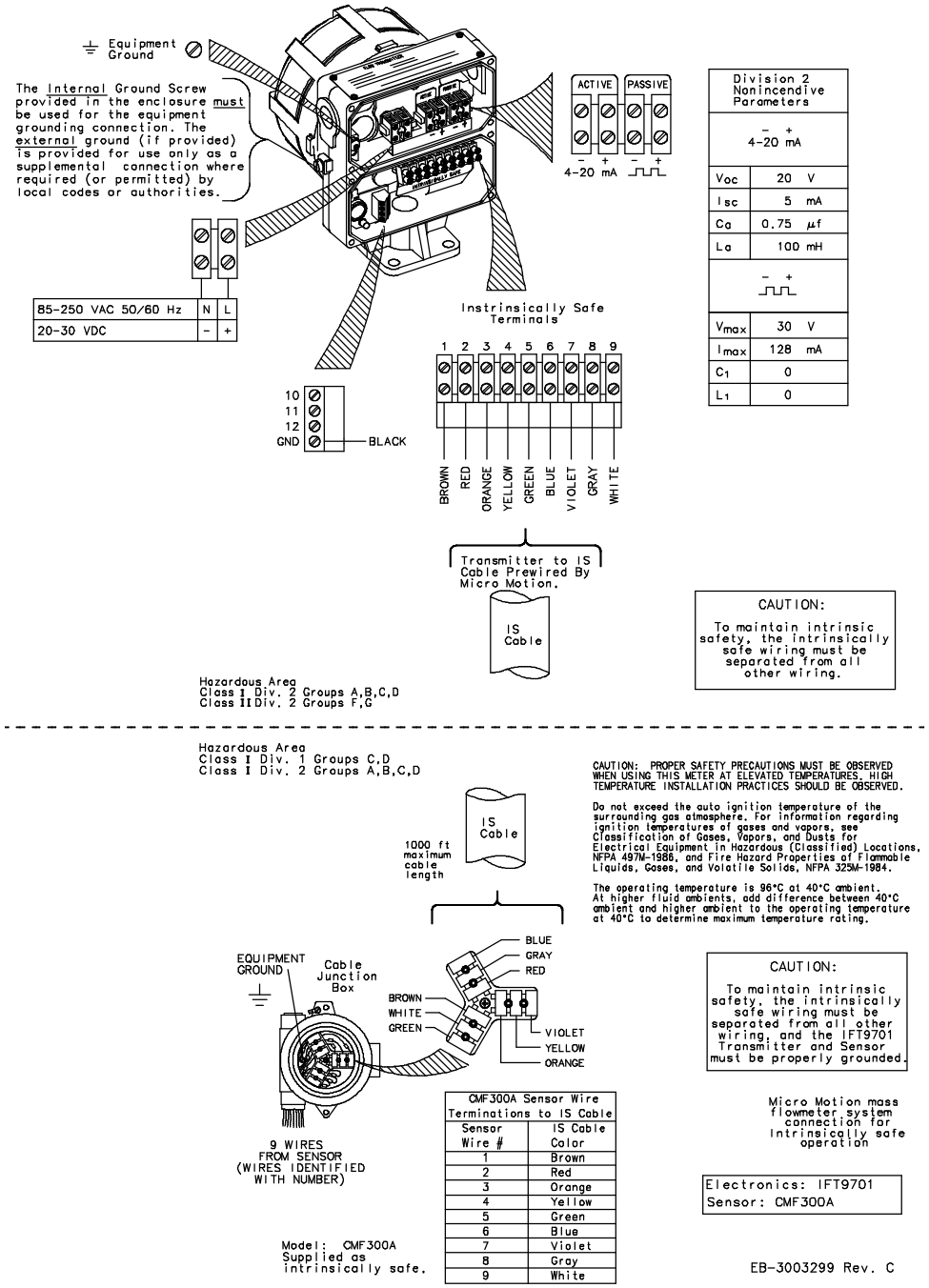
Installation	Drawing
9701 with CMF or F sensors	EB-3100714, Revision K
9701 with CMF300A sensor	EB-3003299, Revision C
9701 with CMF400 sensor with booster amplifier	EB-3005805, Revision C
9701 with D or DL sensors	EB-3100715, Revision H

7.1 9701 with CMF or F sensors

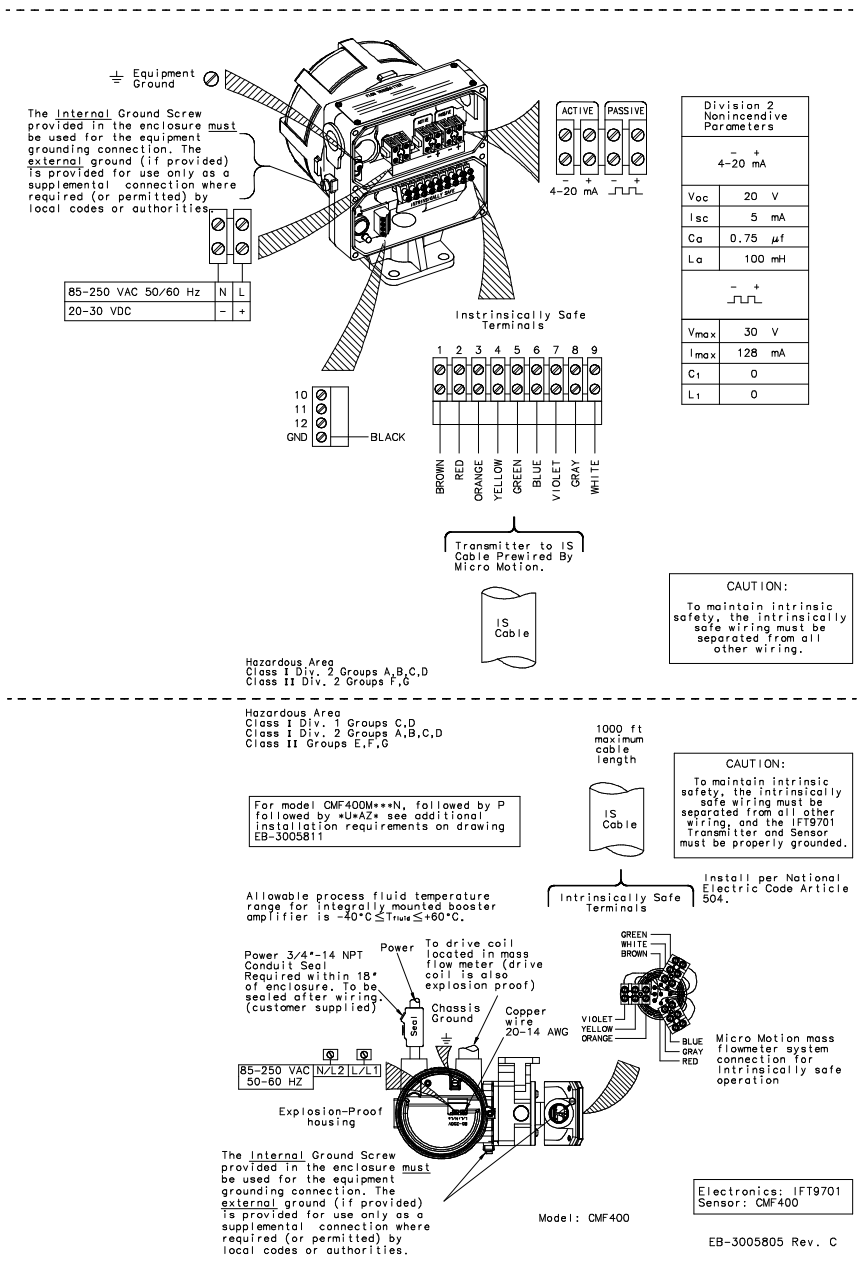
This drawing does not apply to the CMF300A sensor or to the CMF400 sensor with booster amplifier.



7.2 9701 with CMF300A sensor

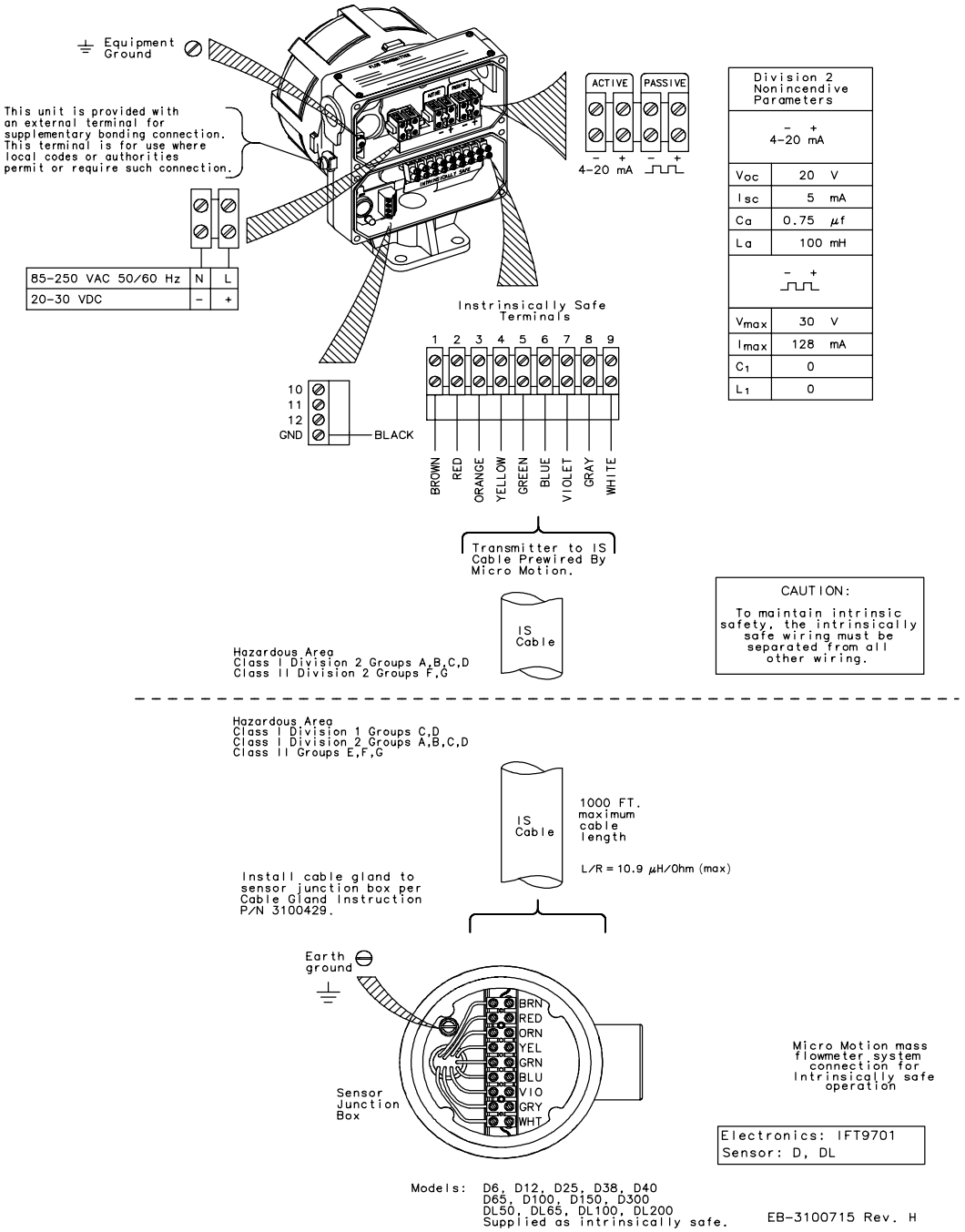


7.3 9701 with CMF400 sensor with booster amplifier



7.4 9701 with D or DL sensors

This drawing does not apply to D600 or DT sensors.



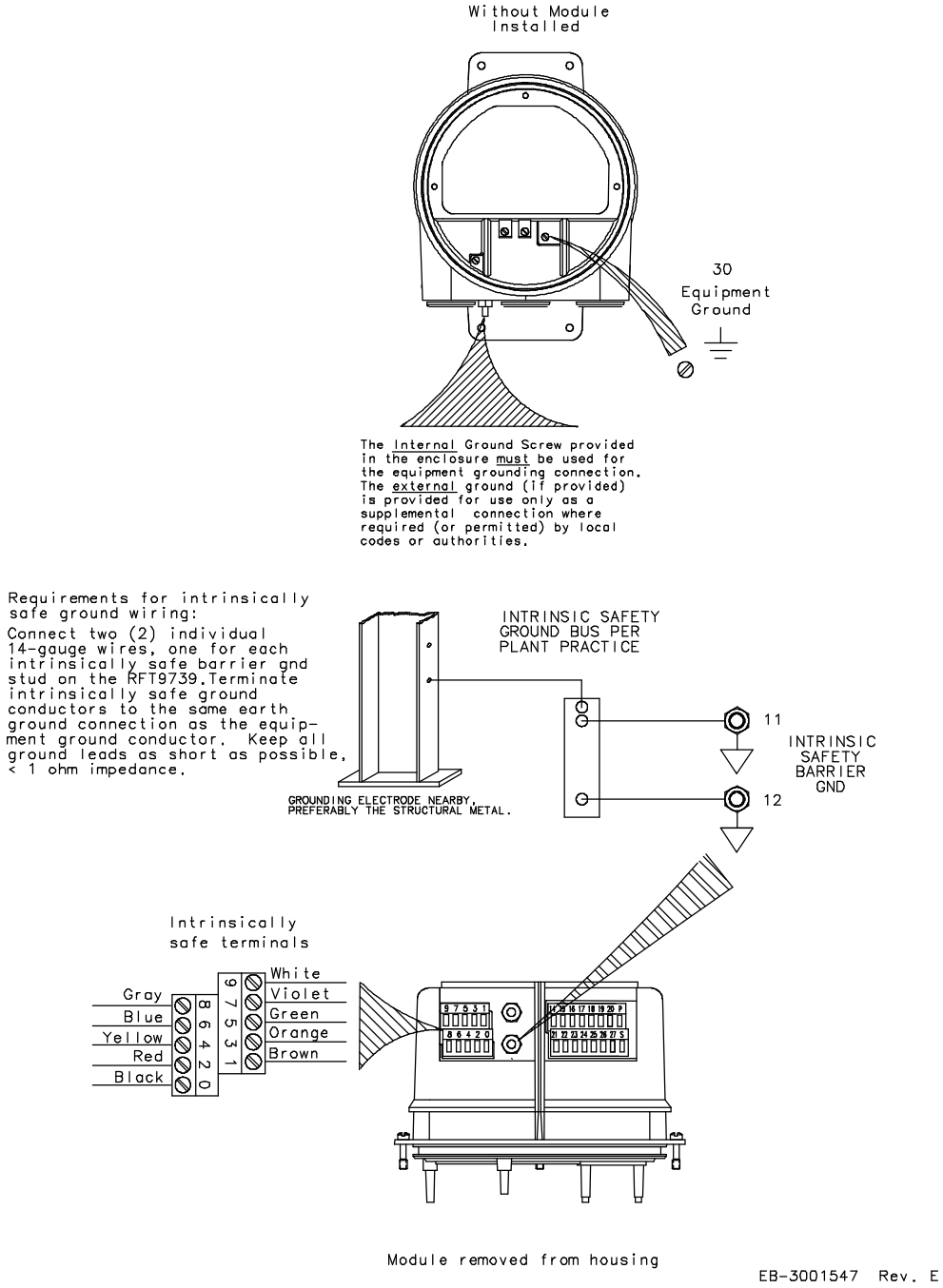
8 9739 transmitters

8.1 9739 field mount installations

List of drawings

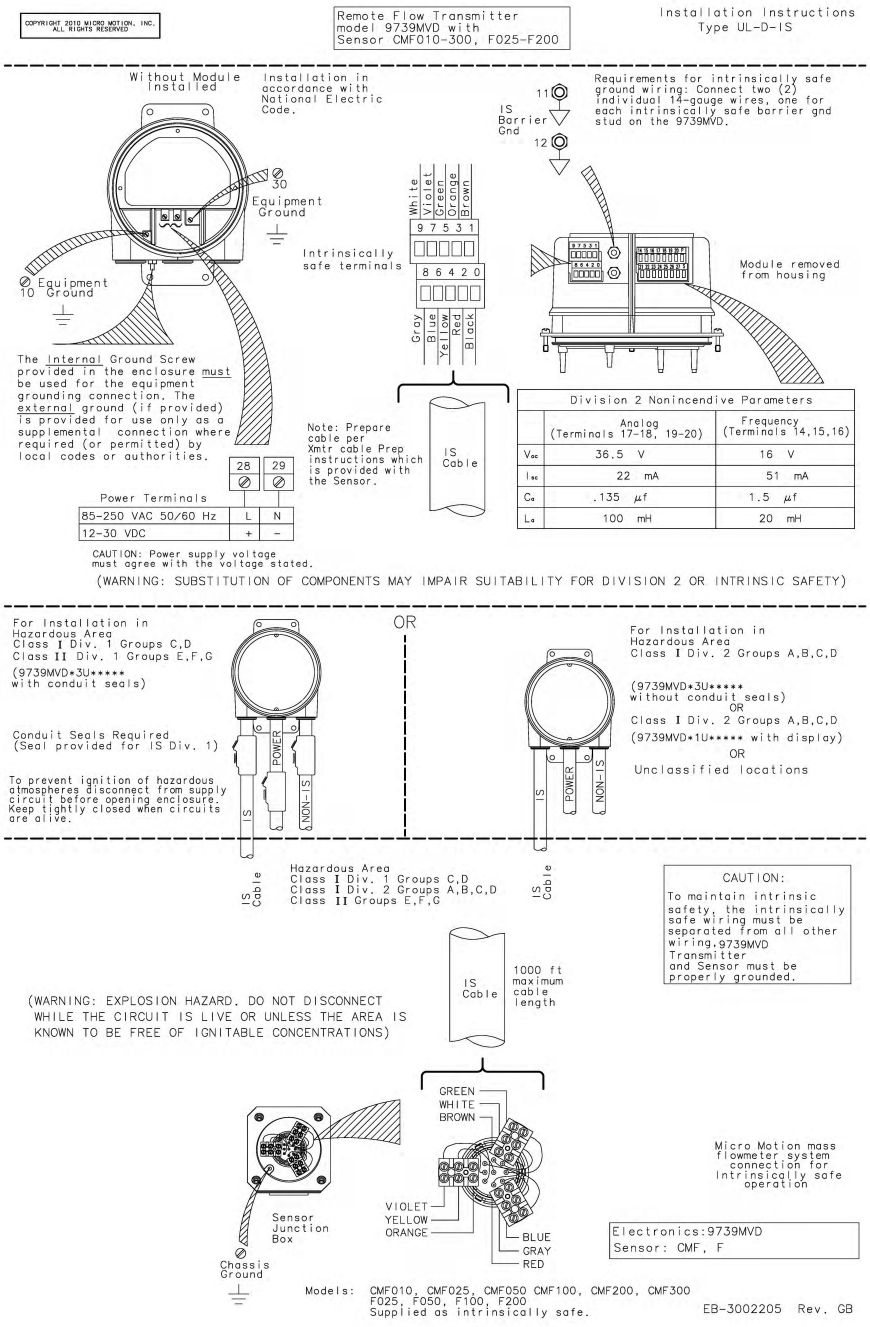
Installation	Drawing
9739 field mount grounding	EB-3001547 Rev E
9739 field mount with CMF or F sensors	EB-3002205, Revision GB
9739 field mount with CMF300 sensor	EB-3002929, Revision F
9739 field mount with CMF400 sensor and a booster amplifier	EB-3005802, Revision C
9739 field mount with D or DL sensors	EB-3002206, Revision GB
9739 field mount with D600 sensor	EB-1005069, Revision B
9739 field mount with DT sensor	EB-3002208, Revision EA

8.1.1 9739 field mount grounding

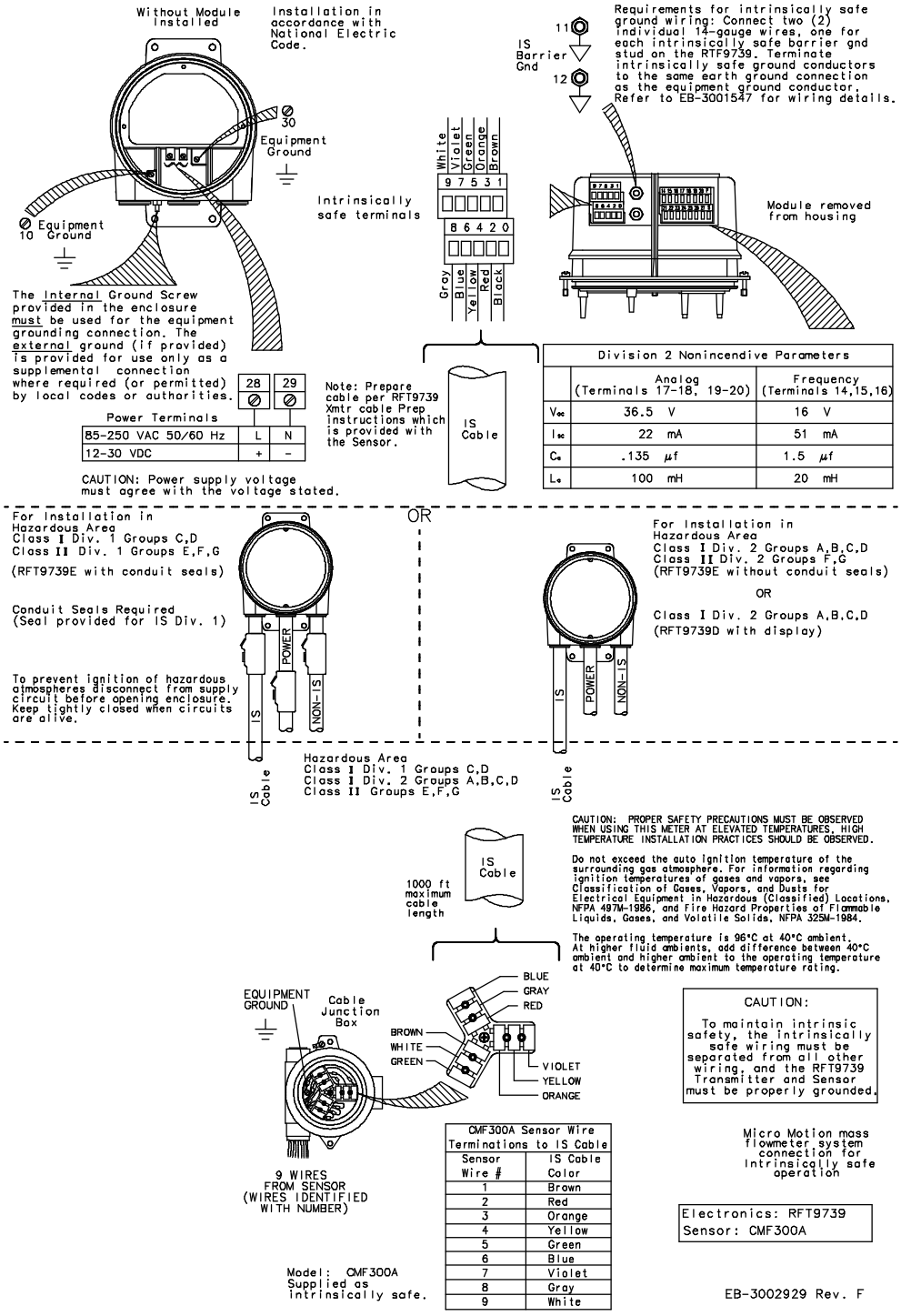


8.1.2 9739 field mount with CMF or F sensors

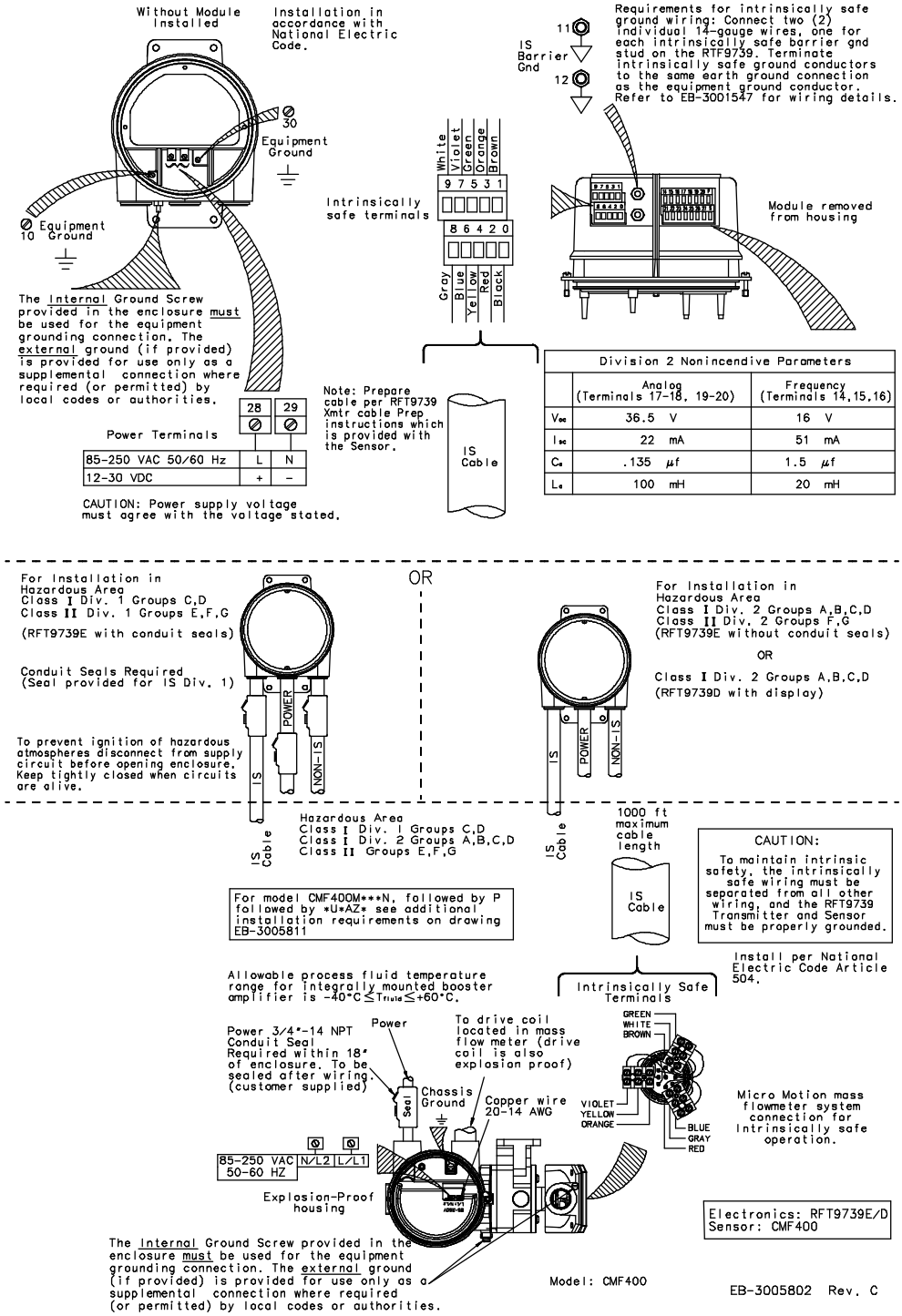
This drawing does not apply to the CMF300A sensor or to the CMF400 sensor with booster amplifier.



8.1.3 9739 field mount with CMF300 sensor

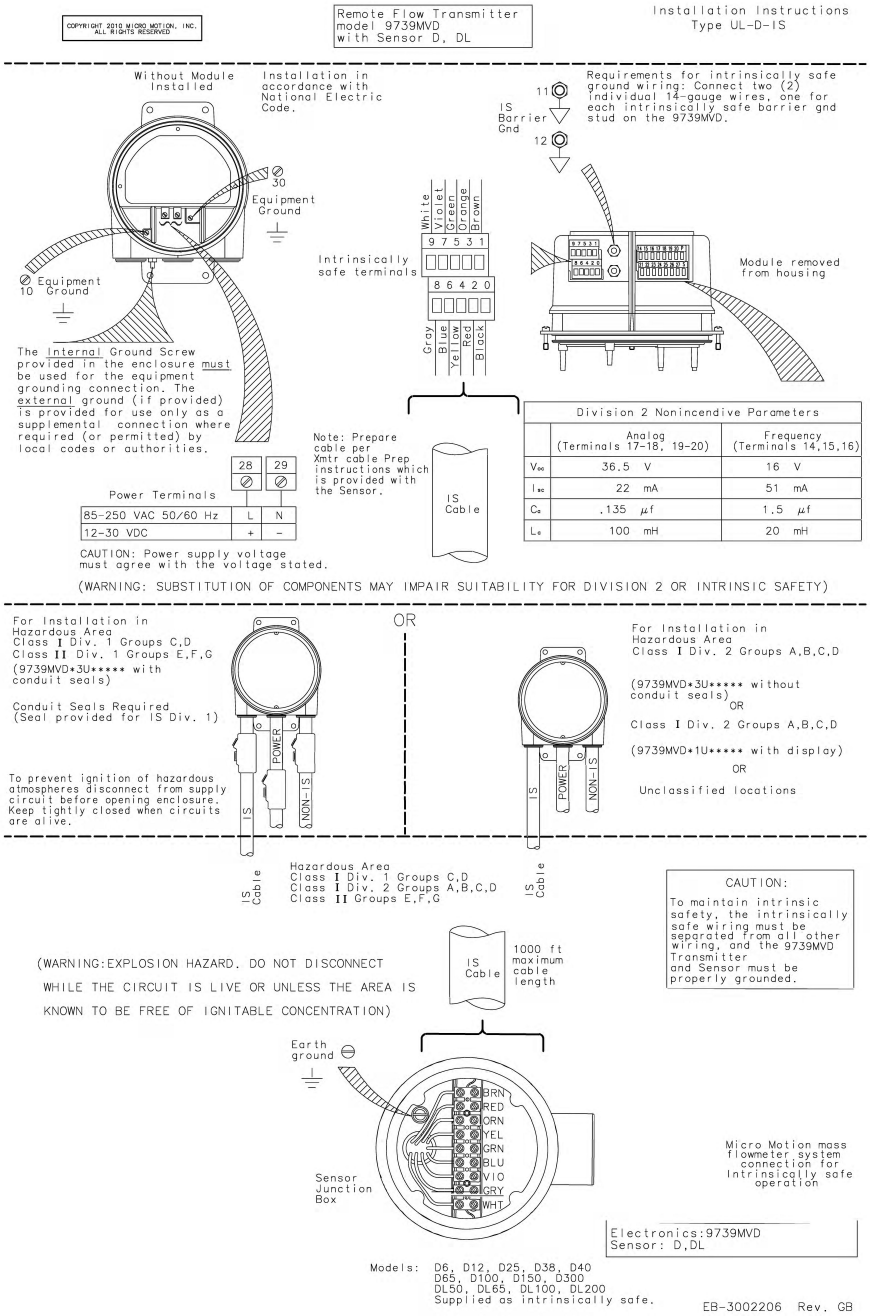


8.1.4 9739 field mount with CMF400 sensor and a booster amplifier

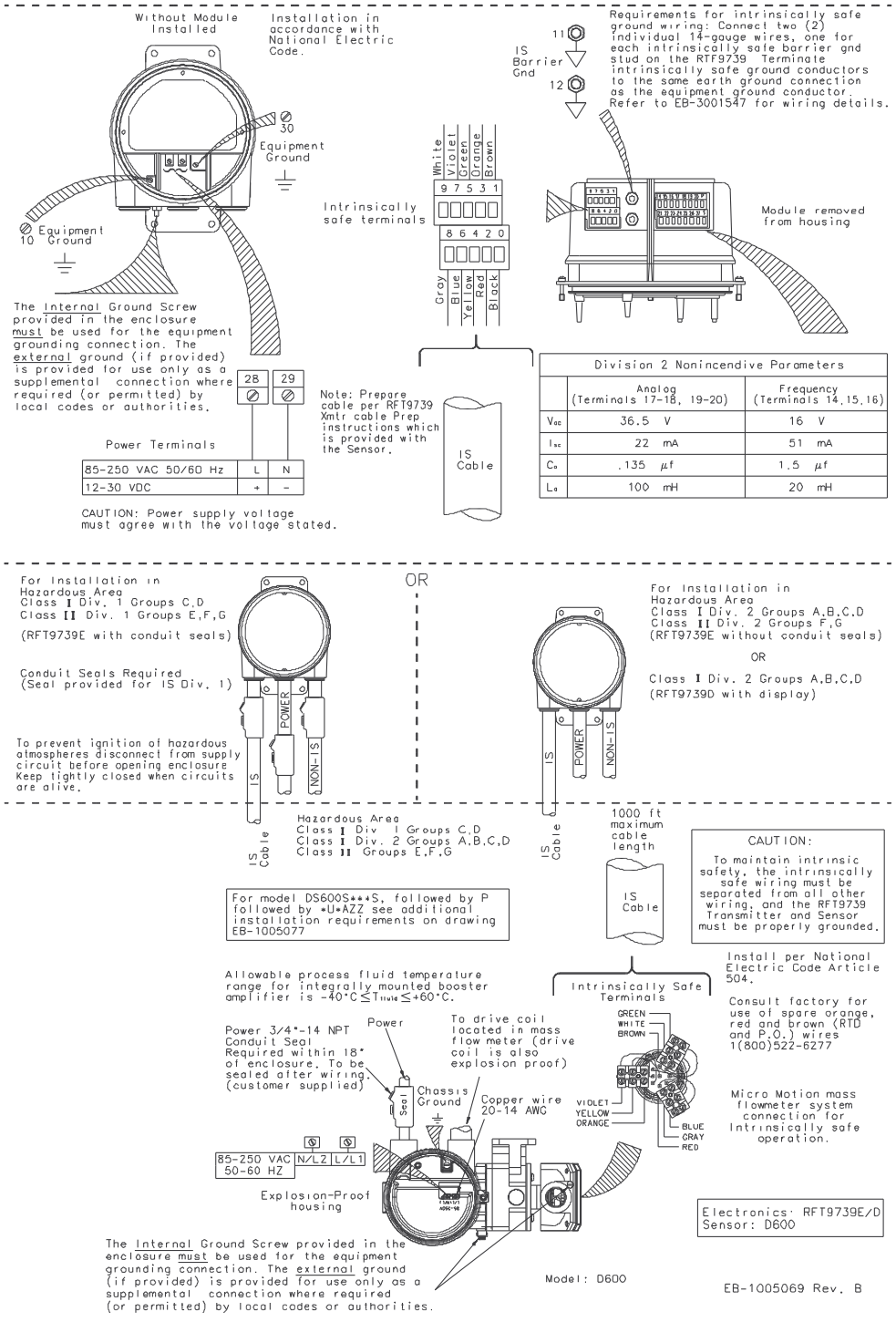


8.1.5 9739 field mount with D or DL sensors

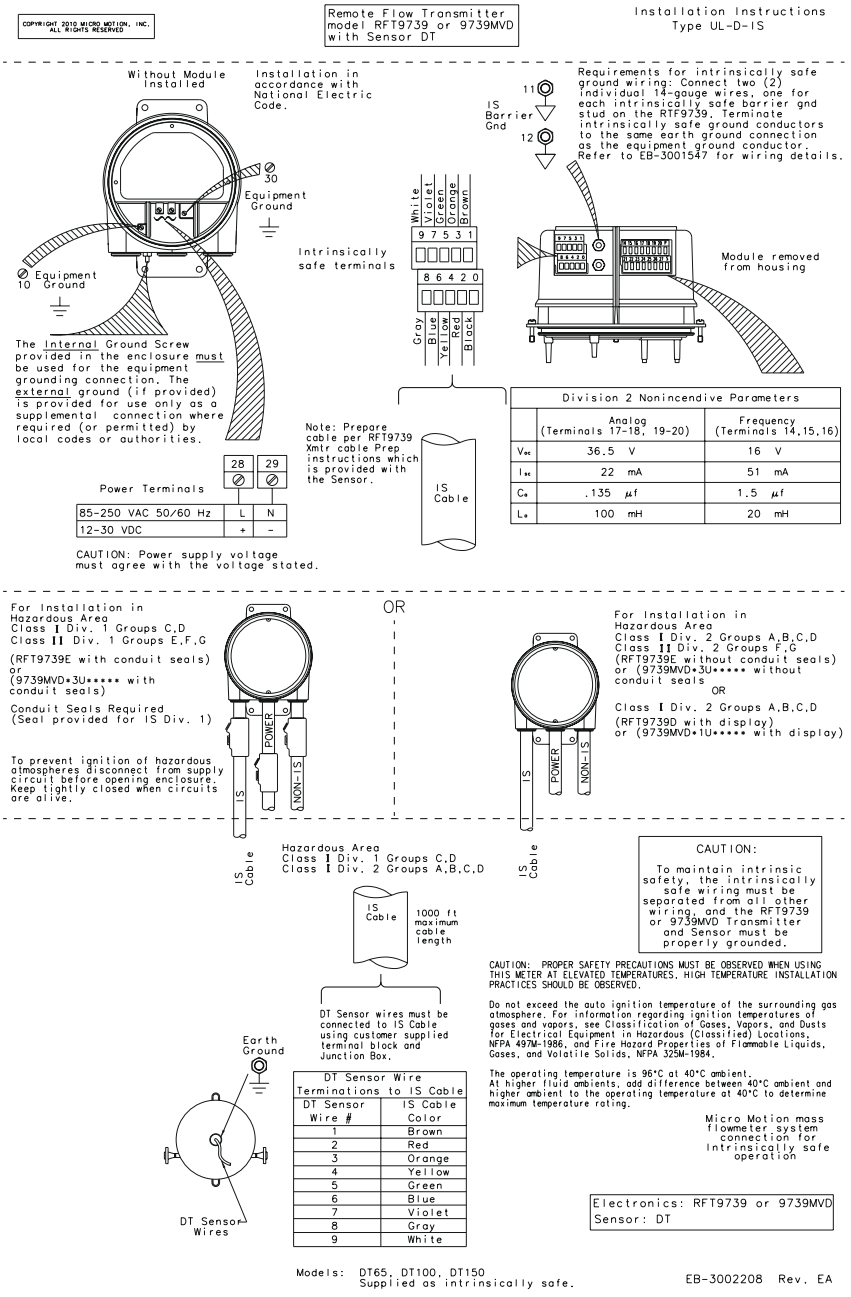
This drawing does not apply to D600 or DT sensors.



8.1.6 9739 field mount with D600 sensor



8.1.7 9739 field mount with DT sensor

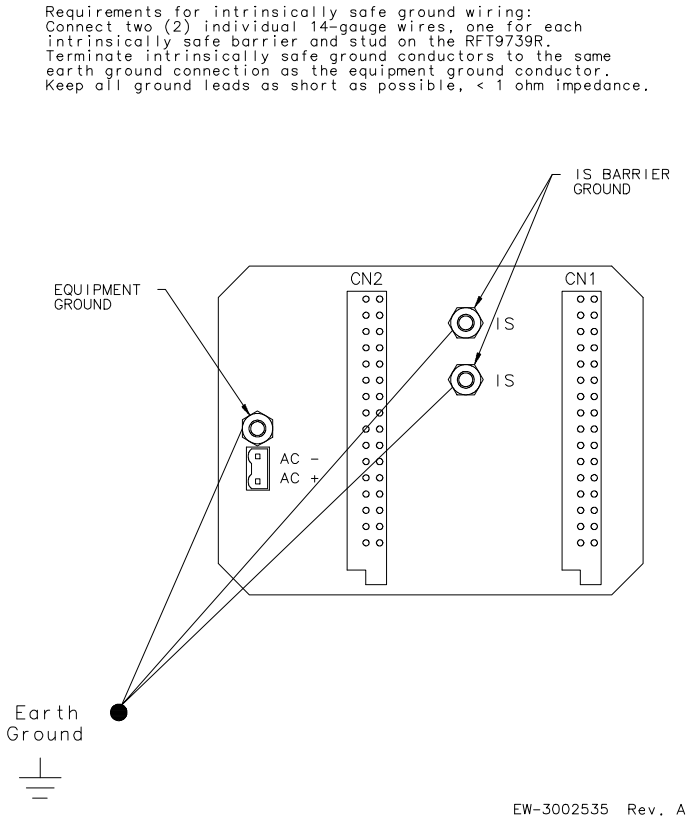


8.2 9739 rack mount installations

List of drawings

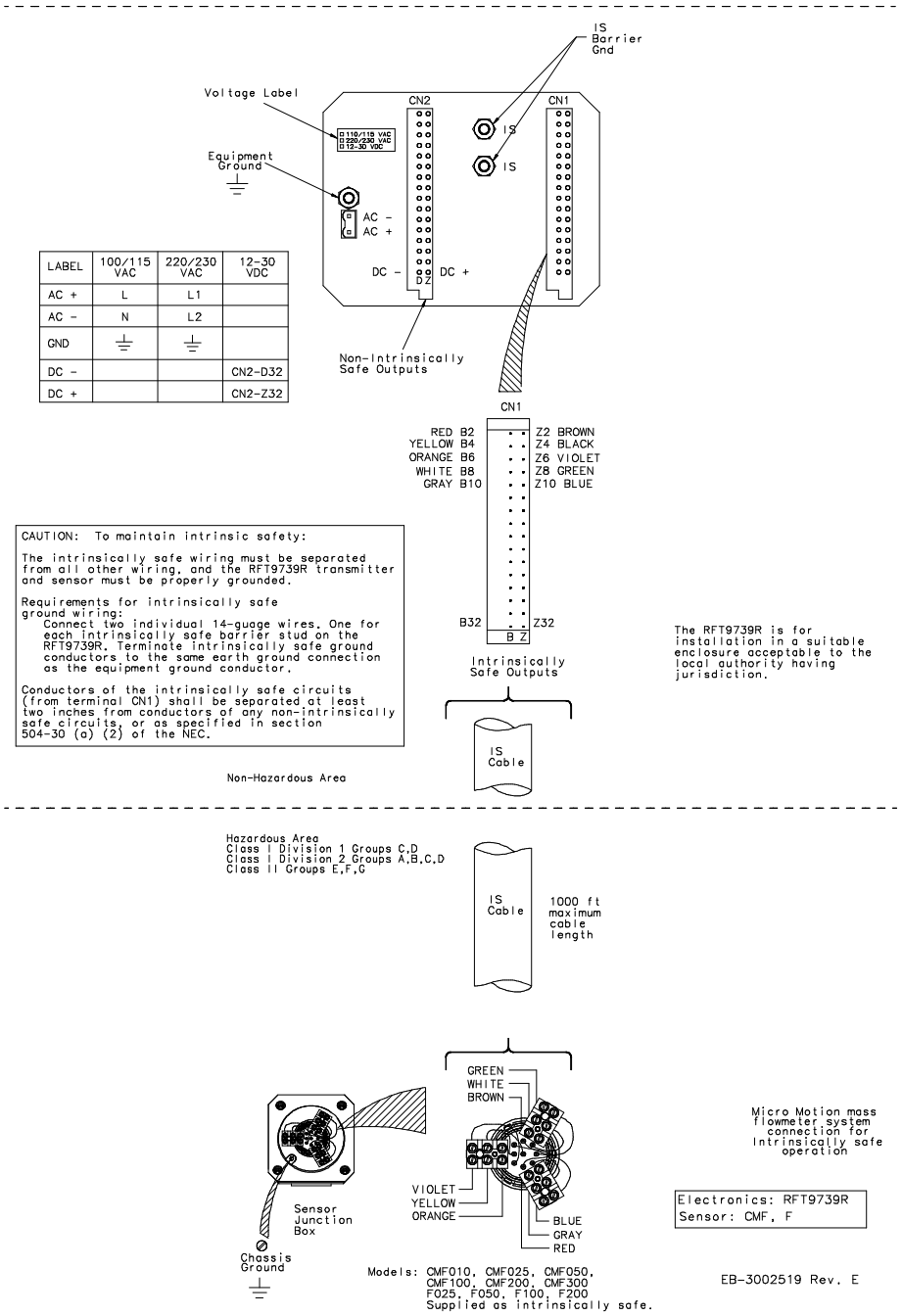
Installation	Drawing
9739 rack mount grounding	EW-3002535, Revision A
9739 rack mount with CMF or F sensors	EB-3002519, Revision E
9739 rack mount with CMF300A sensor	EB-3002931, Revision E
9739 rack mount with CMF400A sensor and a booster amplifier	EB-3005803, Revision C
9739 rack mount with D or DL sensors	EB-3002520, Revision E
9739 rack mount with D600 sensor	EB-1005070, Revision B
9739 rack mount with DT sensor	EB-3005606, Revision B

8.2.1 9739 rack mount grounding

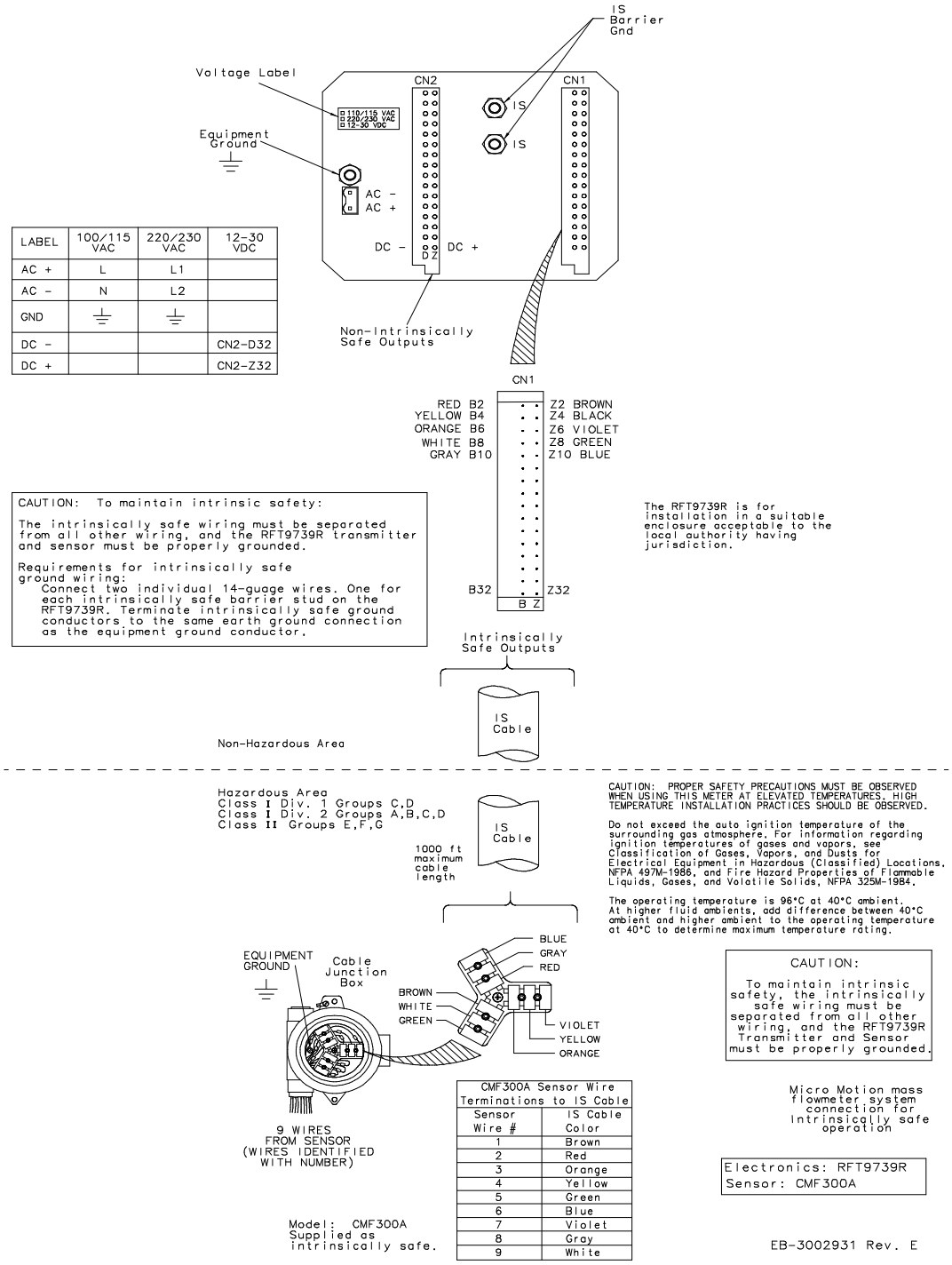


8.2.2 9739 rack mount with CMF or F sensors

This drawing does not apply to the CMF300A sensor or to the CMF400 sensor with booster amplifier.



8.2.3 9739 rack mount with CMF300A sensor



LABEL	100/115 VAC	220/230 VAC	12-30 VDC
AC +	L	L1	
AC -	N	L2	
GND	⏚	⏚	
DC -			CN2-D32
DC +			CN2-Z32

CAUTION: To maintain intrinsic safety:

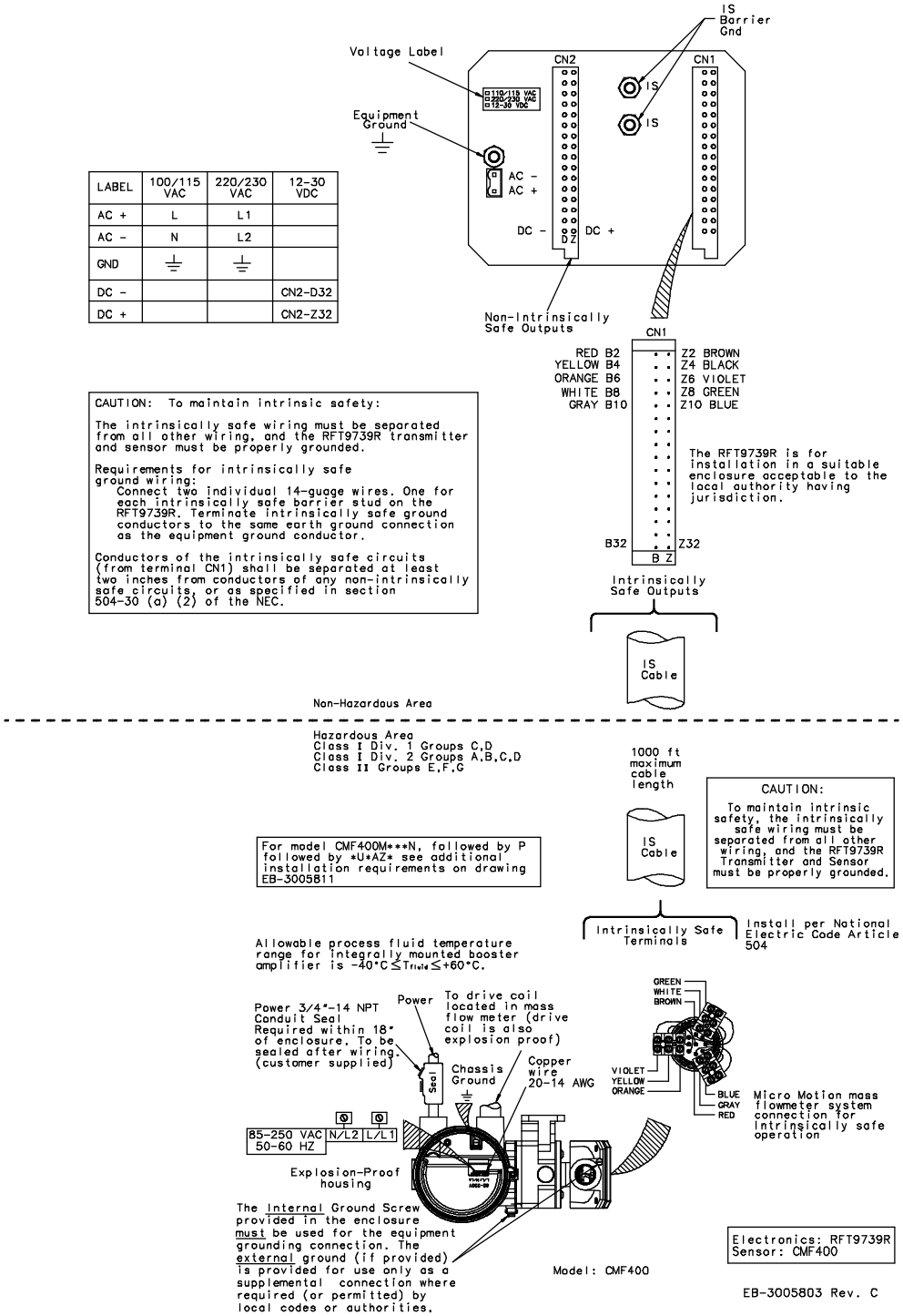
The intrinsically safe wiring must be separated from all other wiring, and the RFT9739R transmitter and sensor must be properly grounded.

Requirements for intrinsically safe ground wiring:
Connect two individual 14-guage wires. One for each intrinsically safe barrier stud on the RFT9739R. Terminate intrinsically safe ground conductors to the same earth ground connection as the equipment ground conductor.

The RFT9739R is for installation in a suitable enclosure acceptable to the local authority having jurisdiction.

CMF300A Sensor Wire Terminations to IS Cable	
Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

8.2.4 9739 rack mount with CMF400A sensor and a booster amplifier



LABEL	100/115 VAC	220/230 VAC	12-30 VDC
AC +	L	L1	
AC -	N	L2	
GND	⏚	⏚	
DC -			CN2-D32
DC +			CN2-Z32

CAUTION: To maintain intrinsic safety:

The intrinsically safe wiring must be separated from all other wiring, and the RFT9739R transmitter and sensor must be properly grounded.

Requirements for intrinsically safe ground wiring:
Connect two individual 14-guage wires. One for each intrinsically safe barrier stud on the RFT9739R. Terminate intrinsically safe ground conductors to the same earth ground connection as the equipment ground conductor.

Conductors of the intrinsically safe circuits (from terminal CN1) shall be separated at least two inches from conductors of any non-intrinsically safe circuits, or as specified in section 504-30 (a) (2) of the NEC.

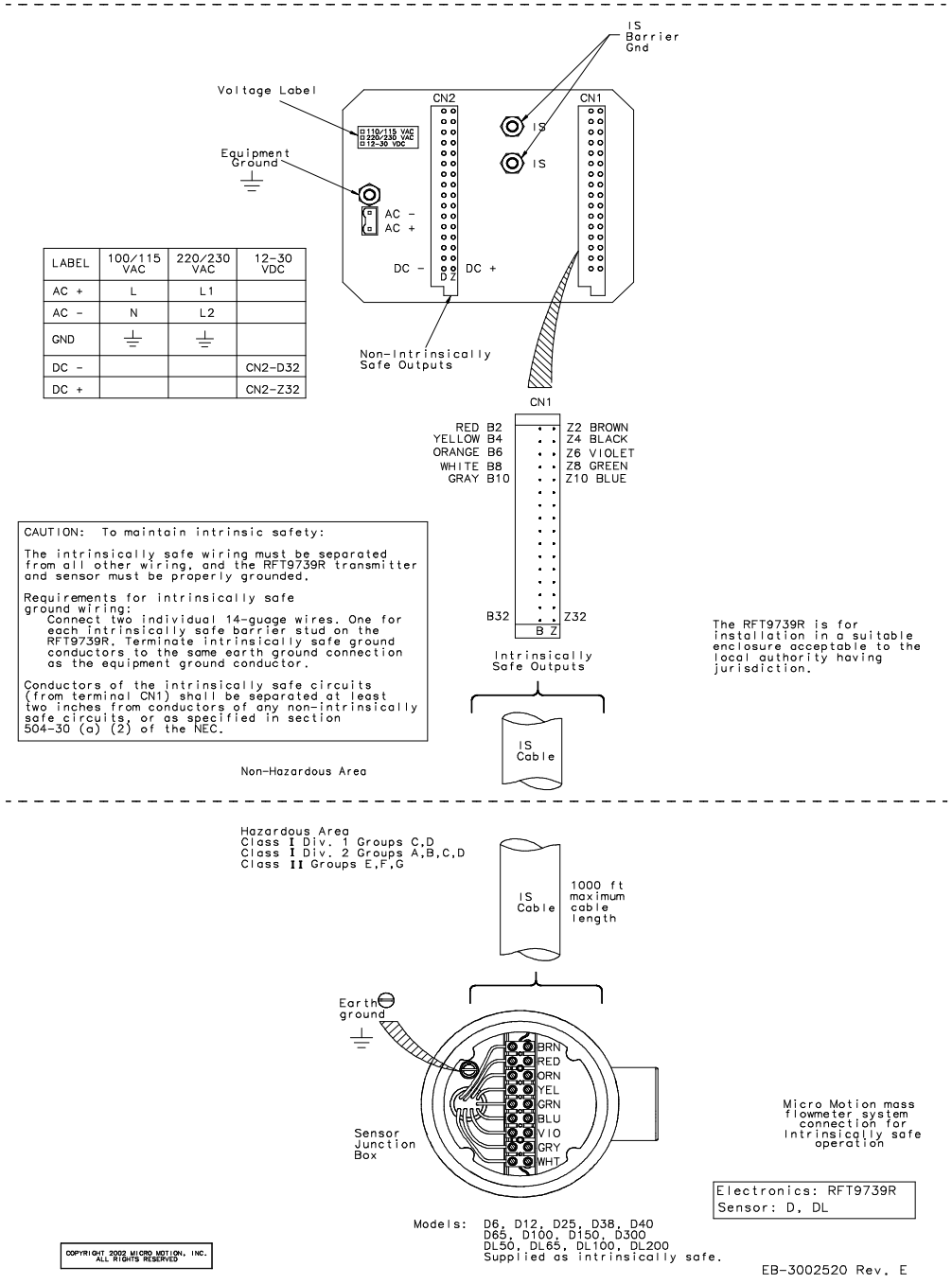
The RFT9739R is for installation in a suitable enclosure acceptable to the local authority having jurisdiction.

For model CMF400M***N, followed by P followed by *U*AZ* see additional installation requirements on drawing EB-3005811

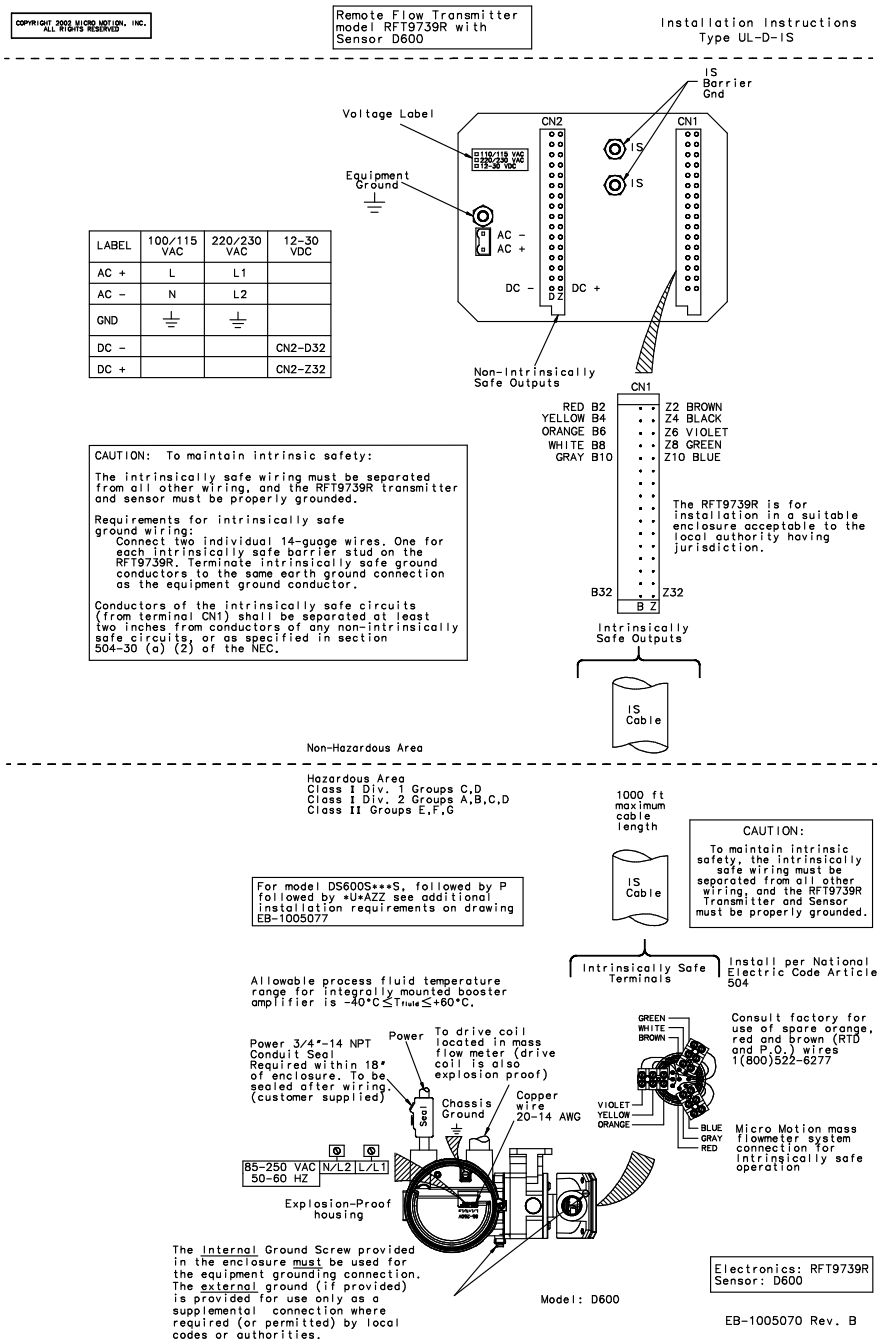
CAUTION:
To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the RFT9739R Transmitter and Sensor must be properly grounded.

8.2.5 9739 rack mount with D or DL sensors

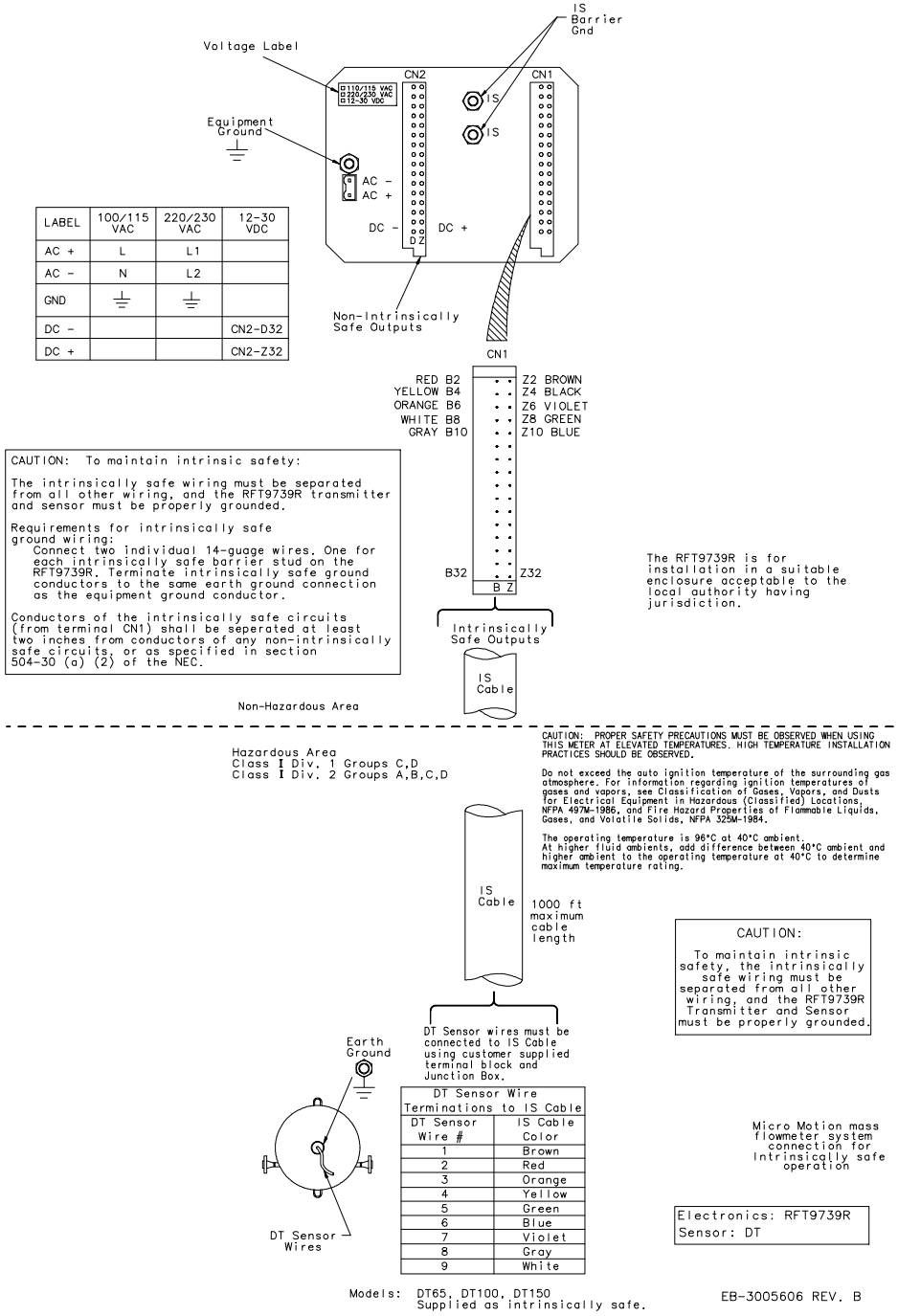
This drawing does not apply to D600 or DT sensors.



8.2.6 9739 rack mount with D600 sensor



8.2.7 9739 rack mount with DT sensor



LABEL	100/115 VAC	220/230 VAC	12-30 VDC
AC +	L	L1	
AC -	N	L2	
GND	⏚	⏚	
DC -			CN2-D32
DC +			CN2-Z32

CAUTION: To maintain intrinsic safety:

The intrinsically safe wiring must be separated from all other wiring, and the RFT9739R transmitter and sensor must be properly grounded.

Requirements for intrinsically safe ground wiring:
Connect two individual 14-guage wires. One for each intrinsically safe barrier stud on the RFT9739R. Terminate intrinsically safe ground conductors to the same earth ground connection as the equipment ground conductor.

Conductors of the intrinsically safe circuits (from terminal CN1) shall be seperated at least two inches from conductors of any non-intrinsically safe circuits, or as specified in section 504-30 (a) (2) of the NEC.

The RFT9739R is for installation in a suitable enclosure acceptable to the local authority having jurisdiction.

CAUTION: PROPER SAFETY PRECAUTIONS MUST BE OBSERVED WHEN USING THIS METER AT ELEVATED TEMPERATURES. HIGH TEMPERATURE INSTALLATION PRACTICES SHOULD BE OBSERVED.

Do not exceed the auto ignition temperature of the surrounding gas atmosphere. For information regarding ignition temperatures of gases and vapors, see Classification of Gases, Vapors, and Dusts for Electrical Equipment in Hazardous (Classified) Locations, NFPA 497M-1986, and Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids, NFPA 325M-1984.

The operating temperature is 96°C at 40°C ambient. At higher fluid ambients, add difference between 40°C ambient and higher ambient to the operating temperature at 40°C to determine maximum temperature rating.

CAUTION:

To maintain intrinsic safety, the intrinsically safe wiring must be separated from all other wiring, and the RFT9739R Transmitter and Sensor must be properly grounded.

DT Sensor Wire Terminations to IS Cable	
DT Sensor Wire #	IS Cable Color
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray
9	White

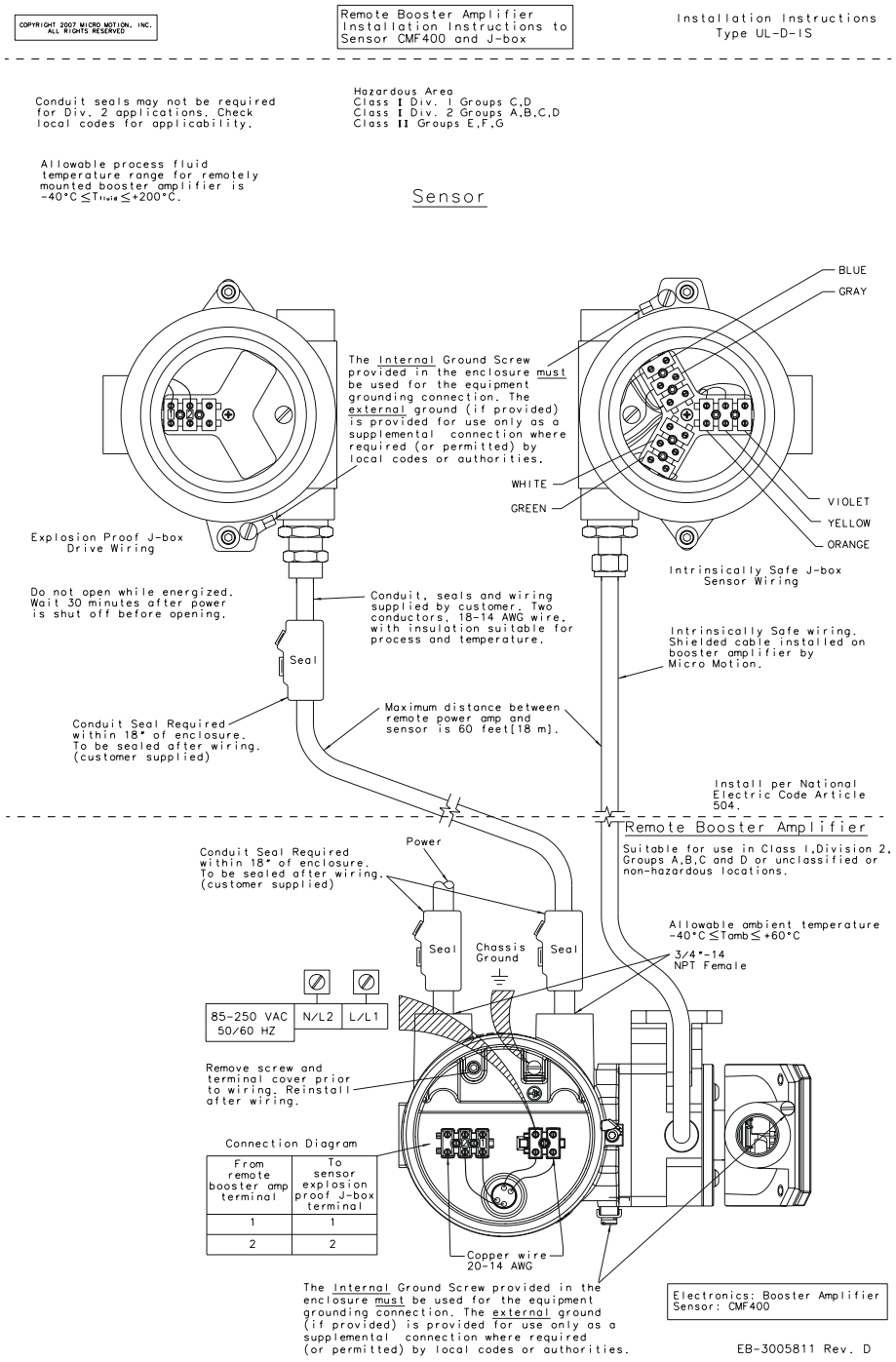
9 Booster amplifiers

9.1 Booster amplifiers with CMF400 sensors

List of drawings

Installation	Drawing
Booster amplifier with junction box and CMF400 sensor	EB-3005811, Revision D

9.1.1 Booster amplifier with junction box and CMF400 sensor

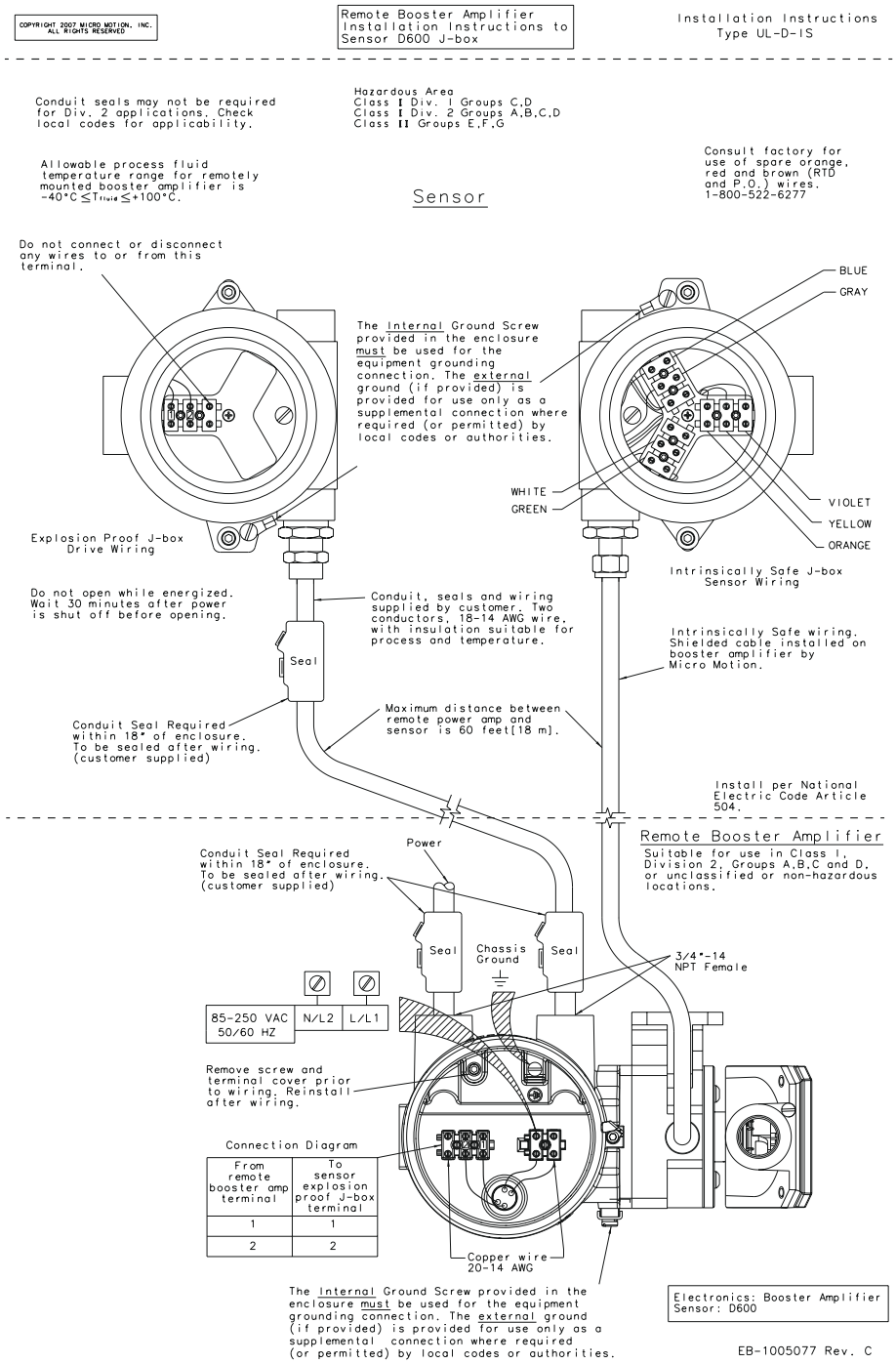


9.2 Booster amplifiers with D600 sensors

List of drawings

Installation	Drawing
Booster amplifier with junction box and D600 sensor	EB-1005077, Revision C

9.2.1 Booster amplifier with junction box and D600 sensor



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