



Member of the FM Global Group

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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

9410/34-3d0-f0, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 75°C;
ANI / I, II, III / 2 / ABCDEFG; 9410 6 031 001 1; Entity
I / 2 / AEx nA [ic] IIC T4 Ta = 75°C; 9410 6 031 001 1; Entity

d = design of terminals; 1 (screw type), 2 (Cage clamp), or 3 (detachable blocks)
f = number of channels; 3 (4 Channel), 4 (8 Channel) or 6 (12 Channel)

Entity:

Voc (V)	Isc (mA)	Po (W)	Lo [Cl. I, Div. 2, A, B]	Co [Cl. I, Div. 2, A, B]
< 25	54	1.35	0.27mH	80nF

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

9411/34-3d0-f0, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 75°C
ANI / I, II, III / 2 / ABCDEFG; 9411 6 031 003 1; Entity
I / 2 / AEx nA [ic] / IIC / T4 Ta = 75°C; 9411 6 031 003 1; Entity
d = design of terminals; 1 (screw type), 2 (Cage clamp), or 3 (detachable blocks)
f = number of channels; 3 (4 Channel) or 4 (8 Channel)

Entity Parameters:

Voc (V)	Isc (mA)	Po (W)	Lo [Cl. I, Div. 2, A, B]	Co [Cl. I, Div. 2, A, B]
< 25	54	1.35	0.27mH	80nF

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

9411/34-3de-f0, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 70°C; IP54

DIP / II, III / 1,2 / EFG / T4 Ta = 70°C; IP54
 ANI / I, II, III / 2 / ABCDEFG; 9411 6 031 0023 1; Entity
 I / 2 / AEx nA [ic] / IIC / T4 Ta = 70°C; 9411 6 031 003 1; Entity; IP54
 d = design of terminals; 1 (screw type), 2 (Cage clamp)
 e = type of enclosure; 3 (Plastic Type 8146), 4 (Metal Type 8125)
 f = number of channels; 3 (4 Channel) or 4 (8 Channel)
 Entity Parameters:

Voc (V)	Isc (mA)	Po (W)	Lo [Cl. I, Div. 2, A, B]	Co [Cl. I, Div. 2, A, B]
< 25	54	1.35	0.27mH	80nF

Special Conditions of Use:

1. For enclosure options 3, bonding between the conduit hubs shall be required.

9411/11-2d0-f0, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 75°C
 I / 1 / AEx m e / IIC / T4 Ta = 75°C; 9411 6 031 002 1
 d = design of terminals; 1 (screw type), 2 (Cage clamp)
 f = number of channels; 3 (4 Channel) or 4 (8 Channel)

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

9411/11-2de-f0, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 70°C; IP54
 DIP / II, III / 1,2 / EFG / T4 Ta = 70°C; IP54
 I / 1 / AEx m e / IIC / T4 Ta = 70°C; 9411 6 031 002 1; IP54
 d = design of terminals; 1 (screw type), 2 (Cage clamp)
 e = type of enclosure; 3 (Plastic Type 8146), 4 (Metal Type 8125)
 f = number of channels; 3 (4 Channel) or 4 (8 Channel)

Special Conditions of Use:

1. For enclosure options 3, bonding between the conduit hubs shall be required.

9411/21-2d0-f1, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 75°C
 AIS / I, II, III / 1 / ABCDEFG; 9411 6 031 001 1; Entity
 I / 1 / AEx m e [ia] / IIC / T4 Ta = 75°C; 9411 6 031 001 1; Entity

Entity Parameters:

V_{oc} = 15.7 V dc, I_{sc} = 245 mA, P_o = 960mW, C_a = 476 nF, L_a = 0.58 mH, L_o/R_o = 37 μH/Ω

d = design of terminals; 1 (screw type), 2 (Cage clamp), or 3 (detachable blocks, at spur only)

f = number of channels; 3 (4 Channel) or 4 (8 Channel)

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

9411/21-2de-f1, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 70°C; IP54
 DIP / II, III / 1, 2 / EFG / T4 Ta = 70°C; IP54
 AIS / I, II, III / 1 / ABCDEFG; 9411 6 031 001 1; Entity
 I / 1 / AEx m e [ia] / IIC / T4 Ta = 70°C; 9411 6 031 001 1; Entity; IP54

Entity Parameters:

V_{oc} = 15.7 V dc, I_{sc} = 245 mA, P_o = 960mW, C_a = 476 nF, L_a = 0.58 mH, L_o/ R_o = 37μH/Ω

d = design of terminals: 1 (screw type), 2 (Cage clap) or 3 (detachable terminal blocks, at spur only).

e = type of enclosure: 3 (Plastic Type 8146) or 4 (Metal Type 8125).
f = channels: 3 (4 channels) or 4 (8 channels).

Special Conditions of Use:

1. For enclosure options 3, bonding between the conduit hubs shall be required.

9411/24-3d0-f1, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 75°C;
AIS / I, II, III / 1 / ABCDEFG; 9411 6 031 004 1; Entity
I / 2 / AEx nA [ia] / IIC / T4 Ta = 75°C; 9411 6 031 004 1; Entity;

d = Connector design: 1 (screw type), 2 (Cage clamp) or 3 (detachable terminal blocks, at spur only).
f = channels: 3 (4 channels) or 4 (8 channels).

Entity Parameters:

$V_{oc} = 15.7$ V dc, $I_{sc} = 245$ mA, $P_o = 960$ mW, $C_o = 476$ nF, $L_o = 0.58$ mH, $L_o / R_o = 37\mu$ H/ Ω

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

9411/24-3de-f1, Field Device Coupler

NI / I / 2 / ABCD / T4 Ta = 70°C; IP54
DIP / II, III / 1, 2 / EFG / T4 Ta = 70°C; IP54;
AIS / I, II, III / 1 / ABCDEFG; 9411 6 031 004 1; Entity
I / 2 / AEx nA [ia] IIC T4 Ta = 70°C; 9411 6 031 004 1; Entity, IP54

d = design of terminals; 1 (screw type), 2 (Cage clamp) or 3 (detachable terminal blocks, at spur only)
e = type of enclosure; 3 (Plastic Type 8146), 4 (Metal Type 8125)
f = number of channels; 3 (4 Channel) or 4 (8 Channel)

Entity for Output:

$V_{oc} = 15.7$ V dc, $I_{sc} = 245$ mA, $P_o = 960$ mW, $C_o = 476$ nF, $L_o = 0.58$ mH, $L_o / R_o = 37\mu$ H/ Ω

Special Conditions of Use:

1. For enclosure options 3, bonding between the conduit hubs shall be required.

9412/0b-3d0-1g, Fieldbus Power Supply

NI / I / 2 / ABCD / T4 Ta = 70°C;
I / 2 / AEx nA nC / IIC / T4 Ta = 70°C; 9412 6 031 001 1;

b = output voltage: 0 ($V_{oc} = 30.4$), 1 ($V_{oc} = 17.3$) or 2 ($V_{oc} = 23.7$).
d = design: 0 (project version), 1 (with fault monitoring) or 4 (with signal diagnosis).
g = terminator function: 0 (terminator active "ON") or 1 (selectable terminator "ON" or "OFF").

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

9415/00-310-4g, Diagnosis Communication Module

NI / I / 2 / ABCD / T4 Ta = 70°C
ANI / I, II, III / 2 / ABCDEFG; 9415 6 031 001 1; Entity
I / 2 / AEx nA [ic] IIC T4 Ta = 70°C

g = Service interface; 0 (without) or 2 (RS232)

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

9418/0b-201-10, Fieldbus Terminator

NI / I / 2 / ABCD / T5 Ta = 75°C / T6 Ta = 40°C;
DIP / II, III / 2 / EFG / T5 Ta = 75°C / T6 Ta = 40°C;
I / 1 / AEx ib / IIC / T5 Ta = 75°C / T6 Ta = 40°C;
II, III / 21 / AEx ibD T100°C, Ta = 75°C or T65°C, Ta = 40°C;

b = type of external circuit: 1 (Non I.S. circuit) or 2 (I.S. circuit).

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

9419/abc-def-ghij, bus-Carrier

NI / I / 2 / ABCD / T4 Ta = 70°C;
I / 2 / AEx nA nC IIC T4 Ta = 70°C;

ab = segments supplied: 04 (4 segments) or 08 (8 segments).

c = type of supply: F (Simplex) or R (Redundant)

de = type of DCS system: XX (Universal)

f = version of bus-carrier: 1 to 9 (with DCM slot)

gh = type of host: 01 (simplex) or 02 (redundant)

ij = host connector: C1 (screw type terminal)

Special Conditions of Use:

1. Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application..

Equipment Ratings:

I. Intrinsically Safe Outputs

Nonincendive for Class I, Division 2, Groups A, B, C & D,

Increased Safety and Encapsulation for use in Class I, Zone 1, Group IIC;

Hazardous (Classified) indoor/outdoor (IP54) Locations

Intrinsically Safe Outputs, with entity parameters, for Connections to Class I, II & III, Division 1,

Groups A, B, C, D, E, F & G, and Class I, Zone 0, Group IIC, in accordance with manufacturer's Control Drawing No. 9411 6 031 002 1

II. Intrinsically Safe Outputs With Optional Enclosures

Nonincendive for Class I, Division 2, Groups A, B, C & D,

Increased Safety and Encapsulation for use in Class I, Zone 1, Group IIC;

Suitable for Class II, Division 2, Groups E, F & G

Dust-Ignition Proof for Class II & III, Division 1, Groups E, F & G

Hazardous (Classified) indoor/outdoor (TYPE 4X, IP54) Locations

Intrinsically Safe Outputs, with entity parameters, for Connections to Class I, II & III, Division 1,

Groups A, B, C, D, E, F & G, and Class I, Zone 0, Group IIC, in accordance with manufacturer's Control Drawing No. 9411 6 031 002 1

III. Non-Intrinsically Safe Outputs

Nonincendive for Class I, Division 2, Groups A, B, C & D,
Increased Safety and Encapsulation for use in Class I, Zone 1, Group IIC;
Hazardous (Classified) indoor/outdoor (IP54) Locations

IV. Non-Intrinsically Safe Outputs With Optional Enclosures

Nonincendive for Class I, Division 2, Groups A, B, C & D,
Increased Safety and Encapsulation for use in Class I, Zone 1, Group IIC;
Suitable for Class II, Division 2, Groups E, F & G
Dust-Ignition Proof for Class II & III, Division 1, Groups E, F & G
Hazardous (Classified) indoor/outdoor (TYPE 4X, IP54) Locations

FM Approved for:

R. STAHL Schaltgeraete GmbH
Am Bahnhof 30
D-74638 Waldenburg (Wurtt.) Germany

This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

3600	1998
3610	2010
3611	2004
3810	2005
ANSI/ISA-82.02.01	2004
ANSI/ISA 12.23.01	2002
ISA 12.16.01	2002
IEC60079-0	2004
IEC60079-11	2006
IEC60079-15	2005
IEC60529	2001

Original Project ID: 3026646

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Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
3042885	November 17, 2011		

FM Approvals LLC



James Marquedant
Group Manager Electrical

17 November 2011

Date

The Type 9410/34-3*0-*0 Field Device Coupler is an Explosion protected device for installation in Non-Hazardous, Class I, II, III Division 2 or Class 1, Zone 2 or Class II, III, Zone 21 Hazardous (Classified) Locations and provides nonincendive circuits / circuits with type of protection AEx ic for connection of fieldbus devices.

Field device coupler Type 9410/34-3d0-f0

d = numeral 1, 2 or 3 for design of terminal

- 1 = Screw type terminals;
- 2 = Cage clamp terminals
- 3 = detachable Terminal blocks
- 3 = 4 Channels;
- 4 = 8 Channels
- 6 = 12 Channels

f = numeral 3 or 4 for number of Channels

Nominal values are as follows:

	V _{nom}	I _{nom} (4 channels at 41mA)	I _{nom} (8 channels at 41mA)
Terminal TRUNK + / -	24 V DC (9 to 32 V DC)	184 mA	348 mA
Terminal SPUR + / -	24 V DC (9 to 32 V DC)	≤ 41 mA	≤ 41 mA

Entity parameters for the output circuits in type of protection AEx ic are as follows, provided the input voltage at the TRUNK is limited per AEx ic requirements. The output voltage at the SPUR is identical to that voltage supplied at the TRUNK:

Terminal TRUNK: + / -	V _{max} [V]	Terminal SPUR 1 to 4 (8): + / -	V _{OC} [V]	I _{SC} [mA]	P _O [W]	L _O CL I, DIV 1, A,B Zone 0, GP IIC	C _O CL I, DIV 1,A,B Zone 0, GP IIC
	≤ 25		≤ 25	54	1,35	0,27 mH	80 nF

Notes:

1. For Connections refer to chapter 10 of Operation instructions.
2. Installation should be in accordance with Article 504/505 of the National Electrical Code, ANSI/NFPA 70 and ANSI/ISA RP 12.06.01
3. Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
4. Each channel shall be installed within a separately shielded cable or a single cable with a separate shield for each channel.
5. Do not disconnect Non-I.S. field wiring unless area is known to be non hazardous.
6. Connect either non I.S. circuits or AEx ic circuits. Do not mix different types of circuits.
7. To guarantee circuits with Limited Energy per AEx ic at the output circuits (SPUR) use an appropriate supply (e.g. R. STAHL Type 9412) with an output voltage limited per AEx ic.
8. Do not disconnect voltage limited TRUNK unless area is known to be non hazardous.
9. All Terminal "S" for connection of the cable shield are internally interconnected and separated from all other circuits. Use (optional) ground busbar terminals for direct ground connection.
10. Ambient temperature: -40°C ... +75°C
11. Use a general purpose enclosure meeting the requirements of ANSI/ISA S82.02.01 for use in Non-Hazardous or Class I, Division 2, Hazardous (Classified) Locations.
12. Use an FM Approved Dust-ignition proof enclosure appropriate for environmental protection in Class II, Division 1, Groups E, F and G; and Class III, Hazardous (Classified) Locations.
13. The FDC Types 9410/34-3d0-f0 are to be snap mounted on DIN rail or screw mounted on a rail or plate.

The safety relevant statements of this document may be transferred into the operating instructions. Transferring the text, editorial changes of equivalent meaning are allowed.

			2011	Date	Name	Certification drawing	Scale	
			drawn	04.10.	Reistle		none	
			checked		Kaiser		Sheet 1 of 1	
						IS bus - Field Device Coupler Type 9410/34-3*0-*0	Agency	
							FM	
01	04.11.11	Reistle				9410 6 031 001 1		
Version	Date	Name					Ers. f.	Ers. d.
								A4



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The Type 9411/21-2**-*1 Field Device Coupler is an Explosion-protected device for installation in Non-Hazardous, Class I, II, III, Division 2, Groups A-G or Class I, Zone 1 Hazardous (Classified) Locations and provides intrinsically safe connections for four or eight field devices located in Class I, II, III, Division 1, Group A-G or Class I, Zone 0, [AEx ia] Group IIC/IIB hazardous locations according to NEC Article 504/505 as listed below.

Field device coupler Type 9411/21-2de-f1

- | | |
|--|---|
| d = numeral 1, 2 or 3 for design of terminal | 1 = Screw type terminals;
2 = Cage clamp terminals
3 = detachable terminal blocks (at SPURs only) |
| e = numeral 0, 3 or 4 for Protective Enclosure | 0 = without;
3 = Plastic (Type 8146);
4 = Metal (Type 8125) |
| f = numeral 3 or 4 for number of Channels | 3 = 4 Channels;
4 = 8 Channels |

Nominal values are as follows:

	V_{nom}	I_{nom} (4 channels)	I_{nom} (8 channels)
Terminal: TRUNK + / -	24 V DC; (16 V to 32 V DC)	130 mA; (200 mA to 100 mA)	160 mA; (255 mA to 120 mA)

Entity parameters for wiring configurations are as follows:

Terminals SPUR 1 to 4 (8): + / -	V_{OC} [V]	I_{SC} [mA]	P_O [mW]	L_o CL I, DIV 1, GP A, B / Zone 0, GP IIC	L_o CL I, DIV 1, GP C-G / Zone 0, GP IIB	C_o CL I, DIV 1, GP A, B / Zone 0, GP IIC	C_o CL I, DIV 1, GP C - G / Zone 0, GP IIB	L_o/R_o CL I, DIV 1, GP A, B / Zone 0, GP IIC	L_o/R_o CL I, DIV 1, GP C-G / Zone 0, GP IIB
	15,7	245	960	0,58 mH	2,9 mH	476 nF	2878 nF	37 μ H/ Ω	148 μ H/ Ω


Notes:

- For Connections refer to chapter 10 of Operation instruction.
- Intrinsically safe apparatus may be one of the following: switches, thermocouples, LEDs, RTDs, or Entity device connected in accordance with the manufacturer's installation instructions.
- For Entity concept use the appropriate parameters to ensure the following:

V_t or $V_{OC} \leq V_{max}$	$C_o, C_a \geq C_i + C_{cable}$	$P_o \leq P_i$
I_t or $I_{SC} \leq I_{max}$	$L_o, L_a \geq L_i + L_{cable}$	
- Electrical apparatus connected to the non-intrinsically safe Connections (Trunk IN, Trunk Out, and Term) shall not use or generate voltages > 250 V (U_{max}).
- Installation should be in accordance with Article 504/505 of the National Electrical Code, ANSI/NFPA 70 and ANSI/ISA RP 12.06.01
- Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
- Each channel shall be installed within a separately shielded cable or a single cable with a separate shield for each channel.
- Alternatively use Terminal "S" for connection of the cable shield for capacitive ($\leq 5,2$ nF) decoupled grounding or use ground busbar terminals for direct ground connection.
- Ambient temperature:

-40°C ... +75°C (Type 9411/21-2d0-c1)
-20°C ... +70°C (Type 9411/21-2de-f1, e = 3, 4)
- The following only applies for Type 9411/21-2d0-f1
 - Use a general purpose enclosure meeting the requirements of ANSI/ISA S82.02.01 for use in non-hazardous or Class I, Division 2, hazardous (classified) locations.
 - Use an FM Approved Dust-ignition proof enclosure appropriate for environmental protection in Class II, Division 1, Groups E, F and G; and Class III, hazardous (classified) locations.
 - The FDC Types 9411/21-2d0-f1 are to be snap mounted on DIN rail or screw mounted on a rail or plate.

The safety relevant statements of this document may be transferred into the operating instructions. Transferring the text, editorial changes of equivalent meaning are allowed.

Version	Date	Name	Certification drawing		Scale
	2006	Date			none
	drawn	24.05.	Einsiedler		
	checked		Kaiser		
			 IS bus - Field Device Coupler Type 9411/21-2**-*1 9411 6 031 001 1		Sheet
03	04.10.11	Reistle			1 of 1
02	20.09.10	Reistle			Agency
01	19.09.06	Einsiedler			FM
Version	Date	Name	Ers. f.	Ers. d.	A4

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The Type 9411/11-2**-*0 Field Device Coupler is an Explosion protected device for installation in Class I, Zone 1 or Class I, II, III, Division 2, Groups A-G Hazardous Areas and provides increased safety terminals for safe connection of non I.S. fieldbus circuits.

Field device coupler Type 9411/11-2de-f0

d = numeral 1 or 2 for design of terminal

e = numeral 0, 3 or 4 for Protective Enclosure

f = numeral 3 or 4 for number of Channels

1 = Screw type terminals;
 2 = Cage clamp terminals
 0 = without;
 3 = Plastic (Type 8146);
 4 = Metal (Type 8125)
 3 = 4 Channels;
 4 = 8 Channels


Nominal values are as follows:

	V _{nom}	I _{nom} (4 channel at 40 mA)	I _{nom} (8 channel at 40 mA)
Terminal TRUNK + / -	24 V (12 to 32 V)	182 mA	342 mA
Terminal SPUR + / -	24 V (12 to 32 V)	≤ 40 mA	≤ 40 mA

Notes:

- For Connections refer to chapter 10 of Operation instruction.
- Installation should be in accordance with Article 504/505 of the National Electrical Code, ANSI/NFPA 70
- Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
- Each channel shall be installed within a separately shielded cable or a single cable with a separate shield for each channel.
- Alternatively use Terminal "S" for connection of the cable shield for capacitive (≤ 5.2 nF) decoupled grounding or use ground busbar terminals for direct ground connection.
- Ambient temperature: -40°C ... +75°C (Type 9411/11-2a0-c0)
 -20°C ... +70°C (Type 9411/11-2ab-c0, b = 3, 4)
- The following only applies for Type 9411/11-2a0-c0
 - Use a general purpose enclosure meeting the requirements of ANSI/ISA S82.02.01 for use in Non-Hazardous or Class I, Division 2, Hazardous (Classified) Locations.
 - Use an FM Approved Dust-ignition proof enclosure appropriate for environmental protection in Class II, Division 1, Groups E, F and G; and Class III, Hazardous (Classified) Locations.
 - The FDC Types 9411/21-2a0-c0 are to be snap mounted on DIN rail or screw mounted on a rail or plate.

The safety relevant statements of this document may be transferred into the operating instructions. Transferring the text, editorial changes of equivalent meaning are allowed.

			2006	Date	Name	Certification drawing	Scale	
			drawn	24.05.	Einsiedler		IS bus - Field Device Coupler Type 9411/11-2**-*0	none
			checked		Kaiser			Sheet 1 of 1
03	04.10.11	Reistle				9411 6 031 002 1	Agency	
02	27.09.10	Reistle					FM	
01	19.09.06	Einsiedler						
Version	Date	Name				Ers. f.	Ers. d.	A4

The Type 9411/34-3**-*0 Field Device Coupler is an Explosion protected device for installation in Non-Hazardous, Class I, II, III Division 2 or Class 1, Zone 2 or Class II, III, Zone 21 Hazardous (Classified) Locations and provides nonincendive circuits / circuits with type of protection AEx ic for connection of fieldbus devices.

Field device coupler Type 9411/34-3de-f0

d = numeral 1 or 2 for design of terminal

e = numeral 0, 3 or 4 for Protective Enclosure

f = numeral 3 or 4 for number of Channels

1 = Screw type terminals;
 2 = Cage clamp terminals
 0 = without;
 3 = Plastic (Type 8146);
 4 = Metal (Type 8125)
 3 = 4 Channels;
 4 = 8 Channels

Nominal values are as follows:

	V _{nom}	I _{nom} (4 channels at 41mA)	I _{nom} (8 channels at 41mA)
Terminal TRUNK + / -	24 V DC (9 to 32 V DC)	184 mA	348 mA
Terminal SPUR + / -	24 V DC (9 to 32 V DC)	≤ 41 mA	≤ 41 mA


Entity parameters for the output circuits in type of protection AEx ic are as follows, provided the input voltage at the TRUNK is limited per AEx ic requirements. The output voltage at the SPUR is identical to that voltage supplied at the TRUNK:

Terminal TRUNK: + / -	V _{max} [V]	Terminal SPUR 1 to 4 (8): + / -	V _{OC} [V]	I _{SC} [mA]	P _O [W]	L _O CL I, DIV 2, A,B Zone 2, GP IIC	C _O CL I, DIV 2, A,B Zone 2, GP IIC
	≤ 25		≤ 25	54	1.35	0.27 mH	80 nF

Notes:

- For Connections refer to chapter 10 of Operation Instructions.
- Installation should be in accordance with Article 504/505 of the National Electrical Code, ANSI/NFPA 70 and ANSI/ISA RP 12.06.01
- Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
- Each channel shall be installed within a separately shielded cable or a single cable with a separate shield for each channel.
- Do not disconnect Non-I.S. field wiring unless area is known to be non hazardous.
- Connect either non I.S. circuits or AEx ic circuits. Do not mix different types of circuits.
- To guarantee circuits with Limited Energy per AEx ic at the output circuits (SPUR) use an appropriate supply (e.g. R. STAHL Type 9412) with an output voltage limited per AEx ic.
- Do not disconnect voltage limited TRUNK unless area is known to be non hazardous.
- All Terminal "S" for connection of the cable shield are internally interconnected and separated from all other circuits. Use (optional) ground busbar terminals for direct ground connection.
- Ambient temperature: -40°C ... +75°C (Type 9411/34-3d0-f0)
-20°C ... +70°C (Type 9411/34-3de-f0, e = 3, 4)
- The following only applies for Type 9411/34-3de-f0
 - Use a general purpose enclosure meeting the requirements of ANSI/ISA S82.02.01 for use in Non-Hazardous or Class I, Division 2, Hazardous (Classified) Locations.
 - Use an FM Approved Dust-ignition proof enclosure appropriate for environmental protection in Class II, Division 1, Groups E, F and G; and Class III, Hazardous (Classified) Locations.
 - The FDC Types 9411/34-3de-f0 are to be snapped mounted on DIN rail or screw mounted on a rail or plate.

The safety relevant statements of this document may be transferred into the operating instructions. Transferring the text, editorial changes of equivalent meaning are allowed.

Version	Date	Name	Certification drawing		Scale
	2010	Date	Name	IS bus - Field Device Coupler Type 9411/34-3**-*0	none
	drawn	20.09.	Reistle		Sheet 1 of 1
	checked		Kaiser		
01	04.10.11	Reistle			Agency FM
Version	Date	Name			Ers. f.

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The Type 9411/24-3**-*1 Field Device Coupler is an Explosion-protected device for installation in Non-Hazardous, Class I, II, III Division 2, Groups A-G or Class 1, Zone 2 Hazardous (Classified) Locations and provides intrinsically safe connections for four or eight field devices located in Class I, II, III, Division 1, Group A-G or Class I, Zone 0, [AEx ia] Group IIC/IIB Hazardous Locations according to NEC Article 504/505 as listed below.

Field device coupler Type 9411/24-3de-f1

- | | |
|--|---|
| d = numeral 1, 2 or 3 for design of terminal | 1 = Screw type terminals;
2 = Cage clamp terminals
3 = detachable terminal blocks (at SPURs only) |
| e = numeral 0, 3 or 4 for Protective Enclosure | 0 = without;
3 = Plastic (Type 8146);
4 = Metal (Type 8125) |
| f = numeral 3 or 4 for number of Channels | 3 = 4 Channels;
4 = 8 Channels |

Nominal values are as follows:

	V _{nom}	I _{nom} (4 channels)	I _{nom} (8 channels)
Terminal: TRUNK + / -	24 V DC; (16 V to 32 V DC)	130 mA; (200 mA to 100 mA)	160 mA; (255 mA to 120 mA)

Entity parameters for wiring configurations are as follows:

Terminals SPUR 1 to 4 (8): + / -	V _{OC} [V]	I _{SC} [mA]	P _O [mW]	L _o CL I, DIV1, GP A, B / Zone 0, GP IIC	L _o CL I, DIV 1, GP C-G / Zone 0, GP IIB	C _o CL I, DIV 1, GP A, B / Zone 0, GP IIC	C _o CL I, DIV 1, GP C - G / Zone 0, GP IIB	L _o /R _o CL I, DIV 1, GP A, B / Zone 0, GP IIC	L _o /R _o CL I, DIV 1, GP C-G / Zone 0, GP IIB
	15,7	245	960	0,58 mH	2,9 mH	476 nF	2878 nF	37 µH/Ω	148 µH/Ω


Notes:

- For Connections refer to chapter 10 of Operation instruction.
- Intrinsically safe apparatus may be one of the following: switches, thermocouples, LEDs, RTDs, or Entity device connected in accordance with the manufacturer's installation instructions.
- For Entity concept use the appropriate parameters to ensure the following:

V_t or $V_{OC} \leq V_{max}$	$C_o, C_a \geq C_i + C_{cable}$	$P_o \leq P_i$
I_t or $I_{SC} \leq I_{max}$	$L_o, L_a \geq L_i + L_{cable}$	
- Electrical apparatus connected to the non-intrinsically safe Connections (Trunk IN, Trunk Out, and Term) shall not use or generate voltages > 250 V (U_{max}).
- Installation should be in accordance with Article 504/505 of the National Electrical Code, ANSI/NFPA 70 and ANSI/ISA RP 12.06.01
- Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
- Each channel shall be installed within a separately shielded cable or a single cable with a separate shield for each channel.
- Alternatively use Terminal "S" for connection of the cable shield for capacitive (≤ 5,2 nF) decoupled grounding or use ground busbar terminals for direct ground connection.
- Ambient temperature:

-40°C ... +75°C (Type 9411/24-3d0-f1)
-20°C ... +70°C (Type 9411/24-3de-f1, e = 3, 4)
- The following only applies for Type 9411/24-3d0-f1
 - Use a general purpose enclosure meeting the requirements of ANSI/ISA S82.02.01 for use in non-hazardous or Class I, Division 2, Hazardous (Classified) Locations.
 - Use an FM Approved Dust-ignition proof enclosure appropriate for environmental protection in Class II, Division 1, Groups E, F and G; and Class III, Hazardous (Classified) Locations.
 - The FDC Types 9411/24-3d0-f1 are to be snap mounted on DIN rail or screw mounted on a rail or plate.

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			2010	Date	Name	Certification drawing		Scale
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			checked		Kaiser			Sheet
								1 of 1
01	04.10.11	Reistle				9411 6 031 004 1		Agency
Version	Date	Name				Ers. f.	Ers. d.	A4

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The Type 9412/0*-3*0-1* Fieldbus Power Supply is an Explosion protected device for installation in Non-Hazardous, Class I, II, III Division 2 or Class 1, Zone 2 or Class II, III, Zone 21 Hazardous (Classified) Locations .

Fieldbus Power Supply Type 9412/0b-3d0-1g

b = numeral 0, 1 or 2 for output voltage

d = numeral 0, 1 or 2 for design

g = numeral 0 or 1 for terminator function

0 = $U_o / V_{oc} = 30.4 \text{ V}$

1 = $U_o / V_{oc} = 17.3 \text{ V}$

2 = $U_o / V_{oc} = 23.7 \text{ V}$

0 = project version

1 = with fault monitoring

4 = with signal diagnosis

0 = terminator active "ON"

1 = Selectable Terminator "ON" or "OFF"

Nominal values are as follows:

Type	Terminal	V_{nom}	U_{max}	$I_{nom} @ 18 \text{ V}$	$I_{nom} @ 24 \text{ V}$	$I_{nom} @ 32 \text{ V}$
9412/00-3*0-1*	7 (+); 9 (-)	24 V DC (9 to 32 V DC)	32 V DC	1.00 A	0.74 A	0.58 A
9412/01-3*0-1*				0.54 A	0.41 A	0.31 A
9412/02-3*0-1*				0.74 A	0.56 A	0.42 A
9412/0*-3*0-1*	8, 9 (-)	30 V AC or DC	32 V AC/DC	100 mA		
9412/0*-3*0-1*	4, 5	5 V DC	32 V DC	5 mA		


The output circuit provides voltage limitation as per type of protection AEx ic. With a current limiter as per type of protection AEx ic in series an intrinsically safe circuit with type of protection AEx ic can be established.

Type	Terminal	$V_{nom} \text{ (min)}$	$V_{oc} \text{ [V]}$	$I_{sc} \text{ [mA]}$
9412/00-3*0-1*	10 (Trunk +), 11 (Trunk -), 12 (Shield)	28.0	30.4	not I.S. limited (depends on external current limitation)
9412/01-3*0-1*	13 (Host +), 14 (Host -), 15 (Shield)	15.0	17.3	
9412/01-3*0-1*	1 (bus-Carrier +), 2 (bus-Carrier -), 3 (bus-carrier shield), ,	21.4	23.7	

Notes:

- For Connections refer to chapter 10 of Operation Instructions.
- Installation should be in accordance with Article 504/505 of the National Electrical Code, ANSI/NFPA 70 and ANSI/ISA RP 12.06.01
- Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
- Do not connected circuits which use > 32 V (U_{max}) to the non I.S. side circuits of the FPS.
- Do not disconnect Non-I.S. field wiring unless area is known to be non hazardous.
- To guarantee field circuits with Limited Energy per AEx ic use an appropriate device with current limitation of type of protection AEx ic (e.g. R. STAHL Type 9411/34-3**-*0)
- Do not disconnect voltage limited output circuit unless area is known to be non hazardous.
- Each channel shall be installed within a separately shielded cable or a single cable with a separate shield for each channel.
- Ambient temperature: -20°C ... +70°C; depends on mounting and load conditions refer to chapter 6 of Operation Instructions.
- Use a general purpose enclosure meeting the requirements of ANSI/ISA S82.02.01 for use in Non-Hazardous or Class I, Division 2, Hazardous (Classified) Locations.
- Use an FM Approved Dust-ignition proof enclosure appropriate for environmental protection in Class II, Division 1, Groups E, F and G; and Class III, Hazardous (Classified) Locations.
- The FPS Types 9412/0*-3*0-1* are to be snapped mounted on DIN rail or onto bus-Carrier Type 9419.

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								1 of 1
01	04.10.11	Reistle				9412 6 031 001 1		Agency
Version	Date	Name				Ers. f.	Ers. d.	FM
								A4

The Type 9419/***-**f-**** bus-Carrier is a passive Explosion-protected device for installation in Class I, Zone 2 or Class II, III, Zone 22 or Class I, II, III, DIV 2, Groups A-G Hazardous (Classified) Locations.

The Type 9419/***-**f-**** bus-Carrier is used to ease mounting and wiring of 8 or 16 Fieldbus Power Supplies (FPS) Type 9412/0*3*0-1* for the single or redundant supply of 4 or 8 Fieldbus segments and optionally one Diagnosis Communication Module (DCM) Type 9415/00-310-4*.

bus-Carrier Type 9419/abc-def-ghij

- | | |
|---|----------------------------------|
| ab = numeral 2 digits for number of segments supplied | 04 = 4 segments |
| | 08 = 8 segments |
| c = letter for type of supply | F = simplex |
| | R = redundant |
| de = arbitrary two letter for type of DCS system | (e.g. XX = universal) |
| f = numeral 1 digit for version of bus-carrier | 1 to 9 = with DCM slot |
| gh = numeral 2 digits for type of Host | 01 = simplex |
| | 02 = redundant |
| ij = one letter and one numeral for Host connector | (e.g. C1 = screw type terminals) |


Nominal values are as follows:

	Terminal designation	V _{nom}	I _{nom}
Primary Power Supply	primary + -	24 V DC (9 to 32 V DC)	< 8 A
Redundant Power Supply	redundant + -	24 V DC (9 to 32 V DC)	< 8 A
Power-Fail Monitoring Relay	PF	30 V AC or DC	100 mA
Diagnosis Monitoring Relay	Dia	30 V AC or DC	100 mA
Host and Trunk	FPS x	30 V DC	500 mA

Notes:

- For Installation requirements refer to Operating Instructions.
- For Connections refer to Operating Instruction.
- Installation should be in accordance with Article 501 to 506 of the National Electrical Code, ANSI/NFPA 70 and ANSI/ISA RP 12.06.01
- Installation in Canada should be in accordance with the Canadian Electrical Code, CSA C22.1, Part 1, Appendix F.
- Ambient temperature: - 20 °C ... + 70 °C depends on mounting and load conditions; refer to Operating Instructions of Fieldbus Power Supply type 9412/0*3*0-1*.
- Use a general purpose enclosure meeting the requirements of ANSI/ISA S82.02.01 for use in Non-Hazardous or Class I, Division 2, Hazardous (Classified) Locations
- Use an FM Approved Dust-ignition proof enclosure appropriate for environmental protection in Class II, Division 2, Groups E, F and G; and Class III, or Class II, III, Zone 22 Hazardous (Classified) Locations.
- The bus-Carrier Type 9419/***-**f-**** are to be snap mounted on DIN rail or screw mounted on a rail or plate.
- The bus-Carrier Type 9419/***-**f-**** provides galvanic separation per type of protection Ex ic between the Host and Trunk circuit and the non-intrinsically safe circuits.

The safety relevant statements of this document may be transferred into the operating instructions. Transferring the text, editorial changes of equivalent meaning are allowed.

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