

ISSUE	CHANGE ORDER No	WEEK	ISSUE	CHANGE ORDER No	WEEK
01	SME-6095	0949	02	SME-7573	1306

PRELIMINARY

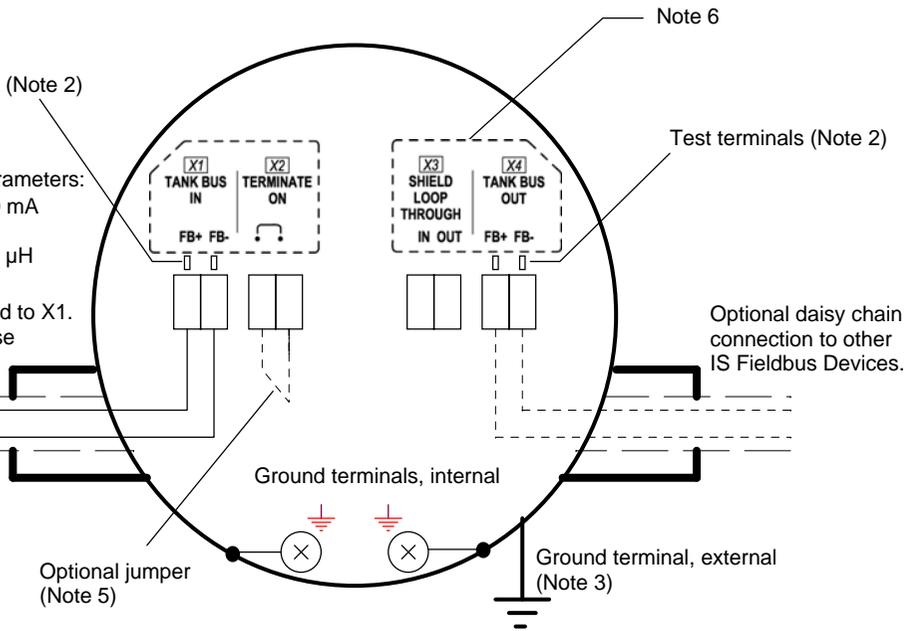
NON-HAZARDOUS LOCATION      HAZARDOUS LOCATION

FISCO power supply  
(Associated Apparatus, Notes 1, 4)  
FISCO Parameters:  
 $U_o \leq 17.5 \text{ V}$ ;  $I_o \leq 380 \text{ mA}$ ;  
 $P_o \leq 5.32 \text{ W}$   
 $C_o, L_o$ : Unspecified  
 $C_i \leq 5 \text{ nF}$ ;  $L_i \leq 10 \text{ uH}$

**FM APPROVED PRODUCT**  
**No revisions to this drawing**  
**without prior Factory Mutual**  
**Approval**

Test terminals (Note 2)  
X1 FISCO Input Parameters:  
 $U_i = 17.5 \text{ V}$ ;  $I_i = 380 \text{ mA}$   
 $P_i = 5.32 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \text{ uH}$

Note:  
Test terminals and X4 are internally connected to X1.  
I.e. Input parameters of X1 also apply for these connections.



**ROSEMOUNT 5900 SERIES Radar Level Gauge**

FISCO Field Device for use in      ATEX:  $\text{II } 1/2 \text{ G Ex ia IIC T4 } (-50 \text{ }^\circ\text{C} < T_a < +80 \text{ }^\circ\text{C})$   
Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G      IECEx: Ex ia IIC Ga/Gb T4 (-50 °C < Ta < +80 °C)  
Class I Zone 0/1 AEx ia IIC  
Ex ia IIC  
Temperature Class T4, -50 °C < Ta < +80 °C

- Notes:
- Control equipment connected to the Associates Apparatus must not use or generate more than 250 VRMS or VDC.
  - Test terminals for temporary connection of Intrinsically Safe Rosemount 375 Field Communicator.
  - Earth connection cable area: minimum 4 mm<sup>2</sup>.
  - Installation in the USA should be in accordance with ANSI/ISA-RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70). Dust tight conduit seals must be used when installed in Class II and Class III environments.
  - The integrated line terminator is connected over the bus when a jumper is placed in the terminal block.
  - Terminal Markings are labeled in the Terminal Compartment

WARNING: To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.  
WARNING: Substitution of components may impair Intrinsic Safety.  
WARNING: Parabolic and Array antennas with plastic surfaces may, under certain extreme conditions, generate an ignition-capable level of electrostatic charge. Therefore, when these antennas are used in Class I, Division 1, Groups A and B, appropriate measures must be taken to prevent electrostatic discharge.

**FIELDBUS INTRINSICALLY SAFE CONCEPT (FISCO) APPROVAL**

FISCO allows interconnection of intrinsically safe apparatus to associated apparatus not specially examined in such combination. The criteria for interconnection is that the voltage ( $U_i$  or  $V_{max}$ ), the current ( $I_i$  or  $I_{max}$ ), and the power ( $P_i$  or  $P_{max}$ ) which an intrinsically safe apparatus can receive and remain intrinsically safe considering faults, must be equal or greater than voltage ( $U_o$ ,  $V_{oc}$  or  $V_t$ ), the current ( $I_o$ ,  $I_{sc}$  or  $I_t$ ) and the power ( $P_o$  or  $P_{max}$ ) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance ( $C_i$ ) and the inductance ( $L_i$ ) of each apparatus (other than the termination) connected to the Fieldbus must be less than or equal to 5 nF and 10 uH respectively.

In each I.S. Fieldbus segment only one active device, normally the Associated Apparatus, is allowed to provide the necessary energy for the Fieldbus. The voltage ( $U_o$ ,  $V_{oc}$  or  $V_t$ ) of the Associated Apparatus is limited to a range of 14 V to 17.5 V. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except a leakage current of 50 uA for each connected device. Separately powered equipment needs galvanic isolation to assure that the intrinsically safe Fieldbus circuit remains passive.

The cables used to interconnect devices need to have the parameters in the following range:

- Loop Resistance  $R_c$ : 15.....150 ohm/km
- Loop Inductance  $L_c$ : 0.4.....1 mH/km
- Capacitance per unit length  $C_c$ : 45.....200 nF/km
- $C_c = C_c \text{ line to line} + 0.5 C_c \text{ line to screen}$ , if both lines are floating or
- $C_c = C_c \text{ line to line} + C_c \text{ line to screen}$ , if screen is connected to one line
- Length of trunk cable: Less than or equal to 1 km
- Length of spur cable: Less than or equal to 60 m

At each end of the trunk cable an approved infallible line terminator with the following parameters should be installed:  $R \geq 90 \text{ ohm}$ ,  $C \leq 2.2 \text{ uF}$  (recommended parameters are:  $R = 100 \pm 2 \text{ ohm}$ ,  $C = 1.0 \pm 0.2 \text{ uF}$ )  
One of the allowed terminations may be integrated in the Associated Apparatus.  
The device is also equipped with an integrated line terminator, see note 5.  
FISCO limits the number of passive devices connected to a single segment to 32 devices. If the above rules are respected, a total length of up to 1000 m of cable is permitted (sum of trunk and spur cables). The inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

<b>9240040-917</b>	ISSUED BY <b>EE-MK</b>	WEEK <b>0848</b>	PRODUCT CODE <b>5900</b>	TITLE <b>SYSTEM CONTROL DWG.</b>
	APPROVED BY <b>EAp</b>	WEEK <b>0949</b>	DOC. TYPE <b>6</b>	FILE <b>OrCAD</b>
	ALL DIMENSIONS ARE IN MILLIMETRES. TOLERANCES, UNLESS OTHERWISE STATED:			FINISH, UNLESS OTHERWISE STATED:
	<b>ROSEMOUNT</b>			1 ST ANGLE      SCALE
			<b>9240040-917</b>	DWG NO. <b>9240040-917</b>
			<b>02</b>	ISSUE <b>02</b>
			<b>1 / 7</b>	SHEET <b>1 / 7</b>
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PRELIMINARY

NON-HAZARDOUS LOCATION      HAZARDOUS LOCATION

FISCO power supply  
(Associated Apparatus, Notes 1, 4)  
FISCO Parameters:  
 $U_o \leq 17.5 \text{ V}$ ;  $I_o \leq 380 \text{ mA}$ ;  
 $P_o \leq 5.32 \text{ W}$   
Co, Lo: Unspecified  
 $C_i \leq 5 \text{ nF}$ ;  $L_i \leq 10 \text{ uH}$

**FM APPROVED PRODUCT**  
No revisions to this drawing  
without prior Factory Mutual  
Approval

**FIELDBUS INTRINSICALLY SAFE CONCEPT (FISCO) APPROVAL**

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In each I.S. Fieldbus segment only one active device, normally the Associated Apparatus, is allowed to provide the necessary energy for the Fieldbus. The voltage ( $U_o$ ,  $V_{oc}$  or  $V_t$ ) of the Associated Apparatus is limited to a range of 14 V to 17.5 V. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except a leakage current of 50 uA for each connected device. Separately powered equipment needs galvanic isolation to assure that the intrinsically safe Fieldbus circuit remains passive.

The cables used to interconnect devices need to have the parameters in the following range:

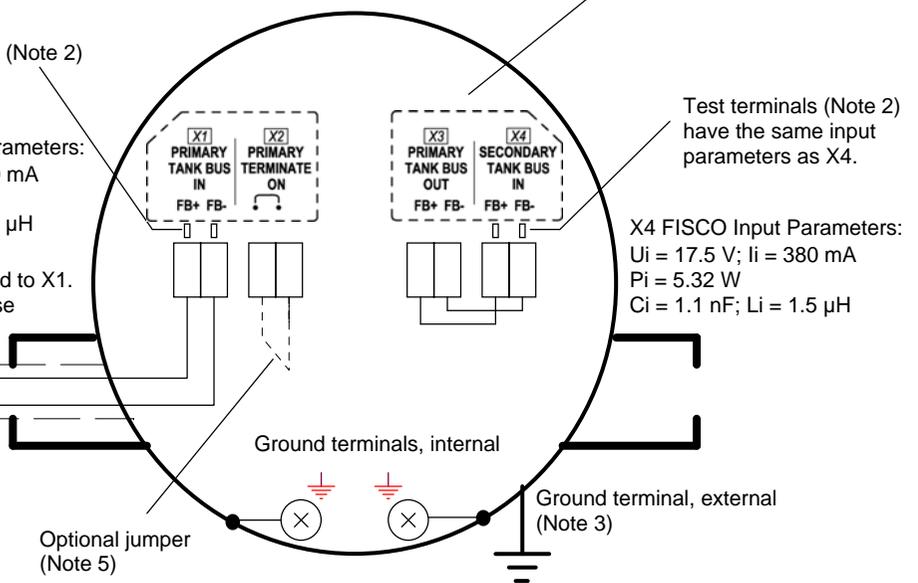
- Loop Resistance  $R_c$ : 15.....150 ohm/km
- Loop Inductance  $L_c$ : 0.4.....1 mH/km
- Capacitance per unit length  $C_c$ : 45.....200 nF/km
- $C_c = C_c \text{ line to line} + 0.5 C_c \text{ line to screen}$ , if both lines are floating or
- $C_c = C_c \text{ line to line} + C_c \text{ line to screen}$ , if screen is connected to one line
- Length of trunk cable: Less than or equal to 1 km
- Length of spur cable: Less than or equal to 60 m

At each end of the trunk cable an approved infallible line terminator with the following parameters should be installed:  $R \geq 90 \text{ ohm}$ ,  $C \leq 2.2 \text{ uF}$  (recommended parameters are:  $R = 100 \pm 2 \text{ ohm}$ ,  $C = 1.0 \pm 0.2 \text{ uF}$ )  
One of the allowed terminations may be integrated in the Associated Apparatus.  
The device is also equipped with an integrated line terminator, see note 5.  
FISCO limits the number of passive devices connected to a single segment to 32 devices. If the above rules are respected, a total length of up to 1000 m of cable is permitted (sum of trunk and spur cables). The inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

Note:  
Test terminals and X3 are internally connected to X1.  
I.e. Input parameters of X1 also apply for these connections.

X1 FISCO Input Parameters:  
 $U_i = 17.5 \text{ V}$ ;  $I_i = 380 \text{ mA}$   
 $P_i = 5.32 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \text{ uH}$

Note 6



Test terminals (Note 2) have the same input parameters as X4.

X4 FISCO Input Parameters:  
 $U_i = 17.5 \text{ V}$ ;  $I_i = 380 \text{ mA}$   
 $P_i = 5.32 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \text{ uH}$

**ROSEMOUNT 5900 SERIES Radar Level Gauge**

FISCO Field Device for use in Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G  
ATEX: II 1/2 G Ex ia IIC T4 (-50 °C <Ta< +80 °C)  
Class I Zone 0/1 AEx ia IIC  
IECEx: Ex ia IIC Ga/Gb T4 (-50 °C <Ta< +80 °C)  
Ex ia IIC  
Temperature Class T4, -50 °C <Ta< +80 °C

- Notes:
- Control equipment connected to the Associates Apparatus must not use or generate more than 250 VRMS or VDC.
  - Test terminals for temporary connection of Intrinsically Safe Rosemount 375 Field Communicator.
  - Earth connection cable area: minimum 4 mm<sup>2</sup>.
  - Installation in the USA should be in accordance with ANSI/ISA-RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70). Dust tight conduit seals must be used when installed in Class II and Class III environments.
  - The integrated line terminator is connected over the bus when a jumper is placed in the terminal block.
  - Terminal Markings are labeled in the Terminal Compartment

**WARNING:** To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.

**WARNING:** Substitution of components may impair Intrinsic Safety.

**WARNING:** Parabolic and Array antennas with plastic surfaces may, under certain extreme conditions, generate an ignition-capable level of electrostatic charge. Therefore, when these antennas are used in Class I, Division 1, Groups A and B, appropriate measures must be taken to prevent electrostatic discharge.

<b>9240040-917</b>	ISSUED BY <b>EE-MK</b>	WEEK <b>0848</b>	PRODUCT CODE <b>5900</b>	TITLE <b>SYSTEM CONTROL DWG.</b>
	APPROVED BY <b>EAp</b>	WEEK <b>0949</b>	DOC. TYPE <b>6</b>	FILE <b>OrCAD</b>
	ALL DIMENSIONS ARE IN MILLIMETRES. TOLERANCES, UNLESS OTHERWISE STATED:			FINISH, UNLESS OTHERWISE STATED:
	<b>ROSEMOUNT</b>			1 ST ANGLE 
				<b>9240040-917</b>
				ISSUE <b>02</b>
				SHEET <b>2 / 7</b>
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**PRELIMINARY**

NON-HAZARDOUS LOCATION

HAZARDOUS LOCATION

FISCO power supply  
(Associated Apparatus, Notes 1, 4)  
FISCO Parameters:  
 $U_o \leq 17.5 \text{ V}$ ;  $I_o \leq 380 \text{ mA}$ ;  
 $P_o \leq 5.32 \text{ W}$   
Co, Lo: Unspecified  
 $C_i \leq 5 \text{ nF}$ ;  $L_i \leq 10 \text{ uH}$

**FM APPROVED PRODUCT**  
No revisions to this drawing without prior Factory Mutual Approval

FISCO power supply  
(Associated Apparatus, Notes 1, 4)  
FISCO Parameters:  
 $U_o \leq 17.5 \text{ V}$ ;  $I_o \leq 380 \text{ mA}$ ;  
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Co, Lo: Unspecified  
 $C_i \leq 5 \text{ nF}$ ;  $L_i \leq 10 \text{ uH}$

**Note 7: Both connections may be connected to one single FISCO power supply.**

Note:  
Test terminals and X3 are internally connected to X1.  
I.e. Input parameters of X1 also apply for these connections.

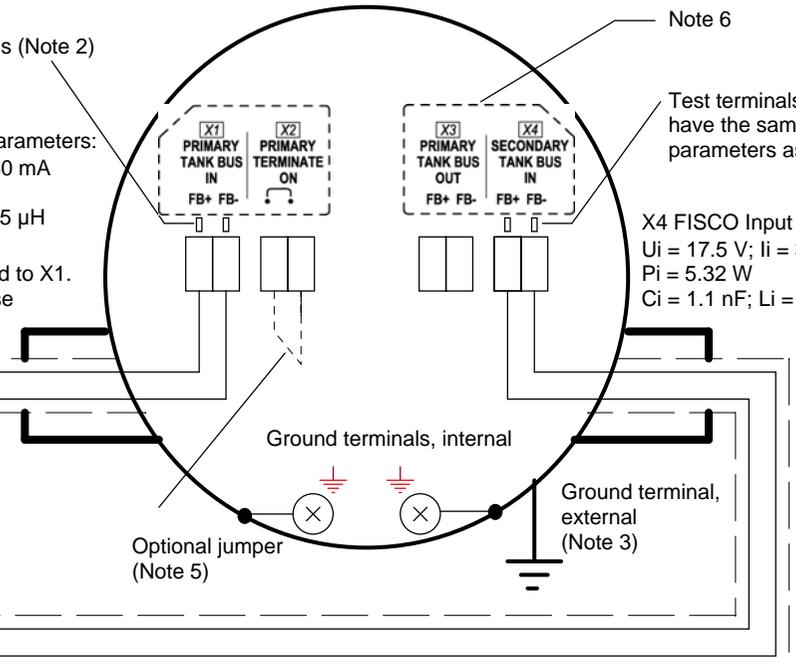
Test terminals (Note 2)

X1 FISCO Input Parameters:  
 $U_i = 17.5 \text{ V}$ ;  $I_i = 380 \text{ mA}$   
 $P_i = 5.32 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \text{ uH}$

Note 6

Test terminals (Note 2) have the same input parameters as X4.

X4 FISCO Input Parameters:  
 $U_i = 17.5 \text{ V}$ ;  $I_i = 380 \text{ mA}$   
 $P_i = 5.32 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \text{ uH}$



**ROSEMOUNT 5900 SERIES Radar Level Gauge**

FISCO Field Device for use in  
Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G  
Class I Zone 0/1 AEx ia IIC  
Ex ia IIC  
Temperature Class T4, -50 °C <Ta< +80 °C

ATEX: II 1/2 G Ex ia IIC T4 (-50 °C <Ta< +80 °C)  
IECEx: Ex ia IIC Ga/Gb T4 (-50 °C <Ta< +80 °C)

Notes:

- Control equipment connected to the Associates Apparatus must not use or generate more than 250 VRMS or VDC.
- Test terminals for temporary connection of Intrinsically Safe Rosemount 375 Field Communicator.
- Earth connection cable area: minimum 4 mm<sup>2</sup>.
- Installation in the USA should be in accordance with ANSI/ISA-RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).  
Dust tight conduit seals must be used when installed in Class II and Class III environments.
- The integrated line terminator is connected over the bus when a jumper is placed in the terminal block.
- Terminal Markings are labeled in the Terminal Compartment

WARNING: To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.

WARNING: Substitution of components may impair Intrinsic Safety.

WARNING: Parabolic and Array antennas with plastic surfaces may, under certain extreme conditions, generate an ignition-capable level of electrostatic charge. Therefore, when these antennas are used in Class I, Division 1, Groups A and B, appropriate measures must be taken to prevent electrostatic discharge.

**FIELDBUS INTRINSICALLY SAFE CONCEPT (FISCO) APPROVAL**

FISCO allows interconnection of intrinsically safe apparatus to associated apparatus not specially examined in such combination. The criteria for interconnection is that the voltage ( $U_i$  or  $V_{max}$ ), the current ( $I_i$  or  $I_{max}$ ), and the power ( $P_i$  or  $P_{max}$ ) which an intrinsically safe apparatus can receive and remain intrinsically safe considering faults, must be equal or greater than voltage ( $U_o$ ,  $V_{oc}$  or  $V_t$ ), the current ( $I_o$ ,  $I_{sc}$  or  $I_t$ ) and the power ( $P_o$  or  $P_{max}$ ) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance ( $C_i$ ) and the inductance ( $L_i$ ) of each apparatus (other than the termination) connected to the Fieldbus must be less than or equal to 5 nF and 10 uH respectively.

In each I.S. Fieldbus segment only one active device, normally the Associated Apparatus, is allowed to provide the necessary energy for the Fieldbus. The voltage ( $U_o$ ,  $V_{oc}$  or  $V_t$ ) of the Associated Apparatus is limited to a range of 14 V to 17.5 V. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except a leakage current of 50 uA for each connected device. Separately powered equipment needs galvanic isolation to assure that the intrinsically safe Fieldbus circuit remains passive.

The cables used to interconnect devices need to have the parameters in the following range:

- Loop Resistance  $R_c$ : 15.....150 ohm/km
- Loop Inductance  $L_c$ : 0.4.....1 mH/km
- Capacitance per unit length  $C_c$ : 45.....200 nF/km
- $C_c = C_c$  line to line + 0.5  $C_c$  line to screen, if both lines are floating or
- $C_c = C_c$  line to line +  $C_c$  line to screen, if screen is connected to one line
- Length of trunk cable: Less than or equal to 1 km
- Length of spur cable: Less than or equal to 60 m

At each end of the trunk cable an approved infallible line terminator with the following parameters should be installed:  $R \geq 90 \text{ ohm}$ ,  $C = 2.2 \text{ uF}$  (recommended parameters are:  $R = 100 \pm 2 \text{ ohm}$ ,  $C = 1.0 \pm 0.2 \text{ uF}$ )  
One of the allowed terminations may be integrated in the Associated Apparatus.  
The device is also equipped with an integrated line terminator, see note 5.  
FISCO limits the number of passive devices connected to a single segment to 32 devices. If the above rules are respected, a total length of up to 1000 m of cable is permitted (sum of trunk and spur cables). The inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

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	APPROVED BY <b>EAp</b>	WEEK <b>0949</b>	DOC. TYPE <b>6</b>	FILE <b>OrCAD</b>
	ALL DIMENSIONS ARE IN MILLIMETRES. TOLERANCES, UNLESS OTHERWISE STATED:			FINISH, UNLESS OTHERWISE STATED:
	<b>ROSEMOUNT</b>			1 ST ANGLE
<b>9240040-917</b>				ISSUE <b>02</b>
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**PRELIMINARY**

NON-HAZARDOUS LOCATION

HAZARDOUS LOCATION

FISCO power supply  
(Associated Apparatus, Notes 1, 4)  
FISCO Parameters:  
 $U_o \leq 17.5 \text{ V}$ ;  $I_o \leq 380 \text{ mA}$ ;  
 $P_o \leq 5.32 \text{ W}$   
Co, Lo: Unspecified  
 $C_i \leq 5 \text{ nF}$ ;  $L_i \leq 10 \text{ uH}$

**FM APPROVED PRODUCT**  
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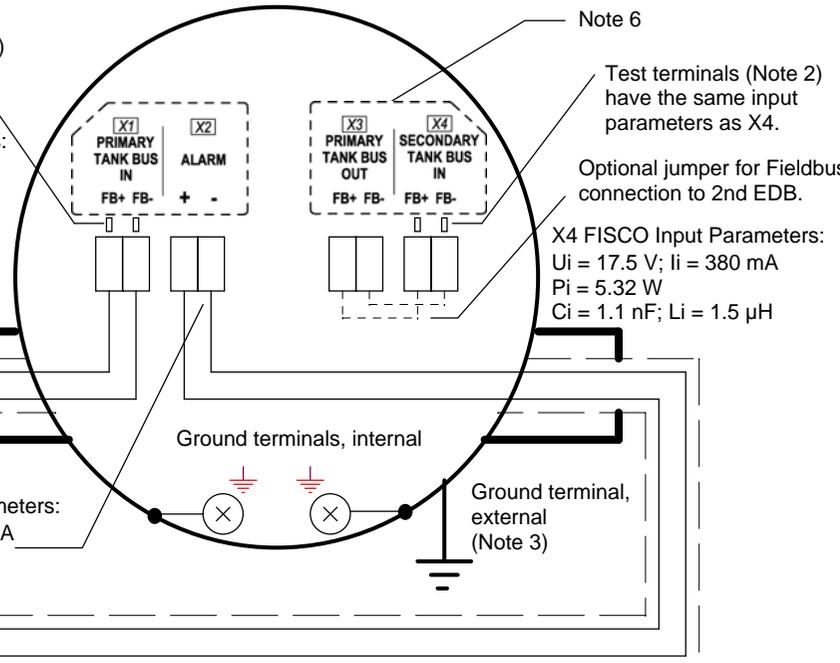
**Note 7: Both connections**  
**may be connected to one**  
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Note:  
Test terminals and X3 are internally connected to X1.  
I.e. Input parameters of X1 also apply for these connections.

SIL Alarm

Test terminals (Note 2)  
X1 FISCO Input Parameters:  
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 $P_i = 5.32 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \text{ uH}$

X2 FISCO Input Parameters:  
 $U_i = 17.5 \text{ V}$ ;  $I_i = 380 \text{ mA}$   
 $P_i = 5.32 \text{ W}$   
 $C_i = 0 \text{ nF}$ ;  $L_i = 0 \text{ uH}$



**ROSEMOUNT 5900 SERIES Radar Level Gauge**

FISCO Field Device for use in Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G  
ATEX:  $\text{Ex ia IIC T4 } (-50 \text{ }^\circ\text{C} < T_a < +80 \text{ }^\circ\text{C})$   
IECEX:  $\text{Ex ia IIC Ga/Gb T4 } (-50 \text{ }^\circ\text{C} < T_a < +80 \text{ }^\circ\text{C})$   
Class I Zone 0/1 AEx ia IIC  
Ex ia IIC  
Temperature Class T4,  $-50 \text{ }^\circ\text{C} < T_a < +80 \text{ }^\circ\text{C}$

Notes:

- Control equipment connected to the Associates Apparatus must not use or generate more than 250 VRMS or VDC.
- Test terminals for temporary connection of Intrinsically Safe Rosemount 375 Field Communicator.
- Earth connection cable area: minimum 4 mm<sup>2</sup>.
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In each I.S. Fieldbus segment only one active device, normally the Associated Apparatus, is allowed to provide the necessary energy for the Fieldbus. The voltage ( $U_o$ ,  $V_{oc}$  or  $V_t$ ) of the Associated Apparatus is limited to a range of 14 V to 17.5 V. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except a leakage current of 50 uA for each connected device. Separately powered equipment needs galvanic isolation to assure that the intrinsically safe Fieldbus circuit remains passive.

The cables used to interconnect devices need to have the parameters in the following range:

- Loop Resistance  $R_c$ : 15.....150 ohm/km
- Loop Inductance  $L_c$ : 0.4.....1 mH/km
- Capacitance per unit length  $C_c$ : 45.....200 nF/km
- $C_c = C_c \text{ line to line} + 0.5 C_c \text{ line to screen}$ , if both lines are floating or
- $C_c = C_c \text{ line to line} + C_c \text{ line to screen}$ , if screen is connected to one line
- Length of trunk cable: Less than or equal to 1 km
- Length of spur cable: Less than or equal to 60 m

At each end of the trunk cable an approved infallible line terminator with the following parameters should be installed:  $R \geq 90 \text{ ohm}$ ,  $C = 2.2 \text{ uF}$  (recommended parameters are:  $R = 100 \pm 2 \text{ ohm}$ ,  $C = 1.0 \pm 0.2 \text{ uF}$ )  
One of the allowed terminations may be integrated in the Associated Apparatus.  
The device is also equipped with an integrated line terminator, see note 5.  
FISCO limits the number of passive devices connected to a single segment to 32 devices. If the above rules are respected, a total length of up to 1000 m of cable is permitted (sum of trunk and spur cables). The inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

<b>9240040-917</b>	ISSUED BY <b>EE-MK</b>	WEEK <b>0848</b>	PRODUCT CODE <b>5900</b>	TITLE <b>SYSTEM CONTROL DWG.</b>
	APPROVED BY <b>EAp</b>	WEEK <b>0949</b>	DOC. TYPE <b>6</b>	FILE <b>OrCAD</b>
	ALL DIMENSIONS ARE IN MILLIMETRES. TOLERANCES, UNLESS OTHERWISE STATED:			FINISH, UNLESS OTHERWISE STATED:
	<b>ROSEMOUNT</b>			1 ST ANGLE
<b>9240040-917</b>				ISSUE <b>02</b>
<b>9240040-917</b>				SHEET <b>4 / 7</b>
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Rosemount Tank Radar AB, Sweden				

ISSUE	CHANGE ORDER No	WEEK	ISSUE	CHANGE ORDER No	WEEK	ISSUE	CHANGE ORDER No	WEEK
01	SME-6095	0949	02	SME-7573	1306			

PRELIMINARY

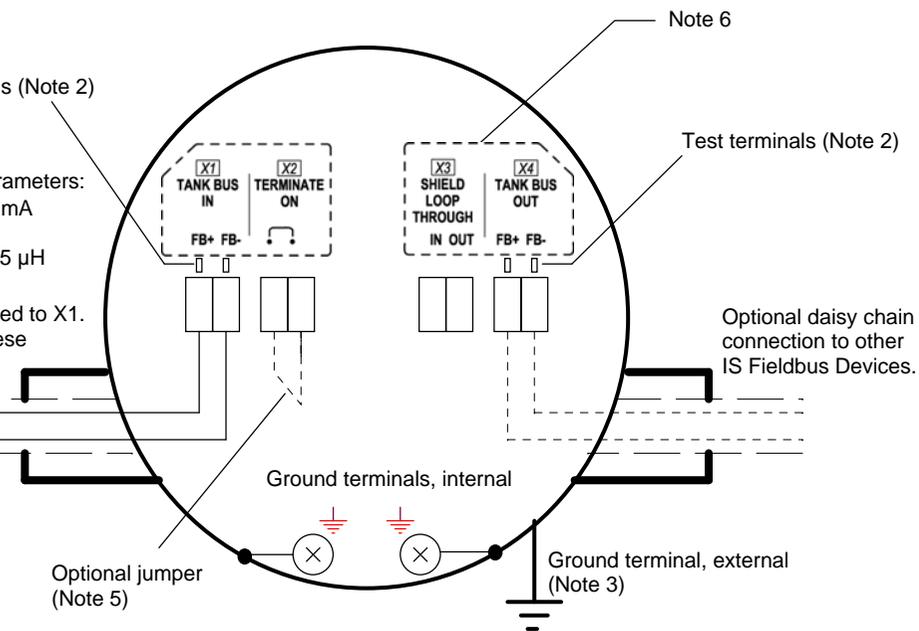
NON-HAZARDOUS LOCATION      HAZARDOUS LOCATION

Intrinsically Safe power supply  
(Associated Apparatus, Notes 1, 4)  
Entity Parameters:  
 $U_o \leq 30 \text{ V}$ ;  $I_o \leq 300 \text{ mA}$ ;  $P_o \leq 1.3 \text{ W}$   
 $C_o \geq$  Total capacitance of connected cables and Fieldbus Devices  
 $L_o \geq$  Total inductance of connected cables and Fieldbus Devices

**FM APPROVED PRODUCT**  
No revisions to this drawing  
without prior Factory Mutual  
Approval

Note:  
Test terminals and X4 are internally connected to X1.  
I.e. Input parameters of X1 also apply for these connections.

X1 Entity Input Parameters:  
 $U_i = 30 \text{ V}$ ;  $I_i = 300 \text{ mA}$   
 $P_i = 1.3 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \mu\text{H}$



**ROSEMOUNT 5900 SERIES Radar Level Gauge**

Intrinsically Safe for use in Class I, II, III, Div. 1, Groups A,B,C,D,E,F,G  
Class I Zone 0/1 AEx ia IIC  
Ex ia IIC  
Temperature Class T4, -50 °C <Ta< +80 °C

ATEX: Ex ia IIC Ga/Gb T4 (-50 °C <Ta< +80 °C)  
IECEx: Ex ia IIC Ga/Gb T4 (-50 °C <Ta< +80 °C)

- Notes:
- Control equipment connected to the Associates Apparatus must not use or generate more than 250 VRMS or VDC.
  - Test terminals for temporary connection of Intrinsically Safe Rosemount 375 Field Communicator.
  - Earth connection cable area: minimum 4 mm<sup>2</sup>.
  - Installation in the USA should be in accordance with ANSI/ISA-RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70). Dust tight conduit seals must be used when installed in Class II and Class III environments.
  - The integrated line terminator is connected over the bus when a jumper is placed in the terminal block.
  - Terminal Markings are labeled in the Terminal Compartment

**WARNING:** To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.

**WARNING:** Substitution of components may impair Intrinsic Safety.

**WARNING:** Parabolic and Array antennas with plastic surfaces may, under certain extreme conditions, generate an ignition-capable level of electrostatic charge. Therefore, when these antennas are used in Class I, Division 1, Groups A and B, appropriate measures must be taken to prevent electrostatic discharge.

**ENTITY CONCEPT APPROVAL**

The Entity concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in combination as a system. The approved values of max. open circuit voltage ( $U_o$ ,  $V_{oc}$  or  $V_t$ ), max. short circuit current ( $I_o$ ,  $I_{sc}$  or  $I_t$ ) and max. power ( $P_o$  or  $V_{oc} \times I_{sc} / 4$  or  $V_t \times I_t / 4$ ), for the associated apparatus must be less than or equal to the maximum safe input voltage ( $U_i$  or  $V_{max}$ ), maximum safe input current ( $I_i$  or  $I_{max}$ ) and maximum safe input power ( $P_i$  or  $P_{max}$ ) of the intrinsically safe apparatus. In addition, the approved max. allowable connected capacitance ( $C_o$  or  $C_a$ ) of the associated apparatus must be greater than the sum of the interconnecting cable capacitance and the unprotected internal capacitance ( $C_i$ ) of the intrinsically safe apparatus, and the approved max. allowable connected inductance ( $L_o$  or  $L_a$ ) of the associated apparatus must be greater than the sum of the interconnecting cable inductance and the unprotected internal inductance ( $L_i$ ) of the intrinsically safe apparatus.

<b>9240040-917</b>	ISSUED BY <b>EE-MK</b>	WEEK <b>0848</b>	PRODUCT CODE <b>5900</b>		TITLE <b>SYSTEM CONTROL DWG.</b>
	APPROVED BY <b>EAp</b>	WEEK <b>0949</b>	DOC. TYPE <b>6</b>	FILE <b>OrCAD</b>	<b>Entity Single Radar Level Gauge</b>
	ALL DIMENSIONS ARE IN MILLIMETRES. TOLERANCES, UNLESS OTHERWISE STATED:			FINISH, UNLESS OTHERWISE STATED:	<b>ROSEMOUNT 5900 SERIES</b>
					DWG NO. <b>9240040-917</b>
				1 ST ANGLE	SCALE
				ISSUE	SHEET
				<b>02</b>	<b>5 / 7</b>
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ISSUE	CHANGE ORDER No	WEEK	ISSUE	CHANGE ORDER No	WEEK	ISSUE	CHANGE ORDER No	WEEK
01	SME-6095	0949	02	SME-7573	1306			

**PRELIMINARY**

NON-HAZARDOUS LOCATION

HAZARDOUS LOCATION

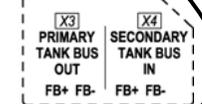
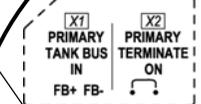
Intrinsically Safe power supply  
(Associated Apparatus, Notes 1, 4)  
Entity Parameters:  
Uo ≤ 30 V; Io ≤ 300 mA; Po ≤ 1.3 W  
Co ≥ Total capacitance of connected cables and Fieldbus Devices  
Lo ≥ Total inductance of connected cables and Fieldbus Devices

**FM APPROVED PRODUCT**  
**No revisions to this drawing**  
**without prior Factory Mutual**  
**Approval**

Test terminals (Note 2)

X1 Entity Input Parameters:  
Ui = 30 V; li = 300 mA  
Pi = 1.3 W  
Ci = 1.1 nF; Li = 1.5 μH

Note:  
Test terminals and X3 are internally connected to X1.  
I.e. Input parameters of X1 also apply for these connections.



Test terminals (Note 2) have the same input parameters as X4.

X4 Entity Input Parameters:  
Ui = 30 V; li = 300 mA  
Pi = 1.3 W  
Ci = 1.1 nF; Li = 1.5 μH

Ground terminals, internal

Optional jumper (Note 5)

Ground terminal, external (Note 3)

**ROSEMOUNT 5900 SERIES Radar Level Gauge**

Intrinsically Safe for use in  
Class I, II, Div. 1, Groups A,B,C,D,E,F,G  
Class I Zone 0/1 AEx ia IIC  
Ex ia IIC  
Temperature Class T4, -50 °C <Ta< +80 °C

ATEX: Ⓜ II 1/2 G Ex ia IIC T4 (-50 °C <Ta< +80 °C)  
IECEX: Ex ia IIC Ga/Gb T4 (-50 °C <Ta< +80 °C)

Notes:

- Control equipment connected to the Associates Apparatus must not use or generate more than 250 VRMS or VDC.
- Test terminals for temporary connection of Intrinsically Safe Rosemount 375 Field Communicator.
- Earth connection cable area: minimum 4 mm<sup>2</sup>.
- Installation in the USA should be in accordance with ANSI/ISA-RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70). Dust tight conduit seals must be used when installed in Class II and Class III environments.
- The integrated line terminator is connected over the bus when a jumper is placed in the terminal block.
- Terminal Markings are labeled in the Terminal Compartment

**WARNING:** To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.

**WARNING:** Substitution of components may impair Intrinsic Safety.

**WARNING:** Parabolic and Array antennas with plastic surfaces may, under certain extreme conditions, generate an ignition-capable level of electrostatic charge. Therefore, when these antennas are used in Class I, Division 1, Groups A and B, appropriate measures must be taken to prevent electrostatic discharge.

ENTITY CONCEPT APPROVAL

The Entity concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in combination as a system. The approved values of max. open circuit voltage (Uo, Voc or Vt), max. short circuit current (Io, Isc or It) and max. power (Po or VocxIsc / 4 or VtxIt / 4), for the associated apparatus must be less than or equal to the maximum safe input voltage (Ui or Vmax), maximum safe input current (li or Imax) and maximum safe input power (Pi or Pmax) of the intrinsically safe apparatus. In addition, the approved max. allowable connected capacitance (Co or Ca) of the associated apparatus must be greater than the sum of the interconnecting cable capacitance and the unprotected internal capacitance (Ci) of the intrinsically safe apparatus, and the approved max. allowable connected inductance (Lo or La) of the associated apparatus must be greater than the sum of the interconnecting cable inductance and the unprotected internal inductance (Li) of the intrinsically safe apparatus.

<b>9240040-917</b>	ISSUED BY <b>EE-MK</b>	WEEK <b>0848</b>	PRODUCT CODE <b>5900</b>		TITLE
	APPROVED BY <b>EAp</b>	WEEK <b>0949</b>	DOC. TYPE <b>6</b>	FILE <b>OrCAD</b>	<b>SYSTEM CONTROL DWG.</b>
	ALL DIMENSIONS ARE IN MILLIMETRES. TOLERANCES, UNLESS OTHERWISE STATED:			FINISH, UNLESS OTHERWISE STATED:	<b>Entity 2-in-1 single bus</b>
					<b>ROSEMOUNT 5900 SERIES</b>
DWG NO. <b>9240040-917</b>					ISSUE <b>02</b>
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ISSUE	CHANGE ORDER No	WEEK	ISSUE	CHANGE ORDER No	WEEK	ISSUE	CHANGE ORDER No	WEEK
01	SME-6095	0949	02	SME-7573	1306			

**PRELIMINARY**

NON-HAZARDOUS LOCATION      HAZARDOUS LOCATION

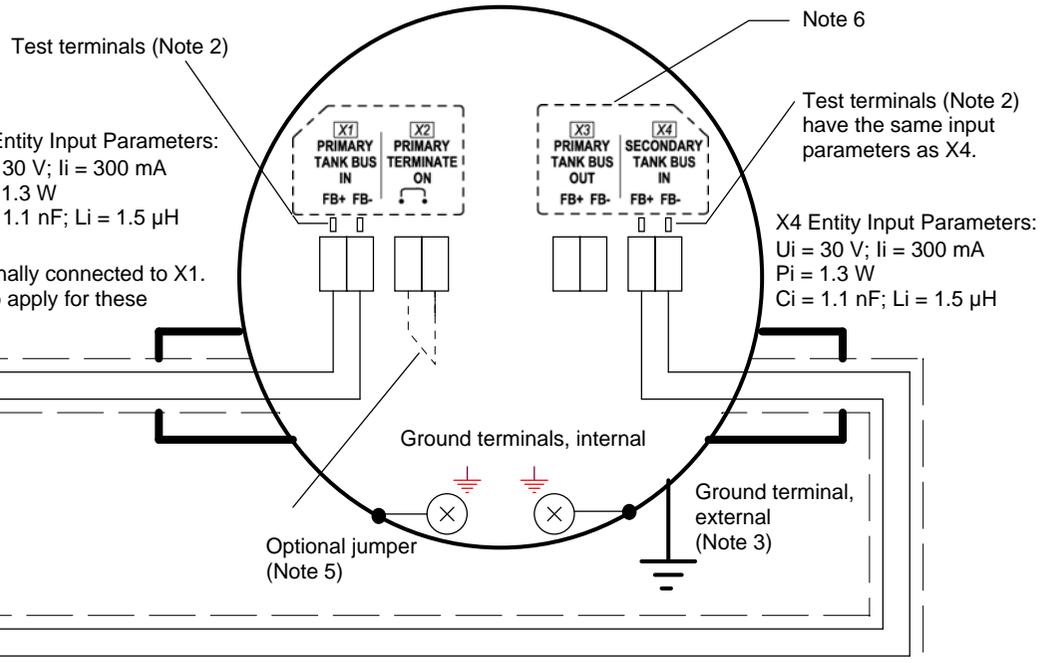
Intrinsically Safe power supply  
(Associated Apparatus, Notes 1, 4)  
Entity Parameters:  
 $U_o \leq 30 \text{ V}$ ;  $I_o \leq 300 \text{ mA}$ ;  $P_o \leq 1.3 \text{ W}$   
 $C_o \geq$  Total capacitance of connected cables and Fieldbus Devices  
 $L_o \geq$  Total inductance of connected cables and Fieldbus Devices

**FM APPROVED PRODUCT**  
**No revisions to this drawing**  
**without prior Factory Mutual**  
**Approval**

**Note 7: Both connections may**  
**be connected to one single**  
**Intrinsically Safe power supply.**

Intrinsically Safe power supply  
(Associated Apparatus, Notes 1, 4)  
Entity Parameters:  
 $U_o \leq 30 \text{ V}$ ;  $I_o \leq 300 \text{ mA}$ ;  $P_o \leq 1.3 \text{ W}$   
 $C_o \geq$  Total capacitance of connected cables and Fieldbus Devices  
 $L_o \geq$  Total inductance of connected cables and Fieldbus Devices

Note:  
Test terminals and X3 are internally connected to X1.  
I.e. Input parameters of X1 also apply for these connections.



X1 Entity Input Parameters:  
 $U_i = 30 \text{ V}$ ;  $I_i = 300 \text{ mA}$   
 $P_i = 1.3 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \mu\text{H}$

X4 Entity Input Parameters:  
 $U_i = 30 \text{ V}$ ;  $I_i = 300 \text{ mA}$   
 $P_i = 1.3 \text{ W}$   
 $C_i = 1.1 \text{ nF}$ ;  $L_i = 1.5 \mu\text{H}$

**ROSEMOUNT 5900 SERIES Radar Level Gauge**

Intrinsically Safe for use in  
Class I, II, Div. 1, Groups A,B,C,D,E,F,G  
Class I Zone 0/1 AEx ia IIC  
Ex ia IIC  
Temperature Class T4, -50 °C <Ta< +80 °C

ATEX:  $\text{II } 1/2 \text{ G Ex ia IIC T4 } (-50 \text{ °C } <T_a < +80 \text{ °C})$   
IECEx: Ex ia IIC Ga/Gb T4 (-50 °C <Ta< +80 °C)

- Notes:
- Control equipment connected to the Associates Apparatus must not use or generate more than 250 VRMS or VDC.
  - Test terminals for temporary connection of Intrinsically Safe Rosemount 375 Field Communicator.
  - Earth connection cable area: minimum 4 mm<sup>2</sup>.
  - Installation in the USA should be in accordance with ANSI/ISA-RP12.6 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70). Dust tight conduit seals must be used when installed in Class II and Class III environments.
  - The integrated line terminator is connected over the bus when a jumper is placed in the terminal block.
  - Terminal Markings are labeled in the Terminal Compartment
- WARNING: To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.
- WARNING: Substitution of components may impair Intrinsic Safety.
- WARNING: Parabolic and Array antennas with plastic surfaces may, under certain extreme conditions, generate an ignition-capable level of electrostatic charge. Therefore, when these antennas are used in Class I, Division 1, Groups A and B, appropriate measures must be taken to prevent electrostatic discharge.

**ENTITY CONCEPT APPROVAL**

The Entity concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in combination as a system. The approved values of max. open circuit voltage ( $U_o$ ,  $V_{oc}$  or  $V_t$ ), max. short circuit current ( $I_o$ ,  $I_{sc}$  or  $I_t$ ) and max. power ( $P_o$  or  $V_{oc} \times I_{sc} / 4$  or  $V_t \times I_t / 4$ ), for the associated apparatus must be less than or equal to the maximum safe input voltage ( $U_i$  or  $V_{max}$ ), maximum safe input current ( $I_i$  or  $I_{max}$ ) and maximum safe input power ( $P_i$  or  $P_{max}$ ) of the intrinsically safe apparatus. In addition, the approved max. allowable connected capacitance ( $C_o$  or  $C_a$ ) of the associated apparatus must be greater than the sum of the interconnecting cable capacitance and the unprotected internal capacitance ( $C_i$ ) of the intrinsically safe apparatus, and the approved max. allowable connected inductance ( $L_o$  or  $L_a$ ) of the associated apparatus must be greater than the sum of the interconnecting cable inductance and the unprotected internal inductance ( $L_i$ ) of the intrinsically safe apparatus.

<b>9240040-917</b>	ISSUED BY <b>EE-MK</b>	WEEK <b>0848</b>	PRODUCT CODE <b>5900</b>		TITLE <b>SYSTEM CONTROL DWG.</b>	
	APPROVED BY <b>EAp</b>	WEEK <b>0949</b>	DOC. TYPE <b>6</b>	FILE <b>OrCAD</b>	<b>Entity 2-in-1 two buses</b>	
	ALL DIMENSIONS ARE IN MILLIMETRES. TOLERANCES, UNLESS OTHERWISE STATED:			FINISH, UNLESS OTHERWISE STATED:	<b>ROSEMOUNT 5900 SERIES</b>	
					DWG NO. <b>9240040-917</b>	ISSUE <b>02</b>
<b>ROSEMOUNT</b>		1 ST ANGLE	SCALE	The copyright/ownership of this document is and will remain ours. The document must not be used without our authorization or brought to the knowledge of a third party. Contravention will be prosecuted. <b>Rosemount Tank Radar AB, Sweden</b>		