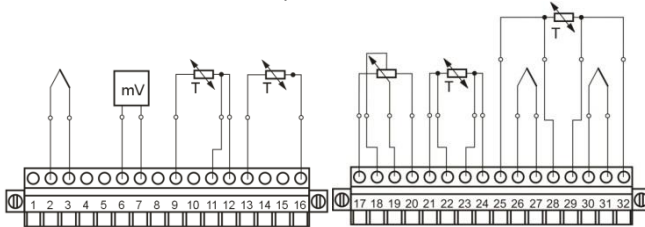


Nonhazardous
Class I, II, III, Division 2, Group A-G
or Class I, Zone 2, Group IIC/IIB
Hazardous (Classified) Locations



Example connection:



Wiring legend
Connection allocation example for RTD or potentiometer
– Temperature Input Module Type 9482

Channel	X1 / X2 2 Wire Input	X1 / X2 3 Wire Input	X1 / X2 4 Wire Input
	Terminals	Terminals	Terminals
0	1(I+), 4(I-)	1(I+), 3(V-), 4(I-)	1(I+), 2(V+), 3(V-), 4(I-)
1	5(I+), 8(I-)	5(I+), 7(V-), 8(I-)	5(I+), 6(V+), 7(V-), 8(I-)
2	9(I+), 12(I-)	9(I+), 11(V-), 12(I-)	9(I+), 10(V+), 11(V-), 12(I-)
3	13(I+), 16(I-)	13(I+), 15(V-), 16(I-)	13(I+), 14(V+), 15(V-), 16(I-)
4	17(I+), 20(I-)	17(I+), 19(V-), 20(I-)	17(I+), 18(V+), 19(V-), 20(I-)
5	21(I+), 24(I-)	21(I+), 23(V-), 24(I-)	21(I+), 22(V+), 23(V-), 24(I-)
6	25(I+), 28(I-)	25(I+), 27(V-), 28(I-)	25(I+), 26(V+), 27(V-), 28(I-)
7	29(I+), 32(I-)	29(I+), 31(V-), 32(I-)	29(I+), 30(V+), 31(V-), 32(I-)

The signals are connected together via resistors by an internal common ground.
Any combination of 2-, 3- and 4-wire connection is possible.

Connection allocation example thermocouples or mV-sources and external CJC
– Temperature Input Module Type 9482

Channel	Thermocouple	External CJC 2 Wire	External CJC 3 Wire	External CJC 4 Wire
	Terminals	Terminals	Terminals	Terminals
0	2(V+), 3(V-)	-	-	-
1	6(V+), 7(V-)	-	-	-
2	10(V+), 11(V-)	-	-	-
3	14(V+), 15(V-)	-	-	-
4	18(V+), 19(V-)	-	-	-
5	22(V+), 23(V-)	-	-	-
6	26(V+), 27(V-)	25(I+) 32(I-)	25(I+) 29(I+) 32(I-)	25(I+) 28(I-) 29(I+) 32(I-)
7	30(V+), 31(V-)			

The signals are connected together via resistors by an internal common ground.

The Type 9482 Temperature Input Module is designed to receive up to 8 input signals from 2-/3- or 4-wire RTDs and potentiometers or up to eight thermocouples and mV sensors. Via the channels 6 and 7 a connection of an external cold junction compensation (CJC) via an RTD is also possible. The module transmit those signals to the IS1 CPU & Power Module.

The module is nonincendive for installation in a Class I, II, III, Division 2, Group A-G or Class I, Zone 2, Group IIC/IIB hazardous location according to NEC Article 504/505 or Canadian Electrical Code, CSA C22; Providing intrinsically safe connections for Class I, Division 1, Groups A-G or Class I, Zone 0, Group IIC/IIB hazardous locations listed below.

Entity parameters for wiring configuration are on the next pages.

Notes:

- Intrinsically safe apparatus may be mV sources, thermocouples, CJCs, RTDs, potentiometers or an Approved System or Entity device connected in accordance with the manufacturer's installation instructions.
- For Entity concept use the appropriate parameters from above to ensure the following:

$$V_{OC} \text{ or } V_t \leq V_{max} \quad C_a \geq C_i + C_{leads}$$

$$I_{SC} \text{ or } I_t \leq I_{max} \quad L_a \geq L_i + L_{leads}$$
- The values of L_a and C_a in the tables on the next sheets are the maximum values for combined inductance and capacitance (including cable inductance and capacitance). The values for L_a and C_a marked in grey are the values determined according to curves and tables of IEC 60079-11, Annex A. These grey marked values may be used for assessment as per IEC 60079-14, intrinsically safe circuits with only one source of power.
- Suitable separation must be maintained between wiring of each I.S. input channel.
- For Installation in Division 2 or Zone 2 see Certification drawing for IS1 resp. IS1+ Remote I/O System No. 9400 6 031 004 1 or 9400 6 031 006 1 as part of the documentation of the CPU & Power Modules.

2016	Date	Name	Certification drawing Temperature Input Module Type 9482/33-08-1*	Scale
Drawn by	25.10.	Bagusch		none
Checked		Kaiser		Sheet 1 of 4
01	09.03.2018	Bagusch	9482 6 031 002 1	Agency FM
Version	Date	Name		Rep. f.



Entity parameters for wiring configuration – Temperature Input Module Type 9482

General explanations:

Grounded - the channels are connected via a common ground together by installation.
 Ungrounded - the channels are installed galvanically separated to each other and to ground

The source is linear in all applications.

If an U_i is applied at one channel, the U_i might occur in addition to U_o at another channel. Therefore the L_a and C_a values are calculated with $V_{oc\ ext} = V_i + V_{oc}$.

The stated V_i is a sum over all inputs.

Ungrounded only RTD and potentiometer

For connection of up to 8 passive, galvanically isolated and ungrounded I.S. circuits.

2-Wire:	Connector X1 / X2 – Channel 0 (1/4); Channel 1 (5/8) up to Channel 7 (29/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = n/a$				$V_{oc\ ext} = n/a$				$I_{sc} = 6.5\ mA$	$P_o = 10.5\ mW$			
3-Wire:	Connector X1 / X2 – Channel 0 (1/3/4); Channel 1 (5/7/8); up to Channel 7 (29/31/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = n/a$				$V_{oc\ ext} = n/a$				$I_{sc} = 7.8\ mA$	$P_o = 12.5\ mW$			
4-Wire:	Connector X1 / X2 – Channel 0 (1/2/3/4); Channel 1 (4/6/7/8); up to Channel 7 (29/30/31/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = n/a$				$V_{oc\ ext} = n/a$				$I_{sc} = 9.8\ mA$	$P_o = 15.7\ mW$			
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
L_a [mH]	100	50	20	2	0.2	0.02	0.002	100	50	20	2	0.2	0.02	0.002
C_a [µF]	1.1	1.2	1.4	2.0	3.2	7.0	25	5.8	6.3	7.1	10	19	51	570

Ungrounded RTD or potentiometer connected in a mixed configuration with U_i

For connection of up to 8 passive, galvanically isolated and ungrounded I.S. circuits. Thermocouples and external CJC circuit might also be connected, their calculation is below. Calculated with the following maximum values:


2-Wire:	Connector X1 / X2 – Channel 0 (1/4); Channel 1 (5/8) up to Channel 7 (29/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = 6.5\ V$				$V_{oc\ ext} = 12.92\ V$				$I_{sc} = 13.1\ mA$	$P_o = 42.2\ mW$			
3-Wire:	Connector X1 / X2 – Channel 0 (1/3/4); Channel 1 (5/7/8); up to Channel 7 (29/31/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = 6.5\ V$				$V_{oc\ ext} = 12.92\ V$				$I_{sc} = 15.7\ mA$	$P_o = 50.6\ mW$			
4-Wire:	Connector X1 / X2 – Channel 0 (1/2/3/4); Channel 1 (4/6/7/8); up to Channel 7 (29/30/31/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = 6.5\ V$				$V_{oc\ ext} = 12.92\ V$				$I_{sc} = 19.6\ mA$	$P_o = 63.3\ mW$			
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
L_a [mH]	100	50	20	5	1	0.5	0.2	100	20	10	2	1	0.5	0.1
C_a [µF]	0.19	0.25	0.31	0.40	0.54	0.63	0.78	1.3	1.7	1.9	2.5	3.0	3.5	5.7

2-Wire:	Connector X1 / X2 – Channel 0 (1/4); Channel 1 (5/8) up to Channel 7 (29/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = 3.5\ V$				$V_{oc\ ext} = 9.92\ V$				$I_{sc} = 10\ mA$	$P_o = 24.9\ mW$			
3-Wire:	Connector X1 / X2 – Channel 0 (1/3/4); Channel 1 (5/7/8); up to Channel 7 (29/31/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = 3.5\ V$				$V_{oc\ ext} = 9.92\ V$				$I_{sc} = 12\ mA$	$P_o = 29.8\ mW$			
4-Wire:	Connector X1 / X2 – Channel 0 (1/2/3/4); Channel 1 (4/6/7/8); up to Channel 7 (29/30/31/32)													
Input	$V_{oc} = 6.42\ V$	$V_i = 3.5\ V$				$V_{oc\ ext} = 9.92\ V$				$I_{sc} = 15\ mA$	$P_o = 37.3\ mW$			
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
L_a [mH]	100	50	20	1	0.1	0.05	0.02	100	50	20	1	0.1	0.05	0.02
C_a [µF]	0.40	0.47	0.56	0.92	1.6	2.0	2.8	2.3	2.5	2.9	5.1	9.8	13	20

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2016	Date	Name	Certification drawing										Scale		
Drawn by	25.10.	Bagusch	Temperature Input Module Type 9482/33-08-1*										none		
Checked		Kaiser											Sheet		
			9482 6 031 002 1										2 of 4		
													Agency		
01	09.03.2018	Bagusch											FM		
Version	Date	Name	Rep. f.											Rep. t.	A4

Grounded RTD or potentiometer connected in a mixed configuration with Vi

For connection of up to 8 passive I.S. circuits. Thermocouples and external CJC circuit might also be connected, their calculation is below. Calculated with the following maximum values:

2-Wire:	Connector X1 / X2 – Channel 0 (1/4); Channel 1 (5/8) up to Channel 7 (29/32)													
Input	Voc = 6.42 V	Vi = 6.5 V					Voc ext = 12.92 V	Isc = 47.9 mA	Po = 155 mW					
3-Wire:	Connector X1 / X2 – Channel 0 (1/3/4); Channel 1 (5/7/8); up to Channel 7 (29/31/32)													
Input	Voc = 6.42 V	Vi = 6.5 V					Voc ext = 12.92 V	Isc = 58.5 mA	Po = 189 mW					
4-Wire:	Connector X1 / X2 – Channel 0 (1/2/3/4); Channel 1 (4/6/7/8); up to Channel 7 (29/30/31/32)													
Input	Voc = 6.42 V	Vi = 6.5 V					Voc ext = 12.92 V	Isc = 68.8 mA	Po = 222 mW					
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
La [mH]	9	5	2	1	0.5	0.2	0.1	40	20	10	5	1	0.5	0.1
Ca [µF]	0.23	0.31	0.41	0.50	0.60	0.76	0.93	0.94	1.3	1.6	1.9	2.9	3.4	5.6

2-Wire:	Connector X1 / X2 – Channel 0 (1/4); Channel 1 (5/8) up to Channel 7 (29/32)													
Input	Voc = 6.42 V	Vi = 3.5 V					Voc ext = 9.92 V	Isc = 36.6 mA	Po = 91 mW					
3-Wire:	Connector X1 / X2 – Channel 0 (1/3/4); Channel 1 (5/7/8); up to Channel 7 (29/31/32)													
Input	Voc = 6.42 V	Vi = 3.5 V					Voc ext = 9.92 V	Isc = 44.8 mA	Po = 111 mW					
4-Wire:	Connector X1 / X2 – Channel 0 (1/2/3/4); Channel 1 (4/6/7/8); up to Channel 7 (29/30/31/32)													
Input	Voc = 6.42 V	Vi = 3.5 V					Voc ext = 9.92 V	Isc = 52.6 mA	Po = 131 mW					
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
La [mH]	17	10	5	2	1	0.2	0.02	71	50	10	2	1	0.2	0.02
Ca [µF]	0.34	0.46	0.58	0.74	0.78	1.3	2.8	1.4	1.8	2.9	4.2	4.9	7.8	20

Ungrounded Thermocouple and mV Sources in a mixed configuration with Vi

For connection of up to 8 passive or active, galvanically isolated and ungrounded I.S. circuits. RTD and potentiometer might also be connected, their calculation is above. The external CJC might also be connected, the calculation is below. Calculated with the following maximum values:

	Connector X1 / X2 – Channel 0 (2/3); Channel 1 (6/7) up to Channel 7 (30/31)													
Input	Voc = 6.42 V	Vi = 6.5 V					Voc ext = 12.92 V	Isc = 6.53 mA	Po = 21.1 mW					
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
La [mH]	100	50	10	5	1	0.5	0.2	100	50	10	1	0.5	0.2	0.1
Ca [µF]	0.30	0.32	0.38	0.42	0.55	0.63	0.79	1.5	1.6	1.9	3.0	3.5	4.6	5.7

Grounded Thermocouple and mV Sources in a mixed configuration with Vi

For connection of up to 8 passive or active I.S. circuits. RTD and potentiometer might also be connected, their calculation is above. The external CJC might also be connected, the calculation is below. Calculated with the following maximum values:


	Connector X1 / X2 – Channel 0 (2/3); Channel 1 (6/7) up to Channel 7 (30/31)													
Input	Voc = 6.42 V	Vi = 6.5 V					Voc ext = 12.92 V	Isc = 25 mA	Po = 81 mW					
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
La [mH]	72	50	10	2	1	0.5	0.2	100	20	5	1	0.5	0.2	0.1
Ca [µF]	0.17	0.22	0.34	0.46	0.53	0.62	0.78	1.2	1.6	2.1	3.0	3.5	4.5	5.7

	Connector X1 / X2 – Channel 0 (2/3); Channel 1 (6/7) up to Channel 7 (30/31)													
Input	Voc = 6.42 V	Vi = 3.5 V					Voc ext = 9.92 V	Isc = 19.2 mA	Po = 48 mW					
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
La [mH]	100	50	10	2	1	0.2	0.02	100	20	5	1	0.5	0.1	0.02
Ca [µF]	0.33	0.43	0.60	0.80	0.92	1.3	2.8	2.2	2.9	3.6	5.0	6	9.8	20

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			2016	Date	Name	Certification drawing							Scale
			Drawn by	25.10.	Bagusch	Temperature Input Module Type 9482/33-08-1*							none
			Checked		Kaiser								Sheet
						9482 6 031 002 1							3 of 4
													Agency
01	09.03.2018	Bagusch				9482 6 031 002 1							FM
Version	Date	Name											Rep. f.

Ungrounded RTD for external CJC connected in a mixed configuration with Vi

For connection of up to 8 passive, galvanically isolated and ungrounded I.S. circuits. Thermocouples and RTD and potentiometer might also be connected, their calculation is above. Calculated with the following maximum values:

2-Wire:	Connector X2 – Channel 6 and 7 (25/32)													
Input	Voc = 6.42 V	Vi = 6.5 V			Voc ext = 12.92 V			Isc = 13.1 mA			Po = 43 mW			
3-Wire:	Connector X2 – Channel 6 and 7 (25/29/32)													
Input	Voc = 6.42 V	Vi = 6.5 V			Voc ext = 12.92 V			Isc = 17.4 mA			Po = 56.2 mW			
4-Wire:	Connector X2 – Channel 6 and 7 (25/28/29/32)													
Input	Voc = 6.42 V	Vi = 6.5 V			Voc ext = 12.92 V			Isc = 26.1 mA			Po = 84.3 mW			
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
L _a [mH]	66	50	20	5	1	0.5	0.2	100	20	5	1	0.5	0.2	0.1
C _a [µF]	0.17	0.21	0.29	0.39	0.53	0.62	0.78	1.2	1.6	2.1	2.9	3.5	4.5	5.7

2-Wire:	Connector X2 – Channel 6 and 7 (25/32)													
Input	Voc = 6.42 V	Vi = 3.5 V			Voc ext = 9.92 V			Isc = 10 mA			Po = 24.9 mW			
3-Wire:	Connector X2 – Channel 6 and 7 (25/29/32)													
Input	Voc = 6.42 V	Vi = 3.5 V			Voc ext = 9.92 V			Isc = 13.4 mA			Po = 33.2 mW			
4-Wire:	Connector X2 – Channel 6 and 7 (25/28/29/32)													
Input	Voc = 6.42 V	Vi = 3.5 V			Voc ext = 9.92 V			Isc = 20.1 mA			Po = 49.7 mW			
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
L _a [mH]	100	50	10	2	1	0.2	0.02	100	20	5	1	0.5	0.1	0.02
C _a [µF]	0.31	0.43	0.60	0.80	0.91	1.3	2.8	2.2	2.8	3.6	5.0	6	9.8	20

Grounded RTD for external CJC connected in a mixed configuration with Vi

For connection of up to 8 passive I.S. circuits. Thermocouples and RTD and potentiometer might also be connected, their calculation is above. Calculated with the following maximum values:


2-Wire:	Connector X2 – Channel 6 and 7 (25/32)													
Input	Voc = 6.42 V	Vi = 6.5 V			Voc ext = 12.92 V			Isc = 47.9 mA			Po = 155 mW			
3-Wire:	Connector X2 – Channel 6 and 7 (25/29/32)													
Input	Voc = 6.42 V	Vi = 6.5 V			Voc ext = 12.92 V			Isc = 68.6 mA			Po = 222 mW			
4-Wire:	Connector X2 – Channel 6 and 7 (25/28/29/32)													
Input	Voc = 6.42 V	Vi = 6.5 V			Voc ext = 12.92 V			Isc = 87.1 mA			Po = 281.1 mW			
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
L _a [mH]	5.6	5	2	1	0.5	0.2	0.1	25	20	10	5	1	0.5	0.1
C _a [µF]	0.25	0.27	0.39	0.48	0.58	0.75	0.92	1	1.1	1.5	1.9	2.8	3.4	5.6

2-Wire:	Connector X2 – Channel 6 and 7 (25/32)													
Input	Voc = 6.42 V	Vi = 3.5 V			Voc ext = 9.92 V			Isc = 36.8 mA			Po = 91.1 mW			
3-Wire:	Connector X2 – Channel 6 and 7 (25/29/32)													
Input	Voc = 6.42 V	Vi = 3.5 V			Voc ext = 9.92 V			Isc = 52.6 mA			Po = 131 mW			
4-Wire:	Connector X2 – Channel 6 and 7 (25/28/29/32)													
Input	Voc = 6.42 V	Vi = 3.5 V			Voc ext = 9.92 V			Isc = 66.8 mA			Po = 166 mW			
	CL I, DIV 1, A,B / Zone 0, GP IIC							CL I, DIV 1, C-G / Zone 0, GP IIB/IIIC						
L _a [mH]	10	5	2	1	0.2	0.1	0.02	44	20	10	2	1	0.1	0.02
C _a [µF]	0.37	0.53	0.71	0.85	1.3	1.6	2.8	1.5	2.3	2.8	4.1	4.9	9.8	20

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Drawn by	25.10.	Bagusch	Temperature Input Module Type 9482/33-08-1*										none	
Checked		Kaiser											Sheet	
			9482 6 031 002 1										4 of 4	
													Agency	
01	09.03.2018	Bagusch											FM	
Version	Date	Name	Rep. f.										Rep. t.	A4