



These devices are analog signal repeaters/converters with intrinsically safe input circuits. They are designed to isolate and transmit standard analog signals from a hazardous location to a non-hazardous location.

Each device, except the MK31-114Ex0-LU, offers a choice of two intrinsically safe inputs: current sources (terminals 1-2) or voltage sources (terminals 3-4). Only one of the inputs may be used at a time. The signal transmission may be a 1:1 repetition or zero-base conversion, with or without voltage/current conversion. The Function Table lists the available versions and their respective transmission modes.

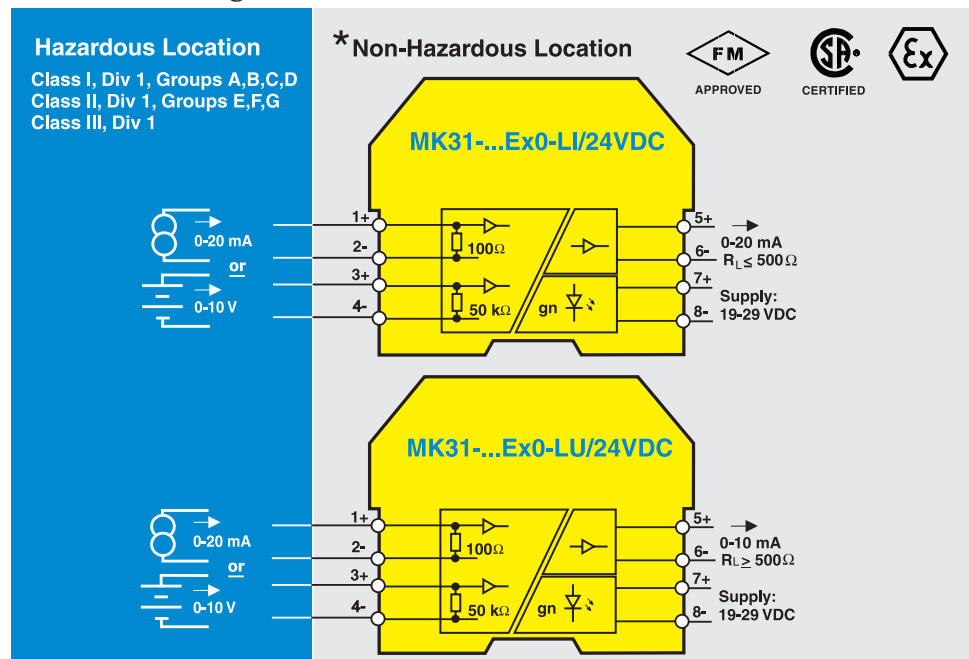
The **MK31-114Ex0-LU** has one intrinsically safe input, which is for voltage sources only.

0-60 mV devices such as thermocouples may be connected to terminals 3-4.

MK31-11Ex0-LI/24VDC
 MK31-111Ex0-LI/24VDC
 MK31-112Ex0-LI/24VDC
 MK31-113Ex0-LI/24VDC
 MK31-115Ex0-LI/24VDC
 MK31-119Ex0-LI/24VDC
 MK31-11Ex0-LU/24VDC
 MK31-111Ex0-LU/24VDC
 MK31-112Ex0-LU/24VDC
 MK31-113Ex0-LU/24VDC
 MK31-114Ex0-LU/24VDC
 MK31-115Ex0-LU/24VDC
 MK31-116Ex0-LU/24VDC
 MK31-117Ex0-LU/24VDC
 MK31-119Ex0-LU/24VDC
 MK31-120Ex0-LU/24VDC
 MK31-121Ex0-LU/24VDC
 MK31-122Ex0-LU/24VDC

* These devices may be installed in a Class I, Division 2, Group A-D area.

Connection Diagram



Analog Signal Repeater/Converter MK31-...Ex0-LI/24VDC (11, 111, 112, 113, 115, 119) MK31-...Ex0-LU/24VDC (11, 111, 112, 113, 114, 115, 116, 117, 119, 120, 121, 122)

Type ID Number	MK31-...Ex0-LI/24VDC	MK31-...Ex0-LU/24VDC	MK31-114Ex0-LU/24VDC M7506220
- 11	M7506005	M7506205	
- 111	M7506010	M7506210	
- 112	M7506015	M7506215	
- 113	M7506016	M7506216	
- 115	M7506017	M7506221	
- 116	M7506020	M7506222	
- 117		M7506223	
- 119	M7506019	M7506224	
- 120		M7506225	
- 121		M7506226	
- 122		M7506227	
Power Supply			
Supply voltage	19-29 VDC, ≤10% ripple	19-29 VDC, ≤10% ripple	19-29 VDC, ≤10% ripple
Current consumption	approx. 50 mA	approx. 50 mA	approx. 50 mA
Galvanic isolation	between input, output and supply circuits, test voltage 2.5 kVrms	between input, output and supply circuits, test voltage 2.5 kVrms	between input, output and supply circuits, test voltage 2.5 kVrms
Input Circuits			
Current Input			
- Input resistance	100 Ω	100 Ω	na
- Operating characteristics	see Function Table (40 mA max.)	see Function Table (40 mA max.)	na
Voltage input			
- Input resistance	50 kΩ	50 kΩ	>50 kΩ
- Operating characteristics	see Function Table (20 V max.)	see Function Table (20 V max.)	0-60 mV (20 V max.)
Intrinsic Safety Parameters	see page K11	see page K11	see page K11
Output Circuits			
Load resistance	≤500 Ω	≥500 Ω	≥500 Ω
Output characteristics	see Function Table (mA)	see Function Table (V)	0-60 mV
Transfer Characteristics			
Linearity tolerance	≤0.1% of full scale	≤0.1% of full scale	≤0.1% of full scale
Measuring tolerance	≤0.2% of full scale	≤0.2% of full scale	≤0.2% of full scale
Long-term drift	≤0.1% / year	≤0.1% / year	≤0.1% / year
Ambient temperature sensitivity	≤0.02% / K of full scale	≤0.02% / K of full scale	≤0.02% / K of full scale
Pulse rise time	300 ms (10%-90%)	300 ms (10%-90%)	300 ms (10%-90%)
Release time	300 ms (90%-10%)	300 ms (90%-10%)	300 ms (90%-10%)
Housing Style	Diagram A (page A17)	Diagram A (page A17)	Diagram A (page A17)

Analog Input/Output

Output Input	0-20 mA	4-20 mA	0-10 V	2-10 V	0-5 V	1-5 V	0-60 mV
0-20 mA 0-10 V	MK31-11Ex0-LI 75060 05	MK31-111Ex0-LI 75060 10	MK31-11Ex0-LU 75062 05	MK31-111Ex0-LU 75062 10	MK31-116Ex0-LU 75062 22	MK31-121Ex0-LU 75062 26	----
4-20 mA 2-10 V	MK31-112Ex0-LI 75060 15	MK31-11Ex0-LI 75060 05	MK31-112Ex0-LU 75062 15	MK31-11Ex0-LU 75062 05	MK31-117Ex0-LU 75062 23	MK31-116Ex0-LU 75062 22	----
0-10 mA 0-5 V	MK31-115Ex0-LI 75060 17	MK31-113Ex0-LI 75060 16	MK31-115Ex0-LU 75062 21	MK31-113Ex0-LU 75062 16	MK31-11Ex0-LU 75062 05	MK31-122Ex0-LU 75062 27	----
2-10 mA 1-5 V	MK31-119Ex0-LI 75060 19	MK31-115Ex0-LI 75060 17	MK31-119Ex0-LU 75062 24	MK31-115Ex0-LU 75062 21	MK31-120Ex0-LU 75062 25	MK31-11Ex0-LU 75062 05	----
0-60 mV	----	----	----	----	----	----	MK31-114Ex0-LU 75062 20