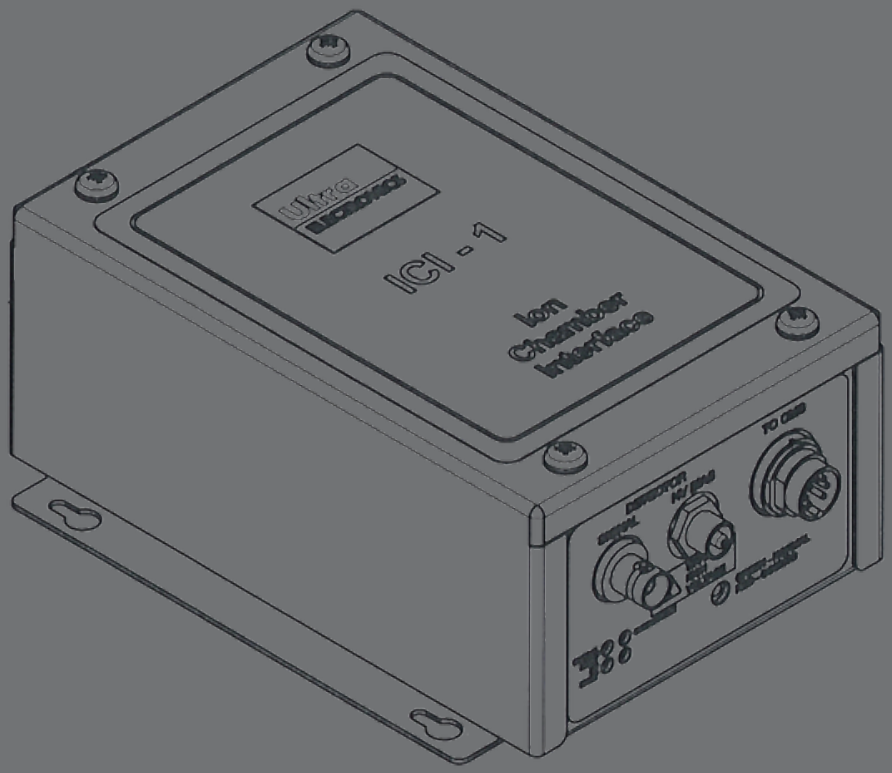
ICI-1 - Ion Chamber Interface



Overview

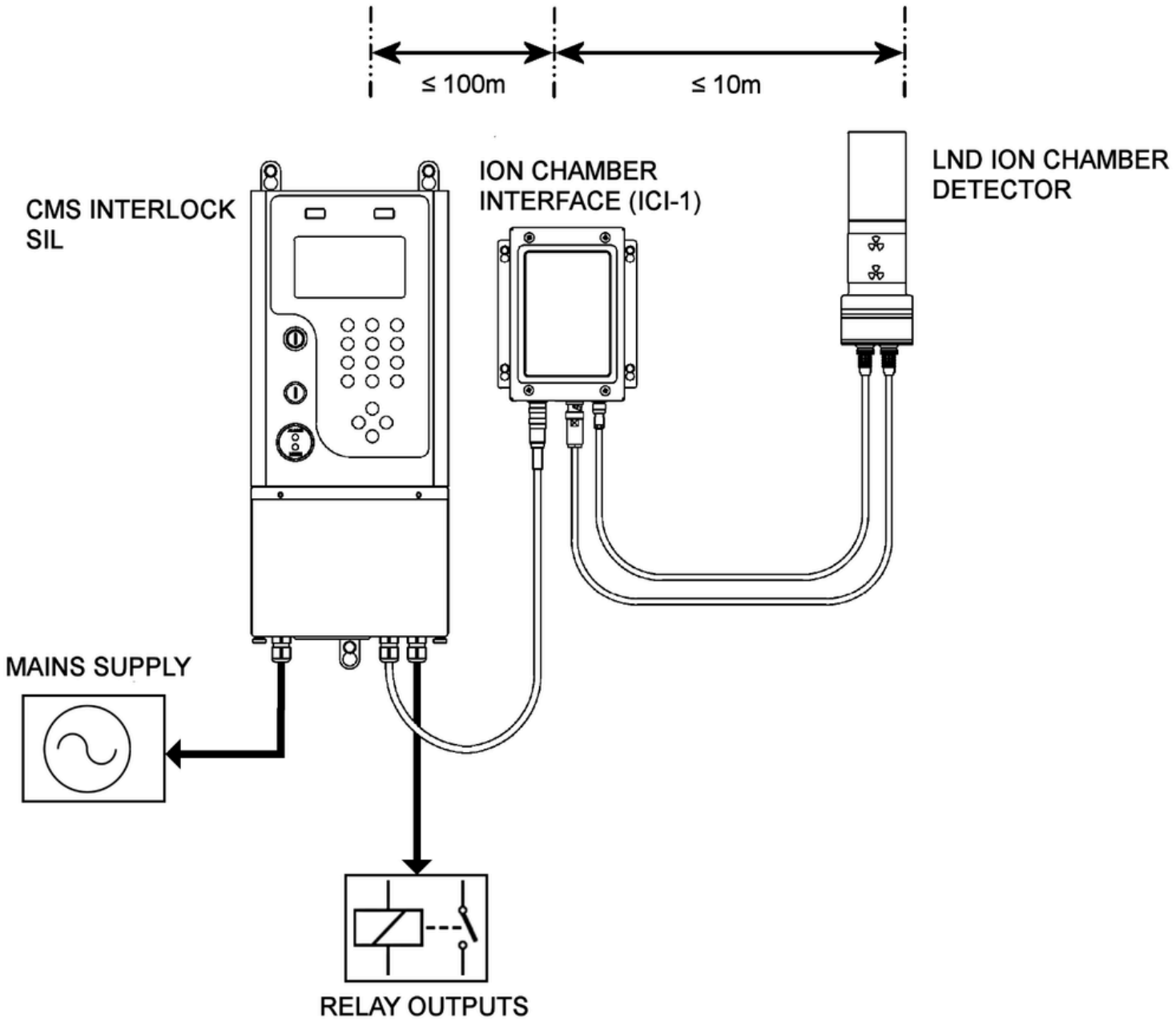
Curtiss-Wright's ICI-1 is a single channel device designed to provide an interface between an ionisation chamber and a host system, such as our CMS Interlock SIL, CMS Gamma or Area Gamma Monitor. The ICI-1 has been designed to operate with an ion chamber and a host system, and can only be connected to a single ion chamber at any given time.

The ion chamber uses an electro-mechanical sensor device, which allows gamma energy to ionise inside a chamber filled with an inert gas. The ICI-1 then provides a high voltage bias to the ion chamber, which results in a very small charge current when an ionisation event takes place. The charge current is then fed back into the ICI-1 which translates it into a digital pulse stream that is fed into the host logic control system, via RS-422, as a corresponding output frequency. The signal output frequency from the ICI-1 into the host system is directly proportional to the ionisation activity.

The host system raises an alarm if the input count rate exceeds a predetermined value, or raises a fault status if the input falls below a predetermined threshold. The ICI-1 implements diagnostic monitoring of the critical signal path from the ion chamber sensor to the RS-422 pulse stream output.

Technical specifications

Example set up: ICI-1 with CMS Interlock SIL host system



Technical specifications

ICI-1	
Overall dimensions	176 mm x 116 mm x 70 mm
Ion chamber input and HV	
Input impedance	10 kΩ
Input current measurement range	Measurement range: up to 1 µA
Input current maximum	Maximum: 20 mA
Over range frequency	250 kHz
Over range threshold	1.1 µA
HV bias typical	-500 V or -1200 V
HV bias current maximum	-50 mA
Typical sensitivity	0.10 Hz / pA
Output signal parameters	
Start-up time	420 s
Response time	10 µs
RS-422 pulse outputs	
Output frequency	100 kHz
Pulse shaping output pulse width	3 µs

Technical specifications

ICI-1	
Power requirements	
Minimum Voltage	9.5 V
Maximum Voltage	15 V
Maximum current	350 mA
Internal fuses	A 300 mA self-resetting fuse provides protection for the +12V power supply and protects against reverse polarity
Environmental conditions	
Maximum relative humidity	95% Non-Condensing (up to 30 ºC)
Operating temperature range	-10 to + 50 °C
Lifespan	
Recommended lifespan	If the ICI-1 is used for a SIL rated application, the recommended lifespan is 10 years
Conformity	
CE Mark	• EMC Directive: 2004/108/EC • Low Voltage Directive: 2006/95/EC
BS	• BS IEC 61508 • BS EN 61326 • BS EN 61010 • BS EN 60532

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About Curtiss-Wright

Curtiss-Wright Round Rock and Wimborne have worked with nuclear and industrial customers for over 60 years. We support customers across the world from facilities located in the US and UK. Our solutions are embedded in strategic national infrastructure and our people are active partners in customer programs that are focused on delivering advanced future nuclear and industrial capabilities.

Curtiss-Wright Corporation (NYSE: CW) is a global integrated business that provides highly engineered products, solutions and services mainly to Aerospace & Defense markets, as well as critical technologies in demanding commercial power, process and industrial markets. We leverage a workforce of approximately 8,600 highly skilled employees who develop, design and build what we believe are the best engineered solutions to the markets we serve. Building on the heritage of Glenn Curtiss and the Wright brothers, Curtiss-Wright has a long tradition of providing innovative solutions through trusted customer relationships.