



Plant Products

Connecting Business



Tijdelijke Aarding

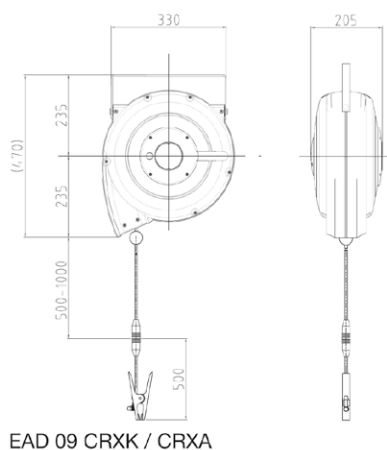
Temporary bonding with earth monitoring

Prevention of electrostatic charges as ignition source

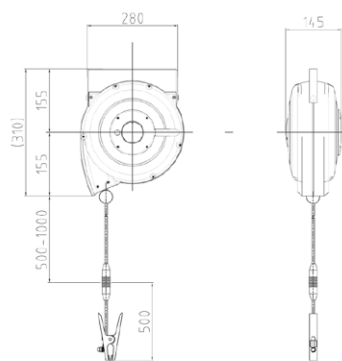
In many cases electrostatic charges are immediately associated with industrial processes such as transferring, emptying or filling. They can not only cause breakdowns and damage, but can also spark off fires and explosions. When assessing hazards due to electrostatic charges, the decisive factor is the probability of the local and temporal concurrence of an explosive atmosphere and a dangerously high charge. Such a concurrence is most probable when the handling of a product leads to both a dangerously high charge and to the formation of an explosive atmosphere. This applies, in particular, for the handling of flammable liquids such as, for example, hydrocarbons or other non-polar solvents or

non-conductive, combustible bulk materials. However, conductive materials can also be charged to a dangerously high degree if they are processed in non-conductive installations or if, during operation, a separation of charges occurs. Furthermore, non-conductive installations-themselves or conductive installations that are not earthed can be charged to a dangerously high degree. Examples of fires and explosions caused by static electricity as the ignition source range from the filling of a plastic canister with toluene to the pneumatic filling of a large silo with a combustible bulk material. Other typical examples of accidents include the filling of driers with a product that is damp due to solvents, the emptying of centrifuges and the emptying of combustible bulk materials out of flexible bulk material containers.





EAD 09 CRXK / CRXA



EAD 09 CR7K / CR7A

In order to exclude electrostatic charges as ignition source as far as possible, a two-channel earth monitoring unit, which, on the one hand, reliably monitors the resistance between the earth conductor and a potential equalization and the correct connection of the earthing device, on the other hand, is available.

Temporary equalizer connections for mobile equipment, containers and vehicles

A resistance of $10^6 \Omega$ between mobile equipment, holding tanks and vehicles of the installations is sufficient to prevent a dangerously high charge. Before each operation, e.g. the opening of tanks, the connection of pipes or hoses for filling or emptying, the mobile equipment, tanks and vehicles shall be earthed by means of a potential equalization conductor so that the resistance between the equipment to be earthed and the potential equalization or, if applicable, a charge bridge is less than $10^6 \Omega$ and, in practice, is reduced to low, singledigit values. The temporary equalizer connection must not be removed until all operations have been completed. The use of a monitoring system with an interlock is recommended to prevent the loading or unloading of liquids or bulk materials if there is no equalizer

connection or if it is not effective. The earth monitoring system has additional advantages if coatings or coats of paint on the equipment, barrels or tanks give reason to doubt the effectiveness of the equalizer connections.

Organisational measures and misuse when installing the temporary equalizer connection

The correct connection of the earth clamp to the apparatus or vehicle is dependent on organisational measures. The monitoring system cannot detect any misuse, because it is not possible to distinguish a mobile apparatus or vehicle from other metallic parts. If there is a risk of monitoring systems being used incorrectly, a coded plug with an apparatus socket can be used instead of an earth clamp. In these cases, the enabling relay only operates if the plug is being used correctly with the respective apparatus.

Accessories

In cases where the evaluating device is installed in the control room, an additional signal can be given locally by means of an explosion-protected flashing light or signal lamp (explosion-protected

Technical data

Type of protection (gas)

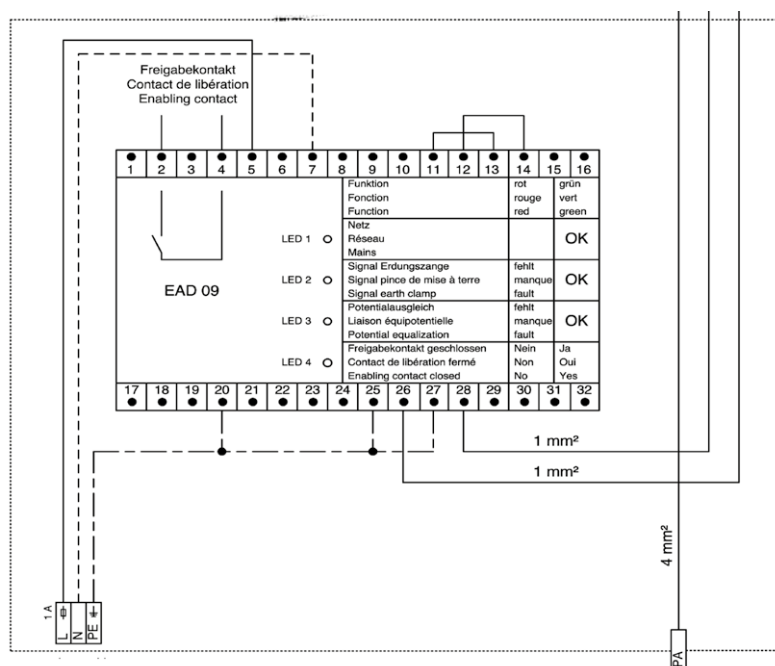
Evaluation unit EAD 09	II (1)G	[Ex ia Ga] IIB/IIC
	II 3 (1)G	Ex nA nC [ia Ga] IIB/IIC T4 Gc
Cable reel EAD 09 CR	II 2 (1)G	Ex ia [ia Ga] IIB/IIC T6 Gb
Earth clamp EAD 09 CL	II 1G	Ex ia IIB/IIC T6 Ga

Type of protection (dust)

Evaluation unit EAD 09	II (1)D	[Ex ia Da] IIIC
Cable reel EAD 09CR	II 2(1)D	Ex ia [ia Da] IIIC T85 °C Db
Earth clamp EAD 09 CL	II 2 (1)G	Ex ia [ia Ga] IIB/IIC T6 Gb

EC-Type Examination Certificate	BVS 09 ATEX E 156 X
International certifications	IECEX BVS 10.0024X
Voltages	230 V AC, 50 Hz
Permissible ambient temperature	-30°C to -60°C (Evaluation electronics) -40°C to -60°C (Cable reel and clamp)

Unit	Type	Cable length	Dimension
Cable reels, evaluation electronics and controls			
Cable reel	EAD09 CR1K	max. 8 m	
Cable reel	EAD09 CRXK/ CRXA	max. 25 m	
Cable reel	EAD09 CR7K/ CR7A	max. 10 m	
Cable (yellow/green)	4mm2 + 2 • 1mm2 EPR/PUR		
Earth monitoring unit	EAD09	Rail mounting	115 x 44 x 100
Ex nA nC [ia Ga] IIB/IIC T4 Gc, PTB 07 ATEX 1014			271 x135x 136
Polyester enclosure IP 66			





Technical data

Marking to 94/EC	II 2G II 2D
EC Type Examination Certificate	BVS 10 ATEX E 084
Admissible ambient temperature	-40 to 60 °C
Enclosure material	Aluminium Plastic
IP degree of protection	IP 54 / IP 65
Kabel	1 to 10 mm ² PUR, Standard 10 mm ² (other cross-sections upon request)

Unit	Type	Cable length
Cable reel	CR1K	max. 8m
Cable reel	CR7A / CR7K	max. 10m
Cable reel	CRXA / CRXK	max. 25m
K... Polyethylene		
A... Aluminium		

