



ECS - Earthing Control System

• Use

EARTHING CONTROL SYSTEM allows safe loading and off-loading of mobile tanks (trucks, wagons, trolleys and big bags) in which flammable products are stored. The high speed process could generate electrostatic charges with possible risks of sparks and explosions. To avoid the accumulation of static electricity, the system constantly verifies the grounding connection and allows the loading process only if safety parameters are fully respected.

• Function

The ECS is connected to the mobile tank through an active clamp, with a 10 meters length bipolar cable.

The working procedure is the following:

- the clamp is connected to the tank to be used
- the earthing control system measures the parameters (resistance and /or capacity) of the electrical connection loop monitoring any breaks or low values due of oxidations. It also verifies the type of connection to understand if the system is really clamped to the tank and not to other metal structures.

If all the parameters are positive:

- a ground relay, signalled by a green LED, is switched on and remains on during loading/off-loading process
- two internal relays, connected with pump or valve controls, switch on
- the earthing connection continues to be monitored during the loading process, interrupting it immediately in case of any fault

• Construction

The Earthing Control System is housed in a GUB or an EJB enclosure, available in copper-free aluminium alloy finished with epoxy-coating RAL 7035 or, for highly-corrosive environments, in stainless steel.

GUB housing is suitable for the IIC Group Protection while EJB housing is suitable for II+H₂ Group Protection (any gas with the sole exclusion of Acetylene).

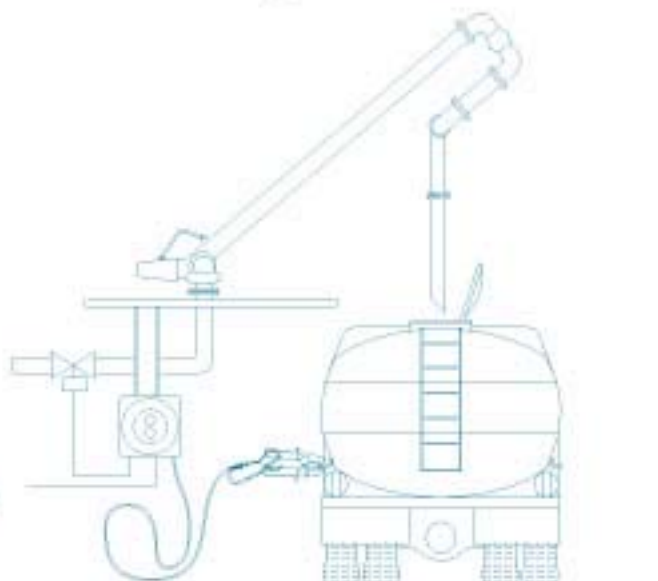
The connection to the clamp is performed through an intrinsically safe circuit.

The electronic control unit is available in different version, covering the different applications:

- RESISTIVE : a low resistance R is detected between the two clamp jaws;
- RESISTIVE & CAPACITIVE : in addition to low resistance, the truck's capacitance is also monitored.

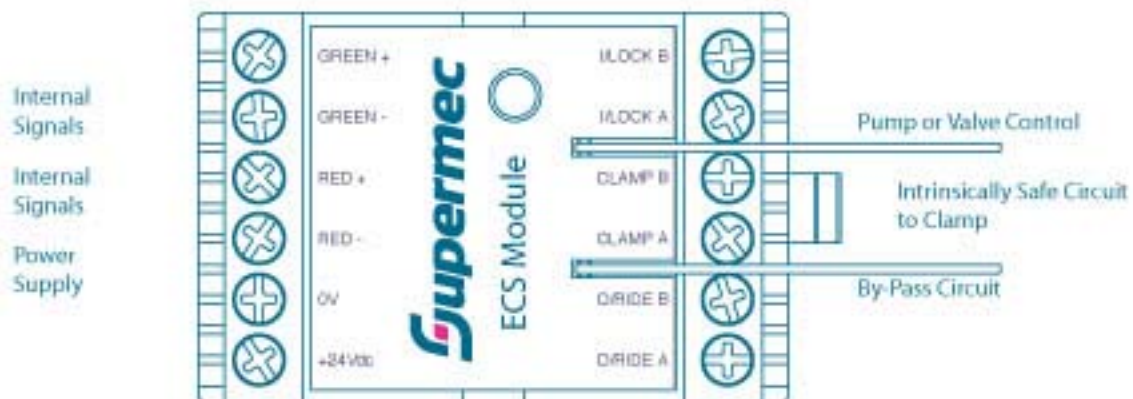
The standard parameters of electronic control units can be adjusted on demand.

The system can be equipped, on request, of a by-pass key switch, operated only by authorized personnel, to force the CAPACITIVE mode in extreme wet conditions.



EARTHING CONTROL SYSTEM
Complete with by-pass

CIRCUIT DIAGRAM
(complete with by-pass option)

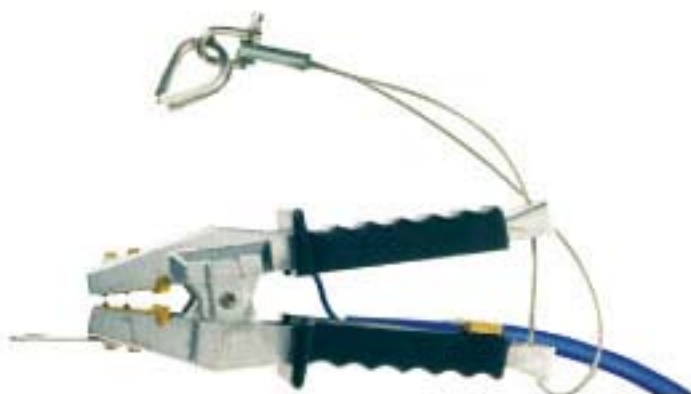


active clamps

ordering code	ECS - CA	ECS - CS
material - body	aluminium alloy	stainless steel
material - handles	neoprene	stainless steel
material - contacts	stainless steel	stainless steel
clamping max range	20 mm.	35 mm.
contacts connection range	from 3 to 15 mm.	from 3 to 35 mm.
cable type	flying cable HO5RN-F 2x1,5 + 1,5 mm ² (10 meters length)	

cable reel

ordering code	ECS - CR	
description	closed cable housing IP55, pivotable on bracket	
functioning	spring activated automatic winding with latching mechanism	
material - body	aluminium	
cable type	cable HO5RN-F 2x1,5 + 1,5 mm ² (24 meters length)	



ECS-CA



ECS-CS


GUBW 4A-ECS

GUBA 4A-ECS2

ordering code	GUBW 4A-ECS	GUBW 4A-ECS1
ECS System	capacitive	capacitive resistive
material - body	aluminium alloy	aluminium alloy
overall dimensions	mm. 246 x 246 x 170	mm. 246 x 246 x 170
power supply	240 VAC +/- 10% - 50/60 Hz or 24 VDC +/- 20%	
connections	3 brass cable glands 1/2" NPT (power supply - permissive signal - clamp)	
by-pass	-	-
clamp	ECS - CA	ECS - CA

ordering code	GUBA 4A-ECS2	
ECS System	capacitive - resistive	
material - body	aluminium alloy	
overall dimensions	mm. 246 x 246 x 170	
power supply	240 VAC +/- 10% - 50/60 Hz or 24 VDC +/- 20%	
connections	3 s.s cable glands 1/2" NPT (power supply - permissive signal - clamp)	
by-pass	key contact switch	
clamp	ECS - CA	

• Protection

certificate number: IMQ 11 ATEX 030
 marking: Ex II 2GD Ex d [ja] IIC T6 Gb Ex tb IIIC T85°C Db
 ambient temperature: -25°C +55°C
 degree of protection: IP66
 conformity: Directive ATEX 94/9/EC
 standards: EN60079-0 / EN60079-1 / EN60079-11 / EN60079-31 / EN60529
 category: suitable for Zone 1 - 21 (gas) and Zone 2 - 22 (dust)


EJB 3A-ECS2

EJB 3S-ECS2

ordering code	EJB 3A-ECS	EJB 3A-ECS1 / ECS2
ECS System	capacitive	capacitive resistive
material - body	aluminium alloy	aluminium alloy
overall dimensions	mm. 390 x 300 x 285	mm. 390 x 300 x 285
power supply	240 VAC +/- 10% - 50/60 Hz or 24 VDC +/- 20%	
connections	3 brass cable glands 1/2" NPT (power supply - permissive signal - clamp)	
by-pass (ECS 2 model)	-	key contact switch
clamp	ECS - CA	ECS - CA

ordering code	EJB 3S-ECS	EJB 3S-ECS1 / ECS2
ECS System	capacitive	capacitive resistive
material - body	stainless steel	stainless steel
overall dimensions	mm. 390 x 300 x 252	mm. 390 x 300 x 252
power supply	240 VAC +/- 10% - 50/60 Hz or 24 VDC +/- 20%	
connections	3 s.s. cable glands 1/2" NPT (power supply - permissive signal - clamp)	
by-pass (ECS 2 model)	-	key contact switch
clamp	ECS - CS	ECS - CS

• Protection

certificate number:	IMQ 11 ATEX 031
marking:	Ⓔ II 2GD Ex d [Ia] IIB+H; T6 Gb Ex tb IIIC T85°C Db
ambient temperature:	-25°C +55°C
degree of protection:	IP66
conformity:	Directive ATEX 94/9/EC
standards:	EN60079-0 / EN60079-1 / EN60079-11 / EN60079-31 / EN60529
category:	suitable for Zone 1 - 21 (gas) and Zone 2 - 22 (dust)