EN ISO 9001 Quality international level

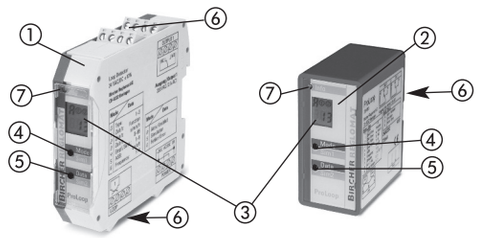
DEA dea system

Loop230/1

Loop detector for industrial doors and gates, car parks and parking bollards

Operating instructions

General



① Loop230/1 loop detector DIN variant, mounting rail installation
② Loop230/1 loop detector 11-pin, base mounting
③ LCD display
④ «Mode» button
⑤ «Data»-button
⑥ Terminals
⑦ Info LED

1 Safety instructions

These devices and their accessories may only be operated in compliance with the operating instructions (intended use)!
These devices and their accessories may only be commissioned by trained and qualified personnel.
These devices may only be operated with the intended operating voltages and parameters.
If malfunctions occur that cannot be rectified, shut down the device and send it in for repair.
These devices are only allowed to be repaired by the manufacturer. Tampering and alterations are not permitted. This will invalidate all guarantee and warranty claims.

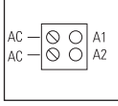
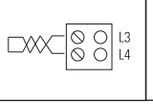
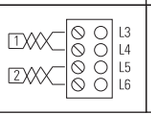
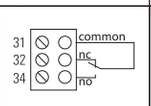
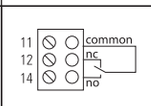
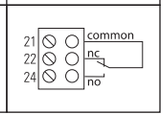
2 Mechanical mounting in the switch cabinet

The Loop230/1 DIN variant is mounted on a 35 mm mounting rail acc. to EN 50 022 in the switch cabinet. In the Loop230/1, the terminals are pluggable and coded. The 11-pin version of the Loop230/1 is mounted onto a mounting rail base (ES 12). This base is ordered and delivered separately as it is not included in the scope of delivery.

3 Electrical connection

The loop connection wiring to the loop detector must be twisted at least 20 times per meter.
Please wire the device in accordance with the terminal assignment. Make sure the terminals are assigned correctly.

3.1 Loop230/1 DIN variant terminal connection diagram

A: Supply voltage connection	B: Loop connection 1-channel device	C: Loop connection 2-channel device	D: Alarm output connection (optional)	E: Relay connection output 1	F: Relay connection output 2
					

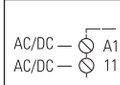
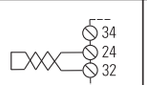
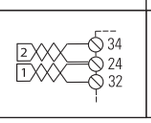
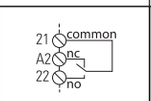
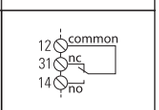
Output connection options (depending on the options ordered):

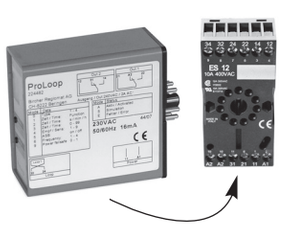
1-loop device	Relay assignment:	Output connection diagram:
	Output 1	E
	Output 2	E, F
	Alarm output	D, E, F

2-loop device	Relay assignment:	Output connection diagram:
	Output 1+2	E, F
	Alarm output	D, E, F

3.2 Loop230/1 11 terminal connection diagram (ES 12 base assignment)

Check the electrical connection (base assignment) when exchanging a loop detector from another manufacturer.

A: Supply voltage connection	B: Loop connection 1-channel device	C: Loop connection 2-channel device	D: Relay connection output 1	E: Relay connection output 2
				



Output connection options (depending on the options ordered):

1-loop device	Relay assignment:	Output connection diagram:
	Output 1+2	D, E

2-loop device	Relay assignment:	Output connection diagram:
	Output 1+2	D, E

4 Value and parameter setting options

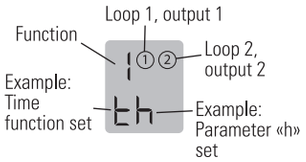
General

The settings of the Loop230/1 devices in this chapter are shown and explained for the 1-loop device. The settings for loop 2 of a 2-loop device should be made using the corresponding method.

4.1 LCD display and controls

Standard display 1-loop device	Standard display 2-loop device	Control button	Control button
			

Explanation of the LCD display



Explanation of the LED

Red & green:	Start-up phase
Green:	Operation
Red & green:	Configuration
Flashing green:	Loop activated
Flashing red:	Error
Flashing red + green:	Simulation

4.2 Basic functions 0 (see Table 4.11a for settings)

Parameters

1: Door and gate The assigned output relay picks up when the loop is activated and drops out when the loop returns to a non-activated condition.

2: Barrier The assigned output relay picks up when the loop is activated and drops out when the loop returns to a non-activated condition.

3: Quiescent current The assigned output relay drops out when the loop is activated and picks up again when the loop returns to a non-activated condition.

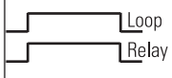
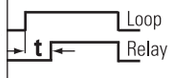
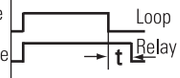
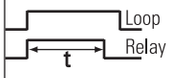
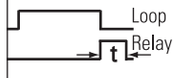
4: Direction logic Output 1 switches if an object moves from loop 1 to 2. Output 2 switches if an object moves from loop 1 to 2. **Both loops** must be activated for a short time. The outputs are reset again when loop 2 returns to a non-activated condition. Both loops must have returned to a non-activated condition for another direction detection.

0: Loop 2 Loop 2 can be deactivated in a 2-loop device.

Relay response to malfunctions (see chapter 6 Troubleshooting):

1. Door/gate systems	A malfunction causes the output relay to be released. The alarm relay drops out.	2. Barrier	A malfunction causes the output relay to pick up. The alarm relay drops out.	3. Quiescent current	A malfunction causes the output relay to be released. The alarm relay drops out.	4. Direction logic (2-loop device only)	A malfunction causes the output relays to be released. The alarm relay drops out.

4.3 Time functions 1, time unit 2 and time factor 3 (see Table 4.11a for settings)

h The relay picks up when the loop is activated and drops out when the loop is exited.		On delay: The relay picks up after the time t when the loop is activated and drops out when the loop is exited.		Off delay: The relay picks up when the loop is activated and drops out after the time t when the loop is exited.	
Activation pulse: The relay picks up when the loop is activated and drops out again after the time t.		Impulse by leaving the loop: By leaving the loop, the relay picks up after the time t, relay drops out.			

4.4 Sensitivity 4 (see Table 4.11a for settings)

The sensitivity 5 (=Sensitivity) of the loop detector can be adapted in 9 stages: 51 = Lowest sensitivity, 59 = Highest sensitivity, 56 = Factory setting. The sensitivity setting depends on the frequencies (see chapter 4.6 Frequency).

4.5 Automatic Sensitivity Boost ASB 5 (see Table 4.11a for settings)

ASB (=**A**utomatic **S**ensitivity **B**oost). ASB is required in order to be able to recognise trailer drawbars after activation.

4.6 Frequency 6 (see Table 4.11a for settings)

Four different frequencies F1, F2, F3, F4* can be set in order to avoid interference when using several loop detectors. These settings influence the sensitivity (the sensitivity can be set in the range 1–7 for frequencies F1 to F3). F2 to F4 can be set for inductance < 150 µH and only F4 can be set for inductance < 75 µH.

4.7 Direction logic 7 (see Table 4.11a for settings)

The direction logic function can only be used with a 2-loop device. Direction logic must have been set in the basic function (see chapter 4.2). Detection can be performed from: → Loop 1 to loop 2 → From loop 2 to loop 1 → from both directions

4.8 Output 2 8 (see Table 4.11b for settings)

In a device with 2 outputs, output 2 can be either activated or deactivated. In Loop230/1 11, output 2 can also be set as an alarm output.

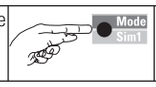
4.9 Protection against power failure 9 (see Table 4.11a for settings)

Basic function 2 «Barrier systems» must be set for this function. This function is inactive by default (= factory setting).

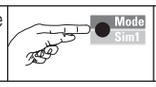
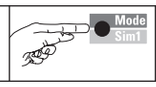
P 1 = Car parks and automatic parking bollards: The sensitivity is restricted to 1–5 and the time function to h.

4.10 Changeover from operation to configuration mode

1- loop device

Display after start-up:		Touch the «Mode» button once to change to configuration mode		

2- loop device

Display after start-up:		Touch the «Mode» button once to change to configuration mode			① Loop 1 is selected			② Loop 2 is selected

*Factory setting

4.11 Configuration mode

Note on 2-loop device: After loop 1 has been set, the parameters for loop 2 are set (make the settings using the same procedure) and the settings are not shown in the table with the exception of the direction logic

Table 4.11a Settings

Function	LCD display	Button operation functions	Button operation parameter	Data Sim2	Data Sim2	Data Sim2	Data Sim2	Data Sim2	Notes
0 - Basic function	0 ① 1	Mode Sim1		Door/gate systems* 0 ① 1	Barrier systems 0 ① 2	Quiescent current 0 ① 3	Direction logic 0 ①② 4	Only 2-loop device: **Loop 2** Activated: «1»* Deactivated: «0» 0 ② 1	With deactivation of loop 2 the output 2 becomes configurable → 8
1 - Time function	1 ① th	Mode Sim1		∞* Loop Relay 1 ① th	On delay Loop t Relay 1 ① to	Off delay Loop t Relay 1 ① tF	Activation pulse loop Loop t Relay 1 ① t-	Impulse when loop is exited Loop t Relay 1 ① t7	
2 - Time unit	2 ① tH	Mode Sim1	This display does not appear with time function th (∞)	0.1 second 2 ① tc	1 second* 2 ① tC	1 minute 2 ① tn	1 hour 2 ① tH		The time unit multiplied by the time factor gives the set time.
3 - Time factor	3 ① C 1	Mode Sim1	This display does not appear with time function th (∞)	1* 3 ① C 1	Set value between 1 and 99 by touching or holding the «Data» button				
4 - Sensitivity	4 ① 57	Mode Sim1	5 = Sensitivity	6* 4 ① 56	Set value between 1 (lowest) and 9 (highest sensitivity) by touching or holding the «Data» button				Setting restrictions: Frequency F1-F3: Value 1–7 Protection against power failure (with P1): Value 1-5
5 - Automatic Sensitivity Boost ASB	5 ① A1	Mode Sim1	ASB stands for Automatic Sensitivity Boost	Switched off* 5 ① A0	Switched on 5 ① A1				
6 - Frequency	6 ① F4	Mode Sim1		Frequency F4* 6 ① F4	Frequency F1 6 ① F1	Frequency F2 6 ① F2	Frequency F3 6 ① F3		
7 - Direction logic	7 ①② d--	Mode Sim1	This display appears only with a 2-loop device	Both directions 7 ①② d--	Loop 2 to loop 1 7 ①② d -	Loop 1 to loop 2 7 ①② d-			The direction logic function can only be implemented with 2 loops and a 2-loop device
8 - Output 2 configuration	8 ① o 0	Mode Sim1		Output 2 is switched off 8 ② o 0	Output 2 is activated 8 ② o 1	Output 2 is connected as alarm output (only possible with ProLoop 11) 8 ② o A			Loop 2 must be set to «deactive» = 0
9 - Protection against power failure	9 P 0	Mode Sim1		Protection against power failure: deactivated* 9 P 0	Car parks and automatic parking bollards 9 P 1				If parameter 9=P 1 parameter 5 must be set to off (5=A0).
A - Operating mode	A ① 11			Operating mode A ① 11	Error memory slot 1 1 000	Error memory slot 2 2 000	Error memory slot 3 3 000	Error memory slot 4 4 000	Possible displays in case of error: see chapter 6 of these operating instructions

* Factory setting

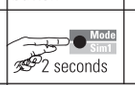
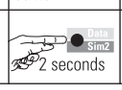
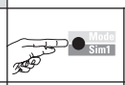
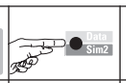
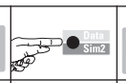
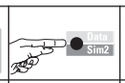
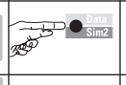
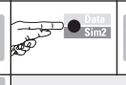
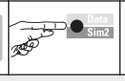
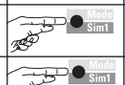
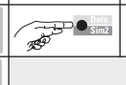
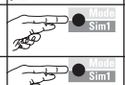
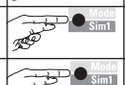
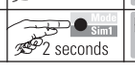
Table 4.11b Different product variants (setting options)

Loop230/1			
	Loop 2	Output 2	Notes
1-loop device, 2 relays	–	1*/0	1 = Output 2 on; 0 = Output 2 off
2-loop device, 2 relays	active	–	Parameter 8 is not possible and is not displayed
	deactivated	1/0*	1 = Output 2 on; 0 = Output 2 off

Loop230/1 11			
	Loop 2	Output 2	Notes
1-loop device, 2 relays	–	1/0/A*	1 = Output 2 on; 0 = Output 2 off, A = A = Output as alarm output
2-loop device, 2 relays	active	–	Parameter 8 is not possible and is not displayed
	deactivated	1/0*/A	1 = Output 2 on; 0 = Output 2 off, A =A = Output as alarm output

5 Simulation mode

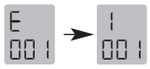
The activation of the loops can only be simulated if loops are connected to the appropriate terminal!
The displays apply similarly for loop 2

Changeover to simulations mode	Press «Sim1» button		Press «Sim2» button		Press «Sim2» button		Press «Sim2» button		Notes
Changeover to simulation mode: Press the Sim1 + Sim2 buttons simultaneously for 2 seconds.		+							
Simulation mode:									
Activation of the loop with time function									LO -Activation of loop 1 with time function output 1 L1 -Activation of loop 1 with time function output 2 ① - Loop 1 ② - Loop 2
Activation of the loop without time function									oO -Activation of loop without time function output 1 oO -Activation of loop without time function output 2 ① - Loop 1 ② - Loop2
Alarm output activation									A0 -Switch off alarm relay A1 -Switch on alarm relay
Inductance of loop 1									Measurement of the inductance, value in µH
Inductance of loop 2									Measurement of the inductance, value in µH
Exiting simulation mode									Return to function mode

6 Troubleshooting

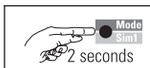
If an error occurs, operating mode «A» and error display «E» light up alternately and an error code such as E 012 is displayed. The LED changes to flashing red, the 4 most recent errors are stored and can be interrogated.

Display	E001	E002	E011	E012	E101	E201	E301	E302	E311	E312
Error	Interruption Loop 1	Interruption Loop 2	Short circuit Loop 1	Short circuit Loop 2	Under-voltage	EPROM Error	Loop 1 too large	Loop 2 too large	Loop 1 too small	Loop 2 too small

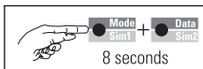


Briefly pressing the «Data» button shows the last of 4 errors on the display. Another short press switches to the error before that, and so on. When the button is pressed for the 5th time, the device switches back to automatic mode. If you press the «Data» button for 2 seconds during the query, all error messages are deleted. The figure shows memory slot 1 in which error 001 Interruption loop 1 has been stored (example).

7 Reset



Reset 1 (recalibration)
The loop(s) is/are recalibrated.



Reset 2 (factory setting)
All values are reset to the factory settings (see Table 4.11a).
The loop(s) is/are recalibrated.

8 Most important technical data

	Loop230/1	**Loop230/1 11**
Supply voltage / Power consumption	24 VAC –20 % to +10%, max. 2 VA 24 VDC –10 % to +20%, max. 1.5 W 94–240 VAC ±10%, 50/60, max. 2.9 VA	24 VAC –20% to +10%, max. 1.8 VA 24 VDC –10% to +20%, max. 1.3 W 115 VAC –15% to +10%, max. 3.5 VA 230 VAC –15% to +10%, max. 3.7 VA
Power consumption	max. 2 VA	24V 1.2 VA
Loop inductance	max. 40–1000 µH, ideally 80–300 µH	max. 40–1000 µH, ideally 80–300 µH
Loop connection wiring	max. 200 m 1,5 mm² min. 20x/m	max. 200 m 1,5 mm² min. twisted 20x/m
Loop resistance	< 8 Ohm with connection wire	< 8 Ohm with connection wire
Output relay (loop)	240 VAC/2 A AC1	240 VAC/2 A AC1
Output relay (alarm)	60 VAC, 0.3 A, AC1	–
Dimensions	22.5 x 94 x 88 mm (W x H x D)	36 x 74 x 88 mm (W x H x D)
Housing mounting	Direct DIN rail mounting	Mounting rail installation via 11-pin base ES 12
Connection type	Plug-in terminals	Screw terminals base ES 12
Protection class	IP 30	IP 20
Approvals, safety	See declaration of conformity at www.deasystem.com	See declaration of conformity at www.deasystem.com
Operating temperature	–20°C to +60°C	–20°C to +60°C
Storage temperature	–40°C to +70°C	–40°C to +70°C
Air humidity	<95% non-condensing	<95% non-condensing

9 Declaration of conformity

Manufacturer: DEA System S.p.A. - Via della Tecnica, 6 - 36013 - Piovene Rocchette (VI) - ITALY
Product, type: Loop230/1, Loop230/1 11
Model: 24VDACDC, 115VAC, 230VAC, 1-loop devices, 2-loop devices
Intended purpose: Programmable loop detector for controlling gates and barriers as well as for regulating and counting cars in parking areas if used in accordance with the intended purpose, complies with the basic requirements acc. to:
R&TTE Directive, Appendix III 1999/5/EC

10 Contact data

Manufacturer: **DEA System S.p.A.**
Via della Tecnica, 6
36013 Piovene Rocchette (VI)
ITALY

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