

# Pressure Wave Switches

Profiles, push buttons, pressure cells and ground sensors for automatic doors, gates and barriers

# Maintenance free, robust, tried-and-tested

- Very fast closing
- Pressure wave technology for a high standard of switching reliability
- Straightforward and robust structure
- Millions of units successfully in service

# Pressure wave switches

# For automatic doors, gates and barriers

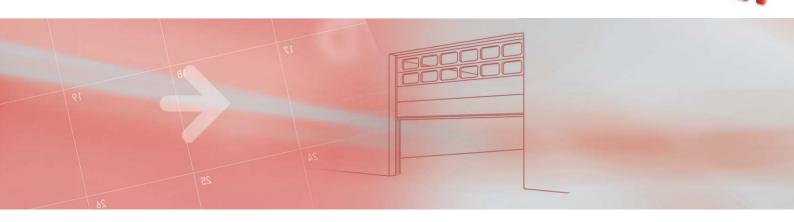
## Can be used wherever a reliable switching pulse is required

The highly sensitive response of the pressure wave system means that it protects people and vehicles from almost all directions. The robustness and durability of the pressure wave switch make it an impressive opening sensor as well.

#### **Quick and reliable**

Even low pressure of 3 to 4 mbar is enough to guarantee the electric contact will switch. Pressure wave switch systems are well proven and maintenance free, as well as offering a particularly good cost-performance ratio.



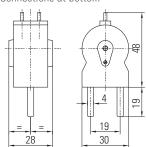


# Types of the D1 and D3 series

Technical data see back page, measurements in mm

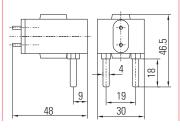
#### D1 series - small and universal **DW10**

Pluggable pressure wave switch Connections at bottom



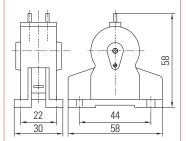
#### DW10s

Pluggable pressure wave switch Connections on the side



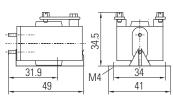
# DW20s

Pressure wave switch with screw connections. Easily accessible screw terminals and 6.3 mm blade terminals



#### **DW40**

Pressure wave switch with connection terminals and 6.3 mm plug tab with clip-on mounting bracket



#### **Types**

209986 DW10 DW10s 209999 DW20s 210004 210018 DW40

#### D1 options e.g. for DW40 210018 **DW40**

Pressure closes contact

#### 210020 DW40D

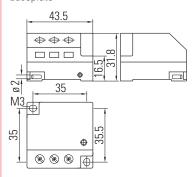
Pressure closes contact, sealed pressure equalisation valve

#### 210025 DW40D0E

Pressure opens contact

## D3 series - wide range use

Pressure wave switch with two-hole baseplate



#### **Types**

#### 209853 **D3-P**

Pressure activates the binary switch

#### D3-PB 209854

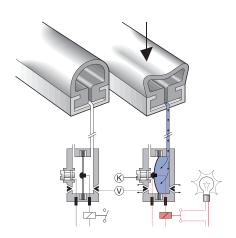
Pressure activates the binary switch, pressure equalisation valve is sealed (birotil)

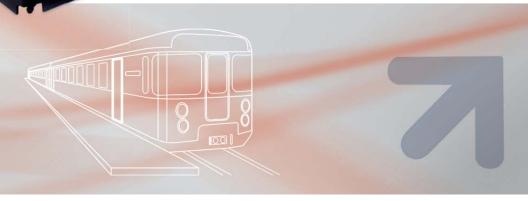


# **Functional principles**

A pressure wave generated by the sensor reaches the pressure wave switch. The membrane deflects and the electric contact switches.

The electric contact remains switched for as long as the input pressure is above the response pressure. With the contact (K) and valve screw (V) the switch's sensitivity can be set individually.





# Reliable in every application

#### **Situation**

Bus door/Train door

#### **Solution**

Safety: Pressure wave profile DWS

#### **Advantages**

- The pressure wave profile is very sensitive and switches quickly
- It protects against crushing and shearing, when the door is closing



# Situation

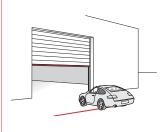
Roller gate

#### **Solution**

- Opening signal: Ground sensor DGU
- Safety: Pressure wave profile DWS

#### **Advantages**

- The ground sensor is very robust and can be driven over by all kinds of vehicles
- The pressure wave profile is very sensitive and switches quickly



#### **Situation**

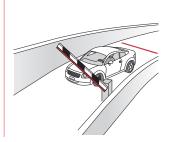
Barrier

## **Solution**

- Opening signal: Ground sensor DGU
- Safety: Pressure wave profile DWS

#### **Advantages**

- The ground sensor is very robust and can be driven over by all kinds of vehicles
- The pressure wave profile is very sensitive and switches quickly



#### **Situation**

Sanitary area / explosive area

#### Solution

Sensor: foot or hand-operated push button

#### **Advantages**

 Simple and safe control of electric switching procedures in damp rooms or rooms with a potentially explosive atmosphere



# Pressure wave sensor

# Pneumatic pressure wave profiles

## Safety with profile

When a rubber profile gets an impact, the inside air volume is compressed pulsed and thereby generates a pressure wave. It passes through the connecting hose to the pressure wave switch, where it triggers a contact.

# Order possibilities of the edges and rubber profiles

- 1. Fully assembled edge incl. of rubber and aluminium profile, e.g. DWS-C/1000 mm
- 2. Only rubber profile with pneumatic connections, e.g. DWSGUMMI-C/1000 mm
- 3. Made to measure rubber profile, e.g. DWSGO-C/1000 mm
- 4. Made to measure aluminium profile, e.g. DWSALU-C/1000 mm





# **Profile types**

Technical data see back page, measurements in mm

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Dimensions	2 8 14	2.5	2.5	2.5 23.5	36	2.5
	small air chamber	universal	universal + high	with sealing lip	big air chamber	adheasive
Rubber profile	DWS-D	DWS-C	DWS-B	DWS-Bs	DWS-A	DWS-P
Article no.	210173	210171	210167	210168	210165	210175
Material	PVC black	PVC black	PVC black	PVC black	PVC black	PVC black
Air cross section	77 mm²	180 mm²	400 mm <sup>2</sup>	400 mm <sup>2</sup>	550 mm <sup>2</sup>	213 mm²
Weight* with/without rail	0.27 kg/lfm / 0.14 kg/lfm	0.66 kg/lfm / 0.33 kg/lfm	0.75 kg/lfm / 0.42 kg/lfm	0.78 kg/lfm / 0.46 kg/lfm	1.3 kg/lfm / 0.8 kg/lfm	0.3 kg/lfm
Mounting Rail (Dimensions in mm)	<u>∞</u>   6   14   14	13 25 25	13 25 25	13 25 25	22 <u>22 36 36 36 </u>	
Aluminium profile	DWSALUD	AP-2	AP-2	AP-2	AP-1	
Article no.	210144	209577	209577	209577	209574	
Packaging unit	6 m	6 m	6 m	6 m	6 m	
End pieces	DWSED	DWSEC	DWSEB	DWSEB	DWSEA	DWSEC
Article no.	209154	208995	208996	208996	208997	208995



# Ground sensor DGU\*

Technical data see back page

#### Type selection

The DGU ground sensor is available in five standard overall lengths.

## Standard overall length A in mm:

540, 1040, 1540, 2040, 3040

## Standard effective length B in mm:

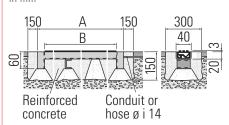
500, 1000, 1500, 2000, 3000

### Installation

During installation care should be taken that the steel channel base is flush with the ground and only the ribbed part of the rubber profile projects above the surface.

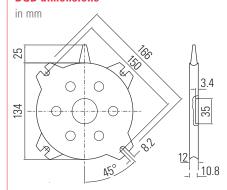
#### **Installation dimensions**

in mm



# Pressure cell DGD\*

#### **DGD** dimensions



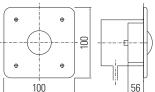
## **Specifications**

- Max. pressure load 5 t / element
- Max. preload 40 kg/element
- Response weight ca. 5 kg/element
- Deformation 0.2 mm / 100 N
- Max. deformation 1.2 mm / 600 N
- Number of elements per system max. 8
- Operating temperature -20° to +70° C

# Push buttons DT\*

#### **DT** dimensions

in mm



# Foot-operated push button DTFU Hand-operated push button DTFUW

- Visible plate made from chromium-nickel steel
- Black push button bellows

The DTFUW version is a handoperated push button and has an especially soft bellows.

#### Type

209979 DTFU 209981 DTFUW

#### Replacement part

Bellows to DTFU 209689 209690 Bellows to DTFUW

# Pressure wave switches and sensors

# **Connection elements**

## **Simplicity of connection**

Pressure wave switches and sensors can be connected together easily and in a variety of ways. A wide range of connection pieces and hoses guarantees flexibility and reliable function appropriate to your application.



# **Connection elements**

Measurements in mm

# **PVC 2/4**

PVC air hose with 2/4 mm diameter, colour transparent



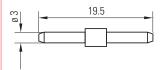
#### **NEO 2/4**

Neoprene air hose with 2/4 mm diameter, colour black, flame retardant



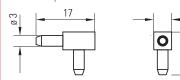
# $\mathbf{DWV}$

Straight air hose connection piece



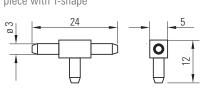
#### DWL

Air hose connection piece with L-shape



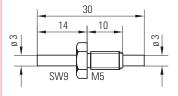
## **DWT**

Air hose connection piece with T-shape



# **A3M5**

Connection piece with two 3 mm diameter connections, thread M5



# Pressure wave switches

# **Accessories**

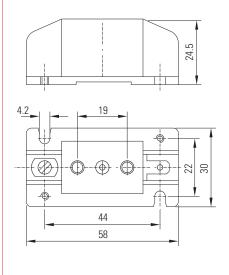


# Plug-in base, cover hood and housing

Measurements in mm

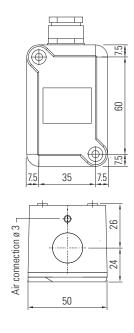
# DWSO plug-in base

- Space-saving and efficient installation of DW10 and DW10s
- Spring-mounted plugs
- Easily accessible connection terminals
- Ability to connect 6.3 mm blade terminals



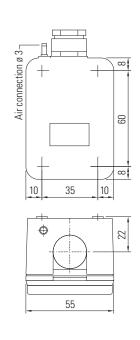
## **GEHDWGK 1**

- Impact-resistant screw-on housing for pressure wave switch serie D1
- Proctection class 65 (EN 60529)



## **GEHDWGK 11/GEHD3K1**

- Impact-resistant snap-in housing for pressure wave switch serie D1 and D3
- Proctection class 54 (EN 60529)



# **Ordering information**

Ground sensor DGU			Replacement rubber	Replacement rubber	
209932	DGU500	500 mm	<b>209942</b> DGUG500		
209928	DGU1000	1000 mm	<b>209935</b> DGUG1000		
209929	DGU1500	1500 mm	<b>209936</b> DGUG1500		
209930	DGU2000	2000 mm	<b>209937</b> DGUG2000		
209931	DGU3000	3000 mm	<b>209941</b> DGUG3000		

#### Pressure sensitive cell DGD

209926 DGD	DGD pressure sensitive cell
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# Pneumatic foot and hand-operated push buttons DT

209979	DTFU	Foot-operated push button DTFU	0 0
209689	B-DTFU	Bellows to DTFU	
209981	DTFUW	Hand-operated push button DTFUW	0 0
209690	B-DTFUW	Bellows to DTFUW	

#### Connection elements

Oominoon	on oromonio		
207495	PVC 2/4	PVC air hose, transparent, 100 m	
207502	NEO 2/4	Neoprene air hose, black, 100 m	
208930	DWV	Straight air hose connection piece	
208929	DWL	Air hose connection piece with L-shape	7
208928	DWT	Air hose connection piece with T-shape	
208968	A3M5	Connection piece with two ø 3 mm connections, thread M5	

Accessoires				
210191	DWS0	Plug-in base for DW10 and DW10s		
212865	GEHDWGK1	Impact-resistant screw-on housing for pressure wave switch serie D1		
212866	GEHDWGK11	Impact-resistant snap-in housing for pressure wave switch serie D1, grey housing bottom	5	
212864	GEHD3K1	Impact-resistant snap-in housing for pressure wave switch serie D3, black housing bottom		
210032	D1CLIP	Mounting bracket for DW40	<b>3</b>	
213966	SPK3	Spiral cable 3 m, 4 x 0.5 mm <sup>2</sup> , PU	1	
239889	SPK5	Spiral cable 5 m, 4 x 0.5 mm <sup>2</sup> , PU	6	
213967	SPK-APD	Connection box, surface mount, 52 x 50 x 40 mm, material ABS	and I've	

The rubber profiles can be joined to the end pieces by using Tetrahydrofuran that can be bought at your local chemical store.

# Technical data

#### D1 series - DW10/DW10s/DW20s/DW40

Response pressure	
Max. pressure	150 mbar
Pressure equalisation	110 ml/min. at 2 mbar
Min./max. current	20 mA/500 mA (ACDC ohmic)
Min./max. operating voltage	24-250 VAC, 24-50 VDC
Output	NC or NO
Mechanical service life	50 million switchings
Ambient temperature	-30°C to +70°C

#### D3 series - D3P/D3V/D3PB

D3 Series – D3P/ D3V/ D3PB	
Response pressure	2 mbar
Max. pressure	500 mbar
Pressure equalisation	65 ml/min. at 2 mbar
Min./max. current	1 mA/1000 mA (ACDC ohmic)
Min./max. operating voltage	6-250 VAC, 6-50 VDC
Output	Changeover switch
Mechanical service life	10 million switchings
Ambient temperature	-30°C to +80°C

#### Pneumatic pressure wave profiles

Material	PVC
Profile length	max. 6 m
Connection cable to PW	max. 10 m (ø 2/4 mm)
Manufacturing tolerances	at 20°C
Width/height	± 2 mm
Length up to 1000 mm	± 3 mm
Length up to 2000 mm	± 5 mm
Length up to 4000 mm	± 9 mm
Length up to 6000 mm	± 15 mm

#### Ground sensor DGU

U-profile: galvanised steel Rubber profile: EPDM
max. 10 m (ø 2/4 mm)
max. 2 t
max. 30 km/h
-20°C to +60°C

#### Housing GEHDWGK-1 / GEHDWGK-11

nousing denietran 17 denietran 11		
Material	Impact-resistant plastic,	
	Luran 786R, grey or black	
Fastening	2 x M4 screw	
Electrical connection	PG-cable gland PG11	
Air connection	Connection nipple ø 3 mm	
Protection class	IP 54 or IP 65 (EN 60529)	

#### Note

Technical details and recommendations concerning our products are based on experience and are an aid for the orientation of the user. Details stated in our brochures and data sheets do not guarantee special properties of the products. This does not apply to special product properties confirmed by us in writing or individually. Subject to technical alterations

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