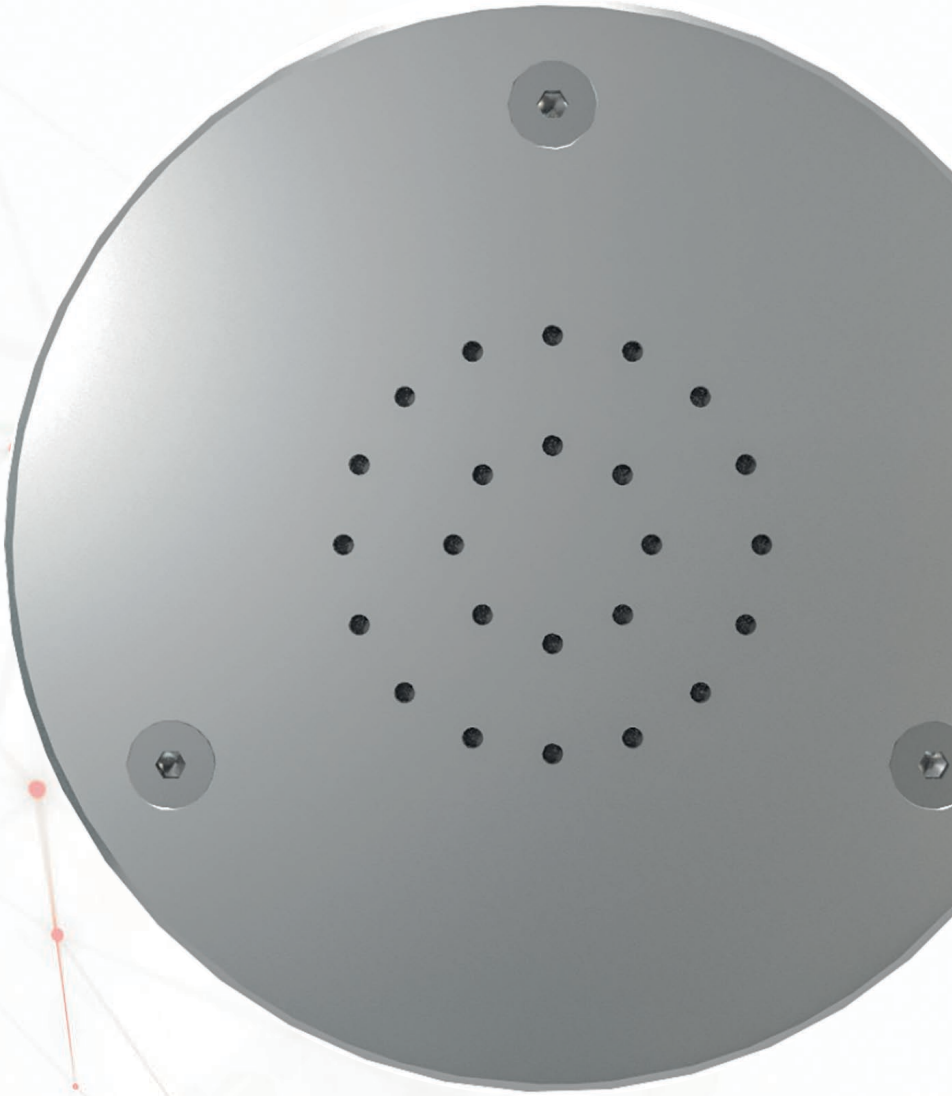
MAFELEC

TSL-ESCHA



SOUNDERS

MAFELEC and TSL-ESCHA GmbH

MAFELEC develops control and signaling solutions for harsh environments. From push buttons to switches, from complete control panels to door control solutions, the company offers solutions that are best suited to the needs of our partners.

TSL stands for Touch, Signal and Light. Door opening push buttons, signal lights, sounders, indicator and display devices as well as LED lighting are part of the product portfolio. TSL-ESCHA develops, manufactures, and distributes individual customer solutions for public transportation.

Members of the MAFELEC TEAM

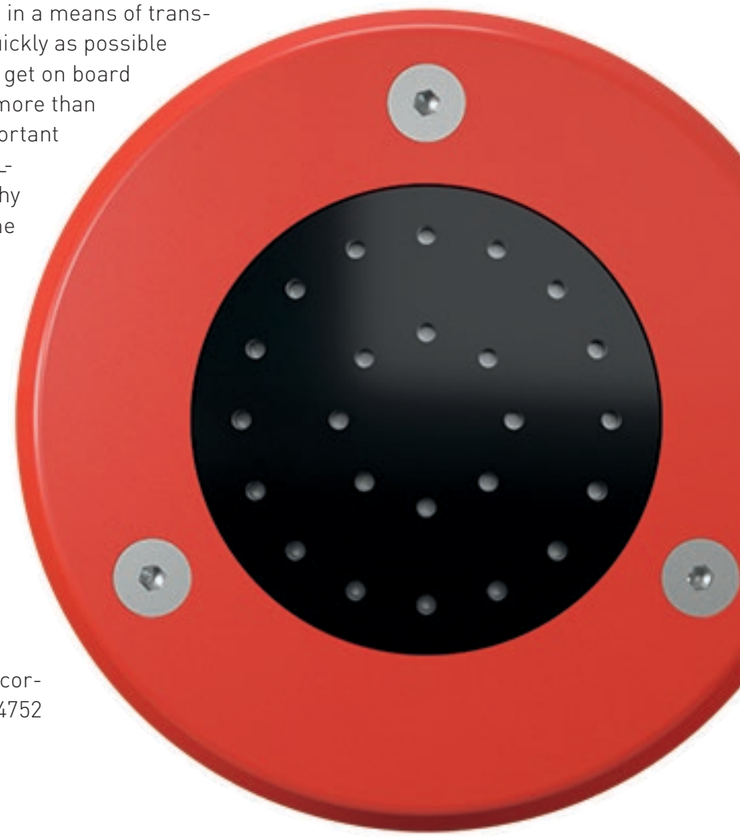
TSL-ESCHA based in Halver (Germany) and MAFELEC in Chimilin (France) are part of the MAFELEC TEAM. The owner-managed group of companies offers solutions for HMI, lighting and sensors and is active in the markets of bus and railway, industrial vehicle, industry, energy, defense, aerospace, and elevators.

CONTENTS

SOUNDERS

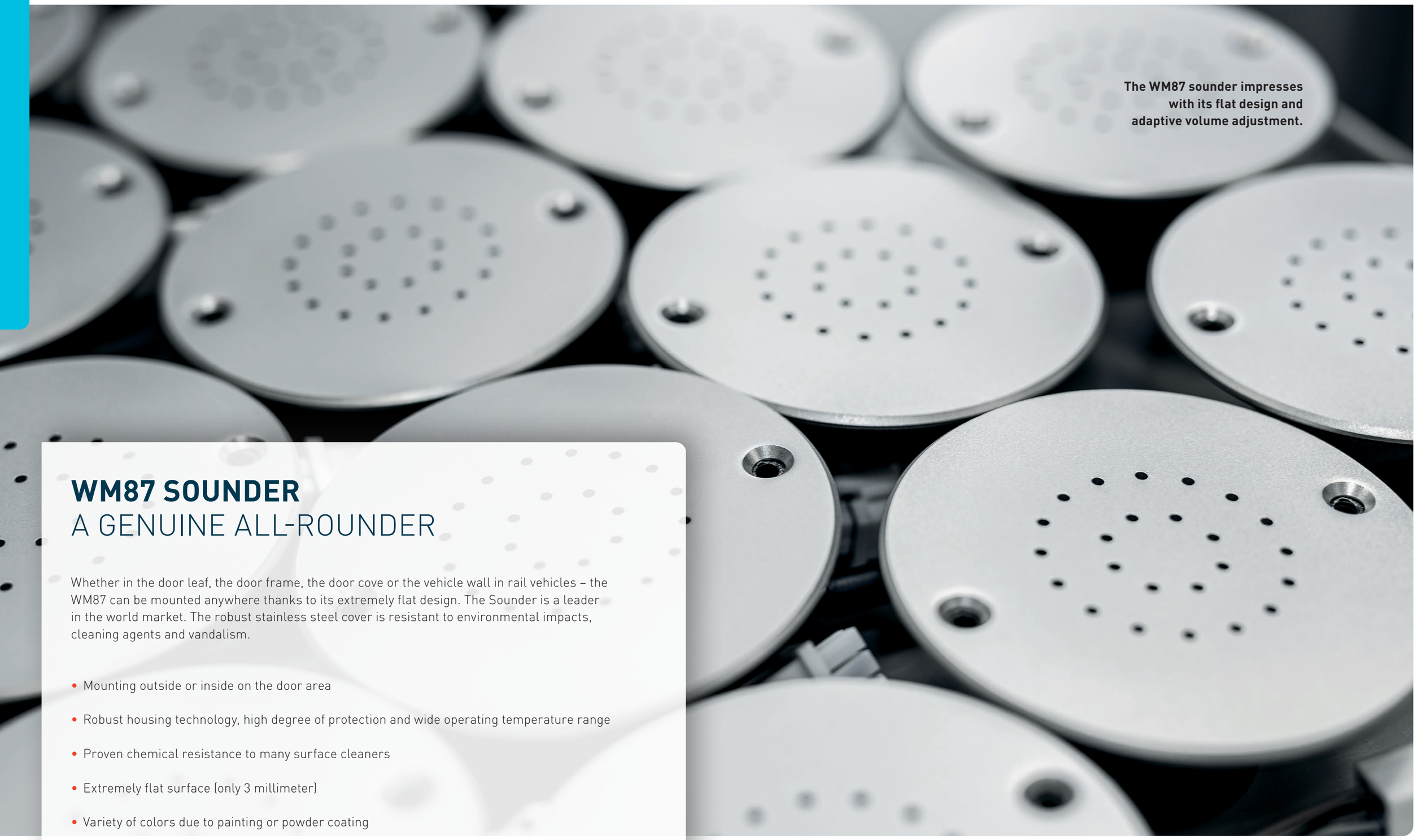
SOUNDERS
WARNING OF DANGERS AT DOOR SYSTEMS

The door entrance is still the most critical area in a means of transport. Passengers want to get off the train as quickly as possible in short cycle times. Other passengers want to get on board just as quickly. All this with a door opening no more than two meters wide. This makes it even more important to install warning sounders like those from TSL-ESCHA in vehicle side entry systems. That is why acoustic sounders in the door area have become indispensable, as they warn passengers timely about the status of the door.



- Sound level can be adjusted in compliance with the required standard
- Individual tones or WAVE files can be integrated
- Sounder settings can be individually adjusted even on site when installed
- Complies with the statutory requirements according to TSI PRM and standards such as EN 14752

TSL sounders ensure safe entry and exit.



The WM87 sounder impresses with its flat design and adaptive volume adjustment.

WM87 SOUNDER
A GENUINE ALL-ROUNDER

Whether in the door leaf, the door frame, the door cove or the vehicle wall in rail vehicles – the WM87 can be mounted anywhere thanks to its extremely flat design. The Sounder is a leader in the world market. The robust stainless steel cover is resistant to environmental impacts, cleaning agents and vandalism.

- Mounting outside or inside on the door area
- Robust housing technology, high degree of protection and wide operating temperature range
- Proven chemical resistance to many surface cleaners
- Extremely flat surface (only 3 millimeter)
- Variety of colors due to painting or powder coating

WM87
ROBUST UND EXTREMLY FLAT

The WM87 sounder have an optional adaptive volume adjustment to the environment. The sound level thus becomes accordingly louder in a suburban train loaded with passengers at rush hour while automatically becoming quieter on a quiet night trip in an Intercity train car.

The vehicle operator can use up to seven different tones, melodies or voice outputs to draw attention to different situations on the vehicle. The WM87 is the world leader in terms of functionality.

Since the installed sounder level depends on the respective installation situation, the acoustic warning sounders cannot be set at the factory to the values required by the standards. TSL-ESCHA has solved this problem with a specially developed tool for parameter settings: The required volume values can be set directly on the vehicle. The adjustment or change of frequencies and times can also be adapted quickly and easily afterwards.

The WM87 sounder mounted from the front side and cable outlet at the rear with various plug options

- Adaptive sound level adjustment on all side entry systems for rail vehicles
- Can be mounted from the front side, cable outlet at the rear with various connector options
- Complies with the current standards for rail vehicles (EN 50155, EN 45545-2, EN 61373, EN 14752)
- Up to seven different tones, melodies or voice outputs can be parameterized according to customer requirements
- Frequency range 450 ... 8,000 Hz
- Volume depending on installation type and frequency up to a maximum of 90 dB(A) at one meter
- Quick mounting and maintenance-free
- High degree of protection (IP67)
- Available with a large diameter of 100 millimeters, WM87-FA with three mounting screws as shown below

Nominal voltage	24 ... 110 VDC
Nominal power	1,5 W @ 24 VDC
Operating temperature	-40 ... +80 °C
Degree of protection	IP67
Visible external dimensions (D x H)	Ø87 x 3 mm

BUILT-IN SOUNDER SM87
COMPACT AND FOR CONCEALED MOUNTING

- Integration of the acoustic warning in the interior of rail vehicles, for example behind the overhead area of the door or boarding area in a pre-drilled installation situation
- For rear mounting
- Frequency range 450 ... 8,000 Hz
- Volume: depending on installation situation and frequency
- Optional adaptive volume adjustment of the SM87 to the environment

Nominal voltage	24 ... 110 VDC
Nominal power	1,5 W @ 24 VDC
Operating temperature	-40 ... +80 °C
Degree of protection	IP40
Visible external dimensions (D x H)	Ø56 x 3 mm

BUILT-IN SOUNDER SM87V
LOUDER WITH SOUND AMPLIFIER PANEL

- Integration of the acoustic warning in the interior of rail vehicles, for example behind the overhead area of the door or boarding area in a pre-drilled installation situation
- Increase in volume (sound pressure) due to additional sound amplifier panel
- For surface mounting solutions
- Frequency range 450 ... 8,000 Hz

Nominal voltage	24 ... 110 VDC
Nominal power	1,5 W @ 24 VDC
Operating temperature	-40 ... +80 °C
Degree of protection	IP40
Visible external dimensions (D x H)	Ø87 x 14 mm

PKW21
EASY-TO-UNDERSTAND AND VERSATILE

TSL-ESCHA's PKW21 sounders are used in rail vehicles. The products mainly installed in the door area warn passengers of opening and closing doors by means of various beeps. Thanks to the similar construction of the Presskey push button, the PKW21 sounder fits well into the overall picture of the vehicle along with push buttons and signal lights.

Equipped with an optional adaptive adjustment to the ambient sound level, TSL's PKW21 acoustic warning sounder ensures that each passenger hears the beeps at an appropriate volume. This ensures that the beeps are heard just as well in an suburban train with celebrating soccer fans as during a quiet night ride in an Intercity train car.

Optical feedback can also be added with the SLR120 signal light. The illuminated ring matches the size of the sounder and uses red/green LEDs to indicate the status of the door. This results in even better passenger warning. The signal light encloses TSL's PKW21 buzzer and uses its mounting screws. The WM87 can also be combined with the SLR120.

PKW21 in combination with the SLR120 signal light.

Nominal voltage	24 ... 110 VDC
Nominal power	1,5 W @ 24 VDC
Operating temperature	-40 ... +80 °C
Degree of protection	IP67
Visible external dimensions (D x H)	Ø87 x 10 mm

- Robust housing technology, high degree of protection and wide operating temperature range
- Proven chemical resistance to many surface cleaners
- Can be mounted from the front side, cable outlet at the rear with various connector options
- Complies with the current standards for rail vehicles (EN 50155, EN 45545-2, EN 61373, EN 14752)
- Up to seven different tones or melodies can be parameterized according to customer requirements
- Frequency range 450 ... 8,000 Hz
- Volume depending on installation type and frequency up to a maximum of 90 dB(A) at one meter
- Variants: various colors possible

PKW21 FOR GLASS MOUNTING
EFFECTIVE AND DISCREET

Glass doors are mainly used in trams, metros and buses. TSL-ESCHA offers not only door opening push buttons for glass mounting, but also warning sounders such as the PKW21. It has the same design as the PK series of push buttons. For the PK and therefore also for the PKW21 there is a new mounting adapter with a modern and optimized design for glass mounting. The plastic housing, which complies with the increased fire protection requirements, is uniformly black.
The mounting adapter with movable cable cover easily compensates for tolerances and gaps. The cable covers are available for five different angles (0°, 6°, 10°, 15°, 25°) for adaptation to the respective door profiles.

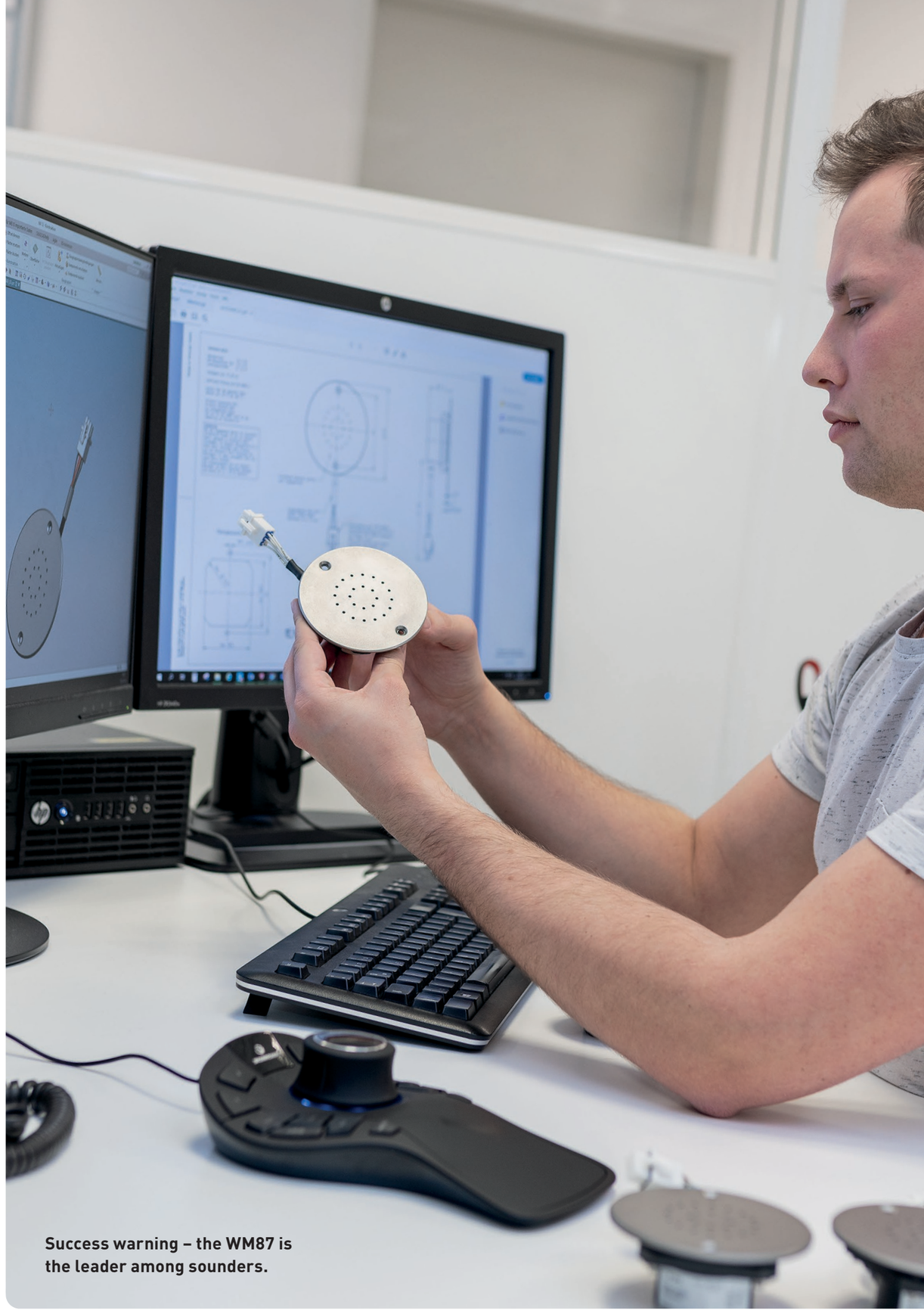
Currently, the PKW21 is most commonly used in glass doors with a single-sided function. The front ring is currently available in red, gray and black. Especially with the black front ring and the black speaker bezel, the PKW21 is visually discreet, but still very effective due to the adaptive volume adjustment.

- Can be mounted from the front side
- Complies with the current standards for rail vehicles (EN 50155, EN 45545-2, EN 61373, EN 14752)
- Up to seven different tones or melodies can be parameterized according to customer requirements
- Frequency range 450 ... 8,000 Hz
- Volume depending on installation type and frequency up to a maximum of 90 dB(A) at one meter

SOUNDER ACCESSORIES
PRACTICAL AND CUSTOMIZED

Sounders cannot necessarily be installation situation on the real train or tram. The different installation situations can have both sound-absorbing and sound-amplifying effects on the sound level. The acoustic warning sounders must comply with the values set by the standards for each installation situation. This is where the TSL acoustic warning sounder can show its real advantage: Our own DeCon parameterization tool and the appropriate parameters can be used to quickly and easily change sound levels, frequencies and times and adapt them to comply with the currently valid requirements.

- Parameterization box (for uploading individual tones and melodies to the buzzer)
- Decon tool (tool for creating customized tones, melodies and frequencies)



Success warning – the WM87 is the leader among sounders.

MAFELEC TEAM

CREATING SMART AND
SUSTAINABLE INTERFACES

1000321. 01_09-2022-EN . Printed in Germany

HMI
INTERIOR AND EXTERIOR

- DOOR EQUIPMENT
- PASSENGER COMFORT
- SANITARIES
- DRIVER DESK
- SAFETY SOLUTIONS

DETECTION & PROTECTION

- VOLTAGE & CURRENT SENSORS
- CIRCUIT BREAKERS
- INSULATORS AND BUSHINGS
- POWER SWITCHES

LIGHTING
INTERIOR AND EXTERIOR

- FRONT LIGHTING
- INTERIOR LIGHTING
- EXTERIOR LIGHT SIGNATURE

MAFELEC

MAFELEC
471, Route de la Cuisinière | 38490 Chimilin | France
T +33 4 763 207 33 | contact@mafelec.com
www.mafelec.com

TSL-ESCHA

TSL-ESCHA GmbH
Elberfelder Straße 1 | 58553 Halver | Germany
T +49 2353 66796-0 | info@tsl-escha.com
www.tsl-escha.com

MEMBERS OF THE MAFELEC TEAM

PETERCEM SWITCHES

STOPCIRCUIT

COMTRONIC

FULL ELECTRONIC SYSTEM

PETERCEM SENSORS

MAFELEC CHINA