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 products 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 (EN 14752) and TSI PRM

- Individual tones or WAVE files can be integrated

- Sounder settings can be individually adjusted even on site when installed

- Complies with the normative standards such as EN 45545, EN50155 and EN 61373
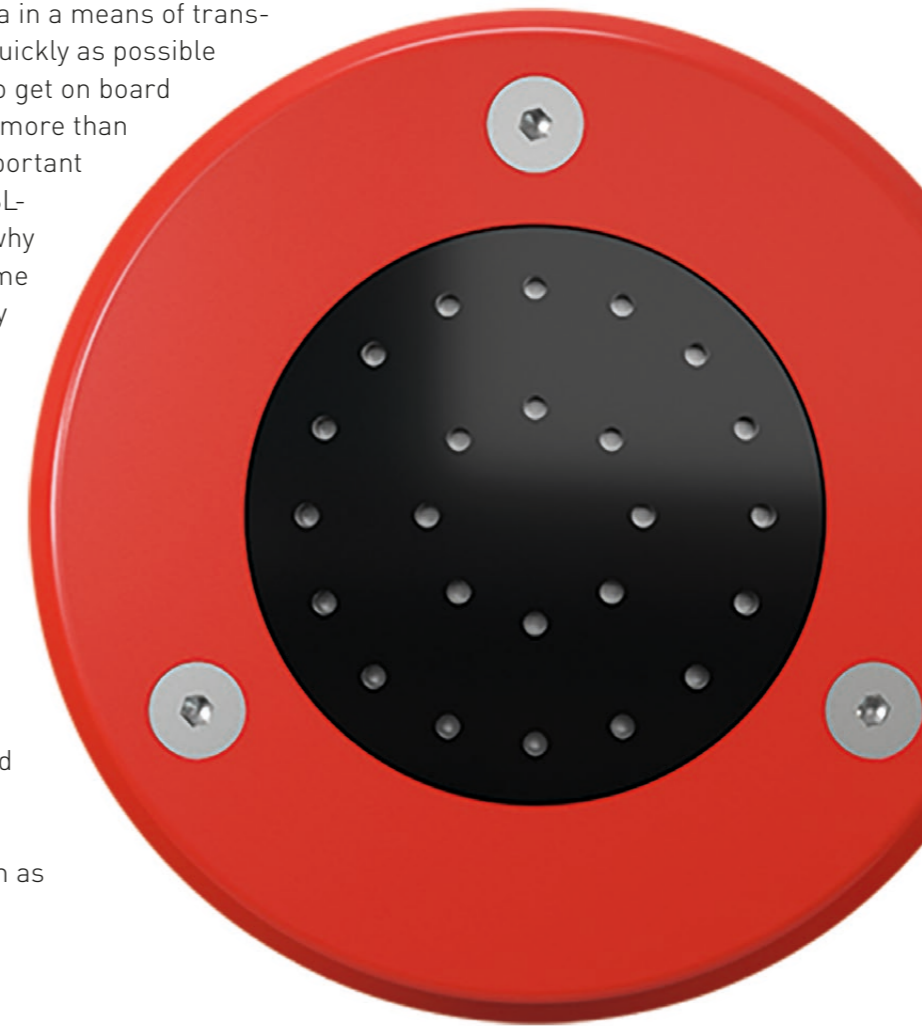
TSL sounders ensure safe entry and exit.

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 the door area

• Robust housing technology, high degree of protection and wide operating temperature range

• Proven chemical resistance to many surface cleaners

• Extremely flat design (only 3 millimeter)

• Variety of colors due to painting or powder coating

• Orientation tones according to TSI-PRM

• Voice output possible

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 filled with passengers during rush hour, while it automatically becomes quieter on a tranquil night trip in a tram.

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.

- 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) and TSI PRM

- 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 a distance of one meter

- Quick mounting, maintenance-free

- High degree of protection (IP67)

- Available with a large diameter of 100 millimeters, WM87-FA with three mounting screws as shown below

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

Operating 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

WM87 in combination with the SLR120 signal light (red/green LEDs).

WSM87
SOUNDER OF THE NEW GENERATION

NEW

The WSM87 is a further development of TSL-ESCHA. With its timeless design and extended functions, it sets new standards in the field of acoustic sounders for side entry systems.

Offering up to 15 different tones, the WSM87 provides vehicle operators with a wide range of individual design options, effectively drawing attention to various conditions in the vehicle. The warning tone is played at an appropriate volume depending on the situation. The WSM87 has the significant advantage of the microphone reacting from a volume of 45 dB and offering better

regulation in quiet surroundings, reducing noise pollution on platforms and at stops, while also providing optimal acoustic quality with lower tolerances and constant sound output. It is quickly and easily set up with minimal parameterization effort.

The sounder is an indispensable tool for the safety and comfort of passengers, guaranteeing a reliable and precise warning in every situation to ensure a pleasant travel experience. In addition to its extended functions, the WSM87 continues to incorporate the proven features of the WM87.

- Adaptive sound level adjustment from 45 dB

- Complies with the current standards for rail vehicles (EN 50155, EN 45545-2, EN 61373, EN 14752) and TSI PRM

- Up to 15 different tones, melodies or voice outputs can be parameterized according to customer requirements

- Increased microphone sensitivity

- Lower tolerances ensure optimum acoustic reproducibility

- Dynamic orientation tones improve user-friendliness and efficiency

- Reduced parameterization time

Nominal voltage	24 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

Operating 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

Operating 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

- 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) and TSI PRM

- 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 a distance of one meter

- Variants: various colors possible

PKW21 in combination with the SLR120 signal light (red/green LEDs).

Operating 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

PKW21 FOR GLASS MOUNTING
EFFECTIVE AND DISCREET

- Can be mounted from the front side

- Complies with the current standards for rail vehicles (EN 50155, EN 45545-2, EN 61373, EN 14752) and TSI PRM

- 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 a distance of one meter

| Operating 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

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 sounder)

• DeCon parameterization tool (tool for creating customized tones, melodies and frequencies)
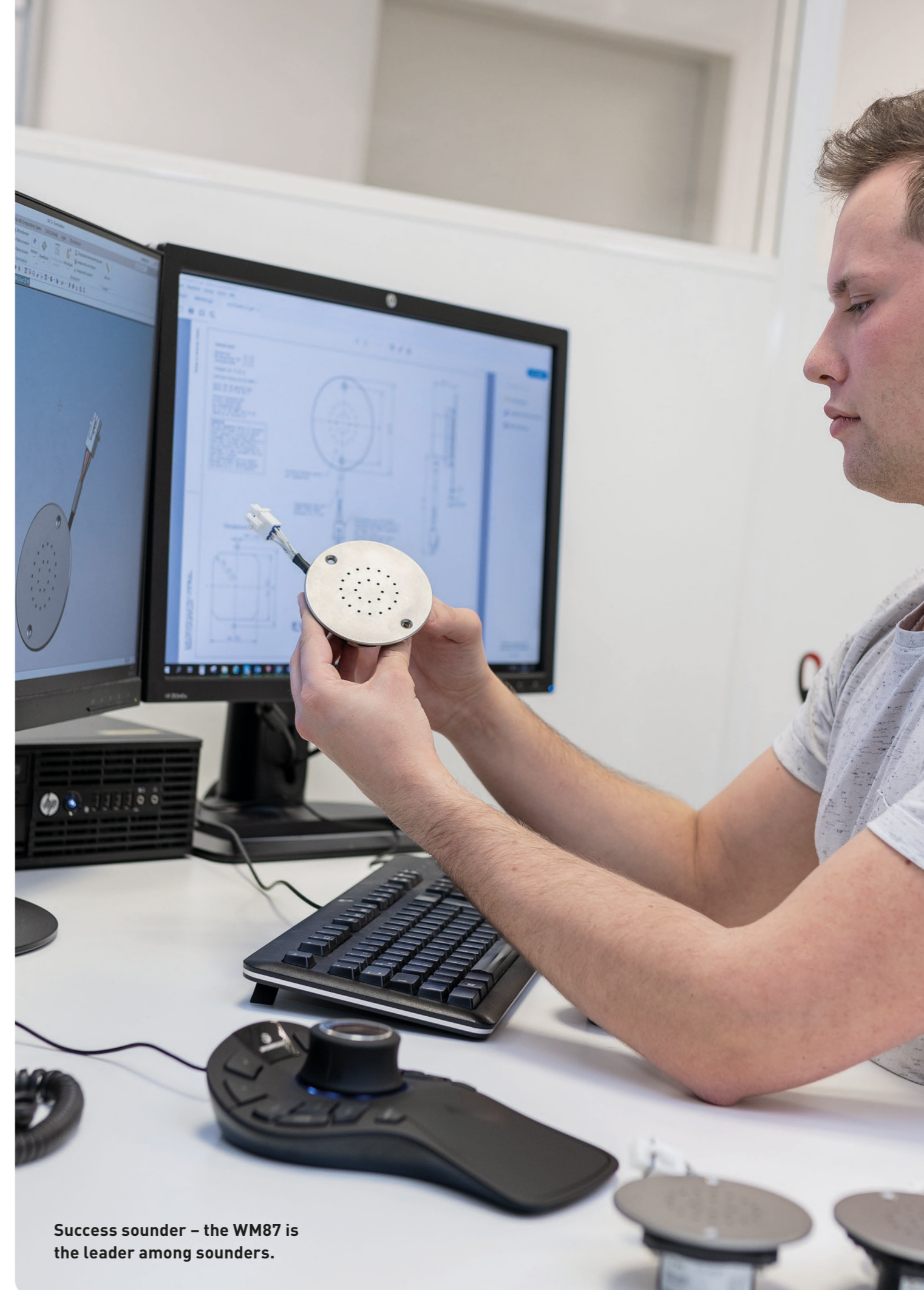
Success sounder – the WM87 is the leader among sounders.
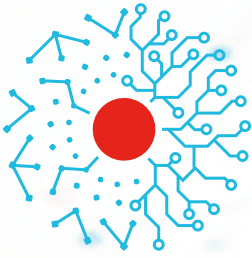
MAFELEC TEAM

CREATING **TOGETHER** SMART AND SUSTAINABLE INTERFACES

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
Post office box 1134 | 58541 Halver | Germany
T +49 2353 66796-0 | info@tsl-escha.com
www.tsl-escha.com

MEMBERS OF THE MAFELEC TEAM

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FULL ELECTRONIC SYSTEM

PETERCEM SENSORS

MAFELEC CHINA

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