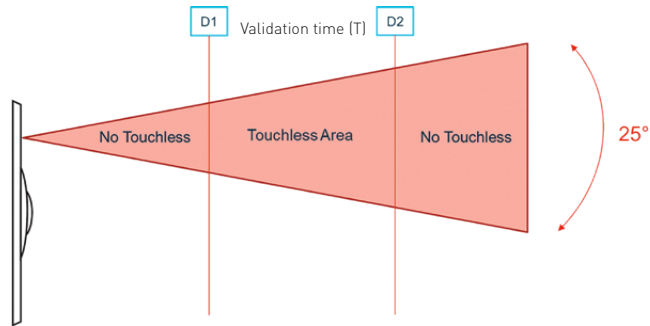


M-Safe Touchless Description

Infrared sensor technology operates on the principle of touchless object detection, within an infrared cone, as shown below. This technology detects objects or hands within a defined distance range and validation time.



Touchless calibration for standard target (ungloved hand).
Activation threshold will vary according to target type.
D1 = 30 mm (fixed value), D2 = typ. 80 mm (factory customizable),
T = typ. 200 ms (factory customizable)

To comply with various applications and customer requirements, the activation distance and validation time can be configured at the factory. A standard set-up is available based on our market feedback.

● Standard setup ● Customized setup

D2 (mm) = 80 D2 (mm) D2 =
[D2 max = 100 mm]

T (ms) = 200 T (ms) T =
[T min = 200 ms]
[T max = 500 ms]

Proven Highlights and Touchless Implementation

Regardless of the HMI, all existing features remain available with the Touchless implementation.

- Large range of color and pictogram combinations
- Multiple electrical schematics available
- Sound option included (dependent on HMI version)
- Depending on the product compliant with current standards for rail vehicles (TSI-PRM, EN 14752, EN 50155, EN 45545-2 and EN 61373) and standards for buses (ECE R107, ECE R10 and ECE R11)



MAFELEC TEAM

CREATING **TOGETHER** SMART AND SUSTAINABLE INTERFACES



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M-SAFE TOUCHLESS HMI

TOUCHLESS AND TACTILE ACTIVATION

M-SAFE: The Market 's Unique Hygienic HMI Range

To meet the growing demand for hygienic HMIs in applications such as door control, toilet operation, or stop requests, we have developed a configurable touchless activation solution.

The design algorithm created by the MAFELEC TEAM, which is embedded in our HMI, analyzes the information received from the infrared sensor and determines whether to authorize the activation of the push button. This technology is advantageous as it is compatible with all types of objects or parts of the human body, whether covered or not.

Available as an option in our main ranges of push buttons, touchless activation is complemented by tactile actuation to ensure reliable activation for all passengers under various conditions of use, in compliance with application standards such as TSI PRM, EN14752, and ECE R107.



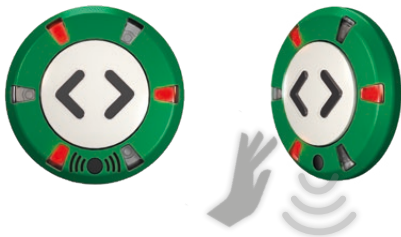
Touchless Option in Our HMI Portfolio

M-Door GMT



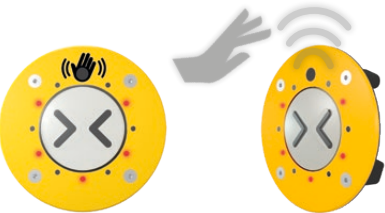
Mounting type	Glass without drilling
Nominal voltage	12 or 24 VDC
Nominal current	145 mA @ 24 VDC
Luminous colors	Red, green, blue, white, amber
Dimensions	100 x 136 x 14 mm
Degree of protection	IP65
Sound option	No
Main Applications	Access, interior or gangway doors
Product status	Released

PKT55 with Touchless Function



Mounting type	Various mounting types possible
Operating voltage	24...110 VDC
Nominal current	Typ. 50 mA @ 24 VDC
Luminous colors	Red, green
Dimensions	Ø87 mm
Degree of protection	IP67
Sound option	Yes
Main Applications	Wall panel or door profile
Product status	Prototype

CKT with Touchless Function



Mounting type	Various mounting types possible
Nominal voltage	24 VDC
Nominal current	Up to 50 mA @ 24 VDC
Luminous colors	Red, green, yellow
Dimensions	Ø100 mm
Degree of protection	IP67 front and back side
Sound option	Yes
Main Applications	Door area, lavatories
Product status	Released