ELEKTRO-TIPP

08 | 2026

CUSTOMER INFORMATION FOR ELECTRICAL PROFESSIONALS

HENSEL

Dear reader,

When every minute counts in an emergency, the electrical power supply must function reliably. Especially in critical infrastructures, solutions are required that ensure the operation of safety-relevant systems even under extreme conditions such as fire exposure. Electrical functional integrity and insulation integrity play a central role in this. The prerequisite is comprehensively tested systems that withstand the highest requirements. At Hensel, our solutions undergo numerous tests to prove their reliability under realistic loads.

As an expert in secure power supply, we develop practical solutions for functional integrity and insulation integrity. New to our range are two cable junction boxes with protected branch for main line protection. They offer additional safety in energy distribution and expand our portfolio for demanding applications.

In this way, we support you in implementing your projects in a future-proof manner – and give you the assurance that you can always offer your customers a reliable solution.

Yours

Philipp C. Hensel, Geschäftsführer der Gustav Hensel GmbH & Co. KG

SAFETY WITH SYSTEM – EVEN IN EMERGENCIES

IN THE EVENT OF FIRE, THE ELECTRICAL FUNCTION MUST BE MAINTAINED

When there is a fire, every minute counts. Safety-relevant electrical systems must continue to operate reliably even under fire exposure, for example emergency lighting, fire alarm systems, smoke extraction, or fire service elevators.

Functional integrity ensures that these circuits remain operational for a defined period, protecting people and supporting rescue measures. What is crucial is not a single product, but the tested interaction of a complete wiring system consisting of cables, support systems, fastenings, connection technology, and cable junction boxes.

Functional integrity is only an additional requirement in the event of a fire. Cable junction boxes must, of course, continue to meet all the requirements of everyday installation.

DIN 4102-12 is an established standard for verifying the functional integrity of electrical cable systems and is often used internationally as a recognized system verification.

In addition to functional integrity, insulation integrity is also often considered. While insulation integrity assesses individual components, functional integrity describes the operability of the entire wiring system.

Functional integrity does not arise from a single product – but from the tested system.

The ENYCASE **FK series** was specially developed for these requirements and meets the highest standards regarding fire protection and operational safety.

Fire test according to DIN 4102-12

FUNCTIONAL INTEGRITY ARISES IN THE TESTED SYSTEM

Functional integrity does not arise from individual products, but from the tested interaction of the entire wiring system consisting of cables, support systems, fastenings, connection technology, and cable junction boxes.

Only tested and professionally installed systems can ensure the required function in the event of a fire.

WHEN IS WHAT REQUIRED? E30, E60, E90 OR INSULATION INTEGRITY?

The requirements depend on the safety function and the required time in the event of a fire.

FUNCTIONAL INTEGRITY ACCORDING TO DIN 4102-12

E30

Functional integrity for at least **30 minutes**

Typical applications:

+ Emergency lighting
+ Fire alarm systems
+ Alarm systems
+ Controls for smoke and heat extraction systems
+ Other systems that are required during evacuation are needed

Objective:
Enable safe evacuation of persons

E60

Functional integrity for at least **60 minutes**

Typical applications:

+ Project-specific requirements
+ Systems with extended bridging function
+ Supplementary systems according to fire protection concept

Objective:
Ensure bridging of a longer period of time

E90

Functional integrity for at least **90 minutes**

Typical applications:

+ Firefighter elevators
+ Smoke protection pressure systems
+ Mechanical smoke extraction-systems
+ Water pressure boosting-systems
+ Hospital bed-elevators
+ Other systems required during firefighting operations

Objective:
Support of fire fighting and maintenance of critical functions

The required class is determined by the fire protection concept, the application, and the country-specific requirements – the application cases mentioned are typical examples and may differ in individual cases.

INSULATION INTEGRITY

PH120

Insulation integrity for at least **120 minutes**

Typical applications:

+ protection against short circuit, earth fault and electric shock in the event of fire
+ Maintenance of electrical insulation of cables and lines
+ Supply of safety-relevant circuits according to the fire protection concept
+ Cable systems with increased protection requirements

Objective:
Maintenance of electrical insulation to prevent short circuits, earth faults, power failures and dangerous touch voltages in the event of fire

FUNCTIONAL INTEGRITY OR INSULATION INTEGRITY?

Functional integrity considers the entire cable system in the installed system.

Insulation integrity evaluates, on the other hand, the behavior of individual components under fire exposure, e.g., PH120 according to BS EN 50200.

PLANNING PROCESS FOR FUNCTIONAL AND INSULATION INTEGRITY

The path to safe electrical cable systems in the event of fire

1 Check requirement

Understand requirements

+ Check country- and project-specific requirements
+ Observe the fire safety plan and regulatory requirements
+ Define the required safety function

Result: Clear requirements and constraints

2 Define objective

E/PH

Functional integrity or insulation integrity?

E **INTRINSIC FIRE RESISTANCE**
E30 / E60 / E90 acc. to DIN 4102-12

PH **INSULATION INTEGRITY**
e.g. PH120 acc. to BS EN 50200

+ Determine the required term of protection

Result: Defined protection objective and required duration

3 Select system

Combine materials correctly

+ Select the cable or wiring system
+ Specify the cable junction box / connection method
+ Determine the installation route, laying method and fixing method
+ Use only tested system combinations (refer to the test certificate)

Result: Complete system selection based on test certificate

4 Select manufacturer

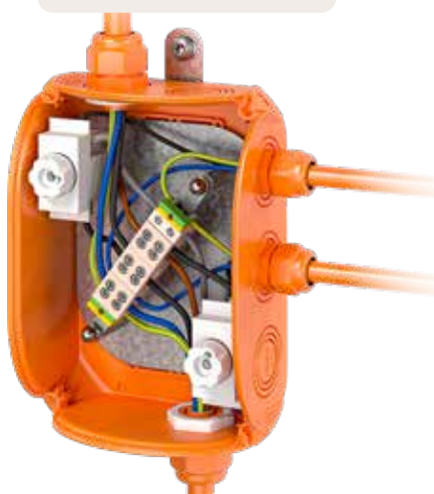
Secure documentation

+ Select a certified system manufacturer
+ Check test certificates and approvals
+ Ensure components are compatible with one another

CE Note the marking

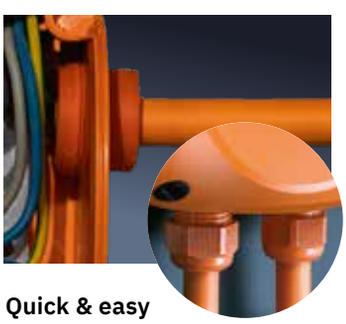
Result: Tested system and supporting documentation available

HENSEL SOLUTION: FK SERIES – UNCOMPROMISING SAFETY AND EFFICIENT INSTALLATION



Cable junction boxes must convince in two ways

Cable junction boxes with functional integrity must not only take into account the event of fire, but also simultaneously meet all the requirements of everyday installation, such as degree of protection, electrical safety, mechanical load capacity, and reliable connection technology.

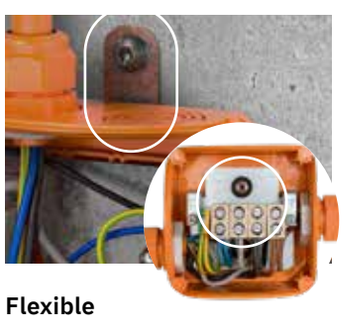


Quick & easy installation

Enclosed plug-in glands (IP 65), metric multi-stage knockouts, and pre-assembled design save time during installation. Optional with cable gland AKMF for higher protection class (IP 66) and strain relief.

String protection

Thanks to the integrated fuse, the entire main string remains intact in the event of a short circuit – without the need for an additional distribution unit.



Flexible installation

Products with string protection and external mounting. All other products are designed for internal mounting – including screw anchors – for simple, safe, and tested wall mounting.

Quick-release fastener with quarter turn

It is immediately apparent whether the fastener is open or closed.

THE RIGHT BOX FOR EVERY APPLICATION

Whether in dry, damp, wet, dusty, or potentially explosive areas – or where functional integrity is required: HENSEL cable junction boxes ensure reliable power distribution in all areas of application.

DK series: IP 66
for protected installation,
with and without terminals,
elastic sealing membranes or
metric knockouts

KF series: IP 66 / IP 67 / IP 69
weatherproof, for unprotected
outdoor installation,
with and without terminals,
metric knockouts

WP series: IP 66 / IP 68 / IP 69
submersible up to 20 meters,
168 hours, waterproof, for potting, with
terminals, metric knockouts

FK series: IP 66
E30/E60/E90 – functional integrity
PH120 – insulation integrity
with terminal

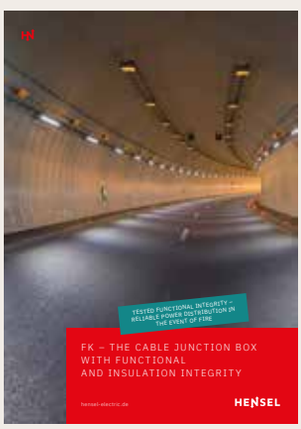
KX series: IP 66
for use in potentially explosive areas
Suitable for Ex-Zone 2 and 22,
with terminals

HENSEL

Gustav Hensel GmbH & Co. KG
Gustav-Hensel-Str. 6
57368 Lennestadt
+49 2723 609-0
info@hensel-electric.de

hensel-electric.de

Product information
"FK – The cable junction box with functional and insulation integrity"



Request free of charge:
Product information "FK – The cable junction box with functional and insulation integrity" – scan the QR code and download.

MADE IN GERMANY

07/26