PRODUCTS

6 Foot switches
   Metal enclosure

10 Series GF, single-pedal
16 Series GFS, single-pedal
26 Series GFI, single-pedal
32 Series GFSI, single-pedal
38 Series GF 2, double-pedal
44 Series GFS 2, double-pedal
50 Series GF 3, triple-pedal
52 Series GFS 3, triple-pedal

54 Safety foot switches
   Metal enclosure

58 Series GFS VD, single-pedal
60 Series GFSI VD, single-pedal
62 Series GFS 2 VD, double-pedal

64 Foot switches
   Thermoplastic enclosure

68 Series KF
72 Series KFS
76 Series KF 2
80 Series KF 3
82 Series KF 4
84 Series KF 5

87 Appendix

Legend of symbols
Wireless

»Safe switchgear for demanding and critical applications«. True to this motto, steute has been providing its customers with innovative, practical and durable switchgear solutions – for over 50 years.

When our customers are successful, so are we. Because we always focus on our customers, our company has grown steadily and sustainably over the last decades. Steute is committed to continuing this growth – in close cooperation with our customers.

We are situated in East Westphalia, a key region for machine building and electrical goods manufacturing. It is home to qualified specialists committed to developing and manufacturing innovative products. It is also the location of renowned universities, research and educational institutions to which we maintain healthy contacts.

Markets are no longer restricted by national borders. This is why our products are developed and tested for extreme conditions all over the world. We take care to ensure that our products are always certified according to the latest international standards. In every industrial or emerging nation in the world, steute has access to qualified specialists who can guarantee competent support and a quick service.

As a medium-sized company we are able to react with speed to customer wishes and market trends. We are continually developing innovative products and using new technologies as we consistently open up new fields of application for our switchgear.

steute is currently active in four different business fields, producing switchgear, sensors and control units for use in industry and in medical equipment:

Wireless

Cable free switchgear and sensors for use in machinery and process plants. These industrial-strength wireless switches communicate with higher level control systems via reliable radio transmission. »Energy harvesting« can play a major role in these products.

Automation

Standard and customised switchgear for machinery and process plants. Tried and tested electromechanical and non-contact technologies for classical applications in industrial automation and process control – always with a view to the latest global requirements.

Extreme

Switchgear and sensors for use in extreme environments or under extreme conditions. Certified products for use in hazardous areas worldwide (e. g. ATEX, IECEx, GOST).

Meditec

A comprehensive range of standard and customised foot and hand controls for medical devices, meeting the highest ergonomic and availability requirements. Produced in accordance with the certified EN ISO 13485 quality management system for medical products.

The following information provides an overview of our standard range of switchgear for complex and demanding applications. We will be happy to provide you with any additional information you require. If you cannot find the solution for your application: just get in touch. We have already helped numerous customers by developing »tailor-made« switchgear for their individual needs.

Marc Stanesby
Managing Director
steute Schaltgeräte GmbH & Co. KG

// SAFE SWITCHGEAR FOR DEMANDING AND CRITICAL APPLICATIONS
Foot switches
Metal enclosure

Single-pedal types
// Series GF
from page 10
// Series GFS
from page 16
// Series GFI
from page 26
// Series GFSI
from page 32

Double-pedal types
// Series GF 2
from page 38
// Series GFS 2
from page 44

Triple-pedal types
// Series GF/GFS 3
from page 50
Application

Foot switches are mounted on machines and plants in cases where operation using the hands is not possible. They are used to start and stop operations and production processes. Depending on the environmental conditions and mechanical duty, differing versions of foot switches are used.

The robust GF, GFS, GFI and GFSI range switches are generally used in the engineering industry, e.g. on presses, punching and bending machines, as well as in sheet-steel processing.

Design and mode of operation

The GF and GFS range foot switches are available in versions with multiple pedals. GFS and GFSI range switches are mounted with a shield to protect against unintentional actuation. All foot switches are equipped with slow or snap action contacts. Different versions are available with pressure point, potentiometer, Hall sensor and latching element. Foot rests, carrying handle and pedal covers are also available.

The foot switches bear the CE mark according to the Low Voltage Directive.
Foot switches  
// Series GF

Features/Options
- Without protective shield
- Max. 4 contacts
- Metal enclosure
- High level of stability
- Low pedal height
- Wiring compartment
- Ex version available
- Available with mechanical interlock (only for slow action S)
- Available with special finish in RAL colour tones

Technical data

Standards  
EN ISO 13849-1; EN 60947-5-1

Enclosure  
aluminium die-cast, enamel finish, RAL 5011

Cover  
glass-fibre reinforced thermoplastic

Pedal  
glass-fibre reinforced thermoplastic

Connection  
screw terminals

Cable cross-section  
max. 2.5 mm² [incl. conductor ferrules]

Cable entry  
1 x M20 x 1.5

Contact material  
silver

Degree of protection  
IP 65 to IEC/EN 60529

Switching system  
slow or snap action with double break, positive break NC contact

Switch insert  
slow action: 2 contacts: ES 60 GF  
4 contacts: ES 40 GF  
nap action: 2 and 4 contacts: ZS 232

B10d (10 % load)  
2 million

TMAX  
max. 20 years

Utilisation category  
AC-15

Ie/Ue  
slow action: 4 contacts: 6 A/400 VAC  
2 contacts: 16 A/400 VAC  
nap action: 2 and 4 contacts: 4 A/230 VAC; 2.5 A/400 VAC; 1 A/500 VAC

Max. fuse rating  
slow action: 4 contacts: 6 A gG/gN fuse  
2 contacts: 16 A gG/gN fuse  
nap action: 4 A gG/gN fuse

Ambient temperature  
– 25 °C … + 80 °C

Mechanical life  
> 1 million operations

Approvals  

Ordering details  
GFM K 1Ö/1S

1 NC/1 NO contact, (2Ö/2S, 1Ö/3 S), other configurations possible

Pedal Cover  
M Snap action [without M slow action]

Series

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFM 1Ö/1S</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFM 2Ö/2S</td>
</tr>
</tbody>
</table>

---

Guaranteed by steute
Foot switches
// Series GF, variants

// Without protective shield GF

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFM 10/15</td>
<td>1048500</td>
</tr>
<tr>
<td>GFM 20/25</td>
<td>1048523</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GF 10/15</td>
<td>1048458</td>
</tr>
<tr>
<td>GF 20/25</td>
<td>1048512</td>
</tr>
</tbody>
</table>

// Pedal cover K

<table>
<thead>
<tr>
<th>Snap action/Pedal cover</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFMK 10/15</td>
<td>on request</td>
</tr>
<tr>
<td>GFMK 20/25</td>
<td>1048524</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slow action/Pedal cover</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFK 10/15</td>
<td>1048464</td>
</tr>
<tr>
<td>GFK 20/25</td>
<td>1048515</td>
</tr>
</tbody>
</table>
## Foot switches

### // Series GF, variants

**Features/Options**
- With pressure point: 2-step switching
- 4 contacts
- Metal enclosure
- Without protective shield
- High level of stability
- Low pedal height
- Wiring compartment
- Available with mechanical interlock
- Available with special finish in RAL colour tones

### // GF D

![Foot switch image]

**Technical data**

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN ISO 13849-1; EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Cover</td>
<td>glass-fibre reinforced thermoplastic</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic</td>
</tr>
<tr>
<td>Connection</td>
<td>screw terminals</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. 2.5 mm (incl. conductor ferrules)</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M20 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>slow action with double break, positive break</td>
</tr>
<tr>
<td>Switch insert</td>
<td>2 x ES 40 GF</td>
</tr>
<tr>
<td>Switching element</td>
<td>2-step switching: 1 NC/1 NO contact pressure point: 1 NC/1 NO contact</td>
</tr>
<tr>
<td>Actuating force</td>
<td>approx. 240 N</td>
</tr>
<tr>
<td>B10g (10% load)</td>
<td>2 million</td>
</tr>
<tr>
<td>Tm</td>
<td>max. 20 years</td>
</tr>
<tr>
<td>Utilisation category</td>
<td>AC-15</td>
</tr>
<tr>
<td>Ie/Ue</td>
<td>6 A/400 VAC</td>
</tr>
<tr>
<td>Max. fuse rating</td>
<td>6 A gG/gN fuse</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 °C ... +80 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td>GFK:</td>
</tr>
</tbody>
</table>

**Standards**
- EN ISO 13849-1
- EN 60947-5-1

**Enclosure**
- Aluminium die-cast, enamel finish, RAL 5011

**Cover**
- Glass-fibre reinforced thermoplastic

**Pedal**
- Glass-fibre reinforced thermoplastic

**Connection**
- Screw terminals

**Cable cross-section**
- Max. 2.5 mm (incl. conductor ferrules)

**Cable entry**
- 1 x M20 x 1.5

**Contact material**
- Silver

**Degree of protection**
- IP 65 to IEC/EN 60529

**Switching system**
- Slow action with double break, positive break

**Switch insert**
- 2 x ES 40 GF

**Switching element**
- 2-step switching: 1 NC/1 NO contact pressure point: 1 NC/1 NO contact

**Actuating force**
- Approx. 240 N

**B10g (10% load)**
- 2 million

**Tm**
- Max. 20 years

**Utilisation category**
- AC-15

**Ie/Ue**
- 6 A/400 VAC

**Max. fuse rating**
- 6 A gG/gN fuse

**Ambient temperature**
- -25 °C ... +80 °C

**Mechanical life**
- > 1 million operations

**Approvals**
- GFK:

### Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td><strong>GF 10S D 10S</strong> 1048531</td>
</tr>
</tbody>
</table>

### Ordering details

<table>
<thead>
<tr>
<th>GF 10S D 10S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1NC/1NO contact</td>
</tr>
<tr>
<td>Pressure point</td>
</tr>
<tr>
<td>Contacts 1NC/1NO contact, other configurations possible</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>

![Ordering detail image]
Features/Options
- With latching: ON/OFF principle
- Max. 2 contacts
- Metal enclosure
- Without protective shield
- High level of stability
- Low pedal height
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Cover
glass-fibre reinforced thermoplastic

Pedal
glass-fibre reinforced thermoplastic

Connection
screw terminals

Cable cross-section
max. 2.5 mm² (incl. conductor ferrules)

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Switching system
slow action with double break, positive break

NC contact

Switch insert
ES 60 GF RE

Switching element
1 NC/1 NO contact with latching

Utilisation category
AC-15

Ie/Ue
16 A/400 VAC

Max. fuse rating
16 A gG/gN fuse

Ambient temperature
– 25 °C ... + 80 °C

Mechanical life
> 1 million operations

Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GF 1Ö/1S RE 1048462</td>
</tr>
</tbody>
</table>

Ordering details

GF 1Ö/15 RE

Latching element
1NC/1NO contact

Series

steute
Foot switches
// Series GF, variants

Features/Options
- With Hall sensor: Analogue output
- Metal enclosure
- Various output values available: 0 ... 10 VDC, 0 ... 20 mA or 4 ... 20 mA
- Analogue output signal proportional to pedal travel
- Without protective shield
- Available with additional micro switch
- High level of stability
- Low pedal height
- Wiring compartment
- Available with special finish in RAL colour tones

// GF HS

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Hall sensor</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U_a$</td>
<td>GF HS 0-10 VDC</td>
</tr>
<tr>
<td></td>
<td>1048576</td>
</tr>
<tr>
<td>$I_a$</td>
<td>GF HS 0-20 mA</td>
</tr>
<tr>
<td></td>
<td>1048577</td>
</tr>
<tr>
<td></td>
<td>GF HS 4-20 mA</td>
</tr>
<tr>
<td></td>
<td>1048578</td>
</tr>
</tbody>
</table>

Ordering details

| Ordering details | GF HS 0-20 mA |
|------------------|--|--|
| Output value $I_a$ 0-20 mA | (| $I_a$ 4-20 mA, $U_a$ 0-10 VDC) |
| Hall sensor Series | |
Features/Options
- With potentiometer: Analogue output
- Metal enclosure
- With various potentiometers available: 1 kΩ, 2 kΩ, 5 kΩ or 10 kΩ
- Start value can be set in factory
- Without protective shield
- High level of stability
- Low pedal height
- Available with special finish in RAL colour tones

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Potentiometer</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 change-over</td>
<td>GF POTI 1K 1PW</td>
</tr>
<tr>
<td></td>
<td>1048555</td>
</tr>
<tr>
<td>2 change-over</td>
<td>GF POTI 1K 2PW</td>
</tr>
<tr>
<td></td>
<td>on request</td>
</tr>
</tbody>
</table>

Ordering details: GF POTI 1K 1PW

Micro switch 1 change-over contact (2PW)
Potentiometer value 1 kΩ
(2 kΩ, 5 kΩ or 10 kΩ)
Potentiometer Series

Technical data

Standards EN 60947-5-1
Enclosure aluminium die-cast, enamel finish, RAL 5011
Cover glass-fibre reinforced thermoplastic
Pedal glass-fibre reinforced thermoplastic
Connection soldering terminals
Cable entry 1 x M20 x 1.5
Contact material silver, gold-plated
Degree of protection IP 65 to IEC/EN 60529
Switching system potentiometer
Resistance R
20 Ω ... 1 kΩ ±3 %;
20 Ω ... 2 kΩ ±3 %;
50 Ω ... 5 kΩ ±3 %;
100 Ω ... 10 kΩ ±3 %
Linearity ±0.5 %
Utilisation category –
I_e/U_e micro switch: 0.1 A/250 VA C; 0.1 A/24 VDC
Switching power potentiometer: max. 1.5 W at 40 °C
Max. fuse rating –
Ambient temperature –15 °C ... + 80 °C
Mechanical life > 1 million operations
Approvals

Note
The built-in micro switch provides for potential-free switching of the potentiometer.
Foot switches
// Series GFS

Features/Options
- With protective shield
- Max. 4 contacts
- Metal enclosure
- High level of stability
- Low pedal height
- Wiring compartment
- Ex version available
- Available with mechanical interlock (only for slow action S)
- Available with special finish in RAL colour tones

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN ISO 13849-1; EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic</td>
</tr>
<tr>
<td>Protective shield</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Connection</td>
<td>screw terminals</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. 2.5 mm (incl. conductor ferrules)</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M20 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>slow or snap action with double break, positive break NC contact</td>
</tr>
</tbody>
</table>
| Switch insert     | slow action: 2 contacts: ES 60 GF
|                   | 4 contacts: ES 40 GF
|                   | snap action: 2 and 4 contacts: ZS 232 |
| B10g (10 % load)  | 2 million |
| TM                | max. 20 years |
| Utilisation category | AC-15 |
| Ie/Ue             | slow action: 4 contacts: 6 A/400 VAC
|                   | 2 contacts: 16 A/400 VAC
|                   | snap action: 2 contacts: 4 A/230 VAC; 2.5 A/400 VAC; 1 A/500 VAC |
| Max. fuse rating  | slow action: 4 contacts: 6 A gG/gN fuse
|                   | 2 contacts: 16 A gG/gN fuse
|                   | snap action: 4 A gG/gN fuse |
| Ambient temperature | – 25 °C … + 80 °C |
| Mechanical life   | > 1 million operations |
| Approvals         | GFS(M)K: |

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFSM 1Ö/1S</td>
</tr>
<tr>
<td></td>
<td>GFS 1Ö/1S</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFSM 2Ö/2S</td>
</tr>
<tr>
<td></td>
<td>GFS 2Ö/2S</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>GFSM K 1Ö/1S FST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot rest, TST carrying handle</td>
</tr>
<tr>
<td>1 NC/1 NO contact [20/25, 10/35], other configurations possible</td>
</tr>
<tr>
<td>Pedal Cover</td>
</tr>
<tr>
<td>M Snap action (without M slow action)</td>
</tr>
<tr>
<td>S Protective shield</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>
Foot switches
// Series GFS, variants

// With protective shield GFS

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFSM 10/1S</td>
<td>1048638</td>
</tr>
<tr>
<td>GFSM 20/25</td>
<td>1048662</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFS 10/1S</td>
<td>1048579</td>
</tr>
<tr>
<td>GFS 20/25</td>
<td>1048655</td>
</tr>
</tbody>
</table>

// Pedal cover K

<table>
<thead>
<tr>
<th>Snap action/Pedal cover</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFSMK 10/1S</td>
<td>1048641</td>
</tr>
<tr>
<td>GFSMK 20/25</td>
<td>1048684</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slow action/Pedal cover</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFSK 10/1S</td>
<td>1048588</td>
</tr>
<tr>
<td>GFSK 20/25</td>
<td>1048658</td>
</tr>
</tbody>
</table>

// Carrying handle TST

Features/Options
- Carrying handle: stainless steel 1.4104 with thermoplastic grip
Foot switches
// Series GFS, variants

// GFS IP69K

Features/Options
- GFS IP69K, version with IP69K degree of protection: suitable for cleaning with 80 °C hot water at a pressure of 100 bar at a distance of 100 mm from different directions.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFS 10/1S IP69K KST Extreme</td>
<td>1184570</td>
<td></td>
</tr>
<tr>
<td>GFS 10S D 10S IP69K KST Extreme</td>
<td>1184972</td>
<td></td>
</tr>
</tbody>
</table>

// Foot rest FST

Features/Options
- Variants with foot rest available on request
PRODUCTION PROCESS ASSEMBLY
ENAMELLED DOUBLE-PEDAL FOOT SWITCH ENCLOSURE
Foot switches
// Series GFS, variants

Features/Options
- With pressure point: 2-step switching
- 4 contacts
- Metal enclosure
- With protective shield
- High level of stability
- Low pedal height
- Wiring compartment
- Available with mechanical interlock
- Available with special finish in RAL colour tones

// GFS D

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Pedal
glass-fibre reinforced thermoplastic

Protective shield
aluminium die-cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 2.5 mm² (incl. conductor ferrules)

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Switching system
slow action with double break, positive break NC contact

Switch insert
ES 40 GF

Switching element
2-step switching: 1 NC/1 NO contact
pressure point: 1 NC/1 NO contact

Actuating force
aprox. 240 N

B₁₀₀ (10 % load)
2 million

Tₘ
max. 20 years

Utilisation category
AC-15

Iₑ/Uₑ
6 A/400 VAC

Max. fuse rating
6 A gG/gN fuse

Ambient temperature
-25 °C … +80 ºC

Mechanical life
> 1 million operations

Approvals

Ordering details

GFS 1ÖS D 1ÖS

Contacts 1NC/1NO contact
Pressure point
Contacts 1NC/1NO contact, other configurations possible
S Protective shield
Series

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFS 1ÖS D 1ÖS 1048686</td>
</tr>
</tbody>
</table>
Features/Options
- With latching: ON/OFF principle
- Max. 2 contacts
- Metal enclosure
- With protective shield
- High level of stability
- Low pedal height
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Pedal
glass-fibre reinforced thermoplastic

Protective shield
aluminium die-cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 2.5 mm² incl. conductor ferrules

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Switching system
slow action with double break, positive break

NC contact

Switch insert
ES 60 GF RE

Switching element
1 NC/1 NO contact with latching

Utilisation category
AC-15

Ie/Ue
16 A/400 VAC

Max. fuse rating
16 A gG/gN fuse

Ambient temperature
–25 °C ... +80 °C

Mechanical life
> 1 million operations

Approvals

Ordering details
GFS 10/1S RE

Latching element
Contacts 1NC/1NO contact
S Protective shield
Series
Foot switches
// Series GFS, variants

Features/Options
- With Hall sensor: Analogue output
- Metal enclosure
- Various output values available: 0 ... 10 VDC, 0 ... 20 mA or 4 ... 20 mA
- Analogue output signal proportional to pedal travel
- With protective shield
- Available with additional micro switch
- High level of stability
- Low pedal height
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Pedal
glass-fibre reinforced thermoplastic

Protective shield
aluminium die-cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 1 mm² (incl. conductor ferrules)

Cable entry
1 x M20 x 1.5

Degree of protection
IP 65 to IEC/EN 60529

Switching system
Hall sensor

Output values
- Output voltage $U_a$
  0 ... 10 VDC ±1 %
- Output current $I_a$
  0 ... 20 mA ±1 %
  or 4 ... 20 mA ±1 %

$I_e/U_e$
- at $U_a$: 25 mA/15 ... 30 VDC
- at $I_a$: 45 mA/15 ... 30 VDC

Ambient temperature
-10 °C ... + 70 °C

Mechanical life
> 1 million operations

Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Hall sensor</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U_a$</td>
<td>GFS HS 0-10 VDC 1048765</td>
</tr>
<tr>
<td>$I_a$</td>
<td>GFS HS 0-20 mA 1048766</td>
</tr>
<tr>
<td></td>
<td>GFS HS 4-20 mA 1048767</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>GFS HS 0-20 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output value $I_a$ 0-20 mA</td>
</tr>
<tr>
<td>$I_a$ 4-20 mA, $U_a$ 0-10 VDC</td>
</tr>
<tr>
<td>Hall sensor</td>
</tr>
<tr>
<td>S Protective shield</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>

.steute
Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Potentiometer</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 change-over</td>
<td>GFS POTI 1K 1PW</td>
</tr>
<tr>
<td></td>
<td>1048737</td>
</tr>
<tr>
<td>2 change-over</td>
<td>GFS POTI 1K 2PW</td>
</tr>
<tr>
<td></td>
<td>on request</td>
</tr>
</tbody>
</table>

Features/Options
- With potentiometer: Analogue output
- Metal enclosure
- With various potentiometers available: 1 kΩ, 2 kΩ, 5 kΩ or 10 kΩ
- Start value can be set in factory
- With protective shield
- High level of stability
- Low pedal height
- Available with special finish in RAL colour tones

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic</td>
</tr>
<tr>
<td>Protective shield</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Connection</td>
<td>soldering terminals</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M20 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver, gold-plated</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>potentiometer</td>
</tr>
<tr>
<td>Resistance R</td>
<td>20 Ω … 1 kΩ ±3 %;</td>
</tr>
<tr>
<td></td>
<td>20 Ω … 2 kΩ ±3 %;</td>
</tr>
<tr>
<td></td>
<td>50 Ω … 5 kΩ ±3 %;</td>
</tr>
<tr>
<td></td>
<td>100 Ω … 10 kΩ ±3 %</td>
</tr>
<tr>
<td>Linearity</td>
<td>±0.5 %</td>
</tr>
<tr>
<td>Ie/Ue</td>
<td>micro switch: 0.1 A/250 VAC; 0.1 A/24 VDC</td>
</tr>
<tr>
<td>Switching power</td>
<td>potentiometer: max. 1.5 W at 40 °C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-15 °C … +80 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td>GFS Poti 10K 1PW: PE</td>
</tr>
</tbody>
</table>

Note
The built-in micro switch provides for potential-free switching of the potentiometer.
Foot switches
// Series GFS, variants

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFS 10/1S NA 10/1S 1184930</td>
</tr>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFS 10/1S NA 20 1184419</td>
</tr>
</tbody>
</table>

Ordering details
GFSM 10/1S NA 10/1S

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency-stop push button contacts 1 NC/1 NO contact (20)</td>
<td>1184930</td>
</tr>
<tr>
<td>Emergency-stop push button 1 NC/1 NO contact (20/2S)</td>
<td>1184419</td>
</tr>
<tr>
<td>M Snap action (without M slow action)</td>
<td>1184419</td>
</tr>
<tr>
<td>Series</td>
<td>1184419</td>
</tr>
</tbody>
</table>

Technical data

- Standards: EN ISO 13849-1; EN 60947-5-1
- Enclosure: aluminium die-cast, enamel finish, RAL 5011
- Pedal: glass-fibre reinforced thermoplastic
- Protective shield: aluminium die-cast, enamel finish, RAL 5011
- Connection: screw terminals
- Emergency-stop push button: 2.8 x 0.8 mm per DIN 46247-3
- Cable cross-section: max. 2.5 mm² (incl. conductor ferrules)
- Degree of protection: IP 65 to IEC/EN 60529
- Switching system: slow or snap action with double break, positive break NC contact
- Switch insert: slow action: 2 contacts: ES 60 GF
- Max. fuse rating: 4 contacts: 6 A gG/gN fuse
- Ambient temperature: –25 °C ... +80 °C
- Mechanical life: > 30,000 operations
- Approvals: CE
PRODUCTION PROCESS PAINT SHOP
PROTECTIVE SHIELDS ON AN ENAMELLING FIXTURE
Foot switches
// Series GFI

Features/Options
- Metal enclosure
- Max. 4 contacts
- Without protective shield
- High level of stability
- Ergonomic pedal design and low pedal height
- Degree of protection IP 67/IP 68 possible on request
- Ex version available
- Wiring compartment
- Available with mechanical interlock (only for slow action S)
- Available with special finish in RAL colour tones

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Cover
aluminium die-cast, enamel finish, RAL 2004

Pedal
aluminium die-cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 2.5 mm² [incl. conductor ferrules]

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Swiching system
slow or snap action with double break, positive break NC contact

Switch insert
slow action:
2 contacts: ES 60 GF
4 contacts: ES 40 GF
snap action: 2 and 4 contacts; ZS 232

Swiching element
1 NC/1 NO contact or 2 NC/2 NO contacts

B10g (10 % load)
1 NC/1 NO contact
2 million

TM
max. 20 years

Utilisation category
AC-15

Ie/Ue
slow action:
4 contacts: 6 A/400 VAC
2 contacts: 16 A/400 VAC

Max. fuse rating
snap action:
4 A/230 VAC
2.5 A/400 VAC
1 A/500 VAC

Ambient temperature
-25 °C ... +80 °C

Mechanical life
> 1 million operations

Approvals
GFI 1Ö/1S:

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th></th>
<th>Snap action</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFIM 1Ö/1S</td>
<td>GFI 1Ö/1S</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFIM 2Ö/2S</td>
<td>GFI 2Ö/2S</td>
</tr>
</tbody>
</table>

Ordering details
GFIM 1Ö/1S

Contacts 1Ö/1S, (2Ö/2S), other configurations possible
M Snap action (without M slow action)
Series
Foot switches
// Series GFI, variants

---

// Without protective shield GFI

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFIM 10/1S</td>
<td>1183831</td>
</tr>
<tr>
<td>GFIM 20/2S</td>
<td>1186822</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFI 10/1S</td>
<td>1053497</td>
</tr>
<tr>
<td>GFI 20/2S</td>
<td>1186735</td>
</tr>
</tbody>
</table>
Foot switches  // Series GFI, variants

Features/Options
- With pressure point: 2-step switching
- 4 contacts
- Without protective shield
- High level of stability
- Ergonomic pedal design
- Low pedal height
- Wiring compartment
- Degree of protection IP 67/IP 68 possible on request
- Available with mechanical interlock
- Available with special finish in RAL colour tones

// GFI D

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN ISO 13849-1; EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Cover</td>
<td>aluminium die-cast, enamel finish, RAL 2004</td>
</tr>
<tr>
<td>Connection</td>
<td>screw terminals</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. 2.5 mm (incl. conductor ferrules)</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M20 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>slow action with double break, positive break</td>
</tr>
<tr>
<td>Switch insert</td>
<td>2 x ES 40 GF</td>
</tr>
<tr>
<td>Switching element</td>
<td>2-step switching: 1 NC/1 NO contact</td>
</tr>
<tr>
<td>Actuating force</td>
<td>approx. 240 N</td>
</tr>
<tr>
<td>B_{10%} (10 % load)</td>
<td>2 million</td>
</tr>
<tr>
<td>T_{M}</td>
<td>max. 20 years</td>
</tr>
<tr>
<td>Utilisation category</td>
<td>AC-15</td>
</tr>
<tr>
<td>I_{e}/U_{e}</td>
<td>6 A/400 VAC</td>
</tr>
<tr>
<td>Max. fuse rating</td>
<td>6 A gG/gN fuse</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 °C ... +80 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td></td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFI 1ÖS D 1ÖS on request</td>
</tr>
</tbody>
</table>

Ordering details

GFI 1ÖS D 1ÖS
1NC/1NO contact, other configurations possible
Pressure point
Contacts 1NC/1NO contact
Series
Features/Options
- With latching: ON/OFF principle
- Metal enclosure
- 2 contacts
- Without protective shield
- High level of stability
- Low pedal height
- Ergonomic pedal design
- Degree of protection IP 67/IP 68 possible on request
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Cover
aluminium die-cast, enamel finish, RAL 2004

Pedal
aluminium die-cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 2.5 mm² incl. conductor ferrules

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Switching system
slow action with double break, positive break
NC contact

Switch insert
ES 60 GF RE

Switching element
1 NC/1 NO contact with latching

Utilisation category
AC-15

Iₑ/Uₑ
16 A/400 VAC

Max. fuse rating
16 A gG/gN fuse

Ambient temperature
-25 °C ... +80 °C

Mechanical life
> 1 million operations

Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFI 1Ö/1S RE 1180900</td>
</tr>
</tbody>
</table>

Ordering details

GFI 1Ö/1S RE

Latching element
Contacts 1NC/1NO contact

Series
Foot switches
// Series GFI, variants

Features/Options
- With Hall sensor: Analogue output
- Metal enclosure
- Various output values available: 0 ... 10 VDC, 0 ... 20 mA or 4 ... 20 mA
- Analogue output signal proportional to pedal travel
- Without protective shield
- Available with additional micro switch
- Ergonomic pedal design and low pedal height
- Degree of protection IP 67/IP 68 possible on request
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Cover
aluminium die-cast, enamel finish, RAL 2004

Pedal
aluminium die-cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 1 mm (incl. conductor ferrules)

Cable entry
1 x M20 x 1.5

Degree of protection
IP 65 to IEC/EN 60529

Switching system
Hall sensor

Output values
Output voltage $U_a$
0 ... 10 VDC ±1 %

Output current $I_a$
0 ... 20 mA ±1 %
or 4 ... 20 mA ±1 %

$I_e/U_e$
at $U_a$: 25 mA/15 ... 30 VDC
at $I_a$: 45 mA/15 ... 30 VDC

Ambient temperature
-10 °C ... + 70 °C

Mechanical life
> 1 million operations

Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Hall sensor</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U_a$</td>
<td>GFI HS 0-10 VDC on request</td>
</tr>
<tr>
<td>$I_a$</td>
<td>GFI HS 0-20 mA</td>
</tr>
<tr>
<td></td>
<td>GFI HS 4-20 mA</td>
</tr>
</tbody>
</table>

Ordering details

GFI HS 0-20 mA

Output value $I_a$ 0-20 mA
$I_e$ 4-20 mA, $U_a$ 0-10 VDC

Series
Features/Options
- With potentiometer: Analogue output
- Metal enclosure
- With various potentiometers available: 1 kΩ, 2 kΩ, 5 kΩ or 10 kΩ
- Start value can be set in factory
- Without protective shield
- Low pedal height
- Ergonomic pedal design
- Degree of protection IP 67/IP 68 possible on request
- Wiring compartment
- Available with special finish in RAL colour tones

GFI POTI

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Potentiometer</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 change-over</td>
<td>GFI POTI 1K 1PW on request</td>
</tr>
<tr>
<td>2 change-over</td>
<td>GFI POTI 1K 2PW on request</td>
</tr>
</tbody>
</table>

Technical data

Standards
EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Cover
aluminium die-cast, enamel finish, RAL 2004

Pedal
aluminium die-cast, enamel finish, RAL 5011

Connection
soldering terminals

Cable entry
1 x M20 x 1.5

Contact material
silver, gold-plated

Degree of protection
IP 65 to IEC/EN 60529

Switching system
potentiometer

Resistance R
20 Ω ... 1 kΩ ±3 %;
20 Ω ... 2 kΩ ±3 %;
50 Ω ... 5 kΩ ±3 %;
100 Ω ... 10 kΩ ±3 %

Linearity
±0.5 %

Ie/Ue
micro switch: 0.1 A/250 VAC; 0.1 A/24 VDC

Switching power
potentiometer: max. 1.5 W at 40 ºC

Ambient temperature
– 15 ºC ... + 80 ºC

Mechanical life
> 1 million operations

Approvals

Note
The built-in micro switch provides for potential-free switching of the potentiometer.
Foot switches
// Series GFSI

Features/Options
- Metal enclosure
- Max. 4 contacts
- With protective shield
- Wide opening in protective shield
- Ergonomic pedal design
- Degree of protection IP 67/IP 68 possible on request
- Ex version available
- Wiring compartment
- Available with mechanical interlock (only for slow action S)
- Available with special finish in RAL colour tones

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Pedal
aluminium die-cast, enamel finish, RAL 5011

Protective shield
aluminium die-cast, enamel finish, RAL 2004

Connection
screw terminals

Cable cross-section
max. 2.5 mm² (incl. conductor ferrules)

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 67 to IEC/EN 60529

Switching system
slow or snap action with double break, positive break NC contact

Switch insert
slow action:
- 2 contacts: ES 60 GF
- 4 contacts: ES 40 GF

snap action:
- 2 and 4 contacts: ZS 232

Switching element
1 NC/1 NO contact or 2 NC/2 NO contacts

B10g (10 % load)
2 million

Tₘ
max. 20 years

Utilisation category
AC-15

Iₑ/Uₑ
slow action:
- 4 contacts: 6 A/400 V AC
- 2 contacts: 16 A/400 V AC

snap action:
- 4 A/230 V AC; 2.5 A/400 V AC; 1 A/500 V AC

Max. fuse rating
slow action:
- 4 contacts: 6 A gG/gN fuse
- 2 contacts: 16 A gG/gN fuse

snap action:
- 2 and 4 contacts: 4 A gG/gN fuse

Ambient temperature
-25 °C to +80 °C

Mechanical life
> 1 million operations

Approvals
GFSI 1Ö/1S - GFSI 2Ö/2S

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFSIM 1Ö/1S</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFSIM 2Ö/2S</td>
</tr>
</tbody>
</table>

Ordering details
GFSIM 1Ö/1S

Contacts 1Ö/1S (2Ö/2S), other configurations possible
M Snap action (without M slow action)
Series, S Protective shield
With protective shield GFSI

Snap action
GFSIM 10/1S
GFSIM 20/25

Material Number
1159404
1184185

Slow action
GFSI 10/1S
GFSI 20/25

Material Number
1053499
1161879
Foot switches
// Series GFI, variants

Features/Options
- With pressure point: 2-step switching
- 4 contacts
- With protective shield
- Wide opening in protective shield
- Ergonomic pedal design
- Low pedal height
- Wiring compartment
- Degree of protection IP 67/IP 68 possible on request
- Available with mechanical interlock
- Available with special finish in RAL colour tones

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN ISO 13849-1; EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Pedal</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Protective shield</td>
<td>aluminium die-cast, enamel finish, RAL 2004</td>
</tr>
<tr>
<td>Connection</td>
<td>screw terminals</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. 2.5 mm (incl. conductor ferrules)</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M20 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>slow action with double break, positive break NC contact</td>
</tr>
<tr>
<td>Switch insert</td>
<td>2 x ES 40 GF</td>
</tr>
<tr>
<td>Switching element</td>
<td>2-step switching: 1 NC/1 NO contact pressure point: 1 NC/1 NO contact</td>
</tr>
<tr>
<td>Actuating force</td>
<td>approx. 240 N</td>
</tr>
<tr>
<td>B_{10%} (10 % load)</td>
<td>2 million</td>
</tr>
<tr>
<td>T_{M}</td>
<td>max. 20 years</td>
</tr>
<tr>
<td>Utilisation category</td>
<td>AC-15</td>
</tr>
<tr>
<td>I_{e}/U_{e}</td>
<td>6 A/400 VAC</td>
</tr>
<tr>
<td>Max. fuse rating</td>
<td>6 A gG/gN fuse</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 °C ... +80 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td></td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFSI 1ÖS D 1ÖS on request</td>
</tr>
</tbody>
</table>

Ordering details

GFSI 1ÖS D 1ÖS
1NC/1NO contact
Pressure point
1NC/1NO contact, other configurations possible
Series, S Protective shield
Features/Options
- With latching: ON/OFF principle
- Metal enclosure
- 2 contacts
- With protective shield
- Wide opening in protective shield
- Low pedal height
- Ergonomic pedal design
- Degree of protection IP 67/IP 68 possible on request
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Pedal
aluminium die-cast, enamel finish, RAL 5011

Protective shield
aluminium die-cast, enamel finish, RAL 2004

Connection
screw terminals

Cable cross-section
max. 2.5 mm² [incl. conductor ferrules]

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Switching system
slow action with double break, positive break
NC contact

Switch insert
ES 60 GF RE

Switching element
1 NC/1 NO contact with latching

Utilisation category
AC-15

Ie/Ue
16 A/400 VAC

Max. fuse rating
16 A gG/gN fuse

Ambient temperature
-25 °C ... +80 °C

Mechanical life
> 1 million operations

Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFSI 1Ö/1S RE 1182299</td>
</tr>
</tbody>
</table>

Ordering details

GFSI 1Ö/1S RE

Latching element
Contacts 1NC/1NO contact
Series, S Protective shield
Foot switches

// Series GFSI, variants

Features/Options
- With Hall sensor: Analogue output
- Metal enclosure
- Various output values available: 0 ... 10 VDC, 0 ... 20 mA or 4 ... 20 mA
- Analogue output signal proportional to pedal travel
- With protective shield and wide opening in protective shield
- Available with additional micro switch
- Ergonomic pedal design
- Degree of protection IP 67/IP 68 possible on request
- Wiring compartment
- Available with special finish in RAL colour tones

// GFSI HS

Technical data

Standards
- EN 60947-5-1

Enclosure
- aluminium die-cast, enamel finish, RAL 5011

Pedal
- aluminium die-cast, enamel finish, RAL 5011

Protective shield
- aluminium die-cast, enamel finish, RAL 2004

Connection
- screw terminals

Cable cross-section
- max. 1 mm² (incl. conductor ferrules)

Cable entry
- 1 x M20 x 1.5

Degree of protection
- IP 65 to IEC/EN 60529

Switching system
- Hall sensor

Output values
- Output voltage $U_a$: 0 ... 10 VDC ±1 %
- Output current $I_a$: 0 ... 20 mA ±1 %
- or 4 ... 20 mA ±1 %

$I_e/U_e$
- at $U_a$: 25 mA/15 ... 30 VDC
- at $I_a$: 45 mA/15 ... 30 VDC

Ambient temperature
- – 10 °C ... + 70 °C

Mechanical life
- > 1 million operations

Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Hall sensor</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U_a$</td>
<td>GFSI HS 0-10 VDC</td>
</tr>
<tr>
<td>$I_a$</td>
<td>GFSI HS 0-20 mA</td>
</tr>
<tr>
<td></td>
<td>GFSI HS 4-20 mA</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>GFSI HS 0-20 mA</th>
<th>Output value $I_a$ 0-20 mA (Ia 4-20 mA, U_a 0-10 VDC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall sensor</td>
<td>Series, S Protective shield</td>
</tr>
</tbody>
</table>

...
/// GFSI POTI

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Pedal</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Protective shield</td>
<td>aluminium die-cast, enamel finish, RAL 2004</td>
</tr>
<tr>
<td>Connection</td>
<td>soldering terminals</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M20 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver, gold-plated</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>potentiometer</td>
</tr>
<tr>
<td>Resistance R</td>
<td>20 Ω ... 1 kΩ ±3 % ;</td>
</tr>
<tr>
<td></td>
<td>20 Ω ... 2 kΩ ±3 % ;</td>
</tr>
<tr>
<td></td>
<td>50 Ω ... 5 kΩ ±3 % ;</td>
</tr>
<tr>
<td></td>
<td>100 Ω ... 10 kΩ ±3 %</td>
</tr>
<tr>
<td>Linearity</td>
<td>±0.5 %</td>
</tr>
<tr>
<td>Ip/Ue</td>
<td>micro switch: 0.1 A/250 VAC; 0.1 A/24 VDC</td>
</tr>
<tr>
<td>Switching power</td>
<td>potentiometer: max. 1.5 W at 40 °C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-15 °C ... + 80 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td>²</td>
</tr>
<tr>
<td>Note</td>
<td>The built-in micro switch provides for potential-free switching of the potentiometer.</td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Potentiometer</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 change-over</td>
<td>GFSI POTI ... 1PW on request</td>
</tr>
<tr>
<td>2 change-over</td>
<td>GFSI POTI ... 2PW on request</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>GFSI POTI 1K 1PW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro switch 1 change-over contact (2PW), other configurations possible</td>
</tr>
<tr>
<td>Potentiometer value 1 kΩ (2 kΩ, 5 kΩ or 10 kΩ)</td>
</tr>
<tr>
<td>Potentiometer</td>
</tr>
<tr>
<td>Series, S Protective shield</td>
</tr>
</tbody>
</table>
Foot switches

// Series GF 2

Features/Options
- Double-pedal type
- Without protective shield
- Max. 4 contacts per pedal
- Metal enclosure
- Different pedal functions possible
- Low pedal height
- Wiring compartment
- Ex version available
- Available with mechanical interlock (only for slow action S)
- Available with special finish in RAL colour tones

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Cover
aluminium cast, enamel finish, RAL 5011

Pedal
glass-fibre reinforced thermoplastic

Connection
screw terminals

Cable cross-section
max. 2.5 mm² [incl. conductor ferrules]

Cable entry
1 x M25 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Switching system
slow or snap action with double break, positive break NC contact

Switch insert
slow action: 2 contacts: ES 60 GF
4 contacts: ES 40 GF
snap action: 2 and 4 contacts: ZS 232

B10d (10 % load)
2 million

TM
max. 20 years

Utilisation category
AC-15

Ie/Ue
slow action: 4 contacts: 6 A/400 VAC
2 contacts: 16 A/400 VAC
snap action: 2 contacts: 4 A/230 VAC;
2.5 A/400 VAC; 1 A/500 VAC

Max. fuse rating
slow action: 4 contacts: 6 A gG/gN fuse
2 contacts: 16 A gG/gN fuse
snap action: 4 A gG/gN fuse

Ambient temperature
– 25 °C … + 80 °C

Mechanical life
> 1 million operations

Approvals
GF 2 1ÖS/1ÖS, GF 2 2ÖS/2ÖS:

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFM 2 1ÖS/1ÖS</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFM 2 2ÖS/2ÖS</td>
</tr>
</tbody>
</table>

Ordering details
GFMK 2 1ÖS/1ÖS

1 NC/1 NO contact (2Ö/2S)
right pedal
1 NC/1 NO contact (2Ö/2S) left pedal,
other configurations possible
2 pedals
K Pedal cover
M Snap action (without M slow action)
Series
Foot switches
// Series GF 2, variants

// Without protective shield GF 2

Snap action
- GFM 2 10S/10S
- GFM 2 10S/20S
- GFM 2 20S/10S
- GFM 2 20S/20S

Material Number
- 1048793
- 1048809
- 1048811
- 1048805

Slow action
- GF 2 10S/10S
- GF 2 10S/20S
- GF 2 20S/10S
- GF 2 20S/20S

Material Number
- 1048770
- 1048808
- 1048810
- 1048798

// Pedal cover K

Snap action/Pedal cover
- GFMK 2 10S/10S
- GFMK 2 20S/20S

Material Number
- on request
- on request

Slow action/Pedal cover
- GFK 2 10S/10S
- GFK 2 20S/20S

Material Number
- 1048774
- 1160261
Foot switches
// Series GF 2, variants

Features/Options
- With pressure point: 2-step switching
- Double-pedal type
- Max. 4 contacts per pedal
- Metal enclosure
- Without protective shield
- Different pedal functions possible
- Wiring compartment
- Available with mechanical interlock
- Available with special finish in RAL colour tones

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN ISO 13849-1; EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Cover</td>
<td>aluminium cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic</td>
</tr>
<tr>
<td>Connection</td>
<td>screw terminals</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. 2.5 mm² (incl. conductor ferrules)</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M25 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Swtiching system</td>
<td>slow action with double break, positive break</td>
</tr>
<tr>
<td>Switching insert</td>
<td>2 x ES 40 GF per pedal</td>
</tr>
<tr>
<td>Switching element</td>
<td>2-step switching: 1 NC/1 NO contact pressure point: 1 NC/1 NO contact</td>
</tr>
<tr>
<td>Actuating force</td>
<td>approx. 240 N</td>
</tr>
<tr>
<td>B100 (10 % load)</td>
<td>2 million</td>
</tr>
<tr>
<td>Tm</td>
<td>max. 20 years</td>
</tr>
<tr>
<td>Utilisation category</td>
<td>AC-15</td>
</tr>
<tr>
<td>Ie/Ue</td>
<td>6 A/400 VAC</td>
</tr>
<tr>
<td>Max. fuse rating</td>
<td>6 A gG/gN fuse</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 °C ... +80 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td></td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GF 2 10SD10S/10SD10S 1048826</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>GF 2 10S D 10S/10S D 10S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts right pedal</td>
</tr>
<tr>
<td>1NC/1NO contact left pedal</td>
</tr>
<tr>
<td>Pressure point</td>
</tr>
<tr>
<td>1NC/1NO contact left pedal, other configurations possible</td>
</tr>
<tr>
<td>2 pedals</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>

// GF 2 D
Ordering details GF 2 1ÖS RE/1ÖS RE

- Latching element right p.
- 1NC/1NO contact right pedal
- Latching element left pedal
- 1NC/1NO contact left pedal, other configurations possible
- 2 pedals
- Series

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GF 2 1ÖS RE/1ÖS RE 1048772</td>
</tr>
</tbody>
</table>

Technical data

- Standards EN 60947-5-1
- Enclosure aluminium die-cast, enamel finish, RAL 5011
- Cover aluminium cast, enamel finish, RAL 5011
- Pedal glass-fibre reinforced thermoplastic
- Connection screw terminals
- Cable cross-section max. 2.5 mm² (incl. conductor ferrules)
- Cable entry 1 x M25 x 1.5
- Contact material silver
- Degree of protection IP 65 to IEC/EN 60529
- Switching system slow action with double break, positive break
- NC contact
- Switch insert 1 x ES 60 GF RE per pedal
- Switching element 1 NC/1 NO contact with latching
- Utilisation category AC-15
- Ie/Ue 16 A/400 VAC
- Max. fuse rating 16 A gG/gN fuse
- Ambient temperature -25 °C ... +80 °C
- Mechanical life > 1 million operations
- Approvals
Foot switches
// Series GF 2, variants

**Technical data**

- **Standards**: EN 60947-5-1
- **Enclosure**: aluminium die-cast, enamel finish, RAL 5011
- **Cover**: aluminium cast, enamel finish, RAL 5011
- **Pedal**: glass-fibre reinforced thermoplastic
- **Connection**: soldering terminals
- **Cable entry**: 1 x M25 x 1.5
- **Contact material**: silver, gold-plated
- **Degree of protection**: IP 65 to IEC/EN 60529
- **Switching system**: potentiometer
- **Resistance R**: 20 Ω ... 1 kΩ ±3 %; 20 Ω ... 2 kΩ ±3 %; 50 Ω ... 5 kΩ ±3 %; 100 Ω ... 10 kΩ ±3 %
- **Linearity**: ±0.5 %
- **I_p/U_p**: micro switch: 0.1 A/250 V AC; 0.1 A/24 V DC
- **Switching power**: potentiometer: max. 1.5 W at 40 °C
- **Ambient temperature**: −15 °C ... +80 °C
- **Mechanical life**: > 1 million operations
- **Approvals**:  

**Note**
The built-in micro switch provides for potential-free switching of the potentiometer.

---

**Contact variants: Travel/contacts**

<table>
<thead>
<tr>
<th>Potentiometer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 change-over</td>
<td>GF 2 POTI 1K 1PW/1K 1PW</td>
</tr>
<tr>
<td>2 change-over</td>
<td>GF 2 POTI 1K 2PW/1K 2PW</td>
</tr>
</tbody>
</table>

---

**Ordering details**

<table>
<thead>
<tr>
<th>GF 2 POTI 1K 1PW/1K 1PW</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts right pedal</td>
<td>Micro sw. 1 change-over (2PW) Lp.</td>
</tr>
<tr>
<td>Potentiometer</td>
<td>POTI value 1 kΩ (2, 5 or 10 kΩ) left pedal, other config. possible</td>
</tr>
<tr>
<td>2 pedals</td>
<td>Series</td>
</tr>
</tbody>
</table>
Potentiometer

<table>
<thead>
<tr>
<th>Potentiometer</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GF 2 Poti 1K 1PW/1K 1PW</td>
<td>1184063</td>
</tr>
<tr>
<td>GF 2 Poti 5K 1PW/5K 1PW</td>
<td>1048812</td>
</tr>
<tr>
<td>GF 2 Poti 10K 1PW/10K 1PW</td>
<td>1048813</td>
</tr>
</tbody>
</table>
**Foot switches**  
// Series GFS 2

### Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN ISO 13849-1; EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic</td>
</tr>
<tr>
<td>Protective shield</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Connection</td>
<td>screw terminals</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. 2.5 mm (incl. conductor ferrules)</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M25 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>slow or snap action with double break, positive break NC contact</td>
</tr>
</tbody>
</table>
| Switch insert              | slow action: 2 contacts: ES 60 GF  
2 contacts: ES 40 GF  
4 contacts: ES 40 GF  
snap action: 2 and 4 contacts: ZS 232 |
| B10d (10 % load)           | 2 million |
| TM                         | max. 20 years |
| Utilisation category       | AC-15 |
| Ie/Ue                      | slow action: 4 contacts: 6 A/400 VAC  
2 contacts: 16 A/400 VAC  
snap action: 2 contacts: 4 A/230 VAC; 2,5 A/400 VAC; 1 A/500 VAC |
| Max. fuse rating           | slow action: 4 contacts: 6 A gG/gN fuse  
2 contacts: 16 A gG/gN fuse  
snap action: 4 A gG/gN fuse |
| Ambient temperature        | – 25 °C … + 80 °C |
| Mechanical life            | > 1 million operations |
| Approvals                  | GFS 2 10S/10S, GFS 2 20S/20S: |

### Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Contact variants</th>
<th>Snap action</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFSM 2 10S/10S</td>
<td>GFS 2 10S/10S</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFSM 2 20S/20S</td>
<td>GFS 2 20S/20S</td>
</tr>
</tbody>
</table>

### Ordering details

<table>
<thead>
<tr>
<th>Ordering details</th>
<th>GFSMK 2 10S/10S TST</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST Carrying handle</td>
<td>(FST foot rest)</td>
</tr>
<tr>
<td>1NC/1NO contact</td>
<td>right pedal</td>
</tr>
<tr>
<td>1NC/1NO contact</td>
<td>left pedal, other configurations possible</td>
</tr>
<tr>
<td>2 pedals</td>
<td></td>
</tr>
<tr>
<td>K Pedal cover</td>
<td></td>
</tr>
<tr>
<td>M Snap action</td>
<td>(without M slow action)</td>
</tr>
<tr>
<td>S Protective shield</td>
<td></td>
</tr>
</tbody>
</table>

---

**Features/Options**

- Double-pedal type
- With protective shield
- Max. 4 contacts per pedal
- Metal enclosure
- Different pedal functions possible
- Low pedal height
- Wiring compartment
- Ex version available
- Available with mechanical interlock (only for slow action S)
- Available with special finish in RAL colour tones

---

**Diagram**

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Contact variants</th>
<th>Snap action</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFSM 2 10S/10S</td>
<td>GFS 2 10S/10S</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFSM 2 20S/20S</td>
<td>GFS 2 20S/20S</td>
</tr>
</tbody>
</table>

**Ordering details**

<table>
<thead>
<tr>
<th>Ordering details</th>
<th>GFSMK 2 10S/10S TST</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST Carrying handle</td>
<td>(FST foot rest)</td>
</tr>
<tr>
<td>1NC/1NO contact</td>
<td>right pedal</td>
</tr>
<tr>
<td>1NC/1NO contact</td>
<td>left pedal, other configurations possible</td>
</tr>
<tr>
<td>2 pedals</td>
<td></td>
</tr>
<tr>
<td>K Pedal cover</td>
<td></td>
</tr>
<tr>
<td>M Snap action</td>
<td>(without M slow action)</td>
</tr>
<tr>
<td>S Protective shield</td>
<td></td>
</tr>
</tbody>
</table>
Foot switches
// Series GFS 2, variants

// Pedal cover K

Snap action
- GFSM 2 10S/10S
- GFSM 2 10S/20S
- GFSM 2 20S/10S
- GFSM 2 20S/20S

Material Number
- 1048877
- 1048905
- 1048908
- 1048893

Slow action
- GFS 2 10S/10S
- GFS 2 10S/20S
- GFS 2 20S/10S
- GFS 2 20S/20S

Material Number
- 1048842
- 1048903
- 1048906
- 1048883

Snap action/Pedal cover
- GFSMK 2 10S/10S
- GFSMK 2 20S/20S

Material Number
- 1048878
- 1048894

Slow action/Pedal cover
- GFSK 10S/10S
- GFSK 20S/20S

Material Number
- 1048848
on request

// Carrying handle TST

Features/Options
- Carrying handle: stainless steel 1.4104 with thermoplastic grip
Foot switches
// Series GFS 2, variants

Features/Options
- With pressure point: 2-step switching
- Double-pedal type
- Max. 4 contacts per pedal
- Metal enclosure
- With protective shield
- Different pedal functions possible
- Low pedal height
- Wiring compartment
- Available with mechanical interlock
- Available with special finish in RAL colour tones

// GFS 2 D

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN ISO 13849-1; EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic</td>
</tr>
<tr>
<td>Protective shield</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Connection</td>
<td>screw terminals</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. 2.5 mm [incl. conductor ferrules]</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M25 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>slow action with double break, positive break NC contact</td>
</tr>
<tr>
<td>Switch insert</td>
<td>2 x ES 40 GF per pedal</td>
</tr>
<tr>
<td>Switching element</td>
<td>2-step switching: 1 NC/1 NO contact</td>
</tr>
<tr>
<td>Actuating force</td>
<td>approx. 240 N</td>
</tr>
<tr>
<td>B10d (10 % load)</td>
<td>2 million</td>
</tr>
<tr>
<td>Tm</td>
<td>max. 20 years</td>
</tr>
<tr>
<td>Utilisation category</td>
<td>AC-15</td>
</tr>
<tr>
<td>Ie/Ue</td>
<td>6 A/400 VAC</td>
</tr>
<tr>
<td>Max. fuse rating</td>
<td>6 A gG/gN fuse</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 °C ... +80 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td>IP65/IEC/EN 60529</td>
</tr>
</tbody>
</table>

Standards
- EN ISO 13849-1; EN 60947-5-1

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFS 2 1ÖS/21ÖS/1ÖS/21ÖS/21ÖS/1ÖS 1048916</td>
</tr>
</tbody>
</table>

Ordering details

| GFS 2 1ÖS D 1ÖS/1ÖS D 1ÖS | Contacts right pedal 1NC/1NO contact left pedal Pressure point 1NC/1NO contact left pedal, other configurations possible 2 pedals Series, S Protective shield |

46
Technical data

<table>
<thead>
<tr>
<th>Features/Options</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>- With latching: ON/OFF principle</td>
<td></td>
</tr>
<tr>
<td>- Double-pedal type</td>
<td></td>
</tr>
<tr>
<td>- Max. 2 contacts per pedal</td>
<td></td>
</tr>
<tr>
<td>- Metal enclosure</td>
<td></td>
</tr>
<tr>
<td>- With protective shield</td>
<td></td>
</tr>
<tr>
<td>- Different pedal functions possible</td>
<td></td>
</tr>
<tr>
<td>- Low pedal height</td>
<td></td>
</tr>
<tr>
<td>- Wiring compartment</td>
<td></td>
</tr>
<tr>
<td>- Available with special finish in RAL colour tones</td>
<td></td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>GFS 2 1ÖS RE/1ÖS RE</th>
<th>Contacts right pedal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Latching element left pedal</td>
</tr>
<tr>
<td></td>
<td>1NC/1NO contact left pedal</td>
</tr>
<tr>
<td></td>
<td>2 pedals</td>
</tr>
<tr>
<td></td>
<td>S Protective shield</td>
</tr>
<tr>
<td></td>
<td>Series</td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFS 2 1ÖS RE/1ÖS RE</td>
</tr>
</tbody>
</table>
Foot switches
// Series GFS 2, variants

Features/Options
- With potentiometer: Analogue output
- Double-pedal type
- Metal enclosure
- With various potentiometers available: 1 kΩ, 2 kΩ, 5 kΩ or 10 kΩ
- Start value can be set in factory
- With protective shield
- Different pedal functions possible
- Low pedal height
- Wiring compartment
- Available with special finish in RAL colour tones

// GFS 2 POTI

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN 60947-5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic</td>
</tr>
<tr>
<td>Protective shield</td>
<td>aluminium die-cast, enamel finish, RAL 5011</td>
</tr>
<tr>
<td>Connection</td>
<td>soldering terminals</td>
</tr>
<tr>
<td>Cable entry</td>
<td>1 x M25 x 1.5</td>
</tr>
<tr>
<td>Contact material</td>
<td>silver, gold-plated</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>potentiometer</td>
</tr>
<tr>
<td>Resistance R</td>
<td>20 Ω ... 1 kΩ ± 3 %; 20 Ω ... 2 kΩ ± 3 %; 50 Ω ... 5 kΩ ± 3 %; 100 Ω ... 10 kΩ ± 3 %</td>
</tr>
<tr>
<td>Linearity</td>
<td>±0.5 %</td>
</tr>
<tr>
<td>I_0/U_e</td>
<td>micro switch: 0.1 A/250 VAC; 0.1 A/24 VDC</td>
</tr>
<tr>
<td>Switching power</td>
<td>potentiometer: max. 1.5 W at 40 °C</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>– 15 °C ... + 80 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
</tbody>
</table>

Approvals

Note
The built-in micro switch provides for potential-free switching of the potentiometer.
### Potentiometer

<table>
<thead>
<tr>
<th>Potentiometer</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFS 2 Poti 1K 1PW/1K 1PW</td>
<td>1171137</td>
</tr>
<tr>
<td>GFS 2 Poti 2K 1PW/1K 1PW</td>
<td>1165008</td>
</tr>
<tr>
<td>GFS 2 Poti 5K 1PW/5K 1PW</td>
<td>1048912</td>
</tr>
<tr>
<td>GFS 2 Poti 10K 1PW/10K 1PW</td>
<td>1048910</td>
</tr>
<tr>
<td>GFS 2 Poti 1K 2PW/1K 2PW</td>
<td>on request</td>
</tr>
</tbody>
</table>
Foot switches
// Series GF 3

Features/Options
- Triple-pedal type
- Without protective shield
- Max. 4 contacts per pedal
- Metal enclosure
- Different pedal functions possible
- Low pedal height
- Wiring compartment
- Ex version available
- Available with mechanical interlock (only for slow action S)
- Available with special finish in RAL colour tones

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1

Enclosure
aluminium cast, enamel finish, RAL 5011

Cover
aluminium cast, enamel finish, RAL 5011

Pedal
glass-fibre reinforced thermoplastic

Connection
screw terminals

Cable cross-section
max. 2.5 mm² [incl. conductor ferrules]

Cable entry
2 x M25 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Swiching system
- slow or snap action with double break, positive break NC contact
- slow action: 2 contacts: ES 60 GF
- 4 contacts: ES 40 GF
- snap action: 2 and 4 contacts: ZS 232

Switch insert
- slow action: 2 contacts: 6 A/400 VAC
- 4 contacts: 16 A/400 VAC
- snap action: 2 contacts: 4 A/230 VAC,
- 2.5 A/400 VAC; 1 A/500 VAC

Max. fuse rating
- slow action: 4 contacts: 6 A gG/gN fuse
- 2 contacts: 16 A gG/gN fuse
- snap action: 4 A gG/gN fuse

Ambient temperature
- 25 °C … + 80 °C

Mechanical life
> 1 million operations

Approvals
GF 3 1ÖS/1ÖS/1ÖS, GF 3 2ÖS/2ÖS/2ÖS:

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th></th>
<th>Snap action</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFM 3 1ÖS/1ÖS/1ÖS</td>
<td>GF 3 1ÖS/1ÖS/1ÖS</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFM 3 2ÖS/2ÖS/2ÖS</td>
<td>GF 3 2ÖS/2ÖS/2ÖS</td>
</tr>
</tbody>
</table>

Ordering details
GFM 3 1ÖS/1ÖS/1ÖS

Contacts right pedal
Contacts center pedal
1 NC/1 NO contact (20/25) left pedal, other configurations possible
3 pedals
M Snap action (without M slow action)

Series
Without protective shield GF

Snap action
GFM 3 10S/10S/10S
GFM 3 20S/20S/20S

Material Number
1048949
1048952

Slow action
GF 3 10S/10S/10S
GF 3 20S/20S/20S

Material Number
1048945
1048951
Foot switches
// Series GFS 3

Features/Options
- Triple-pedal type
- With protective shield
- Max. 4 contacts per pedal
- Metal enclosure
- Different pedal functions possible
- Low pedal height
- Wiring compartment
- Ex version available
- Available with mechanical interlock (only for slow action S)
- Available with special finish in RAL colour tones

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1

Enclosure
aluminium cast, enamel finish, RAL 5011

Pedal
glass-fibre reinforced thermoplastic

Protective shield
aluminium cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 2.5 mm² [incl. conductor ferrules]

Cable entry
2 x M25 x 1.5

Contact material
silver

Degree of protection
IP 65 to IEC/EN 60529

Switching system
slow or snap action with double break, positive break NC contact

Switch insert
slow action: 2 contacts: ES 60 GF
4 contacts: ES 40 GF
snap action: 2 and 4 contacts: ZS 232

B10d (10 % load)
2 million

TM
max. 20 years

Utilisation category
AC-15

Ie/Ue
slow action: 4 contacts: 6 A/400 VAC
2 contacts: 16 A/400 VAC
snap action: 2 contacts: 4 A/230 VAC;
2.5 A/400 VAC; 1 A/500 VAC

Max. fuse rating
slow action: 4 contacts: 6 A gG/gN fuse
2 contacts: 16 A gG/gN fuse
snap action: 4 A gG/gN fuse

Ambient temperature
- 25 °C ... + 80 °C

Mechanical life
> 1 million operations

Approvals
GFS 3 1ÖS/1ÖS/1ÖS, GFS 3 2ÖS/2ÖS/2ÖS:

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>1 NC/1 NO contact</th>
<th>Snap action GFSM 3 1ÖS/1ÖS/1ÖS GFS 3 1ÖS/1ÖS/1ÖS</th>
<th>Slow action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFSM 3 2ÖS/2ÖS/2ÖS GFS 3 2ÖS/2ÖS/2ÖS</td>
<td></td>
</tr>
</tbody>
</table>

Ordering details GFSM 3 1ÖS/1ÖS/1ÖS

Contacts right pedal
Contacts center pedal
1NC/1NO contact [20/2S] left pedal, other configurations possible
3 pedals
M Snap action (without M slow action)
S Protective shield
Series
// With protective shield GFS 3

Snap action
- GFSM 3 10S/10S/10S
- GFSM 3 20S/20S/20S

Material Number
- 1048959
- 1048962

Slow action
- GFS 3 10S/10S/10S
- GFS 3 20S/20S/20S

Material Number
- 1048956
- 1048961
Safety foot switches
Metal enclosure

Single-pedal types
// Series GFS VD
from page 58
// Series GFSI VD
from page 60

Double-pedal types
// Series GFS 2 VD
from page 62
**Application**

Safety foot switches are mounted on machines and plants as enabling switches in cases where operation using the hands is not possible and an emergency-stop function in case of a hazardous situation is required.

**Design and mode of operation**

All safety foot switches are mounted with a shield to protect against unintentional operation. When the foot pedal is actuated to as far as the pressure point, the NO contact is closed. If, in case of danger, the pedal is actuated beyond the pressure point, then the positive break NC contact is opened and mechanically latched. Reset operation is carried out by means of a push button. The function principle of all safety foot switches is also shown in the drawing below. The safety foot switches conform to IP 65.

All safety foot switches bear the CE mark according to the Machinery Directive.

---

**Application**

Safety foot switch at a machining center

**Function principle**

![Function principle diagram](image)
Safety foot switches
// Series GFS VD

Features/Options
- GFS VD: NC contact 15-16 + in series with NO contact 23-24 (internal wiring)
- With impulse wiping contacts GFS IK VD: without switching impulse when unlocking foot switch; NO contact 13-14 is converted into positive break NC contact + by internal baffle after pressure point,
- Safety contact: 13–14 +, Signalling contact: 21–22
- Max. 4 contacts
- Metal enclosure
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1, BG-GS-ET-15

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Pedal
glass-fibre reinforced thermoplastic

Protective shield
aluminium die-cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 2.5 mm² (incl. conductor ferrules)

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 65 to EN 60529

Swiching system
slow action with double break, positive break NC contact + per EN 60947-5-1

Switch insert
ES 60 GF VD, ES 60 GF IK VD

Contacts
1 NO/1 NC or 2 NO/2 NC contacts

Actuating force
approx. 240 N

B10d (10% load)
200,000

Tm
max. 20 years

Utilisation category
AC-15

Uimp
6 kV

Ui
500 V

Ithom
GFS VD: 16 A, GFS IK VD: 6 A

Ithommax/Ui
GFS VD: 16 A/400 VAC, GFS IK VD: 6 A/400 VAC

Contact load capacity
max. 400 VAC, GFS VD: max. 16 A (cos φ = 1),
GFS IK VD: max. 6 A (cos φ = 1)

Max. fuse rating
GFS VD: 16 A gG/gN fuse,
GFS IK VD: 6 A gG/gN fuse

Ambient temperature
– 25 °C ... + 80 °C

Mechanical life
> 100,000 operations

Approvals
GFS IK VD:

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Impulse wiping contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFS 1S D 10 VD</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFS 2S D 20 VD</td>
</tr>
</tbody>
</table>

Ordering details
GFS 1S D 10 VD
1 NO contact [2S D 20 VD,
IK 105 D 10 VD, IK 205 D 20 VD]
S Protective shield
Series
Foot switches
// Series GFS VD, variants

// With protective shield GFS

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFS 1S D 10 VD</td>
<td>1048696</td>
</tr>
<tr>
<td>GFS 25 D 20 VD</td>
<td>1048719</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impulse wiping contact</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFS IK 101S D 10 VD</td>
<td>1181480</td>
</tr>
<tr>
<td>GFS IK 2025 D 20 VD</td>
<td>1179113</td>
</tr>
</tbody>
</table>
Safety foot switches
// Series GFSI VD

Features/Options
- GFSI VD: NC contact 15-16 in series with NO contact 23-24 (internal wiring)
- With impulse wiping contacts GFSI IK VD: without switching impulse when unlocking foot switch; NO contact 13-14 is converted into positive break NC contact by internal baffle after pressure point, Safety contact: 13-14, Signalling contact: 21-22
- Max. 4 contacts
- Ergonomic pedal shape and wide opening in protective shield
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1, BG-GS-ET-15

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Pedal
aluminium die-cast, enamel finish, RAL 5011

Protective shield
aluminium die-cast, enamel finish, RAL 2004

Connection
screw terminals

Cable cross-section
max. 2.5 mm² (incl. conductor ferrules)

Cable entry
1 x M20 x 1.5

Contact material
silver

Degree of protection
IP 65 to EN 60529

 Switching system
slow action with double break, positive break NC contact per EN 60947-5-1

Switch insert
ES 60 GF VD, ES 60 GF IK VD

Contacts
1 NO/1 NC or 2 NO/2 NC contacts

Actuating force
approx. 240 N

B10d (10 % load)
200,000

Tm
max. 20 years

Utilisation category
AC-15

Uimp
6 kV

U
500 V

Ith
GFSI VD: 16 A, GFSI IK VD: 6 A

GFSI VD: 16 A/400 VAC, GFSI IK VD: 6 A/400 VAC

Contact load capacity
max. 400 VAC, GFSI VD: max. 16 A (cos φ = 1), GFSI IK VD: max. 6 A (cos φ = 1)

Max. fuse rating
GFSI VD: 16 A gG/gN fuse, GFS IK VD: 6 A gG/gN fuse

Ambient temperature
– 25 °C ... + 80 °C

Mechanical life
> 100,000 operations

Approvals
GFSI IK 20S D 20 VD:

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Impulse wiping contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact</td>
<td>GFSI 1S D 10 VD</td>
</tr>
<tr>
<td>2 NC/2 NO contacts</td>
<td>GFSI IK 101S D 10VD</td>
</tr>
</tbody>
</table>

Ordering details
GFSI 1S D 10 VD
1 NO contact (2S D 20 VD, IK 105D 10 VD, IK 205S D 20 VD)
Series, S Protective shield
## Foot switches

// Series GFSI VD, variants

// With protective shield GFS

<table>
<thead>
<tr>
<th>Slow action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFSI 1S D 10 VD</td>
<td>1159564</td>
</tr>
<tr>
<td>GFSI 2S D 20 VD</td>
<td>1177932</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impulse wiping contact</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFSI IK 101S D 10 VD</td>
<td>1184002</td>
</tr>
<tr>
<td>GFSI IK 202S D 20 10SVD</td>
<td>1181942</td>
</tr>
<tr>
<td>GFSI IK 202S D 20 10S</td>
<td>1181885</td>
</tr>
<tr>
<td>GFSI IK 202S D 20 20</td>
<td>1183173</td>
</tr>
</tbody>
</table>
Safety foot switches
// Series GFS 2 VD

Features/Options
- Double-pedal type
- GFS 2 VD: NC contact 15-16 \(\ominus\) in series with NO contact 23-24 (internal wiring)
- With impulse wiping contacts GFS 2 IK VD: without switching impulse when unlocking foot switch; NO contact 13-14 is converted into positive break NC contact \(\larr\) by internal baffle after pressure point, Safety contact: 13-14 \(\ominus\), Signalling contact: 21-22
- Max. 4 contacts per pedal, max. 3 pedals available
- Wiring compartment
- Available with special finish in RAL colour tones

Technical data

Standards
EN ISO 13849-1; EN 60947-5-1, BG-GS-ET-15

Enclosure
aluminium die-cast, enamel finish, RAL 5011

Pedal
glass-fibre reinforced thermoplastic

Protective shield
aluminium die-cast, enamel finish, RAL 5011

Connection
screw terminals

Cable cross-section
max. 2.5 mm\(^2\) (incl. conductor ferrules)

Cable entry
1 x M25 x 1.5

Contact material
silver

Degree of protection
IP 65 to EN 60529

Switching system
slow action with double break, positive break NC contact \(\larr\) per EN 60947-5-1

Switch insert
ES 60 GF VD, ES 60 GF IK VD

Contacts
1 NO/1 NC or 2 NO/2 NC contacts per pedal

Actuating force
approx. 240 N

B\(\text{10d}(10\%\:\text{load})\)
mixed max. 200,000

T\(\text{M}\)
max. 20 years

Utilisation category
AC-15

U\(\text{imp}\)
6 kV

U\(\text{i}\)
500 V

I\(\text{th}\)
GFS 2 VD: 16 A, GFS 2 IK VD: 6 A

I\(\text{e}/U\_e\)
GFS 2 VD: 16 A/400 VAC, GFS 2 IK VD: 6 A/400 VAC

Contact load capacity
max. 400 VAC, GFS VD: max. 16 A (\(\cos \phi = 1\)), GFS 2 IK VD: max. 6 A (\(\cos \phi = 1\))

Max. fuse rating
GFS 2 VD: 16 A gG/gN fuse, GFS 2 IK VD: 6 A gG/gN fuse

Ambient temperature
\(- 25 ^\circ \text{C} \ldots + 80 ^\circ \text{C}\)

Mechanical life
> 100,000 operations

Approvals

Contact variants: Travel/contacts

### Slow action

| 1 NC/1 NO contact | GFS 2 1S D 10 VD... |
| 2 NC/2 NO contacts | GFS 2 2S D 20 VD... |

### Impulse wiping contact

| 1 NC/1 NO contact | GFS 2 1S D 10 VD... |
| 2 NC/2 NO contacts | GFS 2 2S D 20 VD... |

Ordering details

<table>
<thead>
<tr>
<th>GFS 2 IK 10S D 10 VD/IK 10S D 10 VD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NC/1 NO contact right pedal IK Impulse wiping contact right pedal</td>
</tr>
<tr>
<td>1 NC/1 NO contact (10S D 20 VD, 20S D 20 VD: 2 NC/2 NO contacts) left pedal IK Impulse wiping contact left pedal</td>
</tr>
<tr>
<td>2 pedals (3 pedals) S Protective shield Series</td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

Slow action  | Impulse wiping contact
1 NC/1 NO contact | GFS 2 1S D 10 VD... |
2 NC/2 NO contacts | GFS 2 2S D 20 VD... |
Foot switches
// Series GFS 2 VD, variants

// With protective shield GFS

- Slow action
  - GFS 2 15 D 10 VD/15 D 10 VD
  - GFS 2 25 D 20 VD/25 D 20 VD

- Impulse wiping contact
  - GFS 2 IK 1015 D 10 VD
  - GFS 2 IK 2025 D 20 VD

Material Number
- 1048899
- 1048930

Material Number on request
- on request
Foot switches
Thermoplastic enclosure

Single-pedal types
// Series KF
from page 68
// Series KFS
from page 72

Double-pedal types
// Series KF 2
from page 76

Triple-pedal types
// Series KF 3
from page 80

Four-pedal types
// Series KF 4
from page 82

Five-pedal types
// Series KF 5
from page 84
Foot switches
Thermoplastic enclosure

Application
Applications for the plastic KF range switches include use on packaging machines, in the storage and conveyor technology, as well as on textile machinery.

Design and mode of operation
KF range foot switches are available with a choice of reed contacts, micro switches or Hall sensors. They have protection class IP 65/67. All foot switches bear the CE mark according to the Low Voltage Directive.
Foot switches

// Series KF

Features/Options
- Thermoplastic enclosure
- Small flat design
- Without protective shield
- Max. 2 contacts
- Reed contacts for low currents from 1 mA to 1 A
- Micro switches for current load up to 5 A
- With prewired cable, length 2 or 5 m
- Available with plug-in connector
- Other cable lengths and types possible

Technical data

Standards
EN 60947-5-1; VDE 0660 part 200

Enclosure
Polyamide 66 glass-fibre reinforced, self-extinguishing

Pedal
Glass-fibre reinforced thermoplastic (PA 66)

Connection
Cable AWG, length 2 or 5 m

Cable cross-section
2-/3-core: AWG 20: 0.52 mm²
4-core: AWG 24: 0.20 mm²

Degree of protection
IP 65 to IEC/EN 60529

Switching system
Reed contacts or snap action: microswitch

Switching voltage
12 … 250 VAC/DC

Max. switch-on current
Reed contacts: 1 A, micro switch: 5 A

Max. power
Reed contacts: 30 VA, micro switch: 1250 VA

Max. fuse rating
5 A gG/gN fuse

Ambient temperature
−10 °C … +60 °C

Mechanical life
> 1 million operations

Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Reed contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NO contact</td>
<td>KF 1S</td>
</tr>
<tr>
<td>2 NO contacts</td>
<td>KF 2S</td>
</tr>
<tr>
<td>1-pole change-over contact</td>
<td>KF 1PW</td>
</tr>
</tbody>
</table>

Ordering details

KF 1PW-2m
Cable length 2 m (5 m)
1PW 1-pole change-over contact micro switch, (reed contacts: 1S, 2S, 1W)

Series
Foot switches

// Series KF, variants

// Without protective shield KF

<table>
<thead>
<tr>
<th>Material Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1049149</td>
<td>KF 1PW-2m</td>
</tr>
<tr>
<td>1049162</td>
<td>KF 1PW-5m</td>
</tr>
<tr>
<td>1049191</td>
<td>KF 1S-2m</td>
</tr>
<tr>
<td>1049198</td>
<td>KF 1S-5m</td>
</tr>
<tr>
<td>1049295</td>
<td>KF 1W-2m</td>
</tr>
<tr>
<td>1049284</td>
<td>KF 1W-5m</td>
</tr>
</tbody>
</table>

![Diagram of foot switch with dimensions]
Foot switches
// Series KF, variants

Features/Options
- With pressure point: 2-step switching
- 2 contacts
- Thermoplastic enclosure
- Small flat design
- Reed contacts for low currents from 1 mA to 1 A
- With prewired cable, length 2 m
- Available with plug-in connector
- Other cable lengths and types possible

Technical data

Standards
EN 60947-5-1; VDE 0660 part 200

Enclosure
polyamide 66 glass-fibre reinforced, self-extinguishing

Pedal
glass-fibre reinforced thermoplastic (PA 66)

Connection
cable AWG, length 2 or 5 m

Cable cross-section
4-core: AWG 24: 0.20 mm²

Degree of protection
IP 65 to IEC/EN 60529

Switching system
reed contacts

Actuating force
approx. 20 N

Switching voltage
12 ... 250 VAC/DC

Max. switch-on current
1 A

Max. power
30 VA

Ambient temperature
− 10 °C ... + 60 °C

Mechanical life
> 1 million operations

Approvals

Contact variants: Travel/contacts

Reed contacts | Material number
---|---
2 NO contacts | KF 1S D 1S-2m

Ordering details
KF 1S D 1S-2m
Cable length 2 m
1S 1 NO contact
Pressure point
1S 1 NO contact
Series
Features/Options
- With Hall sensor: Analogue output
- Thermoplastic enclosure
- Small flat design
- With prewired cable, length 2 m
- Various output values available: 0 ... 10 VDC, 0 ... 20 mA or 4 ... 20 mA
- Analogue output signal proportional to pedal travel
- Available with plug-in connector
- Other cable lengths and types possible

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN 60947-5-1; VDE 0660 part 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>polyamide 66 glass-fibre reinforced, self-extinguishing</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic (PA 66)</td>
</tr>
<tr>
<td>Connection</td>
<td>cable AWG, length 2 m</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>3-core: AWG 20: 0.52 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>Hall sensor</td>
</tr>
<tr>
<td>Output values</td>
<td></td>
</tr>
<tr>
<td>Output voltage U_a</td>
<td>0...10 VDC ±1 %</td>
</tr>
<tr>
<td>Output current I_a</td>
<td>0...20 mA ±1 % or 4...20 mA ±1 %</td>
</tr>
<tr>
<td>I_e/U_e</td>
<td>for U_a: 25 mA/15 ... 30 VDC</td>
</tr>
<tr>
<td></td>
<td>for I_a: 45 mA/15 ... 30 VDC</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>–10 °C ... +60 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt;1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td></td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Analogue output</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>U_a</td>
<td>KF HS 0...10 VDC-2m</td>
</tr>
<tr>
<td></td>
<td>1049345</td>
</tr>
<tr>
<td></td>
<td>KF HS 0...20 mA-2m</td>
</tr>
<tr>
<td></td>
<td>1049346</td>
</tr>
<tr>
<td></td>
<td>KF HS 4...20 mA-2m</td>
</tr>
<tr>
<td></td>
<td>1049347</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>KF HS 0...10 VDC-2m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable length 2 m</td>
</tr>
<tr>
<td>Output value U_a 0...10 VDC</td>
</tr>
<tr>
<td>I_a 0...20 mA or 4...20 mA</td>
</tr>
<tr>
<td>Hall sensor Series</td>
</tr>
</tbody>
</table>

Foot switches
// Series KF, variants

// KF HS
Foot switches
// Series KFS

### Features/Options
- Thermoplastic enclosure
- Small flat design
- With metal protective shield, special RAL colours available
- Max. 2 contacts
- Reed contacts for low currents from 1 mA to 1 A
- Micro switches for current load up to 5 A
- With prewired cable, length 2 or 5 m
- Available with plug-in connector
- Other cable lengths and types possible

### Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN 60947-5-1; VDE 0660 part 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>Polyamide 66 glass-fibre reinforced, self-extinguishing</td>
</tr>
<tr>
<td>Pedal</td>
<td>Glass-fibre reinforced thermoplastic (PA 66)</td>
</tr>
<tr>
<td>Protective shield</td>
<td>Steel, enamel finish</td>
</tr>
<tr>
<td>Connection</td>
<td>Cable AWG, length 2 or 5 m</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>2-/3-core: AWG 20: 0.52 mm², 4-core: AWG 24: 0.20 mm²</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>Reed contacts or snap action: microswitch</td>
</tr>
<tr>
<td>Switching voltage</td>
<td>12 ... 250 VAC/DC</td>
</tr>
<tr>
<td>Max. switch-on current</td>
<td>Reed contacts: 1 A, micro switch: 5 A</td>
</tr>
<tr>
<td>Max. power</td>
<td>Reed contacts: 30 VA, micro switch: 1250 VA</td>
</tr>
<tr>
<td>Max. fuse rating</td>
<td>Micro switch: 5 A gG/gN fuse</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>~10 °C ... +60 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt;1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td></td>
</tr>
</tbody>
</table>

### Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Reed contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NO contact</td>
<td>KFS 1S</td>
</tr>
<tr>
<td>2 NO contacts</td>
<td>KFS 2S</td>
</tr>
<tr>
<td>1-pole change-over contact</td>
<td>KFS 1PW</td>
</tr>
<tr>
<td></td>
<td>KFS 1W</td>
</tr>
</tbody>
</table>

### Ordering details

<table>
<thead>
<tr>
<th>KFS 1PW-2m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable length 2 m (5 m)</td>
</tr>
<tr>
<td>1PW 1-pole change-over contact micro switch, [reed contacts: 1S, 2S, 1W]</td>
</tr>
<tr>
<td>Protective shield</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>

---

![Diagram of the KFS series](image-url)
Foot switches
// Series KFS, variants

// With protective shield KFS

<table>
<thead>
<tr>
<th>Material Number</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1049352</td>
<td>1049355</td>
</tr>
<tr>
<td>1049370</td>
<td>1049377</td>
</tr>
<tr>
<td>1049392</td>
<td>1051980</td>
</tr>
<tr>
<td>1049385</td>
<td>1189550</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material Number</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1049352</td>
<td>1049355</td>
</tr>
<tr>
<td>1049370</td>
<td>1049377</td>
</tr>
<tr>
<td>1049392</td>
<td>1051980</td>
</tr>
<tr>
<td>1049385</td>
<td>1189550</td>
</tr>
</tbody>
</table>

Snap action
- KFS 1PW-2m
- KFS 1PW-5m

Reed contacts
- KFS 1S-2m
- KFS 1S-5m
- KFS 2S-2m
- KFS 2S-5m
- KFS 1W-2m
- KFS 1W-5m
Foot switches
// Series KFS, variants

Features/Options
- With pressure point: 2-step switching
- 2 contacts
- Thermoplastic enclosure
- With metal protective shield, special RAL colours available
- Small flat design
- Reed contacts for low currents from 1 mA to 1 A
- With prewired cable, length 2 m
- Available with plug-in connector
- Other cable lengths and types possible

// KFS D

Technical data

Standards  
EN 60947-5-1; VDE 0660 part 200

Enclosure  
polyamide 66 glass-fibre reinforced, self-extinguishing

Pedal  
glass-fibre reinforced thermoplastic (PA 66)

Protective shield  
steel, enamel finish

Connection  
cable AWG, length 2 m

Cable cross-section  
4-core: AWG 24: 0.20 mm²

Degree of protection  
IP 65 to IEC/EN 60529

Switching system  
reed contacts

Actuating force  
approx. 20 N

Switching voltage  
12 ... 250 VAC/DC

Max. switch-on current  
1 A

Max. power  
30 VA

Ambient temperature  
– 10 °C ... + 60 °C

Mechanical life  
> 1 million operations

Approvals  

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Reed contacts</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 NO contacts</td>
<td>KFS 1S D 1S-2m</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>KFS 1S D 1S-2m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable length 2 m</td>
</tr>
<tr>
<td>1S 1 NO contact</td>
</tr>
<tr>
<td>Pressure point</td>
</tr>
<tr>
<td>1S 1 NO contact</td>
</tr>
<tr>
<td>S Protective shield</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>
Features/Options
- With Hall sensor: Analogue output
- Thermoplastic enclosure
- Small flat design
- With metal protective shield, special RAL colours available
- With prewired cable, length 2 m
- Various output values available: 0…10 VDC, 0…20 mA or 4…20 mA
- Analogue output signal proportional to pedal travel
- Available with plug-in connector
- Other cable lengths and types possible

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Analogue output</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uₘ</td>
<td>KFS HS 0…10 VDC-2m</td>
</tr>
<tr>
<td>Iₘ</td>
<td>KFS HS 0…20 mA-2m</td>
</tr>
<tr>
<td>Iₘ</td>
<td>KFS HS 4…20 mA-2m</td>
</tr>
</tbody>
</table>

Technical data

- Standards EN 60947-5-1; VDE 0660 part 200
- Enclosure polyamide 66 glass-fibre reinforced, self-extinguishing
- Pedal glass-fibre reinforced thermoplastic (PA 66)
- Protective shield steel, enamel finish
- Connection cable AWG, length 2 m
- Cable cross-section 3-core: AWG 20: 0.52 mm²
- Degree of protection IP 65 to IEC/EN 60529
- Switching system Hall sensor
- Output values
  - Output voltage Uₘ: 0…10 VDC ±1 %
  - Output current Iₘ: 0…20 mA ±1 % or 4…20 mA ±1 %
  - Iₑ/Uₑ for Uₑ: 25 mA/15 … 30 VDC
  - for Iₑ: 45 mA/15 … 30 VDC
- Ambient temperature -10 °C ... +60 °C
- Mechanical life > 1 million operations
- Approvals ➥

Ordering details

<table>
<thead>
<tr>
<th>KFS HS 0…10 VDC-2m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable length 2 m</td>
</tr>
<tr>
<td>Output value Uₘ: 0…10 VDC</td>
</tr>
<tr>
<td>(Iₑ: 0…20 mA or 4…20 mA)</td>
</tr>
<tr>
<td>Hall sensor</td>
</tr>
<tr>
<td>S Protective shield</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>

- Various output values available: 0…10 VDC, 0…20 mA or 4…20 mA
- Analogue output signal proportional to pedal travel
- Available with plug-in connector
- Other cable lengths and types possible

Standards EN 60947-5-1; VDE 0660 part 200
Enclosure polyamide 66 glass-fibre reinforced, self-extinguishing
Pedal glass-fibre reinforced thermoplastic (PA 66)
Protective shield steel, enamel finish
Connection cable AWG, length 2 m
Cable cross-section 3-core: AWG 20: 0.52 mm²
Degree of protection IP 65 to IEC/EN 60529
Switching system Hall sensor
Output values
  - Output voltage Uₘ: 0…10 VDC ±1 %
  - Output current Iₘ: 0…20 mA ±1 % or 4…20 mA ±1 %
  - Iₑ/Uₑ for Uₑ: 25 mA/15 … 30 VDC
  - for Iₑ: 45 mA/15 … 30 VDC
Ambient temperature -10 °C ... +60 °C
Mechanical life > 1 million operations
Approvals ➥
Foot switches
// Series KF 2

Features/Options
- Double-pedal type
- Thermoplastic enclosure
- Small flat design
- Max. 2 contacts per pedal
- With wiring compartment
- Without protective shield
- Reed contacts for low currents from 1 mA to 1 A
- Micro switches for current load up to 5 A

// KF 2

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN 60947-5-1; VDE 0660 part 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>polyamide 66 glass-fibre reinforced, self-extinguishing</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic (PA 66)</td>
</tr>
<tr>
<td>Connection</td>
<td>wiring compartment, cable gland M12 x 1.5 with spiral top or cable, length 2 m</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. AWG 22: 0.33 mm², cable: Ø max. 6.5 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>reed contacts or snap action: micro switch</td>
</tr>
<tr>
<td>Switching voltage</td>
<td>12 ... 250 VAC/DC</td>
</tr>
<tr>
<td>Max. switch-on current</td>
<td>Reed contacts: 1 A, micro switch: 5 A</td>
</tr>
<tr>
<td>Max. power</td>
<td>Reed contacts: 30 VA, micro switch: 1250 VA</td>
</tr>
<tr>
<td>Max. fuse rating</td>
<td>micro switch: 5 A gG/gN fuse</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>– 10 °C ... + 60 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td></td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Reed contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NO contact</td>
<td>KF 2 1S/1S  1 NO contact</td>
</tr>
<tr>
<td></td>
<td>KF 2 2S/2S  2 NO contacts</td>
</tr>
<tr>
<td>1-pole change-over</td>
<td>KF 2 1PW/1PW  1-pole change-over</td>
</tr>
<tr>
<td>contact</td>
<td>KF 2 1W/1W  1-pole change-over</td>
</tr>
</tbody>
</table>

Ordering details
KF 2 1PW/1PW

<table>
<thead>
<tr>
<th>Contacts right pedal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1PW 1-pole change-over contact micro switch, (reed contacts: 1S, 2S, 1W)</td>
</tr>
<tr>
<td>2 pedals</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>

76
Foot switches
// Series KF 2, variants

// Without protective shield KF 2

Snap action
KF 2 1PW/1PW
Material Number 1049096

Reed contacts
KF 2 1S/1S
Material Number 1049006
KF 2 2S/2S
Material Number 1049129
KF 2 1W/1W
Material Number 1049072

// Cable

Features/Options
- With prewired cable, length 2 m
- M12 x 1.5 bellmouth cable gland
- Other cable lengths and types possible

Snap action
KF 2 1PW/1PW-2m
Material Number 1049095

Reed contacts
KF 2 1S/1S-2m
Material Number 1049007
KF 2 2S/2S-2m
Material Number 1049128
KF 2 1W/1W-2m
Material Number 1049071
Foot switches

// Series KF 2, variants

Features/Options
- With pressure point: 2-step switch
- Double-pedal type
- Thermoplastic enclosure
- Small flat design
- Max. 2 contacts per pedal
- With wiring compartment
- Without protective shield
- Reed contacts for low currents from 1 mA to 1 A
- Available with cable or plug-in connector

// KF 2 D

Technical data

Standards
EN 60947-5-1; VDE 0660 part 200
Enclosure
polyamide 66 glass-fibre reinforced, self-extinguishing
Pedal
glass-fibre reinforced thermoplastic (PA 66)
Connection
wiring compartment, cable gland M12 x 1.5
with spiral top or cable, length 2 m
Cable cross-section
max. AWG 22: 0.33 mm²
  cable: ø max. 6.5 mm
Degree of protection
IP 65 to IEC/EN 60529
Switching system
reed contacts
Actuating force
approx. 20 N
Switching voltage
12 ... 250 VAC/DC
Max. switch-on current
1 A
Max. power
30 VA
Ambient temperature
– 10 °C ... + 60 °C
Mechanical life
> 1 million operations
Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Reed contacts</th>
<th>2 NO contacts</th>
<th>KF 2 1SD1S/1SD1S</th>
<th>1049126</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>KF 2 1SD1S/1SD1S-2m</td>
<td>1049127</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>KF 2 1S D 1S/1S D 1S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts right pedal</td>
</tr>
<tr>
<td>1S 1 NO contact left pedal</td>
</tr>
<tr>
<td>Pressure point left pedal</td>
</tr>
<tr>
<td>1S 1 NO contact</td>
</tr>
<tr>
<td>2 pedals</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>
PRODUCTION PROCESS ASSEMBLY
THERMOPLASTIC PEDALS BEFORE FIXING THE MAGNETS
Foot switches  
// Series KF 3

Features/Options
- Triple-pedal type
- Thermoplastic enclosure with metal base plate
- Small flat design
- Max. 2 contacts per pedal
- With wiring compartment
- Reed contacts for low currents from 1 mA to 1 A
- Micro switches for current load up to 5 A
- Available with Hall sensor: Analogue output signal proportional to pedal travel
- Available with cable or plug-in connector, other contact combinations on request

Technical data

Standards
- EN 60947-5-1; VDE 0660 part 200

Enclosure
- polyamide 66 glass-fibre reinforced, self-extinguishing

Base plate
- aluminium, enamel finish

Pedal
- glass-fibre reinforced thermoplastic (PA 66)

Connection
- wiring compartment, cable gland

Cable cross-section
- max. AWG 20: 0.52 mm²
- cable: ø max. 6.5 mm

Degree of protection
- IP 65 to IEC/EN 60529

Switching system
- reed contacts or snap action: micro switch

Switching voltage
- 12 ... 250 VAC/DC

Max. switch-on current
- Reed contacts: 1 A, micro switch: 5 A

Max. power
- Reed contacts: 30 VA, micro switch: 1250 VA

Max. fuse rating
- micro switch: 5 A gG/gN fuse

Ambient temperature
- –10 °C ... +60 °C

Mechanical life
- > 1 million operations

Approvals
- E
- C

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Reed contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NO contact</td>
<td>KF 3 1S/1S/1S</td>
</tr>
<tr>
<td>1-pole change-over contact</td>
<td>KF 3 1PW/1PW/1PW</td>
</tr>
<tr>
<td></td>
<td>KF 3 1W/1W/1W</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>KF 3 1S/1S/1S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts right pedal</td>
</tr>
<tr>
<td>Contact center pedal</td>
</tr>
<tr>
<td>1 NO reed contact, [reed contacts: 1S, 2S, 1W, micro switch: 1PW] left pedal</td>
</tr>
<tr>
<td>3 pedals</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>
Foot switches

// Series KF 3, variants

// Without protective shield KF 3

<table>
<thead>
<tr>
<th>Component</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snap action</td>
<td></td>
</tr>
<tr>
<td>KF 3 1PW/1PW/1PW</td>
<td>1049004</td>
</tr>
<tr>
<td>Reed contacts</td>
<td></td>
</tr>
<tr>
<td>KF 3 1S/1S/1S</td>
<td>1048997</td>
</tr>
<tr>
<td>KF 3 1W/1W/1W</td>
<td>1049003</td>
</tr>
</tbody>
</table>
Foot switches
// Series KF 4

Features/Options
- Four-pedal type
- Thermoplastic enclosure with metal base plate
- Small flat design
- Max. 2 contacts per pedal
- With wiring compartment
- Reed contacts for low currents from 1 mA to 1 A
- Micro switches for current load up to 5 A
- Available with Hall sensor: Analogue output signal proportional to pedal travel
- Available with cable or plug-in connector, other contact combinations on request

Technical data

Standards
EN 60947-5-1; VDE 0660 part 200

Enclosure
polyamide 66 glass-fibre reinforced, self-extinguishing

Base plate
aluminium, enamel finish

Pedal
glass-fibre reinforced thermoplastic (PA 66)

Connection
wiring compartment, cable gland M12 x 1.5 with spiral top

Cable cross-section
max. AWG 20: 0.52 mm², cable: ø max. 6.5 mm

Degree of protection
IP 65 to IEC/EN 60529

Switching system
reed contacts or snap action: micro switch

Switching voltage
12 ... 250 VAC/DC

Max. switch-on current
Reed contacts: 1 A, micro switch: 5 A

Max. power
Reed contacts: 30 VA, micro switch: 1250 VA

Max. fuse rating
micro switch: 5 A gG/gN fuse

Ambient temperature
– 10 °C ... + 60 °C

Mechanical life
> 1 million operations

Approvals

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th></th>
<th>Snap action</th>
<th>Reed contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NO contact</td>
<td></td>
<td>KF 4 1S/1S/1S/1S</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th></th>
<th>KF 4 1PW/1PW/1PW/1PW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts right pedal</td>
<td>Contacts middle right pedal</td>
</tr>
<tr>
<td>Contacts middle left pedal</td>
<td>1PW 1-pole change-over contact micro switch, [reed contacts: 1S, 2S, 1W]</td>
</tr>
<tr>
<td>left pedal</td>
<td>4 pedals</td>
</tr>
<tr>
<td>Series</td>
<td></td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th></th>
<th>Snap action</th>
<th>Reed contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NO contact</td>
<td></td>
<td>KF 4 1S/1S/1S/1S</td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th></th>
<th>KF 4 1PW/1PW/1PW/1PW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts right pedal</td>
<td>Contacts middle right pedal</td>
</tr>
<tr>
<td>Contacts middle left pedal</td>
<td>1PW 1-pole change-over contact micro switch, [reed contacts: 1S, 2S, 1W]</td>
</tr>
<tr>
<td>left pedal</td>
<td>4 pedals</td>
</tr>
<tr>
<td>Series</td>
<td></td>
</tr>
</tbody>
</table>
Foot switches
// Series KF 4, variants

// Without protective shield KF 4

<table>
<thead>
<tr>
<th>Snaps action</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>KF 4 PW/PW/PW/PW</td>
<td>1048993</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reed contacts</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>KF 4 MS/MW/WS/MW</td>
<td>1048991</td>
</tr>
<tr>
<td>KF 4 MS/MW/WS/MW</td>
<td>1048992</td>
</tr>
</tbody>
</table>
Foot switches
// Series KF 5

Features/Options
- Five-pedal type
- Thermoplastic enclosure with metal base plate
- Small flat design
- Max. 2 contacts per pedal
- With wiring compartment
- Reed contacts for low currents from 1 mA to 1 A
- Micro switches for current load up to 5 A
- Available with Hall sensor: Analogue output signal proportional to pedal travel
- Available with cable or plug-in connector, other contact combinations on request

Technical data

<table>
<thead>
<tr>
<th>Standards</th>
<th>EN 60947-5-1; VDE 0660 part 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>polyamide 66 glass-fibre reinforced, self-extinguishing</td>
</tr>
<tr>
<td>Base plate</td>
<td>aluminium, enamel finish</td>
</tr>
<tr>
<td>Pedal</td>
<td>glass-fibre reinforced thermoplastic (PA 66)</td>
</tr>
<tr>
<td>Connection</td>
<td>wiring compartment, cable gland</td>
</tr>
<tr>
<td>Cable cross-section</td>
<td>max. AWG 20: 0.52 mm², cable: ø max. 6.5 mm</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP 65 to IEC/EN 60529</td>
</tr>
<tr>
<td>Switching system</td>
<td>reed contacts or snap action: micro switch</td>
</tr>
<tr>
<td>Switching voltage</td>
<td>12 ... 250 VAC/DC</td>
</tr>
<tr>
<td>Max. switch-on current</td>
<td>Reed contacts: 1 A, micro switch: 5 A</td>
</tr>
<tr>
<td>Max. power</td>
<td>Reed contacts: 30 VA, micro switch: 1250 VA</td>
</tr>
<tr>
<td>Max. fuse rating</td>
<td>micro switch: 5 A gG/gN fuse</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-10 °C ... +60 °C</td>
</tr>
<tr>
<td>Mechanical life</td>
<td>&gt; 1 million operations</td>
</tr>
<tr>
<td>Approvals</td>
<td>P3, G0</td>
</tr>
</tbody>
</table>

Contact variants: Travel/contacts

<table>
<thead>
<tr>
<th>Snap action</th>
<th>Reed contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NO contact</td>
<td>KF 5 1S/1S/1S/1S/...</td>
</tr>
<tr>
<td>1-pole change-over contact</td>
<td>KF 5 1PW/1PW/1PW/1PW/1PW</td>
</tr>
<tr>
<td>KF 5 1W/1W/1W/1W/1W</td>
<td></td>
</tr>
</tbody>
</table>

Ordering details

<table>
<thead>
<tr>
<th>KF 5 1PW/1PW/1PW/1PW/1PW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts right pedal</td>
</tr>
<tr>
<td>Contacts middle right pedal</td>
</tr>
<tr>
<td>Contacts middle pedal</td>
</tr>
<tr>
<td>Contacts middle left pedal</td>
</tr>
<tr>
<td>1PW 1-pole change-over contact micro switch, (reed contacts: 1S, 2S, 1W)</td>
</tr>
<tr>
<td>Left pedal</td>
</tr>
<tr>
<td>5 pedals</td>
</tr>
<tr>
<td>Series</td>
</tr>
</tbody>
</table>
Foot switches
// Series KF 5, variants

// Without protective shield KF 5

<table>
<thead>
<tr>
<th>Component</th>
<th>Material Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snap action</td>
<td>KF 5 1PW/1PW/1PW/1PW/1PW</td>
</tr>
<tr>
<td>Reed contacts</td>
<td>KF 5 1S/1S/1S/1S/1S</td>
</tr>
<tr>
<td></td>
<td>KF 5 1W/1W/1W/1W/1W</td>
</tr>
<tr>
<td></td>
<td>1048986</td>
</tr>
<tr>
<td></td>
<td>1048984</td>
</tr>
<tr>
<td></td>
<td>1048985</td>
</tr>
</tbody>
</table>
EXPLANATION OF SYMBOLS

- positive break NC contact
- pressure point
- positive break travel/angle
- latching point
- CSA/UL approval, Canada
- TÜV prototype-tested
- BG prototype-tested
- conformity to standards, see declaration of conformity
- rated operating current
- thermal test current
- rated operating voltage
- rated insulation voltage
- rated impulse withstand voltage

Explanation of switching travel diagrams

<table>
<thead>
<tr>
<th>0</th>
<th>3.5</th>
<th>6</th>
<th>9-14</th>
<th>21-22</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.5</td>
<td></td>
</tr>
</tbody>
</table>

- Contact open
- Contact closed

X1-X2  NC contact
X3-X4  NO contact
X5-X6  contact overlapping

Colour symbols per DIN IEC 757

- BK black
- BN brown
- BU blue
- GN green
- GY grey
- OG orange
- PK pink
- RD red
- TQ turquoise
- VI violet
- WH white
- YE yellow

Image sources:
Fotostudio Udo Kowalski, Wuppertal
www.fotolia.de
www.istockphoto.com

Errata and technical changes reserved.
steute develops and manufactures safe switchgear for demanding and critical application. Besides a comprehensive standard range of products for «Wireless, Automation, Extreme and Meditec» applications, we also and increasingly develop customised switchgear for extreme conditions in all four business fields. Some examples: emergency pullwire switches for the mining industry, position switches for industrial automation and control panels for laser surgery. Our head office is in Löhne, Westphalia, Germany; worldwide sales are conducted through steute’s subsidiaries and trading partners.