

BERNSTEIN
Your partner in Medical Technology

Our knowledge is your success

About us

BERNSTEIN ranks among the world's leading providers of industrial safety technology. With our comprehensive range of switches, sensors, enclosures, suspension systems and other components for industrial applications.

Years of experience in mechanical engineering and electronics are reflected down to the last detail in our products and guarantee to our customers effective and versatile solutions.

The family-owned enterprise, founded in 1947, has around 500 employees across ten countries. Customer Satisfaction is our number one priority. For us, Quality is more than making a good product, it's about designing them to perfectly match ALL of your needs.



BERNSTEIN worldwide



BERNSTEIN offers

- The right product for your application
- Professional technical advice
- Engineering and project management from one source
- Continuously monitored quality system
- Customer specific developments and approvals
- The right choice for all matters concerning medical technology
- Product and professional training
- Specialists who have awareness of the latest technological advancements

BERNSTEIN Medical Foot-Operated Switches and Foot-Operated Terminals

Our expertise for your safety



Hygiene and cleaning purposes in the medical fields

Products in the medical field operate in extremely demanding environments, so they must be safe, functional, ergonomic and reliable – **Safety** being the top priority.

Hygiene in hospitals, operating theatres, laboratories and medical practices is of paramount importance, with the cleaning of devices and surfaces being fast and easy. BERNSTEIN has developed a range of foot switches to suit the specific requirements of customers in the medical field, based upon cutting edge design and technology standards. Thanks to the innovative internal cable gland patented by BERNSTEIN, the risk of cable damage is virtually impossible, effectively defeating this most common form of failure. The BERNSTEIN foot switch range set new industry standards in terms of functional diversity, ergonomics and ease of cleaning.

Highest quality standards

BERNSTEIN foot switches for medical technology Meet worldwide safety standards and are produced to the highest possible quality standards. This applies not only to our standard products but also to our customer-specific system solutions.

Regulations and approvals for BERNSTEIN food switches MF1-4

- IEC 60947-1
- IEC 60947-5-1
- IEC 60601-1
- DIN EN 60529 (Type of protection)

Give us your ideas – we develop your solution



Future-proof solutions

BERNSTEIN has the objective to actively influence technical innovation and modern application solutions. BERNSTEIN has therefore always been at the centre of defining trends in technology and converting them into promising new product innovations.

Effective cooperation

Customer Satisfaction is our number one priority, as we always strive to deliver a solution to your specific needs and requirements. We work closely with our customers to define their precise needs and to find in our technology centre, the solution that matches their exact requirements. You can count on the experience, expertise and creativity of our employees.

Our products in your Corporate Design

In addition to our vast range of standard products, we can produce foot switches to your individual **Corporate Design**. This provides you an opportunity to have a customised solution, utilising different additional components - even for small quantities:
Decide for yourself:

- Pedal colour
- Housing colour
- Description on the housing
- Labelling
- Cable / connector assembly

Fields of application for the use of medical devices



Laser Technology



Electrical Medicine



Rotor Systems

Laser Technology

- Cosmetic surgery
- Ophthalmic surgery
- Pain treatment
- Urology

Electrical Medicine

- Electrosurgery - HF
- Water jet surgery
- Ophthalmic surgery
- Cryosurgery

Rotor Systems

- High-speed milling
 - Spinal column
 - Otorhinolaryngology
 - Neurosurgery
 - Maxillofacial Surgery
- Power Speed Devices
- All surgical fields
 - Large Bone Surgery
 - Small Bone Surgery
 - Micro Bone Surgery
- Shaver Systems
 - All arthroscopic procedures
 - Laparoscopy
 - Urology



**Medical Technology
Switching without
risks and side effects**

X-ray Technology

- Portable X-ray equipment
- Bucky tables
- Special x-ray equipment

Veterinary Medicine

- Mobile treatment systems with multi-functional foot switches for large and small animals
 - Instrument setting
 - Table positioning
 - Surgical equipment
 - Equipment units for dental care, e.g. in horses
 - X-Ray Technology for animals

Laboratory Technology

- Dental laboratories for producing dental implants
- Blood tests and tissue studies

BERNSTEIN

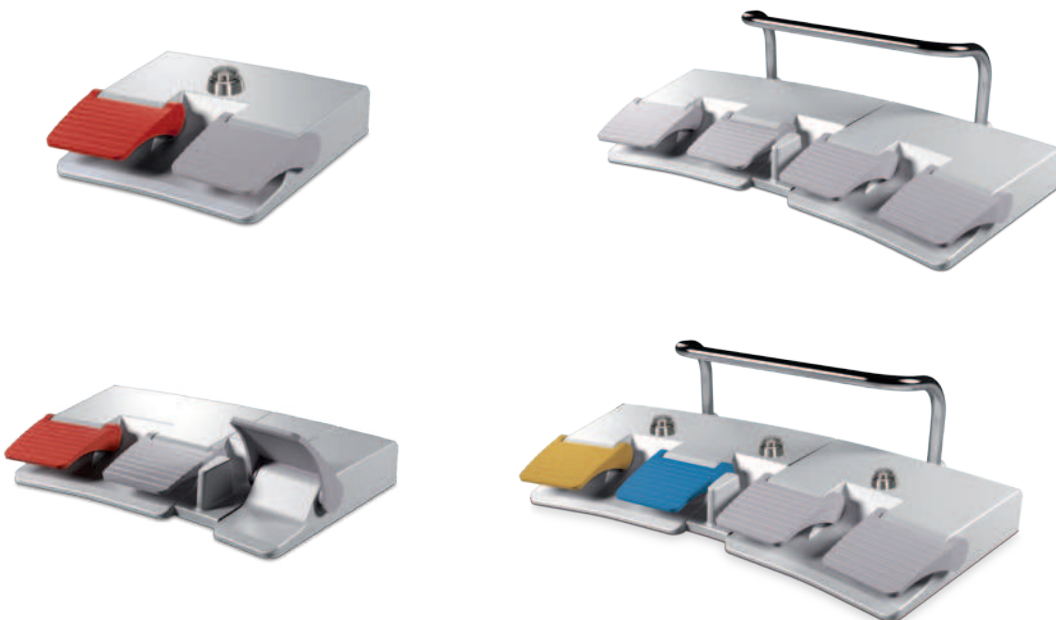
Medical Foot-Operated Switches MF1-4

Varied solutions – consistently reliable



Overview of product advantages

- Ergonomically optimised, elegant design
- Easy to clean:
 - Homogeneous enclosure surfaces
 - No plunger mechanism – actuation integrated on pedal pivot pin
 - Internal cable gland
- Radial cable entry for effective cable protection
- Analogue or digital output signals
- Protected, internal cover seal
- Modular design allows customers to select individual configurations such as:
 - Carrier handle
 - Analogue modules
 - Covered switches in various positions
 - Individual colour layout of enclosure and pedals
 - Laser engraving
 - Screen print labelling



Technical Data

- Enclosure and cover: Aluminium pressure die-casting
- Actuating element: Foot pedal (PA)
- Contact type: Switch element, positive break / potentiometer
- Mechanical service life*: >2 million switching operations
- Ambient temperature: -10 °C to +80 °C / short-term max. 2 h up to +95 °C
- Rated insulation voltage U_i : 400 V AC
- Conv. thermal current I_{the} : 10 A
- Utilization category: AC-15, U_e / I_e 240 V / 3 A
- Type of protection: IP 67, optionally up to IP X8

*see technical data sheet for details

Modular design - System compatibility



Components



To meet the exacting needs of our customers, our foot switch family is constructed to modular design principles. This simplifies complex requirements and facilitates fast response times.

Based on standard components, you can configure almost every function and design to create a product that will totally satisfy your needs.

Due to its modular flexible design, unwanted compromises are now eliminated. A checklist will help you choosing the right function and define the product suit your needs. Please find it on page 18 and 19.

Choose from our extensive range of accessories:

- Enclosures
- Pedals
- Additional components, e.g. push-buttons, tilt protection
- Built-in switches
- Carrier bars
- Protective hood

Components



Our expert team is happy to help you with your selection and work with you to find the best possible solution for your application.

Checklist - Medical Foot-Operated Switch MF1-4

Customer	Customer No.	Telephone
Address		Telefax
Contact person	Department	
<input type="checkbox"/> Enquiry	Target price	
<input type="checkbox"/> Sample	Annual requirement	
<input type="checkbox"/> Order	Delivery date	

Application of the foot switch (short description of your application):

1 Number of pedals

MF1



- 1 pedal
- with tilt protection

MF2



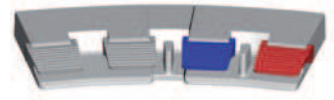
- 2 pedals

MF3



- 3 pedals

MF4



- 4 pedals

2 Partition

(Attention: The joint coupler is always with partition)



- MF2 without partition



- MF2 with partition



- MF4 with partition



- MF4 without partition

3 Pedal colour

Pedal 1

- grey (RAL 7036)
- yellow (RAL 1004)
- blue (RAL 5015)
- red (RAL 3000)

Pedal 2

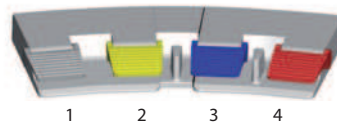
- grey (RAL 7036)
- yellow (RAL 1004)
- blue (RAL 5015)
- red (RAL 3000)

Pedal 3

- grey (RAL 7036)
- yellow (RAL 1004)
- blue (RAL 5015)
- red (RAL 3000)

Pedal 4

- grey (RAL 7036)
- yellow (RAL 1004)
- blue (RAL 5015)
- red (RAL 3000)

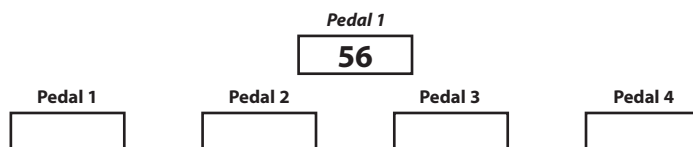


Others

4 Contact configuration

Per pedal, up to two built-in switches or one analog module can be used. An internal pressure point (30N) is also available. There is also the possibility to implement a covered switch when using multi-pedal foot-operated terminals.

Example: Pedal 1: 1x changeover switch (snap-action switching system) + 2x NC (snap-action switching system)



Contact Configuration Code

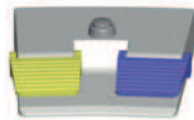
- 0 = without inserts
- 1 = changeover switch 1NC/1NO (switching system)
- 2 = NC 2NC (switching system)
- 3 = NO 2NO (switching system)
- 4 = changeover switch 1NC/1NO overlapping (switching system)
- 5 = changeover switch 1NC/1NO (snap-action switching system)
- 6 = NC 2NC (snap-action switching system)
- 7 = NO 2NO (snap-action switching system)
- A = Analogue module with 1 teachable signalling output

5 Analog module

- 0-5 V 0-10 V 0-20 mA 4-20 mA

6 Covered switches

Covered switches with 2x micro switches (1NC/1NO)

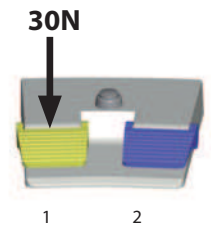


- centred position left right left centred position right without
MF2 **MF3** **MF3** **MF4** **MF4** **MF4**

7 Internal pressure point (30N)

Separates two built-in switch

- MF1 MF2 Pedal 2 MF3 Pedal 3 MF4 Pedal 4
 MF2 Pedal 1 MF3 Pedal 2 MF4 Pedal 3
 MF3 Pedal 1 MF4 Pedal 2
 MF4 Pedal 1
 without



8 Internal cable gland

from type MF2 onwards

- ø clamping area 3-7 mm
 ø clamping area 7-12 mm
 without



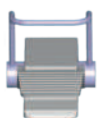
9 Shield support

from type MF2 onwards

- with without

10 Rigid carrier bar

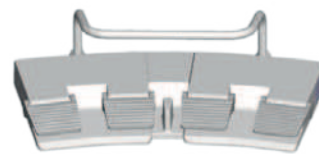
only for MF1, MF2 and MF4



MF1



MF3



MF4

without

11 Collapsible carrier bar

only for MF1, MF2 and MF4



MF2

without

Foot-Operated Terminal FBT

Solutions for intuitive operation

The result of common ideas

With the modular foot-operated terminal **FBT**, BERNSTEIN has included a state-of-the-art medical foot switch in its product range that offers a unique spectrum of combination options while satisfying the requirements of all control applications.

The **FBT** was developed in cooperation with renowned medical equipment manufacturers. It meets the special requirements of this sector and those of comparable fields such as the pharmaceutical or food processing industries.

Numerous high-quality standard components open up a wide range of switching options. The **FBT** has the high protection class IPX8, thus conforming to stringent hygiene requirements.

This is achieved by clear design, large surfaces, high-grade surface finish as well as sealing caps with external sealing edges for shielding switching modules, pedals and other possible options.

The modular design allows customers to select individual configurations such as:

- Carrier handles
- Analogue modules
- Cover buttons at different positions
- Individual colour layout of the enclosure and the pedals
- Laser engraving or screen print labelling

Single-Pedal Foot-Operated Terminal FBT1

The single-pedal foot-operated terminal is a medical foot switch for laboratory and operating theatre applications. The switch consists of an ergonomically formed plastic front with stainless steel cover. Thanks to its special design, the foot-operated switch is extremely stable on the floor and can be easily guided with the foot when changing position. The terminal is particularly easy to clean as not only the electrical contacts but also the entire connection chamber corresponds to IP X8.

Two-pedal foot-operated terminal FBT2

The two-pedal foot-operated terminal is used in connection with shaver systems, radiology, HF surgery as well as laser and laboratory technology.

The switch consists of a high-grade stainless steel base plate and a connection chamber cover. The connection chamber provides space for individual electronics circuitry solutions. The FBT is extremely stable, easy to clean and can be clearly labelled. The medical foot-operated switch conforms to the high protection class IP X8.

Multi-pedal foot-operated terminal FBT3 / FBT4

Up to 26 switching functions can be realised with these operating units, thus offering the user a high degree of flexibility.

In both models, the extended connection chamber ensures effective accommodation of the electronics.

Single-Pedal Foot-Operated Terminal FBT1

Multi-pedal foot-operated terminal FBT2 / FBT3 / FBT4



Technical Data

- Enclosure: Plastic PP (polypropylene)
- Actuating element: Plastic with silicone rubber cover
- Contact type: 1 NO / 1 NC / changeover contact
- Mechanical service life*: >1 million switching operations
- Ambient temperature: 0° to +70°
- Conv. thermal current I_{the} : 2 A
- Utilization category: AC-15, 250 V, 1 A; DC-13, 30 V, 1,5 A
- Type of protection: IP X8 conforming to EN 60529

*see technical data sheet for details

Technical Data

- Base plate: Stainless steel
- Actuating element: Plastic with silicone rubber cover
- Contact type: See technical data sheet for switch insert
- Mechanical service life*: >1 million switching operations
- Ambient temperature: -10° to +80°
- Rated insulation voltage U_i : 250 V (III/2)
- Conv. thermal current I_{the} : 2 A
- Utilization category: AC-15, 250 V, 1 A; DC-13, 30 V, 1,5 A
- Type of protection: IP X8 conforming to EN 60529

*see technical data sheet for details

Checklist - Foot-Operated Terminal FBT

Customer	Customer No.	Telephone
Address		Telefax
Contact person	Department	
<input type="checkbox"/> Enquiry	Target price	
<input type="checkbox"/> Sample	Annual requirement	
<input type="checkbox"/> Order	Delivery date	

1 Version



FBT1



FBT2



FBT3



FBT4

2 Module variants

Module		Position 1	Position 2	Position 3	Position 4
Single pedal	S1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	S2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Double pedal	DS1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	DS2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Potentiometer	P1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Joypad	JP1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	JP2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remark

3 Foot Bars

Two different bar lengths make it possible to physically separate the switch modules at the rear or over the entire area.



120 mm



73 mm

without

④ Centre bar switch

The use of a switched centre bar provides an additional operating function.

 without

⑤ Carrier bar

For conveniently carrying the FBT from one position to the other.

 without

⑥ Support feet

Support feet with different heights adjust the angle of the FBT to the ergonomically ideal position for the user.

 Inclination of 17° Inclination of 10° without

⑦ Cable / Connector

⑧ Labelling

 Screen print without Laser engraving Attached file File will be submitted

BERNSTEIN

Plastic foot switch KFMMini



Modern design

The shock-resistant fiberglass-reinforced plastic foot switches are suitable for demanding applications up to IP 65.

With their strikingly modern design, the KFMMini series are an ideal complement to our existing range of metal body foot switches.

Technical Data

- Enclosure: Thermoplastic (fibre glass reinforced)
- Actuating element: Thermoplastic (fibre glass reinforced)
- Ambient temperature: -20 °C to +80 °C
- Type of protection: IP 65



Product features

- Multi-pedal versions
 - Different coloured pedals
 - Black
 - Grey
 - Blue
 - Yellow
 - Red
- Other colours on request.

Accessories

- 2 m connection cable



**Switch systems –
Economy meets safety**



**Sensor systems –
Compact intelligence**



**Enclosure systems –
Function and design**

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