

Switch Testing Device DIGISWITCH

for production and laboratory

Model 5410

Code: 5410 E
 Manufacturer: burster
 Delivery: ex stock
 Warranty: 24 months



- Capture and evaluation of switch point, reserve switch point, actuation movement and difference movement acc. DIN 41635
- Haptic-testing on switch elements
- Testing of up to 5 switches per second
- 32 different switch types in 32 measuring programs
- Connection of strain gage or piezo-electric load cells and all kinds of displacement sensors
- Control signals for e.g. Start-Stop and limit force switch-off
- RS232 and PLC interface
- Profibus DP (option)

Application

The switch testing device DIGISWITCH model 5410 was developed especially for the testing of switches and buttons acc. to DIN 41635 resp. DIN 41636.

With the simultaneous capture of force, displacement and switch point, the complete switch characteristic can be displayed and evaluated on the 120 x 88 [mm] LCD.

With a sample rate of up to 5 work pieces per second the device is well suitable for online testing in production. Nevertheless, also in the laboratory or at simpler manual work places the device can be of great assistance for spot-checks.

Next to the PLC-output switches OK/NOK the various measurement values as well as the complete measuring curve can be transferred to a PC via the RS232 interface. Fast work piece changes with varying switch characteristics are not a problem for DIGISWITCH. The 32 work piece related parameter sets can be selected via PLC or the device's menu.

Together with the PC software one can save even more data sets. Furthermore, it serves to protocol the measurement results, to up- and download the complete device settings, etc.

Description

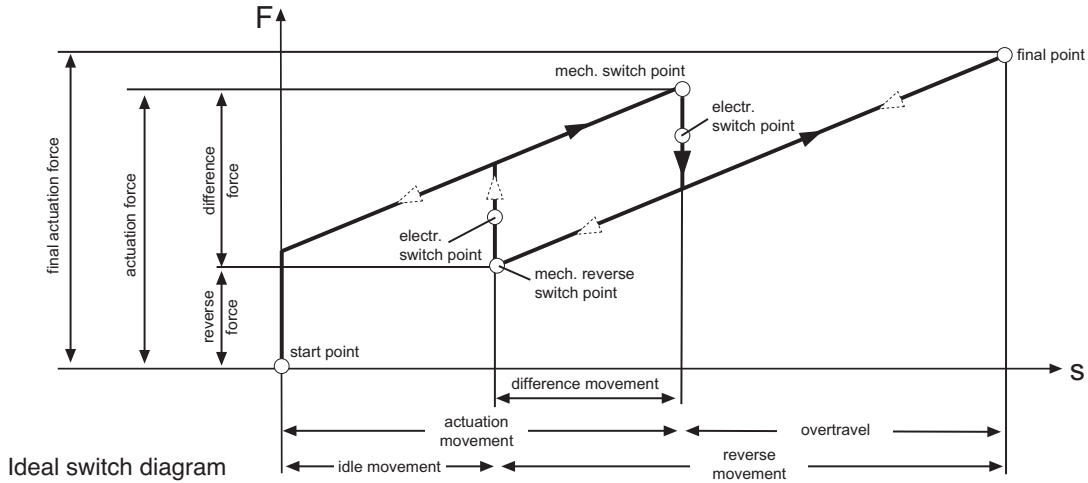
The complete switch characteristic is recorded and evaluated with the help of specific attributes such as switch point, reverse switch point, actuation movement and difference movement. Next to the mechanical values the electrical switch point is also captured. In order to do so, a window is set at the striking position. If the measuring values lie beyond the preset limit value within this window, the window is evaluated as NOK.

In an additional field on the LCD the evaluation of every window is displayed next to the graphic. Only if all preset limit values are in accordance, the switch is evaluated as an OK part which is also transmitted to the PLC with an OK signal. The capture of the switch characteristics with evaluation is effected optimally within 200 ms. In case of a defect on the sensor the limit force switch-off is effected with a reaction time of approx. 2 ms.

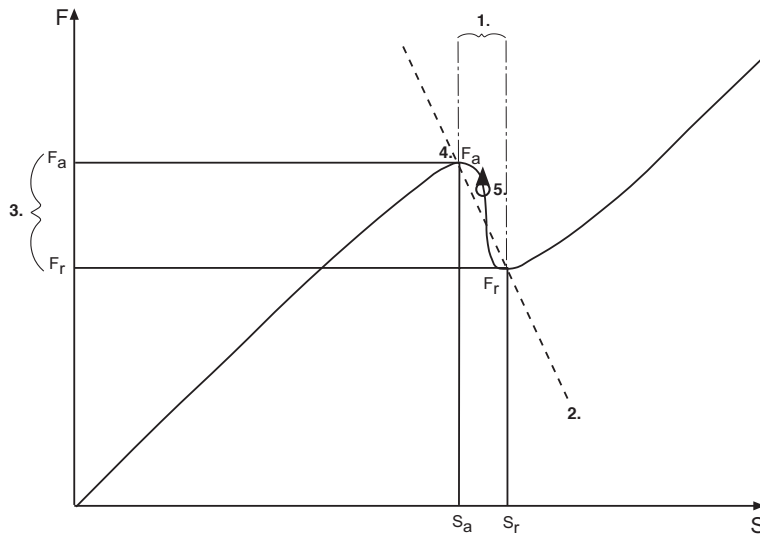
A complete switch test installation can be configured, consisting of the DIGISWITCH model 5410 together with the linear positioning actuator model 5490-Z001 and a load cell.

5410-E

Force-Displacement with Switch Point

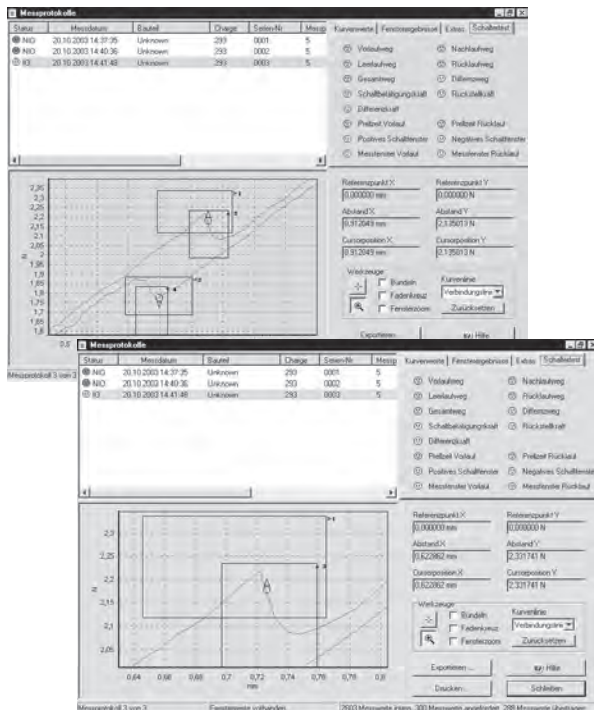


Haptic-Test with Force-Displacement Measurement

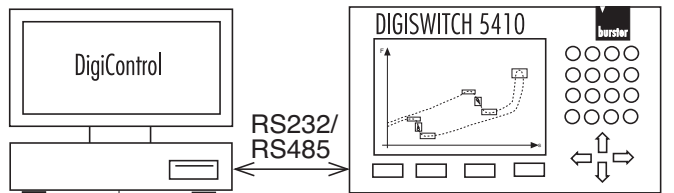


1. Difference Movement $S_r - S_a$
2. Force-Displacement Ratio $\frac{F_a - F_r}{S_r - S_a}$
3. Click Ratio $\frac{F_a - F_r}{F_a} * 100\%$
4. Actuation Force F_a
5. Electrical Switch Point

PC Software DigiControl Plus



DIGISWITCH model 5410 is a self-contained device and can be operated without any external tools. However, the PC program DigiControl (model no. 9306-P100), obtainable as an accessory, offers a number of practical tools:



Display of the force-displacement diagram and switch point with magnifier function.

- ➔ Load measurement curves from 5410
- ➔ Display measurement curves individually
- ➔ Display measurement curve family
- ➔ Gauge measurement curves
- ➔ Print measurement curves
- ➔ Archive measurement curves
- ➔ Upload instrument settings
- ➔ Edit instrument settings
- ➔ Download instrument settings
- ➔ Archive instrument settings
- ➔ Automatic production mode with protocol for traceability
- ➔ Statistic file for EXCEL

Sensors for force measurement

Strain gauge

Parameters:	± 0.2 ... 25 mV/V
Bridge resistance:	100 Ω ... 5 kΩ
Excitation voltage:	2.5 V or 5 V
Current:	35 mA
Type:	2 excitation lines, 2 sense lines
Cutoff frequency:	5 kHz
Cumulative error:	< 0.1 % typ.

Piezo sensors

Measured range:	± 50 pC ... ± 5000 nC
Cutoff frequency:	5 kHz (-3 dB)
Cumulative error:	< 1 %

Process signals

Signal range:	± 5 V, ± 10 V
Cutoff frequency:	5 kHz
Cumulative error:	< 0.1 %

Sensors for displacement measurement

Potentiometers, DC/DC-sensors, process signals

Signal range:	± 5 V, ± 10 V
Supply voltage:	5 / 10 V
Current:	approx. 100 mA max.
Cutoff frequency:	approx. 5 kHz (-3 dB)
Cumulative error:	< 0.1 %

Incremental Sensors

You can connect sensors with or without reference markers, whose coding consists of pulse strings phase-displaced by 90 degrees.

Sinusoidal current output

Signal:	7 ... 16 μA_{pp}
Supply voltage:	+ 5 V, 200 mA, -5 V, 120 mA
Max. frequency:	50 kHz
Counting resolution:	16 bit

Using a TTL-channel

Signal:	5 V
Supply voltage:	+ 5 V, 200 mA, -5 V, 120 mA
Moving load:	open
Max. frequency:	400 kHz
Counting resolution:	16 bit

General Technical Data

Voltage on the switch:	10 ... 15 V or ext.
Current over the switch:	10 ... 100 mA or ext.
Scanning rate:	8 000 value pairs
Digitalization:	12 bits (11 bits + sign bit)
Memory:	8 000 pairs for measurement curve
Computing time:	40 - 110 ms
Delay of the limit - outputs S1 ... S4:	2 - 10 ms
PLC Interface:	all in- and outputs with opto-coupler ext. DC supply 20 V ... 24 V ... 30 V pos. Logic with consume current PLC-inputs. (neg. Logic Option)
RS232/485 interface:	9 pin SubMin D socket
Baud rate:	300 ... 57400
Protocol:	ANSI X.3.28 1976 Subcategory 2-1, A3 SCPI commands, version 1995.0

Profibus

Data transfer rate:	9.6 kBaud ... 12 MBaud
Address range:	0 ... 126
Bus connection:	9 pin SubMin D socket
Range of operating temperature:	+ 5 ... + 23 ... + 50 °C
Range of storage temperature:	0 ... + 60 °C
Power supply:	230 VAC / 25 VA or 115 VAC / 25 VA

Housing

Desktop/rack housing:	
Protection class:	IP 40
Dimensions (W x H x D):	235 x 133 x 255 [mm]

Display

Dimensions:	120 x 88 [mm]
Pixel:	320 x 240

Measuring Functions

F = f (s)

A variable F is computed and evaluated as a function of the variable s. A selectable s-interval determines the input of F/s coordinates. The advantage: Input only occurs when the s variables change.

F = f (s, t)

A variable F is computed and evaluated as a function of the variable s. A selectable time-interval determines the input of F/s coordinates.

Switch point

The F/s coordinates of the electric switch point are computed and evaluated.

Order Information

DIGISWITCH with RS232/485	Model 5410-V0000
DIGISWITCH with Profibus (RS232 is included)	Model 5410-V0002

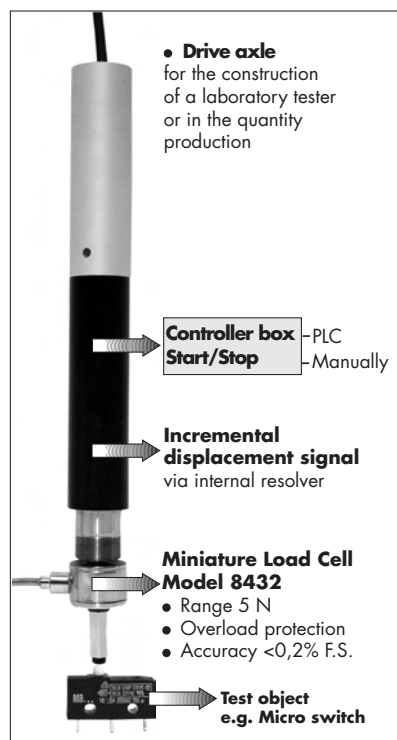
Option

Power supply 115 VAC	Model 5410-V0020
-----------------------------	-------------------------

Accessories

Linear positioning actuator with incremental displacement sensor, model no. 5490-Z001

Travel range:	max. 50 mm
Push/pull force:	max. 50 N
Velocity:	30 mm/ _{sec} max
Design resolution:	0.5 μm
MTBF:	20 000 hours
Dimensions:	length 196 mm, \varnothing 27 mm
Weight:	650 g

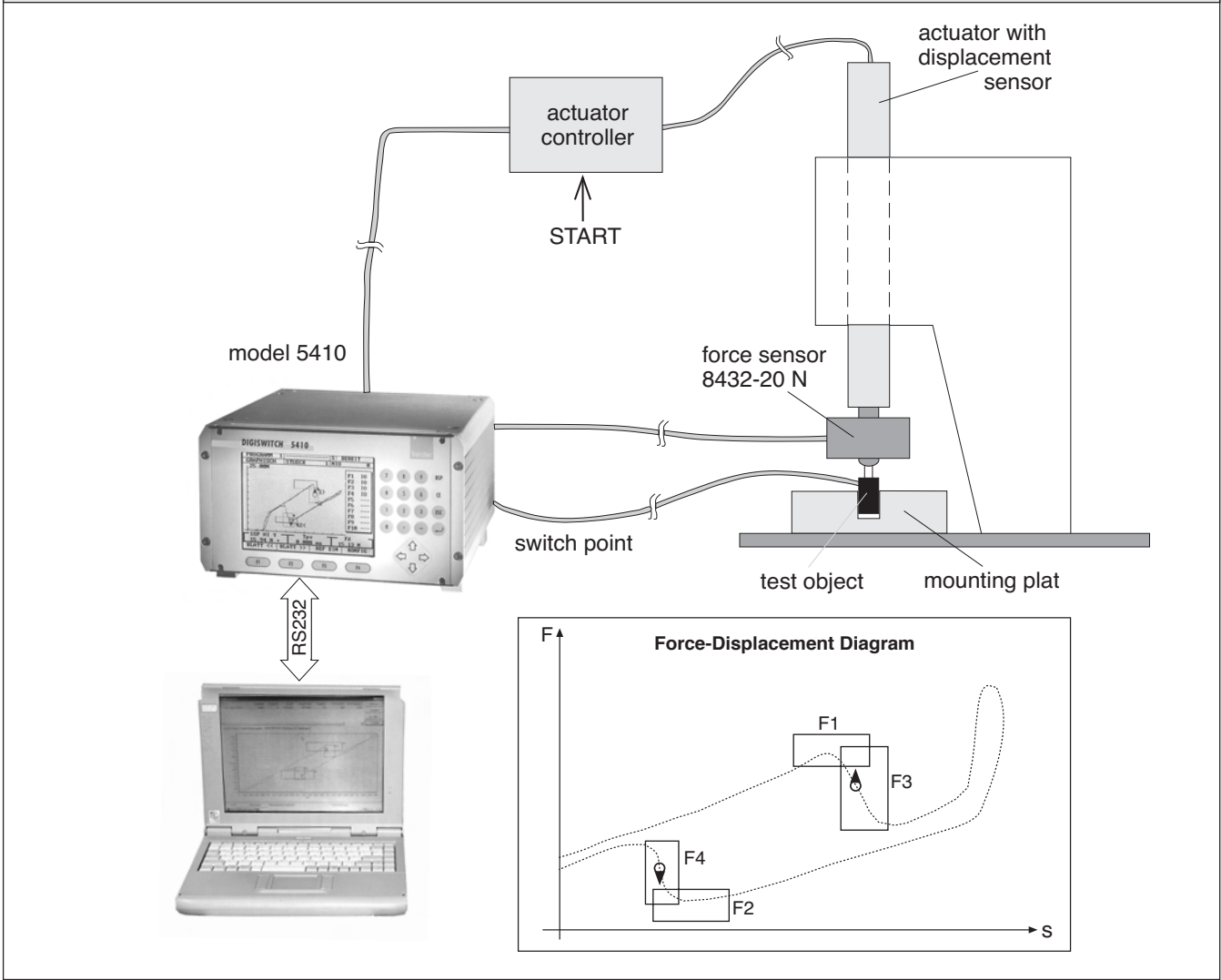


Actuator with controller electronic	Model 5490-Z001
USB interface cable	Model 9900-K350
19" rack mount kit	Model 9305-Z003
Test box for PLC simulation	Model 9306-Box
PC Software DigiControl Plus	Model 9306-P100

5410-E

Applikation

Klassische Microschalterprüfung mit dem DIGISWITCH 5410



Automatisierte Schalterprüfung in der Produktion

