

# Surgeflex 40

## Portable, multifunctional cable testing and fault location system



- **Easy to operate using the selector knob on the Teleflex SX or the touchscreen**
- **High surge energy up to 2,000 joules**
- **Voltage source with 40 kV**
- **All HV location methods integrated: ARM, ICE, DECAY, ICE Plus**
- **Sheath fault location with up to 10 kV**
- **Maximum safety due to external safety equipment and integrated isolating transformer**
- **Reflectometer can be used separately**

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### DESCRIPTION

Thanks to its 40 kV voltage source, the portable SFX 40 is ideally suited for prelocating and pinpointing faults, cable testing in low and medium voltage networks and burning.

The system is easy and intuitive to control directly using the selector knob on the Teleflex SX, the touchscreen of the large colour display or alternatively by using the integrated control panel of the SPG-40.

#### The key features at a glance

- Reflectometer with a 10.4" large sunlight compatible colour display
- Control of the complete system using intuitive menus and touchscreen
- Supports all existing prelocating methods
- Insulation test up to 5 kV
- DC testing up to 40 kV, with ramp function, automatic switch-off in case of breakdown and display of breakdown voltage
- Sheath fault location up to 10 kV with step voltage

#### Prelocating methods

The Surgeflex 40 offers up to four different prelocating methods:

- **ARM:** Arc Reflection Method, comparison of reference and fault images with high voltage discharge in the fault which can be displayed on the reflectometer and evaluated: Selection of 15 comparative measurements for each surge (ARMSlide).
- **ICE:** Impulse Current Equipment, current catching from the travelling wave of a high-voltage discharge in the fault
- **ICE Plus:** Further development of ICE: By evaluating the fundamental frequency of a discharge, prelocating can be more reliable even in branched networks.
- **DECAY:** Voltage decoupling from the travelling wave of a high-voltage discharge in the fault, suitable for long cable and faults that ignite only at very high voltages.
- **IFL:** Intermittent Fault Localisation for easily localising intermittent faults, such as those which often occur in street lighting networks.

## SPG-40 TECHNICAL DATA

### SPG-40

<b>Display</b>	1/4 VGA
<b>Insulation test</b>	Voltages of 1,000 V and 5,000 V Ranges 1 kΩ, 1 MΩ, 100 MΩ
<b>DC testing</b>	0 – 40 kV DC
<b>Leakage current</b>	0 – 1/10/100 mA automatic measuring area setting
<b>Breakdown detection</b>	0 – 40 kV
<b>Burning</b>	0 – 8 kV, 750 mA, 0 – 20 kV, 0.1 A
<b>Upper surge voltages</b>	0 – 12.5 / 25 kV or 0 – 16 / 32 kV
<b>Lower surge voltages (optional)</b>	0 – 4 kV; 0 – 8 kV 0 – 3 kV; 0 – 6 kV
<b>Surge energy</b>	1,000 J in each range (optional 2,000 J)
<b>Surge sequence</b>	3 – 10 secs and single impulse
<b>Sheath fault location</b>	0 – 5 kV and 0 – 10 kV
<b>Cycle intervals</b>	DC; 1:3 ; 1:4 ; 1:6 (sec.)
<b>HV prelocating methods (with optional Teleflex)</b>	ARM, ICE Plus, Decay
<b>Operating temperature</b>	- 10 °C – + 50 °C
<b>Power supply</b>	230 V; 50 / 60 Hz
<b>Power consumption</b>	1.7 kVA max.
<b>Dimensions (L x W x H)</b>	545 x 430 x 1,050 mm
<b>Weight</b>	116 kg + 20 kg per 2,000 J upgrade (for high or low voltage range) + 40 kg (high and low voltage range)

### Transport frame with wheels

<b>Dimensions (L x W x H)</b>	approx. 670 x 820 x 1,360 mm
<b>Weight</b>	approx. 25 kg
<b>Order number</b>	2006522

## FEATURES

- Insulation test up to 5,000 V
- DC testing up to 40 kV, with ramp function, automatic switch-off in case of breakdown and display of breakdown voltage
- Burning with adjustable burning current up to 750 A
- Sheath fault location with step voltage
- Flexible adjustable surge voltage levels for the middle and low voltage levels
- Comprehensive safety circuit for the monitoring of earthing (FOHM), step voltage (FU), emergency stop, excess temperature, etc.



## TELEFLEX SX TECHNICAL DATA



### Teleflex SX

<b>Distance range</b>	20 m – 160 km at $v/2 = 80$ m/ $\mu$ s
<b>Pulse width</b>	20 ns – 10 $\mu$ s
<b>Pulse amplitude</b>	10 – 50 V
<b>Resolution</b>	0.1 m at $v/2 = 80$ m/ $\mu$ s, 1.0 cm at $v/2 < 40$ m/ $\mu$ s
<b>Sampling rate</b>	Up to 400 MHz (real sampling rate)
<b>Amplification</b>	-37 – +37 db
<b>De-attenuation</b>	0 – +22 dB for ProRange (adjustable from 0 to 100%)
<b>Transit time setting v/2</b>	10 – 149.9 m/ $\mu$ s, ft/ $\mu$ s or nvp
<b>Dynamic response range</b>	> 80 dB
<b>Output impedance</b>	50 $\Omega$
<b>Adjustment</b>	8 $\Omega$ – 500 $\Omega$ , adjustable
<b>ARM trigger</b>	Automatic adjustment with $\Delta U$ trigger
<b>Blind spot</b>	No
<b>Withstand voltage</b>	< 400 V, operation only with separation filter
<b>Display</b>	10.4" colour TFT XGA 1,024 x 768, capacitive touchscreen, 600 cd/m <sup>2</sup> , LED backlight, dimmable
<b>Memory</b>	4 GB mSATA for program and data
<b>Connections</b>	Ethernet, USB, BNC, CAN (LON optional)
<b>Protection class</b>	IP 65 enclosed, IP 54 open
<b>Supply</b>	Battery operation, 110 – 240 V, 50/60 Hz, 30 VA, 10 V – 17 V DC, 3,8 A
<b>Dimensions (W x H x D)</b>	362 x 195 x 195 mm (option 19" plug-in, 6 HE)
<b>Weight</b>	10 kg
<b>Operating temperature</b>	-10 °C to +50 °C
<b>Storage temperature</b>	-20 °C to +60 °C

## ALL THE BENEFITS AT A GLANCE

- Large 10.4" sunlight compatible colour display
- Very easy to operate using intuitive menus and touchscreen
- Supports all existing prelocating methods
- Fully-automatic display of cable ends and the fault position
- Battery-operated
- Top performance
- Compatible with all fault location systems

## FUNCTIONS

- ARMSlide technology with 15 measurements per ARM surge
- ProRange for optimised display of distant details
- Two-phase reflectometer with a display of up to 6 measurement curves
- Automatic cable end and fault detection
- High resolution with fast real sampling rate of 400 MHz
- Internal compensation for excellent display at close range
- 2 GB memory for automatically storing all measurements
- Can save over 1,000 measurements and can be extended using the export/import function
- USB port for transferring data and printing
- SPG 40 operation
- Automatic storage of all measurement data
- Test reports in PDF format
- Many languages available

**SPECIAL ACCESSORIES**



digiPHONE+      ESG NT

digiPHONE+ NT set



digiPHONE+ impulse wave receiver for acoustic and electromagnetic fault location



ESG NT: Digital earth leakage detector for the precise location of sheath faults



HSK 27B (for standard version): 25 m HV cable reel, crank handle, connection: 10 mm MC sockets incl. HV terminals and SE adaptors, approx. 17 kg



KTH H-SPG40-25 (for US version): 25 m HV cable reel, crank handle, connection: 10 mm MC sockets, optional: HV terminals and SE hook terminal, approx. 16 kg



External safety equipment with emergency stop and signal lamps, key switch as well as a 5 m connection line

ORDERING INFORMATION					
Parameter	SFX40...	-W	-X	-Y	-Z
Portable system with trolley 32 kV	SFX40-32P				
Portable system with trolley 25 kV	SFX40-25P				
HV surge level selection	12.5 / 25 kV or 16 / 32 kV; 1,000 J	- 1			
	12.5 / 25 kV or 16 / 32 kV; 2,000 J (only with G)	- 2			
LV surge level selection	4 kV; 1,000 J		- A		
	8 kV; 1,000 J		- B		
	4 / 8 kV; 2,000 J		- C		
	3 kV; 1,000 J		- D		
	6 kV; 1,000 J		- E		
	3 / 6 kV; 2,000 J		- F		
	No LV		- G		
	3 kV; 2,000 J		- H		
	6 kV; 2,000 J		- I		
	4 kV; 2,000 J		- J		
	8 kV; 2,000 J		- K		
4 / 8 kV; 1,000 J		- L			
3 / 6 kV; 1,000 J		- M			
TDR and control selection	Complete control using Teleflex SX				- 5
	Teleflex T 3060				- 6
	No reflectometer				- N
	No reflectometer – T 3090 set-up				- 9
Versions	Standard: with MC 10 and 230 V				- N
	US version: MC 14 and US terminals, 120 V				- U
<b>Special accessories</b>					
digiPHONE+					1003319-S
ESG NT					1004629-S
digiPHONE+ NT Set					1003317-S
Safety equipment					1006953
HSK 27B					820012706
KTH H-SPG40-25 (for US version)					820010147

### IMPORTANT INFORMATION:

We define a portable system to be on a trolley with all options within the equipment housing. Selecting all the red highlighted options requires an additional external housing and adds considerable weight to the overall system, which is then no longer portable. For these cases, we recommend choosing an SFX 40-M vehicle installation.

#### Portable systems with N version included:

- 25 m HV test lead on cable drum with MC 10-socket at the ends
- 5 m earth line
- 2.5 m mains supply line
- Isolating transformer
- Large connection clamps

#### Portable systems with U version included:

- 25 m HV test lead on cable reel with MC 14-socket on HV wire and hook terminal on shield wire
- 25 m earth cable in cable reel
- 2.5 m mains supply line
- HV shield and earth conductor are fitted with terminals for insulating rods

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**SFX40P\_DS\_DE\_V01**  
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