protrac®

BAUR pin-pointing system

The figure is illustrative.

Fast and precise cable fault pin-pointing

- Multifunctional all-in-one solution for fast pin-pointing of cable faults, joints, and cable routes
- Precise 3D user guidance to the fault
- Excellent acoustic quality and range

The protrac® pin-pointing system is used for the precise pin-pointing of cable faults and cable sheath faults. It provides methods for both tracing and joint location in one system, making it ideal for universal use.

Thanks to the use of the latest technologies, locating the exact fault position with the protrac® is extremely fast and precise. The innovative two-level signal processing concept permits a high degree of sensitivity and accuracy, and maximum suppression of ambient noise.

The processed measurement data is sent directly to the headphones and the control unit via Bluetooth®. This provides greater convenience and freedom of movement.

The measurement parameters are set automatically depending upon the environmental conditions. As a result, and thanks to the intuitive operation of the capacitive touchscreen, working with the protrac® is extremely simple.

Functions

- Pin-pointing of cable faults
  - Acoustically and magnetically
  - Step voltage method
  - Audio frequency methods
- Joint location
- Tracing

Advantages

Unique operating convenience

- All system components, except for the step voltage probes, are connected with each other wirelessly via Bluetooth®.
- Operation possible via touchscreen or rotary switch
- Power supply by rechargeable or non-rechargeable batteries
- Can also be used without headphones thanks to the loudspeaker integrated into the control unit

Precise 3D user guidance

- Tracing with the audio frequency probe:
  - Precise depth and position measurement
  - Direction display of the cable route and Deviation Alert
- 3D-History Track: Precise left/right guidance and fault direction display in the 3D view
- Real-time calculation and display of the fault distance incl. the previous measured values
- Excellent acoustic quality and range
- Adaptive two-stage ambient noise suppression (ANS)
- Clear distinction between the breakdown noise of the fault and the surge noises of the cable fault location system

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protrac®
Fast and precise cable fault pin-pointing

CU control unit

With the 3D view, the control unit provides clear and intuitive navigation to the fault and along the cable route. For optimum user support for all location methods, the current measured values and the last measured fault distances or the signal sequence are displayed over a period of time that can be defined.

- Convenient and intuitive operation using touchscreen or rotary switch
- Acoustic pin-pointing: Precise 3D operator guidance to the fault by left/right navigation and fault direction display
- Compass function when using the audio frequency probe for faster detection of changes in the cable route direction
- Can also be used without headphones thanks to the integrated loudspeaker
- Work safety assured by limiting the volume in the headphones to 85 dB(A) in accordance with EC directive 2003/10/EC, ISO 1999:1990 and OSHA 1910.95(c)(1)

AGP acoustic ground probe

- Powerful piezoelectric sensor with a high long-term measuring stability, designed for long-term use in harsh environments
- Automatic adaptive ambient noise suppression thanks to ANS two-level signal processing concept
- Noise signals are adaptively suppressed using statistical methods and by intelligent linking to the available signal information.
- Clear distinction between the cable fault noise in the ground and the direct surge noises of the cable fault location system
- Direct transmission of signal data to the headphones and to the control unit via Bluetooth® (range of up to 40 m)
- Simplified tracing function
- Ambient noise inhibiting design
- Contact bell for reliable contact with the ground on hard surfaces
- Different length contact spikes for better contact with the ground on loose surfaces
- Designed to be physically stable during use in strong wind and on steep gradients

Figures are illustrative

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Tracing, cable fault location, and joint location with audio frequency

AFP audio frequency probe

The audio frequency probe is used in conjunction with the control unit and an audio frequency transmitter to locate cable routes, cable faults, and joints.

The core element of the new audio frequency probe is the 3D space coil, whose three coils are arranged in the x, y, and z axes. This means that the signals from all three coils can be simultaneously displayed on the control unit and compared in real time.

- Visualisation of tracing data on the control unit
- Easy to operate, as the audio frequency probe does not need to be aligned for the respective measurement method
- Extension of protrac® to create an all-in-one system with a wide range of application options
- 3D-History Track: Location of short-circuit faults and joints with twist method or minimum distortion method

- Tracing:
  - Combination of maximum and minimum signal: C-Max
  - Direct live readout of cable depth
- Flexible frequency selection for every situation:
  - Pre-set frequencies (50/60 Hz mains frequency, BAUR standard frequencies)
  - Freely programmable frequencies within the overall frequency range of the audio frequency probe
  - Maximum user support thanks to the frequency search function
  - The entire frequency range of the audio frequency probe can be displayed (unfiltered or filtered)

Figures are illustrative

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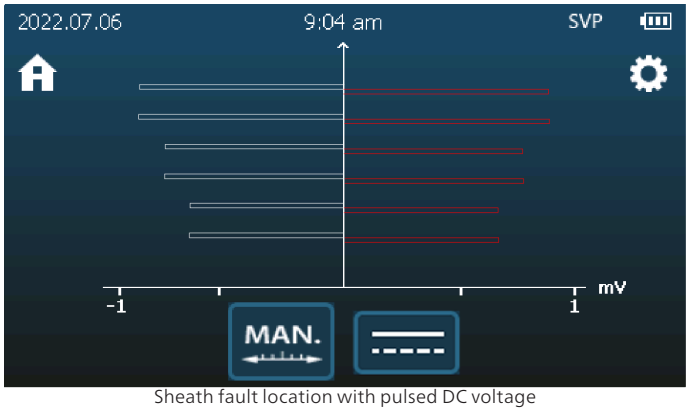
Sheath fault location with step voltage

SVP step voltage probes

The step voltage probes are used in conjunction with the control unit and an HV source to locate cable sheath faults.

- Sheath fault location with DC and AC voltage
- User assistance through automatic ranging
- Automatic noise compensation in DC mode for faster fault location



Sheath fault location with pulsed DC voltage

Transport bag, transport case

Figures are illustrative

Technical data

CU control unit	
Intuitive user interface in multiple languages	
Loudspeaker	3 W
Display	transmissive colour TFT
Display size	4.3", 480 x 272 pixels
Brightness	800 cd/m²
Touchscreen	capacitive, operable with gloves
Power supply	
Rechargeable battery mode	8 x NiMH Mignon AA 1.2 V IEC LR6
Non-rechargeable battery mode	8 x alkaline batteries AA 1.5 V IEC LR6
Rechargeable or non-rechargeable battery life	approx. 6 h*
Charging time	approx. 3.5 h
Degree of protection	IP54
Dimensions (W x H x D)	205 x 143 x 69 mm
Weight	Approx. 1.1 kg

AFP audio frequency probe	
Methods	▪ Maximum method ▪ Minimum method ▪ C-Max ▪ Direct depth measurement ▪ Current measurement ▪ 45° depth measurement ▪ Twist method ▪ Minimum distortion method
Data transmission	Bluetooth®
Frequency range	16 Hz – 15 kHz (40 Hz – 10 kHz for depth measurement)
Accuracy	1% at 1 m
Dynamic range	10 mA – 10 kA @ 50 Hz 20 µA – 20 A @ 10 kHz
Power supply	
Rechargeable battery mode	6 x NiMH Mignon AA 1.2 V IEC LR6
Non-rechargeable battery mode	6 x alkaline batteries AA 1.5 V IEC LR6
Rechargeable or non-rechargeable battery life	Approx. 14 h*
Charging time	approx. 3.5 h
Degree of protection	IP54
Dimensions (W x H x D)	115 x 705 x 90 mm
Weight	Approx. 1.8 kg

AGP acoustic ground probe	
Data transmission	Bluetooth®
Range	40 m
Power supply	
Rechargeable battery mode	6 x NiMH Mignon AA 1.2 V IEC LR6
Non-rechargeable battery mode	6 x alkaline batteries AA 1.5 V IEC LR6
Rechargeable or non-rechargeable battery life	approx. 16 h*
Charging time	approx. 3.5 h
Degree of protection	IP65
Dimensions	Ø 225 x 146 mm
Weight	approx. 2.6 kg (without handle) approx. 3.2 kg (with handle)

Acoustic and electromagnetic pin-pointing	
Filter	ANS (Adaptive Noise Suppression)
Acoustic gain	Automatic/manual, 0 – 34 dB
Electromagnetic gain	Automatic/manual, 0 – 50 dB
Propagation time measurement range	0 – 100 ms (approx. 50 m @ v = 500 m/s)
Resolution	21 µs (approx. 0.1 m @ v = 500 m/s)
Acoustic bandwidth	1 Hz – 2 kHz
Distance indicator	in milliseconds, metres or feet with historic measured values
Left/right indication	yes

Sheath fault location	
Measurement range	1 µV – 220 V
Noise suppression	50/60 Hz, 16 2/3 Hz, DC
Zero point adjustment	automatic
SVP step voltage probes	
Length	extendable, approx. 580 mm – 1,100 mm
Weight per probe	Approx. 0.9 kg

General	
Charger for rechargeable batteries	
Power supply	100 – 240 V, 50/60 Hz
Output voltage	DC 5 – 14.4 V, 1 A ±100 mA
Safety/work safety	Volume limiting to 85 dB(A)
Ambient temperature (operational)	-20°C to +55°C
Storage temperature	-20°C to +65°C
Rel. humidity	Non-condensing
Safety and EMC	CE-compliant in accordance with Low Voltage Directive (2014/35/EU), EMC Directive (2014/30/EU), EN 60068-2-ff Environmental testing

* Operating period depends upon environmental conditions.

“Acoustics" set – Standard delivery, accessories and options

Standard delivery

- CU control unit incl.
  - Carrying strap
  - 8 x rechargeable batteries, NiMH Mignon AA 1.2 V IEC LR6
  - protrac® tool
  - Charger incl. country-specific adapter
  - USB cable 2.0 for software updates
- AGP Acoustic ground probe incl.
  - Contact bell, Ø 79 mm
  - Tripod
  - Telescopic handle
  - Contact spikes: 50, 100, 150 mm
  - 6 x rechargeable batteries, NiMH Mignon AA 1.2 V IEC LR6
  - Charger incl. country-specific adapter
- Bluetooth® headphones with USB charging cable and charger incl. country-specific adapter
- Transport bag
- User manual

Accessories and options

- Transport case
- Tripod for AGP
- Contact spike for AGP, 300 mm
- Contact bell for AGP, Ø 109 mm
- Headphones, 3M Peltor Bluetooth®
- 8 x rechargeable batteries, NiMH Mignon 1.2 V IEC LR6 for CU incl. transport box
- 6 x rechargeable batteries, NiMH Mignon 1.2 V IEC LR6 for AGP incl. transport box

"Step voltage" set – Standard delivery, accessories and options

Standard delivery

- CU control unit incl.
  - Carrying strap
  - 8 x rechargeable batteries, NiMH Mignon AA 1.2 V IEC LR6
  - protrac® tool
  - Charger incl. country-specific adapter
  - USB cable 2.0 for software updates
- SVP step voltage probes, red and black, incl. connection cables, red and black, 1.5 m each
- Transport bag
- User manual

Accessories and options

- Transport case
- Connection cable, 10 m
- Connection cable, 25 m, on hand reel
- 8 x rechargeable batteries, NiMH Mignon 1.2 V IEC LR6 for CU incl. transport box

"Audio frequency transmitter" extension kit – Standard delivery, accessories and options

Standard delivery

- TG 20/50 audio frequency transmitter
- Carrying strap
- Mains supply cord, 2.5 m
- Earth cable, 3 m, with earth terminal
- Connection cable, red, touch-proof, 2 m
- Connection cable, black, touch-proof, 2 m
- Connection clip, red
- Connection clip, black
- User manual for TG 20/50

Accessories and options

- Transport case
- Transport bag
- RA 10 loop antenna
- AZ 10/D 70 transmitting clamp, with connection cable
- AZ 10/D 80 transmitting clamp, with connection cable
- AZ 10/D 125 transmitting clamp, with connection cable
- Battery connection cables, red and black, 5 m each

"Audio frequency" extension kit – Standard delivery, accessories and options

Standard delivery

- AFP audio frequency probe
- 6 x rechargeable batteries, NiMH Mignon AA 1.2 V IEC LR6
- Charger incl. country-specific adapter
- Colour coding labels
- User manual for protrac®

Accessories and options

- Transport case
- Transport bag
- 6 x rechargeable batteries, NiMH Mignon 1.2 V IEC LR6 for AFP incl. transport box

"Step voltage" extension kit – Standard delivery, accessories and options

Standard delivery

- SVP step voltage probe, red
- SVP step voltage probe, black
- Connection cable, red, 1.5 m
- Connection cable, black, 1.5 m

Accessories and options

- Transport case
- Transport bag
- 6 x rechargeable batteries, NiMH Mignon 1.2 V IEC LR6 for AGP or AFP incl. transport box