

## 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

# 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)

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Figures are illustrative

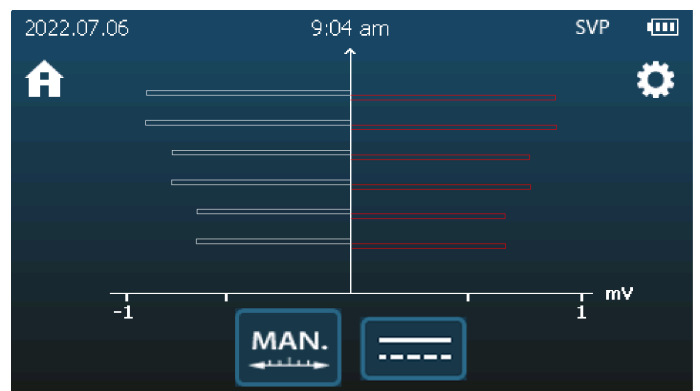
## protrac® Sheath fault location with step voltage



### 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		AGP acoustic ground probe	
Intuitive user interface in multiple languages		Data transmission	Bluetooth®
Loudspeaker	3 W	Range	40 m
Display	transmissive colour TFT	Power supply	
Display size	4.3", 480 x 272 pixels	Rechargeable battery mode	6 x NiMH Mignon AA 1.2 V IEC LR6
Brightness	800 cd/m <sup>2</sup>	Non-rechargeable battery mode	6 x alkaline batteries AA 1.5 V IEC LR6
Touchscreen	capacitive, operable with gloves	Rechargeable or non-rechargeable battery life	approx. 16 h*
Power supply		Charging time	approx. 3.5 h
Rechargeable battery mode	8 x NiMH Mignon AA 1.2 V IEC LR6	Degree of protection	IP65
Non-rechargeable battery mode	8 x alkaline batteries AA 1.5 V IEC LR6	Dimensions	Ø 225 x 146 mm
Rechargeable or non-rechargeable battery life	approx. 6 h*	Weight	approx. 2.6 kg (without handle) approx. 3.2 kg (with handle)
Charging time	approx. 3.5 h	Acoustic and electromagnetic pin-pointing	
Degree of protection	IP54	Filter	ANS (Adaptive Noise Suppression)
Dimensions (W x H x D)	205 x 143 x 69 mm	Acoustic gain	Automatic/manual, 0 – 34 dB
Weight	Approx. 1.1 kg	Electromagnetic gain	Automatic/manual, 0 – 50 dB
AFP audio frequency probe		Propagation time measurement range	0 – 100 ms (approx. 50 m @ v = 500 m/s)
Methods	<ul style="list-style-type: none"> <li>▪ Maximum method</li> <li>▪ Minimum method</li> <li>▪ C-Max</li> <li>▪ Direct depth measurement</li> <li>▪ Current measurement</li> <li>▪ 45° depth measurement</li> <li>▪ Twist method</li> <li>▪ Minimum distortion method</li> </ul>	Resolution	21 µs (approx. 0.1 m @ v = 500 m/s)
Data transmission	Bluetooth®	Acoustic bandwidth	1 Hz – 2 kHz
Frequency range	16 Hz – 15 kHz (40 Hz – 10 kHz for depth measurement)	Distance indicator	in milliseconds, metres or feet with historic measured values
Accuracy	1% at 1 m	Left/right indication	yes
Dynamic range	10 mA – 10 kA @ 50 Hz 20 µA – 20 A @ 10 kHz	Sheath fault location	
Power supply		Measurement range	1 µV – 220 V
Rechargeable battery mode	6 x NiMH Mignon AA 1.2 V IEC LR6	Noise suppression	50/60 Hz, 16 2/3 Hz, DC
Non-rechargeable battery mode	6 x alkaline batteries AA 1.5 V IEC LR6	Zero point adjustment	automatic
Rechargeable or non-rechargeable battery life	Approx. 14 h*	SVP step voltage probes	
Charging time	approx. 3.5 h	Length	extendable, approx. 580 mm – 1,100 mm
Degree of protection	IP54	Weight per probe	Approx. 0.9 kg
Dimensions (W x H x D)	115 x 705 x 90 mm	General	
Weight	Approx. 1.8 kg	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.

## Standard delivery

	"Tracing" set	"Pin-pointing" set	"Acoustics" set	"Step voltage" set	"Audio frequency" set
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	–	✓	✓	–	–
SVP step voltage probes incl. – SVP step voltage probe, red – SVP step voltage probe, black – Connection cables, red and black, 1.5 m each	–	✓	–	✓	–
AFP audio frequency probe incl. – 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	✓	✓	✓	–	✓
TG 20/50 audio frequency transmitter incl. – Carrying strap, adjustable – Mains supply cord, 2.5 m – Earth cable, 3 m, with earth terminal – Connection cables, red and black, touch-proof, 2 m each, with connection clips – Connection clip, black – Connection clip, red – Earth spike – Connection cable, 25 m, on hand reel – TG 20/50 user manual	✓	–	–	–	✓
protrac® user manual	✓	✓	✓	✓	✓
Transport bag	✓	✓	✓	✓	✓

- ✓ Included in standard delivery  
–: Not available

## Options

	"Tracing" set	"Pin-pointing" set	"Acoustics" set	"Step voltage" set	"Audio frequency" set
Transport case	Option	Option	Option	Option	Option
Contact spike for AGP, 300 mm	–	Option	Option	–	–
Contact bell for AGP, Ø 109 mm	–	Option	Option	–	–
Connection cable, 10 m	–	Option	–	Option	–
Connection cable, 25 m, on hand reel	–	Option	–	Option	–
Headphones, 3M Peltor Bluetooth® (without volume limiting)	Option	Option	Option	–	Option
Rechargeable batteries, NiMH Mignon AA 1.2 V IEC LR6 incl. transport box (quantity depends on the set)	Option	Option	Option	Option	Option
RA 10 loop antenna	Option	–	–	–	–
AZ 10/D 70 transmitting clamp, with connection cable	Option	–	–	–	–
AZ 10/D 80 transmitting clamp, with connection cable	Option	–	–	–	–
AZ 10/D 125 transmitting clamp, with connection cable	Option	–	–	–	–
Battery connection cables, red and black, 5 m each	Option	–	–	–	–

## Extension kits

### "Control unit" extension kit:

- CU control unit
- Carrying strap
- 8 x rechargeable batteries, NiMH Mignon AA 1.2 V IEC LR6
- Charger incl. country-specific adapter
- protrac® tool
- USB cable 2.0 for software updates

### "Audio frequency transmitter" extension kit:

- TG 20/50 audio frequency transmitter
- Carrying strap, adjustable
- Mains supply cord, 2.5 m
- Earth cable, 3 m, with earth terminal
- Connection cables, red and black, touch-proof, 2 m each, with connection clips
- TG 20/50 user manual

### "Acoustics" extension kit:

- AGP acoustic ground probe
- Contact bell, Ø 79 mm
- Tripod
- Telescopic handle
- Contact spikes for AGP: 50, 100, 150 mm
- 6 x rechargeable batteries, NiMH Mignon AA 1.2 V IEC LR6
- Charger incl. country-specific adapter

### "Audio frequency" extension kit:

- AFP audio frequency probe
- 6 x rechargeable batteries, NiMH Mignon AA 1.2 V IEC LR6
- Charger incl. country-specific adapter

### "Step voltage" extension kit:

- SVP step voltage probe, red
- SVP step voltage probe, black
- Connection cables, red and black, 1.5 m each

–: Not available

Option: Optional



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