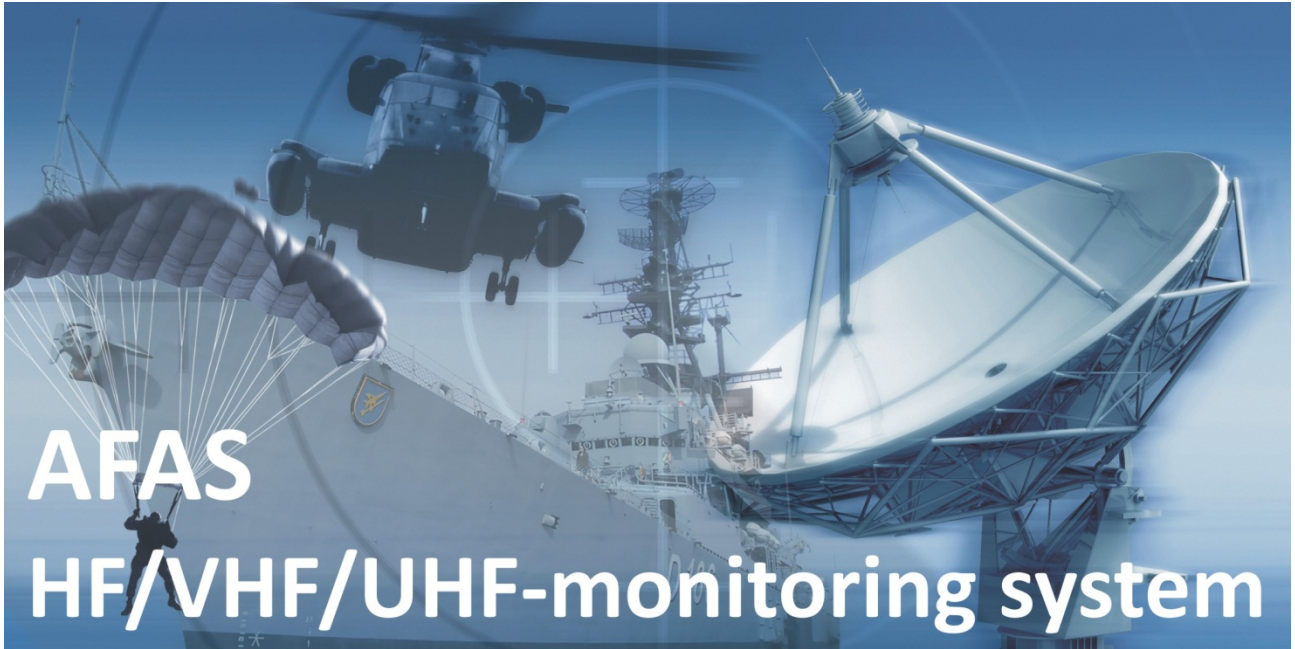




**boger electronics**  
on the same wavelength.



# AFAS HF/VHF/UHF-monitoring system | intelligent | universal |





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## 2 boger electronics – defense technology made in Germany

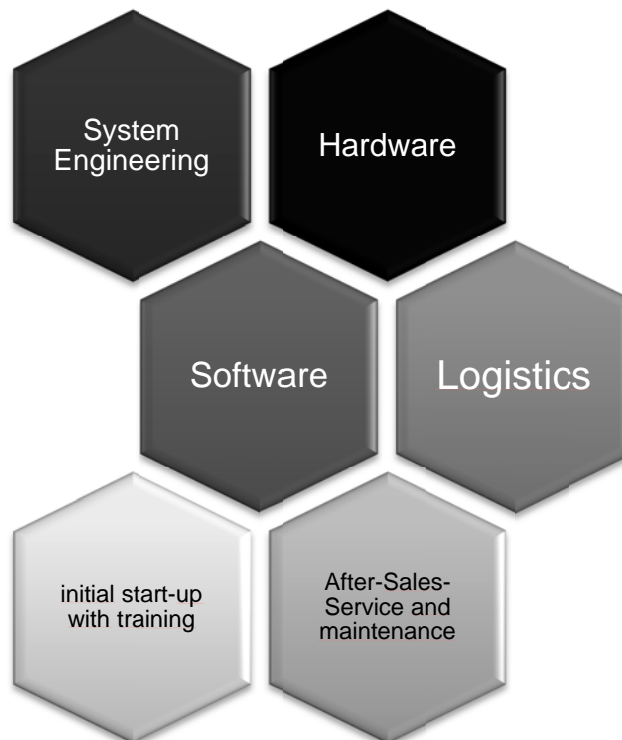
*“protecting people and values. A sign of our appreciation”*

As an ISO 9001 certified family-owned enterprise we develop systems and solutions geared to providing maximum operational readiness in the civil and military sector. Even in unforeseeable situations. And for prolonged operation.

This is our key to success and sustained growth. Among the experts, boger has long been the trusted synonym for security. Your areas of operation also deserve maximum appreciation! Because a fleeting moment can decide a whole life...

We are your long-term partner for growing challenges and strengthen civil and military interests on the basis of top quality and innovative technologies.

In a crisis many processes require a high degree of sensitivity – something which human beings alone are unable to provide. Boger is your single source for planning, development, production, integration and quality assurance. Your team is now prepared for anything. Because routine is the enemy of reality.





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### 3 system description

#### 3.1 features

AFAS combines the advantages of fast search reception with detailed pc-based signal-analysis in an automatic multichannel radio-monitoring system for the HF- and VHF/UHF frequency bands.

Due to four fully equipped reception channels, four frequency spectra can be analyzed and –if required- recorded fully automatically.

*“unlimited bandwidth caused by fast seeker head”*

By using one or multiple reception channels for search of radio-emissions in the corresponding frequency band, detection and subsequent fully automatic classification of signals, which are outside of limited bandwidth of other radio-monitoring systems, is enabled. A random amount of fast search-receivers for detection of radio-emissions guarantees a profound radio-reconnaissance, especially when situation of local area is unknown. As a special advantage of this system can be distinguished, that radio emissions over the whole frequency range can be detected.

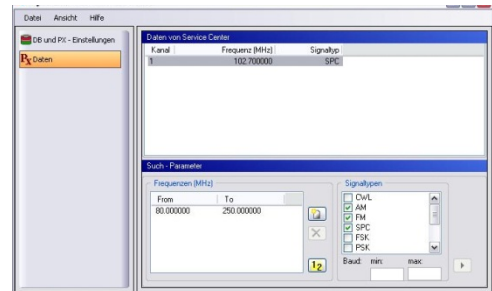
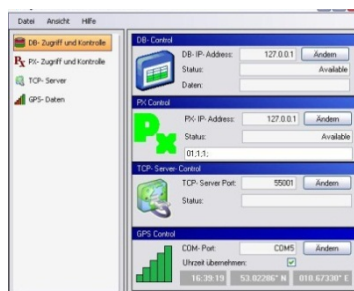
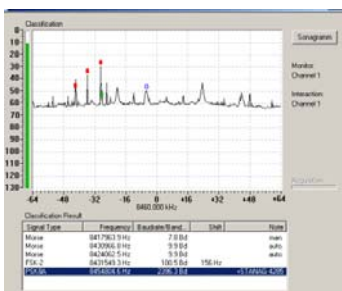
*“automatic and multichannel signal-search and –classification  
including automatic speech identification”*

The radio-monitoring system AFAS is especially designed for fully automatic signal-search and –monitoring as well as signal-analysis –on four reception channels simultaneously!-. If necessary for the mission, the system can be operated fully autarchic, without operator.

If a signal is detected, it will be processed to a free reception channel for classification and –if desired- it will be processed to recording. Recording time can be defined as fixed recording –length or as far as the end of the classified signal / emission. Speech is identified fully automatic.

Simultaneously the system supplies the type of transfer method (e.g. Stanag). Additionally each signal is provided with a time-stamp and GPS-Position.

*“an user-friendly GUI with clear statistic function gives the system  
a very high operational benefit”*





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### 3.2 system architecture



**fast seeker head for scanning the frequency range**

AFAS is equipped with four identical reception channels, which are controlled by Phoenix Signal-Classification Software. The reception channels consist of a BO-35 wideband receiver (including A/D-Converter), which distinguishes itself by its excellent **IP<sup>3</sup> value of +20dBm** (below 1GHz).

While 1 reception channel is always seeking for radio-emissions, the remaining channels are classifying detected emissions. If detected signal is classified as speech, the signal will be recorded automatically.

Furthermore AFAS is driven by a powerful QuadCore processor, on which the signal-classification software Phoenix, database and receiver-control is running.

### 3.3 highest operability by compact design

The operational concept of the fully automatic radio-monitoring system is topped off with its compact size. While other, comparable efficient monitoring systems, are designed as stationary systems, AFAS is designed for highest mobility and operational capacity.





### 3.4 options and accesories

- additional reception channels according customer requirements
- multicoupler for signal-distribution
- 10-MHz reference signals for receiver synchronization
- database analysis tools



*multicoupler 20-3000 MHz*

*10MHz-reference signal including signal-divider*

### 3.5 technical data

#### 3.5.1 Phoenix signal-classification software

CW-Signals Morse	automatically/manual
FSK-2	from modulation index 0.5-20; shift range 25Hz-60kHz* baud range 25Bd-50kBd
F7B	shift range 25-2500Hz, baud range 25-300Bd
Multi-Tone FSK	maximum 36 carriers, baud range 25Bd-20kBd
PSK 2A/B*	baud range 25Bd-60kBd**
PSK 4A/B*	baud range 25Bd-60kBd**
PSK 8A/B*	baud range 25Bd-60kBd**
PSK 16A/B	baud range 25Bd-60kBd**
OQPSK*	baud range 25Bd-60kBd**
12-Channel PSK	all varieties
Speech***	FM/AM/LSB/USB (no add. Adjustment necessary)
OFDM	Approx. 18-500 carrier, BW 800Hz, approx. 20kHz



### 3.5.2 BO-35 wideband receiver

Frequency range	10kHz-3,5GHz
Frequency resolution	1Hz
Switching time	10ms (100 steps/sec.)
Frequency accuracy	20MHz reference intern; 10MHz reference extern: <+/- 1,5ppm, -10° - +55°C
Demodulators	AM, FM, USB, LSB, CW
Audio	1,0 watt at 8 Ohm – 1% THD
IF-filter switchable	2,4/ 4,0/ 6,0/ 15,0/ 30,0/ 110/ 220kHz optional 500Hz
IF-out	Switchable: on/off 10,7MHz BW = 10MHz 10,7MHz BW = 10,7MHz IF-filter 455kHz BW = IF-filter
Typ. Sensitivity	2-30MHz SSB: 0,4µV, 10dB S/N, BW 2,4kHz AM: 1,3µV, 10dB S/N, BW 6,0kHz >30MHz SSB: 0,3µV, 10dB S/N, BW 2,4kHz FM: 0,4µV 12dB SINAD, BW 15kHz
Immunity to interference	IP <sup>3</sup> >+10dBm 18 Preselector-ranges IP <sup>2</sup> >+70dBm
Lineare dynamic	>115dB; IF-Out: 10,7MHz BW 10MHz, > 90dB Audio
Pre-amplifier	20dB in the frequency range <30MHz switchable to off
Attenuator	<1100MHz: 4 positions: 0dB, -10dB, -20dB, -30dB
Operation power	DC 12,0 volt 25 watt
Temperature range	-20° - +70°C
Sockets (coax)	ANT: BNC IF: BNC 10MHz REF: BNC
Case	metal



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## 4 contact

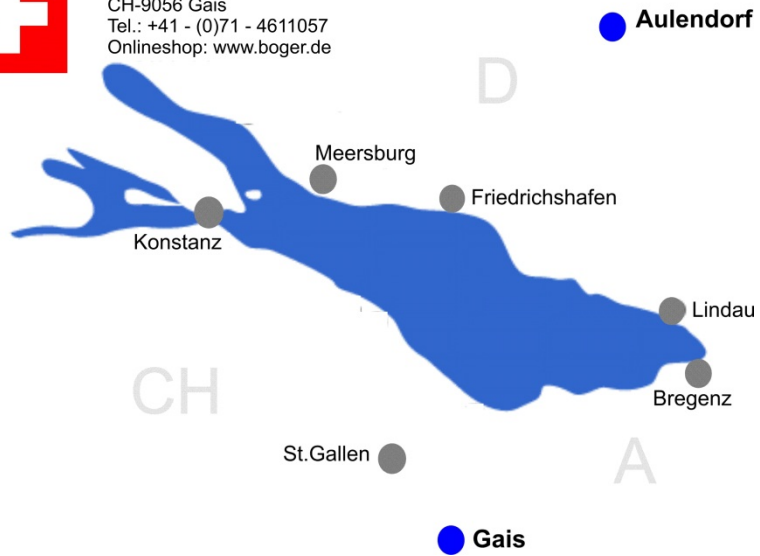
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*„please do not hesitate to contact us”*