Ten pointers to choosing a TETRA radio
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Ten pointers to choosing a TETRA radio

Buying a TETRA network is a major investment, but what about the terminals that it will be used with? Equal care and consideration needs to be given to the radio equipment that your staff will rely on every day.

The TETRA radio terminals you choose for your network will have a long term effect on the users’ daily work. These radios will be among their major tools, in use for several years and often their only means of communication on the field. Taking a TETRA system into use can lead to better mobility and security and new ways of working but only when the radio terminals can meet the needs of both today and tomorrow.

Here, we present a ten point check-list to help you make the right choice. It outlines what to look for when choosing TETRA radio terminals. The advanced and innovative ‘i’-series radio terminals from EADS meet these criteria.

How easy is it to use?

How long will it take for the user to learn the basic operations of their radio terminal? It is easy to discover this through a simple test: give a radio terminal to the user and ask them to perform certain simple tasks, such as sending a status message, toggle between two talk groups or activate scanning. How self-explanatory are the icons and symbols on the display? Is it possible to use the radio without looking to the display at all?

The more intuitive to use the terminal is, the more reliable it will be in daily operation. Another important point is having identical user interfaces and unified features in both handheld and mobile radios. This ensures seamless operation and eliminates the need for separate training and instructions. Numerous customer testimonials show that EADS radio terminals are by far the easiest to use.

Is it robust?

How well can the terminal resist exposure? What kind of shielding does it have to protect the inner components from moisture, dust, drops or bumps? How is the display window protected?

IP55 classified EADS THR880i, THR880i Light and THR880i Ex hand portable radios are protected against dust, splash water and water jets. The microphones and speakers have protective membranes against water and dust. The radio antenna has a water resistant sealing and is constructed from an elastic material that protects against impacts.

External elastomer bumpers on the radio cover protect against shocks and enable a good grip. The keys are cast out of the same material and at the same time as the external bumpers - no holes have been made in the bumpers to accommodate these keys, protecting the radio against water. Furthermore, the radio covers are protected with water a resistant sealing that extends from the left side of the radio to the right, comprising the keypad mat.

The battery is placed inside the radio’s housing, protecting the battery contacts from dirt and oxidation. Tightly locked under a hatch, the battery will not come loose if the radio is dropped.

The radio display window is ultrasonically welded and features a polycarbonate hard coating that protects it against scratches. The display also floats on soft bumpers, which protect it against impacts.

Can it maintain an unbroken connection?

How will the radio operate when roaming and when changing to another base station area?

You should make sure that the radio terminal supports Type 1 handover. In practice this means that when the radio terminal moves from one base station area to another, it doesn’t loose the network connection. This is because with Type 1 handover, the radio terminal is synchronized with a new base station immediately it is detected. This ensures a seamless handover and an unbroken connection from one traffic channel to another. This is the case with EADS terminals.
Products that do not support Type 1 handover need to perform registration to a new base station before they are ready for communication. This will take 1-2 seconds, during which time the radio terminal is unavailable. In densely built up areas, the radio terminal may need to change cells more than 20 times during a work shift, a total time of nearly a minute when the radio is not connected. In mission critical communication, even one second can sometimes be too long.

### Does it provide privacy and security?

End to end encryption, or e2ee, is the most reliable method of securing privacy of communication. Smart card based end to end encryption is the most flexible way of introducing e2ee: radios in the field can be upgraded ‘on the fly’ without needing to touch the radio hardware. Before activating the e2ee, the radio asks for an individual PIN code.

There are several other privacy and security features on the EADS radios allowing different protection or prevention levels. If the radio is stolen or lost, the Temporary and Permanent disabling over the air can be used for preventing unauthorized use of the radio.

### How configurable is it?

How well does the radio terminal adapt to your organization’s and to diverse users’ needs? EADS radios provide several configurable features for customization. These include:

- **Dual PTT:** a must have feature in well structured group communication. Instead of toggling between talk group, use one PTT for talking to the commanding group and the other for communication with the operative group

- **Configurable menu:** if you don’t need all the features included in the full menu, it is possible to hide those menu items which are not used

- **Programmable keys:** number keys can have dual functions – in addition to keying the digits, they can work as short cuts to particular operations, e.g XXX

- **Fast menu:** programmable short cuts that are accessed by a single press of a key, with voice feedback confirming the operation. The fast menu can also be customer specific.

### Can it perform scanning?

In some critical situations, such as large scale rescue operations, the radio user may need to follow and join the radio traffic of several talk groups. The critical feature here is the scanning capability of the radio: priority scanning allows you to monitor the conversations going on in groups other than your selected group. If the incoming group call has a high priority, it always comes through, even if the user is engaged in another group call with a lower priority.

Another important aspect in scanning is whether and how the scanned groups are registered to the network. To avoid unauthorized listening in to communication, for example, in a shared TETRA network, the radio terminal must support so called active scanning, which means that a radio cannot listen to a conversation without the network being aware of it.

EADS terminals support both priority scanning and active scanning.

### Does it offer control over GPS functionality?

Today’s TETRA radio terminals offer enhanced safety for users, allowing their exact position to be monitored over the radio network with the help of the radios’ inbuilt GPS receiver. The GPS receiver itself simply takes care of the connection to the satellites – all the rest depends on the radio terminal. How is the GPS receiver controlled? Can the radio users see or use the positioning information? Look for one that is capable of making the best out of the GPS information, utilising various triggers such as time, distance or a status message.

Another useful feature is waypoints: users can save their current location as a waypoint for later use, or provide the data for an intelligent graphical Waypoint Guidance application, which shows the straightest route and shortest distance to the selected waypoint. This is a unique feature of EADS radios. Waypoints are one of the most useful ways of utilizing the GPS information in the EADS radio terminal. Users can save their current location as a waypoint for later use. Waypoints can be sent and received as a text message over the TETRA network, and used for navigation with...
the help of the intelligent graphical Waypoint Guidance application which shows the straightest route and shortest distance to the selected waypoint (target). Waypoint guidance is a unique feature of EADS terminals.

Does the radio support mobility?

The modern TETRA radio terminals from EADS make it possible to access databases and retrieve information, while bringing colour photos or graphics to the high-resolution screen of the radio terminal. Thanks to built-in XHTML browser and support for WAP protocol, sharing information with TETRA radios is as easy as using the Internet. Getting photos of missing or suspected persons fetched to the radio display, or sending status reports from the radio terminal will result in faster response times and more effective operations.

Does it provide a Java™ application platform?

To safeguard their investments, public organizations must purchase future-proof technology that’s built to last. The lifecycle of a TETRA terminal is typically far longer than that of a consumer product such as a GSM phone. As time goes on, this makes it important that organizations are able to get more out of their terminals throughout the radio’s lifetime, along with their evolving needs. EADS radio terminals are built to support this and this is one of the major benefits of Java technology. Java enables organizations to introduce their own applications easily—even over the air in some instances, removing the need to return the terminals to base for re-configuration.

The Java J2ME, a platform aimed specifically at mobile devices, allows user interfaces to be designed to meet organizations’ particular needs. Java also allows efficient use of network resources. Since the application runs on the terminal, it doesn’t require a constant data connection over the TETRA network—it simply uses the network to transfer specific data when necessary, using for example, short data messages or IP packet data. Java is already the most popular application platform for mobile devices. The technology is well-established and in daily use on the consumer market by millions of mobile phone users. As an open standard platform, it is used by a thriving community of experienced developers, helping reduce development costs and introducing reliable, high-quality applications.

Can the radios be supplied in your own language?

Introduction of a new product is always easier when the user can operate it in their own language. Today, EADS radio user interfaces and the voice feedback facility are available in 20 different languages. The latest new languages are Estonian, Turkish and Brazilian Portuguese.

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