EXPLORER® 727

Introduction
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1. **Introduction**

Thrane & Thrane is proud to announce the launch of the latest EXPLORER family member the Land Vehicular EXPLORER 727 system.

Based on the EXPLORER 700 and the EXPLORER 527 the EXPLORER 727 is the fastest and the most versatile on-the-move communication solution available today. With its many interfaces and vastly enhanced features the EXPLORER 727 is unparalleled in today’s industry.

The EXPLORER 727 with its robust, reliable and durable design is developed to deliver always reach back capabilities even in extremely challenging environments and temperatures.

The innovative EXPLORER 727 will further strengthen Thrane & Thrane’s position as the leading supplier of Broadband Global Area Network (BGAN) terminals in the market.

2. **Product Launch**

Thrane & Thrane will be launching the EXPLORER 727 during Satellite 2008 exhibition being held February 26-28 in Washington DC at the DC Convention Center.

Inmarsat Type Approval is expected ultimo April 2008 making the EXPLORER 727 the first truly mobile Class 10 Land Vehicular system available.

To get you started in the best way possible we offer an EXPLORER 727 Pelican case solution.

The Pelican case with its high density customized foam makes it easy to transport your EXPLORER 727 and accessories. It is built tough with rigid wall technology, reinforced bumper corners, o-ring watertight seal, a comfortable molded fold down handle and atmospheric purge.

3. **Service Capabilities**

Inmarsat’s vast experience in providing communications to defence and government customers requiring time-critical communications with an exceptional level of availability, security and reliability is well known in the industry.

Since the BGAN service was introduced in 2005, journalists, government and defence personnel, media, aid workers, engineers, consultants, project managers and many more have benefited from the secure and reliable broadband connectivity when working in areas of no or limited access.

Today BGAN delivers voice and broadband services to 85% of the world’s landmass, providing global coverage when the third satellite is to be launched mid 2008 adding the entire Pacific area.
Also known as BGAN-X (BGAN eXtension program) the Radio Access Network was upgraded in June 2007 to accommodate on-the-move terminals, already today delivering FleetBroadband services to the maritime community and SwiftBroadband services for aeronautical installations.

BGAN-X includes four main performance enhancement features facilitating truly mobile services optimized for communication on-the-move terminals:

- Spot-beam handover will allow mobile systems to operate while moving between spot beams seamlessly without dropping data or voice connections. The average diameter of a spot-beam is approximately 800 km / 500 miles depending on the location.

- Blockage recovery algorithm will significantly enhance the length of outage that a connection can survive.

- Unique Word distribution in the return direction will make the connection more robust towards blocking, which may occur often at low elevations.

- Improved robustness towards multi-fading, is also part of the EXPLORER 727 enhancements. Multi-fading are reflections of electromagnetic waves, i.e. a plurality of signal paths for instance from the roof of the car, nearby buildings or trees. Multi-fading can be especially severe at low elevation angles, i.e. when operating near the edge of the global beam.

The Inmarsat network supports the following services for EXPLORER 727 terminals on the move:

- Standard Data up to 432 kbps.
- Standard Voice for low-tariff 4.0 kbps voice calls.
- Streaming 32, 64, 128 kbps across full coverage.
- Streaming 256 kbps from 45° to 90° elevation.
- ISDN (UDI/RDI) from 15° to 90° elevation.
- 3.1 kHz Audio from 15° to 90° elevation.
- Supplementary services; call hold, call waiting, call forwarding, voice mail and call barring.
- SMS service.

In 2008, when the third Inmarsat satellite over the Pacific Ocean is in orbit, adjustment between the satellites will increase the coverage in general.

4. Key Markets

Supporting the latest IP services, as well as traditional circuit-switched voice and data, the EXPLORER 727 ensures seamless access to your secure or corporate networks through legacy applications while providing a smooth upgrade path to IP.

Whether the requirement is for mission critical communications or to give a competitive advantage by increasing the personal and business productivity, the EXPLORER 727 will provide the access.

The EXPLORER 727 is the highest performing vehicular product on the market build for customers with demanding data requirements. Due to the dome size, performance, available features and interfaces, we envision that the EXPLORER 727 will address the needs of the following group of customers:
Defence:
- Top quality voice and IP services on-the-move.
- Turn vehicle into in-theatre communication hub.
- Mobile and secure in last tactical mile.
- Low-profile magnet, roof or rail mounted antenna:
  - Auto-tracking.
  - Dual purpose (On-The-Move / Fixed) up to 92m / 300ft.

Government:
- However remote the location, EXPLORER ensures your teams stay up to date and operate efficiently and effectively.
- Consistent user experience worldwide.
- Supporting both IP and legacy ISDN/PSTN devices:
  - All major VPN products and encryption standards.
  - High speed data and voice communications worldwide.

Civil Defence:
- Enable teams to send situational data.
- Provide access to phone and secure networks from vehicle.
- Ad-hoc mobility. Can be relocated to where required.
- Simultaneous voice and broadband data:
  - Easy to use, yet offering great flexibility and freedom.
  - Confidently deploy to more members in the team.

Disaster Management:
- Response - damage assessment - send photographs, videos, interviews etc.
- Recovery - independent, reliable communication will help restoring the area.
- Mitigation - prevent hazards - monitor potentially dangerous areas and transmit vital data to disaster management centre.

News gathering:
- Media organisations all over the world already use EXPLORER to file their reports from disaster-hit areas, war zones, sports events and remote regions.
- Ready when turning ignition key - no terminal set-up or antenna alignment required:
  - Immediate broadcast from news site.
  - Guaranteed data rates up to 256 kbps on demand.

Non-Governmental Agencies (NGOs):
- In disaster situations, EXPLORER can help save lives through instant restoration of vital communications to coordinate relief efforts.
- Vehicles act as communication hub.
- Easy to use. No technical expertise required.
- Instant situation assessment:
  - Live interviews, video broadcast and photos.
  - Phone calls independently of terrestrial networks.
- **Paramedics:**
  - Communications to save lives.
  - Instant damage assessment with outdoor cameras.
  - Independent of terrestrial networks.
  - Telemedicine from moving vehicle:
    - Live vital signs.
    - Video link to medical centre.

- **Armoured vehicles:**
  - Provide reliable and secure comms for emergency.
  - Standard IP applications possible inside while driving (cameras, remote access).
  - Offers VIP’s access to the same applications as used back in the office. Replicate your office environment on the move.
    - Access to e-mail and e-business applications.
    - Make and receive calls independently of cell coverage.

- **Trucks:**
  - Special sensitive cargo which requires monitoring.
  - Direct data links to shipper.
  - Special cargo often worth more than truck.
  - IP link for security applications.
  - Telephone independent of terrestrial networks.
  - Extra service can be sold!

- **Remote locations:**
  - Establish a broadband mobile office when moving from site to site, for individual project managers, field service technicians, consultants, insurance adjusting & delivery vehicles.
  - Cost effective and reliable.
  - Mobile broadband connectivity wherever you need to go.
  - Accommodates multiple applications serving small teams.

- **Transportation (trains & busses):**
  - Automatic spot-beam handover.
  - International lines - one roaming rate regardless of country.
  - Emergency response rail:
    - Camera equipment for instant damage assessment.
    - Provide phone calls to people in train accident.
    - Telemedicine.

- **Mobile Banking / Point of Sales:**
  - Rural mobile banking offering the customers instant access to their accounts, when and wherever needed.
  - Mobile ATM facilities provide the ability to service crowds gathered at large social outings such as: fairs, festivals, sporting / entertainment events, concerts, promotions, conventions and trade shows.
    - Automated teller machines (ATM).
    - POS and payphone services.
5. **What's in the Box**

The TT-3722A EXPLORER 727 system consists of the following parts:

- TT-3736A EXPLORER 727 Terminal.
  - Basic cable support and I/O connector.
- TT-3053B EXPLORER 727 Antenna (desert tan).
  - Antenna mounting kit (rail and roof).
  - Antenna cables 2.7 m / 8.8 ft and 8 m / 26 ft.
- Standard Ethernet cable 5 m / 16.4 ft.
- DC power cable
- TT-3670A Thrane IP Handset (wired).
  - Cradle with 5 m / 16.4 ft cable.
- Documentation package (User & Installation Manual, Quick Start, Getting Started and CD).

5.1 **Options**

In addition to the standard package a range of options are available to the EXPLORER 727.

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT-3672A</td>
<td>Wired IP Handset</td>
</tr>
<tr>
<td>TT-367</td>
<td>Cradle for wired IP Handset</td>
</tr>
<tr>
<td>403625B</td>
<td>EXPLORER 2-wire Handset</td>
</tr>
<tr>
<td>403712A-009</td>
<td>Magnetic Mount Kit</td>
</tr>
<tr>
<td>403722A-009</td>
<td>24 VDC Input Cable 6 m (19 ft)</td>
</tr>
<tr>
<td>403722A-943</td>
<td>Antenna Cable TNC/TNC (male/male), 14 m (45 ft)</td>
</tr>
<tr>
<td>403722A-947</td>
<td>Antenna Cable TNC/TNC (male/male), 50 m (164 ft)</td>
</tr>
</tbody>
</table>
5.2 **IP Handset**

The IP Handset is used for making phone calls over an IP based network. When used with the EXPLORER 727, the communication is only IP based between the handset and the terminal. From the EXPLORER 727, the call is transmitted as a normal circuit-switched call, i.e. as a Standard Voice call or using the Premium (3.1 kHz Audio) service.

The IP Handset connects to the cradle with a coiled cord and is powered directly from the LAN interface using Power over Ethernet (PoE), which eliminates the need for an external power supply.

The TT-3670A IP Handset includes the following main units:

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>403672-001</td>
<td>TT-3672A IP Handset</td>
</tr>
<tr>
<td>403674-001</td>
<td>TT-3674A IP Handset Cradle</td>
</tr>
</tbody>
</table>

The handset is designed specifically for use in harsh environments and it is dust and splash proof.

On the large TFT screen, a graphical user interface provides easy access to all functions including contacts and settings. The user interface also provides direct access to certain features in the EXPLORER 727. The IP Handsets can also be configured via the intuitive EXPLORER web interface.

The IP Handset offers the following features:

- Voice communication over Internet or IP based networks.
- Contacts list with up to 100 entries.
- Intuitive user interface and menu system.
- Built-in web interface.
- 2.2” high quality colour TFT display QVGA.
- Night mode.
- Rugged and executive design.
- Supports cable lengths up to 100 m (328 ft)

Connecting a commercial off-the-shelf (COTS) wireless router or access point to the LAN interface enables the use of up to sixteen Thrane & Thrane wireless IP Handsets inside and around the vehicle.

The range depends on the wireless access point used and the surroundings.

The Thrane & Thrane wireless IP Handset supports the 802.11b/g standards.
6. Interfaces
The EXPLORER 727 offers a wide selection of interfaces:

- L-Band Output reserved for maritime broadcast services.
- Antenna interface (TNC female).
- Multi-purpose Reset button.
- SIM slot for BGAN SIM card.
- Two standard Phone/Fax ports for 2-wire analogue phones, PSTN modems, crypto devices and G-3 fax.
- One Euro ISDN port for ISDN phones, ISDN modems, digital crypto devices, Group-4 fax etc.
- Four LAN ports with Power over Ethernet (PoE) for computers, IP Handsets, IP crypto's, video and audio equipment etc.
- DC Input: 10.5 to 32 V DC (14 to 5.5 Amps) with remote On/Off function.
- One multi-purpose I/O connector with 5 configurable inputs/outputs:
  - Pin 1: Ringer output. Turn on an LED or sound an ext. bell when there is an incoming call (all Circuit Switched services) including wired and wireless IP Handsets.
  - Pin 2: Warning/Error output. Turn on an LED that will indicate if there is a problem with the equipment or the connection.
  - Pin 3: Mute output. This output will be able to mute other equipment (a radio for instance) when an incoming call is received and when an outgoing call is initiated.
  - Pin 4: Radio Silence input. This is used for gracefully shutting down the transmission, it will continue to track the satellite, but won't transmit or be able to receive any calls. This feature will reduce the time to re-connect to a minimum after a radio silence situation.
  - Pin 5: Ignition pin for automatically switching ON the EXPLORER 727 when vehicle is started and switched OFF when ignition is cut.
- Main Power ON/OFF switch.
- Grounding stud (not a requirement in vehicular installations).

7. Unique Features
In general the primary user criteria's, when selecting a new mobile system, is reliability, performance, user-friendliness - and price! The new EXPLORER 727 is developed and designed by Thrane & Thrane to live up to those requirements and the high quality standards that our customers expect from any EXPLORER product.

Revolutionary features like PoE is an innovative technology that provides a new, more cost-effective method for powering network devices. As described in the IEEE 802.3af standard, PoE enables delivery of power over LAN cabling.

The benefits of this technology are substantial, and the applications numerous supporting devices of power class 1, 2 and 3, ranging from powering IP Phones, Ethernet switches, Wireless access points, RFID readers and network security cameras.

Additional PoE advantages in connection with the EXPLORER 727 includes simplification of the installation, eliminating the need for special DC power supplies for each device and the possibility of automatic powering down all PoE devices when EXPLORER 727 is switched-OFF.

The next page gives an overview and information on the main features and functions provided by the EXPLORER 727 system and its options.
Reliable communication:
- Reliability in any environment is what you expect - and is what you get - from any EXPLORER product.
- Robust, simple and functional design to minimize risk of failure.
- Terminal casing made of magnesium.
- Based on the proven technology of the EXPLORER 700 and EXPLORER 527.
- IP-56 rated antenna, dust and spray proof from all directions.

High performance:
- Standard data connectivity up to 432 kbps.
- Streaming up to 256 kbps for time-critical applications.
- Supports ISDN and PSTN devices.
- Automatic spot-beam handover.
- Incorporated blocking recovery.
- Unique Word distribution in the return direction, i.e. more robust towards fading at low elevations.
- Thrane & Thrane developed High Power Amplifier (HPA) for optimal performance.
- Upgraded GPS receiver for faster acquisition times.

User-friendly:
- The EXPLORER products are designed with focus on user-friendliness.
  - Status LED’s on front panel. Same panel will be available on the front of the future 19” rack option.
  - Familiar EXPLORER web interface.
  - IP Handset display and keypad.
  - Planned support of the Inmarsat LaunchPad.
- DHCP will automatically assign IP addresses to the devices attached.
- Automatically registers on the network when activity is detected on the LAN interface.

Multi functional system:
- Single user or a small team can share the same system.
- Supports all available services offered by BGAN.
- ISDN & 2-wire interfaces for support of legacy devices.
- Multiple LAN interfaces (built-in Ethernet switch).
- Advanced Network Management enabling differentiating of services to multiple User Groups.
- Router or Bridge Mode on each individual PDP context.
  - Accommodates up to 11 global static or dynamic IP addresses, or any combination of those.
  - Supports up to 11 primary and secondary PDP contexts.

Simple installation:
- Single coax cable up to 92 m / 301 ft between terminal and antenna carrying all RF signals, DC power and modem communication, i.e. no additional unit’s or interconnection boxes necessary.
- Magnet, rail and roof mount kits available.
- PoE up to 15W on each LAN port.
- The terminal can be desktop mounted (visible or hidden), wall or ceiling.
- Automatically senses MDI/MDI-X Ethernet cables.
- 10.5 to 32V DC input range.
  - Remote ON/OFF pin.

**Easy and flexible configuration:**

- Intuitive EXPLORER user interface.
- IP Handset configuration from the built-in web-server.
- Profiles for fast and easy configuration.
- Remote configuration through 3rd party solutions, for instance TeamViewer or TightVNC.

**Handsets after your choice:**

- IP Handsets, wired or wireless (up to 16 handsets).
  - Can be configured via the terminal web interface.
  - Local calls and call forwarding via built-in PBX.
- 2-wire Handset (EXPLORER or any off-the-shelf analogue phone).
- EXPLORER ISDN Handset or any off-the-shelf ISDN phone.
- The built-in SIP server and an external wireless router will support VoIP calls from the Thrane IP Handset and commercial VoIP handsets.

**Other features:**

- Dashboard for quick status overview.
- Administrator password protection of configuration, including the firmware upgrade page.
- Call restriction features like Allowed Dialling, Phone Book Dial, Auto-prefix and Barring of Services.
- Possibility of generating a diagnostic report for advanced troubleshooting.
- Firmware upgrading directly from the web interface.
## 8. Technical Comparison

Below table compares the EXPLORER 727 capabilities to previous Land Vehicular products.

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>EXPLORER 727 BGAN-X</th>
<th>EXPLORER 527 BGAN</th>
<th>Voyager GAN</th>
<th>Mobile Messenger GAN</th>
<th>Compact Carphone mini-M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous services</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Static IP address</td>
<td>✓ (up to 11)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data services:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voice services:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premium</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Voice services:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data (On-line)</td>
<td>Up to 432 kbps</td>
<td>Up to 464 kbps</td>
<td>Up to 64 kbps</td>
<td>Up to 64 kbps</td>
<td></td>
</tr>
<tr>
<td>QoS (Streaming)</td>
<td>Up to 256 kbps</td>
<td>Up to 128 kbps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISDN</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>PSTN (3.1 kHz)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Messaging:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMS</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interfaces:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet interface</td>
<td>✓ (four)</td>
<td>✓</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Power over Ethernet</td>
<td>✓</td>
<td>✓</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ISDN interface</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone/Fax (2-wire)</td>
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<td>✓ (two)</td>
<td>(ext. TA)</td>
<td>(two)</td>
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<tr>
<td>I/O pins:</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ringer output</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Warning/Error output</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Mute output</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Radio Silence input</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Ignition input</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Remote On/Off</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Power:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>DC input</td>
<td>10.5 to 32 V</td>
<td>10 to 32 V</td>
<td>10.8 to 32 V</td>
<td>9 to 32 V</td>
<td>10.5 to 32 V</td>
</tr>
<tr>
<td>Features:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Built-in router</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIP server</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spot-beam handover</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-fading</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blockage recovery</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19&quot; rack mount kit</td>
<td>✓ (future)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ant. cable length</td>
<td>Up to 92 m / 301 ft</td>
<td>Up to 5 m / 16 ft</td>
<td>Up to 170 m / 558 ft</td>
<td>Up to 70 m (230 ft)</td>
<td>Up to 50 m / 164 ft</td>
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<tr>
<td>Ingress Protection:</td>
<td>Antenna</td>
<td>IP-56</td>
<td>IP-56</td>
<td>IP-55</td>
<td></td>
</tr>
<tr>
<td>Weight:</td>
<td>Transceiver</td>
<td>2.4 kg / 5.5 lbs</td>
<td>4.9 kg / 10.8 lbs</td>
<td>3 kg / 6.8 lbs</td>
<td>3 kg / 6.6 lbs w. PS</td>
</tr>
<tr>
<td></td>
<td>Antenna</td>
<td>6 kg / 13.2 lbs</td>
<td>5.2 kg / 11.5 lbs</td>
<td>12 kg / 26.5 lbs</td>
<td>12 kg / 26.5 lbs</td>
</tr>
<tr>
<td>Dimensions:</td>
<td>Transceiver</td>
<td>42.5 x 247 x 270 mm 1.67 x 9.72 x 10.63&quot;</td>
<td>19&quot;, 1U</td>
<td>80 x 180 x 310 mm 3.15 x 7.1 x 12.2&quot;</td>
<td>43 x 205 x 200 mm 1.7 x 8.07 x 7.87&quot;</td>
</tr>
<tr>
<td></td>
<td>Antenna</td>
<td>Ø 500 mm, H 150 mm Ø 19.7&quot;, H 5.9&quot;</td>
<td>Ø 500 mm, H 150 mm Ø 19.7&quot;, H 5.9&quot;</td>
<td>745 x 701 x 375 mm 29.3 x 27.6 x 14.8&quot;</td>
<td>Ø 650 mm, H 400 mm Ø 25.6&quot;, H 15.75&quot;</td>
</tr>
</tbody>
</table>