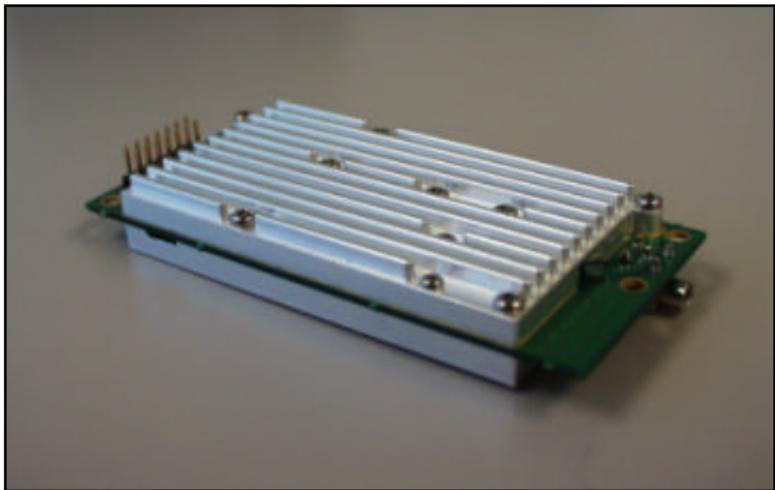


Niigata Seimitsu LTD, Co.

NSA-1800 ©

USER MANUAL

Revision 1.0



NSA-1800 ©

FCC/IC Compliance Statement

This device complies with Part 15 of FCC Rules and with RSS-210 of Industry and Science Canada.

Operation is subject to the following conditions:

- (1) This device may not cause interference, and
- (2) This device must accept any interference, including interference that may cause undesired operation of this device.

Thank you for trusting your RF communication needs to Niigata Seimitsu LTD, Co. and our NSA-1800 family of products. You have selected a high performance, small footprint, AMPS RF device with advanced OEM development features. We encourage you to review this user guide to help familiarize yourself with the operation of the NSA-1800.

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SAFETY INFORMATION

WARNING - FCC RF EXPOSURE REQUIREMENTS

EXPOSURE TO RADIO FREQUENCY SIGNALS

Your wireless device is a low power radio transmitter and receiver. When installed the device receives and transmits RF signals.

In August 1996 the Federal Communications Commission (FCC) adopted RF exposure guidelines with safety levels for mobile wireless devices. Those guidelines are consistent with the safety standards previously set by both U.S. and international standards bodies:

American National Standards Institute – ANSI C95.1 (1992)

National Council on Radiation Protection and Measurements – NCRP Report 86 (1986)

International Commission on Non-Ionizing Radiation Protection – ICNIRP (1996)

Those standards were based on comprehensive and periodic evaluations of the relevant scientific literature. For example, over 120 scientists, engineers, and physicians from universities, government's health agencies, and industry reviewed the available body of research to develop the ANSI Standard (C95.1)

WARNING!

To comply with FCC RF Exposure compliance requirement, the following antenna installation and device operating configurations must be satisfied:

- The antenna, p/n EX00-0336-00, used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
- Vehicle antenna mounting: Antenna must be mounted externally to the vehicle. This mounting could be anywhere excepted windows.
- Fixed application – Home or Business:
 - The antenna, used with this device, must be fixed-mounted on indoor or outdoor permanent structures providing a separation distance of at least 20 cm from all persons during normal operation.

NSA-1800 SAFETY TIPS

Your NSA-1800 gives you the ability to communicate by data-almost anywhere, anytime. But an important responsibility accompanies the benefits of wireless devices, one that every user/installer must uphold.

When installing this device please keep the following items in mind:

1. Get to know your NSA-1800 and its features such as voltage, ground, mounting and data connections.
2. The antenna system is 50 ohms. Please use the least amount of distance when installing. We recommend the use of Niigata Seimitsu LTD, Co. antennas and accessories. Please ask your representative about optional antennas and cables.
3. Position your NSA-1800 within RF coverage. Cellular coverage may be poor in basements or tunnels.
4. Install in well-ventilated areas. Excessive heat will damage the NSA-1800 or hinder the optimal operation.

ELECTRONIC DEVICES

Most electronic equipment is shielded from RF signals. However, certain electronic equipment may not be shielded against the RF signals from your NSA-1800.

Pacemakers

The Health Industry Manufacturers Association recommends that a minimum separation of six (6") inches be maintained between a NSA-1800 and a pacemaker to avoid potential interference with the pacemaker. These recommendations are consistent with the independent research by and recommendations of Wireless Technology Research.

Other Medical Devices

If you install this device near a personal medical device, consult the manufacturer of your device to determine if they are adequately shielded from external RF energy.

Vehicles

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles. Check with the manufacturer or its representative regarding the vehicle. You should also consult the manufacturer of any equipment that has been added to the vehicle.

AIRCRAFT

FCC regulations prohibit using this device on aircraft.

BLASTING AREAS

To avoid interfering with blasting operating, the NSA-1800 must be disabled or in the "OFF" state when in a "blasting areas. Obey all signs and instructions.

POTENTIALLY EXPLOSIVE ATMOSPHERES

Turn your NSA-1800 OFF or don't install this product in any area with a potentially explosive atmosphere and obey all signs and instructions. Sparks in such areas could cause an explosion or fire resulting in bodily injury or even death.

Areas with a potentially explosive atmosphere are often but not always clearly marked. They include FUELING AREAS such as gasoline stations; below decks on boats, fuel or chemical transfer or storage facilities; vehicles using liquefied petroleum gas (such as propane or butane); areas where the air contains chemical particles, such as grain, dust, or metal powders; and any other area where you would normally be advised to turn off your vehicle engine.

GENERAL DESCRIPTION

- EIA553 AMPS Cellular Air Protocol
- 5 Volt Operation
- Compatible with Voice and Control Channel data solutions
- Serial Communications Interface
- FLASH memory for field upgrades
- Assembled & tested to IS19B class A standards
- Common 14 pin Header Interface
- Common form factor and mounting design
- Modem interface for host controlled applications
- Small profile design

NSA-1800 MODELS

| Description | 600 mW | 1200 mW |
|--|-----------------|------------------|
| AMPS Cellular Circuit Switched RF device | NSA-1800-600-CS | NSA-1800-1200-CS |
| Aeris.net Microburst AMPS RF device | NSA-1800-600-A | NSA-1800-1200-A |
| Cellemetry AMPS RF device | NSA-1800-600-C | NSA-1800-1200-C |

Please identify your model when referring to this manual.

TECHNICAL SPECIFICATIONS

Absolute Maximum Ratings

| Parameter | Rating | Unit |
|-----------------------|--------------|------|
| Supply Voltage | -0.3 to +5.5 | VDC |
| Operating Voltage | +4.3 to +5.5 | VDC |
| Storage Temperature | -60 to +100 | °C |
| Operating Temperature | -30 to +60 | °C |
| Humidity | 10 to 90 | % |

General (Ta=-30°C to +60°C)

| Parameter | Rating | Unit |
|-------------------------|-------------------|-----------|
| TX Frequency Coverage | 824.040 ~ 848.970 | MHz |
| RX Frequency Coverage | 869.040 ~ 893.970 | MHz |
| Channel Spacing | 30 | kHz |
| Number of Channels | 832 | |
| Supply Voltage | 4.8 ±0.5 | VDC |
| Standby Supply Current | 70 ±10 | mA(max) |
| Transmit Supply Current | 600/1200 | mA(max) |
| Physical Dimensions | 44×95×17 | mm(W/D/H) |
| Antenna Connection | 50 | Ù |

Receiver (Ta=-30°C to +60°C, VCC=+4.8VDC)

| Parameter | Rating | Unit |
|----------------------------|--------|----------|
| Sensitivity (12dB SINAD) | -116 | dBm(min) |
| Adjacent Channel Rejection | 16 | dB (min) |
| Ultimate Channel Rejection | 60 | dB (min) |

Transmitter (Ta=-30°C to +60°C, VCC=+4.8VDC)

| Parameter | Rating | Unit |
|------------------------|----------|---------|
| Power Output | 600/1200 | mW |
| Peak Deviation | ±8 | kHz |
| Frequency Stability | ±2.5 | ppm |
| Carrier Switching Time | 2 | ms(max) |
| Channel Switching Time | 40 | ms(max) |

INTERFACE CONNECTOR (J1)

Interface Connector (HIROSE: A1-14PA-2.54 DSA)

| PIN | SYMBOL | I/O | DESCRIPTION |
|------------|---------------|------------|------------------------|
| 1 | VCC | VCC | +4.8VDC |
| 2 | SVC | O | Service Available Flag |
| 3 | GND | GND | Primary Ground |
| 4 | RSDV1 | O | Reserved |
| 5 | RXD | I | Control Serial Data RX |
| 6 | RSVD2 | I/O | Reserved |
| 7 | TXD | O | Control Serial Data TX |
| 8 | IN-A | I | Auxiliary Input A |
| 9 | RSSI | O | RSSI |
| 10 | Digital GND | GND | Ground |
| 11 | P-IN | I | Pulse Input |
| 12 | IN-B | I | Auxiliary Input B |
| 13 | OUT-A | O | Auxiliary Output A |
| 14 | OUT-B | O | Auxiliary Output B |

ANTENNA CONNECTOR (J2)

Standard Configuration:

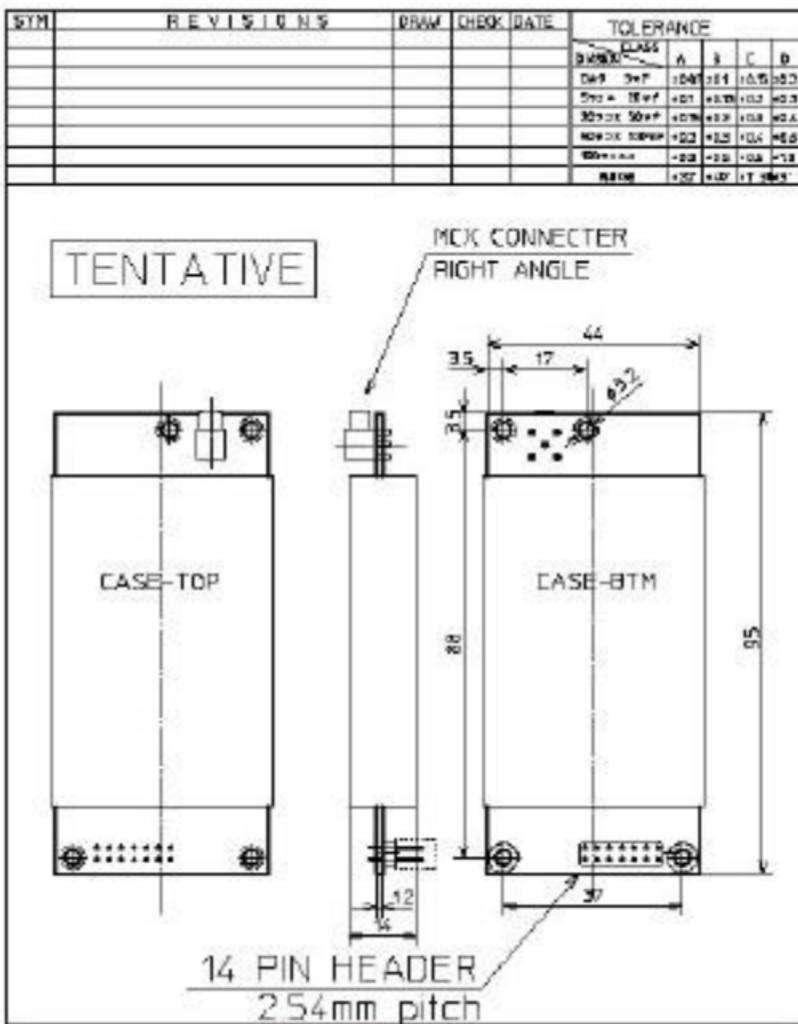
- SMA PCB Angle Receptacle (Jack)
- HRM-300-126S

Note: Antenna and cable is optional.

AUDIO INTERFACE CONNECTOR (J3)

| PIN | SYMBOL | I/O | DESCRIPTION |
|-----|--------|-------|--|
| 1 | VD3.6 | VD3.6 | +3.6VDC |
| 2 | VPP | VPP | +12VDC (FLASH LOAD) |
| 3 | RST | I | Reset |
| 4 | AFO | O | Audio frequency signal output -20 db audio level (line level) |
| 5 | AFI | I | Audio frequency signal input -20 db audio level (line level) |

MECHANICAL LAYOUT



SUPPORT

Customer and technical support is available at Fluent Data Systems by calling toll free 877-860-DATA. Fluent Data Systems will assist with any sales, marketing or technical support.