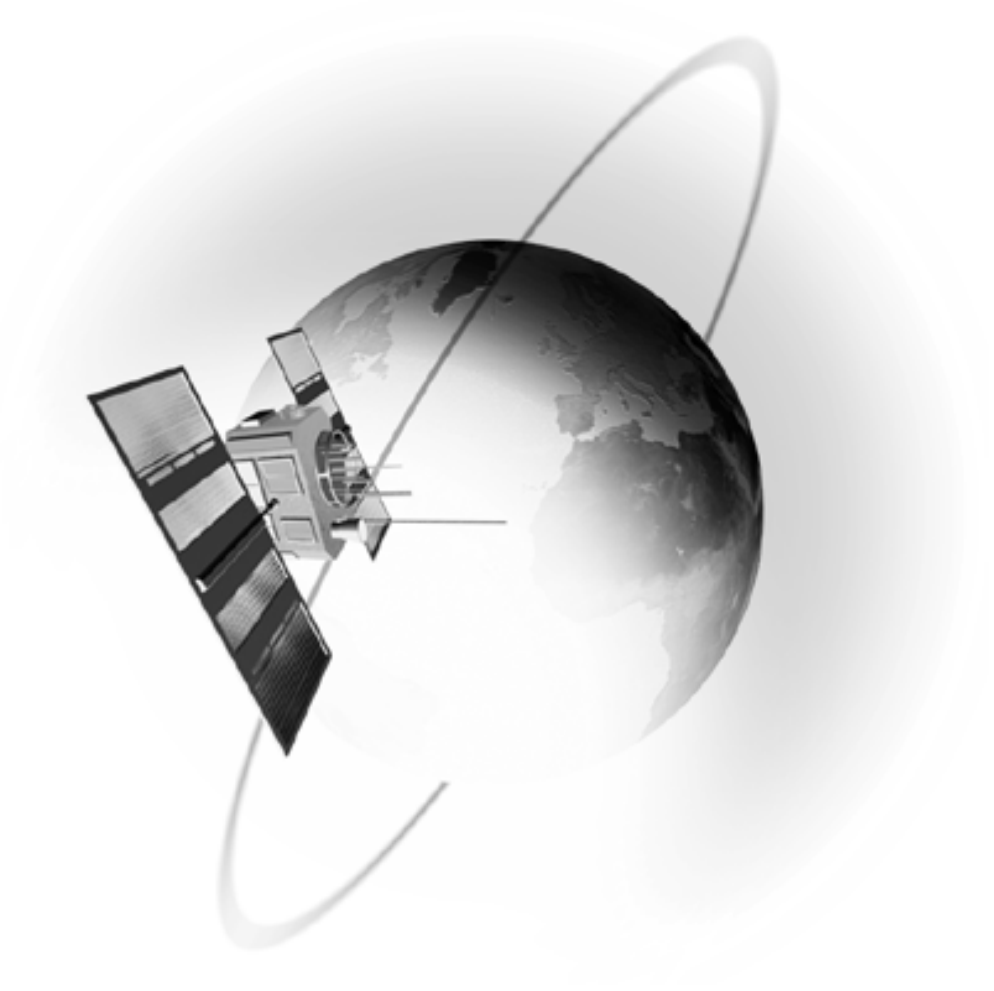
AEMB100 Base Station

AVL & Data Logging System



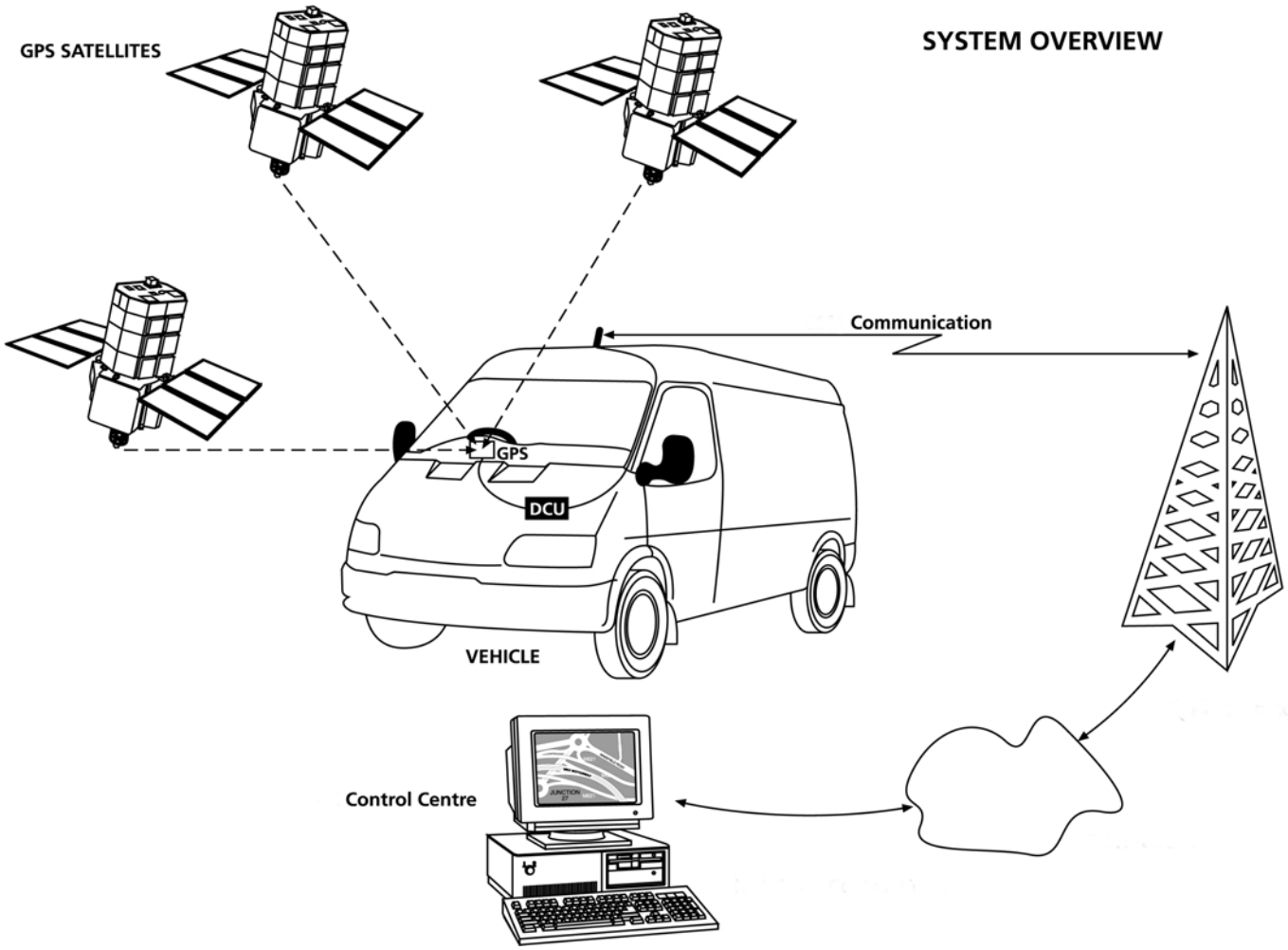
System Overview & Installation Guide

1. OPERATION

1.1 Maptrack System Overview

The Maptrack system brings together satellite based global positioning technology, microprocessor control, low power radio and international GSM communication infrastructure to achieve wide area communication, vehicle location, telematics and communication services.

1.1.1 Operation Overview



1.2 System Overview

The AEM3000 is an electronic data collection and transmission device, incorporating GPS tracking and GSM communication technologies.
Whilst the vehicle is in use, geographical and operational data is continually monitored and recorded within the DCU (data collection unit) memory. Up to 8 weeks of operational data can be held within the DCU. If the memory capacity is reached before the data is downloaded, the oldest records will be lost as new records are recorded.

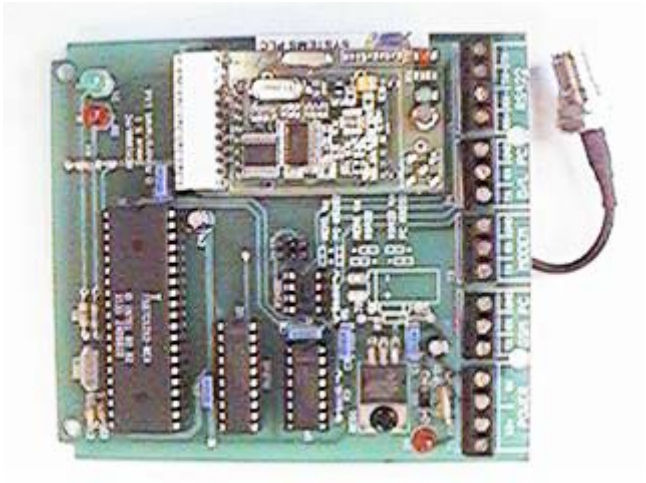
Recorded data may be downloaded for processing by the base computer in the following ways;
a) bulk download of all held data via the GSM data channel
b) snap shot of current 'live' data via the GSM SMS network.
c) bulk download of held data via the FCC compliant low power radio interface upon return to base.

Interrogation of the DCU is possible anywhere that benefits from GSM network coverage (subject to roaming agreements with GSM networks).

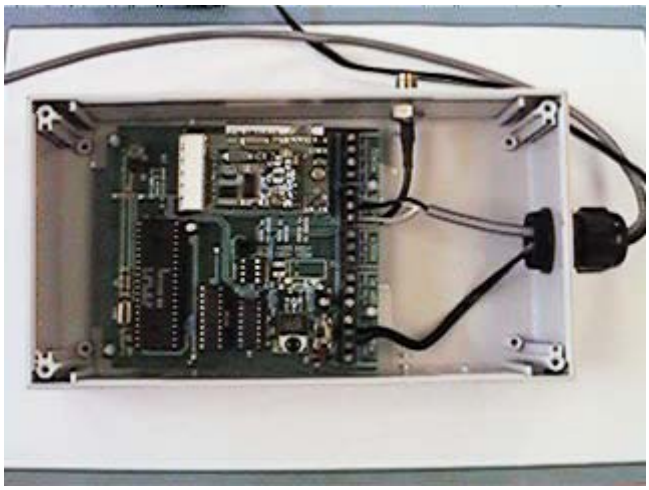
1.3 System Operation

The Maptrack in-vehicle system consists of the DCU (data collection unit), GPS, GSM and Low Power Local Download antennae. Only power and ignition connections are made to the vehicle electrical system.
When an ignition signal is present at the DCU the system records a start event and activates the GPS receiver, the vehicles geographical position, velocity and distance travelled are then continually recorded within the DCU until the ignition signal is removed, at which time a stop event is recorded, the DCU then performs any outstanding tasks before powering down the GPS receiver and GSM transceiver.
When the vehicles ignition is turned off, the low power radio will power up and transmit a 'Come And Get Me' (CAGM) packet. If the vehicle is within range of its AEMB100 Base Station this packet will be received by the Base Station, which will request a transfer of data from the Vehicle to the Base Station. This transfer of data is via the Low Power Radio link in a half-duplex packet format.

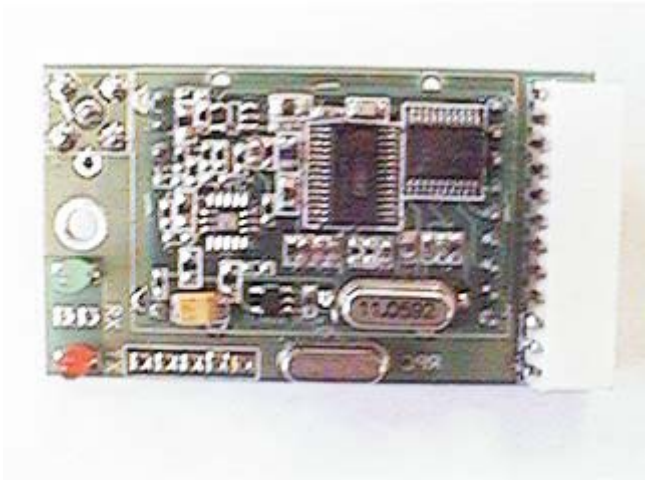
1.4 AEMB100 Component Layout



AEMB100 PCB Assembly



AEMB100 Internal Wiring



Radio Packet Controller Detail

2. SAFETY STANDARDS

The AEMB1000 Base Station and associated equipment has been fully EMC tested to VCA recommendations in accordance with European Directive 95/54/EC, Annex 7 & 8 (emissions).

2.1 Low Power Radio Antenna Element

The low power radio contained within the AEMB100 Base Station is designed to comply with FCC directive part 15. As such only aerials approved and supplied by Minorplanet may be used in conjunction with this product. It is forbidden to use any antennae other than those verified and approved by Minorplanet.

Both the AEMB100 Base Station and its associated antenna must be installed, and/or protected, in such a way that they will be inaccessible to normal pedestrian traffic after installation.

3. TECHNICAL SPECIFICATION

Due to continuous product development, aspects of the following specification may be changed without notice and solely at the discretion of the manufacturer.

3.1 Mechanical Specification AEMB100 Base Station

Size (mm)	:	112 W x 70 H x 200 L.
Weight	:	400 grams.
Material	:	Two part impact resistant polystyrene.

3.2 Electrical Specification

Supply Voltage	:	9 to 12 volts DC.
Current @ 12V	:	120 mA Maximum.
LPR Transceiver	:	902.75MHz max 1 mW @ 3M, FCC part 15 compliant
Operating Temp	:	-20 to +50 degrees centigrade.
EMC	:	Tested to meet European directive 95/54/EC (emissions).

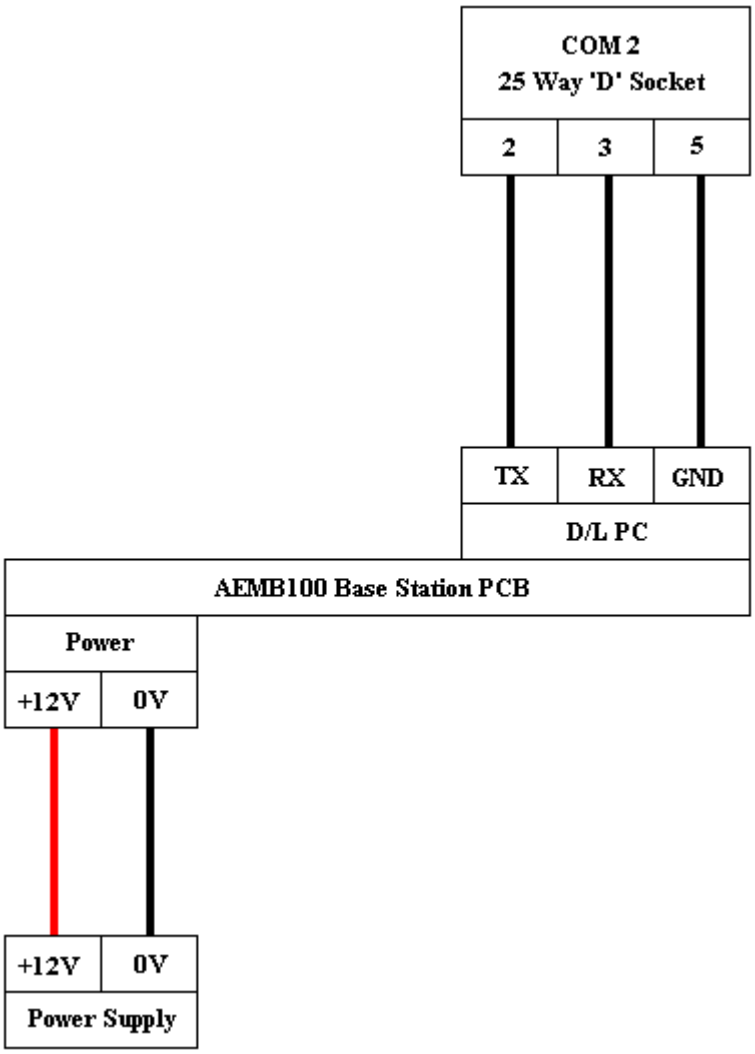
3.3 LPR Antenna Specification

SPECIFICATIONS

Frequency Range	902 – 925 MHz PCS: 1850 - 1980 MHz
VSWR	<2:1
Vertical 3 dB beamwidth	72° typ
Rated Power	10 Watts
Impedance	50 ohms
Termination	N-type female on 1 m Low Loss RG58 cable tail
Material	Radiator: 7/7 PH stainless steel Cover:: ABS
Operating Temperature	-20°C to +80°C
Mounting	With bracket onto wall
Antenna Size	150mm high on 55x200mm bracket
Packing Weight / Volume	0.2kg / 25 x 20 x 6cm

It should be noted that the above information indicates the typical antenna to be used for local download purposes.

4.1 AEMB100 WIRING DIAGRAM



F.C.C.CAUTION: THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: **(1)** THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND **(2)** THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDERSIRED OPERATION. **NOTE:** NO CHANGES OR MODIFICATIONS MAY BE MADE TO THE UNITS. ANY CHANGES MADE TO THE UNITS WILL VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.