

SATELLINE®-3AS OA

Versatile Radio Modem for Data Transfer Applications in Public Transportation Services

SATELLINE-3AS OA is a modified version of the widely used SATELLINE-3AS radio modem and was developed to comply with the requirements of the Dutch KAR (Korte Afstand Radio) protocol for Public Transportation data communications.

SATEL Oy is a Finnish electronics and telecommunications company that specializes in wireless data communications. It designs, manufactures and markets radio modems for data communications and alarm transfer systems. The main user groups include industrial companies, public organizations and private persons. SATEL is the leading supplier of radio modems in Europe. The SATEL radio modems are type approved in most European countries and elsewhere.



The purpose of the development of the KAR Open Air Specification was to provide the Dutch Ministry of Transportation with a detailed description of the functional and technical requirements of information services and data communications in public transportation services. The basic applications therein include traffic light priority requests for buses, the display of real-time information regarding anticipated arrival times at bus stops, vehicle tracking and communication with the central transportation control computer.

Closely related to SATELLINE-3AS

SATELLINE-3AS OA is a half-duplex UHF radio modem with high speed data transmission and versatile functionality. As far as the end user is concerned, its functions and performance are identical to the SATELLINE-3AS. Accordingly, it is operated with 12.5 kHz channel spacing in the frequency range 400-470 MHz, with maximum data speed of 9.6 kbps. Currently, three frequencies (f1, f2 and f3) in the 427-430 MHz band are used for the KAR applications.

The settings of the SATELLINE-

3AS OA can be changed by using either SATEL's proprietary SL- or standard AT-commands from the computer connected to the radio modem via an RS-232 data interface. Thus if the KAR is used for multiple applications the configuration of the 3AS OA is easily changeable using these commands.

The communication protocol as well as the detailed technical requirements of the data interface RS-232 is defined by the KAR Specification. In the test installations made in the Netherlands, the SATELLINE-3AS OA was found to be fully compatible with these requirements.


Mobile data transfer upgrades public transportation services

Over the last few years the public transport community in The Netherlands has defined how on-board computers can be used for various data communication applications within public transportation. The KAR Specification focuses mainly on systems and components used for a set of applications developed to enhance the control and flow of public transportation as well as information services to the public. The applications are based on a combination of up-to-date technologies, including on-board computers, GPS positioning, and short-range wireless communication with radio modems.

- **Traffic light priority** is a vital part of the Dutch transportation infrastructure in order to maintain both traffic flow and efficiency. A priority passage request is used whenever a vehicle wants to get priority over other traffic. In particular this service is used at traffic lights, selective access gates or narrow bridges. As a bus approaches a traffic light, the SATEL LINE-3AS OA radio modem, operating at the frequency 1 (f1), transmits a priority request signal to the radio modem connected to the Traffic Controller (VRI), and a free passage for the bus is initiated.

- **A vehicle tracking system** is an application used by the control centre to monitor the progress of the vehicles running the timetable. Here, the Master computer at the Transportation Control Centre continuously polls the positions of all vehicles in the fleet. The on-board computer of each vehicle sends back its current GPS position and its status via the SATELLINE by using the frequency 2 (f2). As well as positioning data, the on-board radio modem can be

used to exchange schedule information and deviation data between the Control Centre and the vehicle.

- **Real-time information display of expected arrival times** is extremely important to passengers using public transport. Based on vehicle position information from the GPS positioning system, the Master computer at

the Transportation Control Centre calculates the ETA (Expected Time of Arrival) to all the remaining bus stops along the route. This information is transmitted through the SATELLINE to the bus stops, where the ETA is displayed on an information panel. For this application, the frequency channel 3 (f3) is used.

Technical specifications • SATELLINE-3AS OA

The equipment complies with the ETS 300 113, ETS 300 683 and IEC 60950.

TRANSCEIVER

Frequency Range	400 ... 470 MHz
Channel Spacing	12.5 kHz
Number of Channels	160
Type of Emission	F1D (4-level FSK)
Communication Mode	Half-Duplex

Transmitter

Carrier Power	10 mW ... 1 W / 50 ohm
Adjacent Channel Power	Acc. to ETS 300 113
Spurious Radiations	Acc. to ETS 300 113

Receiver

Sensitivity	Better than -110 dBm (BER < 10 E-3)
Co-channel Rejection	> -12 dB
Adjacent Channel Selectivity	> 60 dB
Intermodulation Attenuation	> 65 dB

DATA MODEM

Interface	RS-232
Interface connector	D15, female
Data Speed of RS Interface	9600 ... 38400 bps
Data Speed of Radio Interface	9600 bps
Data Format	Asynchronous data

GENERAL

Operating Voltage	+9 ... +30 Vdc
Power Consumption	1.8 VA typical (Receive) 6.0 VA typical (Transmit) 0.05 VA typical (when DTR is "0")
Temperature Range	-25 °C ... +55 °C
Antenna Connector	TNC, 50 ohm, female
Construction	Aluminium enclosure
Size H x W x D	137 x 67 x 29 mm
Weight	250 g

Values are subject to change without a notice.

Manufacturer:



SATEL Oy, Meriniitynkatu 17, P.O.Box 142, 24101 Salo, Finland
Tel. +358 2 777 7800, fax +358 2 777 7810, info@satel.com
www.satel.com

Distributor :

