# SATELLINE®-1870E

## **Wireless World - Local Solution**

The SATELLINE-1870E radio modem provides a wireless transparent data link on the European licence free 868...870 MHz frequency band. It is designed for tight integration into the user's terminal equipment, and is particularly well suited for the transfer of data and control messages in medium-range (1–10 km) applications.

In accordance with the regulations on the use of the 869 MHz band, the maximum output power of the SATELLINE-1870E is 500 mW. In the design of the radio modem, special attention was paid to ensuring reliable operation in all circumstances. Accordingly, the technical solutions applied in the radio part minimise the risk of disturbance from and collision with other services (DVB-T, TETRA, GSM) using the ISM/SRD band.



SATEL

With SATEL radio modems, setting up a local data transfer network is quick and cost effective. Your wireless network is independent and free of operator services. The cost of operation is either free of charge or fixed, depending on the frequency used. SATELLINE radio modems are type-approved in over 50 countries. For the latest information, please visit our website www.satel.com.

SATELLINE radio modems are always on line, and provide reliable, realtime data communications over distances ranging from tens or hundreds of metres up to around 80 kilometres. Thanks to a store and forward function, any radio modem in a network can be used as a master station, substation and / or repeater.

#### SATELLINE radio modem

networks are flexible, easy to expand and can cover a wide variety of solutions from simple point-to-point connections to large networks comprising hundreds of modems. Even for expanded networks, only one operating frequency is required.

All SATELLINE radio data modems fulfil RoHS requirements (EU directives 2002/95/EC and 2002/96/EU) as of 1 July 2006.



VHF with NMSUHF with NMSUHFUHFLicence FreeIP67OEM

The SATELLINE-1870E operates in a transparent transfer mode, which ensures compatibility with most user systems and protocols. If desired, the modem can be programmed to utilise the addressing functions of the user's protocol, to provide routing or message filtering functions. The settings of the radio modem can be changed from an external terminal in the programming mode or through auxiliary SL-commands during normal operation.

In case there is a need to extend the coverage of the radio modem network, SATELLINE-1870E modems can be used as repeater stations. By using the Store and Forward function, the radio modem buffers the received data and transmits it further using the same radio frequency as in reception.

The SATELLINE-1870E is an appropriate choice where price and range are important aspects. With its high output power, good sensitivity, small size and low power consumption, it meets both the technical and economical requirements set on wireless communications in a number of applications, including:

- Remote meter reading (Gas, Electricity, Heat).
- Remote control of water distribution
- Remote control of irrigation systems
- Environmental monitoring

#### Expert's help always at hand

With over 20 years of experience, SATEL Oy has grown into one of the leading radio modem manufacturers in the world. As a result of our persistent and innovative work in both product design and international marketing, we now offer an extremely large selection of radio modems, and operate through an extensive and skilled distributor network all over the world.

SATEL Oy is an ISO 9001:2000 certified company. The quality of our operations and products is kept as flawless and at as high level as possible.

We have also accumulated a considerable amount of know-how in different radio modem applications. So, whatever your application is, do not hesitate to ask for our expert help whenever you need it. SATELLINE radio modems have been used, for example, at airports, waterworks and electricity plants for various monitoring and control applications, as well as to set up location data-based fleet management systems in cities.

SATEL Oy has prepared an extensive set of Application Notes describing the different ways of utilising SATEL radio modems in various applications. For further information about our products and their applications, please visit our home page www.satel.com or contact your local dealer.

Manufactured:



SATEL Oy, Meriniitynkatu 17, P.O. Box 142, FI-24101 Salo, FINLAND

Tel. +358 2 777 7800 info@satel.com Fax +358 2 777 7810 www.satel.com

#### **Technical Specifications SATELLINE-1870E**

The equipment complies with the EN 300 220-1, EN 301 489-1 and EN 60950-1 specifications.

Frequency Range         868 870 MHz           Channel Spacing         25 KHz           Frequency Stability         ± 2.5 KHz           Type of Emission         F1D (Modulation 2+F5K)           Communication Mode         Half-Duplex           TRANSMITTER         -           Carrier Power         5, 10, 25, 50, 100, 250, 500 mW / 50 ohm           Carrier Power Stability         + 0 dB1 dB (100 500 mW)           Adjacent Channel Power         <37 dB (5 50 mW)           Adjacent Channel Selectivity         > 45 dB           Blocking (typical)         > 75 dB @±1MHz, > 85 dB @±10MHz           DATA MODEM         Interface           Interface Connector         DIN141650-16 pin (male)           Data speed of RS interface         300 - 19200 bps           Data speed of radio interface         9600 bps           Data speed of radio interface         9600 bps           Data speed of radio interface         9600 bps           Detro format         Asynchronous RS-232           GENERAL         Operating mode (typical values)           (mA)         500 mW         100 mW         5mW           Mage         166         105         19         62           30         40         128         76 </th <th>TRANSCEI</th> <th>VFR</th> <th></th> <th></th> <th></th> <th></th> <th></th>	TRANSCEI	VFR					
Channel Spacing         25 kHz           Frequency Stability         ± 2.5 kHz           Type of Emission         F1D (Modulation 2-F5K)           Communication Made         Half-Duplex           TRANSMITTER            Carrier Power         5, 10, 25, 50, 100, 250, 500 mW / 50 ohm           Carrier Power Stability         + 0 dB1 dB (100500 mW)           Adjacent Channel Power         <-37 dBm           RECEIVER            Sensitivity         <-106 dBm (BER < 10 E-3)           Adjacent Channel Selectivity         > 45 dB           Blocking (typical)         > 75 dB @±10MHz, > 85 dB @±10MHz           DATA MODEM            Interface         RS-232           Interface Connector         DIN41650-16 pin (male)           Data speed of rodio interface         9600 bps           Data speed of rodio interface         9600 bps           Data format         Asynchronous RS-232           GENERAL            Notifies (mA)         feacely (mA)           Notifies (mA)         foormat           Power consumption            Interface Ration on different power levels (mA)         feacely (wA)           Standby         foormat         100 mW				868 870 MHz			
Frequency Stability         ± 2.5 kHz           Type of Emission         F1D (Modulation 2.F5K)           Corrier Power         5, 10, 25, 50, 100, 250, 500 mW / 50 ohm           Carrier Power Stability         + 0 dB1 dB (100 500 mW)           Carrier Power Stability         + 0 dB3 dB (5 50 mW)           Adjacent Channel Power         <.37 dBm           RECEIVER           Sensitivity         <-106 dBm (BER < 10 E-3)           Adjacent Channel Selectivity         > 45 dB           Blocking (typical)         > 75 dB @±1MHtz, > 85 dB @±10MHz           DATA MODEM           Interface         RS-232           Interface Connector         DIN41650-16 pin (male)           Data speed of radio interface         9600 bps           Operating mode (typical values)         (mA)           (mA)         500 mW							
Type of Emission         F1D (Modulation 2-F5K)           Communication Mode         Half-Duplex           TRANSMITTER            Carrier Power         5, 10, 25, 50, 100, 250, 500 mW / 50 ohm           Carrier Power Stability         + 0 dB, 1 dB (100500 mW)           Adjacent Channel Power         <-37 dBm           RECEIVER            Sensitivity         <-106 dBm. (BER < 10 E-3)           Adjacent Channel Selectivity         > 45 dB           Blocking (typical)         > 75 dB @±1MHz, > 85 dB @±10MHz           DATA MODEM            Interface         RS-232           Interface Connector         DIN41650-16 pin (male)           Data speed of radio interface         9600 bps           Data speed of radio interface         9600 bps           Data format         Asynchronous RS-232           GENERAL         Transmit on different power levels (mA)           Power consumption         Transmit on different power levels (mA)           Receive (mA)         Transmit on different power levels (mA)           Receive (mA)         Transmit on different power levels (mA)           Not due lass of tab dat 444         244         168           128         296         166         105         19							
Communication ModeHalf-DuplexTRANSMITTERCarrier Power5, 10, 25, 50, 100, 250, 500 mW / 50 ohmCarrier Power Stability $+ 0 dB 1 dB (100 500 mW)$ Adjacent Channel Power $< -37 dB$ RECEIVERSensitivity $< -106 dBm (BER < 10 E-3)$ Adjacent Channel Selectivity $> 45 dB$ Blocking (typical) $> 75 dB @ \pm 10 MHz$ , $> 85 dB @ \pm 10MHz$ DATA MODEMInterfaceRS-232Interface ConnectorDIN41650-16 pin (mole)Data speed of radio interface9600 bpsData speed of radio interface9600 bpsData speed of radio interface9600 bpsData speed of radio interface9600 bpsContractioned (typical) $-18 + 30 Vdc$ Power consumptionTransmit on different power ievels (mA)Mput (mA) $500 mW$ $5mW$ Notage MTransmit on different power ievels (mA)No dV $5mW$ 8136444244168105120304012876139121761227613077 °C (absolute minimum / maximum) $-Storage - 40 °C + 85 °C-Storage - 40 °C + 85 °CAntenno ConnectorSMA, 50 ohm, femaleConstructionAluminium enclosureSize H x W x D57 \times 125 \times 16 mmInstellation plate130 x 63 x 1 mm$							
TRANSMITTERCarrier Power5, 10, 25, 50, 100, 250, 500 mW / 50 ohmCarrier Power Stability+ 0 dB 1 dB (100500 mW) + 0 dB 3 dB (550 mW)Adjacent Channel Power<-37 dBmRECEIVERSensitivity<-106 dBm (BER < 10 E-3)Adjacent Channel Selectivity> 45 dBBlocking (kpical)> 75 dB @±10MHzDATA MODEMInterfaceRS-232Interface ConnectorDIN41650-16 pin (male)Data speed of RS interface300 - 19200 bpsData speed of radio interface9600 bpsDato speed of RS interface9600 bpsDato speed of radio interface9600 bpsDato speed of radio interface9600 bpsDato formatAsynchronous RS-232GENERALNuput (mA)100 mWSon mW500 mW1364442441682555304012892961661051962296304012876447131717Temperature ranges- Operating-25 °C+55 °C (trests acc. to ETSI standards)- Operating-25 °C+55 °C (trests acc. to ETSI standards)- Storage-40 °C+85 °CAntenna ConnectorSMA, 50 ohm, femaleConstructionAluminium enclosureSize H x W x D57 x 125 x 16 mmInstallation plote130 x 63 x 1 mm <th colspan="3"></th> <th colspan="4">· · ·</th>				· · ·			
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$+ 0 dB3 dB (550 mW)$ Adjacent Channel Power $<-37 dBm$ RECEIVER Sensitivity $<106 dBm (BER < 10 E-3)$ Adjacent Channel Selectivity $> 45 dB$ Blocking (typical) $> 75 dB @ \pm 1MHz, > 85 dB @ \pm 10MHz$ DATA MODEM Interface $RS-232$ Interface Connector Interface $RS-232$ Interface Connector Interface $9600 bps$ Data speed of radio interface $9600 bps$ Data format Asynchronous RS-232 $CENERAL$ $Operating wolage + 8+ 30 Vdc$ Power consumption $\int Operating mode (typical values)$ $\int Operating mode (typical$	Carrier Power						
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DATA MODEM       RS-232         Interface Connector       DIN41650-16 pin (male)         Data speed of RS interface       300 - 19200 bps         Data speed of RS interface       9600 bps         Data format       Asynchronous RS-232         GENERAL         Operating voltage       + 8+ 30 Vdc         Power consumption       Operating mode (typical values)         Voltage (v)       Querating mode (typical values)         Voltage (v)       (mA)       500 mW       100 mW       5 mW       (mA)       (uA)         8       136       444       244       168       25       55         12       89       296       166       105       19       62         30       40       128       76       47       13       1717         Temperature ranges       - 25 °C+55 °C (tests acc. to ETSI standards)       - 40 °C+75 °C (absolute minimum / maximum)       - \$10 °C+85 °C         Antenna Connector       SMA, 50 ohm, female       Construction       Aluminium enclosure         Size H x W x D       57 x 125 x 16 mm       130 x 63 x 1 mm       130 x 63 x 1 mm	Adjacent Channel Selectivity			> 45 dB			
Interface         RS-232           Interface Connector         DIN41650-16 pin (male)           Data speed of RS interface         300 - 19200 bps           Data speed of radio interface         9600 bps           Data format         Asynchronous RS-232           GENERAL           Operating voltage         + 8+ 30 Vdc           Power consumption         Power save         Standby (mA)           Mage (N)         Óperating mode (typical values)         Power save         Standby (mA)           8         136         444         244         168         25         55           12         89         296         166         105         19         62           30         40         128         76         47         13         1717           Temperature ranges         - Operating         -25 °C+55 °C (tests acc. to ETSI standards)         -40 °C+75 °C (absolute minimum / maximum)           - Storage         -40 °C+85 °C         -40 °C+85 °C         -40 °C+85 °C           Antenna Connector         SMA, 50 ohm, female         -40 °C+85 °C         -40 °C+85 °C           Construction         Aluminium enclosure         -57 x 125 x 16 mm         -57 x 125 x 16 mm	Blocking (typical)			> 75 dB @±1MHz, > 85 dB @±10MHz			
Interface         DIN41650-16 pin (male)           Data speed of RS interface         300 - 19200 bps           Data speed of radio interface         9600 bps           Data speed of radio interface         9600 bps           Data format         Asynchronous RS-232           GENERAL           Operating voltage         + 8 + 30 Vdc           Power consumption         Power save         Standby (mA)           Input voltage (MA)         500 mW         100 mW         5 mW         (mA)         (uA)           8         136         444         244         168         25         55           12         89         296         166         105         19         62           30         40         128         76         47         13         1717           Temperature ranges         - Operating         - 25 °C+55 °C (tests acc. to ETSI standards)         - 40 °C +75 °C (absolute minimum / maximum)           - Storage         - 40 °C +85 °C         - 57 x 125 x 16 mm         - 57 x 125 x 16 mm         - 57 x 125 x 16 mm	DATA MODEM						
Data speed of RS interface $300 - 19200 \text{ bps}$ Data speed of radio interface $9600 \text{ bps}$ Data formatAsynchronous RS-232GENERALOperating voltage+ 8+ $30 \text{ Vdc}$ Power consumptionInput Voltage (V)Operating mode (typical values) $(mA)$ $500 \text{ mW}$ $500 \text{ mW}$ $100 \text{ mW}$ $5 \text{ MW}$ $(mA)$ $62 \text{ min}$ $100 \text{ mW}$ $5 \text{ mW}$ $(mA)$ $62 \text{ min}$ $100 \text{ mW}$ $5 \text{ mW}$ $(mA)$ $62 \text{ min}$ $100 \text{ mW}$ $63 \text{ mW}$ $100 \text{ mW}$ $76 \text{ mW}$ $19 \text{ min}$ $76 \text{ min}$ $13 \text{ min}$ - Operating- $-25 ^{\circ}\text{C} \dots + 55 ^{\circ}\text{C}$ (fests acc. to ETSI standards)- $-40 ^{\circ}\text{C} \dots + 75 ^{\circ}\text{C}$ (absolute minimum / maximum)- $-50 \text{ mage}$ - $-40 ^{\circ}\text{C} \dots + 85 ^{\circ}\text{C}$ Antenna ConnectorSMA, 50 ohm, femaleConstructionAluminium enclosureSize H x W x D $57 \times 125 \times 16 \text{ mm}$ Installation plate	Interface			RS-232			
Data speed of radio interface         9600 bps           Data format         Asynchronous RS-232           GENERAL          Asynchronous RS-232           Operating voltage         + 8+ 30 Vdc            Power consumption           Yoltage (typical values)         Power save         Standby           Input Voltage (M)         Operating mode (typical values)         Yoltage (mA)         Power save         Standby         (mA)         (uA)           8         136         444         244         168         25         55         55           12         89         296         166         105         19         62           30         40         128         76         47         13         1717           Temperature ranges         -         -         -25 °C+55 °C (tests acc. to ETSI standards)         -           - 0 perating         -25 °C+55 °C (absolute minimum / maximum)         -40 °C+85 °C         -           - Athenna Connector         SMA, 50 ohm, female         -         -         -         -           Size H x W x D         57 x 125 x 16 mm         -         -         -         -         -         -           1nstallati	Interface Connector			DIN41650-16 pin (male)			
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	Data format			Asynchronous RS-232			
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Voltage (M)         Receive (mA)         Transmit on different power levels (mA)         Power save (mA)         Standby (uA)           8         136         444         244         168         25         55           12         89         296         166         105         19         62           30         40         128         76         47         13         1717           Temperature ranges         - Operating         -25 °C + 55 °C (tests acc. to ETSI standards)         -40 °C + 75 °C (absolute minimum / maximum)           -         Storage         -40 °C + 85 °C         -40 °C + 85 °C           Antenna Connector         SMA, 50 ohm, female         -         -           Construction         Aluminium enclosure         -         -           Size H x W x D         57 x 125 x 16 mm         130 x 63 x 1 mm         -	Power consumption						
Receive (mA)         Transmit on different power levels (mA)         Power save (mA)         Standby (uA)           8         136         444         244         168         25         55           12         89         296         166         105         19         62           30         40         128         76         47         13         1717           Temperature ranges         - Operating         - 25 °C + 55 °C (tests acc. to ETSI standards)         - 40 °C + 75 °C (absolute minimum / maximum)           - Storage         - 40 °C + 85 °C           Antenna Connector         SMA, 50 ohm, female         - 257 x 125 x 16 mm         - 130 x 63 x 1 mm         - 130 x 63 x 1 mm		Operating	mode (typical v	alues)			
No.         No. <th>voltage (v)</th> <th colspan="2">Receive Transmit on d</th> <th colspan="2">ifferent power levels (mA)</th> <th>Power save</th> <th>Standby</th>	voltage (v)	Receive Transmit on d		ifferent power levels (mA)		Power save	Standby
12     89     296     166     105     19     62       30     40     128     76     47     13     1717       Temperature ranges       - Operating     -25 °C+55 °C (tests acc. to ETSI standards)       - 40 °C+75 °C (tests acc. to ETSI standards)       - Storage       - A0 °C+75 °C (tests acc. to ETSI standards)       - Storage       - A0 °C+85 °C       Antenna Connector     SMA, 50 ohm, female       Construction       Aluminium enclosure       Size H x W x D     57 x 125 x 16 mm       Installation plate     130 x 63 x 1 mm		(mA)	500 mW	100 mW	5 mW	(mA)	(uA)
30     40     128     76     47     13     1717       Temperature ranges       - Operating     -25 °C+55 °C (tests acc. to ETSI standards)       -40 °C+75 °C (absolute minimum / maximum)       - Storage     -40 °C+75 °C (absolute minimum / maximum)       - Storage     -40 °C+75 °C (absolute minimum / maximum)       - Storage     -40 °C+85 °C       Antenna Connector     SMA, 50 ohm, female     -       Construction     Aluminium enclosure     -       Size H x W x D     57 x 125 x 16 mm     -       Installation plate     130 x 63 x 1 mm     -	8	136	444	244	168	25	55
Temperature ranges       -25 °C+55 °C (tests acc. to ETSI standards)         - Operating       -25 °C+75 °C (absolute minimum / maximum)         - Storage       -40 °C+75 °C (absolute minimum / maximum)         - Storage       -40 °C+85 °C         Antenna Connector       SMA, 50 ohm, female         Construction       Aluminium enclosure         Size H x W x D       57 x 125 x 16 mm         Installation plate       130 x 63 x 1 mm	12	89	296	166	105	19	62
- Operating     -25 °C +55 °C (tests acc. to ETSI standards)       -40 °C +75 °C (absolute minimum / maximum)       - Storage     -40 °C +85 °C       Antenna Connector     SMA, 50 ohm, female       Construction     Aluminium enclosure       Size H x W x D     57 x 125 x 16 mm       Installation plate     130 x 63 x 1 mm	30	40	128	76	47	13	1717
- Storage       -40 °C+85 °C       Antenna Connector       SMA, 50 ohm, female       Construction       Aluminium enclosure       Size H x W x D       1nstallation plate       130 x 63 x 1 mm	Temperature ranges						
- Storage-40 °C +85 °CAntenna ConnectorSMA, 50 ohm, femaleConstructionAluminium enclosureSize H x W x D57 x 125 x 16 mmInstallation plate130 x 63 x 1 mm	- Operating			-25 °C+55 °C (tests acc. to ETSI standards)			
Antenna Connector     SMA, 50 ohm, female       Construction     Aluminium enclosure       Size H x W x D     57 x 125 x 16 mm       Installation plate     130 x 63 x 1 mm				-40 °C+75 °C (absolute minimum / maximum)			
ConstructionAluminium enclosureSize H x W x D57 x 125 x 16 mmInstallation plate130 x 63 x 1 mm	- Storage			-40 °C +85 °C			
Size H x W x D         57 x 125 x 16 mm           Installation plate         130 x 63 x 1 mm	Antenna Connector			SMA, 50 ohm, female			
Installation plate 130 x 63 x 1 mm	Construction			Aluminium enclosure			
	Size H x W x D			57 x 125 x 16 mm			
Weight 125 g	Installation plate			130 x 63 x 1 mm			
	Weight			125 g			

Values are subject to change without notice.

### Distributor:

Sartelco® Sistemi srl - via Torri Bianche, 1 20871 Vimercate (MB) - Italy sistemi@sartelco.it - www.sartelco.it