100% Made & Designed in Italy

RADIO MODULES



SENECA

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RADIO MODULES

PRODUCT RANGE

Building on its experience in interface technology, SENECA's proposal of radio modules and radiomodems is one of the key elements of automation and communication systems, particularly in the transport of signals from a few meters to tens of kilometers. The use of radio-frequency equipment makes it possible to reach distances of several kilometers with maximum reliability. It also enables remote control, remote interrogation, and diagnostic functions of field devices through point-to-point, multipoint, broadcasting, and signal repetition connections.
Radio devices comply with the essential requirements of the Radio Equipment Directive (RED) 2014/53/EU and can be freely marketed within the European Union.







HIGHLIGHTS

- NBFM/GFSK modulation
- RS232/RS485 interfaces
- Extended Vac/dc power supply
- Built- in I/O
- Power transmission 25..500 mW
- Supported protocols: Modbus, LoRa
- Operating bandwidth 169 / 869 MHz
- Outdoor and harsh environment versions

ANTENNAS SELECTION

		Cable length	RM169-1	RTURADIO	Z-LINK2-LO
	**A-169DV12**	5m	First choice for RM 169-1 cod. RM169-1-169DV12	First choice for RM 169-1 cod. RTURADIO-169DV12	-
	**A-169DV12-10**	10m	Iternative to A-169DV12	Alternative to A-169DV12	-
	A-169DV14	-	Alternative to A-169DV12	Alternative to A-169DV12	-
	**A-169DV16**	-	Alternative to A-169DV12	Alternative to A-169DV12	-
	**A-169YAGI**	10m	Alternative to A-169DV12	Alternative to A-169DV12	-
	**A-GSM-MG**	3m	-	-	Optional
	**A-STIL-D**	-	-	-	Supplied

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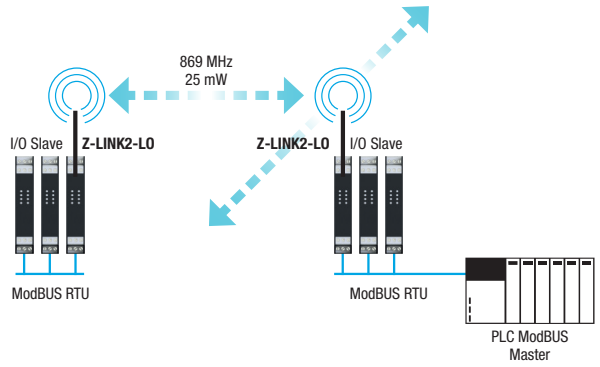
	Z-LINK2	Z-AIR-1	RM169-1	RTURADIO
				
	Wireless LoRa gateway / repeater	**Simplex/half duplex 868 - 870 MHz radiomodem, with built-in antenna**	**169MHz radiomodem, aluminum case, RS232/RS485 interface**	**169MHz radiomodem with built-in I/O 4DI, 2DO, 1 COUNT, RS485**
GENERAL DATA				
Power Supply	10..40 Vdc; 19..28 Vac	9 – 32 Vdc	9 – 32 Vdc	9-32 Vdc with limited power source; 3.3-4.8 Vdc with battery power supply
Power external transducers	-		-	Yes
Power consumption (max)	1 W	30 mA (Rx) / 200 mA (Tx)@12Vdc		30 mA (Rx)/200 mA (Tx) @12VDC
LED Status Indicators	Power supply, bus data transmission, radio data transmission, installation test		On Air, On Data, IO status	On Air, On Data, IO status
Isolation	1.500 Vac	-	-	-
Hot swapping	Sì	No	No	
Bandwidth		868 – 870 MHz	169.400 – 169.475 Mhz	169.400 - 169.475 MHz
Nr. of channels		1@CH50kHz; 3@CH25kHz		1@CH50kHz; 3@CH25kHz; 6@ CH12.5kHz
Channeling		25-50 kHz	12,5-25-50-kHz	12,5-25-50-kHz
Modulation		9K00F1D (@25 kHz channelling); 18K00F1D (@ 50kHz channelling)	9K00F1D o 18K0F1D (NBFM / GFSK)	9K00F1D o 18K0F1D (NBFM / GFSK)
Data rate (radio)		9,6 kbps (@ 25 kHz channelling); 19.200bps(@50kHz channelling)	4.800 bps (@ 12,5 kHz channelling); 9,6 kbps (@ 25 kHz channelling); 19.200bps(@50kHz channelling)	4.800 bps (@ 12,5 kHz channelling); 9,6 kbps (@ 25 kHz channelling); 19.200bps(@50kHz channelling)
Encryption		AES 128 bit	AES 128 bit	AES 128 bit
RTC		-	Built-in on board for custom applications	Built-in on board for custom applications
Antenna		λ/2 integrata	λ/4 - λ/2 o 3 elements Yagi	Short vertical stylus λ/2 / λ/4 / Yagi 3-elements
Dimension	17,5 x 100 x 112 mm	Ø 40 x L 320 mm	90 x 100 x 40 mm	140 x 110 x 50 mm
Operating temperature	-10..+65°C	-30..+60 °C	-30..60°C	-30..60°C
Weight	110 g	750 g	210 g	330 g
Case	PA6, black colour	Fiberglass	Aluminum	Aluminum
Protection degree	IP20	IP65 (for outdoor installation)	IP20	IP20
Mounting	IEC EN60715 35mm DIN rail in upright position	INOX wall mounting bracket (included)	On plate/wall	On plate/wall
Built-in I/O	-	-	Nr.1 Digital Input, 5-24 Vdc o 3-20 Vac. Zinp. 2.2 kΩ (optoisolated) Nr.1 Relay Digital Output, N.O. 24 Vac @ 0,5 A o 32 Vdc @ 1 A	Nr. 4 Digital Inputs, PNP 0-12 Vdc + 1 Counter 10Hz Nr. 2 Relay Digital Output, N.O. 28 Vac @ 0,5 A o 60 Vdc @ 1 A Nr.2 Analog Inputs (4-20 mA) Nr.2 Analog Outputs (4-20 mA)
Connections	Removable 3-way screw terminals, 5mm pitch IDC10 rear connector for DIN rail 46277 SMA standard antenna front connector Micro USB front connector			
Operating mode	Bridge, Remote IO, IO repeater	Point-to-point, Point-to-multipoint, broadcasting, digirepetear; support routing tables for addressing	Point-to-point, Point-to-multipoint, broadcasting, digirepetear; support routing tables for addressing	Point-to-point, point-to-multipoint, broadcasting, Modbus (master/slave), routing table support for addressing
Programming	EASY SETUP, DIP-switch	RADIO SETUP	RADIO SETUP	RADIO SETUP
COMMUNICATION				
Interfaces	N°1 RS232, N° 1 RS485	RS485	RS232 / RS485	RS485
Protocol	ModBUS RTU, LoRa® (Z-LINK2-LO, physical layer) not compatible with Z-LINK1-LO	Transparent to protocol (max 1024 bytes buffer)	Transparent to protocol (max 1024 bytes buffer)	Modbus
Data rate		From 1,2 to 57,6 kbps	From 1,2 to 57,6 kbps	From 2.400 to 57.400 bps
Output power (transmitter)	25 mW	25/150/500 mW depending on operating sub-band	50-150-500 mW	50-150-500 mW
Frequency deviation		±1,8 kHz @12,5 kHz / ±3 kHz @25 kHz	±1.8 kHz@12.5 kHz; ±3.8kHz@25 kHz	±1.8 kHz@12.5 kHz; ±3.8kHz@25 kHz
Output power stability		±1,5 dB		
Receiver (type)	Class 2	Class 2 - LBT e AGILITY	Class 2 - LBT e AGILITY	Class 1 - LBT e AGILITY
Receiver input sensitivity		BER <10-2 <-105dBm@50 kHz; <-107dBm@25 Khz	BER <10-2 <-105dBm@50 kHz; <-107dBm@25 kHz; <-110dBm@12.5 kHz	BER <10-2 <-105dBm@50 kHz; <-107dBm@25 kHz; <-110dBm@12.5 kHz
Coverage	Up to 1,000 m in free field	Up to 7 km in open field with directive antenna in dominant position	Up to 10 km in open field with directive antenna	Up to 10 km in open field with directive antenna
STANDARD				
Approvals	CE	CE	CE	CE
Norms	RED Directive (2014/53/UE), RoHS Directive (2011/65/UE), EN 62368-1+A11+AC, EN 62311, ETSI EN 300220-1 v.3.1.1, ETSI EN 300220-2 v.3.2.1, EN 55032+AC, EN IEC 61000-3-2, EN 61000-3-3+A1, EN 55024+A1, ETSI EN 301489-3 v.2.3.2, ETSI EN 301489-1 v.2.2.3	EN 50401, EN 60950-1, EN 301489-1/3, EN 300220-1/2 v 2.3.1, ERC 70-03, RED Directive 2014/53/EU Directive 1999/5/EC, Directive 2012/19/EU	EN 300 220-1 v2.3.1 , EN 300 220-2 v2.3.1, ED Directive 2014/53/EU	EN 300 220-1 v2.3.1 , EN 300 220-2 v2.3.1, ED Directive 2014/53/EU

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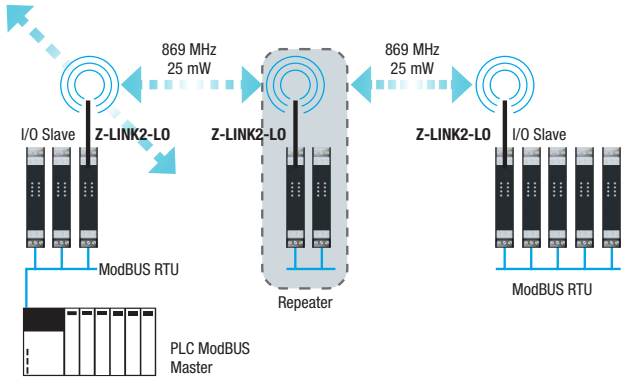
RADIO MODULES

APPLICATION SCHEMES

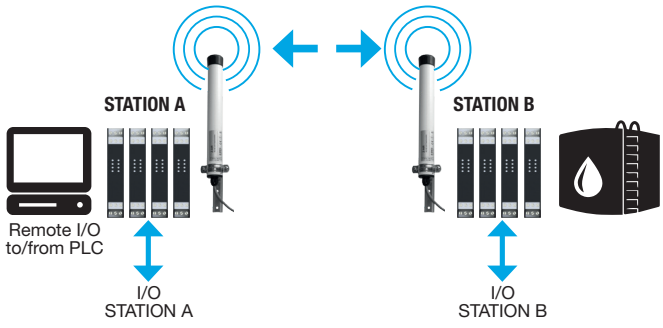
Z-LINK2
BRIDGE MODE (TRANSPARENT WIRELESS CONNECTION)



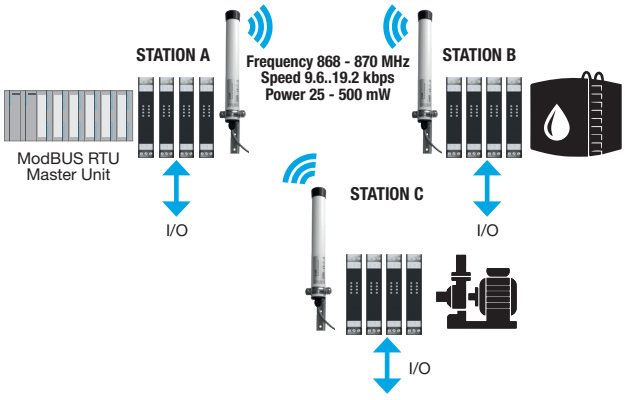
Z-LINK2 REPEATER MODE



Z-AIR-1
POINT-TO-POINT DATA TRANSMISSION (I.E. I/O REPETITION)



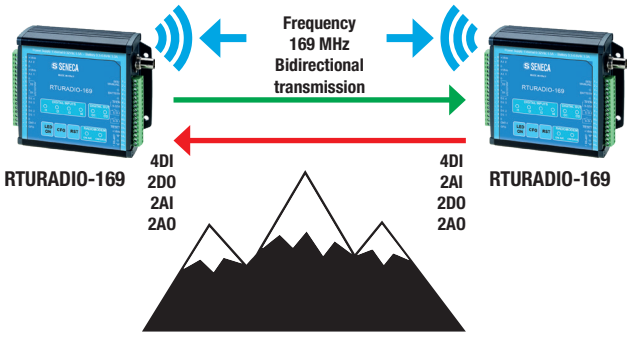
Z-AIR-1 POINT-TO-MULTI-POINT DATA TRANSMISSION



RM169-1 MODBUS I/O EXTENSION – POINT-MULTI-POINT



RTURADIO REMOTE SIGNAL REPETITION



ORDER CODES	
Code	**Description**
Z-LINK2	
Z-LINK2-LO	LoRa® wireless gateway - repeater
CS-RJ10-DB9F	RS232 serial cable (RJ10 / DB9F)
Z-PC-DIN2-17.5	Support for quick mounting on DIN rail 2 slots step 17.5 mm
Z-PC-DINAL2-17.5	Support for quick mounting on DIN rail head + 2 slots pitch 17.5 mm
ANT-LINK1-MG	External magnetic dual band SMA 4 dbi antenna, 2.5 m cable
EASY SETUP 2	Configuration software
Z-AIR-1	
Z-AIR-1	868-870 MHz radiomodem with built-in antenna, IP65 protection rating, RED compliant
S107USB	Portable USB/RS485 serial converter
Z-AIR-1-SETUP	Z-AIR radiomodem configuration software
RM169-1	
RM169-1	Radiomodem 169MHZ, 1DI,1DO, RS485, BNC F connector, RED compliant
RM169-1-169DV12	Radiomodem 169MHZ, 1DI,1DO, RS485, dipole antenna, 5 mt cable, RED compliant
RM169-1-DV12-10	Radiomodem 169MHZ, 1DI,1DO, RS485, dipole antenna, 10 mt cable, RED compliant
RM169-1-169YAGI	Radiomodem 169MHZ 0.2W, 1DI,1DO,1 RS485 + antenna Yagi 3 elements (A-169DVYAGI), 10mt cable
RM169-1-169DV14	Radiomodem 169MHZ, 1DI,1DO, RS485 + ant. Yagi 3 el., RED compliant
A-169DV12	169MHz antenna, lambda/2 vertical dipole, BNC M, 5mt low loss cable, bracket
A-169DV14	169MHz antenna, vertical lambda/4 stylus, BNC M, L=450 mm, no cable
A-169YAGI	169MHz antenna, 3-element Yagi, BNC M, 10 mt low loss cable, bracket
RM169-SETUP	RM169 radiomodem configuration software

ORDER CODES	
Code	**Description**
RTURADIO-169	
RTURADIO-169	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2AO, 2AI, RS485
RTURADIO-169DV14	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2AO, 2AI,RS485
RTURADIO-169DV12	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2AO, 2AI,RS485, dipole antenna, 5 mt cable
RTURADIO-DV12-10	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2AO, 2AI,RS485,dipole antenna, 10 mt cable
RTURADIO-169YAGI	RTU Radio 169MHZ, 4DI, 2 DO, 1 counter, 2AO, 2AI,RS485, ant. Yagi
S117P1	Portable RS232-TTL-RS485/USB serial converter
RTURADIO-SETUP	RTURADIO radiomodem configuration software
ANTENNE	
A-169DV12	169MHz antenna, dip. vertical lambda/2, BNC M, 5 mt cable
A-169DV12-10	169MHz antenna, dip. vertical lambda/2, BNC M, 10 mt cable
A-169DV14	169MHz antenna, stylus vert.lambda/4, BNC M, L=450 mm
A-169DV16	169MHz antenna, ¼ lambda, length 45 cm, + BNC M
A-169YAGI	169MHz antenna, 3-element yagi, BNC M, 10 mt cable

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