

# Radio modules deRFmega128 22M00 | 22M10 Datasheet

- The main component of the deRFmega128-22M00 | 22M10 radio modules is the ATmega128RFA1. Atmel's single chip solution combines an 8-bit AVR microcontroller with a 2.4 GHz transceiver for wireless applications like ZigBee or 6LoWPAN and complies with the IEEE 802.15.4 standard.
- The radio modules are designed as energy-saving end devices for wireless sensor networks. The user can access all important signals via a total of 51 or 55 solderable LGA pads (0.80 mm pitch), positioned at the radio module's bottom side.
- Type 22M00: has an integrated antenna eliminating the need for additional RF design. It minimizes the integration time and BOM costs on customized designs.  
Type 22M10: with its RF pads it enables own external antenna designs or coaxial sockets.
- The integrated transceiver has a receiver sensitivity of -100 dBm as well as an 128-bit AES data encryption unit.
- At 8 MHz MCU clock the radio modules have a very low current consumption of approx. 18 mA in transmit and in receive mode. Current consumption in sleep mode is less than 1 µA. The supply voltage can range from 1.8 VDC up to 3.6 VDC.



deRFmega128-22M00



deRFmega128-22M10

## Technical Data

<b>Dimensions</b>	19.0 x 13.2 x 3.0 mm (22M10) 23.7 x 13.2 x 3.0 mm (22M00)
<b>Operating temperature</b>	- 40 to +85°C
<b>Controls and display elements</b>	None
<b>Power supply</b>	1.8 to 3.6 VDC
<b>Power consumption @ 3.3 VDC</b>	TX: 18 mA @ +3 dBm   RX: 18 mA Sleep: <1 µA
<b>Connections</b>	55 pads (22M10), 51 pads (22M00)
<b>Antenna</b>	RF pads (22M10) Chip ceramic antenna (22M00)
<b>Antenna gain (22M00)</b>	+1.3 dBi (peak)   - 0.5 dBi (average)
<b>Antenna diversity</b>	Yes* (22M10), No (22M00)
<b>External front end connection</b>	Yes (22M10), No (22M00)
<b>Range (22M00)</b>	>200 m (line of sight)
<b>Frequency range</b>	2.4 GHz
<b>Transmit power</b>	+3 dBm
<b>Receiver sensitivity</b>	-100 dBm (250kbit/s)
<b>Communication standard</b>	IEEE 802.15.4
<b>Data rate (gross)</b>	250 kbit/s, 500 kbit/s, 1 Mbit/s, 2 Mbit/s
<b>Microcontroller</b>	ATmega128RFA1
<b>Transceiver</b>	Integrated
<b>Interfaces</b>	JTAG, UART, I2C, ADC, SPI, GPIO
<b>Certification</b>	CE, ETSI, FCC (22M00) CE, ETSI, FCC pending (22M10)

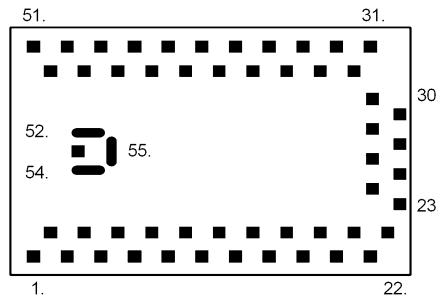
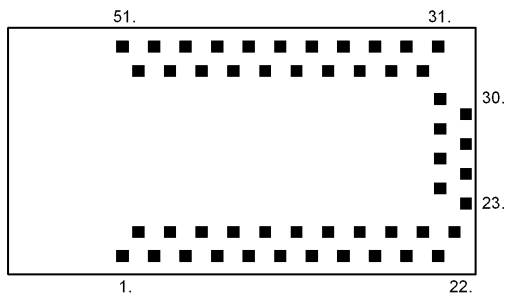
## Technical Data

\* external components required

**Pin Assignment**

1: DGND	15: PD7	29: PE1/TXD0	43: PF3/ADC3/DIG4
2: VCC	16: PD0/SCL	30: PE2/XCK0	44: DGND
3: DGND	17: PD1/SDA	31: DGND	45: PF7/TDI
4: RSTN	18: PD5/XCK1	32: PE3	46: PF6/TDO
5: RSTON	19: PD6	33: PE4	47: PF5/TMS
6: PG0/DIG3	20: PB0	34: PE5	48: PF4/TCK
7: PG1/DIG1	21: PB2/MOSI	35: NC	49: DGND
8: PG2/AMR	22: PB1/SCK	36: NC	50: VCC
9: PG5	23: PB3/MISO	37: PD4	51: DGND
10: PE7	24: PB4	38: AVDD	
11: PE6	25: PB5	39: AREF	52: RFGND*
12: PD3/TXD1	26: PB6	40: PF0/ ADC0	53: RFOUT*
13: PD2/RXD1	27: PB7	41: PF1/ ADC1	54: RFGND*
14: CLKI	28: PE0/RXD0	42: PF2/ADC2/DIG2	55: RFGND*

\* 22M10 only



**Pin Assignment**

For detailed dimensions and notes to be applied please refer to the user manual.

**Scope of delivery**

Radio module deRFmega128-22M00  
Radio module deRFmega128-22M10

**Part number**

BN-034491  
BN-034492

**Development boards**

deRFnode-2TNP2-00N00  
Adapter board deRFmega128-22T00  
Adapter board deRFmega128-22T02  
deRFbreakout Board

BN-031634  
BN-034224  
BN-034476  
BN-032688

**Board options**

Radio module deRFmega128-22M12

BN-035722

**Order Information**

**Options**

More detailed information about all variants can be found in the user manual.

Order online: <https://shop.dresden-elektronik.de>

**Contact**