

Instruction Manual for **AIRRT42FH** radio module



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1. Description AIRRT42FH radio module

1.1 Identification

Equipment	radio module
Radio module	AIRRT42FH
Used frequency band	915-928 MHz
Manufacturer	AUTEC srl Via Pomaroli, 65 I-36030 CALDOGNO (VI)

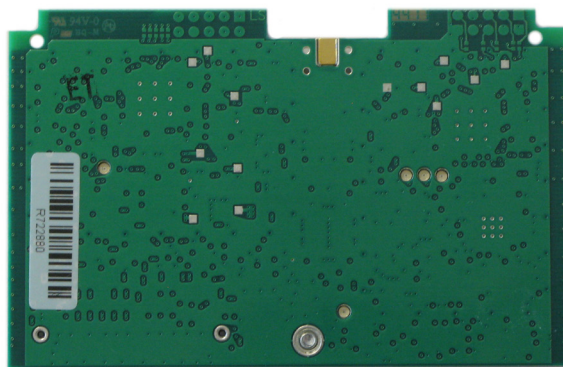
1.2 Technical data

Used frequency band	915 - 928 MHz
Type of modulation	10312 Baud RC-FSK
Channel spacing	50 kHz
Duplex direction	half duplex
Hamming distance	>=9
Probability of non-recognition of error	<4*10 exp-9
Dimensions	(93x60x5,4) mm
Power supply	12Vdc (+/- 10%)
Transportation range temperature	-40°C to +70°C (-40°F to +158°F)
Storage range temperature	-40°C to +70°C (-40°F to +158°F)
Use range temperature	-20°C to +70°C (-4°F to +158°F)

1.3 Photos



Front view



Back view

2. Applications

The AIRRT42FH radio module can be used for the equipment that is installed in machinery . This equipment must be fixed on the machinery.

In addition to the above, this radio module cannot be installed:

- inside equipment that is portable by user
- in equipment that are intended for the use in environments requiring explosion-proof features or in any usage situation that may pose the risk of explosion.
- in equipment for moving, raising and transporting people, if the Machine's characteristics and their related risks and/or the risks related to the use of a Radio Remote Control do not make it possible for the Machine Manufacturer to ensure that all the safety requirements are met. Such requirements must be taken into account when designing and manufacturing the Machine, also bearing in mind that a radio module will be used. The Machine Manufacturer may allow the installation and use of the radio module on such applications under their own responsibility.
- in equipment that create or can create dangerous situations if they stop due to the loss of radio link.
- in equipment that do not allow a risk-free installation of a radio module, due to their functions or features and/or to the risks related to their use.
- if the applicable safety-related laws in the country where the Machine is used, regulations and standards (even local ones), even concerning safety in the workplace, do not allow the use of radio module to control the Machines.

INSTALLATION OF AIRRT42FH RADIO MODULE IN THE ABOVE-MENTIONED EQUIPMENT AND SITUATIONS MAY CAUSE SERIOUS INJURY OR DEATH OR PROPERTY DAMAGE.

3. Functional description

The AIRRT42FH radio module is a transceiver module and it is based on the commercial RFIC (Radio Frequency Integrated Circuit) ADF7021 made by Analog Devices, which encompasses all the circuits and functions needed to build a narrowband, high performance, UHF transceiver for digital signalling. See Analog Devices' website for a complete and up-to-date description of ADF7021.

It can operate on a wide range of frequencies with simple re-programming; this feature has allowed the development of a dual-band radio, capable of communicating on 915-928MHz under north-american FCC part 15.247 as well as on 863-870MHz under european EN300220 radio standards.

To prevent improper or illegal use of the dual-band feature, procedure for choosing of the frequency band will not be disclosed to the final user. It will be managed at Autec production site, or at an authorised technical service site, where trained personnel with adequate instrumentation will be able to choose and verify the correct option for any specific geographical area.

4. Frequencies groups

In the AIRRT42FH radio module there are 4 groups selectable inside the 256 channels available: group A, group B, group C, group D.

4.1 Frequencies group “A”

The channel range of group A is 915.100 - 927.700MHz.

The group contains 64 channels with a minimum space between them of 150kHz.

#	MHz	#	MHz	#	MHz	#	MHz
0	915,100	16	918,300	32	921,500	48	924,700
1	915,350	17	918,550	33	921,750	49	924,950
2	915,550	18	918,750	34	921,950	50	925,150
3	915,700	19	918,900	35	922,100	51	925,300
4	915,900	20	919,100	36	922,300	52	925,500
5	916,150	21	919,350	37	922,550	53	925,750
6	916,350	22	919,550	38	922,750	54	925,950
7	916,500	23	919,700	39	922,900	55	926,100
8	916,700	24	919,900	40	923,100	56	926,300
9	916,950	25	920,150	41	923,350	57	926,550
10	917,150	26	920,350	42	923,550	58	926,750
11	917,300	27	920,500	43	923,700	59	926,900
12	917,500	28	920,700	44	923,900	60	927,100
13	917,750	29	920,950	45	924,150	61	927,350
14	917,950	30	921,150	46	924,350	62	927,550
15	918,100	31	921,300	47	924,500	63	927,700

4.2 Frequencies group “B”

The channel range of group B is 915.200 - 927.800MHz.

The group contains 64 channels with a minimum space between them of 150kHz.

#	MHz	#	MHz	#	MHz	#	MHz
0	915,200	16	918,400	32	921,600	48	924,800
1	915,450	17	918,650	33	921,850	49	925,050
2	915,650	18	918,850	34	922,050	50	925,250
3	915,800	19	919,000	35	922,200	51	925,400
4	916,000	20	919,200	36	922,400	52	925,600
5	916,250	21	919,450	37	922,650	53	925,850
6	916,450	22	919,650	38	922,850	54	926,050
7	916,600	23	919,800	39	923,000	55	926,200
8	916,800	24	920,000	40	923,200	56	926,400
9	917,050	25	920,250	41	923,450	57	926,650
10	917,250	26	920,450	42	923,650	58	926,850
11	917,400	27	920,600	43	923,800	59	927,000
12	917,600	28	920,800	44	924,000	60	927,200
13	917,850	29	921,050	45	924,250	61	927,450
14	918,050	30	921,250	46	924,450	62	927,650
15	918,200	31	921,400	47	924,600	63	927,800

4.3 Frequencies group “C”

The channel range of group C is 915.050 - 927.800MHz.

The group contains 74 channels with a minimum space between them of 100kHz.

#	MHz	#	MHz	#	MHz	#	MHz	#	MHz
0	915,050	16	917,900	32	920,700	48	923,500	64	926,300
1	915,200	17	918,100	33	920,800	49	923,600	65	926,500
2	915,350	18	918,250	34	921,050	50	923,850	66	926,650
3	915,550	19	918,350	35	921,250	51	923,950	67	926,750
4	915,800	20	918,600	36	921,400	52	924,200	68	927,000
5	916,000	21	918,700	37	921,500	53	924,400	69	927,100
6	916,150	22	918,950	38	921,750	54	924,550	70	927,350
7	916,250	23	919,150	39	921,850	55	924,650	71	927,550
8	916,500	24	919,300	40	922,100	56	924,900	72	927,700
9	916,600	25	919,400	41	922,300	57	925,000	73	927,800
10	916,850	26	919,650	42	922,450	58	925,250		
11	917,050	27	919,750	43	922,550	59	925,450		
12	917,200	28	920,000	44	922,800	60	925,600		
13	917,300	29	920,200	45	922,900	61	925,700		
14	917,550	30	920,350	46	923,150	62	925,950		
15	917,650	31	920,450	47	923,350	63	926,050		

4.4 Frequencies group “D”

The channel range of group D is 915.100 - 927.800MHz.

The group contains 85 channels with a minimum space between them of 100kHz.

#	MHz	#	MHz	#	MHz	#	MHz	#	MHz	#	MHz
0	915,100	16	917,450	32	919,850	48	922,300	64	924,650	80	927,250
1	915,200	17	917,600	33	920,050	49	922,400	65	924,800	81	927,350
2	915,350	18	917,800	34	920,150	50	922,550	66	925,000	82	927,500
3	915,550	19	917,900	35	920,300	51	922,750	67	925,100	83	927,700
4	915,650	20	918,050	36	920,500	52	922,850	68	925,250	84	927,800
5	915,800	21	918,250	37	920,600	53	923,000	69	925,450		
6	916,000	22	918,350	38	920,750	54	923,200	70	925,550		
7	916,100	23	918,500	39	920,950	55	923,300	71	925,700		
8	916,250	24	918,700	40	921,050	56	923,450	72	925,900		
9	916,450	25	918,800	41	921,200	57	923,650	73	926,000		
10	916,550	26	918,950	42	921,400	58	923,750	74	926,150		
11	916,700	27	919,150	43	921,500	59	923,900	75	926,350		
12	916,900	28	919,250	44	921,650	60	924,100	76	926,600		
13	917,000	29	919,400	45	921,850	61	924,200	77	926,800		
14	917,150	30	919,600	46	921,950	62	924,350	78	926,900		
15	917,350	31	919,700	47	922,100	63	924,550	79	927,050		

5. Antenna

This radio module has been approved to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated.

Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antenna	external dedicated antenna provided by Autec
Antenna Type	quater wavelength monopole
Antenna gain	$\leq 2\text{dBi}$
Antenna Impedance	50 ohm

Autec allows you to use only the dedicated antenna supplied either with the raio module or as original spare part. The use of any other type of antenna is prohibited and will invalidate tdhe warranty.

Place the dedicated antenna in a position that ensures a minimum separation distance of 20cm from all the people that can be in the working area.

6. Approval for US

6.1 FCC

This radio module 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 undesirable operation.

Any changes or modifications not expressly approved by Autec could void the user's authority to operate the equipment.

The FCC ID for this radio module is OQA-AIRRT42FH.

6.2 FCC End Product Labeling

The AIRRT42FH module is labeled with its own FCC ID. If the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module.

In that case, the final end product must be labeled in a visible area with the following:

- "Contains Transmitter Module FCC ID: OQA-AIRRT42FH"
- "Contains FCC ID: OQA-AIRRT42FH"

7. Approval for Canada

7.1 ISED

This radio transmitter has been approved by Industry Canada to operate with the external dedicated antenna. Other antenna types are strictly prohibited for use with this device.

This device complies with Industry Canada's license-exempt RSS standards. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

The IC for this radio module is 9061A-AIRRT42FH.

7.2 ISED

Cet émetteur radio a reçu l'approbation d'Industrie Canada pour une exploitation avec l'antenne puce incorporée. Il est strictement interdit d'utiliser d'autres types d'antenne avec cet appareil.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage; et
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible de provoquer un fonctionnement non désiré de l'appareil.

Le IC pour ce module radio est 9061A-AIRRT42FH.

7.3 ISED End Product Labeling

The AIRRT42FH module is labeled with its own IC ID. If the IC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module.

In that case, the final end product must be labeled in a visible area with the following:

- "Contains Transmitter Module IC: 9061A-AIRRT42FH."
- "Contains IC: 9061A-AIRRT42FH".

7.4 ISED Étiquetage du produit final

L'étiquette du Module AIRRT42FH porte son propre identifiant IC. Si l'identifiant IC n'est pas visible quand le module est installé à l'intérieur d'un autre appareil, alors l'extérieur de l'appareil dans lequel le module est installé doit aussi porter une étiquette faisant référence au module qu'il contient.

Dans ce cas, une étiquette comportant les informations suivantes doit être apposée sur une partie visible du produit final.

- "Contient le module émetteur IC: 5123A-WT41U"
- "Contient IC : 5123A-WT41U".

