

Wireless Module
TM-24-FS1
Specification

The fourth edition

Tele Power Inc.
3-18-37 WAVE BLDG 2F, MINAMI-IKEBUKURO
TOKYO 171-0022 JAPAN
Tel: 03-6907-8511
Fax: 03-6907-8512



Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device 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 undesired operation.

This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Asking

- Please read the manual before using our product.
- Please guard notes in the text.
- Please keep this book importantly to take it out at once when there is an uncertain point in use.
- Please do not use this product without reading the manual.
- This product is a precision instrument. Please drop and handle it politely so as not to add the impact.

Handling and directions

When this product is used, the following operations : with the cause of the troubles of a fire and the electric shock, etc.

It doesn't become, and never do, please.

- Use by resolution, remodeling, and cover detaching.
- Use in state that water and foreign body adhere.
- Use and connection of non-standard product to this product.
- Installation in place where a lot of waters, moistures, dust, and lamp soot exist and place where direct sunshine strikes.

Please stop energizing the product, and contact our company when water and the foreign body adhere by any chance.

When not using it

Please avoid and keep the place where a lot of moistures, dust, and lamp soot exist and the place that becomes the high temperature and a low temperature.

Exemption matters

Our company doesn't assume the responsibility in the guaranteed term as follows when giving it at all either.

- When trouble is caused by the act caused by a fire, the earthquake, and the third party and other accidents in this product.
- By use under an abnormal condition besides deliberate of the customer and the fault, the misuse, and abuse
When trouble is caused in this product.
- When this product is remodeled, and repaired by the customer.
- When it originates in the use of this product and damage is caused.
- When this product is resold, and transferred to the third party.
- Our company doesn't consent to this product and it when resolving it.

Contents

1. System feature	4
2. Outline of system	5
3. Main body specification	6
4. External I/O list	7
5. Externals chart	8

1. System feature

•The license by the customer need not be applied for by acquiring the technological, standard agreement proof.

The thing used is possible.

•Because it equips it with the connector for an external antenna

An external antenna such as the patch antennas can be used.

•Because the antenna, the RF circuit, and MPU, etc. are installed onboard

It is possible to communicate with the module unit.

•Because the enhancing connector is equipped with serial communications, AD input, and general purpose IO

An easy measurement/control with the module unit is possible.

2.Outline of system

This product is composed of the connector, the control part, and the chip antenna for enhancing.

It is the one that chiefly connects with an external substrate and becomes the core of applied substrate.

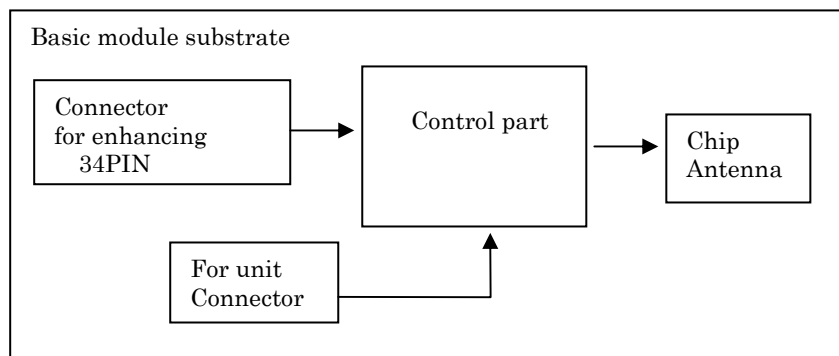


Figure1-1Basic module block chart

3.Main body specification

Model	TM-24-FS1
MPU	MC9S08GT60
Externals	20×38mm
Power supply	2.6V~3.4V 0.2A
Transmitting power	-16.6dBm ~ +3.6dBm
Transmission frequency	2400 ~ 2483.5MHz
Reception sensitivity	-92dBm
Communication rate	20 ~ 250kbps
Communication rate	ARIB STD-T66 conforming
Antenna	Internal organs chip antenna
Technological, standard agreement proof	It has acquired it.

Connector 6pin 1mm pitch molex:53047-0610 for IF-1 unit

Connector 36pin Hirose for IF-2 enhancing: DF12-36DS

- It is possible to correspond to ZigBee standard/IEEE 802.15.4 standard by software.



Figure 2-1 TM-24-FS1 photograph

4.External I/O list

(1)CN1

Connector for IF-1 unit	
PIN number	Signal name
1	3.3V
2	GND
3	GND
4	PORT A7
5	PORT B7
6	RXD2

(2)CN2

Connector for IF-2 enhancing			
PIN number	Signal name	PIN number	Signal name
1	3.3V	2	GND
3	3.3V	4	PTA7
5	3.3V	6	PTA6
7	GND	8	PTA5
9	TXD1	10	PTA4
11	RXD1	12	PTA3
13	TXD2	14	PTA2
15	RXD2	16	PTA1
17	/RESET	18	PTA0
19	MS	20	GND
21	GND	22	PTB7
23	PTC7	24	PTB6
25	PTD4	26	PTB5
27	PTD3	28	PTB4
29	PTD2	30	PTB3
31	PTD1	32	PTB2
33	PTD0	34	PTB1
35	GND	36	PTB0

5.Externals chart

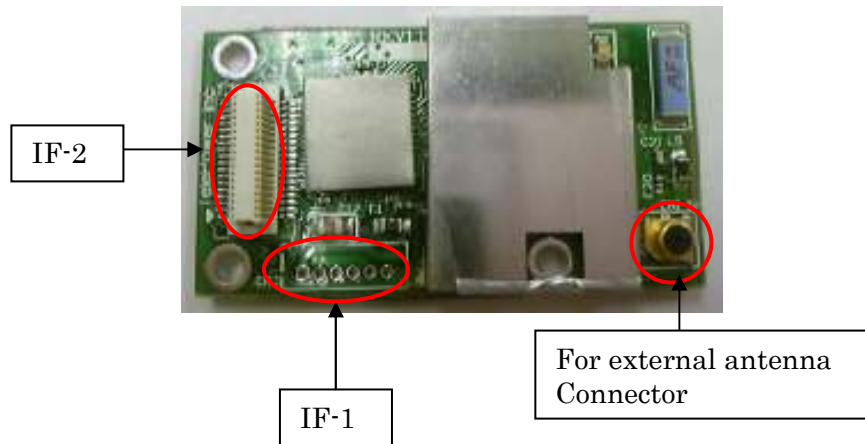


Figure 5-1 connector arrangement chart

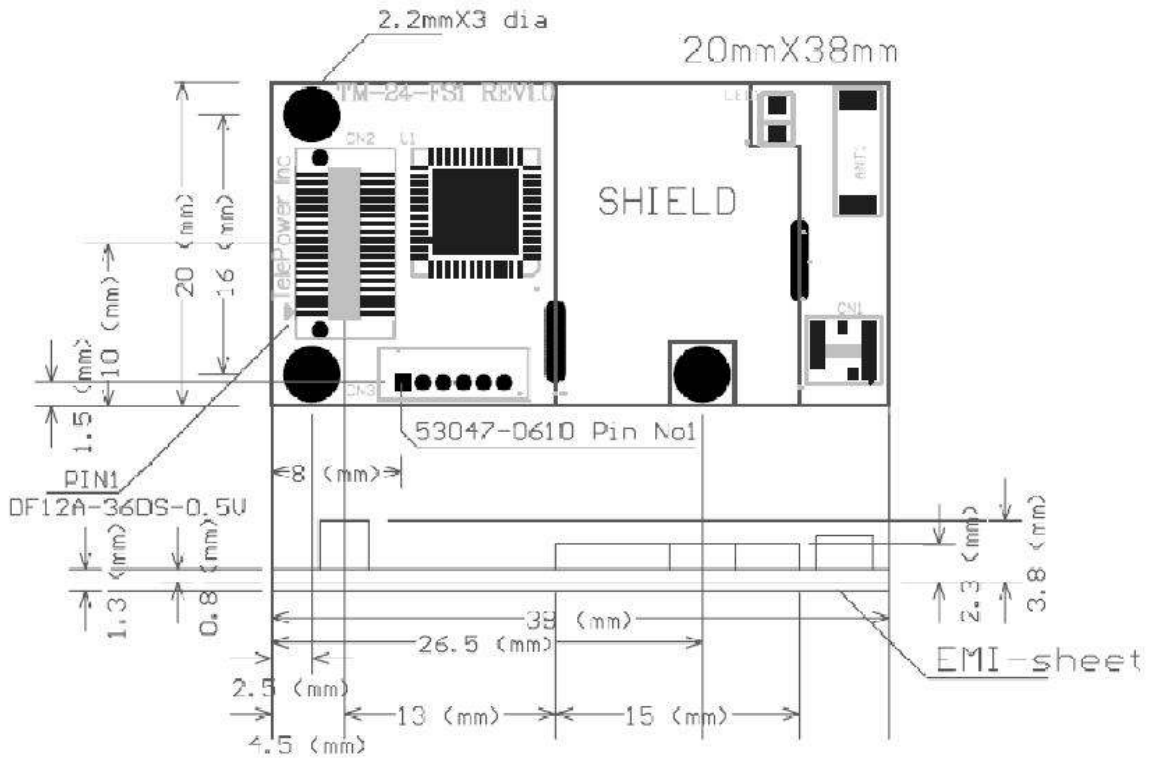


Figure 5-2 substrate dimensional drawing