

October 20, 2010

**Specifications
for
GPS Receiver**

Model: GT-80

Furuno Electric Co., Ltd.
System Products Division

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1. OUTLINE

1.1 MODEL NAME

GT-80 _ _F

The suffix (_ _) represents followings:

GT-80①②F

① : Hardware revision in alphabet : _, A, B, (_ means blank)

② : Software version in numeric : _, 1, 2, (_ means blank)

F : Flash ROM version

1.2 LABEL/LOT NUMBER

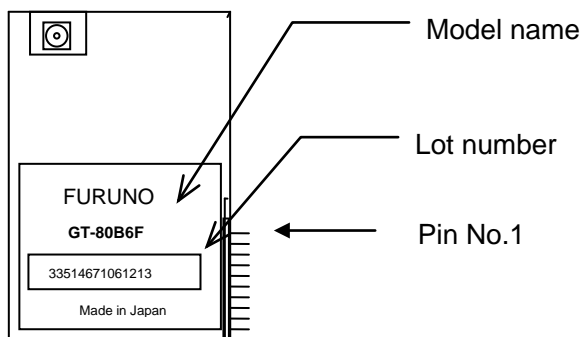
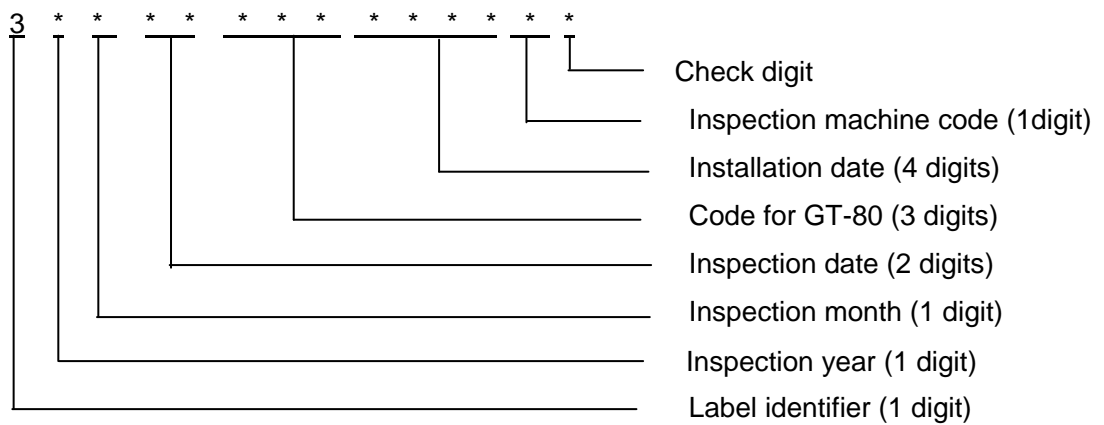


Figure 1.2.1 LOT NUMBER



2. SPECIFICATION

2-1. OVERALL SPECIFICATIONS

A. General Specifications

#	ITEM	SPECIFICATION	NOTE
1	Receiving Frequency	1575.42 MHz	
2	Position-fixing System	All-in-view SPS position-fixing (DGPS RTCM-SC104)	
3	WAAS Support	1 channel	Uses DGPS and the function to deselect unhealthy satellites.
4	GPS-fix Data Renewal Rate	1 sec	
5	1PPS Output	UTC-synchronized.	
6	Max. Number of Satellites Tracked	GPS12ch + SBAS 2ch	Out of SBAS 2ch, only one channel decodes messages.
7	Number of Channels	16	
8	Number of Parallel Searches	16	
9	Protocol	NMEA like	

B. Acquisition/Tracking Specifications

#	ITEM	MIN	TYP	MAX	UNIT	CONDITIONS	NOTE
1	Initial acquisition time (Hot start)	-	7.6	-	sec	Open sky	Based on averaged data for 24 hours measured in Nishinomiya, Japan in November 2003
2	Initial acquisition time (Warm start)	-	34.1	-	sec	- DITTO -	
3	Initial acquisition time (Cold start)	-	46.0	-	sec	- DITTO -	
4	Re-acquisition Time	-	-	2	sec	-127 dBm or stronger	
5	Horizontal accuracy (2 drms)	-	5.0 (2σ)	-	m		Based on averaged data for 24 hours measured in Nishinomiya, Japan in November 2003
6	Vertical accuracy (2 drms)	-	7.3 (2σ)	-	m	- DITTO -	
7	Trackable acceleration	1.2	-	-	G	- DITTO -	
8	Acquisition sensitivity	-	-130	-	dBm		
9	Tracking sensitivity	-	-138	-	dBm	Fixed position	
10	Time Accuracy (2σ)	-	24.9	-	ns	- DITTO -	Based on averaged data for 24 hours measured in Nishinomiya, Japan in November 2003

2-2. ELECTRICAL SPECIFICATIONS

2.2.1. Antenna connector

2.2.1.1 Pin assignment

Receptacle : S.FL2-R-SMT (By Hirose)

Matching connector : S.FL2-LP (By Hirose)

Pin	Signal	Function
Center contact	SIG	<ul style="list-style-type: none"> ● Input of receiving signal ● Signal is super-imposed (biased) on this DC voltage.
Outer contact	GND	Antenna ground

2.2.1.2. Absolute Maximum Rating

Signal input power : -12dBm (max) at Temperature Ta=-30 to +80°C

2.2.1.3. Rating

SIGNAL	REQUIRED ITEM	CONDITION	MIN	TYP	MAX	UNIT
Antenna preamplifier power supply	Voltage	VANT=5.0V i=20mA	4.9	-	-	V
		VANT=5.0V i=40mA	4.8	-	-	V
	Over-current detection	VANT=4.5 to 5.5V	100		300	mA

SIGNAL	REQUIRED ITEM	CONDITION	MIN	TYP	MAX	UNIT	NOTE
ANTSIG	Center frequency		-	1.57542	-	GHz	
	Impedance		-	50	-	Ω	
	Receiving sensitivity	At fixed position using matching antenna at Ta=25°C	-138				dBm

2.2.1.4 Antenna Pre-amplifier Output

Equivalent circuit diagram for the antenna-connection detector circuit is given below.

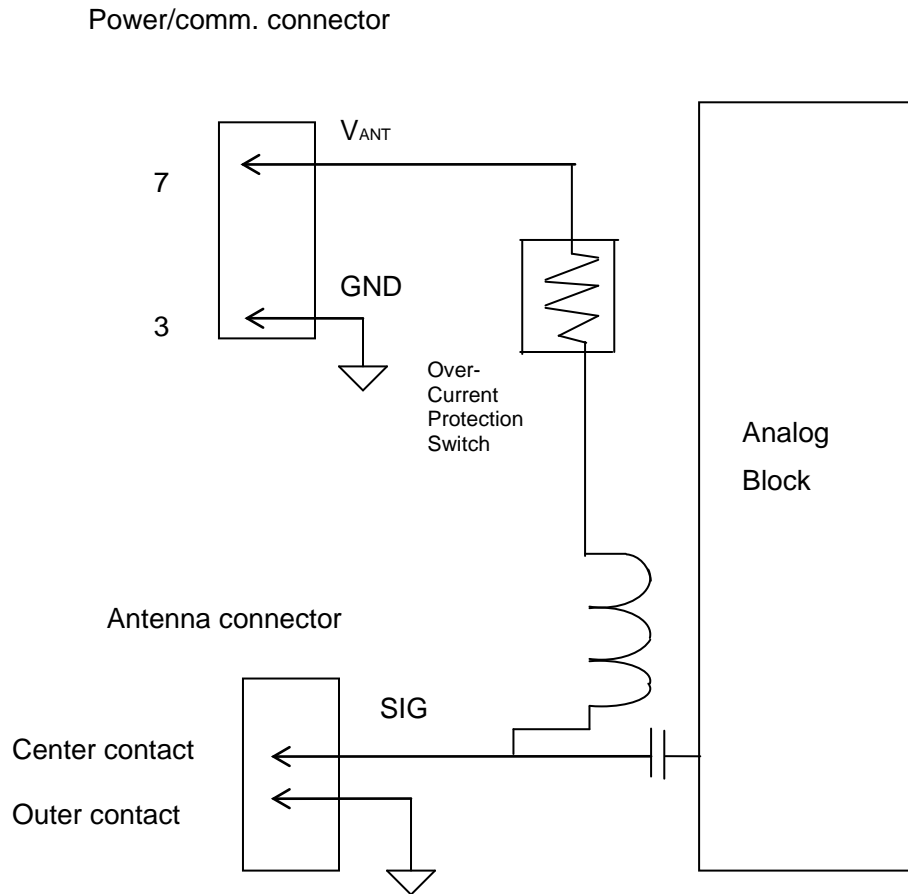


Fig. 2.2.1.4 Antenna Interface Equivalent Circuit

2.2.1.5. Antenna Specification Requirements

Table 2.3.1.5 ANTENNA SPECIFICATION

ITEM	REQUIREMENTS
Impedance	50 ohms
NF	<3 dB (Typically 2dB)
Gain	15 to 35 dB (including cable loss)

2.2.2 POWER/COMMUNICATION CONNECTOR

2.2.2.1 PIN ASSIGNMENT

* Receptacle type 53254-0910 (By Molex Japan Co., LTD.)

* Matching connector type 51065-0900 (By Molex Japan Co., LTD.)

PIN	SIGNAL	Input/Output	FUNCTION
1	RD1	I	Asynchronous Data input (GPS command input)
2	TD1	O	Asynchronous Data output (GPS data output)
3	GND	-	Ground
4	VCC	-	5VDC Power supply
5	VBAT	-	Back-up power supply (*)
6	1 PPS	O	1 pulse/sec output
7	VANT	-	Antenna pre. amp. power supply
8	RD2	I	Asynchronous Data input (Reserved)
9	TD2	O	Asynchronous Data output (Reserved)

(*) No internal backup power supply is available.

2.3.2.2 ABSOLUTE MAXIMAM RATING

ITEM	MAXIMUM RATING	UNIT
RD input voltage	-0.3 to +6.5	V
TD1, TD2 output voltage	-0.3 to +6.5	V
TD1, TD2 output current (*)	±20	mA
1 pps output voltage	-0.3 to +6.5	V
1 pps output current (*)	±20	mA
VCC input voltage	-0.3 to +6.5	V
VBAT input voltage	-0.3 to +6.5	V
VANT input voltage *	-0.3 to +6.5	V

(at -30°C to +8°C)

(*) The current into the GT-80 should be (+).

2.2.2.3 RATING

(At surrounding temperature of -30°C to +80°C)

ITEM			MIN.	TYPICAL	MAX.	UNIT	REMARKS
TD1, TD2 (OUTPUT) ^{*2}	H	VOLTAGE	VCC-1.0		VCC	V	@-0.15mA ^{*1}
	L	VOLTAGE	0		0.4	V	@4.0mA
RD1, RD2 ^{*3} (INPUT)	H	VOLTAGE	2.6		VCC	V	
		CURRENT ^{*1}			±0.1	mA	@VCC
	L	VOLTAGE	0		0.8	V	
1 PPS ^{*2} (OUTPUT)	H	VOLTAGE	3.8			V	@-4.0mA ^{*1}
	L	VOLTAGE			0.5	V	@4.0mA
	DUTY			50			%
VCC	VOLTAGE		4.5	5	5.5	V	
	CURRENT ^{*1}				90	mA	@5.0V, 25°C
VBAT	VOLTAGE		2.5		5.5	V	
	CURRENT ^{*1}		-	3.0	5	μA	@VBAT=3.0V VCC=5.0V 25°C,
	CURRENT ^{*1}		-	5.5	18	μA	@VBAT=3.0V VCC=0V 25°C,
VANT	VOLTAGE		4.5	5	13	V	

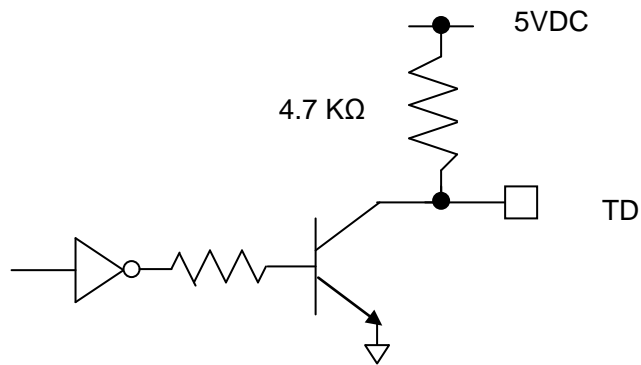
*1 The current into the GT-80 should be (+).

*2 Open Collector Output, Pulled up VCC through 4.7KΩ(±5%)Register.

*3 Schmidt Trigger Input, Pulled up to VCC through 4.7KΩ(±5%)Register.

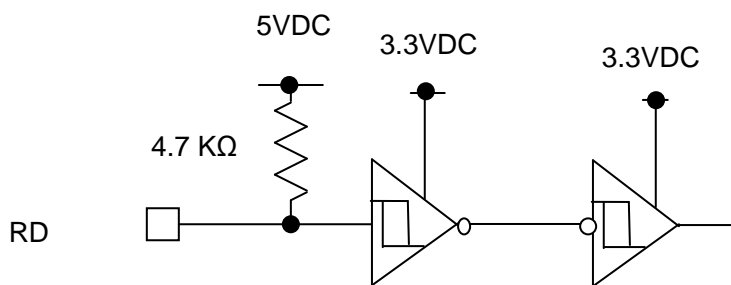
2.2.2.4 Equivalent Circuit

a) TD Output Equivalent Circuit



Transistor is used for transmission IC

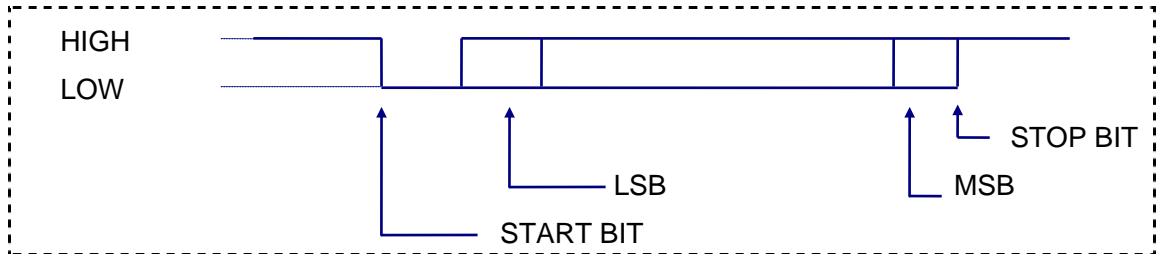
b) RD Input Equivalent Circuit



#SN74LV14APW (Schmidt-Trigger) is used for reception IC

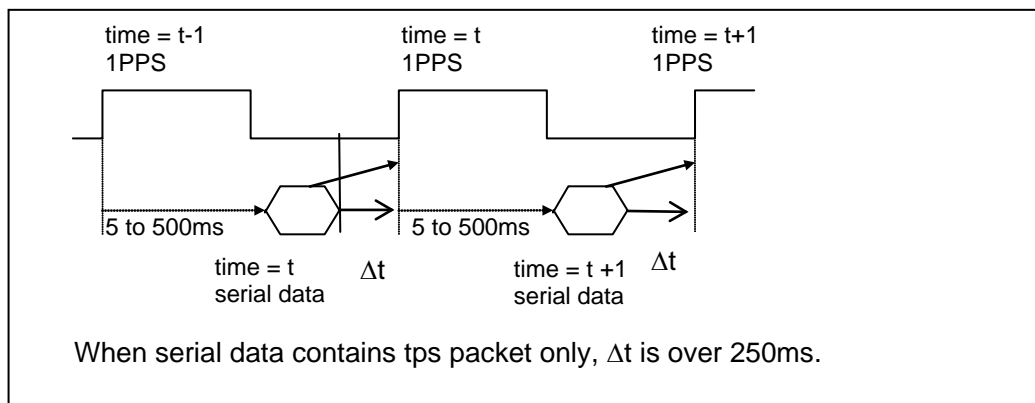
2.2.2.5 COMMUNICATION SPECIFICATION

2.2.2.5.1 TD, RD SIGNAL LOGIC



2.2.2.5.2 PPS TIMING

1 PPS is output synchronized with UTC during when positioning is obtained.
 Rising edge of 1 pps is synchronized with UTC one second.



2.2.3. ENVIRONMENTAL CONDITIONS

ITEM		UNIT	REMARKS
OPERATING TEMPERATURE	-30 to +80	°C	
STORAGE TEMPERATURE	-40 to +85	°C	
HUMIDITY	90	%RH	@ +60°C No condensation
	95		@ +55°C No condensation
VIBRATION	43.1	m/s ²	@ 10 to 200 Hz