1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

OPERATION
MANUAL

New Wetness Sensing System RX69W1
For monitoring purpose in USA

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

By Nippon Kodoshi Corporation
September 4,1998

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Table of Contents

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

FCC PART 15 CLASS B MANUAL
DESCRIPTION

NOTICE

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 instruction, 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

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

connected.

-Consult the dealer or an experienced radio/TV technician for help.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The device is complies with part 15 of the FCC rules.
Operation is subject to the conditions that this device
does not cause harmful interference.

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.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

[1] Wetness Sensing System

(1)   Overview

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)
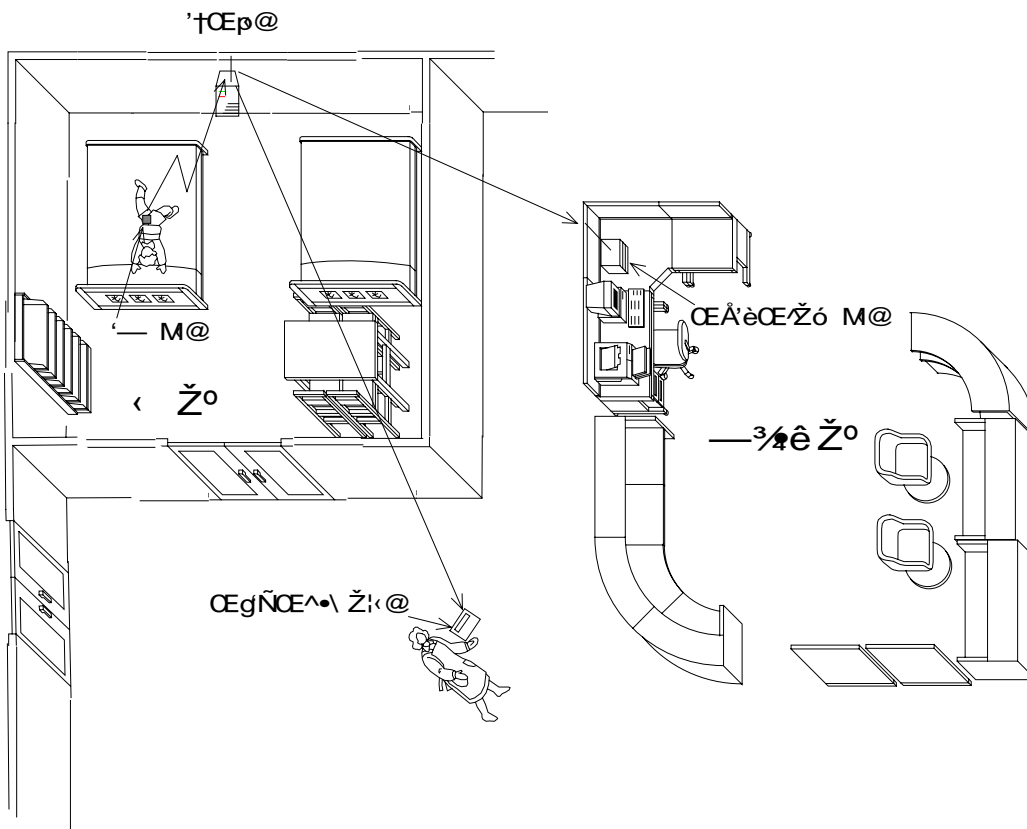
3.RS-232-C Connector

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

    This Wetness Sensing System is comprised with transmitters, transponders and receivers, which inform caregivers of sensing moisture in a diaper. Once wetness sensor incorporated into diaper is aware of moisture, the transmitter including sensor puts out the   signal   to   the   transponder   and   then   to   the   receiver.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Specifications

TRANSMITTER

Frequency	318.125M, 318.500M, 318.875M, 319.250MHz
RF Output Power	2400V/m (67.6dBm) at 3 m
Frequency stability	0.001
Identification	Area ID199, Individual ID 199
Modulation system	Variable reactance frequency modulation
Maximum Deviation	4 kHz
Power Source	3V (lithium battery CR2032)
Battery Life	about 3 months (dropped to 2.5V)

TRANSPONDER

Receive system	Double-conversion superheterodyne
Receiving Frequency 1	318.125M, 318.500M, 318.875M, 319.250MHz
Receiving Frequency 2	314.500M~314.725MHz(25kHz step)
Sensitivity	-113dBm for 12dB SINAD
Intermediate frequencies	1st 21.7MHz
	2nd 450kHz

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Transmitting Frequency   314.500M~314.725MHz(25kHz step)
RF output power   2250V/m (at 3 m)
Frequency stability   0.001
Modulation system   Variable reactance frequency modulation
Maximum Deviation   4 kHz
Power supply requirement   DC,AC9V 0.1A AC adaptor
Battery Life   about 12 hours

RECEIVER

Receive system   Double-conversion superheterodyne
Receiving Frequency 1   318.125M, 318.500M, 318.875M, 319.250MHz
Receiving Frequency 2   314.500M~314.725MHz(25kHz step)
Sensitivity   -113dBm for 12dB SINAD
Intermediate frequencies 1st 21.7MHz
                            2nd 450kHz
Frequency stability   0.001
Power supply requirement   DC,AC9V 0.3A AC adaptor
Battery Life   about 5 hours

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Location and Function of Controls

Transmitter Introduction

(1)overview
    Sensing devise (sensor) is connected to transmitter. Once sensing devise senses moisture, transmitter will send signal to transponder.

()Each Designation

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2. Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3. RS-232-C Connector

Sensor Introduction

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Transmitter and Sensor Operating

·Open-Close Operation

·Method of Battery desorption and Sensor Attachment

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Sensor Installation to Disposal Diaper

·After attach the sensor, put the cover on a diaper and then fix the transmitter.

Transponder Introduction

Overview

Transponder receives signal from Transmitter and then transmits to Receiver.
It transmits the signal received from Transmitter to another Transponder.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Each Designation

Directions

The transponder is located in the signal receivable area from Transmitter.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Receiver Introduction

1. Overview

When the receiver receives signal from the transponder, it informs caregivers of received signal information (e.g. sense moisture or battery shutoff) by alarm of melodies and display.

Each   Designation

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

a.
        Display Receiver Battery Shutoff
        When the battery of receiver run down, LED will
flash.

Information Display

        When receiving the signal of sensing moisture in a
diaper, it displays Area ID in right two-digit and
transmitter ID in left two-digit. (NOTE: In case of sensing
multiple IDs, it displays those IDs in turn.)

    (Example of Display 1)

    Example of Display 2
    When flashing "Warning LED for Battery Shutoff", push "Acknowledge
    button for Transmitter Battery Shutoff", is displayed.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

7Receiver Operation

Turning on power, current receiving channel for the transmitter is displayed in 7 segment Display with red LED and current receiving channel for the transponder in 7 segment display with green LED, like for 5sec, after that it will clear the ID.
When the transmitter senses moisture in a diaper, the receiver displays Area ID and Transmitter ID and puts melodies on.

Once Transmitter IDs are received, it continues displaying these IDs till the signal from the transmitter is cut off for 30sec. Those IDs will be cleared automatically when the signal is aborted (i.e. it displays those IDs till the diaper attached the sensor is changed.).

Volume Control SW

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2. Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3. RS-232-C Connector

It changes Volume of melodies as four stage (large, middle, small and OFF).

TXBATTERYSWLED

Square red LED flashes in Transmitter Battery Shutoff.
Transmitter ID which runs out is displayed during pushing this SW. (In case of detecting multiple IDs, it displays those IDs in turn.)

BT CLEAR SW

Battery Shutoff LED will be lighted out and its IDs will be cleared after checking which ID is detected by pushing TX Battery SW and changing the battery.
NOTE: Be sure to clear detected IDs after changing the battery

Power Supply

AC adapter more than 0.3A, 9V(DC, AC) is available.
In electricity failure, this system can work about for 5 hours by using built-in rechargeable battery.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2. Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3. RS-232-C Connector

3Inside Views, Dip-SW Setting

Transmitter Inside View

Fig.3-1 TRANSMITTER

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Transmitter Dip-SW Setting

SW1MODESELECT

TESTMODESELECTIONSW1-1
SW1-1 is ON when turning on power, it will enter into Test Mode.
It will be transfered data continuously in the Test Mode. To stop the continuous transfer
is turning SW1-1 off in Test Mode.
Turning on power again with SW1-1 OF enters into Normal Mode.

Sensitivity LIMIT Setting MODE (SW1-4 ON,SW1-1 ON)
To change the sensitivity of detection is switching both of SW1-4 and SW1-1 to the on
position.

SENSOR TYPE SELECTIONSW1-2

SW1-2	SENSOR TYPE
OFF	Capacitortype Sensor

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

ON	Resistortype Sensor

Capacitor Sensitivity SelectionSW1-3,4

SW1-3	Capacitor Sensitivity	Resistor Sensitivity
OFF	High Sensitivity about 3.5pF	High Sensitivity about 510k
ON	Low Sensitivity about 5.5pF	Low Sensitivity about 300k

Note: The sensitivity of detection can be changed in Setting Mode.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Transponder Inside View

Fig.3-2 TRANPONDER

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Transponder Dip-SW Setting

SWMODESELECT

TESTMODESELECTSW3-4
SW1-1 is ON when turning on power, it will enter into Test Mode.
Data will be received continuously in the Test Mode. When SW3-1 is OFF, it receives data at Transmitter receiving frequency. When SW3-1 is ON, it receives data at Transponder receiving frequency. In that case, if RSSI is ON green LED will be flashed, if N-DET is ON red LED will be flashed.
In Test Mode, changing SW3-4 into OFF will be in Transfer Mode. At that time, if SW3-1 is OFF it transfers only carrier wave, if ON it transfers ID continuously.
Restart with SW3-4 OFF, it returns to normal mode.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Transponder ID Selection SW3-13

SW3-1	SW3-2	SW3-3	ID
OFF	OFF	OFF	1
ON	OFF	OFF	2
OFF	**ON**	OFF	3
ON	**ON**	OFF	4
OFF	OFF	**ON**	5
ON	OFF	**ON**	6
OFF	**ON**	**ON**	7
ON	**ON**	**ON**	8

NOTE: In case of connecting multiple transponders, be sure not to set same Transponder IDs.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Receiving Channel Selection SW2
Receiving channel means receiving frequency when receiving the signal from Transmitter.

SW2	Receiving CH	Receiving Frequency
0	1 CH	318.125MHz
1	2 CH	318.500MHz
2	3 CH	318.875MHz
3	4 CH	319.250MHz

NOTE: It is impossible to receive the signal if the transmission wave has no accordance with receiving wave.

Transponder Channel Selection SW1
Transponder Channel means identical frequency at which multiple Transponders transfers and receives mutually.

SW1	Transponder CH	Transponder Frequency

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

0	1 CH	314.500MHz
1	2 CH	314.525MHz
2	3 CH	314.550MHz
3	4 CH	314.575MHz
4	5 CH	314.600MHz
5	6 CH	314.625MHz
6	7 CH	314.650MHz
7	8 CH	314.675MHz
8	9 CH	314.700MHz
9	10 CH	314.725MHz

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Receiver Inside View

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Receiver Test Mode 1

TESTMODESELECT

When Power SW is ON in pushing BT CLEAR SW on Front Panel, it will be Test MODE 1.
First, when BT CLEAR SW is pushing is displayed in 7segment LED for 1sec and then the LED of RX, COM and TXBATTERY is flashed sequentially.

Second, it displays the receiving channel of transmitter and transponder which are in memory, like 0102Transponder = 1CH, Transmitter = 2CH.

When BT CLEAR SW is released, it will be in Transponder receiving acknowledge Mode. Transponder receiving channel is displayed in left side LED with green and RSSI Levelradio field intensity is displayed in right side LED with red.

When RSSI is ONRSSI40, RXLED is flashed with green and when N-DET is ON, COMLED is flashed with red.

To change the Transponder receiving channel is switching over SW3 of Rotary Dip SW in the Main Board to target channel, and then push the TX BATTERY SW in the Front Panel to memory the setting.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Transponder Channel Select SW3
Transponder Channel means receiving frequency when receiving the signal from Transponder.

SW1	Transponder CH	Transponder Frequency
0	1 CH	314.500MHz
1	2 CH	314.525MHz
2	3 CH	314.550MHz
3	4 CH	314.575MHz
4	5 CH	314.600MHz
5	6 CH	314.625MHz
6	7 CH	314.650MHz
7	8 CH	314.675MHz
8	9 CH	314.700MHz
9	10 CH	314.725MHz

After pushing BT CLEAR SW in Front panel again, it will be in Transmitter receiving acknowledging Mode.   Current Transponder receiving channel is displayed in left side

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

LED with green and RSSI Levelradio field intensity is displayed in right side LED with red.

When RSSI is ONRSSI40, RXLED is flashed with green and when N-DET is ON, COMLED is flashed with red.

To change the Transponder receiving channel is switching over SW3 of Rotary Dip SW in the Main Board to target channel, and then push the TX BATTERY SW in the Front Panel to memory the setting.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Transmitter Receiving Channel Select SW3
Receiving channel means receiving frequency when receiving the signal from Transmitter.

SW3	Receiving CH	Transmitter Receiving Frequency
0	1 CH	318.125MHz
1	2 CH	318.500MHz
2	3 CH	318.875MHz
3	4 CH	319.250MHz

NOTE: It is impossible to receive the signal if the transmission wave has no accordance with the receiving wave.

It returns to normal mode by restart.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

Receiver Test Mode 2 (Melody Test)

WhenPOWER SW is ON in pushing BT CLEAR SW and TX BATTERY SW   on Front Panel simultaneously, it will enter into Test MODE 2.

First, when BT CLEAR SW and TX BATTERY SW is pushing, is displayed in 7segment LED for 1sec and then the LED of RX, COM and TXBATTERY is flashed sequentially.

The display of Seg. LED is cleared after 2sec.

Second, release BT CLEAR SW and TX BATTERY SW , and push BT CLEAR SW once. It displays Melody Number 01 in7 seg. LED with red and sounds the melody of Yankee Doodle from a loudspeaker only once except that Volume Control is OFF

In addition, if BT CLEAR SW is pushed again, it displays Melody Number 02 in7 seg. LED with red and sounds the melody of Oh Bury Me Not On The Lone Prairie only once.

Each time BT CLEAR SW is pushed, it sounds 16 melodies and 1 audible alarm to test these sounds.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

It returns to normal mode by restart.

1. Pager Controller communicationForm

BAUD RATE	9600BPS
DATA BIT	8-BIT
PARITY	NONE
STOP BIT	1BIT

2.Data Format

Start BIT (1bit)	DATA (8bit)	Stop BIT (1bit)

3.RS-232-C Connector

PagerControllerProtocol

In case of using PAGERCONTROLLER, SW1 in Main Board should be ON.

If the SW1 is ON without connecting Pager Controller by mistake or Pager Controller power is OFF, it alarms sound each 30sec.