Part 2. Technician's Manual

Chapter 1. General Characteristic

1 – 1 General Specifications

- Operation Frequency----------: 433.05~434.79MHz (set by software)
- Hamming Distance ----------: ≧ 4
- I.D. Code----------: > 65,000.sets (set by factory, never repeated)
- Temperature Range----------: -20℃ ~+60℃
- Channel Spacing----------: 12.5KC
- Maximum Operation Range----------: Up to 50 Meters
- Structure----------: Stainless steel and glass-fiber
- Protection Degree----------: IP 65

1 – 2 Transmitter Specifications

- Power Supply----------: Four 1.5volts Alkaline or Rechargeable Batteries (AA Size)
- RF Power----------: < 7.85nW (3m)
- Modulation----------: ≤ ±2.5KHz; NBFM
- Joystick Type----------: Proportional Joystick with mechanical feeling
- Dimensions----------: 230x95x110mm (excluding protrusion)
- Weight----------: about 870g (including batteries)

1 – 3 Receiver Specifications

- Power Supply----------: 48V\110VAC (50/60Hz)
- Sensitive----------: –110dbm (Date Error Rate < 10^{-3})
- Harmonic Ratio----------: ≦65db
- Output Relays----------: 10A/250VAC
- Dimensions----------: 250x145x100mm (excluding protrusion)
- Weight----------: about 1880g(excluding wire cable)

Model:SAGA1-J
FCC ID: NCTSAGA1-J

Chapter 2 System Configuration

2 – 1 Transmitter Unit

Transmitter unit consists of Encoder Module and Transmitter RF Module, that transmitting "control data" to the receiver for the purpose of applications in remote control.

2-1-1 Encoder Module:

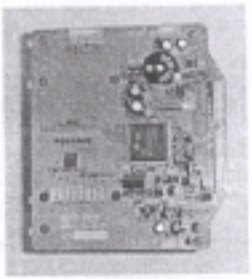
Encoder Module contains Encoder board, Left pushbutton board, right pushbutton board and Rotary switch board. A micro control unit (MCU) is used for the main processing, MCU reads the data from Joystick and pushbutton (or switch) and combines with the ID Code, Hamming Code, and Function Setting. After producing control data by encoding, it generates TXFSK signal to transmitter's RF module via FSK circuit.

2-1-2 Transmitter RF Module:

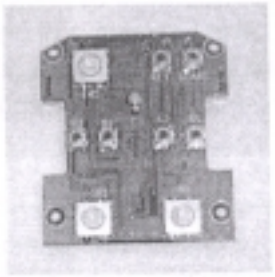
The sequence of RF module is shown as follows: Encoder→TXFSK→ modulates a RF carrier → amplification → antenna.

This RF Module uses Phase Locked Loop (PLL), Voltage Controlled Oscillator (V.C.O.) with lowest side-band noise, SMT advanced technologies. It has power-saving, high efficiency, high reliability and low harmonic NBFM transmitting circuit.

2-1-3 Parts Name and Illustration



Encoder board



Pushbutton board

Figure 2-1-1 Encoder Module

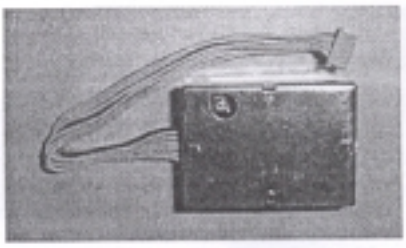


Figure 2-1-2 Transmitter RF Module

2 – 2 Receiver Unit

Receiver unit consists of Receiver/Decoder Module and Relay Module, This unit receives the control data from the transmitter, decodes the data, generates control command, and drives the related relay circuit to control the motions of cranes (or lifting equipment).

2-2-1 Receiver/Decoder Module:

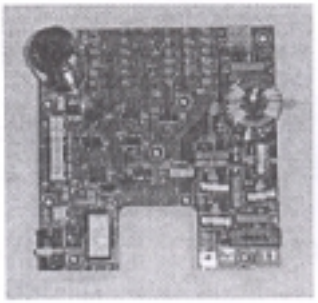
Receiver/Decoder Module contains Decoder board, LED board, and SQ board. This module consists of high frequency receiver circuit and micro control unit. Its main functions are to receive RF signal from transmitter, to detect and correct the received data message, to decode and to send commands to the relay module. This module has high-receiving gain, high-signal selectivity, high-image rejection rate, and low-noise figure. In addition, this module uses special design of "Diversity Reception" and "Frequency Deviation Direction Indicator" (FDDI) to eliminate ate communication dead spot and the adverse effect of environmental change, such as temperature.

2-2-2 Relay Module:

This module receive and process control commands to drive corresponding relay in order to control the motion of cranes (or lifting equipment). The operation safety is especially important. This module consists of relay contact jammed-detection circuit, relay coil test circuit, relay operating voltage test circuit, and the protection circuit for micro control unit, to ensure operation safety.

2-2-3 Parts Name and Illustration

Decoder board



LED board

SQ board

Figure 2-2-1 "Receiver/Decoder" Module

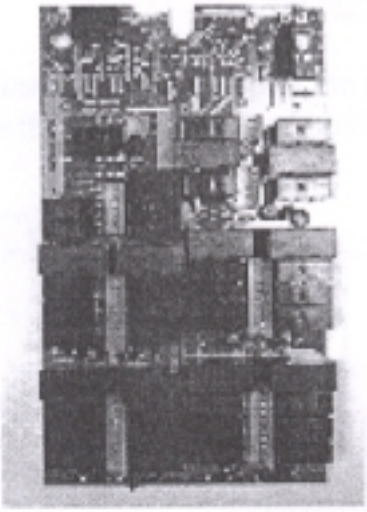


Figure 2-2-2 Relay Module