

OPERATIONAL DESCRIPTION

FCC ID: TNE-430PEN2, IC ID: 6145A-430PEN2

Circuit Function Description

Refer to exhibit TNE-430PEN2 BLKDIA.

1. Power block – regulates battery voltage and latches power
2. Programming interface block – provides the physical layer for the configuration data link. It supports either USB or IrDA SIR.
3. Micro block – the microcontroller, oscillators, voltage supervisor, configuration DIP switch and programming networks
4. RF block – the RF chip and supporting circuits including an oscillator, impedance matching networks, PLL filter, PLL indication, RF switch, SAW filter and antenna.
5. HMI – the Human Machine Interface, this includes pull-down resistors, ferrite beads, wetting voltage and ground to interface to the manual switches.
6. Miscellaneous connectors – physically connect to USB, batteries, programmers, etc.

Operation

The unit is turned on and off with the ON/OFF button. Once powered, other buttons can be pressed to transmit commands (via RF signals) to controlled equipment. The function of the buttons depends on the application. A typical application is crane control. In this case the buttons control 3 axis of movement – up/down, north/south, and east/west. An emergency shutdown button is provided. LEDs indicate mode, RF transmission and battery level.

When buttons are pressed, a well-defined message is assembled according to the pressed buttons and this message is transmitted via the RF section of the device. When a button is initially pressed, a burst of messages is sent followed by random transmissions. When all buttons are released a burst of “clear” messages are transmitted for a brief time.

Miscellaneous features can be configured such as automatic inactivity turn off.

ANT-433-SP (Splatch)

The Splatch uses a grounded-line technique to achieve outstanding performance from a tiny surface-mount element. This antenna is designed for hand or reflow mounting directly to a product’s circuit board. The Splatch exhibits good proximity performance, making it an appropriate choice for hand-held applications such as remote controls, pagers, and alert devices. Typical performance is below that of many external antennas, but the Splatch is an excellent choice when cosmetic or mechanical issues dictate the use of an internal antenna.

Features:

- Ultra-compact package
- Direct PCB attachment
- Ideal for concealed / internal mounting
- Perfect for compact portable devices
- Suitable for hand- or reflow-assembly
- Resistant to proximity effects

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Electrical Specifications:

- Center Freq. 433MHz
- Bandwidth 8MHz
- Wavelength 1/4-wave
- VSWR <1.9 typ. at center
- Impedance 50 ohms
- Surface mount

RF Transmission Information

- Transmission frequency - (messages / second): 50 initial burst, and between 5 and 10 (random) thereafter
- Transmission duration - transmission occurs while a button is pressed and up to 195 ms after the button is released. The duration of a single message is 15 ms typical.
- Transmitted information type - digital control
- Modulation - Frequency Shift Keying (FSK)
- Baud rate – 9600 Baud
- Duty cycle - 11.25% typical when active