

### General Description

Electronics in Industry enhances the efficiency of both production and working processes. Radio Remote Control system, the new technology of wireless control of crane, increases the cost effectiveness of mechanical handling devices and at the same time reduce the risk of accidents.

The pendant control box for Crane Control system is obsolete. The fail-safe Radio Control system offers an economic alternative to traditional control method of using a cable from the shop floor. The tedious and often dangerous activity of going round obstacles with the cable control is phased out. The crane operator can now move about freely in his work area and can remotely control the crane from any position. This provides ability to control without being tied to a fixed station, and also provides for faster lifts with less time wastages.

The crane cabin remains empty and the driver needn't go up and down the cab. More accurate spotting control reduces material damage and saves equipment and products.

The logic interlock and sequencing achieved using bulky relay logic can be very easily achieved when replaced by using electronics used for Remote Control. These shall reduce the overall crane weight and lesser crane structural cost.

Every movement, every lift, every change of position is being done from a chosen place which enhances safety and with perfect control in hand makes the control fatigue free.

Additionally, equipment in hazardous or contaminated areas or noxious procedures can be safely controlled from a safe distance or from behind protective shield.

The above are some of the points which not only emphasize the need, but suggest that the Radio Remote Control is essential today.



**The Hand Held Terminal (HHT)**

### Technical Specifications

#### MECHANICAL

Enclosure	Hand Held Terminal : Plastic (black) with straps
	Receiver Panel : MS (APW/Rittal)

#### ENVIRONMENTAL

Operating Temperature	0 to 60 deg C
Humidity	10-90% non-condensing

#### HAND HELD TERMINAL

Battery	NiMH (2 Ah standard, 4Ah optional)
Backup	Appx. 14 hrs with 2 Ah and 24 hrs with 4 Ah battery
Diagnostic LEDs	Power – Red, Battery Low Indicator
Display	16x2 Character LCD with backlit
Direction Control	Using industrial grade joysticks (2-5 Nos.)
Switches	Key Switches: Power, Program
	Push buttons: Control ON/OFF, Hooter, Spares (2 Nos)
	Mushroom Switches: 1 No. for Emergency Stop
Processor	Silicon Labs C8051F130 @ 25 MIPS

#### RECEIVER PANEL

Controller	Motorola 68K/PPC
Control element	Relays with contacts rated for 220V ac switching
	Typical 40 Nos. Relays, additional on request
Other I/O	6 Nos. Digital Inputs for feedback
Protection	All I/O channels from controller are opto-isolated

#### WIRELESS

Frequency	2.4 GHz (400 MHz optional)
Range	150 mts typical (upto 500 mts optional)
Antenna	5 dbi Portable Antenna on HHT and receiver panel
	Optional 8 dBi Omni Directional Antenna on receiver panel

## Features

- Can be installed on existing cranes
- Rugged, compact and light weight Hand Held Transmitter unit with rugged Pushbutton Keys, Joystick controller & Nickel Metal Hydride rechargeable battery pack
- Micro-controller based system reduces circuitry and hardware. Hence, least maintenance and higher reliability
- Low power design of HHT ensures long battery backup – typically between 12 hrs to 24 hrs
- HHT unit power ON protected by Key Switch to prevent unauthorized operation
- Programming of HHT unit address protected by a key switch to prevent unauthorized changes
- Self diagnostic LEDs and LCD for rapid trouble shooting and better serviceability
- International standard racks and modular concept of electronic cards
- Interference free: Works at a particular frequency, with a field assigned address code. Hence, receiver is able to pickup signals from operator & not from any other source.
- Security: Provides a pre-selectable code to ensure against tamper with the channel setting, and using wrong controller
- FHSS based wireless communication ensures interference free communication
- Flexible design enables customization of the system to suit crane design

## Benefits

- Increased Productivity:
  - Ability to control without being fixed to any particular station
  - More accurate positioning reduces material damage
  - Operators are full time workers also
- Increased Safety:
  - The operator is not physically located on the crane. No need to be under or even near the load
  - Operator has finger-tip control
  - Hazardous/ difficult operations can be performed from a distance or from being behind a protective shield
  - No misunderstanding of signals by crane operator in the cabin
- Better Product Care: Since driver cabin is not required, the dead weight of the crane reduces and hence the capital cost of the crane

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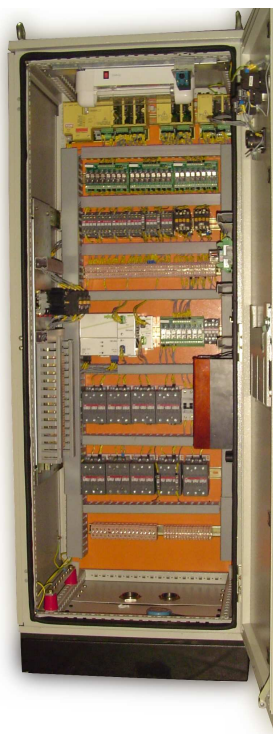
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Pictures of a  
typical  
Receiver  
Panel



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