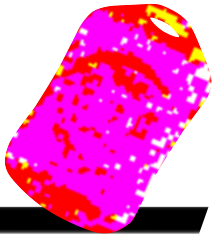
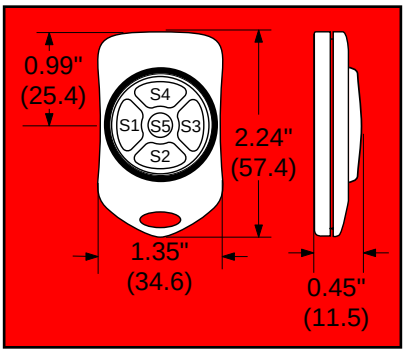
CMD-KEYX-XXX



OEM KEYFOB TRANSMITTER DATA GUIDE

DESCRIPTION

The Linx CMD-KEYX-XXX Remote Command keyfob is ideal for general-purpose remote control and command applications. The unit has been pre-certified for FCC Part 15 compliance which reduces costs and time to product introduction. Available in 315, 418 or 433.92 MHz (418MHz standard), this stylish and compact remote is capable of 100+ ft. transmission range. The unit can be configured with 1-5 buttons and the keypad and labeling can be customized to meet specific customer requirements. Selectable addressing provides security and allows for 2^{10} distinct transmitter-receiver relationships. The transmission can be decoded using a matching Linx function module, a KH series receiver/decoder module or a Linx LC series receiver paired with a decoder IC or microcontroller. The unit operates from a single 3-volt lithium cell.



Physical Dimensions



OEM Configurations

With a one-time NRE and minimum order, Linx can configure the keypad and label areas to meet your specific requirements. Contact Linx for details.

APPLICATIONS INCLUDE:

- Remote Control / Command
- Keyless Entry
- Garage / Gate Openers
- Lighting Control
- Security / Call Systems
- Home / Industrial Automation

ORDERING INFORMATION

PART #	DESCRIPTION
CMD-KEYX-315	315 MHz Keyfob Transmitter
CMD-KEYX-418*	418 MHz Keyfob Transmitter
CMD-KEYX-433	433 MHz Keyfob Transmitter

X= # of buttons - insert 1-5

* = Standard Frequency

Revised 6/11/01

PERFORMANCE DATA– CMD-KEYX-XXX

ABOUT THESE MEASUREMENTS

The performance parameters listed below are based on module operation at 25°C from a 3Vdc supply unless otherwise noted.

RF-Parameters CMD-KEYX-315	Designation	Min.	Typical	Max.	Units	Notes
Frequency of Carrier	F_C	314.925	315	315.075	MHz	–
Harmonic Emissions	P_H	–	–	-40	dBc	–

RF-Parameters CMD-KEYX-418	Designation	Min.	Typical	Max.	Units	Notes
Frequency of Carrier	F_C	417.925	418	418.075	MHz	–
Harmonic Emissions	P_H	–	–	-40	dBc	–

RF-Parameters CMD-KEYX-433	Designation	Min.	Typical	Max.	Units	Notes
Frequency of Carrier	F_C	433.845	433.92	433.995	MHz	–
Harmonic Emissions	P_H	–	–	-45	dBc	–

Electrical Parameters CMD-KEYX- 315,418, 433MHz	Designation	Min.	Typical	Max.	Units	Notes
Operating Voltage Range	V_{CC}	2.7	–	3.2	Vdc	–
Current Average	I_{CA}	–	1.7	–	mA	1
Current In Sleep	I_{SLP}	–	0	-	µA	2
Output Power	P_O		PART 15.231 Compliant			
TX Data length			26bits 3x			
Average Data Duty Cycle			50%			
Encoder Oscillator	FE_{NC}		70		KHz	
Operating Temperature		-30°C	to	+70°C		

Notes:

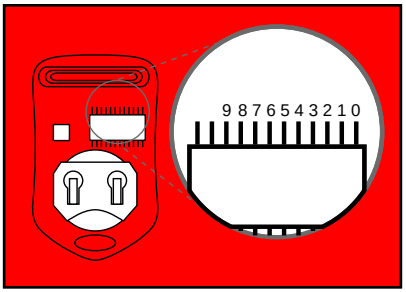
1. Current draw with 50% mark/space ratio.
2. Current draw in standby

THEORY OF OPERATION

The CMD-KEYX-XXX Keyfob Command Unit combines a high-performance SAW-(Surface Acoustic Wave) based transmitter with an on-board encoder. The keyfob can transmit the status of 1 to 5 buttons along with the state of ten address lines for security and creation of unique transmitter/receiver relationships. The product's operation is straightforward. When a button is pressed, power is applied to the internal circuitry and the encoder IC is enabled. The encoder then detects the logic states of the address traces and button data lines. These states are then formatted into a 3-word transmission cycle which continues until the button is released. The encoder data is used to modulate the transmitter which through the antenna conveys the data into free space. The transmitted signal may be received by any Linx KH or LC receiver or pre-made function module of the same frequency. Once data is received it is decoded using a decoder IC or custom microcontroller. The transmitted address bits are checked against the address settings of the receiving device. If a match is confirmed, the decoder's output(s) are set to replicate the transmitter's button status.

SETTING THE TRANSMITTER ADDRESS

The keyfob allows the selection of one of 1024 unique addresses. All keyfobs from the factory are supplied set to the same address. To avoid ID contention with other units in the vicinity or to create unique relationships it may be helpful to change the address settings. This may be accomplished by cutting the appropriate jumper trace(s) with a sharp object such as an X-acto knife as shown. The traces are accessed by removing the rear cover as for battery replacement.



CONTENTION CONSIDERATIONS

It is important to understand that only one transmitter at a time can be activated within a reception area. While the transmitted signal consists of encoded digital data, only one carrier of any frequency can occupy airspace without contention at any given time.

BATTERY REPLACEMENT

The remote unit utilizes a CR-2032 Button Lithium Cell. In normal use it will provide 1-2 years of operation. Access for replacement is accomplished by gently prying apart the two halves of the keyfob at the seam (fingernails will do for this). Once the unit is open, remove the battery by sliding the battery out from beneath the retainer. Replace with the same type of cell while observing the polarity shown.



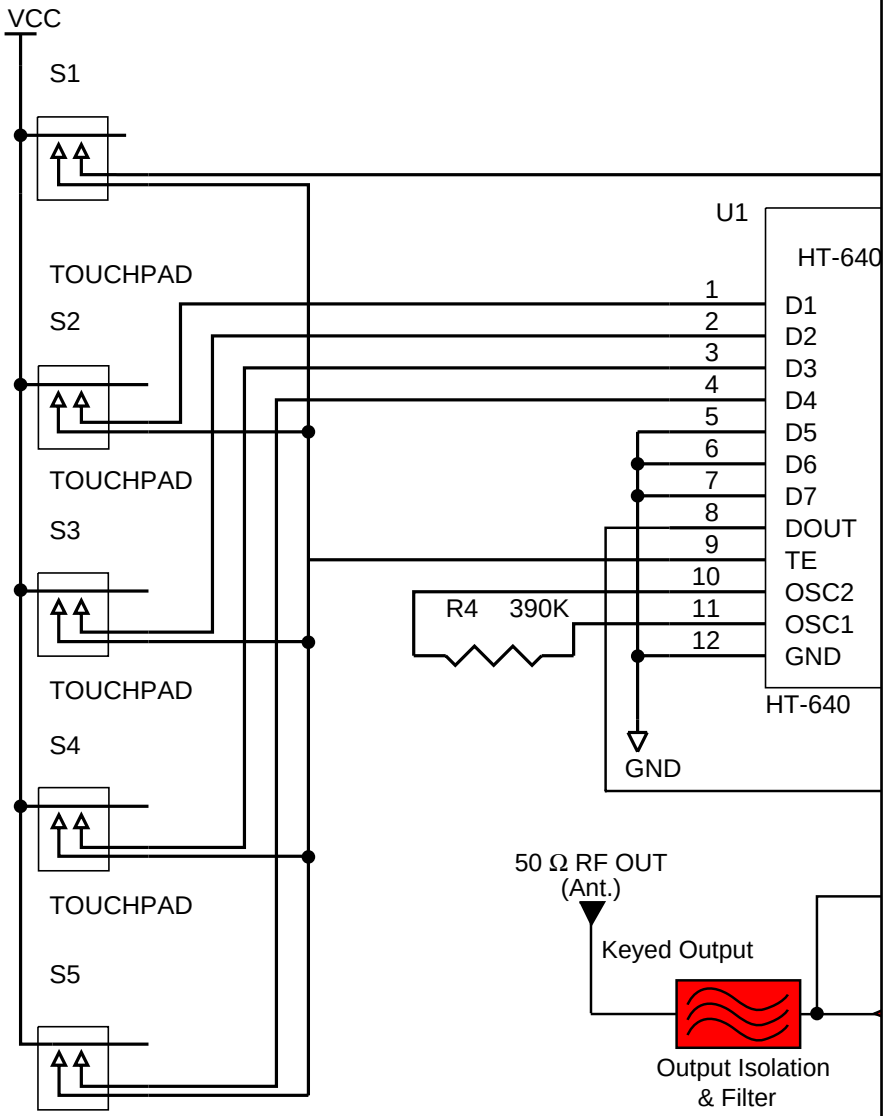
COMPLIANCE REQUIREMENTS

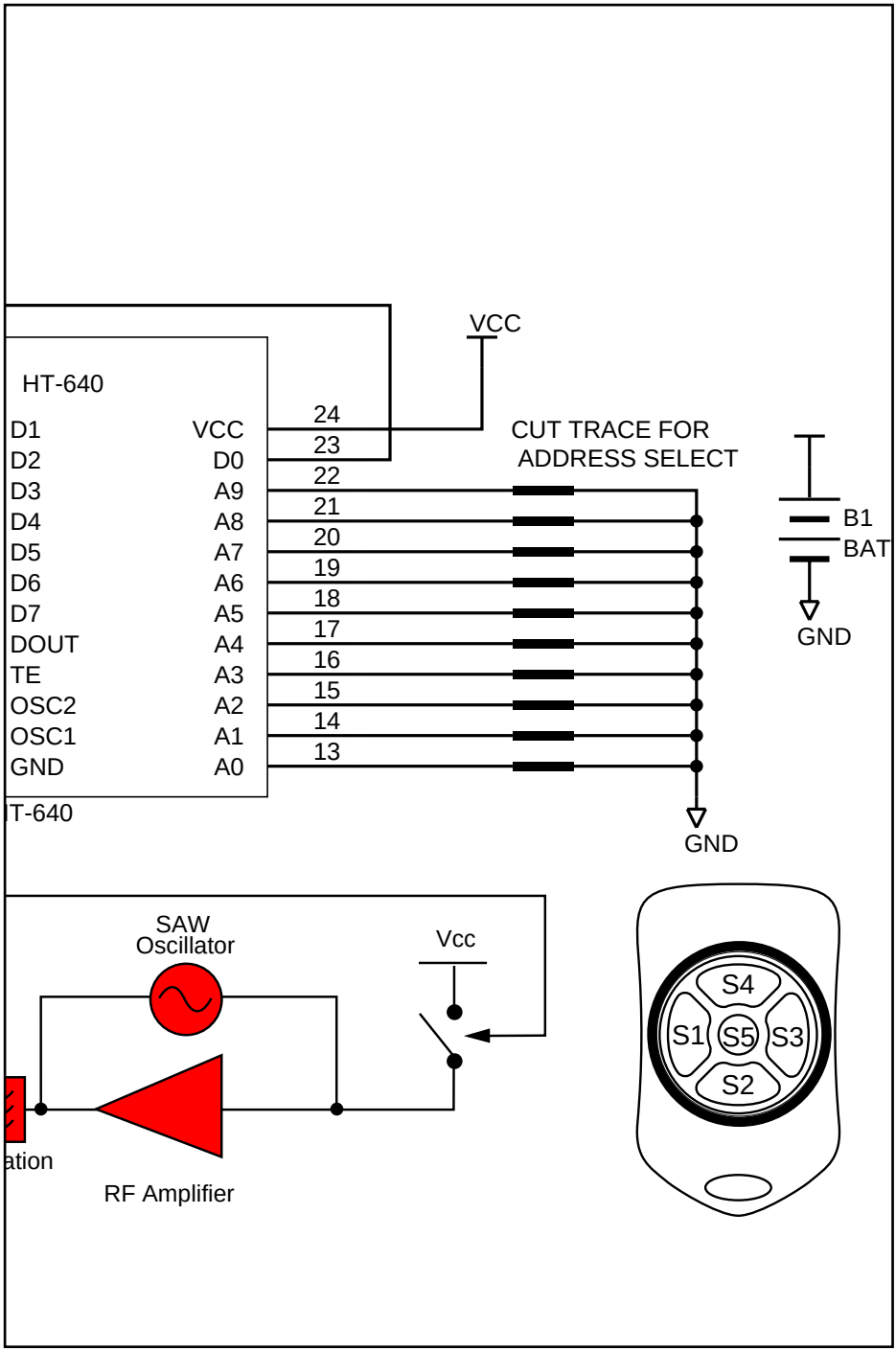
The CMD-KEYX-XXX has been pre-certified by Linx for FCC Part 15 compliance when used with an appropriate function module in keeping with the applications allowed under section 15.231.

LABELING/INSTRUCTION REQUIREMENTS

The CMD-KEYX-XXX Remote Command Unit has already been labeled in accordance with FCC regulations in effect as of the date of this document. No further labeling of the unit is needed; however, it is necessary to include the statement on page 7 in the end product's instruction manual or insert card.

Schematic Diagram

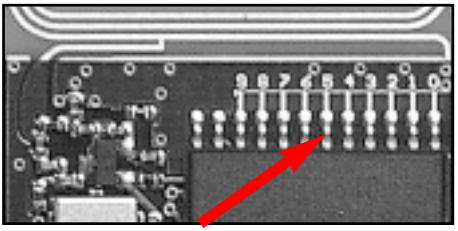



VCC
HT-640
D1
D2
D3
D4
D5
D6
D7
DOUT
TE
OSC2
OSC1
GND
VCC
D0
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
24
23
22
21
20
19
18
17
16
15
14
13
CUT TRACE FOR
ADDRESS SELECT
B1
BAT
GND
GND
SAW
Oscillator
Vcc
S4
S1
S5
S3
S2
RF Amplifier

USING THE KEYFOB WITH LINX RECEIVER MODULES

Keyfob Address Lines

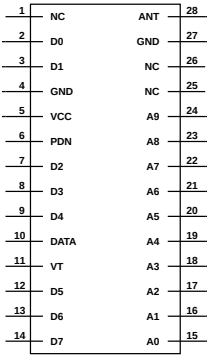
Keyfobs are shipped with all address lines tied to ground (Default) with 1024 possible address combinations available by cutting address traces.



KH Series Receiver/Decoder Module

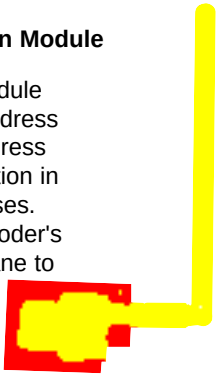
The Keyfob works directly with the KH series receiver/decoder modules when A0-A9 are set to the same configuration as the keyfob address lines.

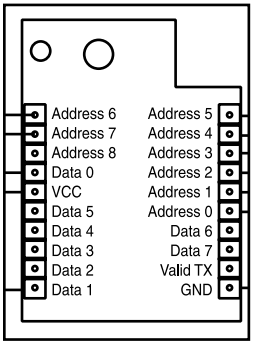




FCC Precertified Decoder Function Module

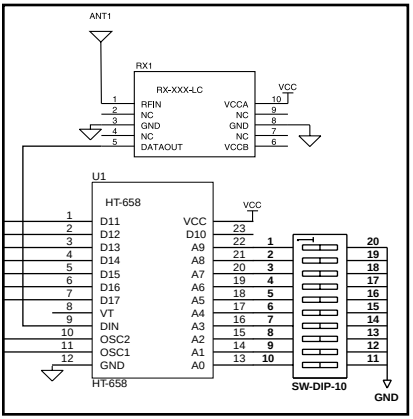
Because the Function Decoder Module only has 9 address lines, the #9 address line on the keyfob must be cut. Address lines 0-8 must match the configuration in the keyfob for 512 possible addresses. Also be sure to tie the function decoder's mounting hole directly to groundplane to further enhance performance.





LC Receiver Module

The LC receiver module can be used with an appropriate decoder such as Holtek's HT-658 for 1024 possible addresses.



INSTRUCTION TO THE USER

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 instructions, 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 connected.

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

This equipment has been certified to comply with the limits for a Class-B computing device, pursuant to FCC Rules. In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

Place the above statement in the instruction manual or insert card.



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