



**MS Keyfob
Transmitter
Data Guide**

Wireless made simple[®]



Warning: Some customers may want Linx radio frequency (“RF”) products to control machinery or devices remotely, including machinery or devices that can cause death, bodily injuries, and/or property damage if improperly or inadvertently triggered, particularly in industrial settings or other applications implicating life-safety concerns (“Life and Property Safety Situations”).

NO OEM LINX REMOTE CONTROL OR FUNCTION MODULE SHOULD EVER BE USED IN LIFE AND PROPERTY SAFETY SITUATIONS. No OEM Linx Remote Control or Function Module should be modified for Life and Property Safety Situations. Such modification cannot provide sufficient safety and will void the product’s regulatory certification and warranty.

Customers may use our (non-Function) Modules, Antenna and Connectors as part of other systems in Life Safety Situations, but only with necessary and industry appropriate redundancies and in compliance with applicable safety standards, including without limitation, ANSI and NFPA standards. It is solely the responsibility of any Linx customer who uses one or more of these products to incorporate appropriate redundancies and safety standards for the Life and Property Safety Situation application.

Do not use this or any Linx product to trigger an action directly from the data line or RSSI lines without a protocol or encoder/decoder to validate the data. Without validation, any signal from another unrelated transmitter in the environment received by the module could inadvertently trigger the action.

All RF products are susceptible to RF interference that can prevent communication. RF products without frequency agility or hopping implemented are more subject to interference. This module does not have a frequency hopping protocol built in.

Do not use any Linx product over the limits in this data guide. Excessive voltage or extended operation at the maximum voltage could cause product failure. Exceeding the reflow temperature profile could cause product failure which is not immediately evident.

Do not make any physical or electrical modifications to any Linx product. This will void the warranty and regulatory and UL certifications and may cause product failure which is not immediately evident.

Ordering Information

Ordering Information	
Part Number	Description
OTX-***-HH-KF#-MS-xxx	MS Keyfob Transmitter
MDEV-***-HH-KF-MS	MS Keyfob Development System

= Number of Buttons, 1 to 5
 *** = 418 (Standard) or 433MHz
 xxx = Color (Leave blank for standard black)
 WHT = White
 CRE = Red
 CGY = Gray

Figure 3: Ordering Information

Electrical Specifications

Keyfob Electrical Specifications						
Parameter	Designation	Min.	Typ.	Max.	Units	Notes
Power Supply						
Operating Voltage	V_{CC}	2.3	3.0	3.6	VDC	
Supply Current	I_{CC}		12.6		mA	
Power-Down Current	I_{PDN}		1.5		μ A	1
Transmitter Section						
Transmit Frequency Range	F_C					
OTX-418-HH-KF#-MS			418		MHz	
OTX-433-HH-KF#-MS			433.92		MHz	
Center Frequency Accuracy		-8		+8	kHz	
Data Rate			9,600		bps	
Environmental						
Operating Temperature Range		0		+70	$^{\circ}$ C	1

1. Characterized, but not tested

Figure 4: Electrical Specifications

Setting the Transmitter Address

The address is changed by using a paper clip or probe to press the CREATE_ADDR button on the board through the hole in the back of the case. When the button is depressed, an LED lights up on the front of the keyfob, indicating that the address is being created. The address is randomized for as long as the button is held down. When the button is released, the randomized address is saved and the LED begins flashing to indicate that the Control Permissions may now be set.



Figure 5: CREATE_ADDR Button Access

Press the buttons that the Keyfob user will have the authority to access. Press the CREATE_ADDR button with the paper clip again or wait 17 seconds for it to time out. The address and Control Permissions are now set. The decoder needs to learn the address before it accepts any transmissions. Please see the Typical Applications section of this data guide or the MS Series Decoder Data Guide for details.

Button Assignments

The Keyfob is available in five button configurations. Those configurations and the corresponding switch numbers are shown in Figure 6. The table shows which encoder data line has been assigned to each switch. When a button is pressed, the data line goes high, causing the corresponding data line on the decoder to go high if the address has been learned.

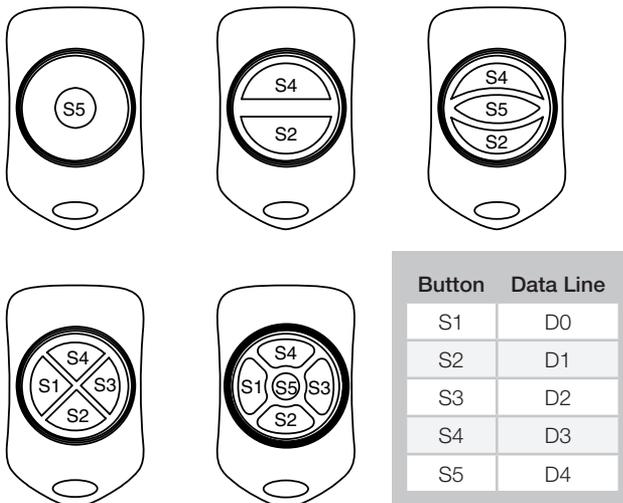


Figure 6: OTX-***-HH-KF#-MS Button Assignments

Labeling / Instruction Requirements

The transmitter has been pre-certified for FCC Part 15 and Industry Canada license-exempt RSS standards for an intentional radiator. The 433.92MHz version has also been tested for CE compliance for use in the European Union. The 418MHz version is not legal for use in Europe. It has already been labeled in accordance with FCC, Industry Canada and CE regulations. No further labeling of the unit is needed; however, it is necessary to include the following Instruction to the User statement in the end product's instruction manual or insert card.

Europe requires that the final product's instruction manual be provided in the end user's native language.



Typical Applications

The signal sent by the Keyfob transmitter can be received by the LR Series receiver module or the LT Series transceiver module. The receiver module is connected directly to the MS Series decoder, which decodes the transmitted signal.



When a button is pressed on the transmitter, a corresponding line on the decoder goes high. This can then be connected to external circuitry to perform whatever function is required by the application.



The decoder must learn the transmitter's address before they can work together. This is done by taking the LEARN line on the decoder high, typically with a pushbutton. The MODE_IND line starts switching (if an LED is attached, this causes it to flash) indicating that the decoder is in Learn Mode. Press any of the buttons on the transmitter to initiate a transmission. Take the LEARN line high again to exit Learn Mode and the system is ready for use. Figure 10 shows a schematic for a typical application.

Figure 9: Linix RF Modules

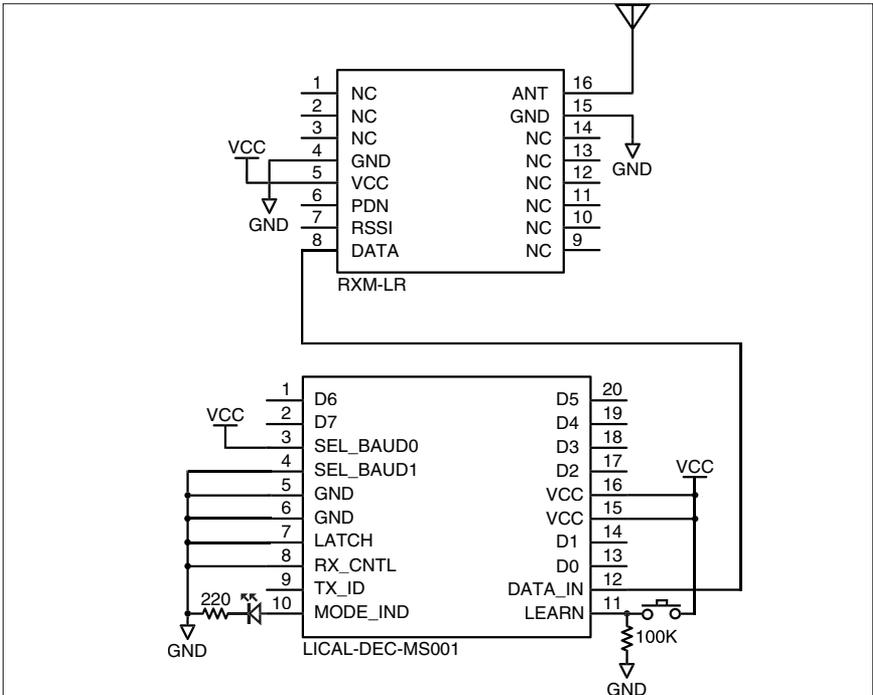


Figure 10: LR Receiver and MS Decoder Schematic

Resources

Support

For technical support, product documentation, application notes, regulatory guidelines and software updates, visit www.linxtechnologies.com

RF Design Services

For customers who need help implementing Linx modules, Linx offers design services including board layout assistance, programming, certification advice and packaging design. For more complex RF solutions, Apex Wireless, a division of Linx Technologies, creates optimized designs with RF components and firmware selected for the customer's application. Call +1 800 736 6677 (+1 541 471 6256 if outside the United States) for more information.

Antenna Factor Antennas

Linx's Antenna Factor division has the industry's broadest selection of antennas for a wide variety of applications. For customers with specialized needs, custom antennas and design services are available along with simulations of antenna performance to speed development. Learn more at www.linxtechnologies.com.





LinX Technologies
159 Ort Lane
Merlin, OR, US 97532

Phone: +1 541 471 6256
Fax: +1 541 471 6251

www.linxtechnologies.com

Disclaimer

LinX Technologies is continually striving to improve the quality and function of its products. For this reason, we reserve the right to make changes to our products without notice. The information contained in this Data Guide is believed to be accurate as of the time of publication. Specifications are based on representative lot samples. Values may vary from lot-to-lot and are not guaranteed. "Typical" parameters can and do vary over lots and application. LinX Technologies makes no guarantee, warranty, or representation regarding the suitability of any product for use in any specific application. It is the customer's responsibility to verify the suitability of the part for the intended application. **NO LINX PRODUCT IS INTENDED FOR USE IN ANY APPLICATION WHERE THE SAFETY OF LIFE OR PROPERTY IS AT RISK.**

LinX Technologies **DISCLAIMS ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL LINX TECHNOLOGIES BE LIABLE FOR ANY OF CUSTOMER'S INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN ANY WAY FROM ANY DEFECTIVE OR NON-CONFORMING PRODUCTS OR FOR ANY OTHER BREACH OF CONTRACT BY LINX TECHNOLOGIES.** The limitations on LinX Technologies' liability are applicable to any and all claims or theories of recovery asserted by Customer, including, without limitation, breach of contract, breach of warranty, strict liability, or negligence. Customer assumes all liability (including, without limitation, liability for injury to person or property, economic loss, or business interruption) for all claims, including claims from third parties, arising from the use of the Products. The Customer will indemnify, defend, protect, and hold harmless LinX Technologies and its officers, employees, subsidiaries, affiliates, distributors, and representatives from and against all claims, damages, actions, suits, proceedings, demands, assessments, adjustments, costs, and expenses incurred by LinX Technologies as a result of or arising from any Products sold by LinX Technologies to Customer. Under no conditions will LinX Technologies be responsible for losses arising from the use or failure of the device in any application, other than the repair, replacement, or refund limited to the original product purchase price. Devices described in this publication may contain proprietary, patented, or copyrighted techniques, components, or materials. Under no circumstances shall any user be conveyed any license or right to the use or ownership of such items.

©2014 LinX Technologies. All rights reserved.

The stylized LinX logo, Wireless Made Simple, WISE, CipherLinX and the stylized CL logo are trademarks of LinX Technologies.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Sub-GHz Modules](#) category:

Click to view products by [Linx Technologies](#) manufacturer:

Other Similar products are found below :

[HMC-C024](#) [nRF24L01P-MODULE-SMA](#) [CMD-KEY2-418-CRE](#) [V640-A90](#) [SM1231E868](#) [HMC-C582](#) [SM-MN-00-HF-RC](#) [HMC-C031](#)
[LoRa Node Kit\(US\)](#) [Sierra HL7588 4G KIT\(US\)](#) [WISE-4610-S672NA](#) [EC21AUFA-MINIPCIE](#) [EC21EUGA-MINIPCIE](#) [CS-EASYSWITCH-](#)
[25](#) [EC21JFB-MINIPCIE](#) [E28-2G4M27S](#) [DL-RFM95-915M](#) [DL-RFM96-433M](#) [Ra-07H-V1.1](#) [Ra-07](#) [Ra-01SH](#) [Ra-01S-T](#) [Ra-01SH-T](#) [CMD-](#)
[HHCP-418-MD](#) [CMD-HHCP-433-MD](#) [CMD-HHLR-418-MD](#) [2095000000200](#) [XB9X-DMRS-031](#) [20911051101](#) [COM-13909](#) [HMC-C033](#)
[COM-13910](#) [WRL-14498](#) [SX1276RF1KAS](#) [HMC-C004](#) [HMC-C011](#) [HMC-C014](#) [HMC-C010](#) [HMC-C050](#) [HMC-C001](#) [HMC-C006](#) [HMC-](#)
[C029](#) [HMC-C030](#) [HMC-C019](#) [HMC-C021](#) [HMC-C041](#) [HMC-C042](#) [HMC-C048](#) [HMC-C051](#) [HMC-C071](#)