

# HDL-MSP08M.4C

# Ceiling Mount 8-in-1 Sensor

# User Manual

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# **Update History**

The form below contains the information of every update. The latest version contains all the updates of all former versions.

No.	Version	Update Information	Date
1	V1.0.0	Initial release	July 22, 2020



# 1 Introduction

Ceiling Mount 8-in-1 Sensor (See Figure 1) includes PIR motion sensor, LUX sensor, dry contact, etc., which can form different logic functions by logic block according to users' requirements. The module supports HDL security mode and commands, and can download IR code from HDL Buspro Setup Tool and emit IR codes in order to control the targets. This manual offers the description of installation, wring and configuration of Ceiling Mount 8-in-1 in Buspro software Setup Tool 2.



Figure 1. Ceiling Mount 8-in-1 Sensor

#### 1.1 Function

Built-in PIR sensor, LUX sensor, IR emitter, dry contact and universal switch.

(1) Logic inputs include LUX sensor, PIR sensor, 2 dry contact inputs, 2 universal switches .

(2) Two logic relations: OR, AND.

(3) Adjustable PIR sensitivity from 1 to 10.

(4) 12 logic blocks (2 switch numbers for each). 201-240 are assigned for universal switch, which has auto-off function with the delay time of 1-3600s.

(5) Logic can trigger different targets no matter it is true or false. Up to 10 targets can be triggered by each logic block.

(6) IR emission function of remote-control code, supports 240 infrared emission targets, corresponding to the universal switch number 1-240. When uploading infrared code, multiple infrared codes can be selected to upload at the same time.

(7) Online update supported via HDL Buspro Setup Tool.

(8) Constant LUX function.

## Important Notes:

# HDL

(1) Buspro cable - CAT5E or dedicated HDL Buspro cable.

(2) Buspro connection - Series connection (hand-in-hand recommended).

(3) Installation position - Ceiling mount.

(4) Check the connection, avoid any mistake.

(5) Installation position: Indoor, keep it away from AC outlet and heat source.

(6) Dry contact cable requirement: Applicable wire:  $0.5 \sim 0.75$ mm<sup>2</sup>, stripping wire length:  $8.5 \sim 10$ mm, shield cable with length less than 20m recommended.

## 1.2 Production Information

(1) LED indicator and IR indicator

Flashes in blue when the module is in normal working mode

Keeps in red when sensor detects movement

Note: Indicators can be set via HDL Buspro Setup Tool 2

(2) Button for module address setting

Press for 3s, blue indicator turns on. Go to "Address management"→"Address modification" of

HDL Buspro Setup Tool to read and modify the address setting.

- (3) IR emitter
- (4) Slot
- (5) PIR sensor
- (6) LUX sensor
- (7) HDL Buspro, from right to left: DC24V, COM, DATA-, DATA+
- (8) Screw holes
- (9) Dry contact 1,2
- (10) Ventilation hole
- (11) Wiring channel, open it for wiring
- (12) Pushrod
- (13) Wiring hole
- (14) Emitter outlet
- (15) Fresnel lens

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## 1.2.1 Dimensions - See Figure 2 - 4

#### 1.2.2 Components - See Figure 5, 6, 8





Figure 4. Dimensions-Side View Figure 5. Components - Interior View





#### 1.2.3 Dry contact wiring - See Figure 7

- 1. The wires are put in the wiring hole, and then loosen the pushrod, the wires will be locked.
- 2. Put wires in the wiring hole, and loosen the pushrod to lock the wires.
- 3. Open the cover to install the sensor, then fix by screws.
  - ① **Open the cover See Figure 8**: Rotate the cover counterclockwise to take off the cover.
  - ② Install the cover See Figure 8: Put the cover to the correct slot and rotate the cover clockwise.

**1.2.4 Accessory - See Figure 9**: Angle cover is used to shield PIR sensor signal from certain angle, in order to enlarge or narrow down detection zone according to users' preference.



Figure 8. Components - Front View

Figure 9. Accessory - Angle cover

1.2.5 Detection range - See Figure 10



Detection Range (At 25°C)

Mounting height	Sitting / Walking towards constantly	Walking towards with pause	Walking across
3m	3m	5m	6m

Figure 10. Detection range

#### 1.2.6 Installation - See Figure 11 - 14

Step 1. Rotate and open the sensor.

- Step 2. Fix the sensor base on the wall box with screws.
- Step 3. Put the cover on the sensor.





# 2 Configuration

## 2.1 Infrared Code

Ceiling Mount 8-in-1 Sensor only supports the codes from IR learner. See Figure 2-1 - IR codes.

		The	proportion of the infrared code space
IR codes	Sensor setting Logic Security setup	The	proportion of the init aligned to the space
Current	selected key: 1	04	Choose need to upload IR codes
currents	Field Rey.		⊕-□QUNDA Current temperature: 45C
Modify se	elected key name:	Rename	PIR: No-movement
			Brightness: 319Lux
Input key	y number(1-240): From 1 To 19	Sure	
Кеу	Name	Validity	Dry contact 1: OFF
1	QUNDA-ON	Valid	Dry contact 2: OFF
2	QUNDA-Cool-H-18	Valid	
3	QUNDA-Cool-H-19	Valid	Ø
4	QUNDA-Cool-H-20	Valid	
5	QUNDA-Cool-H-21	Valid	Adjust lux sensor
6	QUNDA-Cool-H-22	Valid	Infrance de de deteles es france ID
7	QUNDA-Cool-H-23	Valid	Infrared code database from IR
8	QUNDA-Cool-H-24	Valid	learner
9	QUNDA-Cool-H-25	Valid	leather
10	QUNDA-Cool-H-26	Valid	
11		Invalid	
12		Invalid	IR learner Upload IR Stop upload
13 <b>U</b> p	bload IR codes to mo	owle 1	
14		Invalid	Test IR codes
15		Invalid	Button press ways:
16		Invalid	Pressing key once     after the upload
17		Invalid	O Hold on key Test IR codes
18		Invalid	
19		Invalid	
Init	tital all key 😰		📓 📓 Save & Close

Figure 2-1. IR codes

## 2.1.1 Codes from IR learner

## A. How to learn codes from IR learner?

Step 1: In Buspro Software Tool 2, go to Function->IR learner (See Figure 2-2) or in Ceiling Mount 8-in-1 Sensor, select IR learner.



Option evice list	Fast search	Data backup Data	Advance search	Target .	Function Upgrade Device	Too		
Status	Subnet ID	Device ID	Model	Name	Upgrade Enviro Raw	k this	Version	Hardware version
1	5	0	HDL-MBUS01IP.431	gateway	Image		Unread	N/A
1	5	3	HDL-MCLog.431		IR learner	1	Unread	N/A
1	5	4	HDL-MR0416.431	Relay	Hand Remote Controller	1	Unread	N/A
1	5	7	HDL-MW02.431		Serial port leaner	ntroller	Unread	N/A
1	5	8	HDL-MIRC04.40	Infrared me	HDL ON/Xiao bai/5.7	,remot	Unread	N/A
	5	10	HDL-MSP08M.4C	Ceiling Mou	Data Sharing		Unread	N/A
1	5	12	HDL-MSP07M.4C	Sensor	Delau/dimensional test		Unread	N/A
1	5	16	SB-DN-SEC250K	security	Wireless Davice Signal Strength Test	roller	Unread	N/A
1	5	22	HDL-MD0403.432	Dimmer	Wileless Device Signal Scrength Test	mming	Unread	N/A
1	5	30	HDL-MSD04T.40	Dry Contac	Check IP MAC	lule wit	Unread	N/A
1	5	33	HDL-MC-48IPDMX.431	DMX48	Check MAC	roller bus	Unread	N/A
~	5	40	HDL-MDLED0605.432	LED	Check DALI MAC	dimming	Unread	N/A
1	5	59	HDL-MC64-DALI.431	DALI	Allot address	oller	Unread	N/A
1	5	61	HDL-MPT06/101.48		Initialization	function	Unread	N/A
1	5	62	HDL-MPT06/101.48		MFTCL	function	Unread	N/A
	E	62	UDI MOTOS/101 49		6 hutton juiceless mul	Himstian	Unroad	51/0

Figure 2-2

Step 2: Connect the IR learner to your computer. Click "Find USB", it will display the IR learner device. (Generation 2 IR learner does not need the USB driver, if cannot find the IR learner, re-plug in the IR learner to find again.)

Step 3: Click "Ready", IR learner red and blue light will be turned on. See Figure 2-3 – IR Learner Ready

•	IR learner					-		×
	USB: HDL-	-IR-Learner-6			~	Fi	nd USB	
1	IR codes IR library	Data Backup and	Restore		2 🖌			
	IR Learning Status	:	Ready	Learning		Test		
				3				

Figure 2-3. IR Learner Ready

Step 4: Aim the remote controller to IR learner and press the any key you want the IR learner to learn. See Figure 2-4.





Step 5: Click "Learning" to display the code you have learnt. Aim IR learner to IR device, click "Test" to verify the codes. If IR device does not work, need to learn the IR code again.

See Figure 2-5 – IR Learner Learning.

🖙 IR learner				-		$\times$
USB: HDL-IR-Learner-6			$\sim$	Fi	nd USB	
IR codes IR library Data Backup ar	id Restore					
IR Learning Status:	Ready	Learning		Test		
(1):84 00 00 98 0F 09 98 B5 6C 6D 60 (2):84 01 00 00 66 00 01 02 01 03 02 (3):84 02 01 02 04 04 01 02 04 01 02 (4):84 03 03 02 01 02 01 02 01 02 01 (5):84 04 01 02 04 01 02 04 01 02 04 (6):84 05 01 02 01 02 04 01 02 01 02 (7):84 06 04 04 01 02 01 03 02 04 01 (8):84 07 02 01 02 01 02 01 02 01 03 (9):84 08 02 01 02 01 02 01 02 01 03 (10):84 0A C8 00 04 00 CB 00 32 00 3 (12):84 0B C8 00 04 00 CB 00 32 00 3	0 07 03 00 00 00 01 03 03 02 04 04 01 02 04 01 02 01 02 01 02 04 01 02 01 02 01 03 02 04 04 03 02 01 02 01 03 02 04 04 01 03 02 04 04 01 02 04 02 03 05 7 00 5E 00 07 00 4 00 32 00 97 48	5	-			
Brand, Product Type and Model: Name:		~		Save		

#### Figure 2-5. IR Learner Learning

Step 6: Fill a proper name for the device, for example, Media, AC, Haier TV, Samsung TV... And fill a proper name for this code. Then save it. (If you want to delete the code, go to IR learner-> IR library, select code, then press "Delete" button). See Figure 2-6 – IR learner Name.





Step 7: Select corresponding IR code, then click "Upload IR" to upload codes to IR page.

You can click "Test IR codes" to verify whether the code can work. See Figure 2-7 - Upload

				– o ×
IR codes	Sensor setting Logic Security setup			Sensor status
Current	alastad kay 1	094	Choose need to upload IR codes	Updata status automatically
current s	Free space			Current temperature: 46C
Modify se	elected key name:	Rename		PIR: No-movement
		_		Prightnorr 254Lux
Input key	number(1-240): From 1 To 19	Sure		Brightness. 334Lux
Key	Name	Validity		Dry contact 1: OFF
1	QUNDA-ON	Valid	Cool-H-22	Dry contact 2: OFF
2	QUNDA-Cool-H-18	Valid		
3	QUNDA-Cool-H-19	Valid		¢
4	QUNDA-Cool-H-20	Valid	Cool-H-26	
5	QUNDA-Cool-H-21	Valid		Adjust lux sensor
6	QUNDA-Cool-H-22	Valid	Cool-H-29	
7	QUNDA-Cool-H-23	Valid		
8	QUNDA-Cool-H-24	Valid	Cool-M-18	
9	QUNDA-Cool-H-25	Valid		
10	QUNDA-Cool-H-26	Valid	Cool-M-21	
11		Invalid	Cool-M-22	
12		Invalid	IR learner Upload IR Stop upload	
13		Invalid		
14		Invalid	Test IR codes	
15		Invalid	Button press ways:	
16		Invalid	Pressing key once	
17		Invalid	O Hold on key Test IR codes	
18		Invalid	Captinuiusly hold on key	
19		Invalid		
Init	ital all key		Save & Close	

Figure 2-7. Upload IR

## B. How to use IR codes?

Key number is the UV switch number. We can only turn on the UV switch to send IR

IR.



code out. If you need to turn off the AC, use another button to turn off AC. See Figure 2-8 – IR Code Usage.

-101\DLP									-	O
ettings 1 to	o 4 Pages AC	Floor heating Music Sleep	group set	ting						
Page-1 P lint: 1.Doul 2. Click eading if the	Page-2 Page-3 Pa ble click button id to the button id to read ere are three continu	ge-4 test it; d its commands, would stop Jous commands are invalid.	Currer Target	at selected pa	ge: Page	1 Current selected	i button: 2	Mode: Single ON		
Button ID	Name	Mode	Index	Subnet ID	Device ID	Туре	Param1	Param2	Para	
	key 1-AC on	Single ON V	1	5	10	Universal Switch	2(Switch no.)	ON(Switch St	N/A	
2	key 2-AC off	Single ON V								
3		Combination ON/ V	1							Button status
Ļ		Combination ON/ ~	1							Association tyr
5		Combination ON/ V	1							Association (
5		Combination ON/ ~	1							Targets settin
7		Combination ON 🛛 🗸	1							
8		Combination OFF 🛛 🗸	1							
			۲						>	
		Ø				📑 Save &	Close			

Figure 2-8. IR Code Usage.

## 2.2 Sensor Setting

R codes Sensor setting Logic Security setup	Sensor status
LED indicators setting	Updata status automatically
✓ PIR LED ON (Red)  Working LED ON(Green)	Current temperature: 45C
	PIR: No-movement
Sensor enable	
Temperature(UV no.255)	Brightness: 299Lux
☐ Brightness(UV no.254)	Dry contact 1: OFF
✓ PIR(UV no.253) ✓ PIR(UV no.251)	Dry contact 2: OFF
□ Dry Contact 2(UV no.250)	
$\nabla$ UV Switch 1	R
□ UV Switch 2	(v)
	Adjust lux sensor
	August für school
Sensor sensitivity	
Temperature compensation(C) < > 10C	
PIR sensitivity: < 4%	
Constant lux function	
Enable         Constant lux(0-5000):         500         Control cycle(0.15-55):         2.0	~
kp(scaling param): v Used for adjustment error rapidly	
Ki(integral param): 0.01 v Used for adjustment steady-state time	
Low limit: < > 0%	

Figure 2-9. Sensor Setting



- 1. **LED indicators setting**: LED indicator can be enabled or disabled
- 2. **Sensor enable**: sensor、dry contact、UV switch can be enabled or disabled. For example, if shield the IR detection, you can disable the PIR or turn off UV no.253 in device target.
- 3. Sensor sensitivity: adjust sensor temperature compensation (range is between  $-10^{\circ}$ C and  $+10^{\circ}$ C) and PIR sensitivity.
- 4. **Constant lux function**: When the brightness in sensor detecting area is lower or higher than constant lux value, sensor will adjust the brightness of dimming light in sensor target to setpoint value.

5-10\Ceilin	g Mount 8-in-1		—	ō X
IR codes	Sensor setting Logic	Security setup	Sensor status	
Logic	Domosk	Fachle	-Current logic infomation Updata status auto	matically
No.	Remark	Enable	Temperature -20 To -20 Current temperature:	47C
1	Open light	Valid 🗸	Pir: No-m	ovement
2	/	Invalid	Brightness: 349Lu	xL
3	a	Invalid	✓ IR Senser Movement ✓ Dry contact 1: 0	)FF
4		Invalid	Dry contact 1 Disconnect	
5		Invalid	Diventate 2: 0	/FF
7		Invalid	Dry contact 2 Disconnect	লি
8		Invalid	O OR UV switch(201-248) Switch ID: 201	<b>P</b>
9		Invalid	Remark: Adju	ust lux sensor
10		Invalid	OFF	
		b d —	Image: Second problem         UV Switch:201 OFF         UV Switch(201-248)         Switch ID:         202         Remark:         OFF         Auto off(1-3600s)         UV Switch:202 OFF	
		¢	Save & Close	

#### 2.3 Logic Function

Figure 2-10. Logic Function

- a- Logic table: ensure current logic is enabled before configure several logics to control different devices.
- b- OR & AND: OR means if one of the conditions is met, the target can be triggered.

AND means if all the conditions are met, the target can be triggered.

c- Current logic information: enable or disable the current logic table conditions to trigger the target.



- d- Target settings: 1. The delay time of executing target when the condition is true.
  - 2. The delay time of executing target when the condition is false.
  - 3. The target configuration when the condition is true.
  - 4. The target configuration when the condition is false.

#### 2.4 Security Setup

If use dry contact IR sensor to trigger the alarm, You should use with security module. See Figure 2-11 – Security Setup.



Figure 2-11. Security Setup.

## 3 Device Upgrade

#### 3.1 Automatic Upgrade

Automatic upgrade is applicable for the devices searched out. Automatic upgrade page is as shown in 错误!未找到引用源。.



Option	Fast search	Data backu	Data restore	Advance se	earch	Target	Function	Language	Check version	Tool		ock	Help	•
evice list														
Status	Subnet ID	Device	🔳 Firmware Upgra	ade							-		×	Hardwa
<ul> <li>Image: A second s</li></ul>	5	0	Automatic Upgrade	Manually	Upgrade									N/A
<ul> <li>Image: A set of the set of the</li></ul>	5	3	Select Device											N/A
<ul> <li>Image: A set of the set of the</li></ul>	5	4	Select Device:	5-1	10\Ceilina	Mount 8-in-1				~	1 Ge	t Device	List	N/A
<ul> <li>Image: A set of the set of the</li></ul>	5	7	Manually Cubblet									- Democ	List	N/A
<ul> <li>Image: A set of the set of the</li></ul>	5	8	Manually Subivet	ID: 5			- Dev	ice ID: 10		•	2 Read	d Device	Туре	N/A
	5	10	Select File:	C:\	Users\ww	/whw\Desktop\FW_I	HDL-MSP08M	.4C_V04.07U(201	L9-11-25-001)-M0516	_1.bin	2.	Add D	evice	N/A
<ul> <li>Image: A second s</li></ul>	5	12	Davica Madal:	NuvoM0	516_MIN	_SENSOR					<b>D</b> L	- 100 0	crice	N/A
<ul> <li>Image: A set of the set of the</li></ul>	5	16	Device Widden.											N/A
<ul> <li>Image: A set of the set of the</li></ul>	5	22	Unanda Lint											N/A
<ul> <li>Image: A set of the set of the</li></ul>	5	30	Opgrade List	Devices		1	Chathar		Death contract					N/A
<ul> <li>Image: A set of the set of the</li></ul>	5	33	Subnet ID	Device I		vame	Status	1	Path setting				00014	N/A
✓	5	40	<b>≥</b> 5	10	0	elling Mount 8-In-1	wait for t	ne upgrade	C:\Users\www	nw\Desk	top\Fw_i	HUL-IVIS	PU8IVI	N/A
✓	5	59												N/A
<ul> <li>Image: A second s</li></ul>	5	71												N/A
✓	5	101												N/A
	120	1												N/A

#### Figure 3-1. Automatic Upgrade

- 1. Select the device to upgrade.
- 2. Read device type.
- 3. Select the device firmware.
- 4. Add to upgrade list.
- 5. Begin the upgrade.

#### 3.2 Manually Upgrade

If upgrade failure, select manually upgrade page, Refer to Figure 3-2.

🔳 Firmware Upgra	e – 🗆 ×	
Automatic Upgrade	Manually Upgrade	
Select Device		
Device:	5-10 V Read Device Type	
Select File:	C:\Users\wwwhw\Desktop\FW_HDL-MSP08M.4C_V04.07U(2019-11-25-001)-M0516_1.bin Upgrade	
Device Model:	NuvoM0516_2015/12/25	

#### Figure 3-2. Manually Upgrade

1. If it shows Ceiling Mount 8-in-1 Sensor address and type, select the firmware.



2. Manually upgrade it.

#### 3.3 Access in Manually Upgrade Mode

How to access in the manually upgrade mode:

- 1. Open the manually upgrade page.
- 2. Power off Ceiling Mount 8-in-1 Sensor, then long press its Prog button (you may take apart the cover) and power on it. See Figure 3-3.



Figure 3-3

3. In the manually upgrade page, you can see Ceiling Mount 8-in-1 Sensor address and model, select the firmware and upgrade.