

Installation and Instruction Manual

IP65 HF Zhaga book 18 Standard Motion Sensor

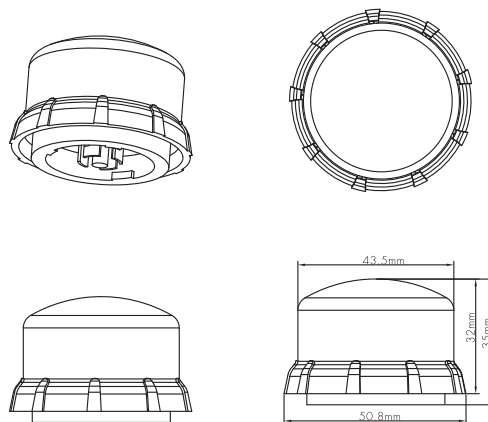
D4i Input device , High-Bay

HYTRONIK®
SAM15/D2

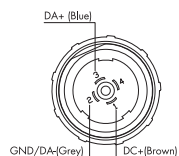
1. Technical Specifications

Operating voltage	12-36 VDC
Stand-by power	<0.5W
Quiescent current	25mA
Output	DALI-2
DALI Input voltage	9.5-22.5V
Bus current consumption	2mA
Lux range	0-1023 lux
Sensor principle	High Frequency (microwave)
Detection range*	Max installation height:15m (forklift) 12m (single person) Max detection range: ϕ 20m (forklift) ϕ 12m (single person)
Detection angle	360°
Sensitivity	30% / 50% / 75% / 100%
Operation temperature	Ta: -20°C ~ +50°C
Storage temperature	-40°C ~ +70°C
Relative humidity	10 ~ 90%
IP rating	IP65
Insulation	Class II

2. Mechanical Structure & Dimensions



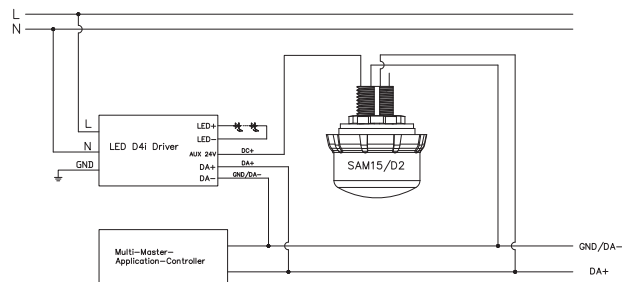
3. Wiring Diagram



- The total current on the DALI bus must not exceed 250mA.
- Terminal block 4 is left unpopulated by default. No wiring required.
- SAM15/D2 has been used as DALI-2 input device to only report DALI instance(light sensor instance and motion sensor instance) to DALI-2 application controller, who is the "main brain" to process the data communication between input devices and the control gear and assign different function.

Wiring Diagram 1

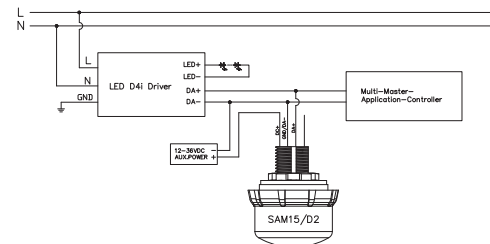
D4i Driver with Built-in AUX



----This product should be installed by a qualified electrician.

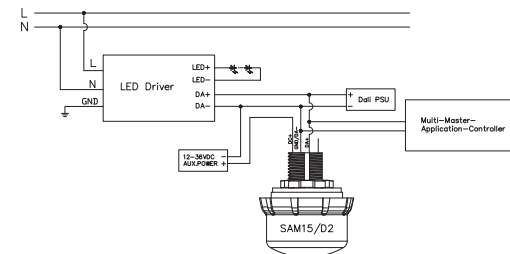
Wiring Diagram 2

D4i Driver with External AUX



Wiring Diagram 3

Standard Driver with External AUX & PSU



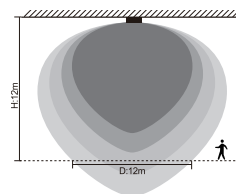
4. Detection Range

*The sensor detection area shown in this table is based on an open space.

In environments with hard surfaces such as metal racking or glass corridors, the detection range may be extended by up to 30% due to reflections or signal penetration.

The data above is tested under following conditions:

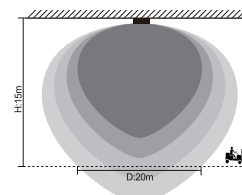
- Single person walking;
- Sensor not connected to any driver that may have soft-on period;
- Testing temperature Ta = 20°C;



Height (m)	Sensitivity			
	100%	75%	50%	30%
Diameter (Ø m)				
12	12	9	6	none
8	13	10	6	2
5	14	11	7	5
3	15	12	8	6

The data above is tested under following conditions:

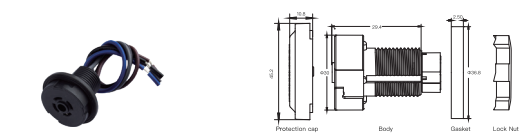
- Forklift driving at a speed of 15km/h;
- Sensor not connected to any driver that may have soft-on period;
- Testing temperature Ta = 20°C;



Height [m]	Sensitivity
	100%
	Diameter (Ø, m)
15	20

5. Optional Accessory

Zhaga Book 18 standard interface (HA18SKT)



For more details, please refer to <https://hytronik.com/product/ha18skt>
Note: HA18SKT not included in the package.

The HA18SKT receptacle is designed to be compatible with the SAM15 and HIR15 series products. It provides a Zhaga Book 18 standard interface, suitable for roadway lighting, area lighting, and occupancy lighting applications.

6. Sensitivity Adjustment

Method 1

Setting the sensitivity can be achieved through the following command combination:

1. “ENABLE WRITE MEMORY”: Enable BANK write function.
2. “DTR1:DRT0=0x1:0x2, WRITE MEMORY LOCATION = 0x55”: Set the Lock byte of BANK1 to 0x55. Here a total of 2 instructions are used. 0x1(binary) = 1(decimal), 0x2(binary) = 2(decimal), 0x55 (binary) = 85(decimal).
3. “DTR1:DRT0=0x1:0x11, WRITE MEMORY LOCATION = sensing gear value”: set the sensitivity of BANK1 to "sensing gear value". 0x11(binary) = 17(decimal). Sensing gear value can be selected from 0x1 to 0x4, 0x1 is the weakest, 0x4 is the strongest.

*Before writing to the bank, two locks need to be unlocked to write normally.

- The first lock is the big lock for all banks. Unlock it with the command “ENABLE WRITE MEMORY”.
- The second lock is that each bank has its own Lock byte. When the written value is 0x55, the small lock is unlocked.

*BANK is a memory space freely defined by the manufacturer. Writing a value after unlocking has two steps:

- Specify the write address, and pass in the address through DTR0 and DTR1.
- Pass in the written value with the write command "WRITE MEMORY LOCATION". This command will return the written value after the write is successful. Write fails without return value.

The following is an example of an instruction to set the sensitivity to 100%.

Type	Addr	Command	Data	Delay	Answer
DALI24	BCast	ENABLE WRITE MEMORY		100...	
DALI24	BCast	ENABLE WRITE MEMORY		100...	
DALI24		DTR1:DRT0	1:2	100...	
DALI24		WRITE MEMORY LOCATION	85	100...	85
DALI24		DTR1:DRT0	1:17	100...	
DALI24		WRITE MEMORY LOCATION	4	100...	4

Method 2

The motion sensor only sends motion events. No further signals or commands will be sent. Sensor sensitivity ranges from 0 to 100%.

- *Values of "detectionRange" and "detectionSensitivity" shall have the following meaning:
- [0,100]: 0-100%. 0 is the lowest detection range or detection sensitivity, 100 is the highest.
 - 255: Adjustment not supported.

*Set sensitivity: 0x26
*Query sensitivity: 0x2B

Command name	Address byte	Instance byte	Opcode byte	DTR0	DTR1	DTR2	Answer	Send twice	See subclause	Command subclause
CATCH MOVEMENT	Device	Instance	0x20						9.4.6	11.7.2
SET HOLD TIMER (DTR0)	Device	Instance	0x21	✓				✓	9.5.1	11.8.3
SET REPORT TIMER (DTR0)	Device	Instance	0x22	✓				✓	9.5.2	11.8.4
SET DEADTIME TIMER (DTR0)	Device	Instance	0x23	✓				✓	9.5.3	11.8.5
CANCEL HOLD TIMER	Device	Instance	0x24						9.5.1	11.7.3
SET DETECTION RANGE (DTR0)	Device	Instance	0x25	✓				✓	9.5.7	11.8.6
SET SENSITIVITY (DTR0)	Device	Instance	0x26	✓				✓	9.5.7	11.8.7
QUERY INSTANCE CAPABILITIES	Device	Instance	0x29				✓		9.5.6	11.9.7
QUERY DETECTION RANGE	Device	Instance	0x2A				✓		9.5.7	11.9.8
QUERY SENSITIVITY	Device	Instance	0x2B				✓		9.5.7	11.9.9
QUERY DEAO TIME TIMER	Device	Instance	0x2C				✓		9.5.3	11.9.3
QUERY HOLD TIMER	Device	Instance	0x2D				✓		9.5.1	11.9.4
QUERY REPORT TIMER	Device	Instance	0x2E				✓		9.5.2	11.9.5
QUERY CATCHING	Device	Instance	0x2F				✓		9.5.6	11.9.6

*The valid value range is 0-100, 0-24 is the lowest sensitivity of the first gear, 25-49 is the second gear, 50-74 is the third gear, and 75-100 is the highest sensitivity of the fourth gear.

7. Additional Information / Documents

1. To learn more about detailed product features/functions, please kindly refer to <https://hytronik.com/product/sam15-d2>
2. Regarding precautions for Microwave sensor installation and operation, please kindly refer to <https://hytronik.com/service/downloads> (Microwave Sensors Precautions for Product Installation and Operation)
3. Data sheet is subject to change without notice, Please always refer to the most recent release on <https://hytronik.com/products/motion-daylight-sensors>
4. Regarding Hytronik standard guarantee policy, please kindly refer to <https://hytronik.com/service/downloads> (Guarantee Conditions document)