steinel

DALI-2 Interface Description
Input Device

Content:

# 1    Version / Compatibility

This specification can be applied for sensors with firmware version 2.0.
The firmware version of the sensor can be read from memory bank 0. It is stored at locations 0x09 (major) and 0xA (minor).

# 2    DALI Communication

STEINEL DALI-2  input device sensor products comply with the following parts of the DALI-standard:

- IEC 62386 Part 101 ed 2.0 (2014-11)
- IEC 62386 Part 103 ed 1.0 (2014-11)
- IEC 62386 Part 303 ed 1.0 (2017-05)
- IEC 62386 Part 304 ed 1.0 (2017-05)

Input devices are normally used in combination with an DALI-2 application controller.

STEINEL-specific settings have been added because the standard does not cover all of the sensors functions. A complete description of these settings is to be found in chapter 4 of this document.

## 2.1  Sensor Instances

Each sensor input value is assigned to a separate DALI instance. Depending on the type of sensor, they are equipped with two or three instances. Instances are identified via type and number.

Motion sensor with light measurement:

| Instance Number | Instance Type | Description |
|---|---|---|
| 0 | 4 | Brightness measuring |
| 1 | 3 | Motion detection |

DualTech motion sensor with light measurement:

| Instance Number | Instance Type | Description |
|---|---|---|
| 0 | 4 | Brightness measuring |
| 1 | 3 | Motion detection ultrasonic |
| 2 | 3 | Motion detection infrared |

Dual light measurement:

| Instance Number | Instance Type | Description |
|---|---|---|
| 0 | 4 | Brightness measuring (spot) |
| 1 | 4 | Brightness measuring (diffuse) |

## 2.2  Identification

An identification procedure can be triggered via DALI commands. The sensor-2 is equipped with a status LED which blinks while the sensor is in identification mode.

# 3 Factory default settings

STEINEL sensors are preprogrammed with optimized DALI settings regarding occupancy sensing. After a RESET Command, all settings changes back to their standardized reset value. An Application controller should be aware of the significance of this settings.

| Setting | Steinel Value | Reset Value | Description |
|---|---|---|---|
| Hold Timer | 1 | 90 | Occupied state last for 10 seconds instead of 900 seconds |
| Report Timer | 5 | 20 | Motion status is reported every 5 seconds instead of 20 seconds |
| Event Filter | 7 | 3 | Activate repeat event too |

Event Filter detail table:

| Bit | Description | Value |
|---|---|---|
| 0 | Occupied event enabled | "1" = Yes |
| 1 | Vacant event enabled | "1" = Yes |
| 2 | Repeat event enabled | "1" = Yes |
| 3 | Movement event enabled | "0" = No |
| 4 | No movement event enabled | "0" = No |
| 5 | Reserved | 0 |
| 6 | Reserved | 0 |
| 7 | Reserved | 0 |

# 4 Memory Bank 2 (STEINEL-specific)

Memory bank 2 is customer specific and used for STEINEL-specific features. The complete content and its purpose is shown in the following table.

Data can be queried via the "READ MEMORY LOCATION (DTR0, DTR1)" command.

Write access to NVM data positions is only possible if the memory bank is unlocked (Lockbyte = 0x55).

| Address | Description | Default value (factory) | Lockable | Memory type |
|---|---|---|---|---|
| 0x00 | Address of last accessible memory location | 0x05 | n/a | ROM |
| 0x01 | Reserved - not implemented | answer NO | n/a | n/a |
| 0x02 | Memory bank lock byte. Lockable bytes in the memory bank shall be read only while the lock byte has a value different from 0x55. | 0xFF | NO | RAM |
| 0x03 | Sensor type | Sensor specific (see:4.1) | n/a | ROM |
| 0x04 | Sensor sensitivity | 0xFF | YES | NVM |
| 0x05 | Detection range (HF / US) | 0xFF | YES | NVM |
| [0x06, 0xFF] | Reserved - not implemented | answer NO | n/a | n/a |

## 4.1 Sensor type

The Sensor type number depends on the physical type of sensor. The following table shows all existing sensor types, its type numbers and its capabilities.

| Type number | Sensor type | Sensitivity setting supported | Detection range setting supported | Dali current consumption |
|---|---|---|---|---|
| 1 | Control Pro IR Quattro | Yes | No | 6mA |
| 2 | Control Pro IR Quattro HD | Yes | No | 8mA |
| 3 | Control Pro HF 360 | Yes | Yes | 10mA |
| 4 | Control Pro Dual HF | Yes | Yes | 14mA |
| 5 | Control Pro DualTech | Yes | Yes (US) | 24mA |
| 6 | Control Pro US 360 | Yes | Yes | 24mA |
| 7 | Control Pro Single US | Yes | Yes | 20mA |
| 8 | Control Pro Dual US | Yes | Yes | 24mA |
| 10 | IR Quattro Slim XS | Yes | No | 4mA |
| 20 | IS 3360 MX | Yes | No | 6mA |
| 21 | IS 345 MX | Yes | No | 6mA |
| 22 | Dual Light Sensor | No | No | 6mA |
| 24 | IR Micro | Yes | No | 4mA |
| 30 | IS 3180 | Yes | No | 6mA |
| 31 | IS 3360 | Yes | No | 6mA |
| 35 | IS 345 | Yes | No | 6mA |
| 36 | HF 3360 | Yes | Yes | 10mA |
| 37 | IR Quattro Micro | Yes | No | 4mA |

## 4.2 Sensor Sensitivity

This parameter is used to change the sensor sensitivity. If "high" sensitivity is selected, the sensor will respond to any movement immediately. If "low" sensitivity is selected, the sensor will respond after detecting several movements. The default value is "0xFF" (high sensitivity).

0x00  ➔  0%  lowest possible sensitivity

…

0xFF  ➔  100%  highest sensitivity

Available for all motion sensors.

## 4.3 Detection Range

Detection range is used to adjust how strong a motion signal must be in order to recognize it as motion. This setting is only applicable for HF and US sensor technology.

0x00  ➔  0%  only very large movements are detected

…

0xFF  ➔  100%  minor movements are detected

# 5    EAN /GTIN

Each sensor type has a unique "European Article Number" for clear identification. This number is stored in memory bank 0 at position 0x03 to 0x08 and can be queried via the "READ MEMORY LOCATION" command.

| EAN / GTIN | Sensor Name |
|---|---|
| 4007841068158 | Control Pro IR Quattro |
| 4007841057497 | Control Pro IR Quattro HD |
| 4007841057480 | Control Pro HF360 |
| 4007841057459 | Control Pro Dual HF |
| 4007841057473 | Control Pro US DualTech |
| 4007841057534 | Control Pro US 360 |
| 4007841057503 | Control Pro US Aisle Single |
| 4007841057466 | Control Pro US Aisle Dual |
|  |  |
| 4007841066239 | Generation 3000 IS 3360 AP (without design cover) |
| 4007841066246 | Generation 3000 IS 3360 MX AP (without design cover) |
| 4007841066253 | Generation 3000 IS 345 AP (without design cover) |
| 4007841066260 | Generation 3000 IS 345 MX AP (without design cover) |
| 4007841066277 | Generation 3000 IS 3180 AP (without design cover) |
| 4007841066284 | Generation 3000 HF 3360 AP (without design cover) |
| 4007841066291 | Generation 3000 Dual Light Sensor AP (without design cover) |
| 4007841066307 | Generation 3000 IS 3360 UP (without design cover) |
| 4007841066314 | Generation 3000 IS 3360 MX UP (without design cover) |
| 4007841066321 | Generation 3000 IS 345 UP (without design cover) |
| 4007841066338 | Generation 3000 IS 345 MX UP (without design cover) |
| 4007841066345 | Generation 3000 IS 3180 UP (without design cover) |
| 4007841066352 | Generation 3000 HF 3360 UP (without design cover) |
| 4007841066369 | Generation 3000 Dual Light Sensor UP (without design cover) |
|  |  |
| 4007841065034 | IR Quattro Slim XS (without design cover) |
| 4007841053871 | IR Quattro Micro |
| 4007841057732 | IR Micro Sensor |
|  |  |
| 0 | No sensor connected |