
HALSANG Remote

Conclusive Engineering

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Contents:

1	Device Overview	1
2	User Interface	2
2.1	Operating Instructions	2
2.2	Modes of Operation	2
2.2.1	Legacy Mode	2
2.2.2	Packet Mode	2
2.2.3	Switching Between Modes	3
3	Troubleshooting	4
3.1	Legacy Mode	4
3.2	Packet Mode	4
4	Technical Specification	5

CHAPTER 1

Device Overview

This remote control is designed for use with compatible gate systems. It features **four buttons (A, B, C, D)**, **two LEDs (green and red)**, and supports **two communication modes**:

- **Legacy Mode** (one-way transmission compatible with legacy H102neo systems)
- **Packet Mode** (two-way communication with acknowledgments)

Both communication modes feature encryption of payload and rolling code functions.

2.1 Operating Instructions

1. Stand within range of the gate system.
2. Press the button assigned to your gate or function (A–D).
3. Observe LED feedback to confirm communication status (see modes above).

2.2 Modes of Operation

2.2.1 Legacy Mode

Legacy mode is characterized by a continuous one-way FSK modulated communication. The device keeps sending the same code for as long as the same combination of buttons is pressed.

Each new press of a button initiates a code rolling and changes the encryption pattern.

Red LED signals the transmission of data stream.

After 20 seconds of consecutive data stream being transmitted the remote stops sending packets and returns to sleep mode to preserve battery life. This feature prevents the user from draining the battery with a long accidental button press i.e. in a pocket.

2.2.2 Packet Mode

Packet mode offers an improved approach to the remote communication. While maintaining a similar FSK modulation and the same operating frequency it adds much higher baud rate reducing the time on air significantly. That reduces power consumption helping to conserve the battery. On top of that, bi-directional communication with a visual feedback response from the gate adds improves user experience by assuring that every button press is followed by an actual gate action being taken.

The LED visual feedback system works as follows:

- **Green LED solid:** packet is sent and followed by a feedback:

- **Green LED solid:** ACK (gate confirmed movement).
- **Red LED solid:** NAK (gate rejected movement).
- **Red LED flashing:** Communication timeout (no response or out of range).

In the **Packet** mode remote retries to send the message only if no response was received. Otherwise, keeping the button pressed has no further effect past initiating a single movement action further preserving the battery.

After 20 seconds of consecutive retries followed by a timeout the remote stops sending packets and returns to sleep mode to preserve battery life. This feature prevents the user from draining the battery with a long accidental button press i.e. in a pocket.

2.2.3 Switching Between Modes

The remote operates in either **Legacy** or **Packet** mode. The **Legacy** mode is not compatible with **Packet** mode. It is not possible to access both legacy and new hardware at the same time. Mode change operation affects whole remote including all buttons **A-D**.

To switch between modes:

- Press and hold **C + D** until both LEDs flash green and red.
 - Press **A** to select Packet Mode.
 - Press **B** to select Legacy Mode.
- The remote will confirm the selection with LED feedback.

3.1 Legacy Mode

Problem	LED Behavior	Solution
No reaction from gate	Red on	Move closer, make sure remote is paired.
No LED activity	–	Check battery.
Wrong communication mode active	–	Re-enter mode menu (C + D) and select B.

3.2 Packet Mode

Problem	LED Behavior	Solution
No reaction from gate	Red flashing	Move closer, make sure remote is paired
NAK response from the gate	Red solid	Check the gate: safety stop or other safety measures might be engaged and prevent the gate from moving.
No LED activity	–	Check remote battery.
Wrong communication mode active	–	Re-enter mode menu (C + D) and select A.

Technical Specification

Parameter	Value
Number of channels	4
Power supply	1× Lithium battery 3V CR2032
Current consumption	<26 mA
Operating frequency	867.84 MHz
Modulation	FSK
Coding	HALSANG rolling code
Transmission mode	Unidirectional or Bidirectional with acknowledgement
Rated e.r.p.	<11 mW
Range in free space	up to 210 m
Temperature range	-22 °C to 60 °C
Dimensions	68 × 40 × 14 mm
Environmental protection	IP65
Weight	29 g