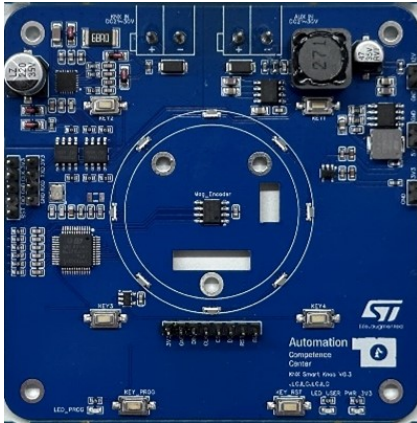


## Reference design board for KNX knob



Fully assembled board developed for performance evaluation only,  
not available for sale

### Features

- KNX 21-32 V as KNX power supply, 30 V as auxiliary power supply
- KNX interface for smart home systems; connectors comply with KNX standard
- RGB ring providing visual feedback to users
- Four physical push buttons for direct control (switching pages/functions)
- Knob for precise adjustments (temperature, brightness level, speed)
- Effective isolation between controller and transceiver to mitigate noise
- Robust protection against surges provided by TVS

### Description

The **STDES-KNXKNOB** is a smart knob used in KNX smart home and building.

This **STDES-KNXKNOB** is designed with **STKNX** as KNX device transceiver and low power **STM32G071CB** as main controller.

The **STDES-KNXKNOB** incorporates **STISO621** between KNX transceiver and MCU, the **L6981** as step-down converter with 30 V input and 12 V output, the **ST1S40** as step-down switching regulator with 3 A DC and 5 V DC output, the **LD39015** as 150 mA low quiescent current low noise voltage regulator.

The **SMAJ40CA** is used as a transient voltage suppressor (TVS).

The **STDES-KNXKNOB** reference design can communicate with LCD and BLDC motor.

By integrating with the KNX stack, this panel can control air conditioning, lighting, and RGB in a KNX home system.

With the aid of an LCD screen and RGB lights, the device offers visual feedback to enhance the user experience. Users can quickly operate the device by pressing four push buttons. Additionally, the device incorporates an encoder that enables more precise manipulation

Product summary	
Reference design board for KNX knob	<b>STDES-KNXKNOB</b>
Software for STDES-KNXKNOB	<b>STSW-KNXKNOB</b>
Mainstream Arm Cortex-M0+ MCU	<b>STM32G071CBT6</b>
Miniature KNX transceiver with voltage regulators	<b>STKNXTR</b>
Dual channel digital isolator	<b>STISO621</b>
38 V, 1.5 A synchronous step-down converter	<b>L6981NDR</b>
3 A DC step-down switching regulator	<b>ST1S40IDR</b>
150 mA low quiescent current low noise voltage regulator	<b>LD39015M33R</b>
400 W, 40 V TVS in SMA	<b>SMAJ40CA-TR</b>
Applications	<b>Smart home</b>

# 1 Schematic diagrams

Figure 1. STDES-KNXKNOB circuit schematic (1 of 3)

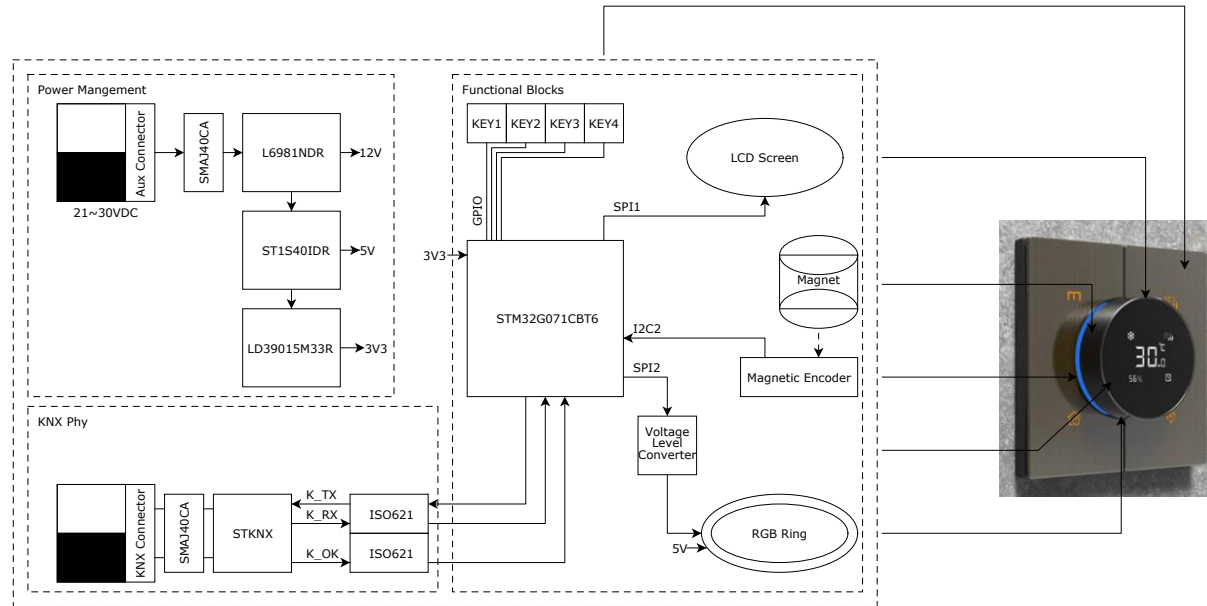
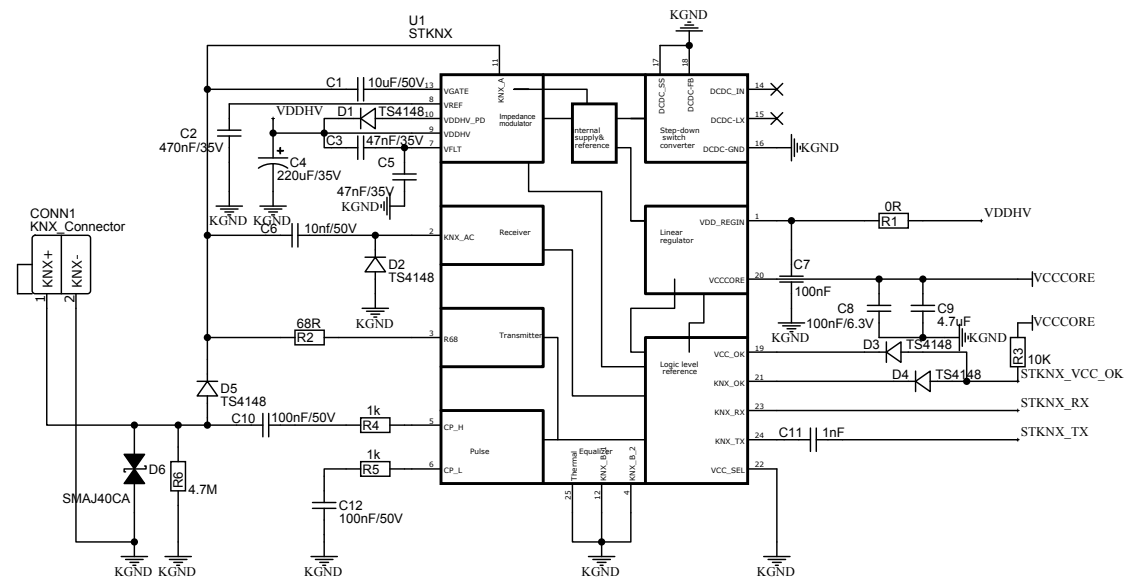


Figure 2. STDES-KNXKNOB circuit schematic (2 of 3)

KNX Phy



Isolation

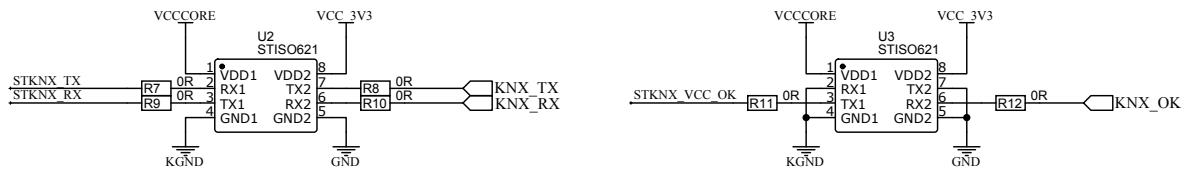
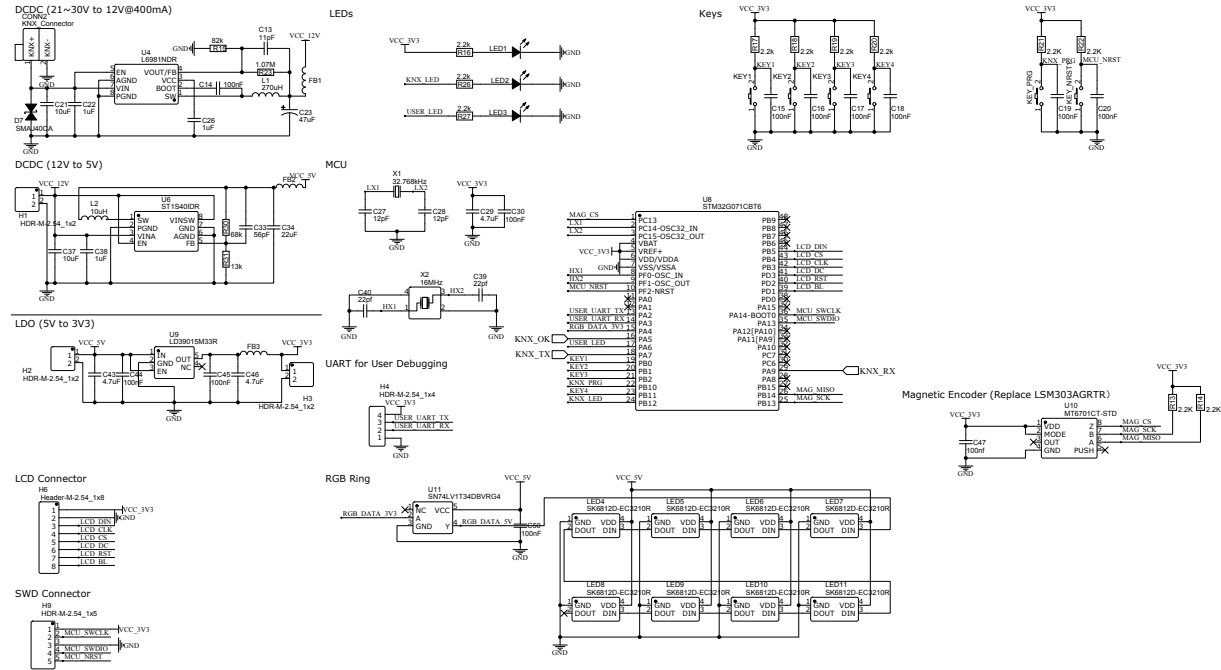


Figure 3. STDES-KNXKNOB circuit schematic (3 of 3)



## Revision history

**Table 1. Document revision history**

Date	Revision	Changes
17-Dec-2024	1	Initial release.

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