

HStack Conformance Statement

Registered KNX TP-1 System B protocol stack, registration 867/23232/26

HTKNXSTK001

DOCUMENT	STACK VERSION	REVISION	ISSUE DATE	WEB
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This document states which parts of the KNX system specification the HStack protocol stack implements. It is a readable summary of the Protocol Implementation Conformance Statement and the Protocol Implementation eXtra Information for Testing that Horizentis filed with KNX Association for registration 867/23232/26. The signed original forms are available to licensees and to prospective licensees on request.

MANUFACTURER	PRODUCT NAME	REGISTRATION	DEVICE DESCRIPTOR
Horizentis, ID 867	HStack	867/23232/26	07B0h, System B

General

Item	Statement
Product name	HStack
Manufacturer	Horizentis, KNX manufacturer ID 867
KNX registration number	867/23232/26
Stack type	Server, that is a KNX end device stack. Router, bridge and client profiles are not implemented
Layers used	Application and application interface layer, transport layer, network layer, link layer
Management version	System B, device descriptor type 0 = 07B0h
Private messaging	Not used. The stack conforms to Volume 3/7/1 without private extensions
Supported transceiver	onsemi NCN5110 bit level TP-1 transceiver. The TP-1 bit timing and encoding are implemented in the microcontroller firmware
Supported microcontroller	STMicroelectronics STM32G0, Arm Cortex-M0+. Registered on STM32G0B0CET6
Operating system	Arm RTX, CMSIS-RTOS2
KNX serial number	6 octets, assigned per device in production

Common profile

- ✓ Medium dependent layers
- ✓ Physical layer general
- ✓ Link layer general
- ✓ Network layer general
- ✓ Transport layer, multicast
- ✓ Transport layer, connection oriented
- ✓ Application layer, group object services
- ✓ Application layer, property value services
- ✓ Application layer, function property services
- ✓ Application interface layer, group objects
- ✓ Application interface layer, interface objects
- ✓ Application interface layer, function properties
- ✓ KNX Data Security

The profiles that HStack deliberately does not implement, because it is an end device stack on a single medium, are the router, bridge and media coupler profiles at link and network layer, group object indirection, the unidirectional device profile, and KNXnet/IP Secure.

Medium and frame format

Item	Statement
Supported medium	Twisted Pair 1, TP1-256
Supported APDU length	69 octets. <code>PID_MAX_APDULENGTH</code> reports 69
Extended frames	Supported, for transmission and reception
Other media	PL110, RF and KNX IP are not implemented

System mode

HStack is configured in system mode, that is with ETS. Easy installation mode is not implemented. The following system mode features are supported.

Communication and device management

- ✓ Transport layer, connection oriented
- ✓ Direct memory access
- ✓ Verify mode
- ✓ Interface object handling, type 1
- ✓ Function properties
- ✓ Load and run state machines, type 1
- ✓ RAM cleared indication
- ✓ User EEPROM
- ✓ Restart, connectionless and connection oriented
- ✓ Master reset, erase codes 01h, 02h and 07h
- ✓ Authorisation, 4 access levels, 0 to 3
- ✓ Download counter, PID 30 of the device object

Device identification and individualisation

- ✓ Device descriptor service, type 0
- ✓ Connection oriented and connectionless
- ✓ Identification of hardware
- ✓ Identification of application
- ✓ Programming mode, both addressing forms
- ✓ KNX serial number, client initiated
- ✓ Default individual address
- ✓ Serial number discovery by system network parameter read

Device linking and application handling

- ✓ Address table, realisation type 7
- ✓ Association table, realisation type 6
- ✓ Group object table, realisation type 7
- ✓ Application program and parameters
- ✓ Application specific parameters
- ✓ Extended property services
- ✓ Extended memory services, 24 bit addressing
- ✓ Extended function property services

NOTE: Easy installation mode, the coupler server services and the user memory services are not implemented, because HStack is an ETS commissioned end device stack.

Group communication

Group read, group write and group response are supported in both directions. A read received from the bus is answered when the read flag is set, and a response received from the bus updates the local value when the update flag is set. Associations of one group object to several group addresses are supported for sending and for receiving.

Supported group object flags

- ✓

Communication enable
- ✓

Write enable
- ✓

Update enable
- ✓

Read enable
- ✓

Transmit enable
- ✓

Read on initialisation

Supported group object value lengths

- ✓

UINT1 to UINT8
- ✓

OCTET3, OCTET4
- ✓

OCTET10
- ✓

UINT16
- ✓

OCTET6, OCTET8
- ✓

OCTET14

KNX Data Security

Item	Statement
Secured communication	Tool access with the tool key, secured group communication with group keys, and secured point to point communication
Security interface object	Implemented, with the security properties required by the specification
Failure reporting	Security failures are logged and reported on the bus with <code>A_NetworkParameter_InfoReport</code>
KNXnet/IP Secure	Not applicable. HStack is a TP-1 stack

Memory access

Memory access is served through a virtual memory map rather than a direct view of the microcontroller address space, so an access outside a declared area is refused with address void rather than reaching real memory. The protected area runs from `000000h` to `0001FFh`. Read and write areas, some of them behind an authorisation level and one of them behind KNX Data Security, are declared from `000200h` upwards, together with the window that holds the ETS configuration data.

NOTE: This summary is written for evaluation. Where a project needs the formal statement, for example during the certification of a device built on HStack, the signed PICS and PIXIT forms filed with KNX Association are the authoritative documents and are supplied with the licence.

IMPORTANT: Registration 867/23232/26 covers the HStack protocol stack. A device built on HStack still needs its own KNX product certification, which covers the application program, the hardware and the ETS product database of that device.