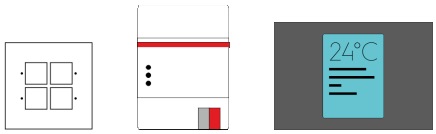
The KnxIP Driver



The KnxIP driver allows North to interface with a wide range of equipment supporting the KNX standard. Available for Commander and ObSys.

This document relates to KnxIP driver version 1.0

Please read the *Commander Manual* or *ObSys Manual* alongside this document, available from *www.northbt.com*

Contents

Compatibility with the KNX System

The KnxIP driver allows North to interface with a wide range of equipment supporting the KNX standard. KNX is the successor to three previous building automation standards: EIB, EHS, and BatiBUS.

The driver connects via an IP network to a KNX IP Interface or IP Router module (Fig. 1). Compatible modules must support the KNXnet/IP tunnelling protocol. The driver can auto-discover an available tunnel on the local network.

KNX devices communicate between each other using group address messages. Once the driver has established a KNXnet/IP tunnel connection, it will listen to group messages sent on the KNX network and store their value. The driver can also send group messages on to the KNX network for other devices to receive a value.

The KnxIP driver can store the values of up to 400 groups. Each group to store can be configured with a label, address and data type, or the driver can be set to automatically learn groups as a message is received.

The EIB driver is also available for compatibility with older European Installation Bus (EIB) equipment supporting the RS232 ETS protocol pre FT1.2.

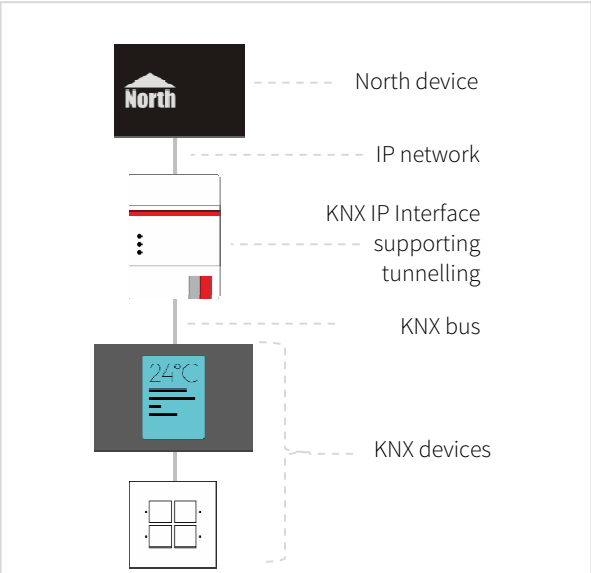


Fig. 1 North to KNX System

Equipment

KNX compatible equipment is available from many manufacturers, including:

- ABB
- Jung
- Theben
- GIRA
- Siemens
- Schneider

Values

Each value available for a group address conforms to one of the standard KNX Datapoint Types (DPTs) available. These include switch state, dimming level, operating mode, temperature, time delay, set point, louvre position, occupancy, lighting scene, meter reading, etc.

Prerequisites

The KNX system, including the KNX IP Interface or Router, needs engineering using KNX ETS software. If possible, consult with the KNX engineer regarding configured group addresses and their associated datapoint types before commissioning this interface.

If you are connecting to the KNXnet/IP via a firewall, then the driver will require bi-directional access on multiple UDP ports.

Using the Driver

On ObSys and Commander, the driver is pre-installed. On all of these North devices, you can use the driver to create an interface to KNX. Once started, you will need to configure the driver before it can communicate with the KNX system.

Starting the Interface

To start an interface using the KnxIP driver, follow these steps:

→ **Start Engineering** your North device using ObSys

→ Navigate to **Configuration, Interfaces,** and set an unused **Interface** to 'KnxIP' to start the interface

→ Navigate to the top-level of your North device and re-scan it

The driver setup object (Mc), labelled **KnxIP Setup**, should now be available. If this object is not available, check an interface licence is available and the driver is installed.

Setting up the Driver

To set up the driver, follow these steps:

→ Navigate to the **KnxIP Setup** object (Mc). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'

→ The driver will attempt to auto-discover a KNX IP Interface or Router on the local network. If you wish to select a particular device, set its IP address in the **KNX IP Address** object (IP)

Checking Communications

You can check that the interface is communicating by reading the **Comms Established** object (DS). A value of 'Yes' indicates the driver has connected to, and is communicating with the KNXnet/IP tunnelling device.

Some KNX IP Interface modules only support one tunnel at any time, and if this is already in use it will be unavailable for this driver.

KNX IP Routers that support multiple tunnels concurrently may not work if any of the connections to it are in Bus Monitor mode. Check with the KNX engineer if in doubt.

Object Specifications

Once an interface is started, one or more extra objects become available within the top-level object of the device. As with all North objects, each of these extra objects may contain sub-objects, (and each of these may contain sub-objects, and so on) – the whole object structure is a multi-layer hierarchy. It is possible to navigate around the objects using the ObSys Engineering Software.

Each object is specified below, along with its sub-objects.

Example Object Reference

An example of a reference to an object in the same device: the KNX System object (S1) contains a Group value object (V1), which contains a switch state at offset 0 (DPT type 1) - therefore the object reference will be 'S1.V1.O0.B1'.

An example of a reference to an object in a different device: the IP network object (IP) contains Default Commander object (CDIP), which contains the object above (S1.V1.O0.B1) – therefore the complete object reference is 'IP.CDIP.S1.V1.O0.B1'.

Device Top-Level Objects

When an interface is started using the KnxIP driver, the objects below become available within the top-level object of the device. For example, if Interface 1 is started, then the object with references 'M1' and 'S1' become available.

Description	Reference	Type
KnxIP Setup Set up the KnxIP driver, started on interface *c* (*c* is the interface number)	M*c*	Fixed Container: On the Commander platform this will be *[CDM v20\KnxIP v10]* On the ObSys platform this will be *[OSM v20\KnxIP v10]*
KNX System Access the KNX system connected to interface *c* (*c* is the interface number)	S*c*	Variable Container: *[KnxIP v10]*

KnxIP Driver Setup

Object Type: *[OSM v20\KnxIP v10]*
Object Type: *[CDM v20\KnxIP v10]*

The KnxIP driver contains the following objects:

Description	Reference	Type
System Label Label displayed when scanning the system object	DL	Obj\Text; Max. 20 chars; Adjustable
KNX IP Address Optional IP address of a KNX IP Interface or Router device. If not specified then the driver attempt to auto-discover a device.	IP	Obj\IP; Adjustable
Comms Established Indicates whether communications have been established with the KNX IP router or interface	DS	Obj\NoYes
Group Learn Mode The driver will store each KNX Group Value object in turn as values are received	LM	Obj\OffOn; Adjustable
Group Value *x* This objects contains settings for each type of value available from the KNX system, they can be configured by the engineer, or populated using the Learn Groups Mode object The Group Value number, *x*, can be in the range 1…400	V*x*	Fixed Container: On the Commander platform this will be *[CDM v20\KnxIP v10\Value]* On the ObSys platform this will be *[OSM v20\KnxIP v10\Value]*
Debug Enable This will store additional debug information in the record file. Use this option only when instructed by North Support	DE	Obj\NoYes; Adjustable

Group Value

Object Type: *[OSM v20\KnxIP v10\Value]*
Object Type: *[CDM v20\KnxIP v10\Value]*

The Group Value object contains settings to store a KNX group address value by the driver. Only group addresses configured here will be stored by the driver.

A Group Value may be auto-configured by the driver when in Group Learn Mode, or by the engineer.

An incoming KNX message can be decoded and written to a destination object. However, as a KNX message may contain several values, the particular value part may need to be defined.

Description	Reference	Type
Label Label displayed to identify the value	L	Obj\Text; Max. 30 chars; Adjustable
Group Address KNX Group address of value	G	Obj\Text; Adjustable Must be in the format: *a/b/c* Where: *a* is the main group in range 0..31 *b* is the middle group in the range 0..7 *c* is the subgroup in the range 0..255
Datapoint Type DPT ID of the group value, see list below	DT	Typically a KNX DPT ID: Obj\Num: 1…23; Adjustable If set by driver in Group Learn Mode: Obj\Float: 0.6…0.112; Adjustable
Adjustable Enables writing of the value to the KNX System	A	Obj\NoYes; Adjustable
Destination Object Optional object reference that specifies where an incoming value is written. Only applies when a particular DPT is specified for this Group Value, and a valid Destination Value Part is specified.	DO	Obj\Obj; Adjustable
Destination Value Part Optional reference to specify which value within the incoming message to write to the destination object. See section below	DV	Obj\Text; Adjustable; in the format: O*x.yz* or O*x.yz*.F*a*, where *x* is the offset into the message, *y* is the type of value, *z* is the size of the value in bits, and *a* is a formula to apply See section below

KNX Datapoint Types

Each KNX group address value has a datapoint type (DPT) associated with it. This indicates what type of value is stored in the value – on/off, floating-point, 16-bit signed value, etc.

A DPT identifier consists of a main-number, followed by a period, then a sub-number. The main-number indicates the data size and encoding, e.g. 8-bit unsigned. The sub-number indicates an application, e.g. HVAC. For example, a DPT of 1.001 indicates a 1-bit value containing a switch on/off value.

When setting the KNX Datapoint Type object (DT) above, only the main-number is required – the subpart is only used to indicate what you could use the value for.

The driver supports the following standard Datapoint Types:

DPT ID	Type of Data	Bit Length
1	Boolean: switch, bool, enable, occupancy,	6
2	2-bit Control: heat/cool, alarm control, step control	6
3	Raise/Lower: dimming lights, blinds	6
4	ASCII character	8

DPT ID	Type of Data	Bit Length
5	8-bit unsigned number: angle, tariffs, scaling, percent	8
6	8-bit signed number: percent, mode with status	8
7	16-bit unsigned number: pulse count, general, time-period, lengths	16
8	16-bit signed number: count, delta-time, rotation	16
9	Floating point 16-bit number: temperature, light-level,	16
10	Time: hours, minutes, seconds, day-of-week	24
11	Date: day, month, year	24
12	32-bit unsigned number: counter	32
13	32-bit signed number: counter, flowrate, energy, delta-time	32
14	Floating point 32-bit number: acceleration, angle, length,	32
15	Access Data:	32
16	ASCII Text:	112
17	Scene Number:	8
18	Scene Control:	8
19	DateTime:	64
20	Enumerated 8 bit number: mode, priority, type, delay	8
21	Bitset 8 bits: general status, device control,	8
23	Enumerated 2-bit number: on/off/action, up/down/action	8

Refer to the KNX document '*System Specifications, Interworking, Datapoint Types*' for further information.

Group Learn Mode Datapoint Types

In Group Lean Mode, the driver automatically stores new group addresses as they received from the KNX network. The DPT ID is not included within the actual network message, so the driver provides several decode options based on the bit length of the value. The engineer can select which decode option to use.

The driver sets the following Datapoint Types based on the length of the data:

DPT ID	Types of Data	Bit Length
0.6	Boolean (DPT1), 2-bit control (DPT2), or Dimming (DPT3)	6
0.8	ASCII char (DPT4), 8-bit unsigned (DPT5), 8-bit signed (DPT6), scene (DPT17), enumerated (DPT20), bitset (DPT21)	8
0.16	16-bit unsigned (DPT7), 16-bit signed (DPT8) floating point (DPT9)	16
0.24	Time(DPT10) or Date (DPT11)	24
0.32	32-bit unsigned (DPT12), 32-bit signed (DPT13), floating point (DPT14), access data (DPT15)	32
0.64	DateTime (DPT19)	64
0.112	ASCII Text (DPT16)	112

After investigation, change the learnt DPT to a standard DPT ID of the same data length.

Destination Value Part

Some incoming KNX messages may contain several values. This object allows the engineer to specify which of those values is to be written to the destination object.

The object's value in the format:

'O*x*.*yz*' or 'O*x*.*yz*.F*a*'

where *x* is the offset into the message, *y* is the type of value, *z* is the size of the value in bits, and *a* is a formula to apply.

Refer to the KNX document '*System Specifications, Interworking, Datapoint Types*' for further information.

If no Destination Value Part is specified, the driver uses default values for some DPTs:

DPT ID	Default Destination Value Part
1	O0.B1
2	O0.B2
3	O0.D4
4	O0.A8
5	O0.U8
6	O0.V8
7	O0.U16
8	O0.V16
9	O0.F16
10	O0.N3
11	O0.U5
12	O0.U32
13	O0.V32
14	O0.F32
15	O0.U4
16	O0.A112
17	O2.U6
18	O2.U6
19	O0.B1
20	O0.N8
21	O4.B1
22	O0.B1
23	O0.B2

KNX System

Object Type: *[KNXIP v10]*

The KNX System contains a list of group address values defined within the driver setup. Scan this object to discover group values.

Description	Reference	Type
Group *x* or ***Label*** The group value, *x*, is in the range 1..400, as configured in the driver setup object.	V*x*	Fixed container: DPT 1.xxx *[KNXIP v10\DPT_1]* DPT 2.xxx *[KNXIP v10\DPT_2]* DPT 3.xxx *[KNXIP v10\DPT_3]* DPT 4.xxx *[KNXIP v10\DPT_4]* DPT 5.xxx *[KNXIP v10\DPT_5]* DPT 6.xxx *[KNXIP v10\DPT_6]* DPT 7.xxx *[KNXIP v10\DPT_7]* DPT 8.xxx *[KNXIP v10\DPT_8]* DPT 9.xxx *[KNXIP v10\DPT_9]* DPT 10.xxx *[KNXIP v10\DPT_10]* DPT 11.xxx *[KNXIP v10\DPT_11]* DPT 12.xxx *[KNXIP v10\DPT_12]* DPT 13.xxx *[KNXIP v10\DPT_13]* DPT 14.xxx *[KNXIP v10\DPT_14]* DPT 15.xxx *[KNXIP v10\DPT_15]* DPT 16.xxx *[KNXIP v10\DPT_16]* DPT 17.xxx *[KNXIP v10\DPT_17]* DPT 18.xxx *[KNXIP v10\DPT_18]* DPT 20.xxx *[KNXIP v10\DPT_20]* DPT 21.xxx *[KNXIP v10\DPT_21]* DPT 23.xxx *[KNXIP v10\DPT_23]* *Group Learn Mode objects:* 6-bit value *[KNXIP v10\DPL_6]* 8-bit value *[KNXIP v10\DPL_8]* 16-bit value *[KNXIP v10\DPL_16]* 24-bit value *[KNXIP v10\DPT_24]* 32-bit value *[KNXIP v10\DPT_32]*

If the DPT is non-standard, or a newer type unknown to our driver, values can still be accessed with knowledge of the KNX Datapoint Type. See the section below.

Non-Standard Group Values

Some group address values may not conform to standard DPTs, or newer DPTs may be available. In these cases, you can directly access the information stored in a group address if you understand how they are constructed.

Set the driver's Group Value Datapoint Type object (DT) to one of the Group Learn Mode DPTs, so the driver knows the size of the data.

The following objects allow custom decoding of a group address (see notes below):

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Bit or Boolean	O*x*.B1	Obj\NoYes

Description	Reference	Type
Dimmer Control Decode 4 bits as a dimmer control value	O*x*.D4	Obj\Num; Range -7..7
Enumerated Value Decode *y* bits as an unsigned enumerated value, where *y* can be 2..8, 16, 32	O*x*.N*y*	Obj\Num
Percent (%) Decode *y* bits as a normalised percent, where *y* can be either 16 or 32. The binary data range (say 0..255) equates to 0..100%	O*x*.P*y*	Obj\Float
Unsigned Integer Decode *y* bits as an unsigned value, where *y* can be 2..8, 16, 32	O*x*.U*y*	Obj\Num
Unsigned Integer with Formula Decode *y* bits as an unsigned value, where *y* can be 2..8, 16, 32. Apply formula *f* after decode – see note 4	O*x*.U*y*.F*f*	Obj\Num
Signed Integer Decode *y* bits as a two's complement signed value, where *y* can be 8, 16, 32	O*x*.V*y*	Obj\Num
Signed Integer with Formula Decode *y* bits as a two's complement signed value, where *y* can be 8, 16, 32. Apply formula *f* after decode – see note 4	O*x*.V*y*.F*f*	Obj\Num
16-bit Floating-point Number Formula F*f* is optional – see note 4	O*x*.F16.F*f*	Obj\Float
32-bit Floating-point Number Formula F*f* is optional – see note 4	O*x*.F32.F*f*	Obj\Float
ASCII Text Decode *y* bits as ASCII 8-bit text, where y is one of 8, 16, 24, 32, 40, 48, 46, 64, 72, 80, 88, 96, 104, 112.	O*x*.A*y*	Obj\Text; Max chars 1..112 (depending on *y*)

Notes

1. All objects require prefixing with the Group object (V*x*).
2. Objects are prefixed with a byte offset, O*x*, into the data structure. Where *x* is in the range 0…111.
3. Objects are only adjustable if the Group Value Adjustable object (A) is set to 'Yes'.
4. Apply a formula, *f*, to the value after the decode, where:

f	Formula (when reading)
1	x10
2	x100
3	x1000
4	x10000
5	x100000
11	/10
12	/100
13	/1000
14	/10000
15	/100000

The driver applies the inverse of the formula when writing data.

DPT 1

Object Type: *[KNXIP v10\DPT_1]*

A DPT 1 object allows access to a KNX DPT 1.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Switch Last value received from, or sent to, KNX. Decoded as a Boolean value	O0.B1	Obj\NoYes; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 2

Object Type: *[KNXIP v10\DPT_2]*

A DPT 2 object allows access to a KNX DPT 2.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Switch Control Last value received from, or sent to, KNX. Decoded as a switch control value	O0.B2	Obj\ENum; Adjustable – depending on driver setup; in the range 0..3, where: 0=None, 1=None, 2=Off, 3=On
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 3

Object Type: *[KNXIP v10\DPT_3]*

A DPT 3 object allows access to a KNX DPT 3.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Dimmer Control Last value received from, or sent to, KNX. Decoded as a dimmer control value	O0.D4	Obj\Num; Adjustable – depending on driver setup; in the range -7..7
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 4

Object Type: *[KNXIP v10\DPT_4]*

A DPT 4 object allows access to a KNX DPT 4.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
ASCII Character Last value received from, or sent to, KNX. Decoded as an ASCII character value	O0.A8	Obj\Text; Max chars. 1; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 5

Object Type: *[KNXIP v10\DPT_5]*

A DPT 5 object allows access to a KNX DPT 5.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Unsigned 8-bit Value Last value received from, or sent to, KNX. Decoded as an unsigned 8-bit value	O0.U8	Obj\Num; Range 0..255; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 6

Object Type: *[KNXIP v10\DPT_6]*

A DPT 6 object allows access to a KNX DPT 6.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
DPT 6.xxx Signed 8-bit Value Last value received from, or sent to, KNX. Decoded as a signed 8-bit value	O0.V8	Obj\Num; Range -128..127; Adjustable – depending on driver setup
DPT 6.020 Bit 1 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 1	O0.B1	Obj\NoYes; Adjustable – depending on driver setup
DPT 6.020 Bit 2 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 2	O1.B1	Obj\NoYes; Adjustable – depending on driver setup
DPT 6.020 Bit 3 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 3	O2.B1	Obj\NoYes; Adjustable – depending on driver setup
DPT 6.020 Bit 4 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 4	O3.B1	Obj\NoYes; Adjustable – depending on driver setup
DPT 6.020 Bit 5 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 5	O4.B1	Obj\NoYes; Adjustable – depending on driver setup
DPT 6.020 Signed 3-bit Value Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype 3-bit	O5.U3	Obj\Num; Range 0..7; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 7

Object Type: *[KNXIP v10\DPT_7]*

A DPT 7 object allows access to a KNX DPT 7.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Unsigned 16-bit Value Last value received from, or sent to, KNX. Decoded as an unsigned 16-bit value	O0.U16	Obj\Num; Range 0..65535; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 8

Object Type: *[KNXIP v10\DPT_8]*

A DPT 8 object allows access to a KNX DPT 8.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Signed 16-bit Value Last value received from, or sent to, KNX. Decoded as an signed 16-bit value	O0.V16	Obj\Num; Range -32768..32767; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 9

Object Type: *[KNXIP v10\DPT_9]*

A DPT 9 object allows access to a KNX DPT 9.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Floating 16-bit Value Last value received from, or sent to, KNX. Decoded as a float-point 16-bit value	O0.F16	Obj\Float; Range 0..65535; Decimals: 4; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 10

Object Type: *[KNXIP v10\DPT_10]*

A DPT 10 object allows access to a KNX DPT 10.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Day Last value received from, or sent to, KNX. Decoded as an unsigned 3-bit value	O0.N3	Obj\ENum; Range 0..6; Adjustable – depending on driver setup; where 0=None, 1=Mon, 2=Tues, 3=Wed, 4=Thurs, 5=Fri, 6=Sat, 7=Sun
Hour Last value received from, or sent to, KNX. Decoded as an unsigned 5-bit value	O3.U5	Obj\Num; Range 0..23; Adjustable – depending on driver setup
Minute Last value received from, or sent to, KNX. Decoded as an unsigned 6-bit value	O10.U6	Obj\Num; Range 0..59; Adjustable – depending on driver setup
Second Last value received from, or sent to, KNX. Decoded as an unsigned 6-bit value	O18.U6	Obj\Num; Range 0..59; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 11

Object Type: *[KNXIP v10\DPT_11]*

A DPT 11 object allows access to a KNX DPT 11.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Date Last value received from, or sent to, KNX. Decoded as an unsigned 5-bit value	O3.U5	Obj\Num; Range 0..31; Adjustable – depending on driver setup
Month Last value received from, or sent to, KNX. Decoded as an unsigned 5-bit value	O12.U4	Obj\Num; Range 0..12; Adjustable – depending on driver setup
Year Last value received from, or sent to, KNX. Decoded as an unsigned 5-bit value	O17.U7	Obj\Num; Range 0..99; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 12

Object Type: *[KNXIP v10\DPT_12]*

A DPT 12 object allows access to a KNX DPT 12.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Unsigned 32-bit Value Last value received from, or sent to, KNX. Decoded as an unsigned 32-bit value	O0.U32	Obj\Num; Range 0..4294967295; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 13

Object Type: *[KNXIP v10\DPT_13]*

A DPT 13 object allows access to a KNX DPT 13.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Signed 32-bit Value Last value received from, or sent to, KNX. Decoded as an signed 32-bit value	O0.V32	Obj\Num; Range -2147483648..2147483647; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 14

Object Type: *[KNXIP v10\DPT_14]*

A DPT 14 object allows access to a KNX DPT 14.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Floating 32-bit Value Last value received from, or sent to, KNX. Decoded as an IEEE floating 32-bit value	O0.F32	Obj\Float; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 15

Object Type: *[KNXIP v10\DPT_15]*

A DPT 15 object allows access to a KNX DPT 15.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Digit 6 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O0.U4	Obj\Num; Range 0..9; Adjustable – depending on driver setup
Digit 5 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O4.U4	Obj\Num; Range 0..9; Adjustable – depending on driver setup
Digit 4 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O8.U4	Obj\Num; Range 0..9; Adjustable – depending on driver setup
Digit 3 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O12.U4	Obj\Num; Range 0..9; Adjustable – depending on driver setup
Digit 2 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O16.U4	Obj\Num; Range 0..9; Adjustable – depending on driver setup
Digit 1 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O20.U4	Obj\Num; Range 0..9; Adjustable – depending on driver setup
Detection Bit Value Last value received from, or sent to, KNX. Decoded as a boolean value	O24.B1	Obj\NoYes; Adjustable – depending on driver setup
Permissions Bit Value Last value received from, or sent to, KNX. Decoded as a boolean value	O25.B1	Obj\NoYes; Adjustable – depending on driver setup
Read Direction Bit Value Last value received from, or sent to, KNX. Decoded as a boolean value	O26.B1	Obj\NoYes; Adjustable – depending on driver setup
Encryption Bit Value Last value received from, or sent to, KNX. Decoded as a boolean value	O27.B1	Obj\NoYes; Adjustable – depending on driver setup
Index of Ident Code Last value received from, or sent to, KNX. Decoded as a 4-bit unsigned value	O28.U4	Obj\Num; Range 0..15; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where:

	0=No, 1=Yes, 2=Invalid (Message length)

DPT 16

Object Type: *[KNXIP v10\DPT_16]*

A DPT 16 object allows access to a KNX DPT 16.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Text Value Last value received from, or sent to, KNX. Decoded as a variable-length text value	O0.A112	Obj\Text; Max chars 14; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 17

Object Type: *[KNXIP v10\DPT_17]*

A DPT 17 object allows access to a KNX DPT 17.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Scene Number Last value received from, or sent to, KNX. Decoded as a 6-bit unsigned value	O2.U6	Obj\Float; Range 0..63; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 18

Object Type: *[KNXIP v10\DPT_18]*

A DPT 18 object allows access to a KNX DPT 18.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Learn Scene Last value received from, or sent to, KNX. Decoded as a Boolean value	O0.B1	Obj\NoYes; Adjustable – depending on driver setup
Scene Number Last value received from, or sent to, KNX. Decoded as a 6-bit unsigned value	O2.U6	Obj\Float; Range 0..63; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 20

Object Type: *[KNXIP v10\DPT_20]*

A DPT 20 object allows access to a KNX DPT 20.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
Enumerated Value Last value received from, or sent to, KNX. Decoded as an enumerated value	O0.N8	Obj\Num; Range 0..255; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 21

Object Type: *[KNXIP v10\DPT_21]*

A DPT 21 object allows access to a KNX DPT 21.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
New Alarm Status Last value received from, or sent to, KNX. Decoded as a Boolean value	O4.B1	Obj\NoYes; Adjustable – depending on driver setup
Alarm Active Last value received from, or sent to, KNX. Decoded as a Boolean value	O5.B1	Obj\NoYes; Adjustable – depending on driver setup
Overridden Last value received from, or sent to, KNX. Decoded as a Boolean value	O6.B1	Obj\NoYes; Adjustable – depending on driver setup
Fault Last value received from, or sent to, KNX. Decoded as a Boolean value	O7.B1	Obj\NoYes; Adjustable – depending on driver setup
Out of Service Last value received from, or sent to, KNX. Decoded as a Boolean value	O8.B1	Obj\NoYes; Adjustable – depending on driver setup
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

DPT 23

Object Type: *[KNXIP v10\DPT_23]*

A DPT 23 object allows access to a KNX DPT 23.xxx value associated with a particular group on the KNX bus.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
2-bit Enumerated Value Last value received from, or sent to, KNX. Decoded as a 2-bit value	O0.B2	Obj\NoYes; Range 0..3; Adjustable – depending on driver setup; where 0=00, 1=01, 2=10, 3=11
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

Learnt 6-Bit Value

Object Type: *[KNXIP v10\DPL_6]*

A DPL 6 object allows access to a learned KNX group value with a message containing 6 bits of data.

Use one of the objects below to decode the value. The value is only adjustable if the Group Value - Adjustable object (A) is set to 'Yes' in the driver.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
DPT 1.xxx - Switch Last value received from, or sent to, KNX. Decoded as a Boolean value	O5.B1	Obj\NoYes; Adjustable
DPT 2.xxx – Switch Control Last value received from, or sent to, KNX. Decoded as a 2-bit unsigned value	O4.B2	Obj\ENum; Range 0..3; Adjustable Values: 0=None, 1=None, 2=Off, 3=On
DPT 3.xxx - Dimmer Control Last value received from, or sent to, KNX. Decoded as a dimmer control value	O2.D4	Obj\Num: -7..7; Adjustable
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

Learnt 8-Bit Value

Object Type: *[KNXIP v10\DPL_8]*

An 8-Bit Value object allows access to a learned KNX group value with a message containing 8 bits of data.

Use one of the objects below to decode the value. The value is only adjustable if the Group Value - Adjustable object (A) is set to 'Yes' in the driver.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
DPT 4.xxx - ASCII Character Last value received from, or sent to, KNX. Decoded as an ASCII character value	O0.A8	Obj\Text; Max chars. 1; Adjustable
DPT 5.001 - Percent 8-bit Value Last value received from, or sent to, KNX. Decoded as an percent 8-bit value	O0.P8	Obj\Float; Range 0..100; 1 decimal place; Adjustable
DPT 5.xxx - Unsigned 8-bit Value Last value received from, or sent to, KNX. Decoded as an unsigned 8-bit value	O0.U8	Obj\Num; Range 0..255; Adjustable
DPT 6.xxx Signed 8-bit Value Last value received from, or sent to, KNX. Decoded as a signed 8-bit value	O0.V8	Obj\Num; Range -128..127; Adjustable
DPT 6.020 Bit 1 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 1	O0.B1	Obj\NoYes; Adjustable
DPT 6.020 Bit 2 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 2	O1.B1	Obj\NoYes; Adjustable
DPT 6.020 Bit 3 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 3	O2.B1	Obj\NoYes; Adjustable
DPT 6.020 Bit 4 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 4	O3.B1	Obj\NoYes; Adjustable
DPT 6.020 Bit 5 State Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype Bit 5	O4.B1	Obj\NoYes; Adjustable
DPT 6.020 Signed 3-bit Value Last value received from, or sent to, KNX Decoded as a DPT 6.020 subtype 3-bit	O5.U3	Obj\Num; Range 0..7; Adjustable setup
DPT 17.xxx Scene Number Last value received from, or sent to, KNX. Decoded as a 6-bit unsigned value	O2.U6	Obj\Float; Range 0..63; Adjustable
DPT 18.xxx - Learn Scene Last value received from, or sent to, KNX. Decoded as a Boolean value	O0.B1	Obj\NoYes; Adjustable
DPT 18.xxx - Scene Number Last value received from, or sent to, KNX. Decoded as a 6-bit unsigned value	O2.U6	Obj\Float; Range 0..63; Adjustable
DPT 20.xxx - Enumerated Value Last value received from, or sent to, KNX. Decoded as an enumerated value	O0.N8	Obj\Num; Range 0..255; Adjustable
DPT 21.xxx - New Alarm Status Last value received from, or sent to, KNX. Decoded as a Boolean value	O4.B1	Obj\NoYes; Adjustable

Description	Reference	Type
DPT 21.xxx - Alarm Active Last value received from, or sent to, KNX. Decoded as a Boolean value	O5.B1	Obj\NoYes; Adjustable
DPT 21.xxx - Overridden Last value received from, or sent to, KNX. Decoded as a Boolean value	O6.B1	Obj\NoYes; Adjustable
DPT 21.xxx - Fault Last value received from, or sent to, KNX. Decoded as a Boolean value	O7.B1	Obj\NoYes; Adjustable
DPT 21.xxx - Out of Service Last value received from, or sent to, KNX. Decoded as a Boolean value	O8.B1	Obj\NoYes; Adjustable
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

Learnt 16-Bit Value

Object Type: *[KNXIP v10\DPL_16]*

A DPL 16 object allows access to a learned KNX group value with a message containing 16 bits of data.

Use one of the objects below to decode the value. The value is only adjustable if the Group Value - Adjustable object (A) is set to 'Yes' in the driver.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
DPT 7.xxx - Unsigned 16-bit Value Last value received from, or sent to, KNX. Decoded as an unsigned 16-bit value	O0.U16	Obj\Num; Range 0..65535; Adjustable
DPT 8.xxx - Signed 16-bit Value Last value received from, or sent to, KNX. Decoded as an signed 16-bit value	O0.V16	Obj\Num; Range -32768..32767; Adjustable
DPT 9.xxx - Floating 16-bit Value Last value received from, or sent to, KNX. Decoded as a float-point 16-bit value	O0.F16	Obj\Float; Range 0..65535; Decimals: 4; Adjustable
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

Learnt 24-Bit Value

Object Type: *[KNXIP v10\DPL_24]*

A DPL 24 object allows access to a learned KNX group value with a message containing 24 bits of data.

Use one of the objects below to decode the value. The value is only adjustable if the Group Value - Adjustable object (A) is set to 'Yes' in the driver.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
DPT 10.xxx - Day Last value received from, or sent to, KNX. Decoded as an unsigned 3-bit value	O0.N3	Obj\ENum; Range 0..6; Adjustable 0=None, 1=Mon, 2=Tues, 3=Wed, 4=Thurs, 5=Fri, 6=Sat, 7=Sun
DPT 10.xxx - Hour Last value received from, or sent to, KNX. Decoded as an unsigned 5-bit value	O3.U5	Obj\Num; Range 0..23; Adjustable
DPT 10.xxx - Minute Last value received from, or sent to, KNX. Decoded as an unsigned 6-bit value	O10.U6	Obj\Num; Range 0..59; Adjustable
DPT 10.xxx - Second Last value received from, or sent to, KNX. Decoded as an unsigned 6-bit value	O18.U6	Obj\Num; Range 0..59; Adjustable
DPT 11.xxx - Date Last value received from, or sent to, KNX. Decoded as an unsigned 5-bit value	O3.U5	Obj\Num; Range 0..31; Adjustable
DPT 11.xxx - Month Last value received from, or sent to, KNX. Decoded as an unsigned 5-bit value	O12.U4	Obj\Num; Range 0..12; Adjustable
DPT 11.xxx - Year Last value received from, or sent to, KNX. Decoded as an unsigned 5-bit value	O17.U7	Obj\Num; Range 0..99; Adjustable
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

Learnt 32-Bit Value

Object Type: *[KNXIP v10\DPL_32]*

A DPL 32 object allows access to a learned KNX group value with a message containing 32 bits of data.

Use one of the objects below to decode the value. The value is only adjustable if the Group Value - Adjustable object (A) is set to 'Yes' in the driver.

Description	Reference	Type
Group Address	G	Obj\Text; Max. chars 10
DPT 12.xxx - Unsigned 32-bit Value Last value received from, or sent to, KNX. Decoded as an unsigned 32-bit value	O0.U32	Obj\Num; Range 0..4294967295; Adjustable
DPT 13.xxx - Signed 32-bit Value Last value received from, or sent to, KNX. Decoded as an signed 32-bit value	O0.V32	Obj\Num; Range -2147483648..2147483647; Adjustable
DPT 14.xxx - Floating 32-bit Value Last value received from, or sent to, KNX. Decoded as an IEEE floating 32-bit value	O0.F32	Obj\Float; Adjustable
DPT 15.xxx - Digit 6 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O0.U4	Obj\Num; Range 0..9; Adjustable
DPT 15.xxx - Digit 5 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O4.U4	Obj\Num; Range 0..9; Adjustable
DPT 15.xxx - Digit 4 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O8.U4	Obj\Num; Range 0..9; Adjustable
DPT 15.xxx - Digit 3 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O12.U4	Obj\Num; Range 0..9; Adjustable
DPT 15.xxx - Digit 2 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O16.U4	Obj\Num; Range 0..9; Adjustable
DPT 15.xxx - Digit 1 Value Last value received from, or sent to, KNX. Decoded as an unsigned 4-bit value	O20.U4	Obj\Num; Range 0..9; Adjustable
DPT 15.xxx - Detection Bit Value Last value received from, or sent to, KNX. Decoded as a boolean value	O24.B1	Obj\NoYes; Adjustable
DPT 15.xxx - Permissions Bit Value Last value received from, or sent to, KNX. Decoded as a boolean value	O25.B1	Obj\NoYes; Adjustable
DPT 15.xxx - Read Direction Bit Value Last value received from, or sent to, KNX. Decoded as a boolean value	O26.B1	Obj\NoYes; Adjustable
DPT 15.xxx - Encryption Bit Value Last value received from, or sent to, KNX. Decoded as a boolean value	O27.B1	Obj\NoYes; Adjustable
DPT 15.xxx - Index of Ident Code Last value received from, or sent to, KNX. Decoded as a 4-bit unsigned value	O28.U4	Obj\Num; Range 0..15; Adjustable
Received	R	Obj\ENum; Range 0..2, where: 0=No, 1=Yes, 2=Invalid (Message length)

Driver Versions

Version	Build Date	Details
1.0	15/04/2015	Driver released
1.0	10/06/2016	Add attempt to connect if IP address known, but no 'discovery' response
1.0	05/07/2017	Add support for Gira routers Added destination object to Group Value setup

Next Steps…

If you require help, contact support on 01273 694422 or visit *www.northbt.com/support*

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