



GW-KNX1 Startup Guide For Interfacing Unitronics PLCs To Building Automation Systems: KNX, Modbus RTU, Modbus/TCP

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A Quick Start Guide

- 1. Record the information about the unit. (**Section 2.1**)
- 2. Connect GW-KNX1 's 3 pin RS-485 port to Unitronics PLC RS485 port. (Section 3.1)
- 3. Connect GW-KNX1 6 pin KNX connector to the KNX network that is connected to each of the devices. (Section 3.2)
- 4. Connect Power to GW-KNX1 6 pin connector. (Section 3.4)
- 5. Modbus RTU: Use a browser to access the GW-KNX1 Web GUI to change the IP Address. No changes to the configuration are necessary. (**Section 5.2**)

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1 INTRODUCTION

1.1 GW-KNX1 Gateway

The GW-KNX1 is an external, high performance **Building Automation multi-protocol gateway** that is preconfigured to automatically communicate between Unitronics' products (hereafter called "device") connected to the GW-KNX1 and automatically configures them for Modbus.

The getaway will convert the Modbus communication to KNX, letting the user connect Unitronics products to KNX networks.

2 KNX SETUP FOR GW-KNX1

2.1 Record Identification Data

Each GW-KNX1 has a product label on the side or the back of the unit. The data from the table should be recorded, as it may be required for technical support. The product label appears with the following information (see table):

Model	Serial Number	MAC Address			
GW-KNX1	XXXXXXXX	NN:NN:NN:NN			
Figure 1: GW-KNX1 Part Numbers					

• GW-KNX1 units have the following 3 ports: RS-485 + Ethernet + KNX

2.2 Point Count Capacity and Registers per Device

The total number of KNX Registers presented by all of the devices attached to the GW-KNX1 cannot exceed 1500 registers.

Part number	Total Registers			
GW-KNX1	1,500			
Figure 2: Supported Point Count Capacity				

3 INTERFACING GW-KNX1 TO DEVICES

3.1 GW-KNX1 Showing Connection Ports



3.2 Device Connections to GW-KNX1

GW-KNX1 6 Pin Phoenix connector for KNX Devices

- Pins 1 through 3 are for KNX devices.
 - The RS-485 GND (Pin 3) is not typically connected
- Pins 4 through 6 are for power. **Do not connect power** (wait until **Section 3.4**).



3.3 Modbus RTU: Wiring Field Port to R485 Network

- Connect the Modbus RTU RS-485 network wires to the 3-pin RS-485 connector on GW-KNX1 as shown below in Figure 5.
 - The RS-485 GND (Pin 3) is not typically connected
- If the GW-KNX1 is the last device on the RS-485 trunk, then the End-Of-Line Termination Switch needs to be enabled. (Figure 6).
 - The default setting from the factory is OFF (switch position = right side)
 - To enable the EOL Termination, turn the EOL switch ON (switch position = left side)

BMS RS 485 Wirin	GW-KNX1 Pin #	Pin Assignment
RS-485 -	Pin 1	RS-485 +
RS-485 ·	Pin 2	RS-485 -
-	Pin 3	RS-485 GND
	Figure 5: Cor	nnection from GW



3.4 Power-Up GW-KNX1

Apply power to GW-KNX1 as show below in **Figure 8**. Ensure that the power supply used complies with the specifications provided in **Appendix B.1**.

- GW-KNX1 accepts either 9-30VDC or 12-24 VAC on pins 4 and 5.
- Frame GND should be connected.

Power Requirement for GW-KNX1 External Gateway						
	Current Draw Type					
GW-KNX1 Family 12VDC/VAC 24VDC/VAC 30VDC						
GW-KNX1 (Typical)	170mA	100mA	80mA			
GW-KNX1 (Maximum) 240mA 140mA 100mA						
NOTE: These values are 'nominal' and a safety margin should be added to the power supply of the host system. A safety margin of 25% is recommended.						
system. A safety margin of 25% is recommended.						

Figure 7: Required current draw for the GW-KNX1



4 CREATING CONFIGURATION FILE AND CONFIGURATING THE PLC

4.1 UniKNX configurator

UniKNX configurator is a tool by Unitronics that allows the user to create the configuration file for the GW-KNX1 easily.

• Client side connections: In this window you will configure the KNX side of the communication.

First the user must choose the type of KNX physical memory scheme he wishes to work with and the physical KNX address of the GW-KNX1

KNX Configurator					
File					
Client Side Connections	Pyhsical Memory scheme: THREE PART SCHEME				
KNX Device Instances	Physical Address: 1:1:10				
KNX Map Descriptors					
Modbus Connection					
Finish					
		< Back Next > Finish			
Error List		. 200x 110x .			
Figure 9: Client side connection					

• KNX Device instances: Here you will add all the KNX slave devices.

KNX Configurator	👸 KNX Configurator						
File							
Client Side Connections							
KNX Device Instances	General Add Device Instance						
KNX Map Descriptors	Device Instance Name						
Modbus Connection	KNXStarterkit						
Finish							
	< Back Next > Finish						
Error List	, Tark Tingu						
Figure 10: KNX Device Instances							

• **KNX Map Descriptions**: Here you will add the data types to be read and/or write in each node, select the data type, group address and function type.

🙀 KNX Configurator								
File	File							
Client Side Connecti	ions							
KNX Device Instance		ld Descriptor						
KNX Map Descriptor	rs Name	Device Instance	Туре	Data Type	Group Addre	Function		
Modbur Connection	Luz1	KNXStarterkit	DPT1	1-Bit binary switch	0:0:1	Read Block C		
Modbus Connection	Luz2	KNXStarterkit	DPT1	1-Bit binary switch	0:0:2	Read Block C		
Finish								
	Swap 32bit	registers						
		-						
				< <u>B</u> ack	<u>N</u> ext >	<u>F</u> inish		
Error List								
Figure 11: KNX Map Descriptor								

Note that:

- Read function will let you read and write while write function will only let you write.
- Read and write block continuous means that the data will be read and write continuously.
- Write block on change means that only when there is change in the data, it will be written.
- Active Read at Startup function is a once-off read function, and then waits for any updated data.

• **Modbus Connection**: Here the user will configure the Modbus connection to the PLC. First the user must select between Modbus protocol: RTU or TCP/IP, then the corresponding configuration.

🙀 KNX Configurator							
File							
Client Side Connections	Modbus Protocol:	Modbus RTU 🔹					
KNX Device Instances	Modbus Node ID:	2					
KNX Map Descriptors	Baud Rate:	9600 🔹					
Modbus Connection	Parity:	None					
Finish	Stop Bits:	1					
			< <u>Back Next > Finish</u>				
Error List							
Figure 12: Modbus RTU connection							

🙀 KNX Configurator								
File								
Client Side Connections	Modbus Protocol:	Modbus IP 🔹						
KNX Device Instances	Modbus Node ID:	255						
KNX Map Descriptors								
Modbus Connection								
Finish								
			C Rack	Next > Einich				
Error List				TIGYL & EUURU				
	Figure 13: Modbus TCP/IP connection							

• **Finish**: This window will show the MODBUS slave addressing map of the data to be read/write from/to the device -to be use in Unitronics software- and will let you export the configuration file that you will download to the GW-KNX1 via the GUI browser.

KNX Configurator	-	terms in the second second		
File				
Client Side Connections	Name	Data Type	Туре	Address
KNX Device Instances	Ligth1	1-Bit binary switch	Holding Register	0
KNX Map Descriptors	Ligth2	1-Bit binary switch	Holding Register	1
Modbus Connection				
Finish				
			< Back	: Next > Finish
Error List				
		Figure 14: Finis	sh	

• File menu will let you save the current configuration or open a previously saved one.

KNX Configurator			-	
File				
Open Configuration				
Save Configuration	al Memory scheme:	THREE_PART_SCHEME		
KNX Device Instances				
KNX Map Descriptors	Physical Address:	1:1:10		
Modbus Connection				
Finish				
			< Back Next >	Finish
Error List				
	F	Figure 15: File menu		

To download the CSV file you just created, please follow the next instructions:

- a. Connect a standard CAT5 Ethernet cable (Straight through or Cross-Over) between the PC and GW-KNX1
- b. The Default IP Address of GW-KNX1 is **192.168.1.24**, Subnet Mask is **255.255.255.0**. If the PC and GW-KNX1 are on different IP Networks, assign a static IP Address to the PC on the 192.168.1.xxx network

c.	Go to Start > Control Panel > Connections	
d.	Right-click on Local Area Connection > Properties	
e.	Highlight 🗹 🏹 Internet Protocol (TCP/IP) > Properties	
f.	Select: Use the following IP address	
	O Use the following IP address:	
	<u>I</u> P address: 192 . 168 . 1 . 11	
	Subnet mask: 255 . 255 . 255 . 0	
	Default gateway:	
		_

- g. Click OK twice
- h. After setting your PC to be on the same subnet as the GW-KNX1, open a web browser on your PC and enter the IP address of the GW-KNX1; the default address is 192.168.1.24.
- i. If IP address of the GW-KNX1 has been changed by previous configuration, down load FieldServer Toolbox to discover unknown IP address of the GW-KNX1. http://www.fieldserver.com/docs/downloads/FieldServer-Toolbox.zip
- j. The Web GUI page will be presented.
- k. From the FST Web GUI's landing page, click on "Setup" to expand the navigation tree and then select "File transfer" to access the IP Settings menu. (Error! Reference source not found.)

Navigation Tree	File Transfer
Navigation Tree About About File Transfer Paswords View User Messages	File Transfer Configuration Firmware General Update Update Update the configuration file on the device. C\Documents and Settij Browse Submit Submit Retrieve Retrieve the configuration file from the device. config.csv Config.csv Config.csv
	Delete Delete the device configuration. Warning: Make sure you have saved a copy of your config.csv file. Delete Configuration HELP (F1) System Restart
	Figure 16: File Transfer Screen

- I. Select browse and look for the CSV file you just created.
- m. Click on submit button. The download process should take a couple of seconds.
- n. To finish please click on system restart.

4.2 PLC Configuration

The PLC must be configured as a MODBUS master. Depending on the MODBUS protocol the user has chosen, the PLC needs to be configure as MODBUS RTU or MODBUS TCP_IP master.

Example for Vision/Samba:

Powerdp Lit EN ENO COM INIT 2 Port 2 Network ID 10	_
EN ENO COM INIT 2 MODBUS Port 2 MODBUS_1 Function in	
COM INIT 2 Port 2 Network ID 10	
Port 2 - CONFIG MODBUS_1 - MB 200 Function in	
Port 2 MODBUS_1 - MB 200 Function in	
Network ID 10	
Network ID 10	
Network ID 10	
I me out junits of	
D#3	
Retries	
Figure 47: MODDUC BTU configuration	
Figure 17: MODBOS RTO configuration	
Com Initialize	
Care Data Data Dita Diana Characteria	
Com Port: Data Bits: Standard:	
CUM2 ▼ 8 ▼ RS485 ▼	
Baud Rate: Parity:	
9600 V None V Flow Control	
DC222 Time Out	
n 5252 Tille Out. Stop Bits.	
U.5 sec	
Modem Settings	
Modem i ype: None	
C Auto	
💿 Tone	
_	
Time Uut Heply:	
1.2 Answer Settings	
PIN Code :	
Liear 51M (all stored messages)	
Cancel Help	

MOD	BUS_1								
Param	; Туре	Add	(66	Format	Description			
	D#		2		DEC	Port 2 Naturals ID 10			_
IN	D#		100		DEC	Time out junits of	10 msec)		
	D#		3		DEC	Retries	,		
TUO	МВ	200				Function in Progr	ess		
						Ok	Cancel	Help	
		Fig	jure 19: E	Example o	f Mod	bus config	uration	1	
up bit		EN			· · · · ·			· · · · · · · · · ·	To ad "Link
	CARD INIT		V570	SOCK INIT Socket 0	Sock	tet 0 Default: P (20000), M	CONFIG ODBUS I	MB 200 Function in	· · ·
					<u></u>				· ·
					· · Neti	work ID 255			· · ·
		S. S. S. S.			· ·				
			and the second second	and the second second		the second se			1.1.1.1.1.1.1.1
· · · · ·		· · · · ·			· · · ·	0#100			1.1
· · · · ·	· · · · ·	· · · · ·	· · · · · ·	· · · · · ·	Time	0#100 out (units of			· · · · ·
· · · · ·	· · · · ·	· · · · ·	· · · · · ·		Time	0#100 out (units of			· · ·
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		D# 100 out (units of D# 3			· · ·
· · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · <	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · ·		D# 100 out (units of D# 3 Retries			· · · · · · · · · · · · · · · · · · ·

	• TCP/IP - Socket Init
 TCP/IP - Card Init 	
	Socket Socket 0
IP Address: D# - 192.168.1.25	Protocol TCP -
Subnet Mask: D# - 255.255.255.0	Local Port: D# - 20000
Default Gateway: D# - 192.168.1.254	Client \Server Client (master -
OK Cancel Help	OK Cancel Help
Figure 21: Example of TCP/IP ca	rd and socket initialize

For technical support and questions concerning setting up the GW-BAC1 to work with a Unitronics PLC (e.g. Vision, UniStream etc.) please contact Unitronics technical support at support@unitronics.com.

5 **MODBUS RTU: CHANGE THE GW-KNX1 IP ADDRESS**

- 5.1 Connect the PC to the GW-KNX1 via Ethernet Port
 - Connect a CAT5 Ethernet cable (Straight through or Cross-Over) between the local PC and GW-KNX1.
 - The Default IP Address of GW-KNX1 is 192.168.1.24, Subnet Mask is 255.255.255.0. If the PC • and GW-KNX1 are on different IP Networks, assign a static IP Address to the PC on the 192.168.1.xxx network.
 - For Windows XP: •

Go to start > Control Panel > Control Panel > Connections
Right-click on Local Area Connection > Properties
Highlight Internet Protocol (TCP/IP) Properties
For Windows 7:
Go to See Section Panel Section Panel Section
Network and Sharing Center Change adapter settings
Right-click on Local Area Connection > Properties
Highlight Internet Protocol Version 4 (TCP/IPv4)

For Windows XP and Windows 7, use the following IP Address: ٠

P address:	192.168.1.11
B <u>u</u> bnet mask:	255 . 255 . 255 . 0

OK Click twice.

Highlight

5.2 Modbus TCP/IP: Setting IP Address for Field Network

• After setting your PC to be on the same subnet as the GW-KNX1 (**Section 5.1**), open a web browser on your PC and enter the IP Address of the GW-KNX1; the default address is 192.168.1.24.

•	The Web	GUI will be	displayed	as the l	landing	page (Figure 2	22)
---	---------	-------------	-----------	----------	---------	--------	----------	-----

Navigation	CN0864 Unitronics v1.00a		
CN0864 Unitronics v1.00a	Status Settings Infr	o Stats	
- J Setup	Statur		
User Messages	Name	Value	
	Driver Configuration	PCC1069	
	DCC Version	V1.01a (A)	^
	Kernel_Version	V6.21b (B)	
	Release_Status	Normal	
	Build_Revision	208	
	Build_Date	Fri Jun 26 13:40:54 2015 +0200	
	BIOS_Version	2.4.1	
	FieldServer_Model	ProtoCessor FFP485	
	Carrier Type	KNX Carrier	
	Data_Points_Used	1	
	Data_Points_Max	1500	
	Application Memory:		
	Memory_Percent_Used	0.27%	
	Memory_Used	274 kB	
	Memory Available	101.044 kB	
Home HELP (F1) Contact Us	System Restart System Time Sy	nch Reset Cycle Times	FieldServi

• From the Web GUI landing page, click on "Setup" to expand the navigation tree and then select "Network Settings" to access the IP Settings menu. (Figure 23)

×				
Navigation	Network Settings			
 CN0864 Unitronics v1.00a J. About J. Setup 	IP Settings			
- La File Transfer - La File Transfer - La Passwords - La P	Note Updated settings only ta after the System Restart	ike effect after a System Restart. If the IP Addr t.	ess is changed you will need to direct your browser to th	e new IP Address
		N1 IP Address	10.1.20.124	
		N1 Netmask	255.255.255.0	
		N1 DHCP Client State	DISABLED V	
		N1 DHCP Server State	DISABLED ¥	
		Default Gateway	10.1.20.254	4
		Domain Name Server1	8.8.8.8	
		Domain Name Server2	8.8.4.4	

- Enter the new IP Address for the GW-KNX1's Ethernet port in the "N1 IP Address" field.
- If necessary, change the Subnet Mask setting in the "N1 Netmask" field.
- If necessary, change the IP Gateway setting in the "Default Gateway" field.
- **NOTE:** If the GW-KNX1 is connected to a router, the IP Gateway of the GW-KNX1 should be set to the IP Address of that router.
 - Click the "System Restart" button at the bottom of the page to apply changes and restart the GW-KNX1.
 - Unplug Ethernet cable from PC and connect the GW-KNX1 to the network hub or router.
 - Record the IP Address assigned to the GW-KNX1 for future reference.

Appendix A. Troubleshooting

Appendix A.1. Lost or Incorrect IP Address

 Ensure that FieldServer Toolbox is loaded onto the local PC. If not, download FieldServer-Toolbox.zip on the Sierra Monitor webpage, under Customer Care-Resource Center, Software Downloads:

http://www.sierramonitor.com/customer-care/resource-center?filters=software-downloads

• Extract the executable file and complete the installation.



- Disable any wireless Ethernet adapters on the PC/Laptop.
- Disable firewall and virus protection software if possible.
- Connect a standard CAT5 Ethernet cable between the PC and GW-KNX1.
- Double click on the FS Toolbox Utility.
- Check IP Addresses from the Device listings.

smc FieldS	TieldServer Toolbox											
Fie	ldSer	ver Too	olbox							(50	sierra monitor
Setu	ip	Help			_		_	_	_	_		
	DEVICES	Ð	IF	ADDRESS		MAC ADDRESS		FAVO	RITE	CONNECTIVITY	(
Proto	Node		19	9 <mark>2.168.3.11</mark> 0		00:50:4E:10:2C:92		*	ć.	•		Connect
ļ							r					

Correct IP Address(es) by right clicking the settings icon and changing the IP Address.

Appendix A.2. Viewing Diagnostic information

- Type the IP Address of the GW-KNX1 into the web browser or use the FieldServer Toolbox to connect to the GW-KNX1.
- Click on Diagnostics and Debugging Button, then click on view, and then on connections.
- If there are any errors showing on the Connection page, please refer to Appendix A.3 for the relevant wiring and settings.

		the local division of				
1 http://10.1.20.124/htm/fsgui.htm#40_OID	P + C 😻 FSGUI	×				ŵ
it <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp						
		/				
Navigation	Connections					
	-					
CN0864 Unitronics v1.00a About	Overview					
- Setup						
Wiew Connections	Connections					0
- J S1 - KNX	Index Name	Tx Msg	Rx Msg	Tx Char	Rx Char	Errors
- Data Arrays	0 S1 - KNX	49	0	441	0	49
- 🛺 Nodes	1 N1 - Modbus/TCP	0	0	0	0	0
User Messages						
Homo HELP (E1) Contact Us						Powered By
Home HELP (F1) Contact Us	Reset Statistics					Powered By FieldServer
Home HELP (F1) Contact Us	Reset Statistics					FieldServer

Appendix A.3. Check Wiring and Settings

- No COMS on KNX side. If Tx/Rx are not flashing rapidly then there is a COM issue on the KNX side. To fix, check the following:
 - Visual observations of LEDs on GW-KNX1 (Appendix A.5)
 - Verify wiring
 - Verify KNX device is connected to the same subnet as the GW-KNX1
- Field COM problems:
 - Visual observations of LEDs on GW-KNX1 (Appendix A.5)
 - Check dipswitch settings (using correct baud rate and device instance)
 - Verify IP Address setting
 - Verify wiring

If the problem still exists, a Diagnostic Capture needs to be taken and sent to Sierra Monitor Corporation. (Appendix A.4)

Appendix A.4. Take Diagnostic Capture With the FieldServer Utilities

- Once the Diagnostic Capture is complete, email it to support@sierramonitor.com. The Diagnostic Capture will allow us to rapidly diagnose the problem.
- Ensure that FieldServer Toolbox is Loaded on the PC that is currently being used, or download • FieldServer-Toolbox.zip on the Sierra Monitor webpage, under Customer Care: Resource Center, Software Downloads:

http://www.sierramonitor.com/customer-care/resource-center?filters=software-downloads

Extract the executable file and complete the installation.



- Disable any wireless Ethernet adapters on the PC/Laptop. •
- Disable firewall and virus protection software if possible. •
- Connect a standard CAT5 Ethernet cable between the PC and GW-KNX1. .
- Double click on the FS Toolbox Utility.

Step 1: Take a Log

• Click on the diagnose icon

smo	TieldServer Toolbox						
	FieldServer	Toolbox				Sn	Sierra
	Setup Help)					
	DEVICES	÷	IP ADDRESS	MAC ADDRESS	FAVORITE	CONNECTIVITY	
	ProtoNode		192.168.3.110	00:50:4E:10:2C:92	*	•	Connect

o Select "Full Diagnostic"

STR FieldServer Toolbox		
FieldServer Toolb	lox	SMGierra
DEVICES +	Device Diagnostics	FAVORITE CONNECTIVITY
ProtoNode	Device Diagnostics	× Connect
	ProtoNode 192,168.3.110	
	Diagnostic Test Full Diagnostic Snap Shot Set capture peril Serial Capture Full Diagnostic Timestamp each character Enable Message logging Show advanced options Start Diagnostic Open Containing Folder Close	

- \circ $\;$ If desired, the default capture period can be changed
- o Click on "Start Diagnostic"

^{smc} FieldServer Toolbox			8
FieldServer Tool	xoo	SMG	a itor
DEVICES +	smc Device Diagnostics	FAVORITE CONNECTIVITY	
ProtoNode	Device Diagnostics	Connect	*-~
	ProtoNode 192.168.3.110 Diagnostic Test Full Diagnostic Set capture period 0:05:00 * Immestamp each character Immestamp each character Enable Message logging Show advanced options Start Diagnostic Open Containing Folder Close Close		

 \circ $\;$ When the capture period is finished, the "Diagnostic Test Complete" window will appear $\;$

Step 2: Send Log

• Once the diagnostic test is complete, a .zip file will be saved on the PC

K FieldServer Toolb	οx			
FieldSer	ver Toolbox		(5 Sierra monitor
DEVICES	+ Sime Device Diagnostics	EAVOE		
ProtoNode	Device Diagnostics	*	•	Connect 🔯 -
	ProtoNode 192.168.3.110			
	Diagnostic test completed and the results have been added to Diagnostic_2015-02-18_12-28.zip Do you want to open the containing folder?	Cancel		
	Start Diagnostic Open Containing Folder Close			

 Click "Open" to launch explorer and have it point directly at the correct folder, then email the diagnostic zip file to <u>support@sierramonitor.com</u>.

🗳 Diagnostic_2014-07-17_20-15.zip	2014/07/17 20:16	zip Archive	676 KB
-----------------------------------	------------------	-------------	--------

Appendix A.5. LED Diagnostics for Communications Between GW-KNX1 and Devices

	SPL O RUN O ERR O RX O PWR O			
Tag	Description			
SPL	The SPL LED will light if the unit is not getting a response from one or more of the configured devices.			
RUN	The RUN LED will start flashing 20 seconds after power indicating normal operation.			
ERR	The SYS ERR LED will go on solid 15 seconds after power up. It will turn off after 5 seconds. A steady red light will indicate there is a system error on the unit. If this occurs, immediately report the related "system error" shown in the error screen of the GUI interface to technical support for evaluation.			
RX	The RX LED will flash when a message is received on the host port.			
ТХ	The TX LED will flash when a message is sent on the host port.			
PWR	This is the power light and should show steady green at all times when unit is powered.			
	Figure 27: Diagnostic LEDs			

Please see the diagram below for GW-KNX1 LED Locations.

Appendix B. Reference

Appendix B.1. Specifications



	GW-KNX1			
	One 6-pin Phoenix connector with: KNX port (+ / - / gnd)			
Electrical Connections	Power port (+ / - / Frame-gnd)			
Electrical Connections	One 3-pin Phoenix connector with: RS-485 port (+ / - / gnd)			
	One Ethernet 10/100 BaseT port			
	CE Certified; TUV approved to UL 916, EN 60950-1,			
Approvals	EN 50491-3 and CSA C22-2 standards; FCC Class A Part 15;			
Approvais	DNP3 Conformance Tested; RoHS Compliant; CSA 205 Approved			
	BTL Marked			
Power Requirements	Multi-mode power adapter: 9-30VDC or 12 - 24VAC			
Physical Dimensions	11.5 cm L x 8.3 cm W x 4.1 cm H (4.5 x 3.2 x 1.6 in.)			
Weight	0.2 kg (0.4 lbs)			
Operating Temperature	-40°C to 75°C (-40°F to167°F)			
Surge Suppression	EN61000-4-2 ESD EN61000-4-3 EMC EN61000-4-4 EFT			
Humidity	5 - 90% RH (non-condensing)			
(Specifications subject to a	change without notice)			
	Figure 28: Specifications			

Appendix B.2. Compliance with UL Regulations

For UL compliance, the following instructions must be met when operating GW-KNX1.

- The units shall be powered by listed LPS or Class 2 power supply suited to the expected operating temperature range.
- The interconnecting power connector and power cable shall:
 - Comply with local electrical code
 - Be suited to the expected operating temperature range
 - Meet the current and voltage rating for GW-KNX1/Net
- Furthermore, the interconnecting power cable shall:
 - Be of length not exceeding 3.05m (118.3")
 - Be constructed of materials rated VW-1, FT-1 or better
- If the unit is to be installed in an operating environment with a temperature above 65 °C, it should be installed in a Restricted Access Area requiring a key or a special tool to gain access.
- This device must not be connected to a LAN segment with outdoor wiring.