Neets Control - TanGo

Installation Manual

Neets

Foreword

This document describes how to install and operate the Neets Control - TanGo.

CHANGES - Neets reserve the right to change the specification and functions of this product without prior notice.

Questions, AFTER reading this manual, can be addressed to your local distributor or:

Neets A/S
Langballe 4
8700 Horsens
Denmark

by E-Mail: Support@Neets.dk
or you may use our contact form at www.neets.dk

Revision list

This document has the following revision changes:

Author: Date	Description	Pages	Rev
SHJ: 03-11-2016	First release.	All	1.00
DB: 07-12-2016	Edits to function description	5	2.00
DB: 13-03-2017	Text corrections in the error indication overview	15	3.00
DB: 14-06-2017	Specifications corrected	2, 5, 6, 12, 13, 14	4.00
DB: 29-06-2017	Updates to "What is in the box?	2	5.00

What is in the box?

When you open the box it will contain the following items:

- 1 x Neets Control - TanGo
- 11 x Terminal connectors
- 2 x Screws and plugs for wall mounting Ø4 x 60 mm
- 2 x Screws for mounting on Neets Rack Shelf M4 x 35 mm
- Manual

Note that PoE power injector is not included. Use the PoE Injector (Part number: 302-000508).

Important Safety Instructions

Caution:

Read these instructions.
Read and understand all safety and operating instructions before using the equipment.
Keep these Instructions.
The safety instructions should be kept for future reference.
Heed all warnings.
Follow all warnings and instructions marked on the equipment or in the user information.
Avoid attachments.
Do not use tools or attachments that are not recommended, as they may be hazardous.

Warning!:

- This equipment should be operated only from the included power supply.
- To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).
- Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.
- Do not defeat the safety purpose of a polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards. Contact your local Neets reseller or distributor.
- If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.
- Do not use this equipment near water.
- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture and objects filled with liquids.
- Unplug the product before cleaning. Clean only with a dry cloth and not cleaning fluid or aerosols. Such products could enter the unit and cause damage, fire, or electric shock. Some substances may also mar the finish of the product.

FCC Class A Notice:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation. The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

FCC regulations state that any unauthorized changes or modifications to this equipment, not expressly approved by the manufacturer, could void the user's authority to operate this equipment.

The lightning bolt triangle is used to alert the user to the presence of uninsulated "dangerous voltages" within the unit's chassis that may be of sufficient magnitude to constitute a risk of electric shock to humans.

The exclamation point triangle is used to alert the user to presence of important operating and service instructions in the literature accompanying the product.

Neets

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Description

Neets Control – TanGo is a powerful control system enabling intuitive touch control through touch panels or standard browsers. For easy installation, the TanGo can be powered by PoE IN and PoE OUT to avoid need for external PSU for both the control system and an external device such as a touch panel.

Function Description

- 3 Bi-directional RS-232 port or IR ports
  Used for controlling projectors, displays, amplifiers & other AV devices with feedback functionality
- 2 Uni-directional RS-232 or IR ports
  Used for sending commands to projectors or other AV devices using serial or infrared communication
- 8 General Purpose I/O ports
  Used for input/output control of relays, switches and sensors
- 4 Built-in low-voltage relays
  Used for contolling external devices such as electrical screens
- Ethernet port
  Used for controlling 10 LAN and 8 Neets extension devices and connection to Central Control and Project Designer as well as access to graphical user interface
- Power over Ethernet (PoE)
  PoE IN for power of the TanGo and PoE OUT for power of an external device such as a touch panel
- Email notifications and warnings. Email notification on lamp/filter hours and warnings
- 1 front USB port
  Used for easy system configuration, uploading and downloading project files
- Built-in Infrared Learner
  IR learner built into the front for easy IR code learning
- Easy mounting
  Can be mounted in trunking systems, hidden from sight, or in the IU Neets Rack Shelf
- PoE powered
  Power the TanGo with a compliant PoE power supply or switch (PoE injector not included)

Specifications

RS-232 (Tx+Rx) or IR (controls up to 2 IR devices on each port)	3
RS-232 (Tx) or IR (controls up to 2 IR devices on each port)	2
LAN device control	10
I/O	8
Low voltage relay	4
NEB Bus (with building NEB extender)	1 (5 NEB units)
PoE input	1
PoE output	1
IR Learn option with Device editor	Yes
USB port for programming	1
PIR sensor input	Yes
Light on/off	Yes
Room darkening	Yes
Screen up/down	Yes
Volume control	Yes
Device feedback	Yes

Specifications
Neets Control - TanGo

RS-232 / IR port

Ports	3 x bidirectional 2 x unidirectional
Baud rate	1200 - 115200 bit/sec
Data bits	7, 8
Parity	Even, Odd, None
Stop bits	1, 2
IR frequency	400 Hz to 500 Hz
Connector	3 pin screw block

IR learn

IR learn frequency	1 KHz to 150 KHz

Input / Output

Ports	8 x I/O
Input trigger low	< 1VDC
Input trigger high	< 4VDC
Output type	Open drain
Isolated output	No
Max voltage load	24 VDC
Max current	0,5 A
Connector	4 pin screw block

Relay Output

Voltage max	30 VDC
Current max	0,5 A
Connector	2 pin screw block

Network (LAN)

Speed	10 / 100 Mbit
Duplex modes	Half or Full
DHCP	Default off
Default IP	192.168.254.252
Default gateway	192.168.1.1
Default subnet mask	255.255.255.0

PoE input

Compliance	802.3af / 802.3at
802.3af PD mode	A + B
PD Class	0 (802.3af) / 4 (802.3at)

PoE output

Compliance	802.3at
Max power output	12 W @ 15 W input
PSE output mode	Mode B(pin 4/5 + 7/8)

General

Width	220 mm
Height	35 mm
Depth	70 mm
Width	8,66 inches
Height	1,38 inches
Depth	1,46 inches
Weight	0,5 kg
Shipping weight	1,0 kg
Shipping dimension (W/D/H)	280 mm / 190mm / 55 mm
Storage temperature	-20 °C to 50 °C
Storage moisture	Non-condensing
Operation temperature	0 °C to 30 °C
Operation moisture	Non-condensing

Product number

310-0305	TanGo

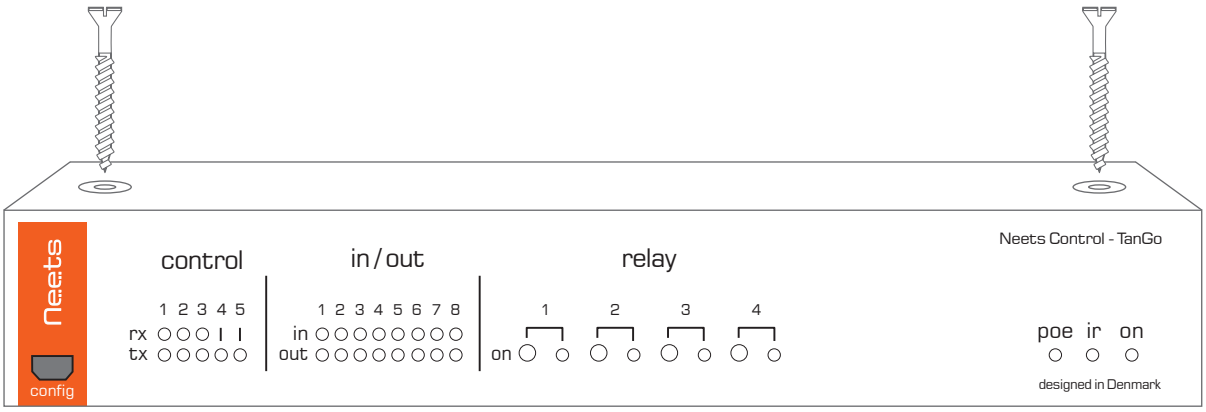
Approvals

IEC/EN	61000-6-1
IEC/EN	61000-6-2
FCC	Part 15, Class A
CE	

Installation

The Neets Control – TanGo is designed to be easily installed in any convenient location. The unit can be placed on a desk free standing. Simply unpack the unit, mount the adhesive feet and it is ready to go.

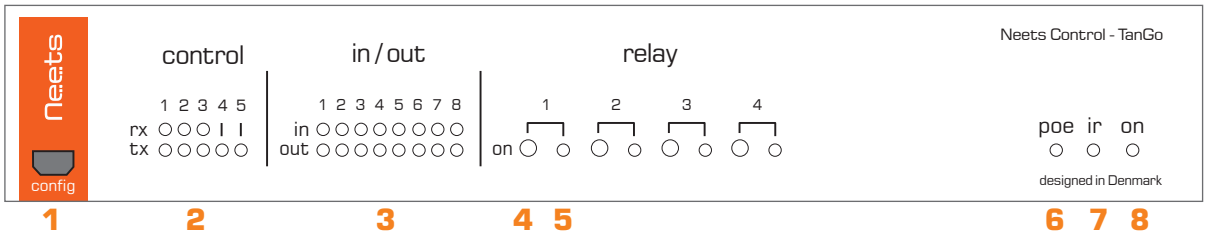
Alternatively, the unit can be mounted under a table or on a ceiling with the included self-tapping screws. Unpack the unit, place the unit on the surface where it is to be mounted, and screw the two screws through the holes in the top as shown below:



The unit also can be mounted in a 19 inch standard rack using the Neets Rack Shelf (Part number: 306-0017). See separate manual for installation instructions.

Connection and Controls

Front



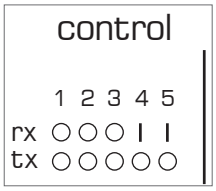
Number:	Description
1	USB configuration input
2	RS-232 status indication
3	IO status indication
4	Relay control button
5	Relay status indication
6	PoE output status indication
7	IR learner input
8	Power and error indication

Front USB Configuration

The USB port is used exclusively for configuring the TanGo from the Neets Project Designer software. It can't be used to control any external devices. The host USB port can power the control system while configuring, so no external power is needed when configuring the TanGo. However, external power and the USB port may be connected at the same time, for example when changing the configuration on an already installed unit.

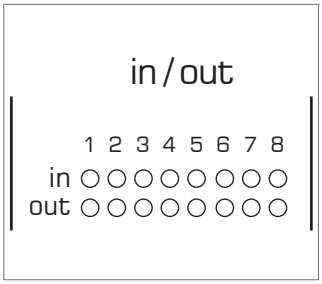
The USB connector for connecting to the controller is "mini USB B 5P". You can buy this cable on the web (select a USB A to Mini USB B 5P).

RS-232 Status Indication



The RS-232 status LED displays the current status of the RS-232 ports. The LEDs illuminate when there is active communication on the port.

IO Status Indication



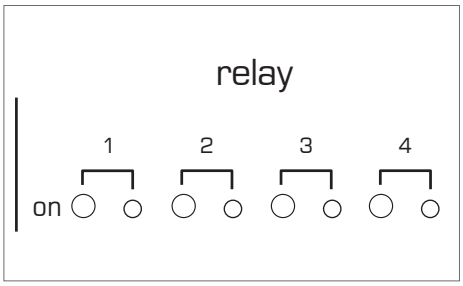
The IO status LED displays current status of the I/Os.

When an IO is configured as input, the yellow LED marked "in" will illuminate when the input is high and turn off when the input is low. The green LED marked "out" will remain off.

When an IO is configured as output, the green LED marked "out" will illuminate when the output is high and turn off when the output is low. The yellow LED marked "in" will remain off.

Relay Control and Indication

The four test buttons are used to test the built-in relay function. The test buttons are intended for use during installation to control functionality of connected devices. The LEDs will indicate if the relay is activated (green) or not activated (off) during use of the test buttons. They will also illuminate when the relays are controlled by the project in the TanGo.



Be aware that you can activate multiple relays at the same time and damage connected equipment if not carefull.

PoE Output Status Indication

The “poe” LED will show current status of the PoE output.

On	Valid PoE device connected to PoE output
Flashing slow	No PoE enabled device connected
Flashing fast	Error or overload on connected PoE device

IR Learner Input

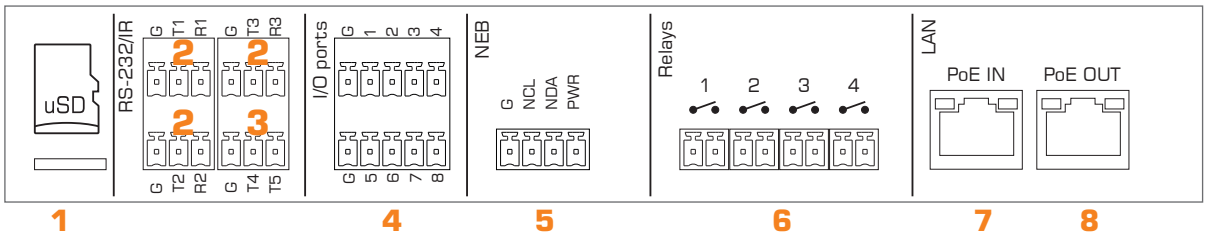
The IR learner can be connected directly to the Neets Device Editor software through the USB port. This enables learning of IR codes from your existing IR remote for easy configuration on-site or at your desk.

Power and Error Indication

The “on” LED will show the current status of the unit.

Green	Neets Control - TanGo is on and running normally
Blue	Neets Control - TanGo is starting
Flashing red	The Neets Control - TanGo is in error mode, see section “Error indication” on page 15 for details

Back



Number:	Description
1	SD card
2	Bi-directional RS-232 or IR transmitter
3	2 x RS-232 or IR transmitter
4	8 x digital I/O
5	Neets Extension Bus (NEB)
6	4 x potential-free relays
7	1 x RJ-45 Network (LAN) connector with PoE input
8	1 x RJ-45 Network (LAN) connector with PoE output

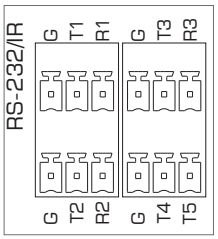
uSD-Card

The uSD-Card stores the TanGo project setup created in the Project Designer software, including general settings and Graphical User Interface. The card should not be removed during normal operation.

To remove the SD Card from the unit, push it GENTLY into the holder about 1mm (by using your finger tip). Release again, and it will slide out.

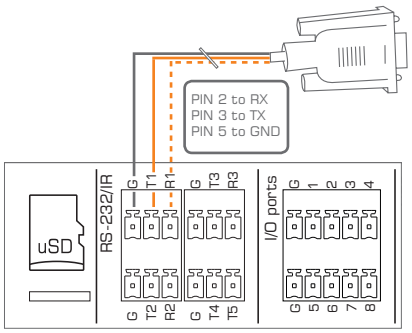
REMEMBER to remove power from unit (power down) before removing uSD card!

RS-232 Connectors

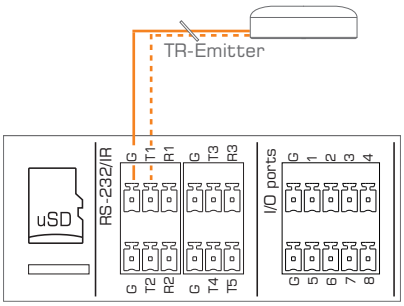


The onboard RS-232 ports T1 + R1, T2 + R2, T3 + R3 can be used for two-way communication with external RS-232 compatible devices. The ports T4 and T5 can be used for one-way communication with external RS-232 compatible decives. Alternatively all Tx ports can act as IR transmitter ports.

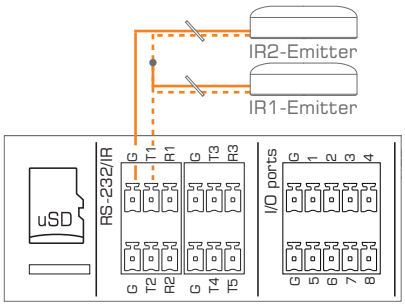
All of the RS-232/IR ports can be configured in the Neets Project Designer software either as RS-232 or as IR emitter.



When used as RS-232 transmit port: Connect the device to T1, R1 and GND, as shown here above.

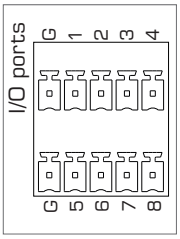


When used as single IR port: Connect the IR emitter to T1 (white striped wire) and GND, as shown above.



When used as dual IR port: Connect the IR1 emitter to T1 (white striped wire) and black wire on IR1 emitter to IR2 emitter (white striped wire), and black wire from IR2 emitter to GND, as shown above.

IO Connectors

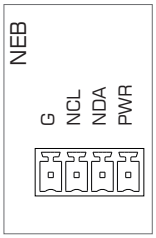


The TanGo has eight I/O (Inputs/Outputs) which can be configured as either output or input. Each I/O is available for connection to a PIR (movement) sensor, keyboard lock, relays or for other compatible uses. The ports are not potential free; you may need external relays to prevent ground loops depending on your application.

When used as outputs, the I/O ports are active low. When activated, the I/O ports are tied to GND through a FET transistor (also called open drain/collector function). Each I/O can draw up to 24VDC/500mA.

When used as inputs, the applied voltage must be below 1 VDC to be accepted as LOW, and above 4 VDC (but below 24 VDC) to be accepted as HIGH. The inputs are default HIGH and must be connected to ground in order to change state.

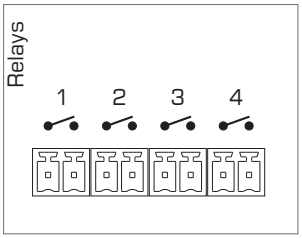
NEB Port



The TanGo has a built-in NEB (Neets Extension Bus). This port is used to add up to 5 NEB devices (e.g. two Keypads, two Level Controls and one Expander). The NEB port includes an NEB extender that allows up to 40m of separation between the TanGo and your NEB devices. However, you MUST connect NEB extender module (Neets P/N 310-0005) at the end for your NEB units.

The TanGo has a built-in NEB extender. Therefore, you need an extender for all your NEB units as well.

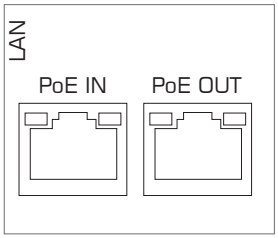
Relays



Relays are used when a external control is needed where there must be potential free connection between the control and the TanGo.

The relays are normally open types. This means that the terminals are not connected when the relay is off.

LAN Connectors with PoE functionality



The LAN connector is used to connect the TanGo to the local area network. The TanGo has Power over Ethernet functionality built into both the LAN interface connectors.

You must connect the TanGo to your LAN if you are using any of the LAN features of the product. The ports features auto MDI-X which means that you can connect the LAN ports directly to other devices without the need for a LAN switch.

The connector marked with PoE IN is used to power up the entire control system. To power the TanGo, use a PoE enabled switch which complies with IEEE802.3af. Or you can use the PoE Injector (Part number 302-000508).

The connector marked with PoE OUT is used to source power to a PoE enabled device, e.g. the SieRRa II used as extension device. The connected device should conform to IEEE802.3af.

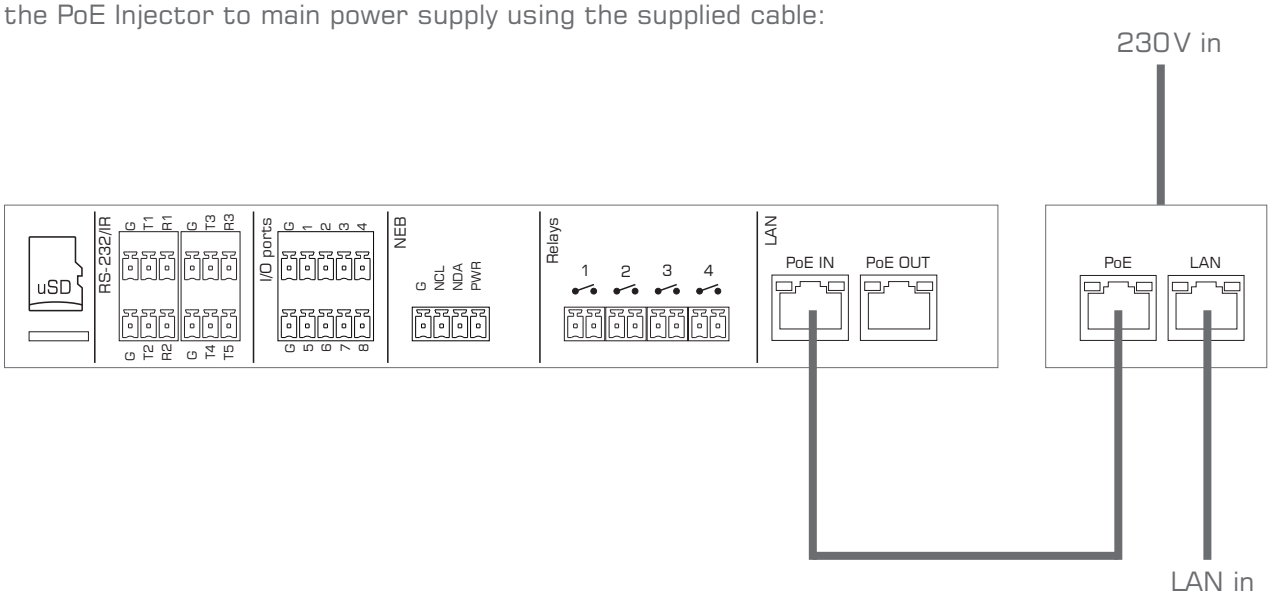
There are two LEDs on each connector with the following indication:

Color	Off	On	Blink
Yellow	No Link	Link	Activity
Green	10 Mbit	100 Mbit	

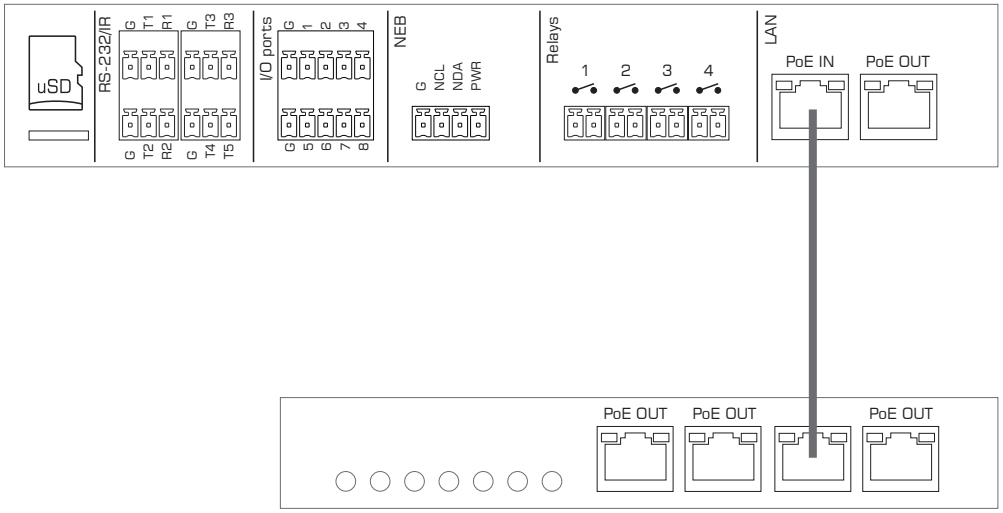
How to connect

PoE power supply to TanGo

To power up the TanGo, the LAN connector marked with PoE IN should be connected to a compliant PoE power supply. Or you can use the PoE Injector (Part number 302-000508). Connect the PoE Injector LAN connector marked “POE” to the TanGo LAN connector marked PoE IN with a RJ45 terminated LAN cable. Connect the PoE Injector connector marked “LAN” to the local network if networking features are required. Connect the PoE Injector to main power supply using the supplied cable:

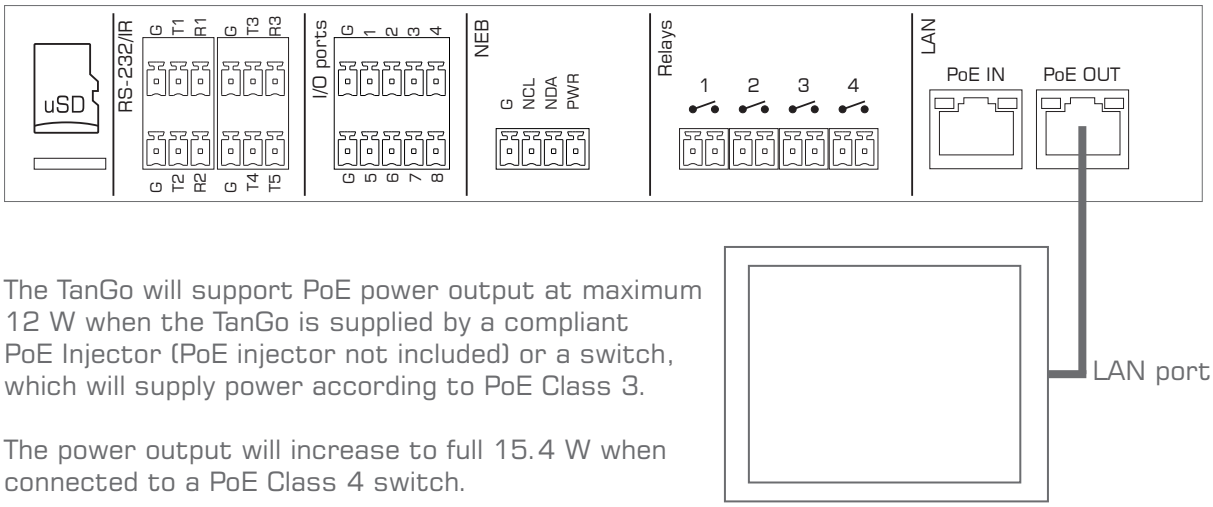


Alternatively the TanGo can be connected to a PoE enabled switch:



PoE power supply from TanGo

To power an external PoE enabled device simply connect a LAN cable between the device and the LAN port marked “PoE OUT”.



The TanGo will support PoE power output at maximum 12 W when the TanGo is supplied by a compliant PoE Injector (PoE injector not included) or a switch, which will supply power according to PoE Class 3.

The power output will increase to full 15.4 W when connected to a PoE Class 4 switch.

Be aware that the cable length and cable quality will impact how much power can be drawn by the connected device at the PoE OUT terminal. This is due to the fact that the TanGo will monitor the power loss in the cables and shut down the output if this loss is too high.

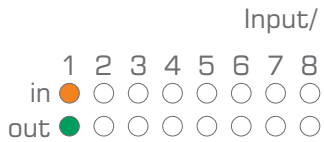
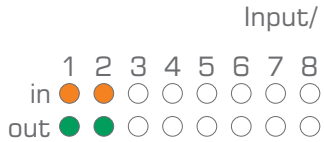
In practice this means that, for example, when using 100 meters of Cat5e cable between the PoE switch and the TanGo plus yet another 100 meters of Cat5e cable between the TanGo and the PoE enabled device, the maximum power draw allowance will be in the PoE Class 2 segment (up to 6,5 W). To increase this capacity shorter cables or higher grade cables e.g. Cat6a with higher cross sectional area can be used.

Troubleshooting

Error indication using LEDs

If there is a fault in either the configuration or the Neets Control - TanGo unit, this will be indicated on the front LED indicators.

In all error modes the power LED will flash red alternating with the IO LEDs. The alternating IO LEDs will indicate type of error. See list below.

LED shows	Description	Solution
	No connection to one or more NEB units.	Check that the NEB units used in the project are connected. Check that the NEB units used in the project are configured correctly. After doing one of the above, remove the power to the control system for 20 sec before reconnecting the power again.
	No project found on the control system	Try to upload the project again. Alternatively, there can be a problem in the project you have uploaded. In this case, try uploading an empty project and see if this works.
	Missing SD card or error on SD card	Make sure that there is a SD card inserted in the control system. After doing the above, turn off the power to the control system for 20 seconds before turning the power on again.
	Unexpected Error	Turn off the power to the control system for 20 sec before turning the power on again.
	No contact to Neets extension unit	Check to confirm that the serial number used in Project Designer matches the Neets extension unit. Check the network or RS-232 connection from the control system to the Neets extension unit. Check the network or RS-232 connection on the TanGo and all connected network units.
	Wrong firmware version in Neets extension unit	The Neets extension unit has a different firmware than the one in the control system. Please upgrade the firmware by plugging in the USB cable from the Neets extension unit into a PC running Project Designer and follow the instructions.