Hardware Installation Manual

Document that describes how to connect the different components
of the VECOS Locker Management System.

0. Table of Contents

Revision History:

v3.0	04-03-2020	First release for V3, the new Power Supplies and UL
v3.1	06-04-2020	Limit to 3.05m for UL and add HEP power supplies
v3.2	29-04-2020	Limit number of HUBs from 1 power source cable and lock temp. protection
v3.3	30-04-2020	Fixed type number of the HLG power supplies
v3.4	03-05-2020	Final version, reviewed and added
v3.5	11-05-2020	Added max 24 locks restriction from power cable
v3.6	14-05-2020	Added allowed products for UL Listed E513979 system
v3.7	18-05-2020	Changed white power plug to 7A
v3.8	08-09-2020	Added new cable article numbers (CULxxx) for USA & CAN
v3.9	05-01-2021	Added V3/V3+ Default RGB status led description
v3.10	01-02-2022	Added Singapore certification for V3+
v3.11	29-04-2022	Safety from Class A to Class B, article number updates, new logo, simplified number of locks calculations, added Power Connection Box
v3.12	29-07-2022	Removed the HEP-480-24A PSU as the Power Connection Box is max 18A
v3.13	30-08-2022	Power Supply text adjustments for UL approval (chapter 5 and 6)
v3.14	12-09-2022	Added Taiwan NCC statement
v3.15	21-11-2022	Updated CAN ICES and FCC ID's to Class-B approvals and Malaysia approval

1. General information

1.1. Introduction.

VECOS Europe B.V is a leading European company in security & efficiency solutions with its own hardware, firmware and software development. The company started in 1988 and is located in Eindhoven, The Netherlands.

Releezme is the trademark name of VECOS Europe B.V. Locker Management System, consisting of a Hardware and Software part.

1.2. Purpose of the manual

This is document is intended as a guide to ensure correct installation of the VECOS Locker Management System hardware.

1.3. How to use the manual

This manual is designed to get you setting up the hardware the correct way.

1.4. The system consist of:

1. Colour Touchscreen Terminal Model no.: LBC 3.0
2. Lock Connection Box Model no.: HUB V3-24
3. VECOS Locker Lock Model no.: V3
4. VECOS Locker Lock Model no.: V3+
5. VECOS Locker Lock Model no.: V3+HID
6. VECOS Locker Lock Model no.: V3+Legic
7. Power Connection Box
8. Power Supply see chapter 2

2. Power supply cabling

As Power Supplies used are the Mean Well Enterprises Co., Ltd fanless HLG-185/480 series.

Ordering Code	Type	Specification
AC12009/4	Power supply v3-68/100 (HLG-185H-24TE10)	27V / 6.9A (185W) TE10 (US-JunctionBox)
AC12009/5	Power supply v3-68/100 (HLG-185H-24TE11)	27V / 6.9A (185W) TE11 (C14)
AC12011/4	Power supply v3-160/256 (HLG-480H-30TE10)	27V / 16A (432W) TE10 (US-JunctionBox)
AC12011/5	Power supply v3-160/256 (HLG-480H-30TE11)	27V / 16A (432W) TE11 (C14)
AC12035/0	Meanwell HEP-185-24A	27.0V / 6.9A
AC12033/0	Meanwell HEP-240-24A	25.6V / 9.4A
AC12034/0	Meanwell HEP-320-24A	26.0V / 12.3A

HLG-Series:

The 24 and 30 in the type number of the HLG power supplies indicate the normal output voltage, and are internally adjusted to 27 V. The TE10 and TE11 in the type number indicate custom made power supplies. The input mains side consists of either the C14 connector or a Junction Box.

The output consists either of 1 or 2 cables (HLG-480 series) The black and red cables of the 480 series shall be connected to the Power Connection Box, so don't connect everything to 1 cable. That way 1 cable will have a max load of 8A.

One side marked with INPUT will always need to be connected to the main wall outlet (100-240VAC or 277 VAC).

HEP Series

The HEP series is an alternative power supply. They all have an C14 connector as input, so in the US, they can never be used at a Fixed locker bank. Default these PSU's are 24v, but these are adjusted to its maximum voltage.

Connecting the INPUT:

The side marked with INPUT shall be connected to the mains wall outlet (90-305 VAC 50-60 Hz).
The TE10 versions are provide with a JunctionBox and are for the USA & Canadian market, where the locker bank is at a Fixed location, for example in a Wall. These TE10 Power supplies shall be installed by a qualified and experienced technician.. An all-pole mains switch in accordance with UL62368-1 Annex L shall be incorporated in the electrical installation of the building.
The TE11 and the HEP versions are provided with a C14 connector and are for all other cases, e.g. lockers put in front of a wall or at the end of desks. Those lockers are also often replaced by customers.

TE10 - JunctionBox

TE11 - C14

If the input is connected to a UPS, you can connect 1 large PSU or 2 small PSU to 1 UPS of 650VA.

Connecting the OUTPUT:

The output wires of the power supply needs to be connected to the Power Connection Box, Red on the + and Black on the – of the 4-level connector.

In the empty position of the 6 level connectors, power extension cables can be connected. The 3 white power connectors can connect directly to HUB's or a Terminal.

The Power Supplies are delivered with the Power Connection Box (AC13009/0) and needs to be connected onsite. In case the Power Supplies are mounted in/under/on-top of a metal locker, use self-tapping screws to connect it to ground.
The Power Connection Box has a limit of 18A, so never use a PSU that can supply more then 18A!

2.1. Extending the standard power cable length

If the standard 27Volt power cable is too short, it is allowed to apply longer cables. Please use suitable UL-Listed connectors (WAGO) and cable (2x2.5mm^2 [AWG 13] to be sure the connections are reliable, and the voltage drop over the total supply cable is less than 4 Volt, when the entire block is activated (all lock in this block active). As example, activating 24 locks over 100m [328 ft] cable (2x2.5mm^2 AWG 13 will result in a voltage drop of 5.2v, meaning the locks are not powered with 27v, but only 21.8v.

For USA & CAN, only VW-1 cables up to 3.05m [10 ft] can be supplied, longer cables need to be sourced locally and require to be in compliance with the Canadian Electrical Code, Part I, CSA C22.1, and the National Electrical Code, NFPA 70

For connecting the cables we advise the WAGO Splicing wire connectors:

Type	No contacts	Specification
Wago 221-413	3 ways	0,14 – 4 mm2 (AWG 24-12)
Wago 221-415	5 ways	0,14 – 4 mm2 (AWG 24-12)

2.2. Connect the Power Supply to the HUB

To be sure everything operates well also when a lot of people scan their cards (only applicable for the V3+ series) or when the emergency key is used, it's important not to connect too many HUBs after each other,. If the power cable needs to be extended, always use at least 2x2.5mm^2 [AWG13] cable.

Maximum number of fully used HUB's from the power supply output is 1, or better 1+1. This makes sure the white power connector never gets more than 7A load (max load for the white connector).
Example 1: **PWR**-HUB
Example 2: HUB- **PWR**-HUB
Example 3: HUB-**PWR**-HUB <nothing> HUB-**PWR**-HUB
If the HUB is not fully used (meaning no 24 locks are connected), multiple HUBs can be applied, but never connect more than 6 locks in 1 loop and never connect more than 24 locks from where the PWR cable starts.

As last, the terminal needs to get power, the LBC 3.0 terminal uses the same cabling as applied between the HUBs. It is not important where the terminal is connected to the power because its power consumption is very low.

All standard cables between the HUB's and the LBC 3.0 are the same.

VECOS Ordering code	Description
CUL16061/1	HUB Data Cable 3.0m [9.8 ft]
CUL16062/1	HUB Power Cable 3.0m [9.8 ft]

Power Cable:
Cable specification : UL2648 16AWG 2C Colour: black & Red
Jack specification : WR MPC4 Nylon 66 UL94V-2

Data Cable:
Cable specification : UL2725 8C 26AWG VW-1 round cable, 5.0 mm.
Jack specification : 8P8C Modular Jack gold plated, squareness type.

As Data cable, also a normal UTP CAT5E or CAT6 network cable can be used, but never use a shielded cable, always an unshielded cable.

CUL16061/1 CUL16062/1

3. Lock interconnection cabling

3.1. V3 Lock

The V3 locks are interconnect to each other via a RJ-12 cable. The loop starts at the first position of the HUB, and then enters one side of the first lock. The other side of the lock is connected via a RJ-12 cable to the second lock, this cycle is repeated until the last lock is connected (the max. is 6 locks in 1 loop). The second RJ-12 of the last lock is returned to the HUB on the second position.

The second cycle is connected to the 3rd position of the HUB, and returns (after interconnecting more locks) to the HUB on the fourth position.

The third cycle then is connected to the next loop of locks (connection 5 and 6 of the HUB).

The last Loop of Lock is connected to the seventh and eight position of the HUB.

In 1 loop a maximum of 6 locks can be connected, so 1 HUB can connect a maximum of 24 Locks.
Each loop is protected by an automated fuse inside the HUB of 1.5A.
See the last chapter of this manual for a complete wiring example .

In case of 5 lockers above each other, 2 long cables and 4 shorter cables are needed.
The needed cable lengths depends on the size of the lockers (distance in height between 2 locks) and how the cables are routed from lock to lock. For 5 lockers above each other, usually the cables of 1 x 2.65 m [8.7 ft], 4 x 0.60 m [23.6 inch] and 1 x 3.70 m [12.4 ft] are used.

The next chapter shows the standard cables that can be supplied from stock.

3.2. RJ-12 cables

There are different cable lengths, and colours, the CUL versions are for the USA & CAN.

VECOS ordering code	Colour	Length (cm)
CUL16074/3	Blue	32 [12.6 inch]
CL16070/2 or CUL16070/2	Black	50 [19.7 inch]
CL16071/3 or CUL16071/3	Red	60 [23.6 inch
CL16072/3 or CUL16072/3	Yellow	100 [3.3 ft]
CL16073/2 or CUL16073/2	Green	130 [4.3 ft]]
CL16074/2	Brown	180 [5.9 ft]
CUL16074/2	Blue	180 [5.9 ft]
CL16070/1 or CUL16070/1	Black	230 [7.6 ft]
CL16071/1 or CUL16071/1	Red	265 [8.7 ft]
CL16072/1 or CUL16072/1	Yellow	300 [9.8 ft]
CL16073/1	Green	335 [11 ft]
CL16074/1	Brown	370 [12.1 ft]
CL16071/2	Red	500 [16.4 ft]
CL16072/2	Yellow	800 [26.3 ft]

CL16071/ 1

Cable specification : UL20251 6C 26AWG Flat telephone cable
: UL2725 6C 26AWG VW-1 round cable, 4.5 mm (CUL)
Jack specification : 6P6C Modular plug, gold plated

For USA & CAN, only VW-1 cables up to 3.05m [10 ft] can be supplied, longer cables need, to be sourced locally and require to be in compliance with the Canadian Electrical Code, Part I, CSA C22.1, and the National Electrical Code, NFPA 70.

3.3. V3 Controller connections

Both power connections and both communication ports are the same (internally connected parallel),

3.4. V3 Controller settings

There are multiple ways to control the block open signal (also called the Emergency Open signal) of the V3 locks connected to the HUB V3, see the table below for the possible settings.

Every HUB that has an Block signal setting selected, will pass on the selected Block signal to the Locks. If the signal becomes active, all locks connected to this HUB will be activated.

For V3 locks, this needs to be active, because if the terminal is broken, the lockers can't be opened in another way. For V3+ series this optional, because with a Master badge on the lock itself it still can be opened .

The communication lines of the HUB V3 and V3 Locks need to be terminated at both ends of the entire communication bus. This means max. TWO no 4 switches are ON in the entire bus, most of the time just 1 because the terminal is connected to the other end and has default termination active.
A simple rule: if there is only 1 RJ45 (data cable) connected, then this is the end of the bus and termination needs to be activated.

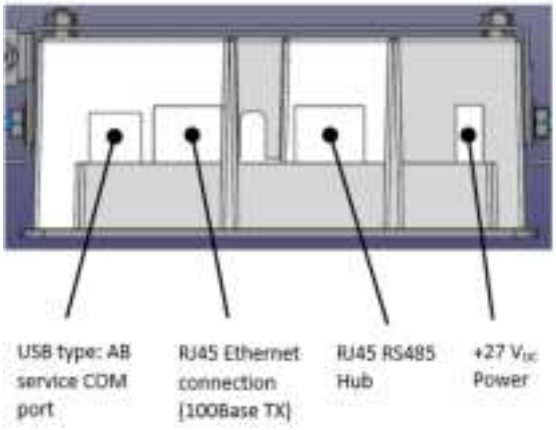
Dip switch settings:

No	Function	Default
1	Key switch input connected to Block open	OFF
2	Bus Block 1 signal connect to Block open	OFF
3	Bus Block 2 signal connect to Block open	OFF
4	Line termination	OFF

4. Terminal cabling

4.1. LBC 3.0 Terminal

The LBC 3.0 terminal can be connected with the same cables as used for connecting HUBs, except for the TCP-IP Network cable, that needs to be a CAT5E or higher network cable and NOT the flat cable used between the HUBs.



Between the 2 RJ45 ports, A switch and jumper is placed between the 2 RJ45 ports,.
The Jumper is to activate the RS485 termination (default placed), remove the jumper if the LBC 3.0 is not connected to the end of the RS485 cable, in that case terminate the 2 HUBs at the end of the RS485 communication bus.

4.2. LBC 3.0 Key switch

The LBC 3.0 contains the emergency open switch:

Middle position is off.
To front: Block 1 active.
To back: Block 2 active.

To indicate the status active state, a lock symbol is placed in the top line of the display with a 1 or 2 next to it:

If one of them is active, the HUBs that are configured with the dipswitches to check the Block 1 or 2 signal will activate all locks attached to that HUB accordingly.

There is no need to connect the external key switches anymore
If more than 2 emergency switches are needed, also extra power supplies can be added, so the maximum number of locks on 1 key signal are not exceeded.

When the Key switch is active, the locks will be activated and will get hotter. The locks have 2 protections:

1. The software makes sure the lock isn't activated more than 15 minutes. The software makes sure the lock isn't activated more than 15 minutes.
2. In case a lock gets too hot, a hardware protection will disable the coil of the lock until it's cooled down again.

If a UPS is powering the power supply, don't use the Key switch if the system is running on UPS power as it will drain the power before you can open all lockers. You can use a badge or in the master menu open door 0.

5. Maximum number of locks on 1 Power Supply

There is not a fixed number of locks that can be connected to 1 Power Supply, it really depends on how the lockers are used, how these are wired and if the emergency key can be used.

Below calculations are all based on Watt so it's easy for calculations.
The maximum number of locks connected to 1 terminal is 256.
For more details about the calculations, see document "Power calculations V3 series locks", this document describes the power consumption and how it's calculated in detail.

Max. Locks Calculations for different powersupplies

LockType	Power [W]	Full-USB [W]	Remarks
V3	4,56	5,56	* Max current in Active state
V3+	4,66	5,66	* Max current in Active state
V3/V3+ Idle	0,85		* If 1 Block is active, the other locks still use some power
V3+Active %	15%		* Max. percentage that can be active at 1 point
UHP MaxLoad	90%		* Without metal plate cooling, this PSU can't be at full load

		Normal USB load					Full USB load	
Max Power [W]	Type	V3 (2*block)	1 block	V3+ (2*block)	1 block	V3+ (no block)	V3	V3+
185	HLG/HEP-185-24xx	68,00	34,00	66,00	33,00	119,00	33	32
240	HLG/HEP-240-24xx	88,00	44,00	86,00	43,00	154,00	43	42
320	HLG/HEP-320-24xx	118,00	59,00	116,00	58,00	206,00	57	56
350	UHP-350-24	116,00	58,00	114,00	57,00	203,00	56	55
432	HLG-480H-30TExx	158,00	79,00	156,00	78,00	278,00	77	76
480	HLG/HEP-480-24	176,00	88,00	174,00	87,00	309,00	86	84
500	UHP-500-24	166,00	83,00	162,00	81,00	290,00	80	79

* For Full USB load, the block doesn't matter as the USB uses more power then the coil itself and USB switches off if the coil is activated
* The UHP-350-24, UHP-500-24 and HLG/HEP-480-24 power supplies are not part of the UL certification!
* The UHP-500-24 and HLG/HEP-480-24 power supplies are not allowed to be used anymore with the PowerConnection Box as they can deliver more then 18A.

Important note:
If more power is used the system will still be safe and nothing will get damaged.
The PSU will lower the voltage and if the voltage gets lower then 22v there is a chance that lockers cannot be opened anymore.
If locks detect a lower voltage then 22,5v, it will also disable the USB power for 10s and the lock will blink orange.

6. Example Technical locker

As an example, below is shown a picture of all components nicely mounted in 1 wooden locker. It shows how the main outlet, network connection and the terminal in the locker are positioned.

As installer it is very important that the Technical locker like below is nicely left behind and that cables can't get stuck between the door. Never drop the cables and materials just in there, this locker might be opened by customers and it must be 100% safe.

Also make sure that no other components of the system are accessible for ordinary persons (HUBs, wires, …).

7. V3/V3+ Default LED states

The Status LED of the V3/V3+ locks can be configured in Releezme to all kind of combinations, but the default configuration/behaver is:

LED_STATE_OFF
Status RGB LED is off due to the fact the locker a public locker or not designed with the locker bank configuration.
LED_STATE_LOST_COIL
Inherited from V2 lock but not used within V3/V3+ lock due to missing hardware for lost coil detection.
LED_STATE_DYNAMIC_FREE
Status RGB LED is green due to the fact the locker is a dynamic and not allocated locker.
LED_STATE_DYNAMIC_IN_USE
Status RGB LED is red due to the fact the locker is a dynamic and allocated locker.
LED_STATE_OPEN_TOO_LONG
Status RGB LED is blinking red due to the fact the maximum allowed opening time has been exceeded.
LED_STATE_DENIED
Status RGB LED is fast blinking red due to the fact unlocking the locker has been denied.
LED_STATE_ASSIGNED
Status RGB LED is blinking green due to the fact the locker has been assigned.
LED_STATE_ALLOW_OPEN
Status RGB LED is fast blinking green to indicate the locker is allowed to be opened.
LED_STATE_ALLOW_REOPEN
Status RGB LED is fast blinking green to indicate the locker is allowed to be opened again.
LED_STATE_ASSIGN_ID
Status RGB LED is blinking red/green to indicate the locker is waiting to be closed in order to assign an ID (part of configuration procedure LBC).
LED_STATE_NO_ID
Status RGB LED is 50% of the period off and 50% blinking red/green to indicate the locker is not assigned an ID (not configured yet by LBC).
LED_STATE_UNEXPECTED
Status RGB LED is 50% of the period off and 50% blinking red to indicate the locker has been opened unexpectedly (unallowed opening).
LED_STATE_WAIT_REPLY
Status RGB LED is fast blinking red/green to indicate the locker is waiting for a communication reply of the LBC.
LED_STATE_BLOCKED
Status RGB LED blinks red for a short period of time to indicate the locker has been blocked (locker blocker state by Releezme).
LED_STATE_STATIC_FREE
Status RGB LED is green due tot the fact the locker is a static and not allocated locker.
LED_STATE_STATIC_IN_USE
Status RGB LED is red due to the fact the locker is a static and allocated locker.
LED_STATE_VOLTAGE_TOO_LOW
Status RGB LED blinks orange for a long period of time to indicate the lock has detected an under-voltage situation. (This has been added to V3/V3+ with respect to V2).
LED_STATE_TEMPERATURE_TOO_HIGH
Status RGB LED blinks yellow for a long period of time to indicate the lock has detected an over temperature situation. (This has been added to V3/V3+ with respect to V2).

8. UL approved system components

Our “Releezme V3 Hardware” is cULus Listed under File no E513979.
The following products are part of this certification:

- Power Supply
  - AC12009/4, Meanwell HLG-185H-24TE10
  - AC12009/5, Meanwell HLG-185H-24TE11
  - AC12011/4, Meanwell HLG-480H-30TE10
  - AC12011/5, Meanwell HLG-480H-30TE11
  - AC12035/0, Meanwell HEP-185-24A
  - AC12033/0, Meanwell HEP-240-24A
  - AC12034/0, Meanwell HEP-320-24A
- Power Connection Box, needed after every power supply
  - AC13009/0, Power Connection Box
- LBC 3.0 Locker Bank Controller with 7” color display
  - TM15001/1, LBC 3.0 Colour Touchscreen Terminal
  - MO17011/0, LBC 3.0 Protector
- HUB V3-24 Controller to connect max 24 V3 series locks
  - PC18008/1, HUB V3-24 w/o cables
  - PC18008S1, HUB V3-24
- V3 series lock
  - AC17012/x, VECOS Locker Lock V3
  - AC17013/x, VECOS Locker Lock V3+
  - AC17014/x, VECOS Locker Lock V3+HID
  - AC17015/x, VECOS Locker Lock V3+Legic
  - MO15013/0, VECOS V3 Door Slider (is part of the lock)
- RJ12 Lock cables to connect all locks together and to the HUB V3-24
  - CUL16074/3, Lock cable 0.32m [12.6 inch] Blue
  - CUL16070/2, Lock cable 0.50m [19.7 inch] Black
  - CUL16071/3, Lock cable 0.60m [23.6 inch] Red
  - CUL16072/3, Lock cable 1.00m [3.3 ft] Yellow
  - CUL16073/2, Lock cable 1.30m [4.3 ft] Green
  - CUL16074/2, Lock cable 1.80m [5.9 ft] Blue
  - CUL16070/1, Lock cable 2.30m [7.5 ft] Black
  - CUL16071/1, Lock cable 2.65m [8.7 ft] Red
  - CUL16072/1, Lock cable 3.00m [9.8 ft] Yellow
- RJ45 Data cable between HUBs and to the LBC 3.0 terminal
  - CUL16061/1, HUB Communication cable 3m
- Red/Black power cable between HUBs and to the LBC 3.0 terminal
  - CUL16062/1, HUB Power cable red/black 3m

9. Compliance Statement about RF, Safety and EMC

Power Connection Box, V3 series Locks, HUB 3-24 and LBC 3.0 Colour Touchscreen

ISED EMC Declaration:
This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de Classe B est conforme à la norme Canadienne ICES-003.

FCC Information to the User:
This equipment has been tested and found to comply with the limits for a Class B digital devices, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequent energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does not cause harmful interference to radio or television reception, which can be determine by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- To ensure compliance with FCC regulations, use only the interface cables provided with the product, or additional specified components or accessories that can be used with the installation of the product.

Canada & USA:
The equipment supplied is cULus approved with File number E513979, CCNs AZOT/AZOT7 according to UL 62368-1 and CSA C22.2 No. 62368-1-14 Audio/Video, Information and Communication Technology Equipment – part 1: Safety requirements - Edition 2 - Issue Date 2014/12/01

CE & UKCA:
Hereby VECOS Europe B.V. declares that the subject equipment is in compliance with the:
- EMC directive 2014/30/EU
- Low Voltage Directive2014/35/EU
- RoHS Directive 2011/65/EU and (EU) 2019/171

V3+ series

Model: V3+ and V3+HID	FCC ID: 2ACYAV3NXP1 and IC: 25896-V3NXP1
Model: V3+Legic	FCC ID : 2ACYAV3LEGIC and IC: 25896-V3LEGIC

FCC and ISED Radiation Exposure Statement:
This equipment complies with FCC and Canadian radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme a RSS-102 limites énoncées pour un environnement non contrôlé.

FCC and ISED Compliance statement:
This device complies with part 15 of the FCC Rules and to RSS-210 of Innovation, Science and Economic Development Canada. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
Cet appareil se conforme aux normes RSS 210 exemptés de license d'Innovation, Sciences et Développement économique Canada. L'opération est soumis aux deux conditions suivantes:
(1) cet appareil ne doit causer aucune interférence, et

(2) cet appareil doit accepter n'importe quelle interférence, y inclus interférence qui peut causer une opération non pas voulu de cet appareil.

Les changements ou modifications n'ayant pas été expressément approuvés par la partie responsable de la conformité peuvent faire perdre à l'utilisateur l'autorisation de faire fonctionner le matériel.

ISED EMC Declaration:
This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de Classe B est conforme à la norme Canadienne ICES-003.

FCC Information to the user:
This equipment has been tested and found to comply with the limits for a Class B digital devices, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequent energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does not cause harmful interference to radio or television reception, which can be determine by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- To ensure compliance with FCC regulations, use only the interface cables provided with the product, or additional specified components or accessories that can be used with the installation of the product.

Canada & USA:
The equipment supplied is cULus approved with File number E513979, CCNs AZOT/AZOT7 according to UL 62368-1 and CSA C22.2 No. 62368-1-14 Audio/Video, Information and Communication Technology Equipment – part 1: Safety requirements - Edition 2 - Issue Date 2014/12/01

CE & UKCA:
Hereby VECOS Europe B.V. declares that the subject equipment is in compliance with the:

- Radio Equipment Directive 2014/53/EU
- RoHS Directive 2011/65/EU and (EU) 2019/171

Singapore :
V3+ Complies with IMDA Standards under license number DA108981

Complies with IMDA Standards DA108981

Malaysia:
V3+ Complies with CID Standards under SLP ID: CIDF22000071

CIDF22000071

Taiwan:
NCC Statement:
「取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。」

10. Wiring example