Hardware Installation Manual

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

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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	18-06-2021	Safety from Class A to Class B

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 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=Non-US (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=Non-US (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
AC12036/0	Meanwell HEP-480-24A	25.2V / 19.0A

The Power Supplies have no FAN and have an IP65 enclosure,

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 cable shall be provided with connectors. The output consists either of 1 or 2 cables (HLG-480 and HEP 480 series)The black and red cables of the 480 series shall be interconnected in the 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 two PS shall be installed by a qualified and experienced technician..
T 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

Connecting the OUTPUT:

To each of the output wires attach 1 WAGO connector, so 2 WAGO connectors are needed, 1 for Black and 1 for Red. Connecting these both of them in 1 WAGO connector, a shortcut is created!

In the empty position of the WAGO connector , the red & black wires of the HUB power cables are attached.
Black = Ground, connect to Black HUB power cable
Red = +27 volt, connect to Red HUB power cable

The Power Supplies are delivered with the connection box and the WAGO connectors already connected In case the Power Supplies are mounted in/under/on-top of a metal locker, use self-tapping screws to connect it to ground.

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, the CUL versions are for the USA & CAN:

VECOS Ordering code	Description
CL16061/1 or CUL16061/1	HUB Data Cable 3.0m [9.8 ft]
CL16062/1 or 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 : UL20251 8C 26AWG flat telephone cable, 2,5 * 9,0 mm.
: 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.

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.

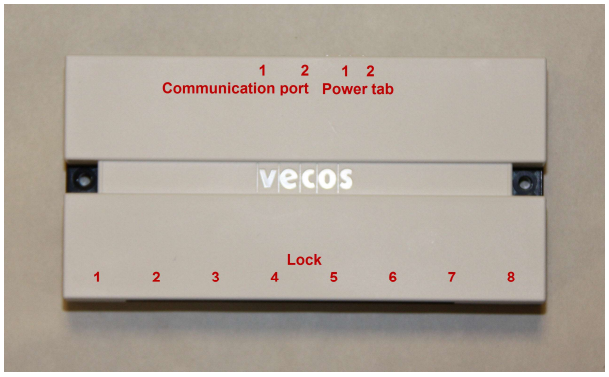
VECOS ordering code	Colour	Length (cm)
CL16070/2 or CUL16070/2	Black	50 [19.7 inch]
CL16071/3 or CUL16071/3	Red	60 [23.6 inch
CL16072/3 or CUL16072/3	Yellow	100 [3.3 ft]
CL16073/2 or CUL16073/2	Green	130 [4.3 ft]]
CL16074/2	Brown	180 [5.9 ft]
CUL16074/2	Blue	180 [5.9 ft]
CL16070/1 or CUL16070/1	Black	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
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.

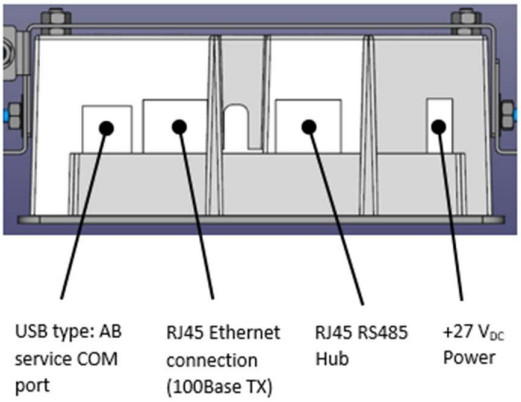
Dip switch settings:

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.

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.

What can influence the power consumption of a Lock:

- The colour of the status led.
  We use an RGB led, so if you want a white colour, all 3 led's will be active, for Red, Green or Blue only 1 will be active.
- The brightness of the status led.
  The brightness is configurable in the Releezme Lock Profile between 0% – 100%
- The brightness of the internal lighting.
  The brightness is configurable in the Releezme Lock Profile between 0% – 100%
  It's only active when the door is open.
- Activation of the Coil.
  Usually a lock has only an active coil for a few seconds (let's say 3-20 seconds). Once a door has been opened the Coil will be deactivated.
- USB Charging.
  If a device is using the USB port(s) to charge, it can take up to 1000mA (5 Watt).
  USB charging is disabled by the lock software while the Coil is active.
- Emergency Key (Block 1 or Block 2 signal on the LBC 3.0 terminal).
  This can activate x number of locks.
  If the signal is active for more than 15 minutes, the Locks will ignore the signal and deactivate the Coil (USB will then be activated again).

The Locks parts have the following power consumption:

- 0.18W Basic electronics V3
- 0.28W Basic electronics V3+ series
- 0.13W Red, Green or Blue (white is 0.31W)
- 0.54W Internal lighting (active when door is open)
- 4.00W Coil
- 5.00W USB charging

The firmware in the lock also takes care of some power savings:

- When the USB charging is active and the door is open, the internal LED has a maximum brightness of 50%
- When the Coil is active, the USB charging is disabled
- When the door is open, the RGB status led is dimmed to prevent that people look into a bright light.
- The software switches the Coil off when the door is opened
- If the Block signal is active, the USB charging will be disabled

Above means for the V3 locks (All V3+ locks use 0.1W more):

- 0.31W Idle power consumption of the V3 lock (1 status led and closed door)
- 0.85W Open power consumption of the V3 lock (1 status led and open door)
- 4.56W Max power consumption of the V3 lock (3 status led, closed door and active Coil)
- 5.56W Max power consumption of the V3 lock (3 status led, closed door and active USB)

The Power Supplies (PSU) applied are available in 2 sizes. The large PSU can supply 432 Watt, the small PSU can supply 185 Watt.

Theoretically that would mean you can connect the following Idle locks:

- 432W / 0.31W = 1393 V3 series locks
- 185W / 0.31W = 496 V3 series locks
- 432W / 0.41W = 1053 V3+ series locks
- 185W / 0.41W = 451 V3+ series locks

So in all cases it's more than the 256 locks that can be connected to 1 terminal.

Locks with full USB load, you can only connect:

- 432W / 5.56W = 77 V3 series locks
- 185W / 5.56W = 33 V3 series locks
- 432W / 5.66W = 76 V3+ series locks
- 185W / 5.66W = 32 V3+ series locks

Active locks and NO USB load (for example with a Block signal active), you can connect:

- 432W / 4.56W = 94 V3 series locks
- 185W / 4.56W = 40 V3 series locks
- 432W / 4.66W = 92 V3+ series locks
- 185W / 4.66W = 39 V3+ series locks

So in both 2 last cases this is less than the 256 locks that can be connected to 1 terminal.

Practice:
In practice never all locks need to be active at the same time and also all USB chargers are not active at the maximum load. So in 99.9% of the installations a good balance is needed.
Practice has shown that below are good numbers:
On the large PSU of 432W you can connect the maximum number of locks, so 256 pcs.
On the small PSU of 185W you can connect 100 locks.

Since the emergency Opening switch (Block 1 / Block 2 signal) is only used for V3 locks as backup for opening in case the terminal is not properly operating below only the calculations for V3 locks.
Instead of the Block signal of the terminal, it can also be activated on the HUB itself to reduce the number of locks that will open (then only the locks connected to that one HUB will be activated, so max. 24 locks).
The V3+ series don't need the Block signals, there the RFID reader can be scanned if the terminal is not working right.
If the Block signal is active, the USB charging will be switched off and once the door is opened, the coil will not be powered anymore.

Only 94 or 40 V3 locks can be connected to 1 Block signal, if the Block signal is used.
There are 2 Block signals but you can't double above number cause the not active block also uses some power.
AS an example: if the door is open the power consumption of a V3 lock is 0.85W.

Calculation with V3 locks on both Block signals:
432 / (4.56W + 0.85W) = 80 Locks on every Block signal, meaning 160 locks totally on 1 large PSU
185 / (4.56W + 0.85W) = 34 Locks on every Block signal, meaning 68 locks totally on 1 small PSU
This is less than the numbers if the Block signal is not used AND assumed that the USB charging is not used.
To allow the higher numbers of connected locks (256 and 100) on 1 PSU, the other locks must use the HUB Emergency Key signal (switch 1 on the HUB), that way more then 2 Block signals can be used. Alternative, just use more PSU's or instead of the small PSU, use a larger one.

So for V3 locks with Block signals in use, VECOS advices for maximum number of connected locks is: 2 x 80 on the large PSU and 2 x 34 on a small PSU.
There is one more item that will allow to connect a few more locks.
Once our PSU gives out the maximum current, it will start lowering the voltage and the Locks still operate at 21v. On the lower voltage the Coil also uses less power. and once a door is opened, the Coil will not use power anymore.
This has been left outside the calculation, but it is an available margin.

So the final conclusion for average use is:

- Large PSU with V3 locks, 160 and use the Block signals for 2x80
- Small PSU with V3 locks, 68 and use the Block signals for 2x34
- Large PSU with V3+ locks, 256 and don't use the Block signals
- Small PSU with V3+ locks, 100 and don't use the Block signals

The final conclusion for Full USB charging is (for example charge devices at night):

- Large PSU with V3 locks, 76 and use the Block signals for 1x76
- Small PSU with V3 locks, 32 and use the Block signals for 1x32
- Large PSU with V3+ locks, 76 and use the Block signals for 1x76 *
- Small PSU with V3+ locks, 32 and use the Block signals for 1x32 *

* Note: The use of Block doesn't matter cause the USB uses more power than the Coil.

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.

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-24TE10
  - AC12011/5, Meanwell HLG-480H-24TE11
  - AC12035/0, Meanwell HEP-185-24A
  - AC12033/0, Meanwell HEP-240-24A
  - AC12034/0, Meanwell HEP-320-24A
  - AC12036/0, Meanwell HEP-480-24A
- LBC 3.0 Locker Bank Controller with 7” color display
  - TM15001/0, LBC 3.0 Colour Touchscreen Terminal
  - MO17001/0, LBC 3.0 Protector
- HUB V3-24 Controller to connect max 24 V3 series locks
  - PC18008/0, HUB V3-24 w/o cables
  - PC18008S0, HUB V3-24
- V3 series lock
  - AC17012/1, VECOS Locker Lock V3
  - AC17013/0, VECOS Locker Lock V3+
  - AC17014/0, VECOS Locker Lock V3+HID
  - AC17015/0, 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
  - 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

V3, 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:
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: 2ACYAV3NXP and IC: 25896-V3NXP
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.

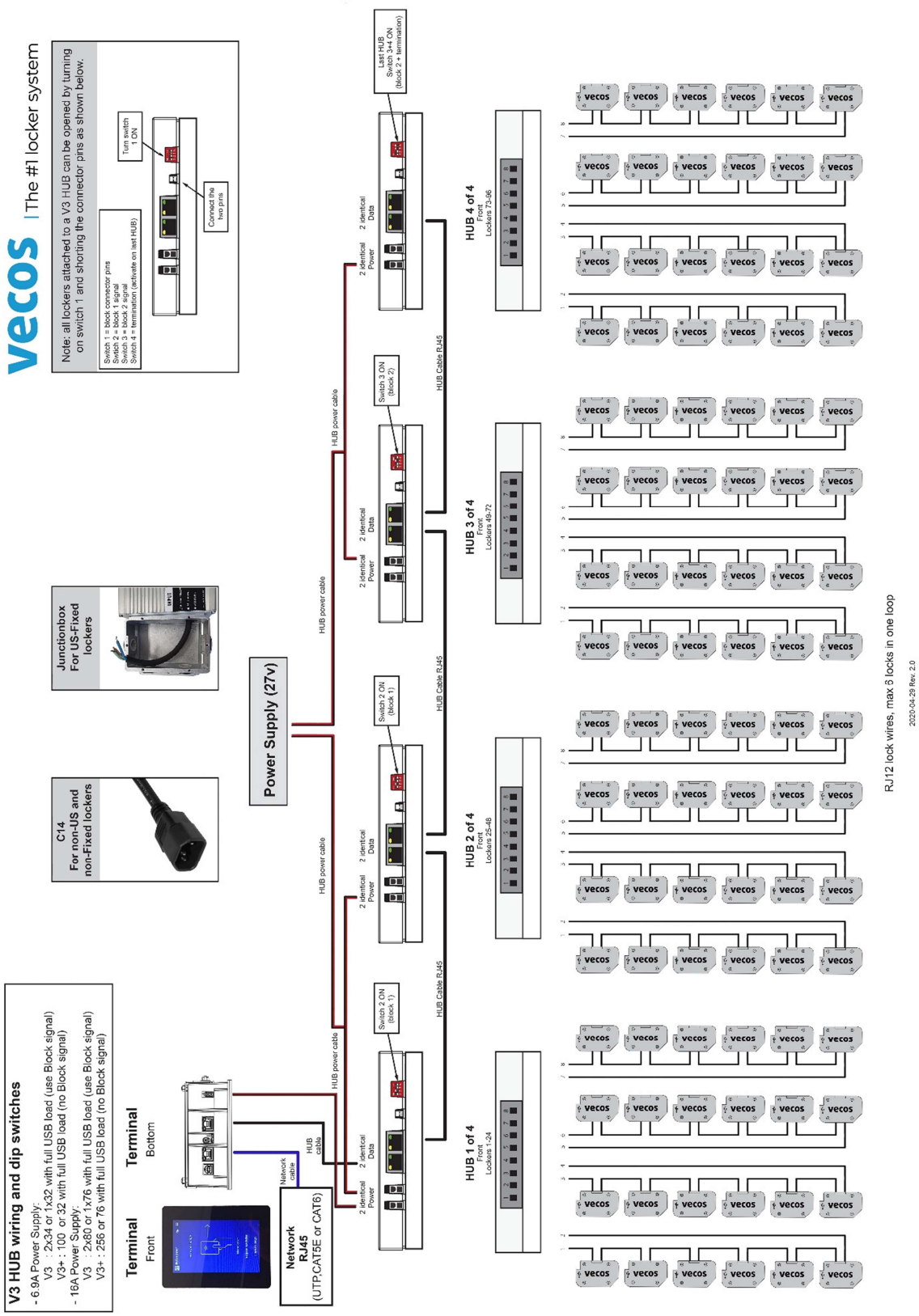
ISED EMC Declaration:
This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de Classe B est conforme à la norme Canadienne ICES-003.

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:
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

10. Wiring example