

VC-SM Install Sheet

We reserve the right to alter, without giving prior notice, technical data, dimensions and weights described in this manual.
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VC-SM
TVL378 ISSUE 6



This Manual is to be read in conjunction with VC-SM Quick Start Manual (TVL379) It is important that you familiarise yourself with both manuals before commencing any work with the VC-SM. Be aware that the elevator controls will contain equipment that is supplied with potentially lethal voltages. Please make sure that equipment is isolated before carrying out any installation work or modifications.



Introduction

The TVC VC-SM provides remote elevator and escalator monitoring. The unit can be used with various options to go from a minimal installation, that uses built in sensors, to a more complex install monitoring various critical points on the elevator / escalator control system. The combination of sensors and optional signals are used to determine whether the elevator is out of service and whether passengers are trapped. It offers extensive metrics for remote monitoring including: availability, journey counts, floor levelling accuracy, ride profiling, door monitoring etc.

This sheet covers the basic wiring and description of DIP / LEDs / connections. For a more comprehensive list of features / commissioning and remote data options please see the main manual TVL379.

Precautions

Observe normal precautions for handling electronic devices, avoid static electricity, dampness and extreme temperatures. Please read this instruction sheet fully before use. The unit is to be wired as per the relevant drawings. Ensure that all interface wires are connected properly and that the supply voltage is correct before turning on the unit.

Specification

Supply Voltage	230 V a.c.
Unit Operating Current	0.5 – Fused (T2A Slow Blow / Anti-Surge)
Backup Battery	2 x 3.6V – Lithium Ion (INR18650/25P)
24V d.c. Wetting Supply	1A - Max load
Low Voltage Inputs	Min - 10V to Max - 48V a.c./d.c.
High Voltage Inputs	Min - 95V to Max - 230V a.c./d.c.
Outputs Min	Min - 100mV @ 100uA d.c.
Outputs Max	Max - 110V a.c. @ 5A / 30V d.c. @ 5A (Resistive)
Communications	Gigabit Ethernet / 4G GSM / Bluetooth.
Dimensions (including connector)	300 x 200 x 100mm
Fixings	4 x M6 at 212 x 116mm
Storage Temperature	-10 °C to +60 °C
Operating Temperature	-10 °C to +50 °C
Humidity Operating Range	0 - 90% relative humidity (non-condensing)

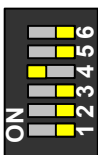
DIP Settings

SW2+SW3



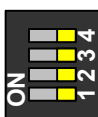
DIP	Name	
2	CAN Term	DIPs 1 and 2 on for CAN termination.
1	CAN Term	These should be set on the last node in the network.
		ON (default) for single door sensor,
		OFF if using 2 door sensors. (Turn on termination
		on both sensors instead).

SW1



DIP	Name	
6	EEPROM_WP (Factory Use default OFF)	
5	BLUE_DISABLE (Factory Use default OFF)	
4	WIFI_DISABLE (Factory Use default ON)	
3	USB_BOOT (Factory Use default OFF)	
2	GLOBAL_EN (Factory Use default OFF)	
1	RUN_PG (Factory Use default OFF)	

SW5



DIP	Name	
4	WATCHDOG_DISABLE (Factory Use default OFF)	
3	Spare 3 (Factory Use default OFF)	
2	FACT_DPS (Factory Use default OFF)	
1	PCB_TEST (Factory Use default OFF)	

EMC Guidelines

It is extremely important that the following guidelines are adhered to: All cable runs must be kept away from motor wiring, a separation of at least 300mm. Keep sensor wiring away from mains. If wiring has to cross any high voltage cable this must be done at right angles. Sensors must be mounted away from any high voltage equipment e.g. motors, door gear etc. CAN networks must be correctly terminated, terminate CAN with DIP's on the both ends (last modules / sensors) of any network. Limit stub connection length on the CAN bus.

LED Descriptions

Main CPU

D1 / Green	2 flashes every 1 Sec - CPU is running.
D2 / Yellow	Boot errors (see main manual).
D4 / Green	3.3V Power OK.
D7 / Green	1 flash every 1 Sec – Main program is running OK.
D8 / Red	Fault in main program (see main manual).
D9 / Yellow	RX from Door Sensors, 1 flash = 1 door sensor active / 2 flashes for 2 sensors.
D10 / Blue	Bluetooth active, strobes in pairing mode, solid in connected mode.
D12 / Green	Modem (Always on Searching Network or Call Connect / 200ms ON, 200ms OFF Data Transmit 4G registered / 800ms ON, 800ms OFF 3G registered network / OFF Power off; Sleep.)

Mic Board

D1 / Green	Follows D7 on main CPU - Main program is running OK.
D1 / Red	Follows D8 on main CPU - Fault in main program (see main manual).

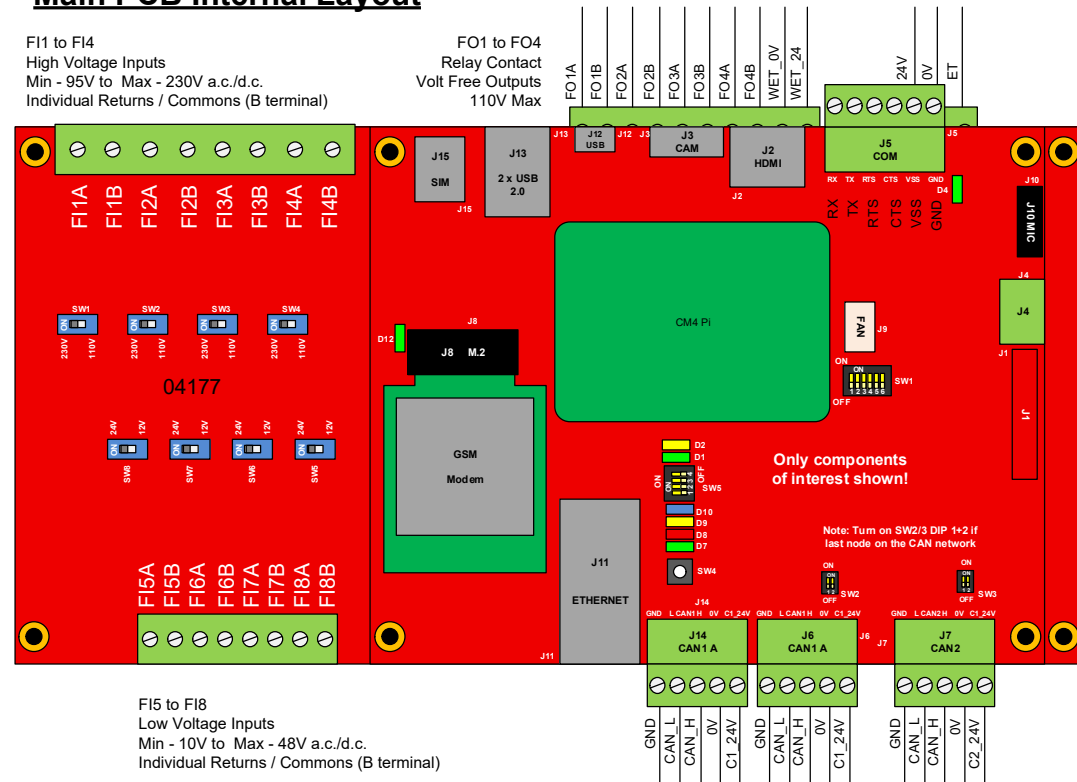
Charger/IO

D6 / Red	Li-Ion Charger Fault
D7 to D8 / Green/Red	HV Input 1 to 4 (lights when on)
D23 To D26 / Green/Red	LV Input 5 to 8 (lights when on)

Main PCB Internal Layout

F11 to F14
High Voltage Inputs
Min - 95V to Max - 230V a.c./d.c.
Individual Returns / Commons (B terminal)

FO1 to FO4
Relay Contact
Volt Free Outputs
110V Max



VC-SM + ToF Door Sensor

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Sequence of Install

- 1) Confirm the lift is electrically isolated and safe to work on.
- 2) The main unit is mounted on the car top, the door sensor mounted on the doors or door gear. Additional equipment may be supplied consult the main manual for instructions.
- 3) Remove the inner frame, with the electronics on, from the VC-SM enclosure. This allows cable entries to be drilled and the enclosure to be mounted. Temporarily remove the back up batteries from the base board if pre-fitted.
Do not power up the unit without the batteries fitted, failure to do this may cause corruption on a power down.
- 4) Mount the VC-SM in a suitable area on the car top. Make sure the unit isn't a trip hazard and is placed on a solid surface, preferably the crown beam or car roof, not the hand rail.
- 5) Place the inner frame back into the VC-SM enclosure, be careful not to disturb the antennae leads.
- 6) Wire the unit to a mains power supply on the car top, usually the car lighting supply if available. The unit can be powered from 120 to 230V a.c.
- 7) Wire in additional signals, if required, to the feature inputs (F11-8). These are in 2 banks: High voltage (F11 to F14) and Low voltage (F15 to F18). Each input is isolated and has its' own return. The high voltage inputs can monitor signals from 90V to 230V a.c. or d.c. The low voltage inputs are rated at 10 to 48V a.c or d.c. Below is a list of inputs that can be assigned in the commissioning phone app.

Optional Inputs

PSC	Safety circuit / controller supply	GL	Landing locks
CG	Car gate	DZ	Door zone
ALMP	Alarm push pressed	DZR	Door zone rear
TEST	Test control	FL	Floor level
FIRE	Fire service	FLR	Floor level rear
IND	Independent service		
FRPAS	Fire recall pass		
MRI	Motor room intruder		
EOSI	Elevator out of service indicator		
RPSTR	Rope stretch		
PRLCK	Landing prelock		

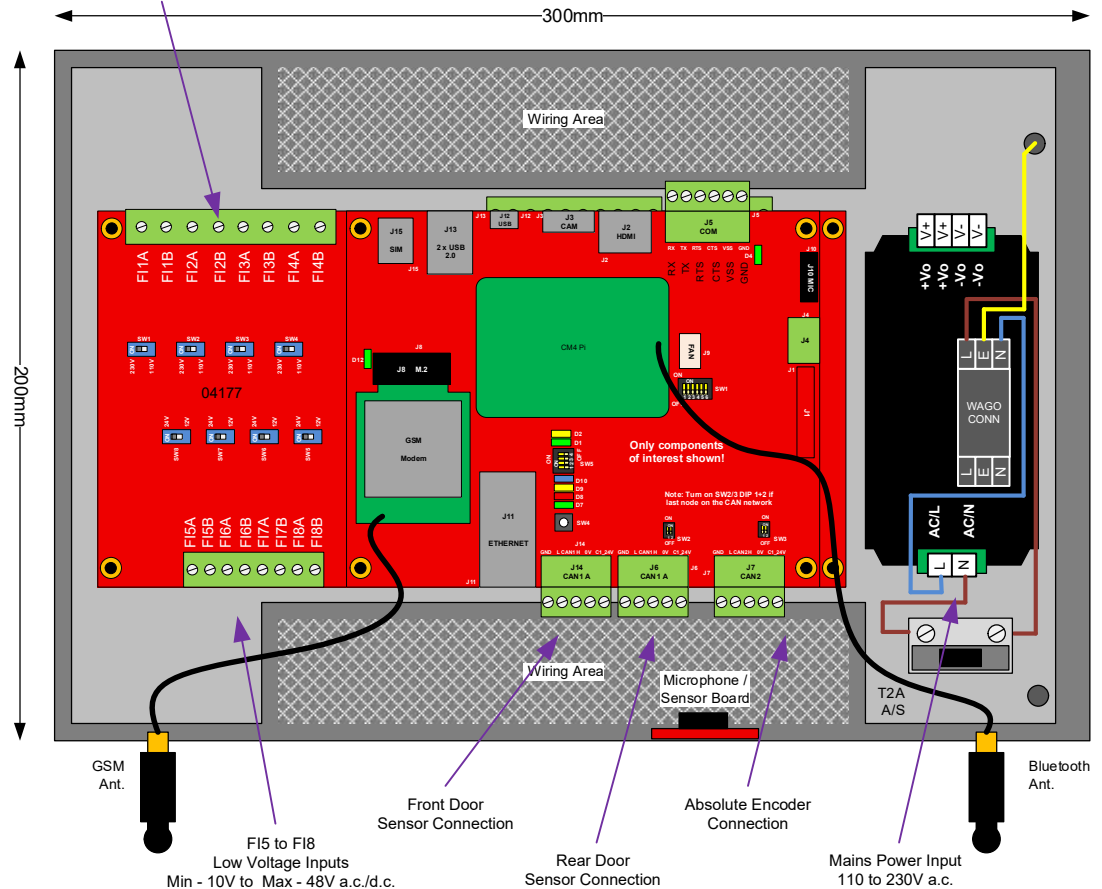
Optional Outputs

TFC	Top floor call
BFC	Bottom floor call
ISOREQ	Isolation request
FRREQ	Fire recall request

- 8) Mount the door sensor and reflector as detailed below. Run the supplied cable back to the VC-SM. Wire into J14 for the front sensor and J6 for the rear sensor, if required.
- 9) Fit the backup batteries back into the base board. Connect Ethernet to J11 if not using the on board GSM modem. The GSM modem LED (D12) will flash once communication is started.
- 10) Power up the unit. The unit will boot up and green LEDs D1 and D7 will start to flash. **If the unit needs to be powered down: Turn off the mains input and wait for 5 minutes for the unit to do a safe shutdown. Once all LEDs on the top board are off, it's safe to power the unit backup.** Failure to wait for the full shutdown may cause the unit to not power back up correctly. Follow mobile app commissioning guide to finalise the install. Press SW4 push button to put the unit in Bluetooth pairing mode first.

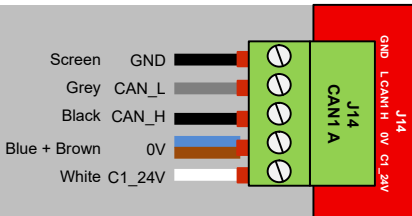
VC-SM External Wiring

F11 to F14 - High Low Voltage Inputs
Min - 95V to Max - 230V a.c./d.c.



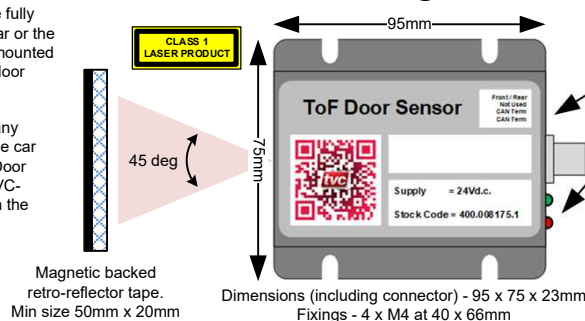
The Door Sensor reports position of the doors and monitors door vibration.

Installation - Position the sensor on the lift door so it has a clear view of the reflector in the fully open and fully closed position. The reflector needs to be mounted on a static part of the car or the second door if centre opening. If mounting on the door is not possible the sensor can be mounted on the car and reflector mounted on the door. This will still provide door position but limit door vibration reporting.



Run the cable parallel with any safety edge fitted, back to the car top mounted VC-SM. Wire Door Sensor CAN and supply to VC-SM as per colours shown on the left.

Door Sensor Mounting / DIPs / LEDs



DIP	Name
4	OFF = Front / ON = Rear Door
3	Spare 3 (Factory Use default OFF)
2	CAN Term
1	CAN Term

DIPs 1 and 2 on for CAN termination
These should be set on the last node in the network. (default ON)

The Green LED will light to signify power to node and that the node is running. Flashing green signifies that the sensor can see a reflector, solid green means the reflector can't be seen at distance or the reflector is closer than 100mm.

The Red LED will light continuously for 4 seconds when the node is first powered up. After this point the red LED signifies various fault codes. The LED will do a quick flash every 4 seconds if the node has a fault.
1 flash every 4 secs = Node not communicating with VC-SM.
2 flashes every 4secs = Node is experiencing data bus faults.
3 flashes every 4 secs = Node has stopped transmitting due to bus faults.
4 flashes every 4 secs = Node has stopped transmitting or receiving from the data bus