

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 2



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 (2A A/S) |
| 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) |

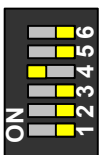
DIP Settings

SW2+SW3



| DIP | Name | Settings |
|-----|----------|---|
| 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 | Settings |
|-----|--|----------|
| 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 | Settings |
|-----|--|----------|
| 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.) |

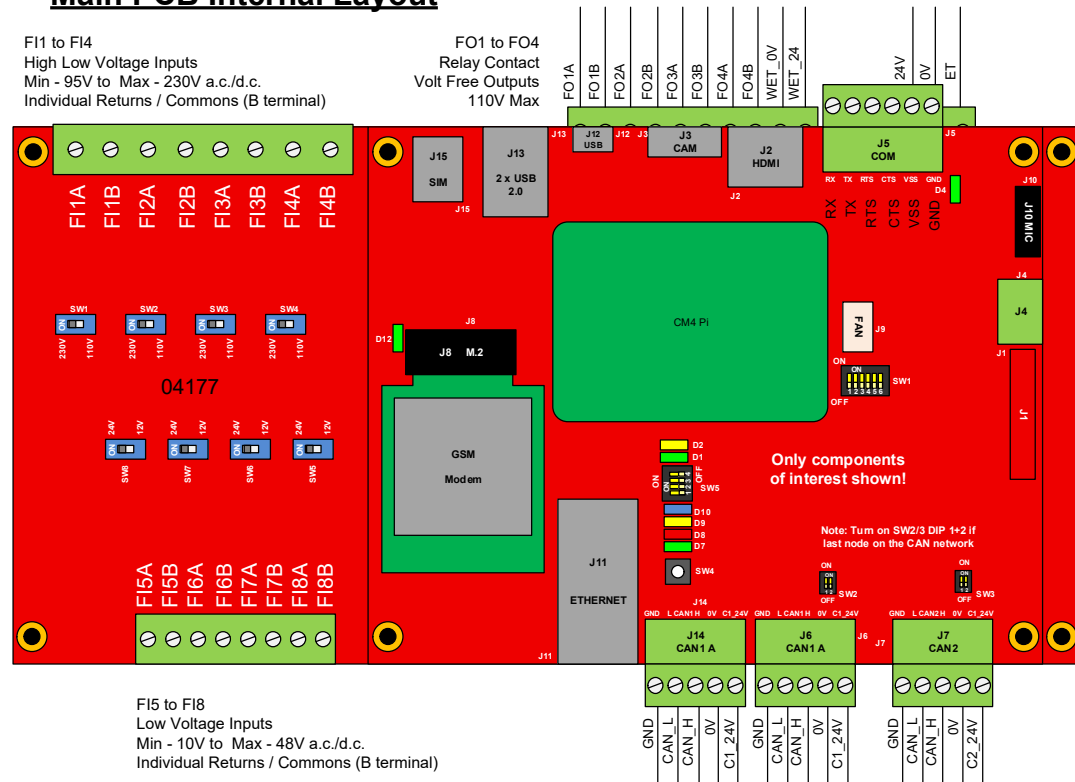
Mic Board

| | |
|------------|---|
| 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



F15 to F18
 Low Voltage Inputs
 Min - 10V to Max - 48V a.c./d.c.
 Individual Returns / Commons (B terminal)

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.
- 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 (F1-8). These are in 2 banks: High voltage (F1 to F4) and Low voltage (F5 to F8). 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.

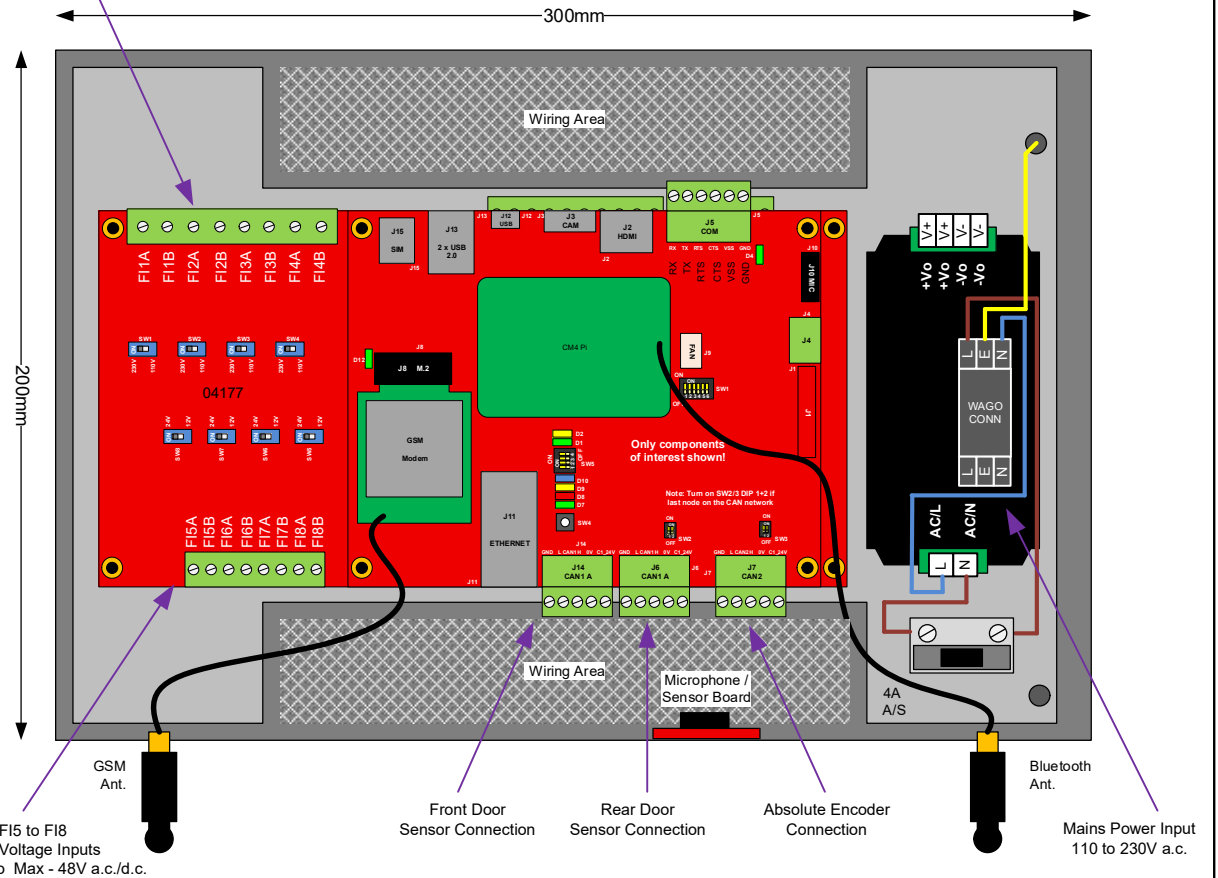
Optional Inputs

| | | | |
|-------|------------------------------------|-------------------------|---------------------|
| 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 | Optional Outputs | |
| MRI | Motor room intruder | TFC | Top floor call |
| EOSI | Elevator out of service indicator | BFC | Bottom floor call |
| RPSTR | Rope stretch | ISOREQ | Isolation request |
| PRLCK | Landing prelock | 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.
- 11) Follow mobile app commissioning guide to finalise the install. Press SW4 push button to put the unit in Bluetooth pairing mode.

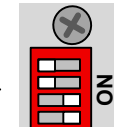
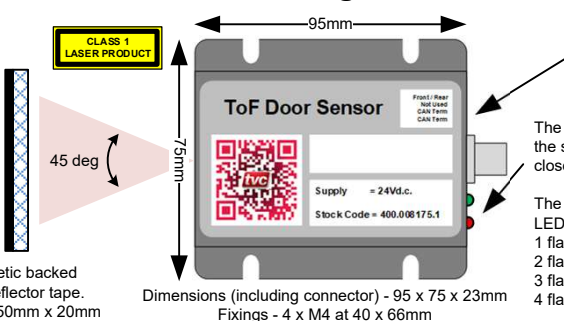
VC-SM External Wiring

F1 to F4 - High Low Voltage Inputs
 Min - 95V to Max - 230V a.c./d.c.



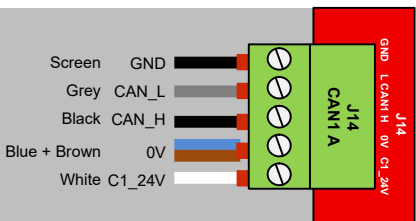
The Door Sensor reports position of the doors and monitors door vibration.
 Installation - Position the sensor on the lift door so it has a clear view of the reflector in the fully open and fully closed position. The reflector needs to be mounted on a static part of the car or the second door if centre 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.

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)



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.

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