

# VVVF DOOR OPERATOR UPGRADE KIT

## VDOOR

### DATA SHEET

- ❖ Converts old 3-Phase door operators into VVVF controlled operators
- ❖ Slow, soft closing without door slamming
- ❖ Simple installation
- ❖ On-site adjustable closing/opening speeds
- ❖ Eliminates frequent adjustments required
- ❖ Works with any lift controller
- ❖ Supply: 230VAC, single phase (VDOOR – 230), 3x400VAC ( VDOOR - 400)
- ❖ Five speeds (easily adjustable on-site – fast/slow closing, fast/slow opening, nudging speed)

### Description

The VVVF Door Operator Upgrade Kit (VDOOR) provides control to old 3-Phase door operators, thus converting them into modern VVVF door operators with two closing speeds, resulting in soft, quiet closing functionality, and with two opening speeds for fast opening and slowdown before full open, eliminating door slamming and frequent adjustment of the door operator.

The VDOOR has a third speed, for nudging, in case of repeated disturbance, which supports lift controllers that provide a nudging command to the door operator during closure.

All speeds are adjustable by the user on-site (fast closure speed, slow closure speed, fast opening speed, slow opening speed and nudging speed).

Basically, the VDOOR is installed between the door operator motor and the lift controller. All other door signals (door limits, safety car contact, force restrictor, photocell, etc.) are not changed. Therefore, no significant wiring change is required in order to install VDOOR in an existing lift.

The VDOOR can be installed in any lift regardless of the lift controller. There are two models available:

- 1) VDOOR-230, for motors that can be configured from 3 x 400VAC to 3 x 230VAC and have symmetrical windings.
- 2) VDOOR-400, for 3x400VAC motors that cannot be configured to work on 230VAC.

The VDOOR requires only two input signals, door open and door close, coming from the lift controller, in order to manage the doors.

The VDOOR includes:

- Upgrade kit box (200mm x 250mm x 170mm)
- Two magnetic sensors
- One small magnet and bracket
- Electric power cord
- Motor cable (shielded)

The VDOOR requires 230VAC (VDOOR – 230) / 3x400VAC (VDOOR – 400) input power supply and installation of two magnetic sensors for setting the slow down point during closing and the slow down point during opening.

VDOOR command inputs (coming from the lift controller) :

- Door open (24VDC), LED to indicate input activation.
- Door close (24VDC), LED to indicate input activation.
- Door nudging (24VDC), LED to indicate input activation.

## VDOOR – 230

## VDOOR – 400



VDOOR control inputs (coming from the magnetic sensors):

- Closing slow down SC, LED to indicate input activation.
- Opening slow down SO, LED to indicate input activation.

Testing: Three test buttons with LED indication are available on the VDOOR PCB for manual door open command (OP), close command (CL), or nudging command (NG), for easy adjustment during installation and maintenance. Please refer to the PCB photo.

### **EMC**

The VDOOR complies with EMC regulations for installation in second environment with unrestricted distribution, according to EN61800-3.

### **Earthing Terminals**

Two earthing terminals are provided, in order to comply with the European standards. Both of them must be connected by a permanent fixed ground connection using two independent conductors, each with a cross-section equal to or exceeding that of the supply conductors. The purpose for two grounding terminals is to prevent a safety hazard from occurring if a connection is lost, this is due to leakage currents associated with VVVF drives.

### **Installation**

Installation of the VDOOR is simple: There are three **command** wires for opening or closing (including common wire), three **control** wires for slowdown during opening or closing (including common wire), three **power** wires to the motor, and supply wires (230VAC + N, 3x400VAC). Generally, the VDOOR is installed on the top of the lift car.

The motor should be connected via a shielded cable. The shield of the motor cable should be connected to the motor body and clamped via the provided metal p-clips on the VDOOR side. Also it is important to connect 2 earthing wires to the VDOOR via the earth terminals or screw-bar provided for that purpose.

### **Specifications**

1.	Door Operator Motor Type	Induction asynchronous, with 3 symmetrical windings, 3 x 230VAC or configurable from 3 x 400VAC to 3 x 230VAC, up to 0.37KW, up to 2.2A
2.	Supply	230VAC single phase (L+N) or 3x400VAC Two earthing terminals
3.	Ground Leakage Current	10mA AC @ 230V, 50Hz
4.	Earthing Terminals	Two earthing terminals for power, one earthing terminal for the door motor
5.	Motor cable	Shielded cable, preferred double shielding, low capacitance, specially designed for VVVF controlled motors
6.	Command Inputs (from lift controller)	Door open signal (OP), door close signal (CL), nudge signal (NG): 24VDC@10mA Each input has an LED to indicate activation of the input
7.	Control Inputs	SC (closing slow down), SO (opening slow down), activated by the magnetic sensors
8.	Outputs	3 x 230VAC 1.5A max, for the door motor
9.	Door Close Speed	Two speeds, high/low adjustable by user
10.	Door Open Speed	Two speeds, high/low adjustable by user
11.	Point of open speed change	Set by the position of the magnetic sensor, adjustable by user
12.	Point of close speed change	Set by the position of the magnetic sensor, adjustable by user
13.	Kit box dimensions	200x250xH170mm



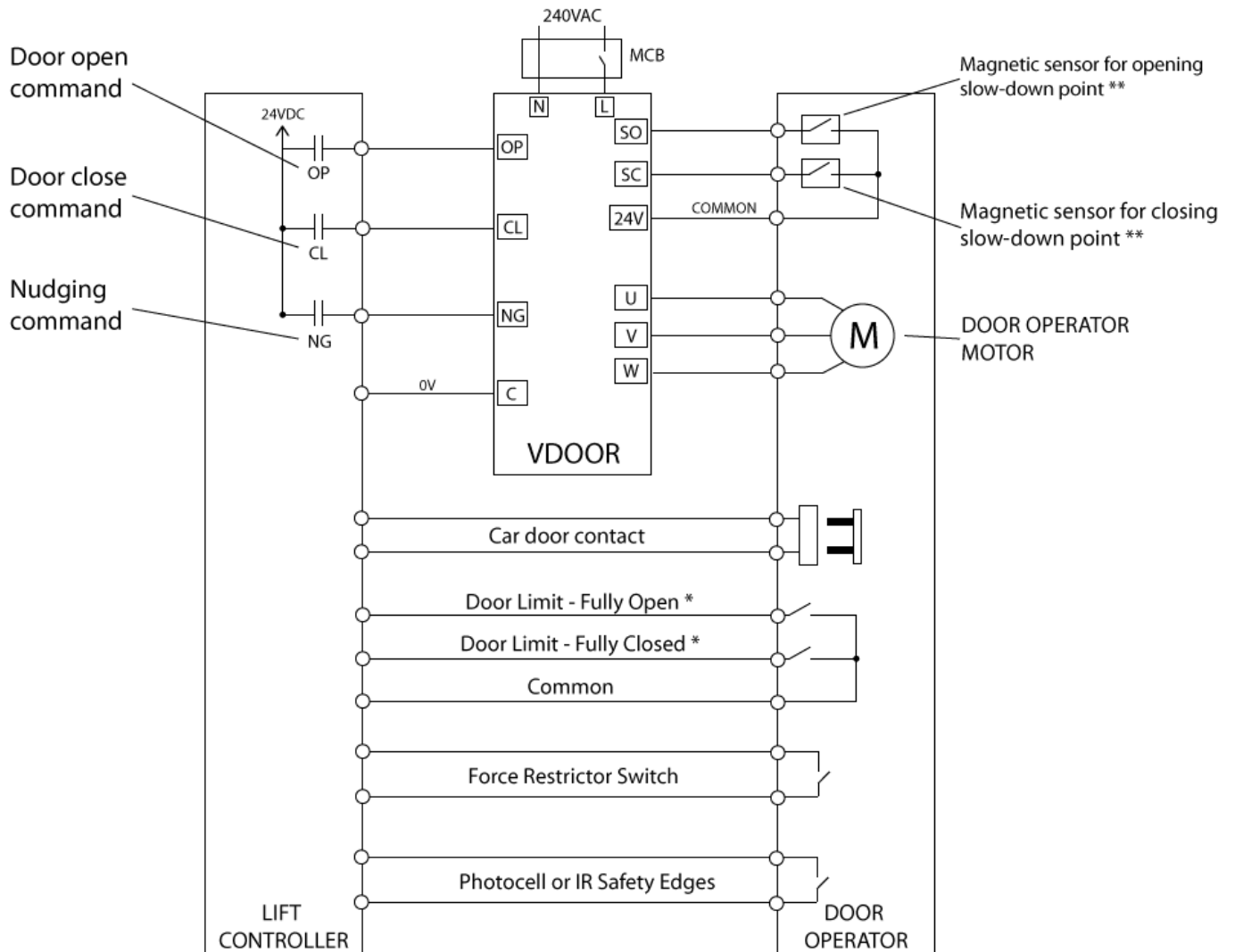
#### **ATTENTION: Car door closing speed compliance with EN81-1/2**

Closing speed should be adjusted in such a way that the kinetic energy of the car door should not exceed 10 joules. Please refer to paragraph 8.7.2.1.1.2 on EN81-1/2.

**To get a price quotation, form T14-En has to be completed. The form is available on request.**



## Typical Wiring Diagram



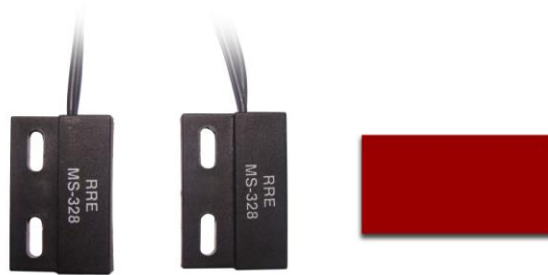
\* If door limit exists

\*\* Comes with the kit and mounted during installation



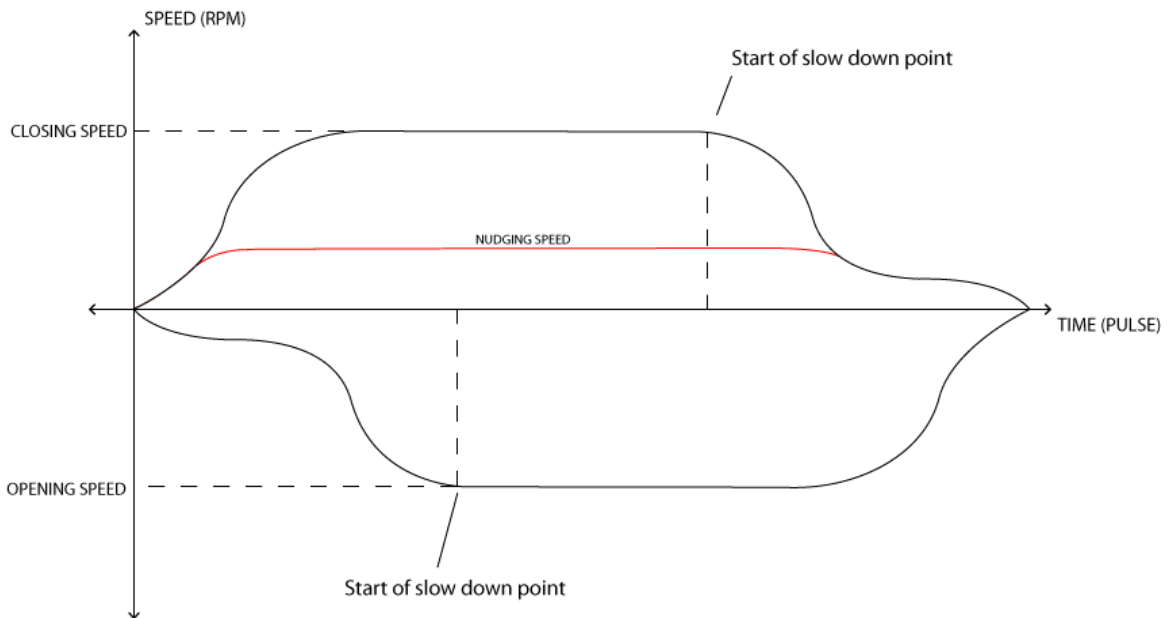


PCB



Magnetic Sensors + Magnet

### Speed Curve



**Commissioning instructions.**

The following parameters can be changed by the user according to the following table:

Nominal opening or closing speed (same speed)	Parameter 61
Nudging speed	Parameter 21
Closing low speed	Parameter 19
Opening low speed	Parameter 20
Opening start speed	Parameter 62
Start opening time for start opening speed	Parameter 63
Motor stop delay, door closed	Parameter 64

Nominal opening or closing speed: nominal cruise speed during opening or closing of the door.

Nudging speed: nominal speed of the door during nudging command.

Closing low speed: low speed during closing cycle after the magnet has passed the slow down sensor.

Opening low speed: low speed during opening cycle after the magnet has passed the slow down sensor.

Opening start speed: the speed at which the door starts its opening.

Start opening time for start opening speed: the time at which an opening door will go at starting speed.

Motor stop delay, door closed: the time at which the motor will operate after the lift controller has given a stop closing command.

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TAL Engineering Ltd reserves the right to change specifications without notice.

