

EV Charge Points: Load Management in Domestic Environments

Product: eDock EVC7001 and eVoom EVC7007

Introduction

Load management can take different forms:

1. Limiting the maximum power available to the EV
2. Varying the power available to the EV charge point dependant on other loads in a domestic installation

This Guidance Note considers single phase installations with a single charge point

Charge Points

The eDock and eVoom charge points, item codes EVC7001 ad EVC7007 respectively, have RS485 data input terminals which are used for data connection with energy meters

Energy Meters

Energy meters are used to measure the power usage and are available either MID (Measuring Instrument Directive) approved, which is required when billing a electricity consumer, or non-MID versions.

Energy meters can either be wired inline (Fig.1), or using a CT (current transformer) clamp fitted (Fig.2) around the live mains cable with signal cables that connect to the energy meter.



Fig. 1



Fig. 2

Which Energy Meter

Energy meters need to be compatible, in terms of RS485 data protocol, with the device they are connected to.

When choosing an energy meter, it needs to be considered if it is going to be fitted in the consumer unit, or externally in separate enclosure.

Two energy meters are compatible with the eVolo charge points:

	Energy Meter Item No.	Product	Other factors
Option 1	Eastron SDM230-Modbus V2	<ul style="list-style-type: none"> • 2 module width device • Wired in line with meter tails 	
Option 2	Eastron SDM120CTM	<ul style="list-style-type: none"> • 1 module width device • Requires a L and N supply • Separate CT clamp required 	The meter needs to be fed from a separate MCB

1. Limiting the maximum power available to the EV

In a domestic property, the size of the electrical DNO (Distributor Network Operator) fuse will determine the maximum power that can be drawn (Fig.3). This fuse is usually 60A, 80A or 100A.

The electrical contractor installing an EV charge point should calculate the maximum demand on a domestic property and determine the spare capacity available to feed the EV charge point.

This spare capacity figure, in amps (A) between 6 and 32A, can be set as a maximum limit within the ConFig APP (Fig.4). The EV will not draw more power than this figure.

Fig.3

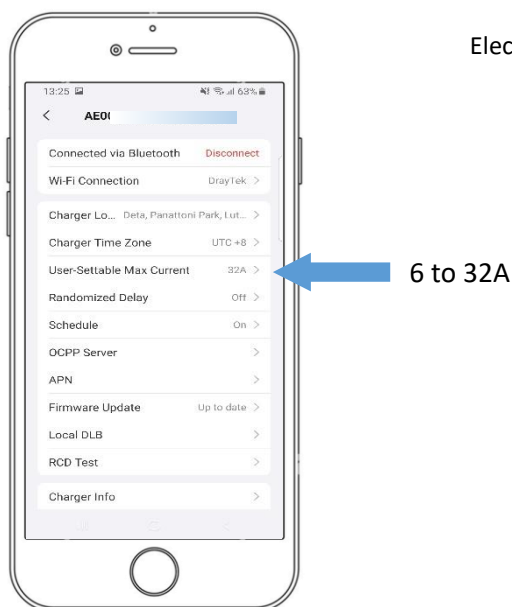
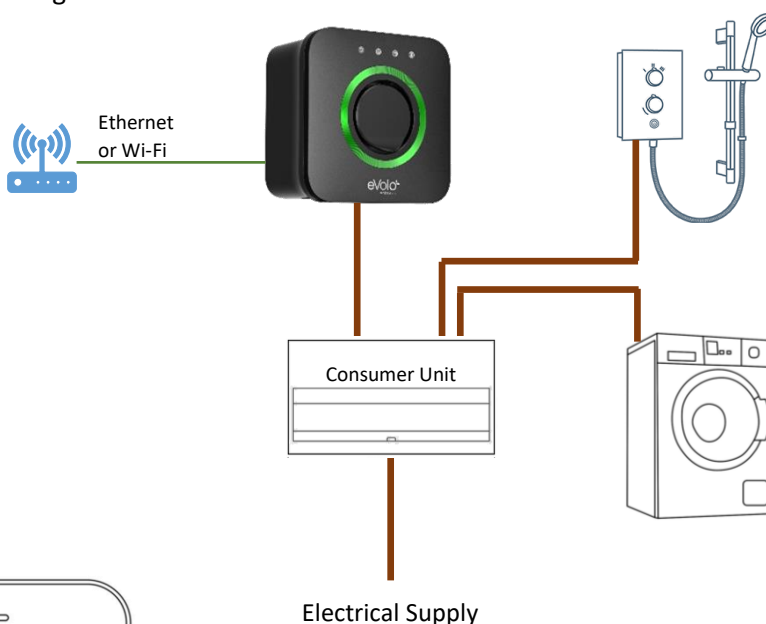


Fig.4

2. Varying the power available to the EV charge point dependant on other loads in a domestic installation

In a domestic property, the size of the electrical DNO (Distributor Network Operator) fuse will determine the maximum power that can be drawn. This fuse is usually 60A, 80A or 100A.

The EV charge point can be configured, through the APP, to provide the maximum power available at any one time to charge the EV.

To do this the EV charge point will need to know the maximum power available in amps, i.e. the size of the DNO fuse, and the real time power being used at a moment in time.

An energy meter with RS485 data communication protocol output, is required to measure the amount of power being used by the property.

Depending upon the energy meter being used, it can be installed in line between the DNO meter and the consumer unit (Fig. 6), or can be fitted within a consumer unit with a CT clamp (Fig.7). A RS485 data cable will need to be installed between the energy meter and the charge point.

The charge point will need to be configured within the ConFig APP by selecting Local Load Balancing (Fig.5) and follow the instructions:

- Select: Adaptive Power Sharing (Single)
- Select: Set as Primary
- Select: Smart Meter On (a smart meter must be connected)
- Select: Available Power: enter the size of the DNO fuse value, in kW

Check:

- that the Power Reserve is set at 10%, as recommended with Regulations
- that Number of Phases is set to Single-phase

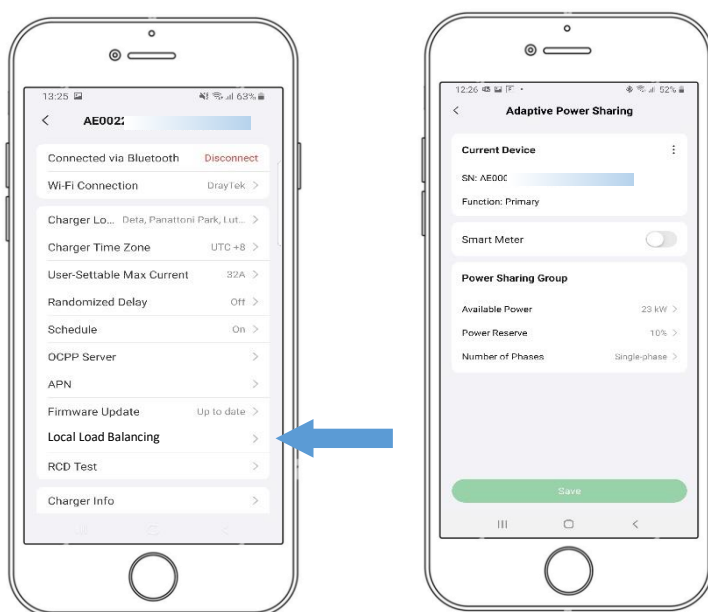


Fig.5

Once configured, as loads switch on and off, e.g. electric showers, washing machines, kettles switch on and off, the power available to the EV will increase and decrease automatically

Fig. 6 Energy Meter wired inline with meter tails

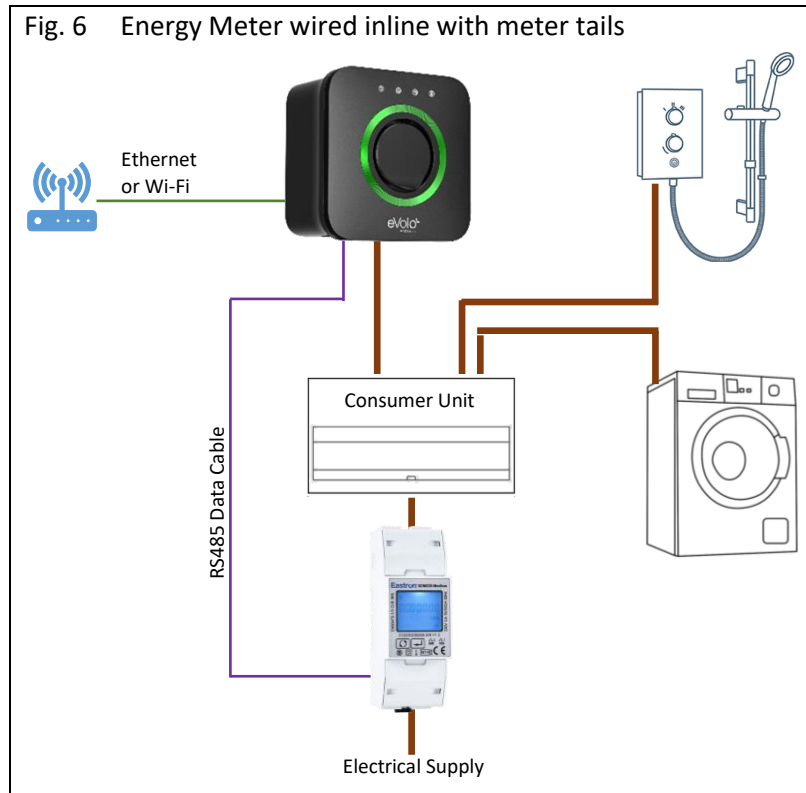


Fig. 7 Energy Meter with CT clamp

