

Facilities For Charging Electric Vehicles



Adamstown Station District Centre - Block G

PROJECT NO. Q066

October 2022



Facilities For Charging Electric Vehicles

Adamstown Station District Centre – Block G



OCSC

O'CONNOR | SUTTON | CRONIN

Multidisciplinary
Consulting Engineers

NOTICE

This document has been produced by O'Connor Sutton Cronin & Associates for its Client Quintain Developments Ireland Ltd. It may not be used for any purpose other than that specified by any other person without the written permission of the authors.

OCSC Job No.: Q066	Project Code	Originator Code	Zone Code	Level Code	File Type	Role Type	Number Series	Status/ Suitability Code	Revision
	Q066	OCSC	BG	XX	RP	E	0001	S4	P01
Rev.	Status	Authors	Checked	Authorised	Issue Date				
3									
2	For Planning	BOB	MH	MH	October 2022				
1	For Planning	TD	MH	MH	September 2022				

EV Charging

PROJECT NO. Q066

INDEX	PAGE NO.
INTRODUCTION.....	5
PROPOSED DEVELOPMENT.....	6
EV CHARGING SYSTEM OVERVIEW.....	7
CONCLUSION.....	12

INTRODUCTION

The intention of this report is to identify the Electric Vehicle Charging associated with the design, construction, ongoing management and maintenance of the proposed Adamstown Station District Centre Block G development located at Adamstown, Co. Dublin.

The Electric Vehicle (EV) charging aspects of the proposed development will comply with IS 10101:2020. As part of the development's efforts to futureproof the EV charging system in Adamstown, the infrastructure will be designed to allow for 100% EV charging while 10% of the operating system will be installed on site. This equates to 9 No. chargers all to be located within the Block F multi-storey carpark.

The proposed Zaptech Vehicle Charging system for the Block F area will comprise of demountable chargers, flat cabling, connections, pedestals along with associated containment and bracketry where required. The system works on a phase balancing basis thus it will have a much lower MIC required for the charging of vehicles.

PROPOSED DEVELOPMENT

The proposed development comprises the construction of Block G of the Adamstown Station District Centre. The proposed development consists of 184 No. apartments over 2 residential blocks with a central courtyard.

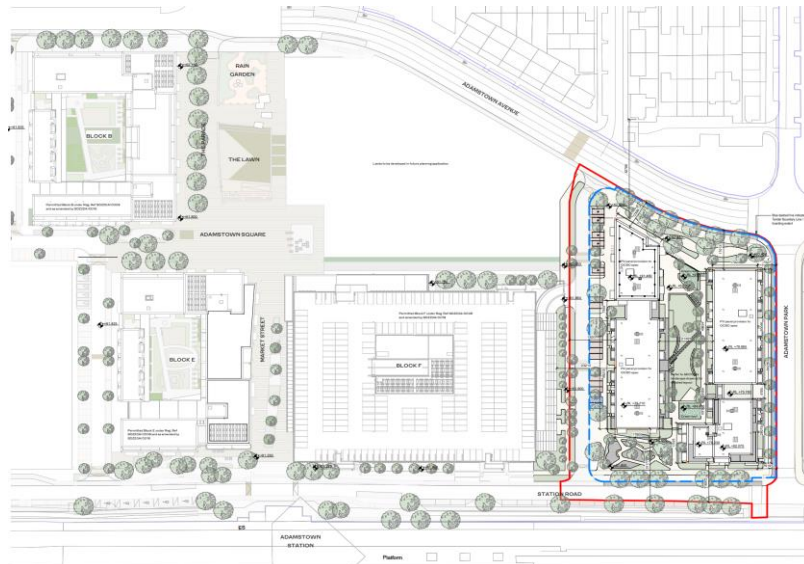


Figure 1 – Proposed Site Plan

The Block G development will be provided with a total of 92 No car parking spaces. Of the 92 No. spaces 16 No. will be on-street, adjacent to Block G1. The proposed multi storey car park in the upper levels of Block F will cater for the remaining 76 No. car parking spaces. The 9 No. EV Chargers will be installed within the Block F multi-storey carpark to satisfy the 10% charging requirement.

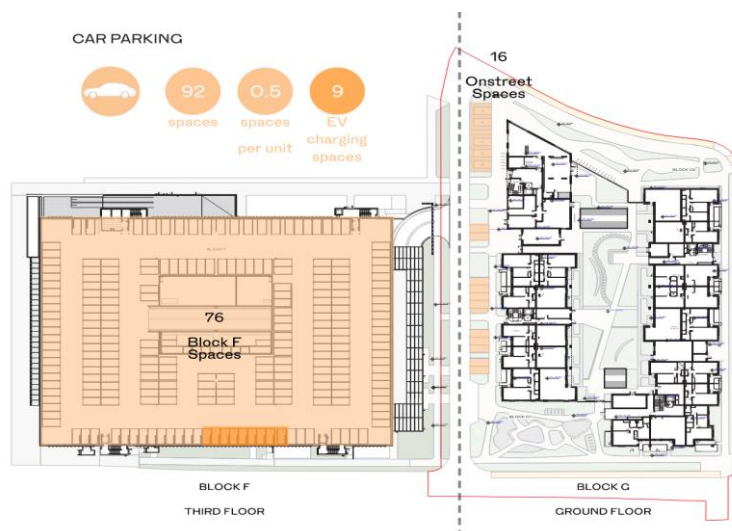


Figure 2 – Proposed Parking Plan

EV CHARGING SYSTEM OVERVIEW

The proposed Zaptec Pro EV chargers allow for the connection of up to 30 No. EV chargers to a single 63A supply. This allows for maximum flexibility in this modular system whilst minimising MIC through the use of the dynamic load and phase balancing system.

The chargers are connected via Woertz 3 phase flat cabling which can be clipped direct to the car park soffit/wall or installed on the suspended cable containment installed within the car park. Proprietary tap offs will be installed at each charging point within the car park. Future EV chargers can be connected to the existing charger circuits up to a maximum of 30 No. chargers per circuit.

The Zaptec Pro chargers communicate with each other and the Zaptec portal via a Wi-Fi connection. The portal is a free tool and can be used for maintenance reports, billing and status information

Each charging point can be wall, column or kiosk mounted. Where ground column, or kiosk mounts are selected, it is recommended that crash barriers are installed.

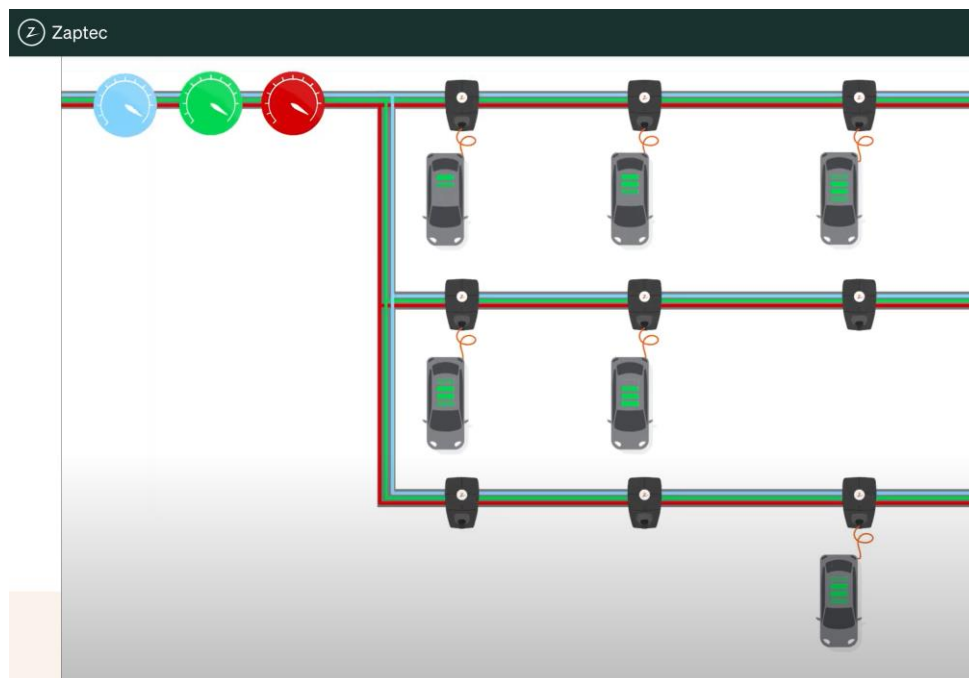


Figure 3 – Zaptec Pro Modular EV Connections



Figure 4 – Ziptec Pro Wall Mount Installation

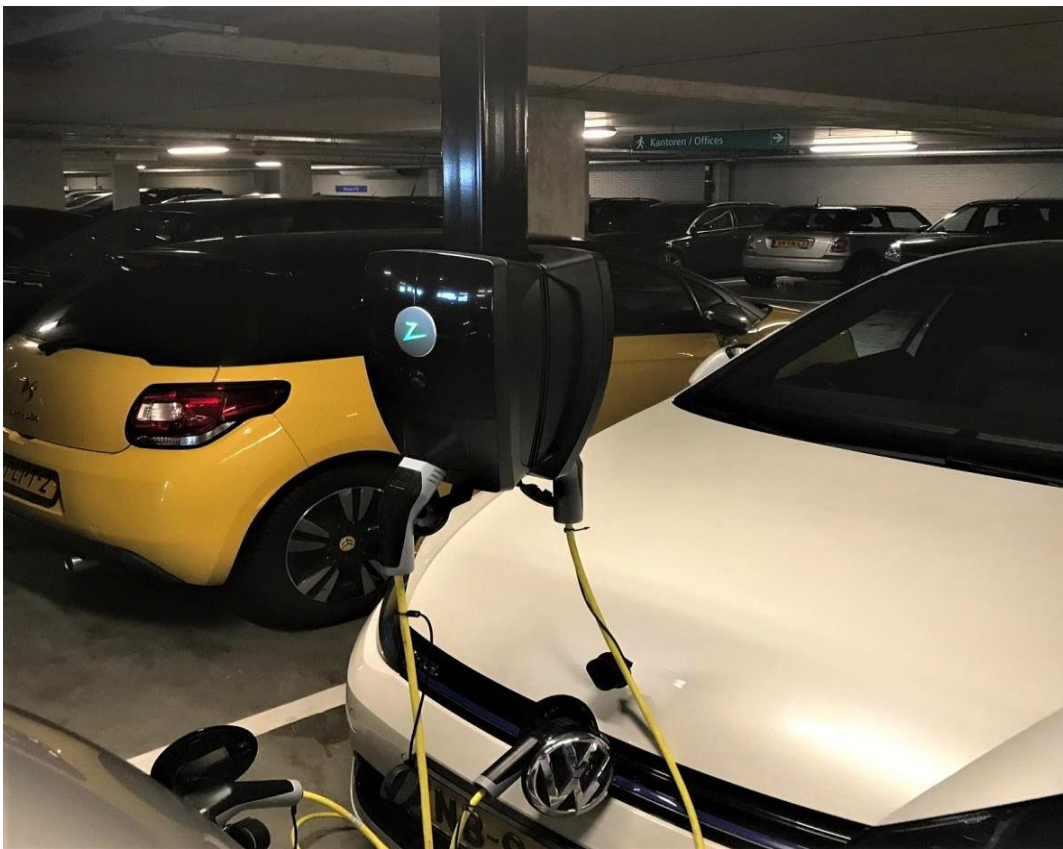


Figure 5 – Ziptec Pro Soffit Column Mount Installation

Technical Specifications - ZAPTEC Pro

ZAPTEC Pro is an alternating current wall or column-mounted charging station in accordance with IEC 61851-1, EVSE mode 3.

Dimensions and weight

H: 392 mm W: 258 mm D: 112 mm
Weight: approx. 5 kg (including backplate)

Installation circuit

Max. 63A serial fuse on installation circuit for charging stations.

Backplate connection box

Cable cross section 2,5–10 mm²
Cable diameter 10–20mm²

Installation network, Voltages

TN, IT and TT
230VAC ±10%
400VAC ±10%

Max. current and charging output

7,36kW* at 32A/1-phase
22kW* at 32A/3-phase (applicable to TN networks only)
5W at standby

Fuses

Built-in 3 x 40A fuses type C

Charging point

EC 62196-2 Type 2 Female with integrated self-closing cover

Earth fault protection

Built-in type B RCD
Calibration and a self-test are carried out before the start of every charging cycle. RCD can be automatically reset by disconnecting from the charging connector.

Integrated Power Meter

MID tested and calibrated (EN.50470).

Theft protection

The front cover of the ZAPTEC Pro can only be opened using a special tool. The charging cable can be locked permanently to the charging station.

Load balancing

Together with other ZAPTEC Pro charging stations, available power in the installation will be distributed automatically between the devices and phases.

Phase balancing

The charging station will dynamically select any single phase or 3-phase in a system with other ZAPTEC Pro charging stations, depending on the available power.

Communications interface and cloud connection/network

4G LTE-M1 (subscription required)
Wi-Fi 2.4 GHz, IEEE 802.11 b/g/n (channels 1-11)
Powerline (PLC) – HomePlug Green PHY®, 10 Mbit/s

Identification and configuration

Bluetooth Low Energy (BLE 4.1)
RFID/NFC reader – Mifare Classic, Type A
PLC for vehicle interface for future services as defined by ISO 15118

Standards and approvals

CE compliance in accordance with the Radio Equipment Directive 2014/53/EU and ROHS Directive 2011/65/EU, and compliance with IEC 61851-1 (TUV SÜD) and IEC 61851-22

Temperature range

-30°C to +50°C

Degree of protection

IP54, indoor and outdoor use
IK10 impact protection
UL94 5VB flammability rating
UV resistant

Electrical protection

Protection class II (4kV AC and 6kV impulse, insulation)
Overvoltage category III (4kV)

Integration services

Third-party integration alternatives (API, Webhooks)
OCPP 1.6J
Message subscription

*32A is available but may be restricted by the condition of the vehicle's battery and temperature increases at the charging station.

See the charging consumption in the administration system or the app

4G LTE-M
Internet connection

Simple identification with charging card

Lock the charging cable to the charging station

Self-closing cover

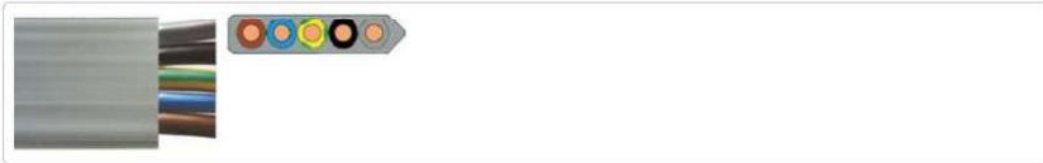




Flat cable 5G16 HF grey

Article number: 49606

Images



Description

Flat cable Woertz 5x16mm² FR/LSOH light grey 3LNPE

Features

Eidas number:	113299680
Base Unit:	meter
availability:	Available from stock
EAN Code:	7611718241529
group:	170000
Packing:	1
country of origin:	CH
Customs number:	8544.6092
Construction:	5x16 mm ²
Dimensions WxH:	48,5x11,3 mm
Cable type:	halogen free flat cable
International designation:	N1Z1Z1H2-K
Reaction to fire classification:	B2ca s1 d0 a1
Fire behavior:	Cable with non-critical behavior
Cross section:	16 mm ²
Copper conductor:	bare copper, stranded flexible CL5 EN60228
Conductor resistance:	1.21 ohm
cores insulation:	Flame retardant polyolefin
Cores colors:	gray, black, green / yellow, blue, brown
Sheet insulation:	Flame retardant polyolefin
Sheath color:	light grey
Min bending radius:	6xH
Operating Temperature:	-25 bis +90 °C
Installation temperature min.:	5 °C
Halogen free acc. to:	IEC/EN60754-1/2
Minimal smoke emission acc. to:	IEC/EN 60034-2
Fire load:	2.63 kWh/m
Flame retardant to:	IEC/EN60332-1-2
Low fire propagation acc. To:	IEC/EN 60332-3-24
Copper weight:	768 g
Weight:	1 mmm g

The below is information in regard to the Zatec Pro portal and load management system.

ZAPTEC Portal is the administrator tool for the ZAPTEC charging system (Cloud solution), which is a virtual installation of the electrical installation. All installation owners today have free "basic" functionality in the ZAPTEC Portal, which is included in the purchase of ZAPTEC charging stations. This includes:

Authentication (User Control via App / RFID / NFC)

Real-time monitoring of the charging system (including automatic email notification if a charge fault and/or loss of communication occurs)

Charge History

Charge consumption report (Per charging station, user and at RFID / NFC level)

Administration of user control and access

All dynamic load and phase balancing is performed by ZAPTEC Portal, which reflects a digital installation from the electrical installation of the ZAPTEC charging system. Where the ZAPTEC charging stations themselves distribute all available power based on which charging stations are being used. The difference between a traditional charging station and a ZAPTEC charging station is the unique load and phase balancing functions that allows the charging system to utilize all phase combinations when charging on both TN 400V and IT 230V power grids.



ZAPTEC APM (Automatic Power Management) is an option-based add-on service that enables the ZAPTEC charging system to dynamically regulate up / down available energy, based on the actual power consumption of the building mass per phase. This prevents one / more un-even loads as a result of high consumption in the building mass, while at the same time electric charging is carried

CONCLUSION

By using Zaptech Car charging approach within the block F carpark to allow for charging of 10% of the of EV chargers for the Block G development. We will be using a more energy efficient cutting edge technology. As the design team for the Adamstown Station District Centre -Block G development located at Adamstown, Co. Dublin we believe this is the best solution for both efficiency of extension of the system and usability of the system.



LEGEND:

- PARKING ASSIGNED TO BLOCK G DEVELOPMENT
- PARKING ALLOCATED FOR FUTURE DEVELOPMENT
- PARKING BAY PROVIDED WITH EV CHARGING (8 No.)
- ♿ ACCESSIBLE / DISABLED PARKING (6 No.)
- APPLICATION BOUNDARY



OCSC

O'CONNOR | SUTTON | CRONIN

Multidisciplinary
Consulting Engineers

9 Prussia Street
Dublin 7
Ireland

T | +353 (0)1 8682000
F | +353 (0)1 8682100
W | www.ocsc.ie

Dublin | London | Abu Dhabi | Belfast | Cork | Galway | Glasgow | Libya | Poland | Romania | Russia