EV CHARGING REQUIREMENTS

REQUIREMENTS FOR THE PERMITTED CHARGING MODES DESCRIBED IN MODE 2, MODE 3, THE FOLLOWING REQUIREMENTS SHALL BE MET.

1. THE FOLLOWING GENERAL REQUIREMENTS SHALL BE MET.
   a. INSTALLATION OF A PRIVATE CHARGING OUTLET SHALL BE TO TBG PART L.
   b. INSTALLATION OF PUBLIC CHARGING OUTLET SHALL BE TO TGB PART L
      - PROVIDE BASES
      - PROVIDE WIRING JUNCTIONS
      - PROVIDE ESB METER PER CHARGER OR GROUP OF CHARGERS
      - COMPLY WITH ESB CODE OF PRACTICE FOR EV CHARGING IN PUBLIC SPACES
      - PAY AS YOU GO SOLUTION TO BE PROVIDED
      - NATIONAL CHARGE POINT MANAGEMENT SYSTEM (NCPMS) AND USE THE LATEST VERSION OF THE OPEN CHARGE POINT PROTOCOL (OCCP).
      - COMPLY WITH VENDOR REQUIREMENTS
      - THE FACILITIES FOR CHARGING ELECTRIC VEHICLES SHALL SUPPORT A USER IDENTIFICATION SYSTEM SUCH AS RADIO FREQUENCY IDENTIFICATION (RFID) OR SIMILAR AS PER NCPMS
   c. THE DESIGN OF CHARGERS SHALL ENABLE MAINTENANCE AND SERVICE WORK TO BE CARRIED OUT SAFELY.
   d. THEY SHALL BE INSTALLED WITH SUFFICIENT SPACE AROUND IT, IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, TO ALLOW FOR VENTILATION AND COOLING OF THE EQUIPMENT.
   e. CHARGERS SHALL BE INSTALLED IN SUCH A WAY AS TO MINIMIZE THE DISTANCE BETWEEN THE EV INLET AND THE CHARGING EQUIPMENT.
   f. CHARGERS SHALL NOT BE INSTALLED IN LOCATIONS WHERE A POTENTIALLY EXPLOSIVE ATMOSPHERE EXISTS, SUCH AS PETROL STATIONS. WHERE SUCH LOCATIONS REQUIRE CHARGERS, IT SHALL BE INSTALLED OUTSIDE THE HAZARDOUS ZONE.
2. THE FOLLOWING REQUIREMENTS SHALL BE MET FOR CIRCUITS.
   a. CHARGERS SHALL BE SUPPLIED BY A SEPARATE AND A DEDICATED RADIAL CIRCUIT. THE RADIAL CIRCUIT SHALL SUPPLY NO OTHER LOADS, EXCEPT FOR VENTILATION EQUIPMENT REQUIRED BY THE CHARGER.
   b. MORE THAN ONE CHARGER CAN BE FED FROM THE SAME SUPPLY CIRCUIT, PROVIDED THAT THE COMBINED CURRENT DEMAND OF THE EQUIPMENT DOES NOT EXCEED THE RATING OF THE SUPPLY CIRCUIT.
   c. CABLES SUPPLYING CHARGER(S) SHALL BE MECHANICALLY PROTECTED BY MEANS OF METAL SHEATH/ARMOUR, OR INSTALLED INSIDE A CONDUIT MADE FROM EITHER: I) RIGID STEEL; II) PLASTIC; OR III) PVC.
   d. EACH FINAL CIRCUIT SHALL BE SIZED TO CARRY THE RATED CURRENT OF THE CHARGER(S), WITH LIMITED VOLTAGE DROP AS REQUIRED.
   e. WHERE THE FINAL CIRCUIT SUPPLIES MORE THAN ONE CHARGER(S), THERE SHALL BE NO DIVERSITY. A DIVERSITY FACTOR (USUALLY GREATER THAN ONE) MAY BE USED FOR A DEDICATED DISTRIBUTION CIRCUIT SUPPLYING MULTIPLE CHARGER(S) CHARGING POINTS, PROVIDED THAT LOAD CONTROL IS AVAILABLE.
3. THE FOLLOWING REQUIREMENTS SHALL BE MET FOR SOCKETS AND CONNECTORS.
   a. ONE SOCKET OUTLET AND/OR VEHICLE CONNECTOR SHALL BE USED TO CHARGE ONE EV.
   b. CHARGER(S) SHALL BE INSTALLED SUCH THAT THE MAIN OPERATING CONTROLS AND ANY SOCKET OUTLET ARE BETWEEN 0.8M AND 0.95M ABOVE GROUND.
   c. THE EV MANUFACTURERS INSTRUCTIONS SHALL BE FOLLOWED WHEN DETERMINING THE TYPE OF SOCKET OUTLET TO BE INSTALLED.
   d. REFER TO PAS 1899
4. THE FOLLOWING REQUIREMENTS SHALL BE MET FOR ISOLATION AND SWITCHING.
   a. A MEANS OF ISOLATING THE SUPPLY TO THE EVSE CIRCUIT SHALL BE PROVIDED, IN ACCORDANCE WITH IS10101. THE ISOLATING DEVICE SHALL BE:
      - CAPABLE OF BEING LOCKED IN THE OPEN POSITION;
      - LOCATED IN A POSITION THAT IS READILY ACCESSIBLE FOR MAINTENANCE PURPOSES; AND
      - SUITABLY IDENTIFIED BY MARKING AND/OR IDENTIFICATION.
   b. WHERE AN EMERGENCY SWITCH IS PROVIDED, IT SHALL:
      - BE LOCATED IN A POSITION THAT IS READILY ACCESSIBLE, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS;
      - BE SUITABLY IDENTIFIED BY MARKING AND/OR LABELLING; AND
      - DISCONNECT ALL LIVE CONDUCTORS, INCLUDING THE NEUTRAL.
5. THE FOLLOWING REQUIREMENTS SHALL BE MET FOR PROTECTION.
   a. CHARGER(S) AND ALL ASSOCIATED EQUIPMENT SHALL BE SELECTED AND ERECTED IN SUCH A WAY AS TO MINIMIZE THE RISK OF OVERLOADS AND SHORTCIRCUITS.
   b. EACH FINAL CIRCUIT SHALL BE INDIVIDUALLY PROTECTED AGAINST FAULT CURRENT BY A SUITABLY RATED OVERCURRENT PROTECTIVE DEVICE.
   c. BASIC PROTECTION AGAINST ELECTRICAL SHOCK SHALL BE PROVIDED BY AUTOMATIC DISCONNECTION OF SUPPLY OR ELECTRICAL SEPARATION, AS IS10101
   d. EVERY CHARGING POINT SHALL BE INDIVIDUALLY PROTECTED BY A 30MA RCD. THE RCD SHALL DISCONNECT ALL LIVE CONDUCTORS, INCLUDING THE NEUTRAL.
   e. THE REQUIREMENTS OF EARTHING AS PER IS10101 SHALL BE MET ON FINAL CIRCUITS.
6. THE FOLLOWING REQUIREMENTS SHALL BE MET FOR LABELLING.
   A. THE LABELLING AND IDENTIFICATION REQUIREMENTS, BELOW, SHALL BE MET, TOGETHER WITH THE FOLLOWING.
   B. ALL LABELS ON CHARGER(S) SHALL BE:
      - CLEAR;
      - EASILY VISIBLE;
      - WRITTEN IN BOTH IRISH AND ENGLISH; AND
      - CONSTRUCTED AND AFFIXED TO REMAIN LEGIBLE FOR AS LONG AS THE ENCLOSURE IS IN USE.
   C. AN OPERATION INSTRUCTION FOR THE CHARGING FACILITY SHALL BE DISPLAYED AT A PROMINENT LOCATION AT ALL PARKING SPACES WITH CHARGER(S). THE INSTRUCTION SHALL INCLUDE THE FOLLOWING INFORMATION:
      - RATED VOLTAGE (V);
      - FREQUENCY (HZ);
      - CURRENT (A); AND
      - NUMBER OF PHASES.
   D. DIRECTIONAL SIGNAGE INSIDE AND OUTSIDE CAR PARKS IS RECOMMENDED TO DIRECT EV DRIVERS TO PARKING SPACES WITH CHARGER(S).
   E. ALL EV CHARGING BAYS TO BE PAINTED WITH EV CHARGING SPACES AS PER ELECTRIC VEHICLE CHARGING INFRASTRUCTURE STRATEGY 2022-2025, I.E.,
   F. IN ADDITION TO THE PAINTED SYMBOL A POLE WITH PARKING FOR EV ONLY NOTICE ON METAL TO BE PROVIDED

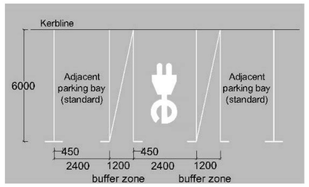
HEIGHT RANGE REQUIREMENTS FOR CHARGEPOINTS PAS 1899:2022		
CHARGE POINT COMPONENT	MINIMUM HEIGHT (mm)	MAXIMUM HEIGHT (mm)
SOCKET OUTLET CENTRELINE	800	950
TETHERED CHARGING CABLE CONNECTOR HANDLE WHIN IN HOLSTER (BOTTOM OF HANDLE)	800	950
SCREEN/ VISUAL INTERFACE	BOTTOM OF SCREEN/ VISUAL INTERFACE 800	TOP OF SCREEN/ VISUAL INTERFACE 1300
	BOTTOM OF BUTTONS/ TOUCHSCREEN 800	TOP OF BUTTONS/ TOUCHSCREEN 1200
PAYMENT TERMINAL (BOTTOM EDGE)	800	1000

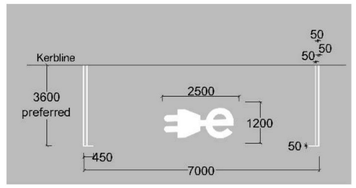
ROAD & SIGN MARKINGS - ELECTRIC VEHICLE RECHARGING BAY
PRIVATE REALM ONLY, BAY SIZES AS PER RPM 034 BELOW

PAINTED CAR PARK BAY SYMBOL, 740x810mm WHITE OR GREEN PAINT TO LOCAL CO. CO. STANDARDS

ELECTRIC VEHICLE RECHARGING POINT ONLY- 3MM ALUMINIUM-DIBOND SIGN 300MM X 200MM MOUNTED ON STANDARD NRA SPEC POLE FOR PRIVATE ROADS ONLY

ROAD & SIGN MARKINGS - ELECTRIC VEHICLE RECHARGING BAY (RPM 034)
PUBLIC REALM ONLY





ALL SIGNS TO BE COMPLIANT WITH EN 12767-1

ALL POLES TO NRA SPECIFICATIONS MIN 76MM DIAMETER, GALVANISED STEEL, ROOTS TO BE IN CONCRETE AS PER NRA REQUIREMENTS. REFER TO CIVIL ENGINEERS FOR MORE DETAILS

ROAD MARKINGS - ELECTRIC VEHICLE RECHARGING BAY (RRM 034)

7.6.15 AN ELECTRIC VEHICLE RECHARGING BAY IS INDICATED BY ROAD MARKING RRM 034, MARKED IN WHITE AND LOCATED ON THE OUTER EDGE OF EACH BAY AND SHOULD BE ACCOMPANIED BY THE UPRIGHT ELECTRIC VEHICLE PARKING BAY REGULATORY SIGN (RUS 020A – SEE CHAPTER 5).
THE BAYS MAY ALSO HAVE GREEN SURFACING APPLIED WITHIN THE LIMITS OF THE BAY, BUT THIS SHOULD NOT BE EXTENDED INTO THE ADJACENT CARRIAGEWAY OR ANY BUFFER ZONES.

7.6.16 PARALLEL, ANGLED OR PERPENDICULAR ELECTRIC VEHICLE RECHARGING BAYS MAY BE PROVIDED IN ISOLATION, OR AS PART OF A SERIES OF PARALLEL, ANGLED OR PERPENDICULAR PARKING BAYS. THE DIMENSIONS OF SUCH BAYS ARE SHOWN IN FIGURE 7.27, TOGETHER WITH EXAMPLES OF HOW THE MARKINGS MAY BE INCORPORATED WITH ADJACENT PARKING BAYS.

ALL PART M PARKING BAYS TO BE PROVIDED WITH EV CHARGING AS PER PART M OF THE BUILDING REGULATIONS FOR DISABILITY AND RESTRICTED MOVEMENT PERSONS

ELECTRIC VEHICLE ONLY PARKING BAYS MAY BE DENOTED BY THE USE OF THE ELECTRIC VEHICLE PARKING SIGN RUS 020A AND SHALL BE USED WITH SUPPLEMENTARY PLATE P053.

EV SIGN
ON POLE

RUS 020a: ELECTRIC VEHICLE PARKING PERMITTED

TIME LIMIT TO 30MIN
ON POLE UNDER EV SIGN

P 057: TIME LIMIT

Permitted Variant:	The time limit may be varied.

24 OPERATION APPLIES
ON POLE UNDER TIME LIMIT TO PERMIT TOWING OF OVERSTAY CHARGING

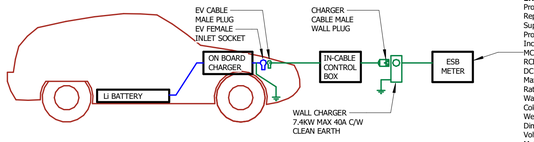
P 055: 24-HOUR OPERATION

EV CHARGING REQUIREMENTS

IEC 61851 SPECIFIES FOUR DIFFERENT MODES OF CONDUCTIVE CHARGING FOR ELECTRIC VEHICLES

MODE 2 CHARGING (TYPICAL DWELLING BASED)
MODE 2 CHARGING IS ILLUSTRATED HEREIN.
THE CHARGING CABLE ASSEMBLY INCORPORATES AN IN-CABLE CONTROL BOX. THE FIXED

ALTERNATING CURRENT (AC) IS DELIVERED TO THE ON-BOARD CHARGER OF THE EV, VIA A STANDARD SOCKET OUTLET AND A CHARGING CABLE WITHOUT COMMUNICATION FUNCTION. AN RCD FOR SHOCK PROTECTION IS PROVIDED ON THE SUPPLY SIDE OF THE FIXED ELECTRICAL INSTALLATION. MODE 1 IS NOT SUITABLE FOR LONGER PERIODS OF CHARGING AT HOME OR THE WORK PLACE. MODE 1 IS NOT PERMITTED DUE TO THE LACK OF SAFETY MEASURES ASSOCIATED WITH THIS MODE OF CHARGING. THE FINAL CIRCUIT, PROTECTIVE DEVICE AND SOCKET SHALL BE OF A SUITABLE RATING FOR THE CONNECTED LOAD, AND SHALL NOT EXCEED 32 A, IN ORDER TO CATER FOR THE HIGHER LEVEL OF CHARGING CURRENT.



MODE 2 CHARGING

PROVIDE RCD 6mA IS10101 722.531.3.101, 722.533, 7.4Kw LOADING MAX TO BE ALLOWED FOR. SPACE FOR PEN DEVICE TO ENSURE CAR DOES NOT BECOME LIVE IN A TN-C-S SYSTEM TO BE ALLOCATED.
ALL VENDOR REQUIREMENTS TO BE ALLOWED FOR I.E. GARO GSEV40PME MCU 40AMP TYPE A RCBO PME FAULT DET CONNECTION UNIT (6 WAY) OR SIMILAR.
WIRE DIRECTLY FROM ESB METER LOCATION, CABLE TO BE PROTECTED VIA RCBO.
PROVIDE ESB HOCKEY STICK TO BOTH INCOMERS
ENSURE DRAW WIRES ARE PROVIDED.

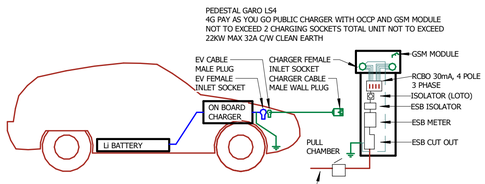
Product Description	Garo MCU 40Amp Type A RCBO PME Fault Detection Connection Unit (6-way)
Replenishh Order Code:	65-3763
Supplier Code:	G6EV40PME
Product Type:	EV PME Fault Detection Connection Centre
Incoming Supply Rating	40A
MCB Included Yes -	RCBO
RCBO/RCCB Included Type	A 40A RCBO
DC Leakage Protection	No
Max Terminal Entry	25mm²
Rated short-circuit capacity	6kA
Warranty:	24 (Electronic) / 60 (Mechanical) Months
Colour	White
Weight	2.1kg
Dimensions (H x W x D)	235 x 161 x 110mm
Voltage Rating	230V
Material	Metal
IP Rating	IP40
Number of ways	6

2 EV CHARGING MODE 2
NTS

EV CHARGING REQUIREMENTS

IEC 61851 SPECIFIES FOUR DIFFERENT MODES OF CONDUCTIVE CHARGING FOR ELECTRIC VEHICLES

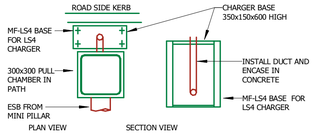
MODE 3 CHARGING (PUBLIC REALM CHARGING)
MODE 3 CHARGING IS ILLUSTRATED HEREIN.
IT EMPLOYS DEDICATED EV SERVICE EQUIPMENT (CHARGER) AND A CHARGING CABLE ASSEMBLY.
THE CONTROL PILOT CABLE OF THE CHARGING CABLE ASSEMBLY ALLOWS COMMUNICATION BETWEEN THE CHARGER AND THE ON-BOARD CHARGER.
COMMUNICATION FUNCTIONS INCLUDE: A) VERIFICATION OF CONNECTION WITH THE EV; B) CONTINUOUS CHECKING OF PROTECTIVE EARTH CONDUCTOR INTEGRITY; C) ENERGIZATION AND DE-ENERGIZATION OF THE SUPPLY; D) SELECTION OF THE CHARGING RATE. E) RFID AND PAYMENT CONTROL USING OPEN CHARGE POINT PROTOCOL (OCCP)
MAX. DELIVERED PER STATION NOT TO EXCEED 22KW/ 400V



MODE 3 CHARGING

GROUND MOUNTED CHARGER TYPE:	LS4(OLEV APPROVED) LS4DCMT222WO-MC
CHARGING MODE	MODE 3
SOCKET OR TETHERED LEAD	SOCKET (TYPE 11) X 2
AC OUTPUT CURRENT (A)	6,10,16,20,25,32
POWER OUTLET (KW)	3.7KW,7.4KW,11KW, 22KW
RATED VOLTAGE [V AC]	230 / 400
FREQUENCY [HZ]	50
TEMPERATURE RANGE [C]	-25...+
DEGREE OF PROTECTION (IP)	54
WEIGHT (KG)	24.5
LOCATION	GROUND / WALL MOUNTED
DC MONITORING	YES
LOAD MANAGEMENT	STANDARD WITH GNM3D / 3T
LOCAL METER	STANDARD
COMMUNICATION	4G
RFID	STANDARD
PROTOCOL	OCPP1.5 / 1.6
CERTIFICATION	EN 61851-1, IEC 61439-7

GROUND MOUNT BRACKET FOR LS4
TYPE: MF-LS4, STEEL TO SUIT AND MATCH LS4
ENCASED IN CONCRETE ONCE ALL DUCTING INSTALLED
PROVIDE PULL CHAMBER TO EACH



3 EV CHARGING MODE 3
NTS

This is a performance drawing and issued for pricing, quidance. The Installation Contractor shall produce all working drawings, including coordination drawings with other Trades and the Builder. This drawing shall be read inconjunction with the specification, schedules that are associated with this project. This is an A1 drawing.

REVISION HISTORY

Rev	Description	Date	By
1	WORK IN PROGRESS	16MAR2023	BON

NOTES

THIS DRAWING REFERENCES ESB LAYOUT
DOCUMENT REF. XXXXXXXXXXXX ISSUED XX-XXX-XXXX

ONLY FOR DISCUSSION

LEGEND OF CHARGERS

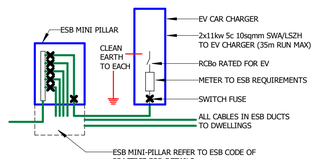
- EV — PUBLIC CHARGING POINT 2 OUTLETS EACH FOR VEHICLES
- EV — PUBLIC CHARGING POINT 2 OUTLETS EACH FOR BICYCLES
- EV — DWELLING CHARGING POINT 1 OUTLET PER DWELLING IN CURTILAGE
- EV — PROVISION OF PUBLIC CHARGING POINT WITH DUCTING PROVISION PROVIDED AS PER PART L 1.4.6
- EV — PROVISION OF DWELLING CHARGING POINT AS PER PART L 1.4.6.

Size 7.4 kW 1EVC — DENOTES DOMESTIC EV CHARGER, LOAD 7.4KW SINGLE PHASE MAX

Size 22.0 kW 1EVC — DENOTES PUBLIC EV CHARGER, LOAD 22KW THREE PHASE MAX THIS ARE TO BE SUPPLIED AS INDICATED IN PARKING BAYS

PUBLIC EV CHARGING

TO BE READ IN CONJUNCTION WITH EV CHARGING MODE 3 DETAIL



TYPICAL GARO TYPE (OR EQUAL AND APPROVED) 2nr CAR CHARGING STATION TO BE PART M COMPLIANT

Client	KELLAND HOMES LTD
Architect	DAVEY SMITH ARCHITECTS
Structural	
Quant. Surv.	KELLAND HOMES LTD
Fire Consultant	

BBSC
CHARTERED BUILDING SERVICES ENGINEERS
80 Willow Park Avenue, Glasnevin, Dublin, D11AE48
[p] 086 386 7097
[e] barry.oneill@bbsc.ie
[w] www.bbsc.ie

App'd	Approver	Chk'd	Checker	Eng'r	Designer	Drawn	Author

Site
SITE WORKS AT RESIDENTIAL DEVELOPMENT
CLONBURRIS, CO. DUBLIN

Drawing Title
ELECTRIC VEHICLE CHARGING REQUIREMENTS

Project Nr.	Scale	Date	Sheet Size
23_0216-S	As indicated	16MAR2023	A1

rev:- 1 rev date :- 16MAR2023

ISO file Reference: CLO-BBSC-DR-SK-E-700310 [1]
Project Status: WIP

09/06/2023 16:01:21