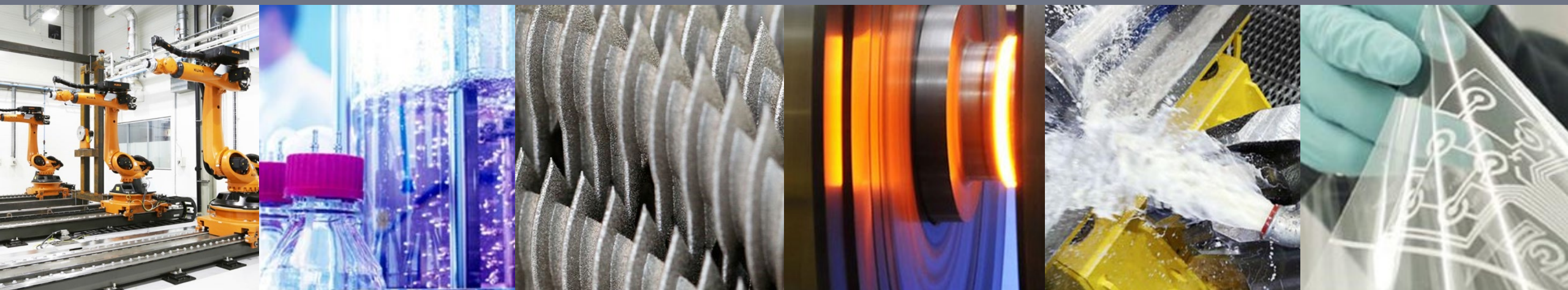


# Emerging Skills Programme

## Open Government Licence Guidelines

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27/05/2021



# What Is Open Government Licence (OGL)

## Basic guidelines

- User is free to copy, publish and transmit the information
- User is free to adapt the information
- User is free to exploit commercially and non-commercially
  - Combine it with other information
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- User must acknowledge source of information by linking to any attribution statement specified by the provider
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- Information is licensed 'as-is' so has no cover of warranties, obligations or liabilities
- Must follow UK Government Licensing Framework (UKGLF)

# ELEC304 - Automotive Electric Vehicle Charging

## LO4 - Electrical Vehicle Charging System Overview

# Function (Charging)

## Function

- To store external power in the HV (High Voltage) battery.
- It is controlled by the VCU (Vehicle Control Unit).
- There are two different charging methods.

## Slow/Fast (regular) charging:

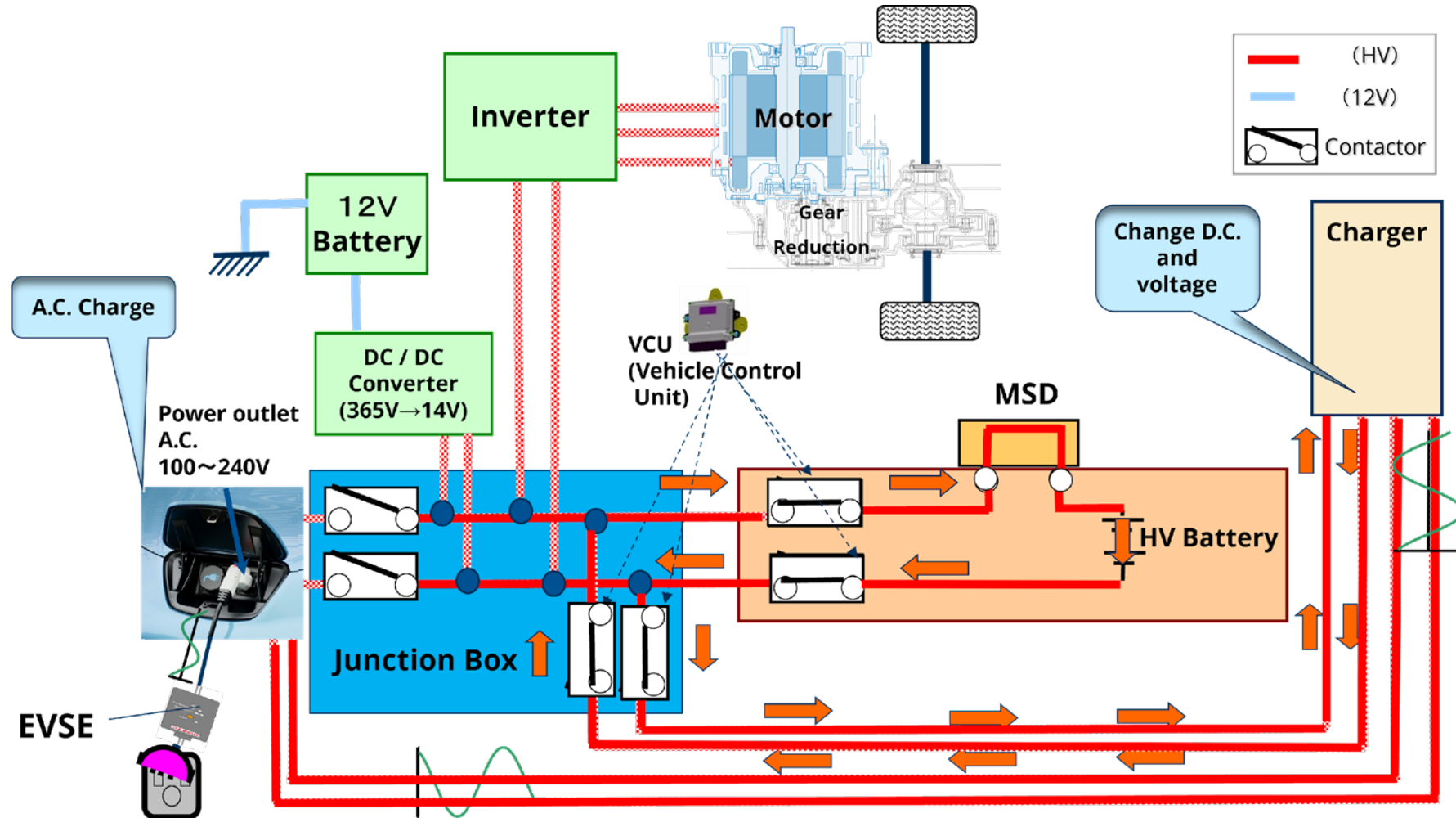
- Connect the EVSE (Electric Vehicle Supply Equipment) to a wall outlet.
- Converts single-phase 240 VAC via the OBC (On-Board Charger) (3.3kW/6.6kW).
- Charging time (0 > 100%): Approx. 8 hours (240 VAC).

## Rapid (direct) charging:

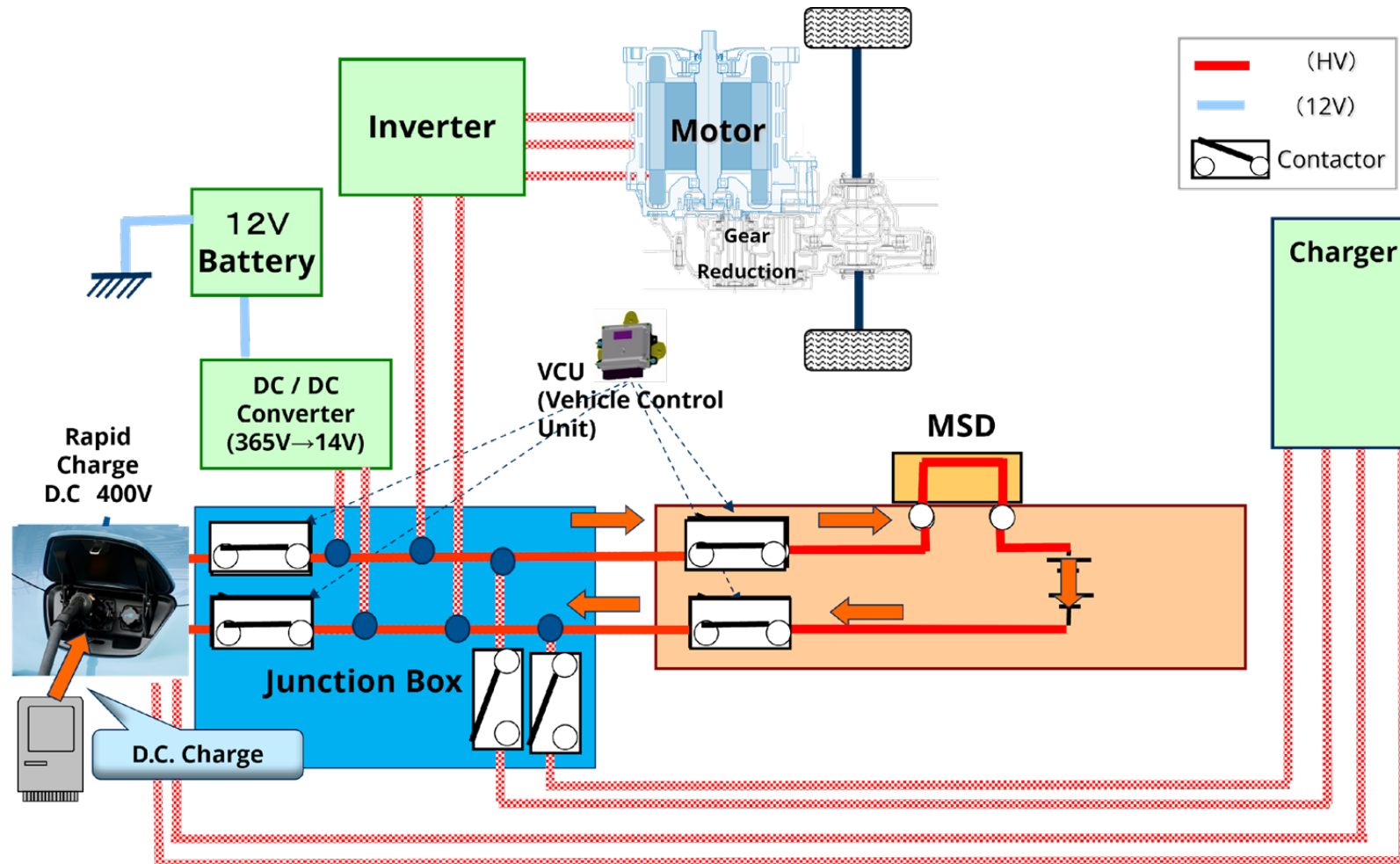
- Charging with DC, 400 VDC using the rapid charger.
- Charging time (10 > 80%): Approx. 30 minutes.

**A relay (located in the junction box) is used in the charging circuit for safety.**

# Function (Slow/Fast Charging AC)



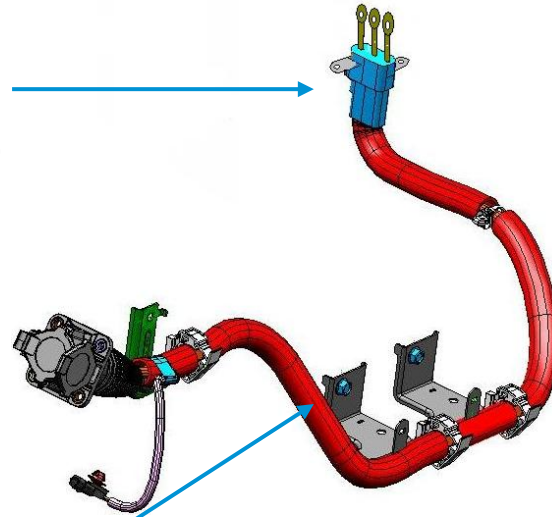
# Function (Rapid Charge DC)





# Component Parts (Regular Charge Port)

Power Drive  
Module/Unit –  
(PDM/PDU) side



Harness

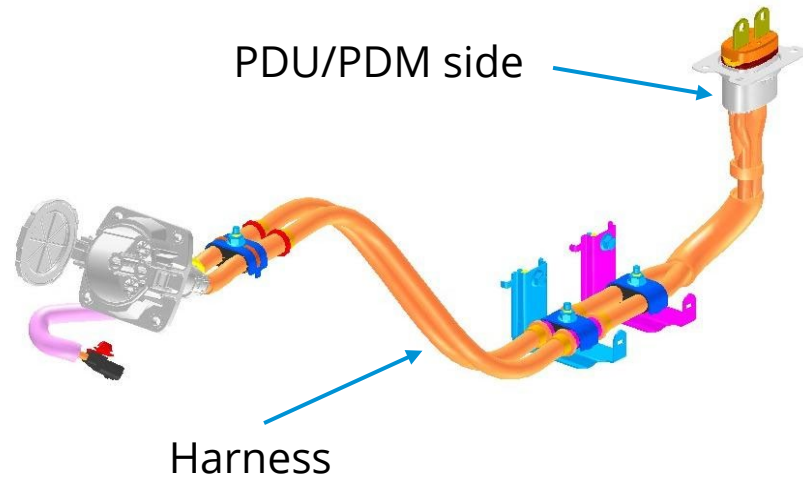
## Function

To feed 240 VAC coming from the EVSE to the OBC/controlled by the VCU

Slow/Fast (regular)  
charge connector



# Component Parts (Rapid Charge Port)



## Function

To feed 400 VDC coming from the rapid charger to the HV battery during a charging cycle



Rapid (DC direct)  
charge connector



# Electric Vehicle Supply Equipment (EVSE)



**EVSE comes as standard with most vehicles.**

## **Function**

It is a power cable which connects a vehicle to a wall socket outlet.

## **It has an added safety function:**

It stops charging if there is a build-up of heat, or an electrical insulation leak is detected.



EVSE plugged into the (regular) charging port