

### Automotive Standards

#### BMW - GS 95023 (2009-12)

9.2.1 - Range of unlimited operating capability
9.2.2 - Range of upper limited operating capability
9.2.3 - Range of lower limited operating capability
9.2.4 - Range of highly limited operating capability
9.2.5 - Voltage dynamics
9.2.6 - Voltage ripple
9.2.7 - Overvoltage
9.2.8 - Overvoltage above the limit voltage
9.2.9 - Undervoltage
9.2.12 - Voltage offset
9.2.13 - Interactions between LV and HV system
9.3.4 - Overcurrent protection (electrical energy storage)
9.3.5 - Short circuit
9.3.7 - Isolation resistance
9.3.10 - Active discharge
9.3.11 - Passive discharge
9.3.15 - HV interlock
9.3.18 - Diagnosis of the HV voltage
9.3.19 - Failure of LV supply voltage
9.4.1 - Isolation monitoring
9.4.3 - Service disconnect
9.4.5 - Detection of open HV cables
9.4.6 - Requirements for HV battery
9.4.7 - Requirements for DC/DC converter HV/LV

#### ISO - 21498-2 (2021 & 2024)

6.2 - DC supply voltage variation within operational range.swg
6.5 - Generated voltage ripple.swg
6.6 - Immunity to voltage ripple.swg
6.7 - Overvoltage.swg
6.8 - Undervoltage.swg
6.9 - Voltage offset.swg
6.10 - Generated load dump voltage.swg
6.11 - Immunity to load dump voltage.swg
6.12 - Short circuit.swg

#### MAN CVS43:2021-01

3.3.7 - Test of excessive EB conductor current
4.1.1 - Operating Voltage
4.1.2 - Steady-state Overvoltage
4.1.3 - Dynamic Overvoltage
4.1.4 - Dynamic Undervoltage
4.1.5 - Voltage ripple along VCB supply lines – Component – Measurement
4.1.7 Immunity – Single pole insulation fault

4.1.9 Active discharge
4.1.10 Passive discharge
4.2.2 Voltage ripple along VCB supply lines – Vehicle – Measurement

## MBN LV123 (2014)

10.4.1 - Range of unlimited operating capability
10.4.2 - Range of upper limited operating capability
10.4.3 - Range of lower limited operating capability
10.4.4 - Range of highly limited operating capability
10.4.5 - Voltage dynamics
10.4.7 - Overvoltage
10.4.8 - Undervoltage
10.5.4 - Overcurrent protection
10.5.6 - Isolation resistance
10.5.8 - Residual voltage
10.5.17 - Behavior in the event of a crash
10.5.18 - Measuring the HV voltage
10.5.19 - Failure of LV supply voltage
10.6.1 - Isolation monitoring
10.6.2 - Service disconnect function
10.6.3 - Pre-charge circuit
10.6.4 - Detection of open HV cables
10.6.5 - Additional requirements for HV battery
10.6.5.1 - Switching equipment HV battery
10.6.5.2 - Overcurrent protection HV battery
10.6.6 - Additional requirements for DC/DC converter HV/LV
10.6.7 - Additional requirements for inverters

## Stellantis - CS.00245 HV EE Components

C_ET_01_HV_V: Resistance to Usual and Operating Voltage
C_ET_03_HV_V: Measurement of Generated Voltage Ripple
C_ET_04_HV_V: Resistance to Transient Overvoltage
C_ET_05_HV_V: Resistance to Transient Undervoltage

## VW - VW 80300 (2016)

HVPT-1 - HV voltage cycle
HVPT-2 - HV pre-charging
HVPT-3 - Passive discharge
HVPT-4 - Active discharge
HVPT-5 - HV insulation resistance to LV
EHV-01 - Operation within the regular HV operating voltage range
EHV-02 - Operation within the HV overvoltage range
EHV-03 - Operation within the HV undervoltage range
EHV-04 - Pre-charging
EHV-05 - Generated HV voltage dynamics

# AETECHRON

EHV-06 - System HV voltage dynamics
EHV-07 - HV voltage dynamics of energy storage devices
EHV-12 - HV overcurrent
<b>VW - VW 80300 (2021)</b>
HVPT-1 - HV voltage cycle
HVPT-2 - HV pre-charging
HVPT-3 - Passive discharge
HVPT-4 - Active discharge
HVPT-5 - HV insulation resistance to LV
EHV-01 - Operation within the regular HV operating voltage range
EHV-02 - Operation within the HV overvoltage range
EHV-03 - Operation within the HV undervoltage range
EHV-04 - Pre-charging
EHV-05 - Generated HV voltage dynamics
EHV-06 - System HV voltage dynamics
EHV-07 - HV voltage dynamics of energy storage devices
EHV-08 Generated HV voltage ripple
EHV-12 HV overcurrent
EHV-13 HV service life (additional)
EHV-14 On/off durability testing for HV components
EHV-15 Functionality of HV interlock, maintenance connector, and crash signaling