

Specific charging requirements for the 22 kW inverter–charger version (5AL 601 / code 908)

Line Item	Characteristic	smart ed (smart EQ fortwo / forfour) 22 kW X07 5AL 601		If there is an issue with this requirement, try the following mitigation
		Mode 2	Mode 3 (3-phase)	
1	Attention: plug – socket	the plugs of the charging cable must be plugged in correctly into the sockets		Push plug strongly and all the way into the socket !
2	Attention: max. assymetr. Load eg. 20 A in Germany ..., 16 A in Austria ...	N.A.	The vehicle does not reduce the charging current, when charging Mode 3 1-phase. Make sure, the charging point respects regional regulations, when connecting a wall box with only 1 phase !	When connecting a wallbox with only 1-phase, adjust the max. possible charging current of the wallbox accordingly to the regional regulations !
3	Requirement: ground resistance of charging point	< 100 Ohm		the local earthing resistance has to be improved by changing the existing rod or putting an interconnected extra rod
4	Requirement: HF perturbation and phase balance	standards IEC 61000-2-2, 61000-2-4 (class 2); 61000-4-30 (measuring cycle 200 ms or less); and EN 50160 § 4.2.4 and § 4.2.5. THD(U) < 8%		a) use another socket w/o perturbations b) switch off the perturbation source (eventually cooperate with a smart ed specialist to follow the car's reaction on the perturbation (signal "Raw Leakage Current-High Frequency")) c) try to use Mode 3 charging rather than Mode 2 charging d) install an EMC filter with sensor
5	Requirement: Circuit breaker	curve B or C (IEC 60898-1)	curve C (IEC 60898-1)	Overcurrent protection shall have a gauge of not less than 125 percent of the gauge of the charging station or the gauge of the supply in mode 2. The charging station shall be protected by a circuit-breaker with a gauge :/ 20 A for a 16 A single or three phase charging station / 25 A for a 20 A single or three phase charging station / 32 A for a 25 A single or three phase charging station / 40 A for a 32 A single or three phase charging station / 80 A for a 63 A three phase charging station / However, if the CB is located in the station, its range could be aligned on the station range providing: - Either a monitoring of the device temperature is implemented and the risk of tripping by over temperature is canceled by a PWM ratio derating based on temperature monitoring - Or the selected CB shall be capable to support the maximum current without tripping in the maximum predictable temperature conditions
6	Requirement : Max Voltage between N and PE	< 10 V (rms)		If above condition is not met, it is necessary to identify the origin of the fault voltage and apply a corrective measure in order to commission the EVSE
7	Requirement : Power of the transformer for 32 Amps or more	N.A.	>100kVA	Distance of the charging station from the feeding transformer (MV/LV) shall be as short as possible to minimize the line impedance values
8	Requirement : installation mode	mode IT is prohibited		mode TT or TN only !
9	Requirement : residual current	<30 mA (DC)		Whenever the number of phases, an additional protection against DC leakage current shall be integrated by either using a type B RCD or if the local regulation allows it, by using a RCD type A with the condition that the charging station is equipped with a specific protection device against the DC leakage current that could affect good functionality of this type A RCD. In all cases, it is necessary to ensure the proper coordination between the branch circuit breaker of the overall installation and the current and differential protections dedicated to the station. In the case of a charging station protected with a RCD type B, any upstream RCD that is not dedicated to the charging station shall be either type B or associated with a DC leakage current detection device which will preserve its correct functionality.
10	Requirement : min. Voltage	150 V		
11	Requirement: min. charging current according to the CP (Control Pilot)	6 A	8 A	If the charging station limits the charging current to less than 8 A (3-phase charging), the 22 kW charger will interrupt the charging process. Increase the CP-signal of the charging station to at least 13% (3-phase charging), as far as regulations or other requirements allow this. Eventually, you will need to contact the charging station operator.