TECHNICAL DATASHEET

MODEL :   *Etrel INCH DUO*

Electrical specification

CHARGER POWER SUPPLY INFORMATION

NOMINAL VOLTAGE	90 V AC to 253 V AC supported (single-phase) and up to 440 V AC (three-phase) Charging station can be connected single-phase or three-phase.
NOMINAL CURRENT PER PHASE	Max 64 A per phase (power supply of two sockets) Three phase model 3 x 64 A, single phase model 1 x 64 A. Can be adjusted through charger settings.
MAXIMUM CHARGING POWER	2 x 7,4 kW (single phase) and 2 x 22 kW (three phase) Max power can be adjusted (lowered) when the charging station is installed and later using the power management algorithms and power management settings using the user interface (mobile app, web app).
FREQUENCY	47Hz – 63Hz
SUPPORTED GROUNDING SYSTEMS	The charging station must be properly grounded. Following grounding system are supported: TN-S, TN-C, TN-C-S and TT under special conditions. Where this is possible local grounding should be done. IT grounding system supported only with use of transformer.
STANDBY OWN ENERGY CONSUMPTION	Own consumption power from 5 W. Depends on actual configuration and integrated modules (Wi-Fi, LTE, payment terminal, etc).
DEVICE OVERVOLTAGE SENSITIVITY	Category III EN60664

CHARGER OUTPUT

NUMBER OF CHARGING OUTPUTS (SOCKETS)	2
NOMINAL VOLTAGE (SINGLE-PHASE VEHICLE CONNECTED) PER CONNECTOR	Power supply voltage 230 V AC (-10 % , +10 %) and 120 V AC (-10 %, +10 %) On-board car charger nominal voltage depends on the car specification and typically reaches values between 100 V dc and 500 V dc.
NOMINAL VOLTAGE (THREE-PHASE VEHICLE CONNECTED) PER CONNECTOR	Power supply voltage 400 V AC (-10 %, +10 %) and 208 V AC (-10 %, +10 %) On-board car charger nominal voltage depends on the car specification and typically reaches values between 100 V dc and 500 V dc. On a three phase charging station single and three phase vehicles can charge.
NOMINAL CURRENT PER PHASE PER CONNECTOR	Max 32 A per phase (for each of two sockets) Three phase model 3 x 32A, single phase model 1 x 32 A. Can be adjusted through charger settings.
MAXIMUM CHARGING POWER PER CONNECTOR	7,4 kW (single phase) and 22 kW (three phase), (for each of two sockets) Max. power can be adjusted (lowered) when the charging station is installed and later using the power management algorithms and power management settings using the user interface (mobile app, web app).
CHARGING SOCKET TYPE	Two Type 2 sockets compliant with IEC 62196-2 • Sockets without status LED light (default) • Sockets with status LED light (optionally) • Sockets with shutter (optionally)

ELECTRICAL PROTECTION

DIFFERENTIAL PROTECTION	Two residual current devices with Δ I = 30 mA. Different options possible: • DC fault current sensor 6 mA, default option. • RCD Type A, RCD Type A EV, RCD Type B, optionally. Compliant with the following standards: • IEC 61851, IEC 62955, IEC/EN 62423 (Type B).	●
SURGE AND OVERVOLTAGE PROTECTION	Installed in external electrical cabinet or in charging station.	Optional
OVERCURRENT PROTECTION	One main miniature circuit breaker (MCB) 80 A, two MCB's 40 A and MCB 6 A for electronics. All MCB's have tripping characteristics C. Rated short time withstand current: 10 kA.	●
ADDITIONAL PROTECTION, CHECKING IF MEASURED CHARGING CURRENT IS HIGHER THAN SET CURRENT	Software overcurrent protection based on additional internal current measurements. Prevents circuit breaker outage. Stop charging if load (EV) does not follow current's setpoint.	●

METERING

MID METER	Two MID meters are installed inside the charging station. Accuracy meter rating: Class 1 for active energy according to EN 62053-21 and class B according to EN 50470-3.	●
EMBEDDED METER	Embedded meter accuracy rating: Class 2. Possible measurements: active and reactive energy and power on all phases, voltage measurements on all phases, current on all phases and energy in both directions, power factor, frequency. • When MID meter is installed part of embedded meter is removed.	Optional

COMMUNICATION INTERFACES WITH SMART HOME OR CPO BACK-END

ETHERNET	Ethernet module 10M/100M connection available in the charger service area.	●
MOBILE	LTE module Modem supports following frequencies: • GSM | GPRS | EDGE: 850, 900, 1800, 1900. • UMTS | HSPA; 800/850, 900, AWS 1700, 1900, 2100 MHz. • Bands B6 and B19 (800 MHz) are a subset of B5 (850 MHz) and are supported as well. • Installation of LTE module cancels the possibility of the Wi-Fi module.	
WIFI	Wi-Fi module Network standard: • IEEE 802.11n | IEEE 802.11g | IEEE 802.11b Wireless transmission rate: • 11n: max 150 Mbps | 11g: max 65 Mbps | 11b: max 11 Mbps Frequency rate: • 2.4 – 2.4835 G Wireless security: • Wireless MAC address filtering. • Wireless security function switch. • 64/128/152 bit WEP encryption. • WPA-PSK/WPA2-PSK, WPA/WPA2 security mechanism. • Installation of Wi-Fi module cancels the possibility of the LTE module.	Optional
ROUTER	LTE Router Mobile: 4G (LTE) – Cat 4 DL up to 150 Mbps, UL up to 50 Mbps; DC-HSPA+; UMTS; TD-SCDMA; EDGE; GPRS Ethernet: 2 x 10/100 Ethernet ports: 1 x WAN (configurable as LAN), 1 x LAN	
NETWORK SWITCH	Ethernet switch Supports straight or cross wired cables. Operating mode: Store and Forward, L2 wire-speed/non-blocking switching engine. Speed: 10/100 Mbps. Protocols: IEEE 802.3 , IEEE 802.3x, Flow Control, Back Pressure, TCP/UDP.	
DIGITAL INPUTS AND OUTPUTS	Signal 12 V, configurable digital inputs and outputs	

COMMUNICATION INTERFACES WITH ELECTRIC VEHICLES

IEC 61851	Digital communication according to IEC 61851-1:2017 is supported. • Older versions of the standard are also supported.	
IEC 15118	High-level communication according to ISO 15118:2015 is supported. • Hardware is already prepared for installation of additional PLC module.	●

COMMUNICATION PROTOCOLS

OCPP	• OCPP 1.6 SOAP (fully supported). • OCPP 1.6 JSON (all messages /methods supported). • OCPP 2.0 JSON (upcoming). • Additionally: Custom data transfer messages supported (for pricing and on display advertising). • Allows OCPP communication with multiple nodes.
CUSTOM WEB API	We can provide API specification. • Authorization is supported/required on this interface.
MODBUS TCP SERVER	Used for integration with Smart Home/Smart building. • Modbus registers table can be provided.

USER INTERFACES

TRUE COLOR LCD DISPLAY WITH TOUCH INTERFACE	Specifications: • LCD visual dimensions: 118.5 x 77.6 mm • Resolution: 800 x 480 pixels • 5-inch touch display true color (16 MB RGB) • Sunlight readable, 12 o'clock view angle	●
WEB INTERFACE FOR LOCAL USERS AND MAINTENANCE	Embedded web interface with responsive design (PC, tablet, phone). It allows charger configuration, online control of charging session, enables reporting, diagnostics/trouble shooting and firmware upgrades.	●
STATUS LED	Is turned on in standby mode to indicate charger present status.	●

OTHER USER INTERFACE FUNCTIONALITIES

HELP EMBEDDED ON SCREEN	Charging station's LCD provides help tips.	●
MULTILINGUAL SUPPORT	Multiple languages supported. Configurable through web interface.	●
ON SCREEN ADVERTISING	Advertisement can be shown on the user interface.	Optional
OTHER	Remote charging start/stop, reservations, configurations, interactive charging levels (user, building, other charging stations, grid), updating, clustering ...	

CHARGER UNLOCKING POSSIBILITIES

RFID READER	RFID module specification: • Supports SPI and UART, 4 GPIO's. • Integrated antenna, frequency 13.56 MHz. • Up to 7 cm reading distance. Supported cards: - ISO14443A: MIFARE Classic 1k & 4k, MIFARE Classic 1k & 4k EV1[4], Mini, DESFire EV1[3], Plus S&X, Pro X, SmartMX, Ultralight, Ultralight EV1[4], Ultralight C, NTAG2xx[4] - SLE44R35, SLE66Rxx (my-d move), LEGIC Advant[1], PayPass[2] - ISO14443B: Calypso[2], CEPAS[2], Moneo[2], PicoPass[2], SRI512, SRT512, SRI4K, SRIX4K - ISO18092 / NFC: NFC Forum Tag Type 1-4 - Sony FeliCa[1] 1) UID only, 2) UID only - read/write on request, 3) AES only, 4) read/write enhanced security features planned	●
PLUG AND CHARGE	YES	●
OCPP (BACK-END FUNCTIONALITY)	OCPP, Open Charge Point Protocol enables connections between Mobility Service Provider and Charge Point Operator (if supported by operator): • Real-time information about location, availability and price. • A uniform way of exchanging data. • Roaming system. • Remote mobile support to access any charge station without pre-registration. • Communication via mobile application or SMS.	●
AUTHORIZATION USING PIN	Users and PIN's configurable through charger web interface.	●

BASIC MECHANICAL SPECIFICATION

DIMENSIONS (HXWXD)	134.3 x 31.2 x 20.0 [cm], middle point height of charging sockets is 108 cm.	
WEIGHT	38 kg (weight depending on the actual configuration).	
DIMENSION INCLUDING PACKAGING (HXWXD)	Packaging adds 10 cm to all dimensions of the product.	
WEIGHT INCLUDING PACKAGING	Packaging adds 5 kg to the charging station.	
CASING MATERIAL	Stainless steel with extra anti-corrosion protection (powder coated) and polycarbonate display cover. UI holder material: fibre-reinforced ABS.	
CASING COLOR	Grey and grey. • Non-default colour combinations available at a surcharge.	Optional

INLET CABLE HANDLING

POWER CABLE ENTRANCE DIRECTION	Power cables can be inserted into the station from the bottom of the charging station.	
POWER CABLE DIMENSIONS	Up to 5 x 50 mm^2 cables can be used directly. Customization for every customer needs with additional clamps possible up to 135 mm^2.	
ETHERNET CABLE ENTRANCE	Ethernet cables can be inserted into the station from the bottom of the charging station.	
ETHERNET CABLE TYPE	CAT-5, RJ45 connector. SFTP preferred if layered with power cables or on long distances. Cat-5 cable suggested longest distance without using signal repeaters is 100 m.	

ENVIRONMENTAL SPECIFICATIONS

ENCLOSURE INGRESS PROTECTION	IP 54 in testing with IK10.	●
TEMPERATURE RANGE	Operation temperature range: -25°C to +65°C Storage temperature range: -40°C to +70°C Product extendable with thermostat and heater.	●
HUMIDITY	Up to 95 % relative humidity, non-condensing	●
MAXIMUM ALTITUDE	2000 m	●

VANDALISM PROTECTION

IMPACT PROTECTION	IK10	●
PLUG LOCKING	Plug locking operation can be enabled or disabled in charger configuration.	Optional
DOOR LOCKING	Three point door locking with single mechanism. Single key access. Door open sensor. Device tilt sensor.	

MAINTENANCE

FIRMWARE UPDATE	Firmware update done through backend system or web interface.	●
ACCESS TO SERVICE AREA	Service doors with key.	●
FUNCTIONS SUPPORTED THROUGH SERVICE AREA	Access to: • Ethernet • Mobile SIM • Charger system reset • Charger configuration reset • Protection manipulation • RCD protection test button (pressed once per year) • Connection to the power supply • Configurable digital inputs (DI) and digital outputs (DO)	●
CLEANING	• Cloth and water or water-based or alcohol-based cleaners. • Do not use solvent-based cleaners.	●

POWER MANAGEMENT

ECONOMIC/PRICE OPTIMIZATION	• Based on energy tariffs. • Time scheduling of charging towards lower tariffs or self-consumption when user preferences and pricing allows it. • Evaluation of on-site production (e.g., photovoltaics).	●
OPERATION OPTIMIZATION	• Machine learning and pattern recognition using built-in AI to predict and optimise each charging session. • Collection of user's departure time over app or touch screen to refine automatically suggested charging profile. • Support for Modbus protocol for integration with external smart building systems.	●
PREVENT OVERLOADING MAIN FUSE – GRID CONNECTION POINT	By using Load Guard device: • Static limit of maximum allowed charging current per phase. • Static limit of maximum allowed charging current per phase in case connection with Load Guard sensor / back-end is lost. • Detection and visualisation of available supply and automatic adjustment of charging power. • Detection and visualisation of surplus energy returned to the grid (Production from renewable energy sources).	●
DEMAND RESPONSE ACTIVATION (BACK-END FUNCTIONALITY)	• Remote power manipulation by DSO. • Remote power manipulation by energy supplier.	●
MANAGING CLUSTER OF CHARGERS	• Based on user preferences and current installation's load conditions. • Master-slave relationship with floating master. Connection of up to 16 electric vehicles possible. • Larger cluster (supply of up to 50 electric vehicles) is possible with use of industrial computer.	●