xChargeIn

Frequently Asked Questions
for commissioning and service technicians

Powering Business Worldwide

Table of contents

1 Assembly

1.1 At what locations/sites may be EATON xChargeIn be installed?

The EATON xChargeIn is suitable for indoor and outdoor installations. However, several installation instructions and restrictions must be observed. For installation details, please refer to the installation manual in the "General criteria for the site selection" chapter.

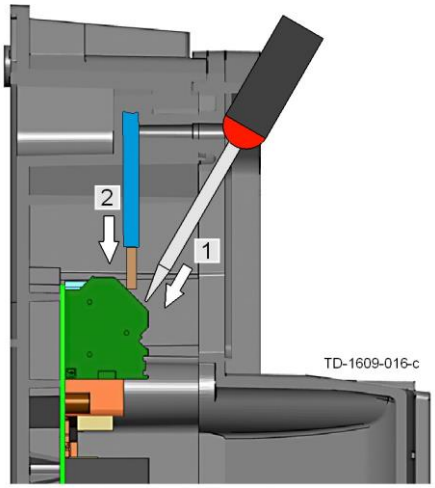
1.2 Are special tools required for the assembly, installation, and inspection?

Assembly

For installing the EATON xChargeIn, you will require a drill and an open-end wrench (13mm/M8).

Electrical installation:

- Flathead screwdriver for supply terminals (blade width 5.5 mm)
- Flathead screwdriver for SELV terminals (blade width 3.0 mm)
- Phillips head screwdriver PH2
- Mounting tools for screw connections M16 (width across flats 20 mm) and M32 (width across flats 36 mm)
- LSA+® insertion tool (optional – versions with PLC/ethernet communication)



Spring-type terminal connections

Please observe that an electrical inspection is necessary after installing the charging station. This electrical inspection must be carried out in accordance with the respective valid national standards and guidelines.

1.3 What additional material is required for the installation?

The EATON xChargeIn in European versions is turnkey ready with all required installation material supplied.

2 Connection and installation

2.1 How can the EATON xChargeIn be electrically protected?

The fuse protection of the EATON xChargeIn always occurs in the local building installation. The fuse protection by circuit line breaker must be done in dependence on the available power in the respective EATON xChargeIn version (Type 2 socket/cable, Type 1 cable) in accordance with the locally valid guidelines.

2.2 Is a 32 A feed-in absolutely necessary for operating the EATON xChargeIn?

No. The EATON xChargeIn can be configured via DIP switches in the housing to the maximum permitted current (10A, 13A, 16A, 20A, 25A, 32A).

Please observe the deviating requirements for fulfilling "Z.E.-Ready®" (Renault) in the installation manual in the "Deviating requirements for fulfilling the "Z.E.-Ready®" (Renault).

2.3 Which fault-current circuit breaker (FI) is used in the building installation?

The selection of the FI circuit breaker type largely depends on the vehicle to be charged. EATON recommends at least using a FI fault-current circuit breaker of Type A, whereby some vehicle manufacturers require a FI fault-current circuit breaker of Type B (universal currents). The following approach is therefore recommended:

- If only one vehicle is charged at the EATON xChargeIn and the vehicle manufacturer does not require a FI fault-current circuit breaker of Type B, then Type A can be used.
- If different vehicles are charged at the EATON xChargeIn, then a FI fault-current circuit breaker of Type B should be installed to prevent any damage caused by fault current.

2.4 Can a EATON xChargeIn with Type 2 socket/cable also be operated in single phase?

Yes. However, bear in mind that with single-phase operation there is less charging power available for the vehicle as with three-phase operation.

2.5 Can a EATON xChargeIn with Type 1 cable also be operated in three phase?

With a Type 1 plug/cable, charging can only occur in single phase. However, with the EATON xChargeIn it is possible to connect the additional phases in the connection area. However, the charging only occurs in single phase.

2.6 Can the EATON xChargeIn be converted from single-phase operation (230 V) to three-phase operation (400 V)?

A conversion in this case only makes sense with a EATON xChargeIn with Type 2 socket/cable. Can a vehicle be charged with a EATON xChargeIn with Type 1 cable in only single-phase anyway.

2.7 How is the connection cable inserted into the EATON xChargeIn?

If the feed line is run on the surface, a cable insertion from above is provided for. If the installation is done with flush mounting, the cable is inserted from the rear into the EATON xChargeIn. Please observe the information in the installation manual in the "Connecting the power supply lines" chapter.

A cable feedthrough from below is not allowed!

2.8 What is the purpose of the enable input "IN" (X1)?

The enable input is intended for use with an external potential-free contact. Using the enable input, it is possible to control the charging station using external components (e.g. external key switches, ripple control receiver of the energy supplier, house control, time switches, combination lock, photovoltaic system etc.).

The configuration of the enable input occurs via the DIP switches in the terminal panel. With active enable input, charging is only possible if the enable contact is closed.

2.9 What is the purpose of the switch contact "OUT" (X2)?

The switch contact X2 "OUT" is a potential-free signal contact with which an upstream safety device (e.g. circuit breaker or residual current device) can be switched off in the event of a unit fault (contactor contacts welded). For instance, this is a requirement for Renault Z.E.-Ready-compliant installations. Over this relay contact only safety extra-low-voltage <50V_{AC} (0.5A) may be switched. For further information including a connection example please refer to the installation manual in chapter “Switch contact output X2”.

The configuration of the signal contact occurs via the DIP switches in the terminal panel.

2.10 How is the Ethernet cabling done in the terminal panel (for versions with Ethrnet communication)?

The EATON xChargeIn in versions with Ethernet communication (S-series) have two Ethernet connections, one LSA+ connection terminal and an RJ45 socket. Hardwired Ethernet cabling on-site has to be done to the LSA+ connection terminal. The RJ45 socket is merely an interface for debugging functions and for software updates.

3 Commissioning

You can find general information on commissioning in the installation manual in the "Commissioning" chapter.

3.1 Where can I find the technical data for the EATON xChargeIn?

You can find the technical data for the EATON xChargeIn in the installation manual in the "Technical data" chapter.

3.2 How do I test the EATON xChargeIn after installation?

The charging station can be placed into a commissioning mode for supporting the initial system test. During this, a self test of the device is performed (interlocking, contactor activation, current measurement, etc.) and the result is displayed. You can find more detailed information in the installation manual in the "Commissioning mode/self test" chapter.

3.3 Can I connect the EATON xChargeIn to a home network?

EATON xChargeIn S-series variants can be connected to a home network.

The EATON xChargeIn features a webserver which displays energy and consumption data as well as event and possible error log entries. Moreover, the unit can be externally controlled through a home network using UDP communication. With this feature it is possible to optimize own household energy consumption in combination with photovoltaic systems and other appliances. For further information please see the installation manual chapter “DIP-Switch settings” and the “UDP programmers’ guide” retrievable from the download section at www.eaton.com/evc.

3.4 Can I update the firmware of the EATON xChargeIn?

Yes, this is possible. Firmware updates are even recommended, as outcomes from continuous tests with new car models as well as possible changes in applicable standards result in firmware changes. The latest firmware releases including an update manual can be retrieved from the download section at www.eaton.com/evc.

3.5 Examples for EATON xChargeIn IP addressing using the DIP-switches

The EATON xChargeIn uses the binary number for IP addressing. Please see the following examples:

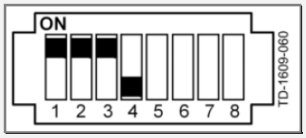
ADDRESSING (for all modes without DHCP)
DSW2.1 to DSW2.4

If multiple charging stations are located in a network, an addressing of the charging stations is necessary.

The addressing is done via the DIP-switches **DSW2.1** to **DSW2.4**. The settable Ethernet addresses start at **10 + DIP-switch setting**.

With the 4-bit addressing, the addresses 11 to 26 are usable **[192.168.25.xx]**.

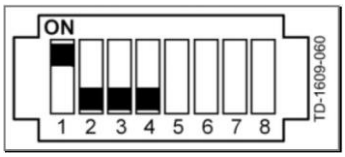
DSW2.1 = Address Bit 2^0 (Value=1)
DSW2.2 = Address Bit 2^1 (Value=2)
DSW2.3 = Address Bit 2^2 (Value=4)
DSW2.4 = Address Bit 2^3 (Value=8)



Example for address "17":

DSW2.1 = ON (value=1)
DSW2.2 = ON (value=2)
DSW2.3 = ON (value=4)
DSW2.4 = OFF (value=0)

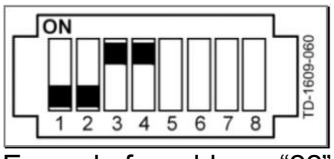
Address= ***10*** + 1 + 2 + 4 + 0 = **17**



Example for address “11”

DSW2.1 = ON (value=1)
DSW2.2 = OFF (value=0)
DSW2.3 = OFF (value=0)
DSW2.4 = OFF (value=0)

Address = 10 + 1 + 0 + 0 + 0 = 11

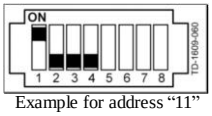


Example for address “22”

DSW2.1 = ON (value=0)
DSW2.2 = OFF (value=0)
DSW2.3 = OFF (value=4)
DSW2.4 = OFF (value=8)

Address = 10 + 0 + 0 + 4 + 8 = 22

Fo on on how the EATON xChargeIn is configured through the DIP-sw tallation manual chapter “DIP-switch settings”.



Example for address “11”

DSW2.1 = ON (value=1)
DSW2.2 = OFF (value=0)
DSW2.3 = OFF (value=0)
DSW2.4 = OFF (value=0)

Address = 10 + 1 + 0 + 0 + 0 = 11

4 Possible faults

4.1 The EATON xChargeIn remains black after switching on

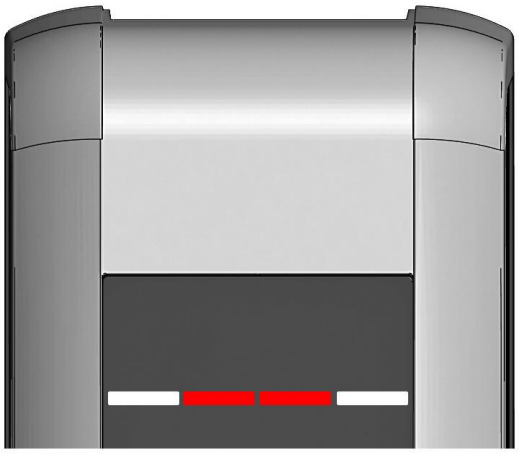
If the EATON xChargeIn does not display anything after switching on, please check the glass tube fuse on the left hand side of the connection area. For replacing the fuse please see the instructions in the installation manual in the “Replacing the fuse” chapter.

4.2 General faults (are displayed in the colors red-white)

The EATON xChargeIn has a status LED which displays color codes for specific faults that can occur during operation or after connecting the charging cable. The displayed faults can have internal causes (charging station hardware or software), external causes (incorrect configuration of the EATON xChargeIn, fault-current circuit breaker, power supply) or causes which specifically affect the power unit.

Note: You can find the color codes for the general operating states in the user manual in the "Status LED" chapter.

Display example



E.g. Fault 6 (internal fault)

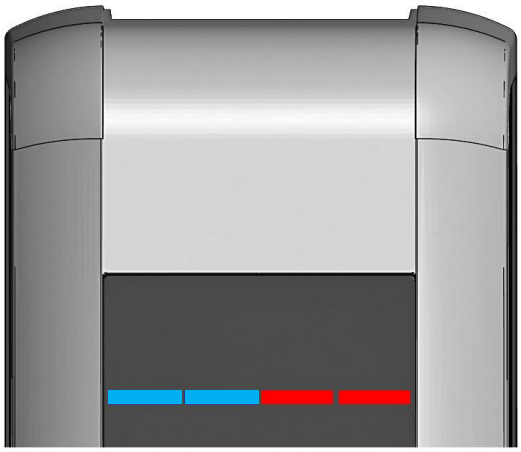
Fault 1 - External fault *The status LED displays 0001 "white white white red"*  *Plug Lost - The plug was pulled out during the charging procedure* *Error Log Entry „1“*	Check the plug connection and start the charging procedure again

Fault 2 - External fault *The status LED displays 0010 "white white red white"*  *Plug Undefined - The plug was not recognized* *Error Log Entry „2“*	Check whether a standard-compliant plug is being used
Fault 3 – Hardware warning *The status LED displays 0011 "white white red red"*  *Overheat – General temperature exceedance - the charging station is overheated.* *Error Log Entry „3“*	Interrupt the charging procedure and continue with it at a later point in time. If the fault occurs again, check whether the device is installed at a suitable location (see installation manual in the "General criteria for the site selection" chapter)
Fault 4 - External fault *The status LED displays 0100 "white red white white"*  *Lock Failed - The plug could not be locked* *Error Log Entry „4“*	Check whether you are using a standard-compliant plug and whether there are mechanical damages present
Fault 5 - External fault *The status LED displays "white red white red"*  *Ohmic Load - The charging station has not detected an electric vehicle but rather a prohibited load* *Error Log Entry „5“*	Only standard-compliant electrically operated vehicles may be charged at the EATON xChargeIn. Remove the prohibited consumer and start the charging procedure again
Fault 6 - Internal fault *The status LED displays 0110 "white red red white"*  *Power Mismatch - There is a fault in the power supply* *Error Log Entry „6“*	The power unit has an unspecified fault. Disconnect the vehicle and start the charging procedure again. If the problem persists, please contact your dealer or service partner
Fault 7 – Configuration fault *The status LED displays "white red red red"*  *IBN Mode - The charging station is in commissioning mode* *Error Log Entry „7“*	Check the DIP switch settings for correct configuration and start the charging procedure again. (See installation manual in the "DIP switch settings" chapter)

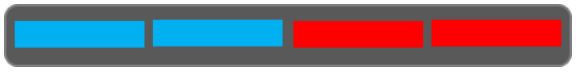
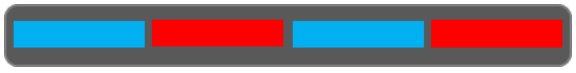
Fault 8 - Internal or external fault *The status LED displays "red white white white"*  *Short Circuit - The charging station has detected a short circuit* *Error Log Entry „8“*	Check cable and plug for damage and replace the defective components. Start the charging procedure again. If the problem persists, please contact your dealer or service partner
Fault 9 – Configuration fault *The status LED displays "red white white red"*  *Config Error - The charging station has detected a configuration fault* *Error Log Entry „9“* ***Fault 10 – External fault*** *The status LED displays "red white red white"*  *13 Amps Error - The charging station has detected a prohibited charging cord.* *Error Log Entry „A“*	Check the DIP switch settings (See installation manual in the "DIP switch settings" chapter) For compatibility reasons, units that have been configured for 32A charging current do not accept 13A charging cords. Use a cord with higher amperage rating or lower the max. charging current of the unit (DIP Switches)

4.3 Fault in the power unit (is displayed in the colors red-blue)

Display example



E.g. Power unit fault 3 (overload)

Power unit fault 1 – Hardware fault *The status LED displays 0001 "blue blue blue red"*  *Hardware fault - Protective contacts in the device are stuck. Switch-on test failed* *Error Log Entry „8001“*	Please contact your dealer or service partner
Power unit fault 2 - External folder hardware fault *The status LED displays 0010 "blue blue red blue"*  *Voltages out of range - The charging station has detected a phase fault* *Error Log Entry „4002“*	Check the charging station for correct connection to the mains supply. If the device is connected correctly and the fault continues, please contact your dealer or service partner
Power unit fault 3 - External fault *The status LED displays 0011 "blue blue red red"*  *Overload - The connected vehicle charges with more current than permitted* *Error Log Entry „4003“*	Please contact the vehicle manufacturer
Power unit fault 4 - External fault *The status LED displays "blue red blue blue"*  *Pilot not OK - No pilot contact was detected* *Error Log Entry „4004“*	Check cable and plug for possible damage
Power unit fault 5 - Internal fault *The status LED displays 0101 "blue red blue red"*  *Internal RCD detection - The internal overload or fault-current mechanism has triggered* *Error Log Entry „8005“*	Disconnect the charging station briefly from the mains (FI or circuit line breaker) and started charging procedure again. If the problem persists, please contact your dealer or service partner

Power unit fault 6 - Configuration or hardware fault *The status LED displays 0110 "blue red red blue"*  *Metering configured but not working - The charging station has detected a metering function fault.* *Error Log Entry „8006“*	Check to see if the DIP switch settings are configured correctly (See installation manual in the "DIP switch settings" chapter). If the DIP switches are configured correctly and the fault continues, please contact your dealer or service partner
Power unit fault 7 - Internal hardware fault *The status LED displays 0111 "blue red red red"*  *Contactor FB not OK - The internal switching-current or fault-current mechanism has triggered* *Error Log Entry „8007“*	Disconnect the charging station briefly from the mains (FI or circuit line breaker) and start charging procedure again. If the problem persists, please contact your dealer or service partner
Power unit fault 8 - Internal software fault *The status LED displays 1000 "red blue blue blue"*  *Configuration missing - An internal software fault is present* *Error Log Entry „8008“*	Please contact your dealer or service partner
Power unit fault 9 - Internal software fault *The status LED displays 1001 "red blue blue red"*  *Nwdog not triggered - An internal software fault is present* *Error Log Entry „8009“*	Please contact your dealer or service partner
Power unit fault 12 – Temperature fault *The status LED displays 1010 "red blue red blue"*  *Temperature - The power unit of the charging station has detected an overtemperature* *Error Log Entry „800c“*	Interrupt the charging procedure and continue with it at a later point in time. If the fault occurs again, check whether the device is installed at a suitable location (see installation manual in the "General criteria for the site selection" chapter)

Power unit fault 13 - Internal software fault *The status LED displays 1101 "red red blue red"*  *Contactor switched wrong - An internal software fault is present* *Error Log Entry „800d“*	Please contact your dealer or service partner
Power unit fault 14 – Internal software warning *The status LED displays 1110 "red red red blue"*  *State (change) error in FSM - An internal software fault is present* *Error Log Eintrag „800e“*	Disconnect the vehicle from the charging station and start the charging procedure again. If the problem persists, please contact your dealer or service partner
Power unit fault 15 – Internal software warning *The status LED displays 1111 "red red red red"*  *Unknown State - An internal software fault is present.* *Error Log Eintrag „800f“*	Disconnect the vehicle from the charging station and start the charging procedure again. If the problem persists, please contact your dealer or service partner

5 Mechanical damage and replacement parts

5.1 The device shows damage after unpacking

If you suspect you have received a defective device, please fill out the accompanying "Repair Order" form and return the device to your dealer or service partner.

5.2 Which replacement parts can be ordered?

The design housing, as well as the cable hanger can be ordered as replacement part. Other defective parts on the EATON xChargeIn must be replaced by EATON in the course of a "Repair Order" (accompanying form). Please contact your dealer or service partner if you have additional questions.

6 Warranty

The EATON xChargeIn has a 24 month warranty. Please contact your dealer or service partner for warranty claims.