
# X1 CLOUD CONNECT

# USER MANUAL

V3.0 PUBLISHED SEP-2024

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# INTRO

## OVERVIEW OF THE CLOUD CONNECT V3.0

Welcome to the X-1 Cloud Connect v3.0 User Manual. The X-1 Cloud Connect is an innovative IoT solution designed to optimize fueling operations by integrating advanced data collection, automation, and telematics features.

This powerful device facilitates seamless communication between fuel trucks, handheld devices, and cloud-based systems, improving operational efficiency and accuracy.

X-1 Cloud Connect is equipped with a specialized MIMO (Multiple Input, Multiple Output) antenna that manages cellular, GPS, and Wi-Fi signals to ensure reliable communication in real-time. It offers full GPS tracking, truck telematics, and advanced workflow automation, making it the ideal tool for modern fueling operations.

With its streamlined installation, globally certified LTE module, and intuitive display diagnostics, the X-1 Cloud Connect is built to deliver a user-friendly, efficient experience while significantly reducing operational costs and errors.
In this manual, you'll find detailed instructions on installation, setup, troubleshooting, and how to maximize the performance of your X-1 Cloud Connect.

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# KEY FEATURES

The X-1 Cloud Connect v3.0 is a powerful and versatile IoT device designed to enhance fueling (metered) operations with the following key features:

- **Seamless Integration:** The device connects effortlessly with the TCS 3000 fuel register, streamlining operations and improving data accuracy in fueling processes.
- **Two-Way Data Automation:** Unlike traditional systems, the X-1 Cloud Connect reads and writes to the register, enabling two-way communication. This allows for real-time data updates and control, reducing manual input and errors while enhancing operational flexibility.
- **Full GPS Support:** Tracks truck locations and fueling patterns in real time without additional hardware.
- **Telematics Support:** With additional X-1 Truck Connect hardware, you can connect to the truck's chassis via the CANBUS or OBD II port. This enables the monitoring of key vehicle parameters such as engine health, fuel consumption, and other operational data, improving vehicle health monitoring and maintenance planning.
- **MIMO (Multiple Input, Multiple Output) Antenna:** Ensures stable cellular, GPS, and Wi-Fi signals in tough environments.
- **Improved Workflow:** Speeds up ticket capture and reduces downtime for more efficient fuel management.
- **LCD Status Display:** Provides real-time diagnostics and network info on a 2.4-inch color display.

These features make the X-1 Cloud Connect a game-changing tool for optimizing fueling operations, offering enhanced efficiency, reduced costs, and improved data accuracy.

# GET STARTED

## PACKAGE CONTENTS

When you unbox your X-1 Cloud Connect v3.0, ensure that the following items are included in the package:


### X-1 CLOUD CONNECT

### MIMO ANTENNA

# CONNECTIONS

UNDERSTANDING ALL YOUR WIRES

## ANTENNA CABLES

X-1 Cloud Connect uses a custom designed MIMO antenna multi-signal (Multiple Input, Multiple Output) antenna that handles cellular, GPS, and Wi-Fi signals, ensuring stable communication and performance even in challenging environments. Each signal has its own dedicated cable, clearly labeled for easy identification and proper connection


- CEL: Cellular signal
- GPS: GPS tracking
- WIFI: Wi-Fi signal

## X-1 CLOUD CONNECT

Your X-1 Cloud Connect has several connectors on both ends of the device. One side hold the 3 antenna connections.


Antenna Ports: Ports CEL, GPS, and WIFI allow for connection to the included MIMO antenna.

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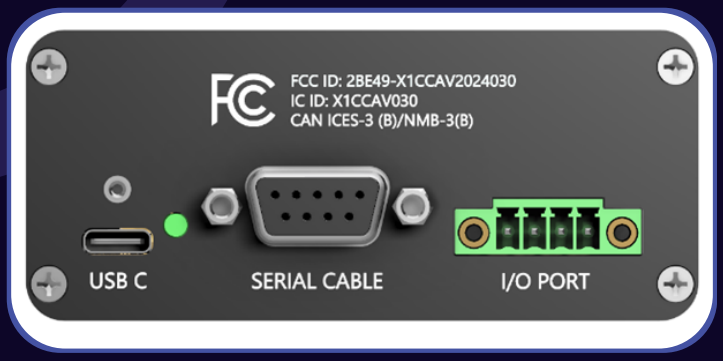
The other side has your Serial Cable, I/O Port and the USB Port.




Serial Cable: Supports serial communication with TCS 3000 register and powers the X-1 Cloud Connect.

I/O Port: This port is used for digital input/output connections.

USB C: Used to program and debug the X-1 Cloud Connect.

# INSTALL

## CORRECT SETUP IS IMPORTANT

Ensuring that your TCS 3000 register is correctly configured is vital to the successful operation of the X-1 Cloud Connect. Proper setup guarantees seamless communication between the fuel register and the device, allowing for real-time data collection, automation, and reporting. Misconfigurations can lead to data errors, delays in fuel ticket processing, and even system malfunctions. Following the compatibility steps ensures your system is ready for smooth, error-free operation and optimal performance.

## BEFORE INSTALLING

Before beginning the installation of the X-1 Cloud Connect, confirm the following minimum requirements to ensure proper operation and workflow:

### SERIAL CABLE

Verify that the serial cable DB9 (RS232) from the TCS 3000 register is installed and routed to the cab of your refueler. In some newer trucks you will find an Ethernet style connector (RJ45). If the connector is not a DB9 but an RJ45, contact Support to request a DB9-RJ45 adapter.

DB9 (RS232)

RJ45 (Ethernet Style)

## POWER SUPPLY ☑

The X-1 Cloud Connect is powered through the register via the pin 9 serial connector. You can confirm there is power in the Serial Cable measuring the voltage between pin 5 (GND) and pin 9 (VDC) of the Serial connector. If the device is not receiving power, refer to the troubleshooting section below.

## REGISTER CONFIGURATION ☑

Ensure the TCS 3000 register firmware version is higher than 1.4.4.1156.
Configure Customer IDs as follows:

- CUSTOMER ID 1: TAIL #
- CUSTOMER ID 2: AIRLINE CODE/GA
- CUSTOMER ID 3: FLIGHT #
- CUSTOMER ID 4 = EMPLOYEE ID

CUSTOMER ID 1 and CUSTOMER ID 4 ***must*** be set as REQUIRED or ENFORCED, depending on the TCS 3000 software version. The other IDs should not be set as required.

## MULTIPLE METERS ☑

If using a truck with two meters installed, confirm that the connection between the registers is functioning correctly. Refer to the troubleshooting steps for more details.

## FUEL TYPES ☑

Verify the name of the fuel product set in your register. If you have more than one register connected make sure that the product names in each one match.

## PRINTER SETTINGS ☑

If a printer is regularly used, set it to automatic printing mode.

## DATE AND TIME SETTINGS ☑

Ensure that the date and time on the register are correctly set.

# DID YOU KNOW YOUR TCS 3000 HAS A BATTERY?

The battery in the TCS 3000 ensures that the register retains critical settings, such as time, date, and configuration, even when power is lost. It's important to check the battery periodically to avoid system issues.

For detailed instructions on the battery, accessing settings, updating product names and the firmware, refer to your TCS installation or operations manual.

# INSTALLING

Next we will take you through the steps required to install your X-1 Cloud Connect and antenna. If you are installing the X-1 Cloud Connect for use in a fuel farm or other fixed environment, please contact support through our chat feature for placement and activation assistance. You can access the chat bubble inside X-1FBO or by visiting www.x1fbo.com/x1cloudconnect and selecting the chat bubble in the lower corner of the page.

## STEP 1 - MOUNTING YOUR ANTENNA

Equipped with a magnetic base, the MIMO antenna allows for secure installation on most metal surfaces. Proper placement of the antenna is critical for optimal signal strength, ensuring maximum device performance. The antenna must be mounted in a strategic location that minimizes obstructions and interference, allowing the device to maintain high-speed communication and stable connectivity.

Identify a location, the highest practical unobstructed location on the truck that is:

- Avoiding other metal structures around the antenna
- At least 12 inches (30cm) away from other antennas installed on the truck
- At least 12 inches (30cm) away from windows

Route the antenna cables inside the truck taking care not to damage the cable or connectors. Use caution not to cross other wires at 90-degree angles to minimize electromagnetic interference or place the antenna cable in a location that can cause damage to the cable such as routing it through the trucks door.

## STEP 2 - MOUNTING YOUR X-1 CLOUD CONNECT

Since each fuel truck can vary in design, it's important to carefully consider the placement of the X-1 Cloud Connect to ensure optimal performance and longevity. Please follow these guidelines when choosing an installation location:

- Optimal Placement:
  - Install the device inside the fuel truck's cab, ideally at shoulder level between the front seats, where the display can be visible to the operator or technician for troubleshooting.
  - Ensure the location allows for easy access but does not obstruct the driver's view or interfere with vehicle controls.
- Avoiding Damage:
  - Be careful to not install the device in areas where it could be bumped, knocked, or damaged during daily operations.
  - Avoid placing it near moving parts, heavy equipment, or areas used for storage in the cab.
- Protection from Elements:
  - Do not install the device where it is constantly exposed to direct sunlight or ultraviolet (UV) rays, as prolonged exposure can degrade the device and affect its performance.
  - Keep the device away from sources of direct heat or moisture.

## STEP 2 - CONTINUED

- Cable Management:
  - Ensure that the antenna cables do not cross themselves or other cables at a 90-degree angle as this can create significant signal interference between the device and antenna.
  - Route all cables neatly to prevent them from becoming tripping hazards or getting caught in vehicle mechanisms.
  - Use cable ties or clips to secure loose cables and avoid sharp bends that could damage them.

By carefully selecting the installation location and following these guidelines, you can prevent potential damage to the X-1 Cloud Connect and ensure it operates effectively within the demanding environment of fuel truck operations.

## STEP 3 - CONNECTING YOUR CABLES


### COAX CABLES

Connect the coax cables from the MIMO antenna (CEL, GPS, WIFI), ensuring the labels on the antenna match the labels on the X-1 Cloud Connect. Hand-tighten these connections; no tools are needed.

### DB9 (RS232) CABLE

Connect the serial cable from the TCS 3000 to the Serial Port on the X-1 Cloud Connect. The serial cable includes screws or knobs to secure the connection. Use a screwdriver if needed to hand-tighten these screws without over-torquing.

## STEP 3 - CONTINUED

### RJ45 ADAPTOR

Connect the RJ45 Adaptor to your X-1 Cloud Connect and use a screwdriver to secure the adaptor to the device. Then plug in your RJ45 cable into the adaptor.

## STEP 4 -ACTIVATING YOUR DEVICE

Once installed and powered, your X-1 Cloud Connect can be activated. With both the truck and X-1 Cloud Connect turned on, start your activation process by using our chat feature. You can access it either inside the X-1FBO platform or by visiting www.x1fbo.com/x1cloudconnect or scan the QR code below and select the chat bubble in the lower corner of the page. Open the chat at tell use “I need to activate an X-1 Cloud Connect”. When contacting support be sure to have the following information ready:

- Truck Name/ID
- Fuel Type (The Fuel Type Names and IDs from your register are helpful. Note that the Item ID can be different in each register)
- Number of Registers on the truck
- X-1 Cloud Connect Number and any startup screens or messages shown when powering the device.

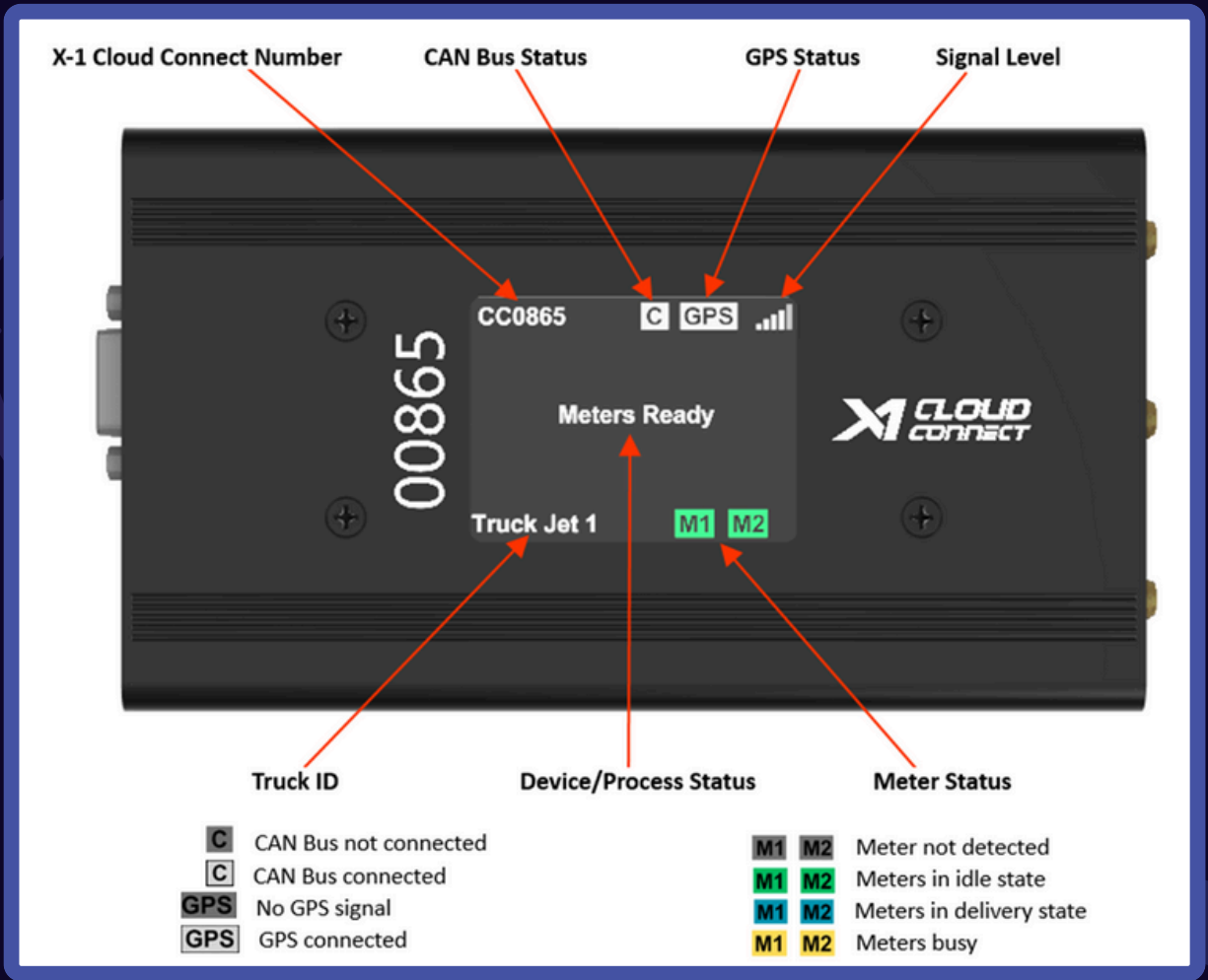
A specialized X-1 Cloud Connect representative is required for activation and is generally available from 0600 to 1700 Eastern Time, Monday through Friday. Once an X-1 Cloud Connect specialist is available, they will guide you through the activation steps.

# OPERATION

## X-1 CLOUD CONNECT DISPLAY

The Cloud Connect v3.0 display provides essential real-time information about the device's operational status, including network connection, signal strength, vehicle data, and system alerts. The display's enhanced diagnostics capabilities allow for efficient troubleshooting and rapid identification of issues.

### UNDERSTANDING YOUR DISPLAY



## DEVICE PROCESSES & MESSAGES

The X-1 Cloud Connects display screen provides essential information about the device's operational status. It can show various messages related to network connectivity, system alerts, truck data, and overall device health. These messages are designed to help you quickly assess the performance and troubleshoot any potential issues

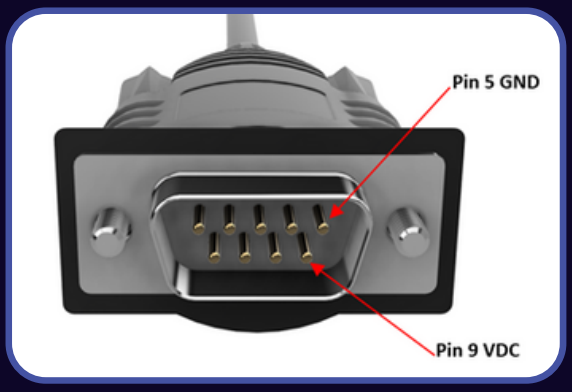
For a complete list of display messages and their meanings, please visit the X-1 Cloud Connect Help Center at https://help.x1fbo.com/en/collections/5898356-x-1-cloud-connect-help-center or scan the QR code below.

# TROUBLESHOOTING

While every X-1 Cloud Connect goes through an extensive quality control process and is tested on registers before shipping, the variations in trucks, antenna locations, signal quality and register settings may result in unforeseen issues. Below are troubleshooting tips for common problems:

## X-1 CLOUD CONNECT WON'T TURN ON

Measure voltage between pin 5 (GND) and pin 9 (VDC) of the TCS3000 serial cable. The reading should be between 12-24V.




If no power is detected, the TCS 3000 may require configuration changes to ensure power is supplied through the 9-pin connector. This step involves opening the register, which should be performed when updating firmware.

## X-1 CLOUD CONNECT WON'T TURN ON

- Inspect the antenna, cables, and connectors for damage.
- Ensure the coax cable labeled CEL is connected to the correct port on the device.
- Check that the center pin inside the antenna connector is not damaged or missing.

## 2ND REGISTER DOES NOT CONNECT

If your truck has two meters but only one is detected by the X-1 Cloud Connect, verify the following TCS 3000 settings:

- **Meter 1 -** Shift + Mode -> System Menu -> System Settings -> Connectivity -> Network Settings -> Address -> 1
- **Meter 2 -** Shift + Mode -> System Menu -> System Settings -> Connectivity -> Network Settings -> Address -> 2
- **Both Meters -** Shift + Mode -> System Menu -> System Settings -> Connectivity -> RI Settings -> Select Mode -> RS232

If these parameters are correct but the second meter is still not recognized, verify the physical Daisy-Chain connection between the two meters.

## OTHER ISSUES OR QUESTIONS

You can find more troubleshooting tips at https://help.x1fbo.com/en/collections/5898356-x-1-cloud-connect-help-center or scan the QR code below.

# TECHNICAL SPECIFICATIONS

## MOBILE

| | |
|---|---|
| Cellular Module | LTE Cat M1/Cat NB2/EGPRS |
| 3GPP Release | |
| Frequency Bands | Cat M1: B1/B2/B3/B4/B5/B8/ B12/B13/B18/B19/B20/ B25/B26/B27/B28/B66/ B85<br>Cat NB2: B1/B2/B3/B4/B5/B8/ B12/B13/B18/B19/B20/ B25/B28/B66/ B71/B85<br>GSM/EDGE: 850/900/1800/1900 MHz |
| Data Transmission | Cat M1: Max. 588 (DL) Max. 1119 (UL)<br>Cat NB2: Max. 127 (DL) Max. 158.5 (UL)<br>EDGE: Max. 296 (DL) Max. 236.8 (UL)<br>GPRS: Max. 107 (DL) Max. 85.6 (UL) |

## GLOBAL NAVIGATION

| | |
|---|---|
| Supports | GPS/GLONASS/BeiDou/Galileo?QZS |

## WIRELESS

| | |
|---|---|
| WiFi Mode | 2.4 GHz, IEEE 802.11 b/g/n |
| Bluetooth | Bluetooth 5.2 |
| Modulation Mode | CCK/ BPSK/ QPSK/ 16QAM/ 64QAM |

## OPERATING CONDITIONS

| | |
|---|---|
| Operating Voltage | 12 - 24 VDC |
| Temperature | –40 °C ~ +85 °C |
| Humidity | 30% - 60% |

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## INTERFACES

| | |
|---|---|
| Antennas | 1 x SMA for Cellular, 1 SMA for GPS, 1 SMA for Wi-Fi |
| USB | 1 x USB C for programming and debug |
| Serial | 1 x DB9 for RS232 communication and power input |
| I/O | 1 x Digital Input, 1 x Digital Output. Can be used for UART communication |
| Display | 1 x 2.4-inch LCD Color Display |
| SIM | 1 x internal Nano SIM slot 4FF |
| Material | Aluminum Housing |
| Dimensions | 164 x 88 x 38 mm |

## PHYSICAL SPECIFICATIONS

| | |
|---|---|
| Material | PC |
| Dimensions | 127.7 x 71.7 mm |
| Connectors | 1 x SMA for Cellular, 1 x SMA for GPS, 1 x SMA for Wi-Fi |
| Cable Length & Type | RG174LL, 3000 mm |

## CERTIFICATIONS

| | |
|---|---|
| Regulatory | FCC, IC |

# SAFETY & COMPLIANCE

## SAFETY GUIDELINES

### PHYSICAL SAFETY GUIDELINES

- Do not expose the device to water or moisture
- Ensure proper ventilation around the device

## COMPLIANCE

The Cloud Connect v3.1 complies with FCC and IC standards.

### FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation

### WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### CLASS B DEVICE COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed-

## CLASS B DEVICE COMPLIANCE - CONT'D

- and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## RADIATION EXPOSURE STATEMENT

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

## IC COMPLIANCE

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

French Translation: Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio

## IC COMPLIANCE - CONT-D

exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
1.L'appareil ne doit pas produire de brouillage, et
2.L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## IC RADIATION EXPOSURE COMPLIANCE

The radiated energy from the antennas connected to the wireless adapters conforms to the IC limit of the RF exposure requirement regarding IC RSS-102, Issue 6 clause 4.3.

French Translation: L'énergie rayonnée par les antennes reliées aux adaptateurs sans fil est conforme à la limite IC de l'exigence d'exposition aux RF concernant RSS-102, Issue 6 clause 4.3.

# SUPPORT
# CONTACTS

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