

Installation, Calibration, Set Up & Operation Manual



CubeFreight System



ED3/ED4-DIM V138

General Installation Guide

This CubeFreight ED3/ED4-DIM Series guide describes how to install, calibrate, set up and use your onboard systems. Following the instructions in the **ADMINISTRATION MENU** you will be able to get the system set up, calibrate quickly. In the event that you require additional assistance, please contact customer support via e-mail at support@skidweigh.com , visit www.skidweigh.com or contact us at the address or contact number below:

Integrated Visual Data Technology Inc.

3439 Whilabout Terrace, Oakville, ON, Canada, L6L 0A7 Phone: 905-469-0985

Safety

Always disconnect the vehicle battery while installing CubeFreight system or any other electronic product. Make sure that main electrical cable, pressure transducer and any other associated cables are securely mounted and do not impede any of the vehicle's controls. Use care when routing the components cables. Route the cables where they will be protected. Use commonly accepted install practices for after market industrial vehicle electronic devices. The installation of the systems should only be performed by an acknowledged lift truck dealer technician or end user electro and hydraulic technical installer.

Here are two acceptable methods of making a wire connections:

- * Soldering your connections (recommended)
- * Crimp connectors (with the use of the proper crimping tool)

Regardless of the method you choose, ensure that the connection is mechanically sound and properly insulated. Use high quality electrical tape and shrink tubing where necessary. This product is connected directly to the vehicle's ignition switch, 12 to 55 VDC. There is no on-off switch on the unit.

Electro-Magnetic Compatibility

CE conformity to EC directive 89/336 (EMC) by application of harmonized standards: Interference stability EN 61000-6-2 and EN 61326-1 interference emit EN 61000-6-3, EN 61326-1 for the pressure transducer.

CubeFreight

Our policy is one of continuous improvement and the information in this document is subject to change without notice. The software version is displayed on the LCD display once the power is turned on to the system.

Overview of components

The standard CubeFreight system consist of two main components:

- **Digital indicator** ** with wiring harness, mounting bracket (*Bluetooth module included*)
- Hydraulic pressure transducer with 3 wires cable
- Installation & calibration manual and operator usage instruction

**** The CubeFreight configuration might consist of additional hardware.**

Depending on the system application the additional hardware such as USB port, operator access control RFID card reader, impact module, strobe alert modules, RF module, etc., might be included in the indicator.



Onboard load weighing operational principal

The load weight operational principal is based on the hydraulic pressure transducer mounted in the vehicle lifting hydraulic circuit that will automatically activate the “weighing cycle / specific algorithm” every time a skid load is lifted just above the ground. The increase in pressure is converted in an electronic signal at the sample rate of 16000 readings per measurement session which is converted into a load weight reading.

Pressure transducer installation

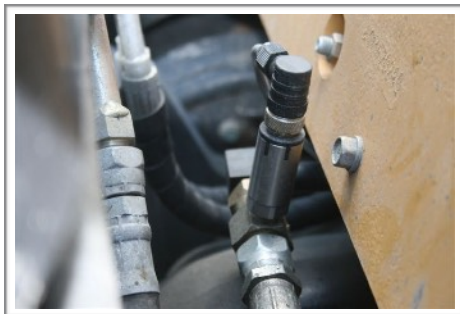
The pressure transducer must be installed in the lifting hydraulic line between the lift control valve and lift cylinder(s). Mount a T-piece in hydraulic lift line. In some cases you can install the pressure transducer in the flow divider, drilling and tapping for 1/4”-18 NPT male in spare plug (if only single or double mast configuration) or in the body of the flow divider. Also, you can drill and tap on any “larger elbow” that might be available in the hydraulic lifting circuit found in vehicles with larger hoses to accommodate larger vehicle lifting capacities.

Pressure transducer installation precautions

Before installation of the pressure transducer the hydraulic lift circuit must be pressure free.

There are two ways to do that:

1. Place the forks on the ground in their lowest position and make the hydraulic system pressure free by tilting the mast forward. The chain(s) should be slack.
2. Lift the forks and position them on the top of a supporting fixture. Start lowering the lifting cylinder into its lowest position. Be sure that chain(s) is slack.



Make sure that that installed pressure transducer will not touch any moving assemblies of the vehicle while in the normal operation.

Pressure transducer has 1/4”-18 NPT male thread. **Use thread seal to ensure tight fit.**

Selecting the mounting location for digital indicator

Use the mounting bracket with the anti vibration mount and fasten digital indicator on the vehicle dashboard, side railing on the right hand side or preferably on the overhead guard. There are many examples of mounting locations that will depend on the vehicle model. However, additional mounting items such as a flat brackets may be needed to help secure the unit to upper right corner of the guard or side railing.

Choose the correct location and make sure that:

- Indicator is visible and within reach of the operator
- Location so that operator has a clear unobstructed view of the working environment

Compact size



All of the CubeFreight systems are compact, housing dimension of only 120 x 80 x 55 mm are ideal for the installations to material handling vehicles of all kinds of vehicles. All systems are internally short circuit protected with resettable fuse. There is no need to install external inline fuse in orange wire that is connected to the ignition switch.

Electrical connections



All CubeFreight systems operate from 12 to 55 VDC.

POWER CONNECTION

Orange Wire (+) Ignition switch On position

Brown Wire (-) Battery negative

PRESSURE TRANSDUCER CONNECTION

- **Red Wire**, connect to **RED** wire of the pressure transducer cable

- **Black Wire**, connect to **BLACK** wire of the pressure transducer cable

- **White Wire**, connect to **WHITE** wire of the pressure transducer cable

Vehicle Disable Function (If applicable)

- **BLUE** Wire

- **GREEN** Wire

The application where operator access control to operate the vehicle via keypad or RFID card reader is required use two wires **BLUE** and **GREEN** to interface with vehicle seat switch.

Connect **BLUE** and **GREEN** wire in **series** with one of the wire connected to the seat switch.

The indicator internal relay contacts SPST are normally open and connected to **BLUE** and **GREEN** wires.

When valid operator keypad ID# or RFID card is inputted into the system the internal relay will be activated, contact will close and stay closed until the ignition switch is turned OFF.



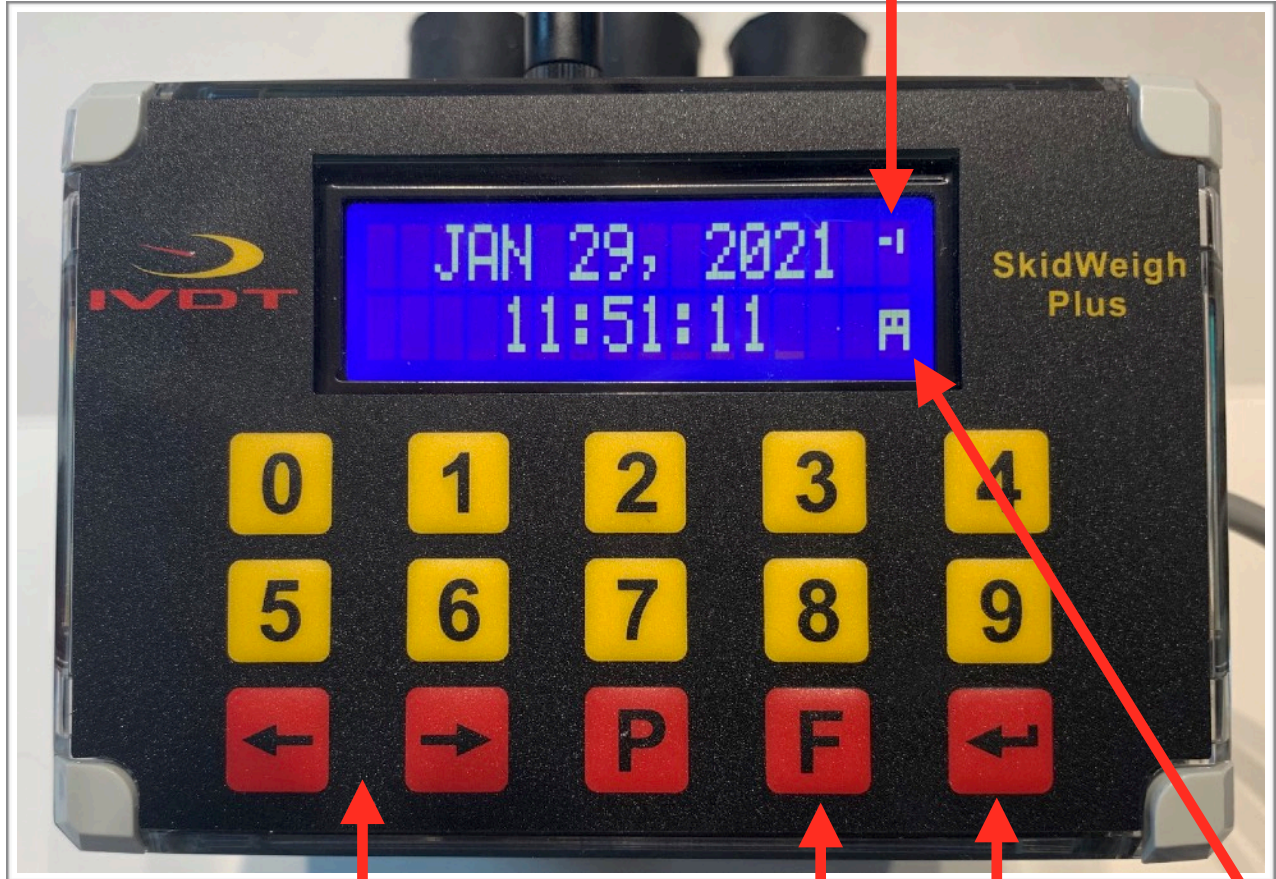
Pressure transducer cable

- **White Wire**, pressure transducer signal 0 to 2,5 VDC

- **Black Wire**, signal negative

- **Red Wire**, power supply + 11 VDC

Impact Module Icon



SCROLL

F 9 Administrative Menu
F 0 Operator Menu

“Enter key”

Bluetooth Icon
Bluetooth Barcode
Scanner Connection
or Bluetooth Printer

Note: The keypad operator access control has a capability for input of 150 valid operators ID's, up to 3 digits maximum, valid range from 1 to 999.

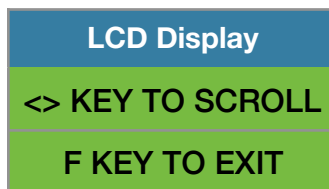
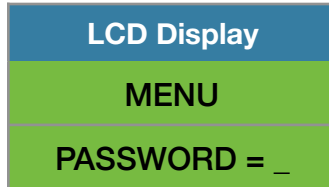
- All new systems are supplied with default operator ID# 111.
- All new systems with RFID reader are supplied with one valid RFID card.

Administration Menu Instructions

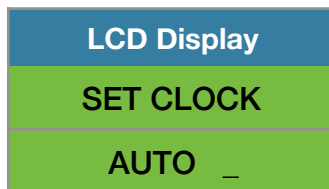
(Set up for Time/Date, Vehicle ID#, Impacts Setup, OSHA Safety, USB Data Upload, Weight Scale Calibration)

To enter into the Administration Menu the LCD Display must show Data / Time. Press **F** key and then number **9** and input the password **521**.

Use < > keys to scroll the menu. Follow the LCD instructions.



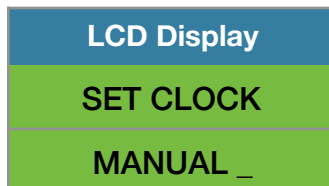
Date / Time Set Up



Use left ◀ and right ▶ arrow key to change from AUTO to MANUAL Date/Time set up.

Note: AUTO set up refers to system utilizing a wireless RF platform with automatic Date /Time update from IVDT Base Station communication and programming hub.

For the applications without Base Station, select MANUAL _ set clock and follow the LCD instructions.

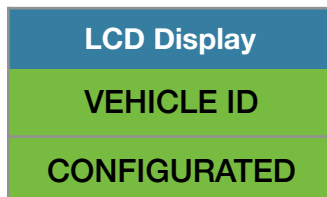
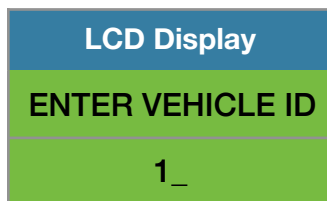
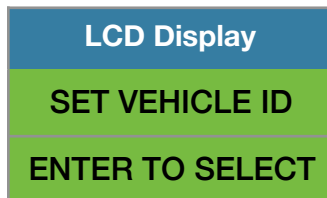
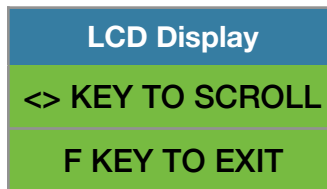




Press “**Enter key**” ↵ to confirm the setting. The cursor will automatically move to the next item to be changed (Month, Day, Year, Hours, Minutes, Seconds). On the last correction, seconds item press **Enter key** ↵ to confirm new Date / Time set up.

Set vehicle ID#

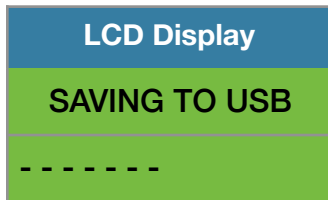
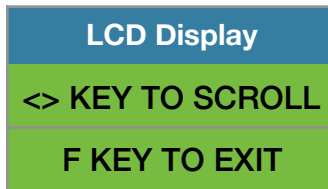
- Maximum input number for vehicle ID# is 3 digits.



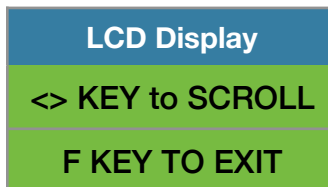
Saving data to USB memory stick (If applicable)



- Insert memory stick into USB port
 - With LCD display showing Date /Time press **F** key and then number **9** and input password **521**.
- Follow instructions shown on the LCD display.



When the system has finished uploading the data to the USB memory stick the LCD display will prompt you to erase the SDRAM. Once you have made your selection **Y** or **N** the system will automatically bring you back to the main screen in the supervisor menu.



Weighing scale calibration

The CubeFreight system calibration is automatic and is done by lifting empty and loaded forks (or any other attachment such as paper clamp) just above the ground. **MAKE SURE THAT YOU HAVE A KNOWN LOAD WEIGHT AND KEEP IT NEARBY TO COMPLETE THE CALIBRATION.**

For the best results use at least minimum calibration load test weight of 30 to 50% of maximum lifting capacity of the lift truck. Use customer floor scale or find a known skid load weight within the operational facility.

Important:

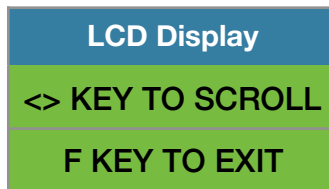
The weighing calibration must be done with known load weight in pounds.

Note:

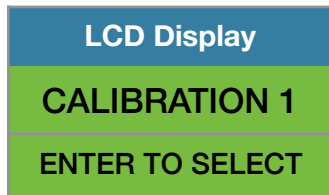
With the system calibrated in pounds the end user can change load weight display from pounds to kg by pressing **F** key and number **0**. Use **< >** key to **WEIGHT DISPLAY**, select kg and press **“Enter key”** ↵.

Calibration

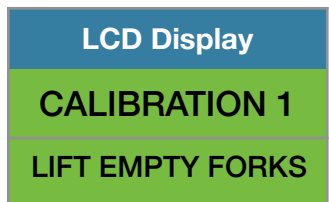
With LCD display showing date /time, press **F** key and then number **9** key. Input password **521** and scroll to **“Calibration1”** shown on LCD display and press **“Enter key”** ↵.



Lower the empty forks to the ground. There should be no hydraulic pressure in lift hydraulic circuit. Follow instructions shown on the LCD display

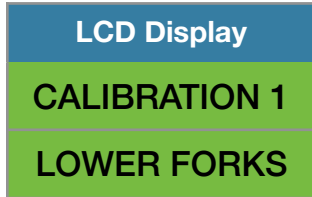


Press **“Enter key”** ↵ .

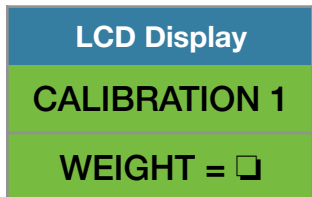


Lift empty forks just above the ground the same way that you would normally do when lifting loads. Do not slow down this lifting operational cycle, do not tilt the load, do not lift to different forks heights or move vehicle. **Lift empty forks just above the ground.**

After few seconds the LCD display will show “Lower Forks”.

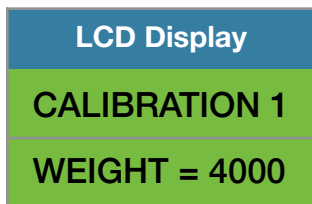


Lower the empty forks to the ground. The LCD display prompt you to input known calibration load weight.

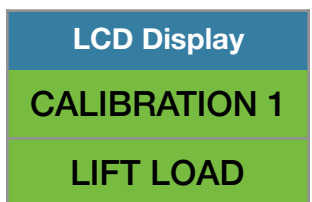


Pick up a known load weigh and **lower the loaded forks to the ground.**

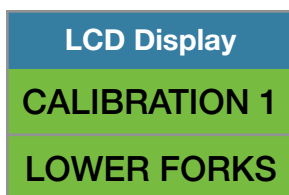
(Our example of the known load weight is 4000)

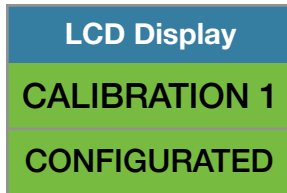


Input into the system the known load weight of 4000 into the LCD display and press “Enter key” ↵.



Lift loaded forks just above the ground. After few seconds the calibrated load weight value of 4000 will be stored in the system memory. The LCD display will prompt you to lower “**LOWER FORKS**”.





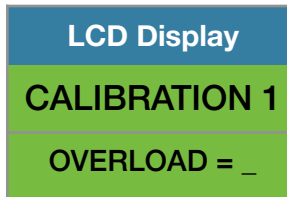
As soon the loaded forks are lowered to the ground LCD will show Data / Time.

System is ready to be used!



Overload warning alert (If applicable)

As soon as the loaded forks are lowered to the ground during the weighing function calibration the LCD will prompt you to input the overload value for your vehicle application.



Input the overload value for your vehicle application and press **“Enter key”** ↵.

The LCD display will go back to default Data / Time display.

The load weight calibration and overload set up function is finished

Set Vehicles Impacts (If applicable)

To enter into the **Supervisor Menu**, press **F** key and than number **9** key and input the password **521**.

Use left ◀ and right ▶ arrow key (bottom left side of the keypad) to change G's value.

LCD Display
MENU
PASSWORD = _

LCD Display
SET IMPACTS
ENTER TO SELECT

LCD Display
ENTER LOW IMPACT
6.0 G _

LCD Display
ENTER HI IMPACT
6.0 G _

LCD Display
ENTER HI IMPACT
12.0 G _

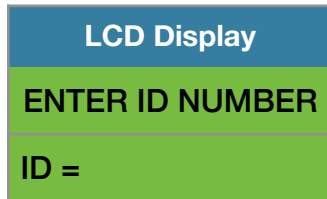
LCD Display
ENTER HI IMPACT
CONTINUOUS ? Y

LCD Display
IMPACT
CONFIGURATED

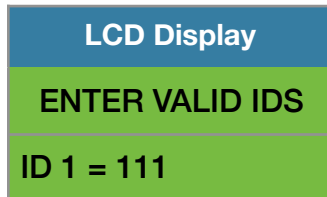
Type to enter text

How to program keypad operator vehicle access ID#'s (If applicable)

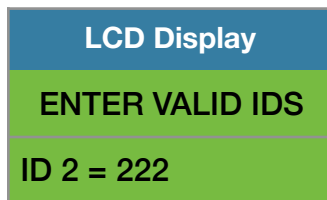
- With power turned on to the system the LCD display will indicate to “ENTER ID NUMBER”



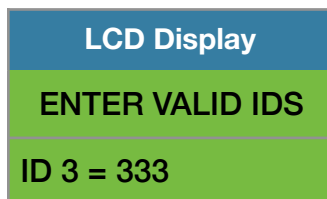
- Input code **742F**. The LCD display will prompt you to input first valid operator ID#. (Any number in range from 1 to 999) and press “Enter key” ↵.



- LCD display will advance and prompt you to input second valid operator ID# and press “Enter key” ↵.



- LCD display will advance and prompt you to input third valid operator ID# and so on.



* Above example showing operators ID# 111, 222 and 333.

On the last valid operator ID number that you have inputed into the system you must press “Enter key” ↵ and then press **F** key.

At any time if you want to look at the current operators ID numbers already in the system, change or delete them you must input password **742F** while LCD display is showing “Enter ID Number”.

How to program operator(s) RFID access cards (If applicable)

The RFID operator access HID card reader is integrated into digital indicator housing with ScanWeight system having proprietary software that allows self programming, deleting and management of authorized vehicles operators on the any of the SkidWeigh products equipped with RFID card readers.

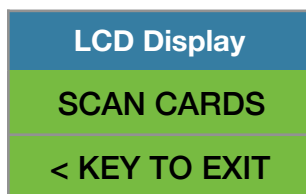
There is no need for any additional programming devices!

- Turn ignition switch to on position
- The LCD display will indicate to “SCAN CARD”



1. Scan RFID MASTER CARD

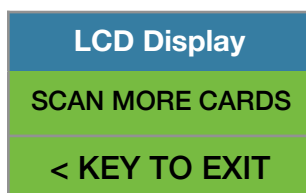
LCD display will show



2. Scan first valid HID operator card.

The LCD display will show for the moment the value of the inputted card.

The LCD display will indicate that “CARD ADDED OK “and short beep once



3. Scan second valid HID operator card.

Follow instructions shown on LCD display.

Keep adding the valid cards to vehicle. When all cards inputted into the system press < **KEY TO EXIT**

Lift Truck CubeFreight RFID Authorized Operator Access System has a capability to add up to 250 valid operator cards.

Note: *Proceed with programming valid operator cards for each vehicle in your fleet.*

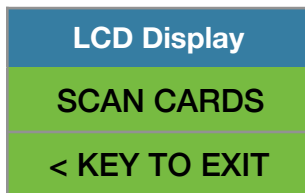
How to delete operator(s) RFID cards already in the system

Turn ignition switch to on position

The LCD display will indicate to “SCAN CARD” (as shown on the picture)

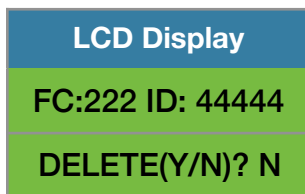
Scan RFID MASTER CARD

LCD display will show

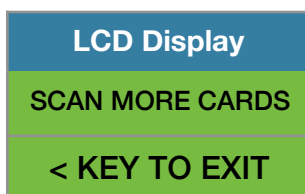


Scan first valid operator CARD that you want to delete from the system

LCD display will show the card ID# . Use left ◀ and right ▶ arrow key to change to Y.



The current card ID# 44444 will be deleted from the system. LCD display will automatically show



Scan next valid operator CARD that you want to delete from the system

Follow instructions shown on LCD display.

Keep adding cards to be deleted. When all cards inputed into the system press < KEY TO EXIT

Note: In the case that you need replacement of RFID MASTER CARD, please call us at 905-469-0985

How to disable RFID reader

Vehicle access enable function in case of lost HID master card, valid card(s) or reader malefaction

- With digital indicator showing “ IVDT SCAN CARD” press and hold **F** key for 5 seconds

- LCD display will show PASSWORD =_

- Input **521** and RFID reader will be disabled. Vehicle will be operational without RFID operator card.

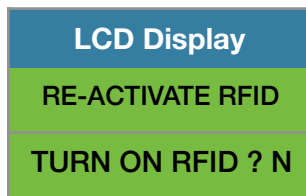
How to enable RFID reader

With digital indicator showing date / time press **F** key and than input number **9**.

- LCD display will show PASSWORD = _

- Input **521**

< KEY TO SCROLL and follow instructions



ProxPoint Plus RFID Card Reader / SkidWeigh Technology

Read Range Typical 3"

Operating Voltage 12 to 55 VDC

Operating Temperature (-35 C to 65C)

Operating Humidity 5-95% non-condensing

Transmit Frequency 125 kHz

Card Compatibility All 125 kHz HID Proximity cards, long and short formats, as well as Corporate 1000 cards formats

LED Type Bicolored (green and red)

Transient Surge and Reverse Voltage Protection

Extra Security, Recognizes card formats up to 85 bits with over 137 billion unique codes

Application for all kinds of lift trucks regardless of the vehicle make, type ,model or operating voltage

Self programming, no additional devices required to add or delete cards from the system

Memory capacity to up to 250 operators ID#

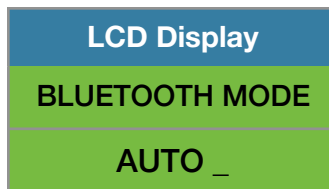
FCC Compliance, part 15 of the FCC rules

Bluetooth Barcode or Printer Pairing

The CubeFreight system allows to pair Bluetooth Barcode Scanner or Printer.

To enter into the Bluetooth pairing menu, press **F** key and then number **0**.

Follow instructions shown on the LCD display for pairing process.



FOR BARCODE SCANNER & PRINTER BLUETOOTH PAIRING USE MANUFACTURER MANUAL

The scanner connects to the host via Bluetooth and emulates a serial connection (SPP)

Note: Use left ◀ and right ▶ arrow key to choose MANUAL, INQUIRY or AUTO.

Suggestion: For pairing of Bluetooth barcode scanner use INQUIRY function



OSHA Safety Check (If applicable)



The OSHA safety check will be automatically initiated every 8, 12 hours or daily.

Default value shown on LCD display is (F) representing “fail”.

Use < > key to change. Follow the LCD messages menu and press “Enter key” ↵ after choosing F or P

F = Fail and (P)= Pass

Automatic Dimensioning & Weighing Cycle

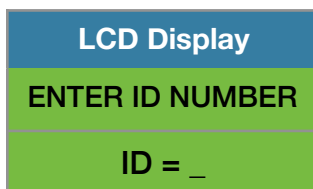
The CubeFreight system requires automatic weighing cycle to be initiated with barcode scanner or by activating “By Pass Switch”. The “By Pass Switch” is used in case that barcode scanner is not available, damaged, barcode label damaged or the operation requires the load weight readout without barcode label ID# readout.

Operator Usage Guide (Application with Barcode Scanner)



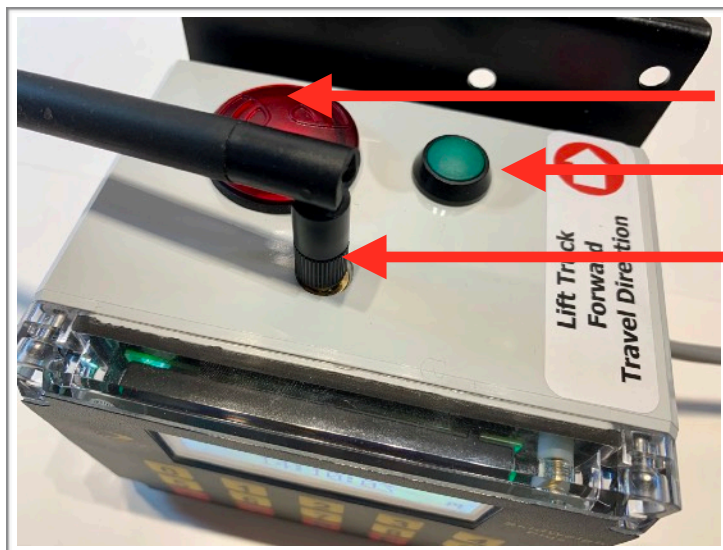
- Turn ignition switch
- Scan valid operator RFID card if applicable.

Note: Input an operator ID# and press “Enter key” ↵ if keypad operator access control is used. *If applicable complete OSHA safety check procedure.*



- Insert the forks into the pallet or under the product to be weighed.
- **Lower the loaded forks to the ground.**

LCD display must show date and time in order to initiate automatic weighing cycle.



Impact, Overload Audio / Visual Alert

Barcode scanner “By Pass Switch”

RF Antenna

PALLETIZED FREIGHT / NON PALLETIZED MEASUREMENT CYCLE

1. With LCD display showing Date/ Time scan the barcode on pallet and follow instruction. *(Should the barcode scanner be not available or barcode*

damaged and not be readable, **press Green button once (By Pass Switch)** to continue with measurement cycle and input pallet ID# by keypad)

- LCD display will show the barcode scan ID# for a moment and display will advance to **default PALLET SIZE 48 x40**. This menu has all of the most popular pallet sizes and manual input for non palletized loads. Use < > key to select other pallet size and press **“Enter key”**.



- Next LCD display show will be **SELECT PALLET HEIGHT**. Input pallet height and press **“Enter key”**. The LCD display will prompt you to lift loaded forks. Lift the load just above the ground. Within few



CubeFreight Data Session

- Date/Time
- Vehicle ID#
- Barcode ID#
- Operator ID#
- Freight size, WIDTH, LENGTH and HEIGHT
- Load weight
- * Optional: Impact, overload, OSHA safety

seconds LCD display will show load weight.

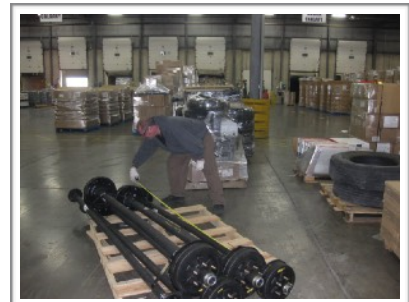
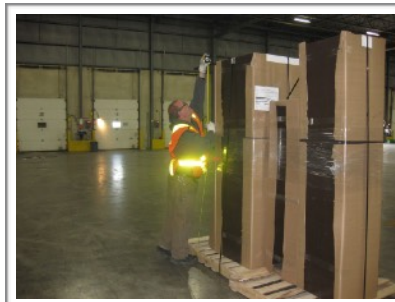
The measurement session is completed. The CubeFreight date will be automatically send to the USB port or/and RF Base Station without operator input.

- For non palletized freight** use < > key in pallet size menu and select **PALLET SIZE MANUAL** and press **“Enter key”**. Input WIDTH, LENGTH and HEIGHT and press **“Enter key”**. The LCD display will prompt you to lift loaded forks. **The measurement session is completed.**

NOTE:

Should the application require only the load weigh measurement, press “By pass switch” **GREEN BUTTON TWICE**. The system LCD display will prompt you to lift loaded forks.

The load weight will be shown on LCD display and will be recorded.



Operator Usage Guide (Application with Bluetooth Mobile Printer)

The CubeFreight system using mobile Bluetooth printer requires automatic weighing cycle to be initiated by activating “By Pass Switch”, **press it once**. Press GREEN button and use keypad to input palletized load ID#. After each ID# keypad number input press “**Enter key**”. On last ID# press “**Enter key**” again.

1. With LCD display showing Date/Time press GREEN **button only once**.
2. LCD display will prompt operator to input the pallet load ID#. Use keypad and input load ID# and make sure that you press “**Enter key**” after each digit entered into the system. On last ID# digit input press “**Enter key**” to advance to **default PALLET SIZE 48 x40** menu. This menu has all of the most popular pallet sizes and manual input for non palletized loads. Use < > key to select other pallet size and press “**Enter key**”. Use < > key to select other pallet size and press “**Enter key**”.
3. Next LCD display show will be SELECT PALLET HEIGHT. Input pallet height and press “**Enter key**”. The LCD display will prompt you to lift loaded forks. Lift the load just above the ground. Within few seconds LCD display will show load weight.
The measurement session is completed. The CubeFreight date in addition to printout ticket will be automatically send to the USB port or/and RF Base Station without operator input.
4. **For non palletized freight** use < > key in pallet size menu and select PALLET SIZE MANUAL and press “**Enter key**”. Input WIDTH, LENGTH and HEIGHT and press “**Enter key**”. The LCD display will prompt you to lift loaded forks.

The measurement session is completed.

CubeFreight Ticket Printout

- Date/Time
- Vehicle ID#
- Barcode ID#
- Operator ID#
- Freight size, WIDTH, LENGTH and HEIGHT
- Load weight



Multiple Pallet Loads with Same Pallet Load Weight

With LCD display showing Date/Time press “**Enter key**” and input number of pallets in the shipment, scan barcode and follow instruction to complete measurement cycle. (Should the barcode scanner be not available or barcode damaged and not be readable, press Green button once (By Pass Switch) and input pallet ID# by keypad and continue with measurement cycle. **Note:** After each ID# number press “**Enter key**”. On last ID# press “**Enter key**” again.