Installation Guide

PLEASE READ THIS ENTIRE DOCUMENT BEFORE STARTING YOUR INSTALLATION

Warning: Failure to properly follow this installation guide may result in injury or serious accident.

Warning: Failure to properly follow this installation guide may result in damage to the Start-Manager unit or the equipment it is being installed on.

Warning: Failure to properly follow this installation guide may void warranty.

Videos Coming Soon

Tools Recommended for Installation

Electric Drill ¾" & ¼" **Drill Bits** 1/4" bit **Driver** 16ga. **Insulated wire** 1 Amp slow **Blow fuse** **Electric Tape & connectors** ¾" & ½" **Wrenches** **Soldering Iron** **Wire Cutter** **Multi-Meter** **Proper PPE**

Time Required

Please allow 1-1/2 to 2-1/2 hours for installation of a single unit depending on the experience level of the installer. Each additional units may require less time.

1.5-2.5 hours

Skill Level

A working knowledge of the ignition system of the forklift or equipment is required. Installer must understand basic electrical connections and proper use of a Multi-Meter.

Medium

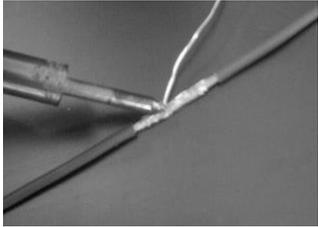# Caution is Required

Electrical Hazard

Shock Hazard

Lock-out Power

Working with electricity can always be dangerous unless proper precautions are taken. Always disconnect and lock out ALL power before starting your work. Always wear proper PPE as indicated. Please follow OSHA guidelines for electrical safe work practices specified in OSHA 29 CFR 1910.331-.335 and NFPA 70E Chapter 1

For additional assistance please visit www.start-manager.com/support (Password: SM-Support)

Connector Recommendation:

Soldered connection

Solderless Crimp Molex, Scotchlok

- A proper electrical connection is critical when installation electronics in an industrial environment.
- When splicing in additional wire, always use a soldered connection.
- In order for an electronic device to work properly in an industrial environment it is critical that the correct connector is used.

# Older Vehicle Warning:

10 Years or Older

This system is designed for low amperage (Max 10amp). Extra caution is advised when wiring the Start-Manager unit directly into an older or non-electronic ignition system. Please use protective relays to prevent high amperage from contacting the Start-Manager system**. Failure to due so may cause system failure and void the warranty.**

Electronic Noise/ Interference:

The Start-Manger unit may be affected by electrical noise, commonly emitted by the ignition circuitry of internal combustion (LP gas or gasoline) engines. It is imperative that the IC vehicle be properly suppressed by using supressed spark plugs and wires. UNSUPPRESSED IGNITION CIRCUITRY MAY CAUSE ERRATIC BEHAVIOR WITH THE START-MANAGER UNITS. Start-Manager is NOT responsible from any malfunction associated with unsuppressed equipment.

Start-Manager OPERATION
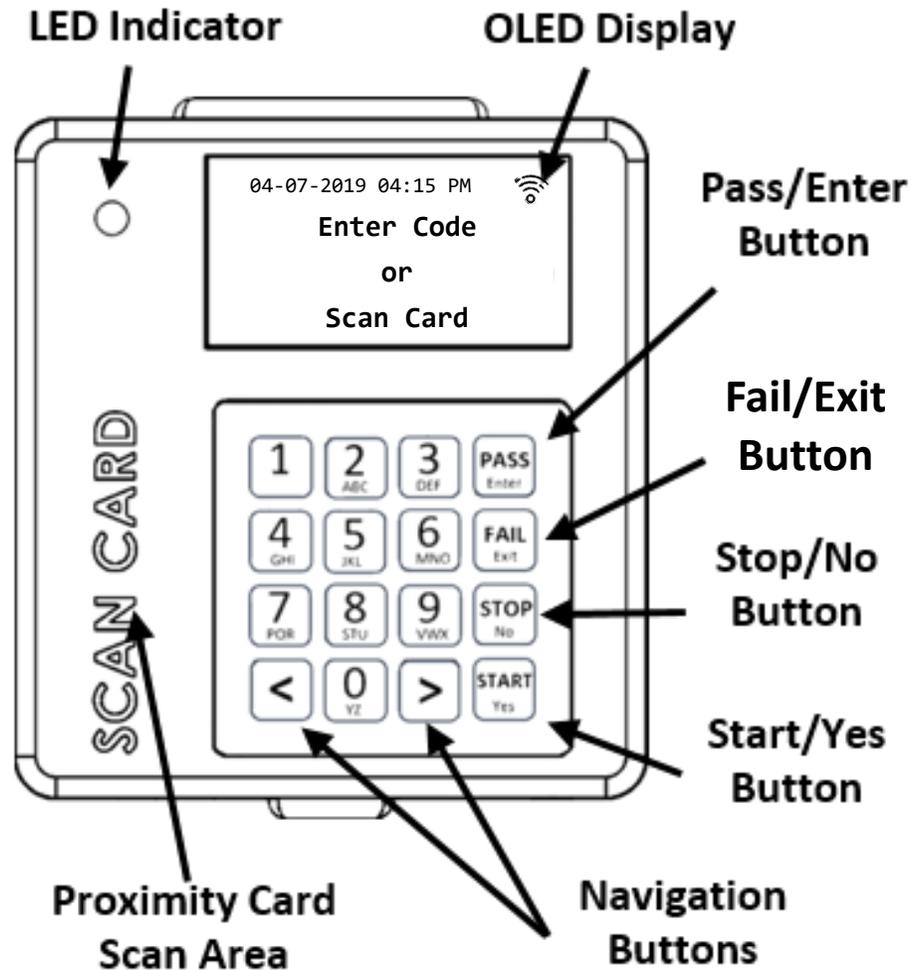
- **OLED Display:** Provides instructions and status of the device.
- **LED Indicator:** Three colors provide vehicle status. Yellow indicates 'in process', Red indicates that there is an issue, Green indicates that everything is operational.
- **Proximity Card Scan Area:** Area provided for scanning proximity card and key fobs.
- **Stainless Steel Keypad:** Manually interact with device.
  - **Pass/Enter Button:** This button is used to "Pass" safety questions, and to enter data.
  - **Fail/Exit Button:** This button is used to "Fail" safety questions, and to exit from certain screens.
  - **Stop/No Button:** This button is used to shut the device/vehicle off, and to decline certain questions.
  - **Start/Yes Button:** This button is used to Start the vehicle/device, and accept certain questions.
  - **Navigation Buttons:** These buttons is used to navigate through the different screens in the

IMPACT MONITOR INTRODUCTION

Start-Manager's IMP-Mod Impact Monitor helps change operator behaviors by displaying to them when 2 levels of vehicle impacts occur. The low Impact Setting displays impact W/ audible alarm (15 sec.), reminding the operator to be careful. The High Impact Settings, displays impact W/ audible alarm (30 sec), records data, and has an optional alarm that will continually sound until it is released by a supervisor. Optional email alerts can also be set through the portal.

- Does not interrupt vehicle operation and safety
- Easy to use and set-up

Best Practice and Roll out

1. Properly setting up an impact monitor can take time and patience
2. Not all equipment types and applications are the same, and sensor settings will reflect this fact.
3. Start with only one impact monitor on one type of equipment in one area (IE: production, shipping, yard, etc.)
4. Make sure all the other impact monitors are turned off until a proper setting can be determined
    1. Manually set the low setting first at least at 2g and keep the high setting higher than 4g
    2. Turn 'Continue on high impact' to "on"
    3. Monitor these setting for a few days and adjust as necessary
    4. Run final settings for at least a week on one unit to ensure accuracy
    5. After desired settings are achieved roll out to all vehicles of that type and application
        1. To ease this process create custom settings and assign to groups of trucks through the portal.
5. Re-start testing process for each type of equipment and application.
6. Activate 'Continue on high impact' to "off", and email alerts if desired.

IMPACT MONITOR SPECIFICATIONS (IMP-MOD)

- Voltage input can range from 12VDC to 18VDC. voltage must be regulated and free from voltage spikes and dips above or below the input voltage specified above.
- Current requirements are 50mA minimum.
- 12 VDC is available from the SM301E device (additional steps required)
- Operating temperature 10° F (-12C) - 120° F (49C)
- Size: 3" x 2" x .90" polyethylene case. 2 rare earth magnets (2-3/8" x 3/8") for mounting.

IMPACT MONITOR (IMP-MOD) WIRING
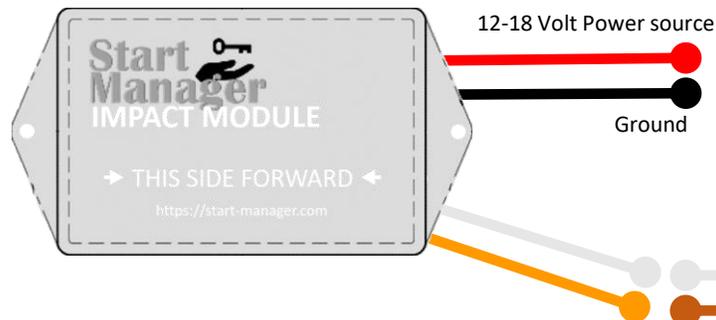
IMP-Mod Wiring Key:

- Black = Connect to a solid ground spot
- Red = Connect to power (**Voltage input can range from 12VDC to 18VDC**)
- White = connects directly with the white wire on SM301E
- Brown/Orange= Connects directly to the brown wire on the SM301E

IMP-Mod Mounting

Start-Manager IMP-Mod should be mounted on the frame of the vehicle facing forward, with the wires facing downward.
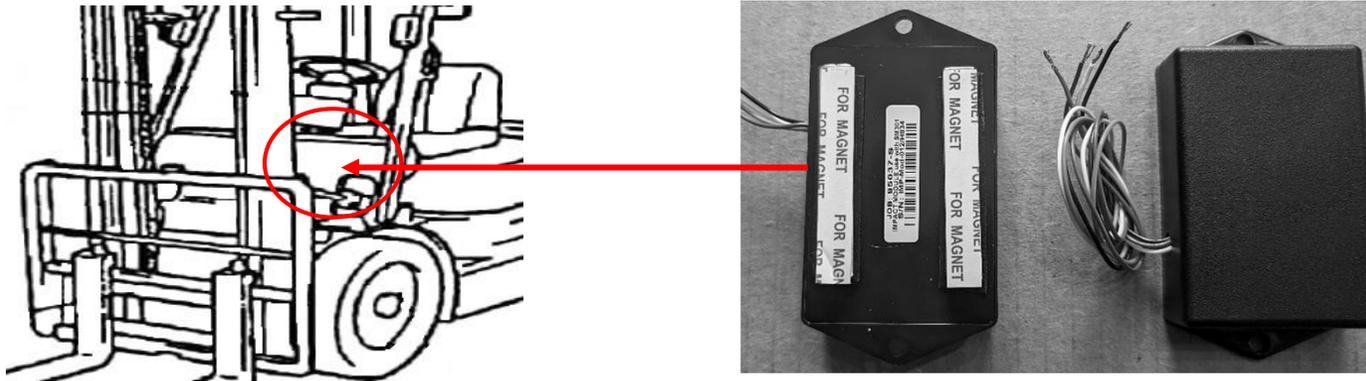

- Find a suitable spot to mount the IMP-Mod on the frame
- Thoroughly clean the area on the frame
- Remove the tape from the 2 rare earth magnets on the back of device
- Securely fasten the device to the frame
- Wire the device as per the previous section
- Splice in wire between the SM301E & the IMP-Mod with a soldered connection.

IMPORTANT NOTICE: Never allow any of the 4 relay wires to be connected to GROUND. Failure to do so may result in Damage to the relays and void of the unit's warranty.

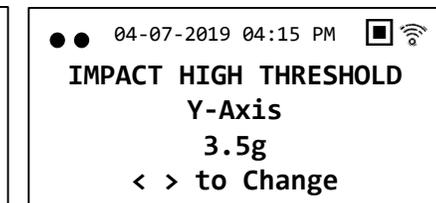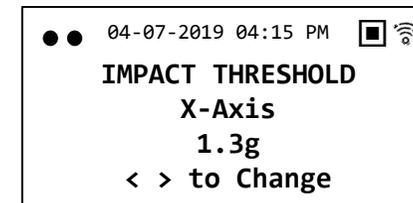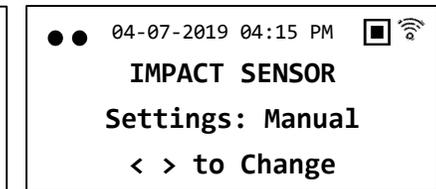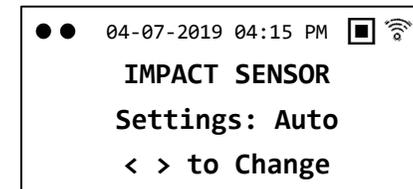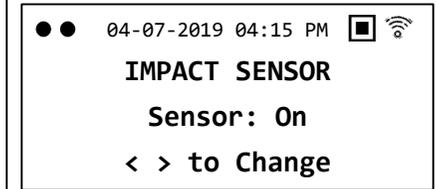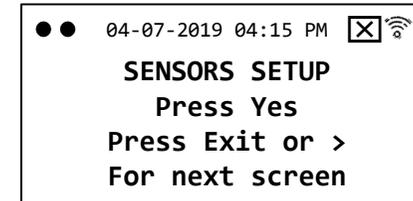# Start-Manager Impact Module Set-up

The below symbols are displayed at the top of the SM301E between the time and Wi-Fi status:

✕ = Impact feature not turned on

⊠ = Impact feature on and IMP-Mod NOT connected

▣ = Impact feature on and IMP-Mod is connected

```
●●  04-07-2019 04:15 PM  ✕ 📶
          Enter Code
              or
          Scan Card
```
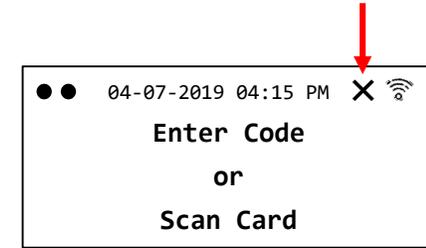
From the device's 'sign-on' screen:

- Enter or scan the yellow supervisor FOB
- Use < > keys to move to the SENSORS SETUP screen
- Press Yes to access
  - Turn this feature on (the ⊠ will appear or ▣ if IMP-Mod is connected and powered)
  - Press the 'enter' key to move on to each screen
  - Choose between 'Auto' or 'Manual' settings
    - If 'Auto' setting is chosen then you move on
    - If 'Manual' is chosen, then adjust each setting
      - Use < > keys to adjust each setting
      - Adjust for X, Y & Z axis for basic Impact threshold
      - Adjust for X, Y & Z axis for high Impact threshold
      - Press the enter key after completing each adjustment
  - Choose 'on high impact continue'
    - Off = buzzer continues after HIGH impact until supervisor releases
    - On = buzzer for 15 seconds then normal operation

```
●●  04-07-2019 04:15 PM  ⊠ 📶
        SENSORS SETUP
          Press Yes
       Press Exit or >
        For next screen
```

```
●●  04-07-2019 04:15 PM  ▣ 📶
        IMPACT SENSOR
          Sensor: On
         < > to Change
```

```
●●  04-07-2019 04:15 PM  ▣ 📶
        IMPACT SENSOR
        Settings: Auto
         < > to Change
```

```
●●  04-07-2019 04:15 PM  ▣ 📶
        IMPACT SENSOR
       Settings: Manual
         < > to Change
```

```
●●  04-07-2019 04:15 PM  ▣ 📶
      IMPACT THRESHOLD
           X-Axis
            1.3g
         < > to Change
```

```
●●  04-07-2019 04:15 PM  ▣ 📶
    IMPACT HIGH THRESHOLD
           Y-Axis
            3.5g
         < > to Change
```

Start-Manager Set-up From the Portal

The Start-Manager portal allows you to easily set-up and manage your Impact settings.

- Fine tune each setting by axis
- Create and save multiple custom setting categories
- Assign to individual Vehicles
- Create equipment groups and assign settings by group
- High impact action warning on dashboard
- Add notes to high impacts warnings
- Turn on high impact email notifications
- IMP-Mod is automatically assigned to vehicle (when connected and powered) and is indicated on the equipment page