

The Use of Fiber Optic Intercoms in Bucket Truck Applications



Everyone is familiar with the industrial bucket truck and its many applications ranging from routine traffic signal repair to cable TV installations and even high voltage power line maintenance and servicing. When these trucks are in operation there is often a great deal of ambient noise and the person in the bucket (when up in the air) cannot easily hear instructions from the person in the cab (on the ground) and vice versa which results in shouting, sore throats and mistaken instructions. In cases where the bucket is very high or the operator is working on a hazardous application such as installing high voltage transmission lines not being able to clearly communicate with the ground can pose a severe hazard. In fact OSHA Regulation 1926.1408(b)(4)(ii)(C) for Power Line Safety specifically states that *"Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator."* One of the ways to easily comply with this regulation is by means of a rugged intercom system especially designed for this purpose. Figures 1 and 2 are photos of the main units of such an intercom that is available either as a hard-wired or totally isolated fiber optic system.

In each case the bucket and cab stations are weatherproof and totally hands-free with the exception of a volume control that can be adjusted to compensate for the ambient noise level. In the wired version power for the bucket station comes through the interconnecting cable from the cab unit which also has a volume control as well as a push-to-talk button. Power for the entire system then comes directly from the normal 12 volt automotive electrical system. The wired system is excellent for use with most routine low voltage applications where the bucket is grounded to the cab but where work on high tension lines is

concerned an isolated bucket is required and for this application the fiber optic version is ideal.

In the fiber optic version the bucket is totally isolated from the frame of the bucket assembly (and ground). There is no metallic connection between the two whatsoever. The connecting cable is totally non conductive since it is made of glass and various plastics and as a result the cable has a voltage breakdown of more than 10,000 volts per foot of length. In this system power for the bucket station comes from a rechargeable battery pack located in the bucket with a continuous life of 24 hours before recharging is necessary. This battery pack is also provided in a weatherproof housing. As in the case of the wired system the bucket intercom station has a volume control but also has a switch to turn operating power on or off to conserve battery life when not in use and an LED signifying when to recharge the battery pack which can then be recharged from the cab station when necessary. Power for the cab unit and battery recharging circuitry then comes directly from the normal 12 volt automotive electrical system.

Audio frequency response of either intercom system is "high fidelity" in nature allowing extremely clear conversations to be had. In addition the bucket and cab power amplifier circuits can provide as much as 10 watts of audio assuring plenty of volume even in very noisy conditions. The push-to-talk scheme employed (from the cab location) also eliminates unwanted triggering in a noisy environment which could easily happen in a voice controlled system.

Some of the advantages of both systems are:

Totally hands free operation at the bucket location eliminating the burden of communicating with the cab by pressing a button.

High volume audio capability at both the bucket and cab units allowing ambient noise to be overshadowed.

No RF interference when working on very high tension lines as can be present with two-way radio units.

No possibility of interference from outside sources since the system is totally wireless.

Distances of 150 feet can be covered with either system.

Interconnecting cables are tactical types, extremely rugged and easily installed on most bucket truck configurations.

Installation is simple and can easily be done by non-experienced personnel.

In conclusion aerial work can be dangerous and must be done in a safe manner particularly when working around energized power lines. By using intercom systems such as the ones described here clear and reliable communications between a bucket and cab is easily achieved.



Fiber Optic Bucket Unit
(Litelink® INCX-1201)



Fiber Optic Cab Unit
(Litelink® INCX-1101)

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