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Understanding CAP Converters

It seems that there has been some confusion surrounding Common Alerting Protocol to Emergency Alert System converters (also called “intermediary devices”) among broadcasters, manufacturers and others in the industry. These misunderstandings have led to some incorrect claims being made and repeated. We at Gorman Redlich Manufacturing Company would like to help clear up some of this confusion and misunderstanding.

What is a CAP Converter?

A CAP-to-EAS converter, or CAP converter for short, is a unit whose purpose is to receive CAP-formatted alerts via the internet and translate them into usable EAS headers. The translated messages are sent from the CAP converter to an existing certified EAS encoder/decoder where they are handled in much the same way that current over-the-air EAS messages are.

A CAP converter differs from integrated CAP units in that the integrated unit contains an EAS encoder/decoder device within the same physical housing as the device which converts the CAP formatted alert into an alert which can be sent over the EAS system.

Why a CAP Converter?

CAP converters are an economical way for broadcasters to be able to meet CAP receiving requirements for significantly less cost than a unit with integrated CAP support. This is done by allowing stations to keep their existing EAS encoder/decoder devices rather than throwing away equipment that is in perfect working order. In today’s tough economic times where many broadcast stations are struggling with budget issues and competition from new media, it simply doesn’t make sense to discard functioning equipment in favor of purchasing new equipment that essentially duplicates the same functionality (albeit, with added features).

Rather than discarding an existing, functioning EAS encoder/decoder and purchasing another EAS encoder/decoder that also handles CAP messages, a CAP converter allows you to keep your familiar equipment and add CAP functionality to it.

It also makes good environmental sense not to send all of this equipment to landfills. The FCC listed almost 31,000 licensed broadcast stations, a large portion of which are EAS participants. Sending thousands upon thousands of pieces of electronic equipment to landfills is not an environmentally sound practice!

Can a station meet the CAP requirement with a Converter?

Yes! Both FEMA and the FCC have recognized and accounted for CAP-to-EAS converters as well as integrated devices. The first testing available for CAP equipment was the FEMA IPAWS Conformity Assessment Program (ICAP), the test procedures for which included those for CAP Converters. The IPAWS Conformity Assessment Program has now ended and FEMA’s conformity testing is now performed by the Preparedness - Technology, Analysis and Coordination (P-TAC) Center through the Supporting Technology Evaluation Project (STEP), which also implements specific test procedures for CAP-to-EAS Converters.

In the recently released FCC Fifth Report & Order, the FCC also acknowledged CAP-to-EAS converters, which they dub “intermediary devices,” as an acceptable way for broadcasters to meet their CAP requirement. The FCC further classified equipment into three categories: *integrated CAP EAS encoder/decoders*, universal *intermediary devices* and *component intermediary devices* (more about the differences between universal and component intermediary devices below).

What is the difference between Universal and Component Intermediary Devices? Which is the CAP-DEC1?

Universal intermediary devices are CAP-to-EAS converters which consume CAP v1.2 formatted messages and convert them to EAS headers, which are then passed on to the audio input of an attached EAS device as AFSK data tones and message audio. Since all certified EAS devices are capable of decoding AFSK EAS headers, universal intermediary devices are able to be connected to certified EAS encoder/decoders from any manufacturer.

Component intermediary devices are CAP-to-EAS converters which consume CAP v1.2 formatted messages and convert them to EAS headers which are passed on to an attached EAS device by some means other than AFSK data tones. Generally, the transmission of converted CAP messages to the EAS unit is of a proprietary nature and, as such, component intermediary devices will only work with EAS encoder/decoders from a particular manufacturer.

The Gorman-Redlich CAP-DEC1 CAP-to-EAS decoder is capable of functioning as either a universal intermediary device or as a component intermediary device (but only one or the other). The CAP-DEC1 will output converted CAP messages as AFSK tones usable by any EAS encoder/decoder but it is also capable of communicating converted CAP messages to the Gorman-Redlich EAS1 line of encoder/decoders via RS232 serial data connection.

What is the 2015 deadline I heard about? Will intermediary devices still work?

The incorrect claim that intermediary devices will no longer work is based on a statement from the FCC Fifth Report & Order, which reads:

> *"[B]ecause we also require that EAS Participants utilize the enhanced text in a CAP message to provide a visual display, as set forth in section 3.6 of the ECIG Implementation Guide, we will require that any intermediary devices provide such functionality by June 30, 2015, which is three years from the June 30, 2012, deadline for overall CAP compliance."*

The "enhanced text" referenced in the excerpt above is constructed from various text fields within the CAP message. The Gorman-Redlich CAP-DEC1 already generates this enhanced text and displays it on the user interface. Additionally, the unit is capable of sending this text to certain signboards and character generators. We see no reason why, once requirements are finalized, the CAP-DEC1 would have any problem complying well in advance of such a deadline.

CAP Equipment Certification

There have been claims circulating that CAP-to-EAS converters are lacking some necessary certification which EAS encoder/decoders with integrated CAP support have. The certification that these units have merely certifies that the EAS encoding and decoding functionalities are in compliance with Federal Communications Commission (FCC) Part 11 rules which govern the Emergency Alert System. All commercial EAS units in use at broadcast facilities must meet this requirement in order for stations to be in compliance.

Gorman Redlich is one of 10 manufacturers certified by the FCC to make and sell EAS encoder/decoder units and one of only four manufacturers certified to make and sell EAS decoder-only units (http://www.fcc.gov/encyclopedia/certified-eas-equipment-vendors). Every EAS unit that Gorman-Redlich sells has this certification.

As of the time of this writing, CAP functionality specifics are not currently defined in FCC Part 11. Efforts are underway by the FCC and CSRIC III Working Group 9 to update Part 11 to accommodate these next generation alerts. As mentioned above, CAP conformity testing is handled by a FEMA-sponsored program through Science Applications International Corporation (SAIC) at the Incident Management Test and Evaluation Laboratory (IMTEL). This testing involves three main sets of specifications: CAP v1.2, IPAWS Profile 1.0 and the CAP-EAS Implementation Guide.

The Gorman-Redlich CAP-DEC1 has undergone and passed this conformity assessment and is currently listed in the FEMA Responder's Knowledge Base (RKB) along with the accompanying test report and SDoC. As the differentiation did not exist at the time of testing, the CAP-DEC1 passed the assessment as a universal intermediary device, although we are currently preparing to submit the CAP-DEC1 for component intermediary device assessment and anticipate a favorable outcome. We are likewise preparing to undergo any further certification required under updated Part 11 rules and do not foresee any major obstacles in completing such a certification process.

The CAP-DEC1 is easily field upgradeable so that if and when CAP equipment requirements change, the equipment can change with it.

So Called "Legacy" Equipment

There are also claims circulating that purchasing a CAP converter may not be a sound decision because of its reliance upon being connected to existing so-called "legacy" equipment. Legacy equipment, in this case, refers to EAS encoder/decoder units which do not have integrated CAP support. These claims would argue that one should not rely on existing equipment because it is not brand-new and that it could fail at a point in the future sooner than new equipment would.

As with any sort of goods or equipment, there is absolutely no way to guarantee that it will not fail at some point. There is also no way to foresee when a product may fail. Brand new equipment can fail just as easily as equipment that is several years old (perhaps more easily by virtue of its lack of "in the field" testing). The only thing that *can* be done is to be sure that, should a product fail, it can be replaced or repaired in a timely, economical fashion.

Gorman Redlich stands behind its equipment fully. Since we began selling EAS units over 14 years ago, we have supported every unit ever sold and repaired every unit sent in for repair (with the exception of *two* which were damaged by improper lightning/surge protection). Additionally, we still support weather radio receivers, antenna monitors and other equipment made and sold as far back as the 1970s. Some manufacturers would like to attach a product life-cycle to their products and stop supporting them after that life-cycle ends, forcing consumers to purchase all new equipment to stay current. At Gorman-Redlich, we do not believe in that practice because we see equipment as an investment that should last.

Governor's Must-Carry Messages

As of this writing, any requirement for CAP equipment to handle so-called Governor's Must Carry messages has been dropped. Arguments against the use of intermediary devices based on the ability or inability to handle GMC messages are now even more irrelevant than they previously were.

CAP Converters Work

Gorman-Redlich CAP-DEC1 units have been tested in-house and in the field, receiving and parsing many tens of thousands of alerts. The CAP-DEC1 has passed all test procedures which are currently available. This performance has demonstrated at the FEMA interoperability demonstration display and Gorman-Redlich displays at various trade shows.

Further successful implementation of CAP converters has been demonstrated in Washington State. As outlined by Don Miller, Telecommunications and Warning Systems Manager for Washington State, during a recent NASBA *Implementing CAP: Case Studies from Three States* presentation, the state government of Washington has purchased and installed numerous CAP converters and has been using them with no reported problems.

Further demonstrations of the CAP-DEC1 units and their interoperability with EAS encoder/decoder devices may be seen around the country at various trade shows and expositions. Check the Gorman-Redlich shows page online at *http://www.gorman-redlich.com/shows.html* for details on upcoming shows.