Channel Bank Replacement
Using the TC8714-2 **MiniChannelBank**

TC COMMUNICATIONS®

Application Note

Channel banks have been widely used for connecting a variety of devices; however, many channel bank manufacturers have exited the market, leaving users with obsolete or non-supported products. This application note takes a look at the TC8714-2 and how it can be used for the replacement of an existing channel bank, or for new applications where a small number of interfaces are being utilized.

A Quick Overview of Channel Bank Options

Including the TC8714-2, TC Communications offers a wide variety of solutions for replacing channel banks. Our JumboSwitch® is an IP-based replacement for a channel bank, while for users connecting using T1 or E1 lines, our JumboBank™ and Mini Channel Bank are modern, flexible alternatives to traditional channel banks.

Of the two T1-based options, JumboBank is designed for solutions using multiple cards and is capable of supporting a variety of DS0 interfaces and connecting devices over as many as eight T1 lines. For single-card solutions involving only a small number of channels, our Mini Channel Bank is a suitable T1-based alternative; the TC8714-2, which is the topic of this application note, is part of this family of products.

In this application note, we explore a common application for the TC8714-2 4W E&M Analog & Dry Contact Channel Bank (a new addition to our Mini Channel Bank series) and the TC8614. While these are typical applications, they are extremely flexible devices and may be used in a variety of applications.

For these applications, we will primarily concentrate on the units used in standalone 1S mounting, but in situations where more cards are required, there are 1U and 4U rack-mountable options available for configuring two or more cards.

The TC8714-2 4W E&M Analog & Dry Contact Channel Bank

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Example Applications Using the TC8614-1 and TC8714-2

The TC8614 4W E&M Multiplexer and the TC8714 can both be used in applications where there is a low density of interfaces required. The TC8614-1/2 units provide one, two, or four interfaces and are used in a "bookended" fashion with units at each end of a T1/E1 line. Meanwhile, the TC8714 provides two interfaces for use in a gateway fashion.

The following two examples illustrate this difference:

Using a Pair of TC8614s to Connect a Remote Radio Site to Voter over T1/E1

The following diagram shows a typical radio solution where a remote site radio receiver is connected to a centrally provided voter. In this, the TC8614 transports a four-wire E&M interface between the sites over a T1.
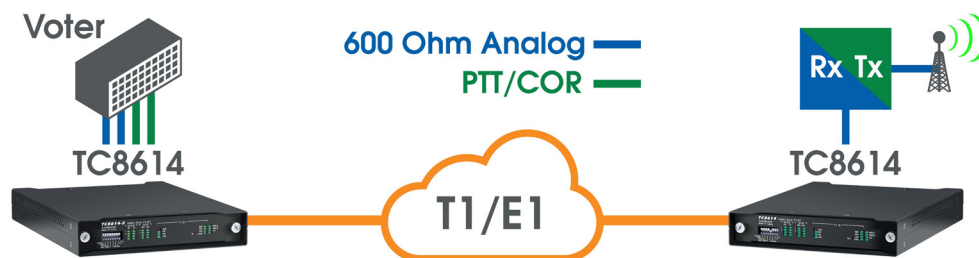
In this case, the TC8614 is connected in a bookended solution where one device is used at each end and the T1 provides a point-to-point solution. As the TC8614 has up to four channels, multiple four-wire E&M circuits can be transported between the sites.

TC8714-2 Gateway Solution

The TC8714-2 provides interfacing to a traditional channel bank using gateway functionality. As the TC8714-2 comes equipped with either one or two four-wire E&M interfaces, it is often utilized when there is a low density of channels needing to be connected to the T1.

Unlike the TC8614, the TC8714-2 is not a bookended solution; instead, it converts the four-wire E&M into a standard DS0, which is placed within the T1. DIP switches allow the DS0 to be placed anywhere in the T1/E1.

The diagram on the next page shows this configuration:

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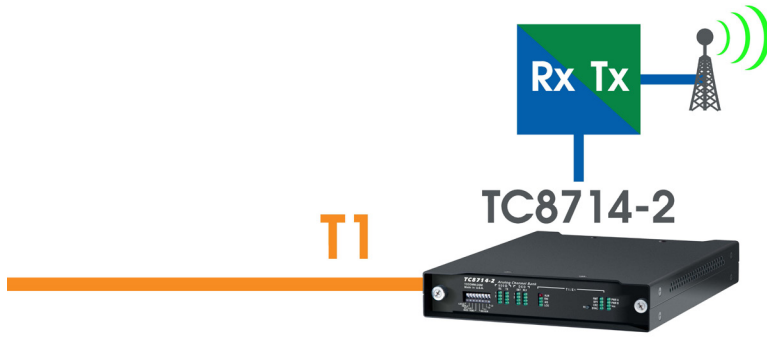
Here, the four-wire E&M circuit is "packaged" within a specified DS0 within the T1. By default, the two four-wire E&M channels are mapped to DS0-1 and DS0-2; however, to provide for more flexibility, the unit allows the channels to be indexed to other DS0s.

In this example, we have set the first channel to be DS0-21, which makes the second channel map to DS0-22. This setup is performed via a simple DIP switch setting.

For applications utilizing more than two channels, some of our other Mini Channel Bank products support a greater number of channels, while our JumboBank options are capable of utilizing all 24 DS0 slots for up to 24 channels.

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TC8714 Product Features

The TC8714-2 is capable of two-wire and four-wire E&M operation and can connect to both T1 and E1 lines; the E1 line may be 75 or 120 Ohms. "Troubleshooting-at-a-glance" LEDs on the front panel keep system diagnostics efficient and straightforward, and the unit is available in our extended temperature range (from -40˚C to 80˚C) for use in harsh conditions.

Conclusion

As with all TC Communications solutions, the TC8614 and the TC8714-2 are engineered to be extremely reliable, boasting a
MTBF of greater than 300,000 hours. All setup is done using simple DIP switches for fast and easy deployment, making them very simple and straightforward replacements for obsolete channel banks.

To learn more about our other products for replacing channel banks, please view our Interactive Product Matrix. The left column displays our JumboSwitch interfaces, and the center column lists our JumboBank and Mini Channel Bank interfaces.

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