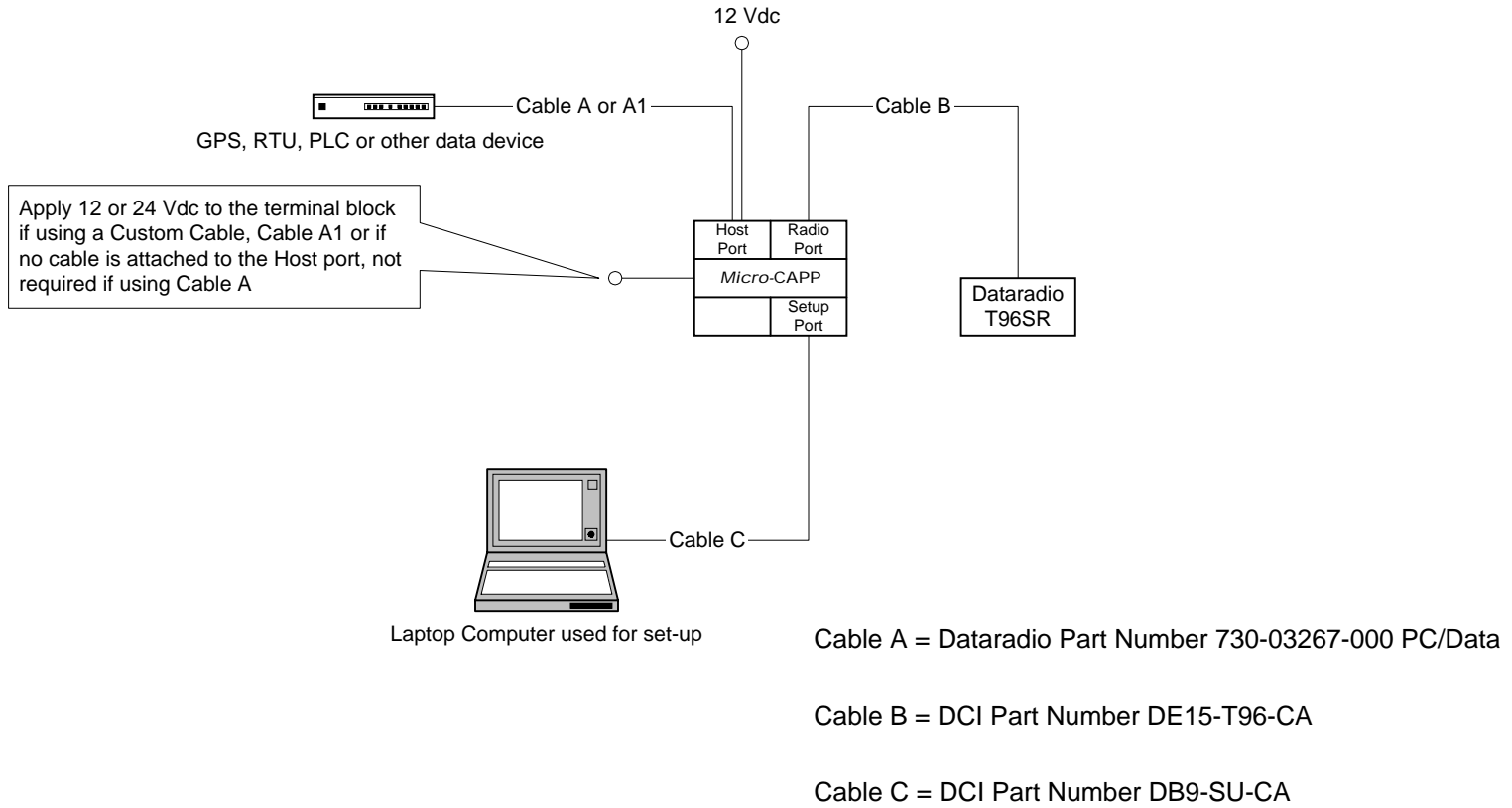


Micro-CAPP™ Quick Start Guide
T96SR Buffer or Baud Rate Translation

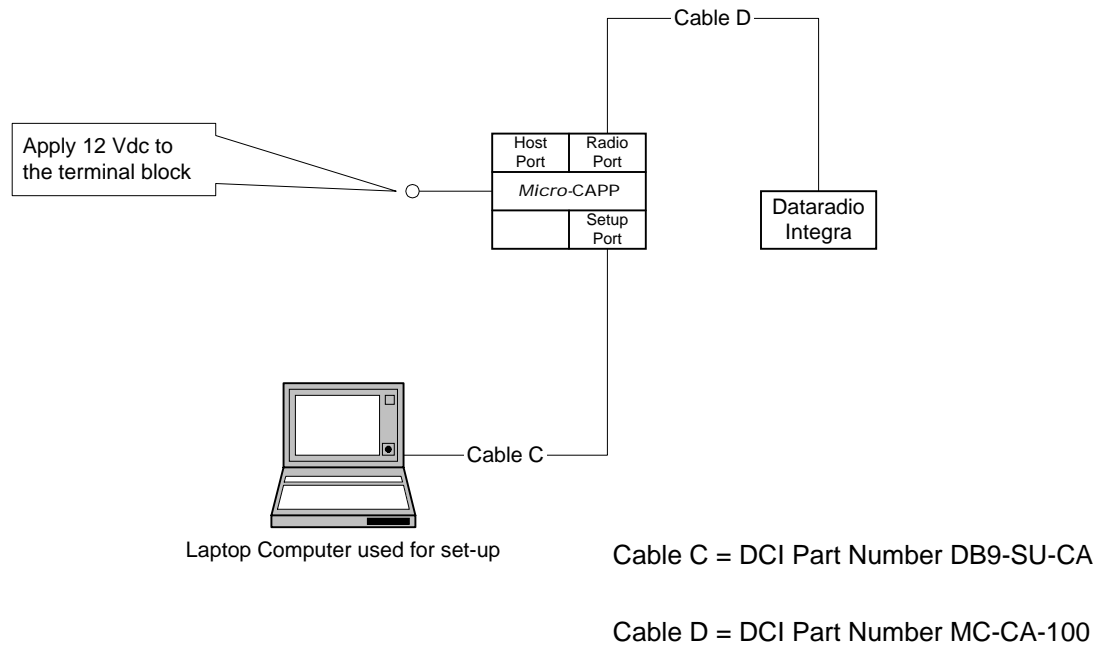


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Project: Micro-CAPP FDX	
Subject: Quick Start Guide	
Detail: Buffer Overview	Revision: 1.3
Company: DCI Technologies Inc.	Designer: W.E.(Ted) Skinner
Filename: Micro-CAPP QS Ver1_3.vsd	Date: Mar 1, 2002 09:38

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Micro-CAPP™ Quick Start Guide
 Inetgra Store and Forward Repeater

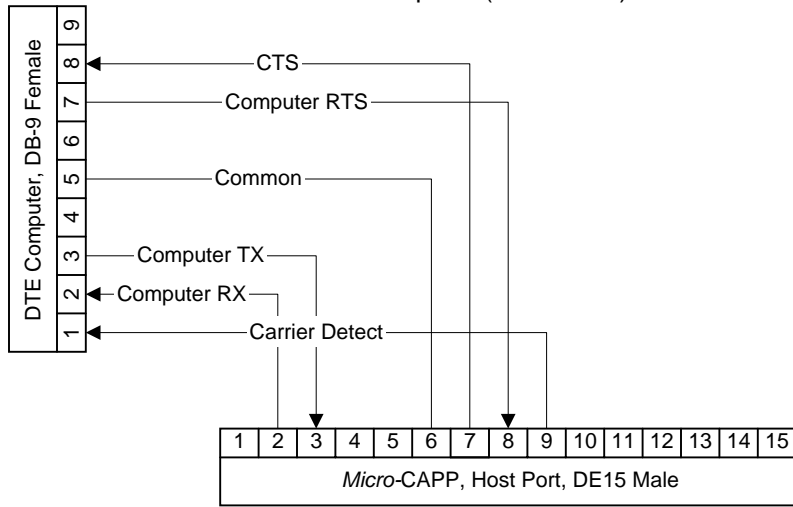


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Project: Micro-CAPP FDX	
Subject: Quick Start Guide	
Detail: Store and Forward	Revision: 1.3
Company: DCI Technologies Inc.	Designer: W.E.(Ted) Skinner
Filename: Micro-CAPP QS Ver1_3.vsd	Date: Mar 1, 2002 09:38

Standard Interface Cable Guide

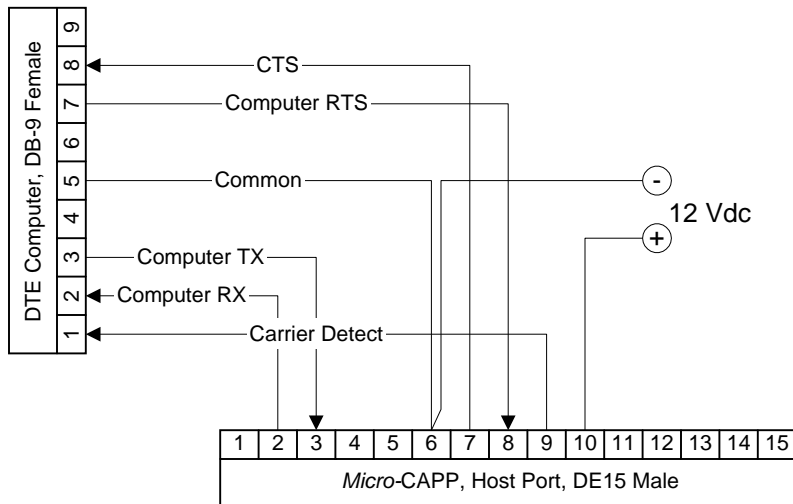
Micro-CAPP to Computer (CABLE A1)



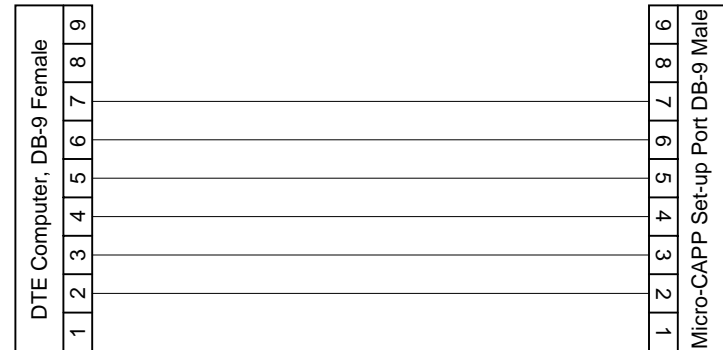
Micro-CAPP to Dataradio T96SR Interface (CABLE B)



Micro-CAPP to Computer , With Power (CABLE A)



Micro-CAPP Set-up Port to Computer (CABLE C)



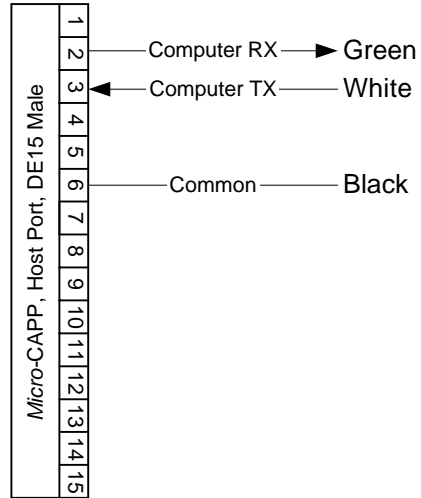
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Project: Micro-CAPP FDX	
Subject: Quick Start Guide	
Detail: Cable Details	Revision: 1.3
Company: DCI Technologies Inc.	Designer: W.E.(Ted) Skinner
Filename: Micro-CAPP QS Ver1_3.vsd	Date: Mar 1, 2002 09:38

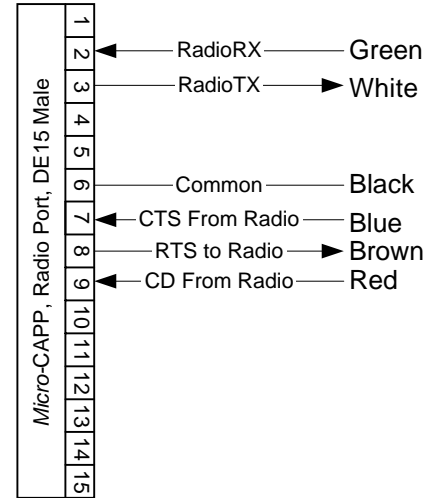
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Custom Interface Cable Guide

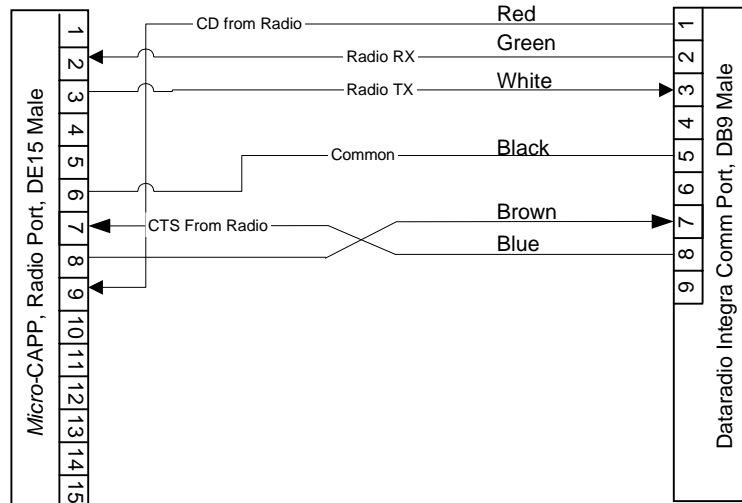
Micro-CAPP to Computer/RTU/PLC (Host Port)



Micro-CAPP to Radiomodem (Radio Port)



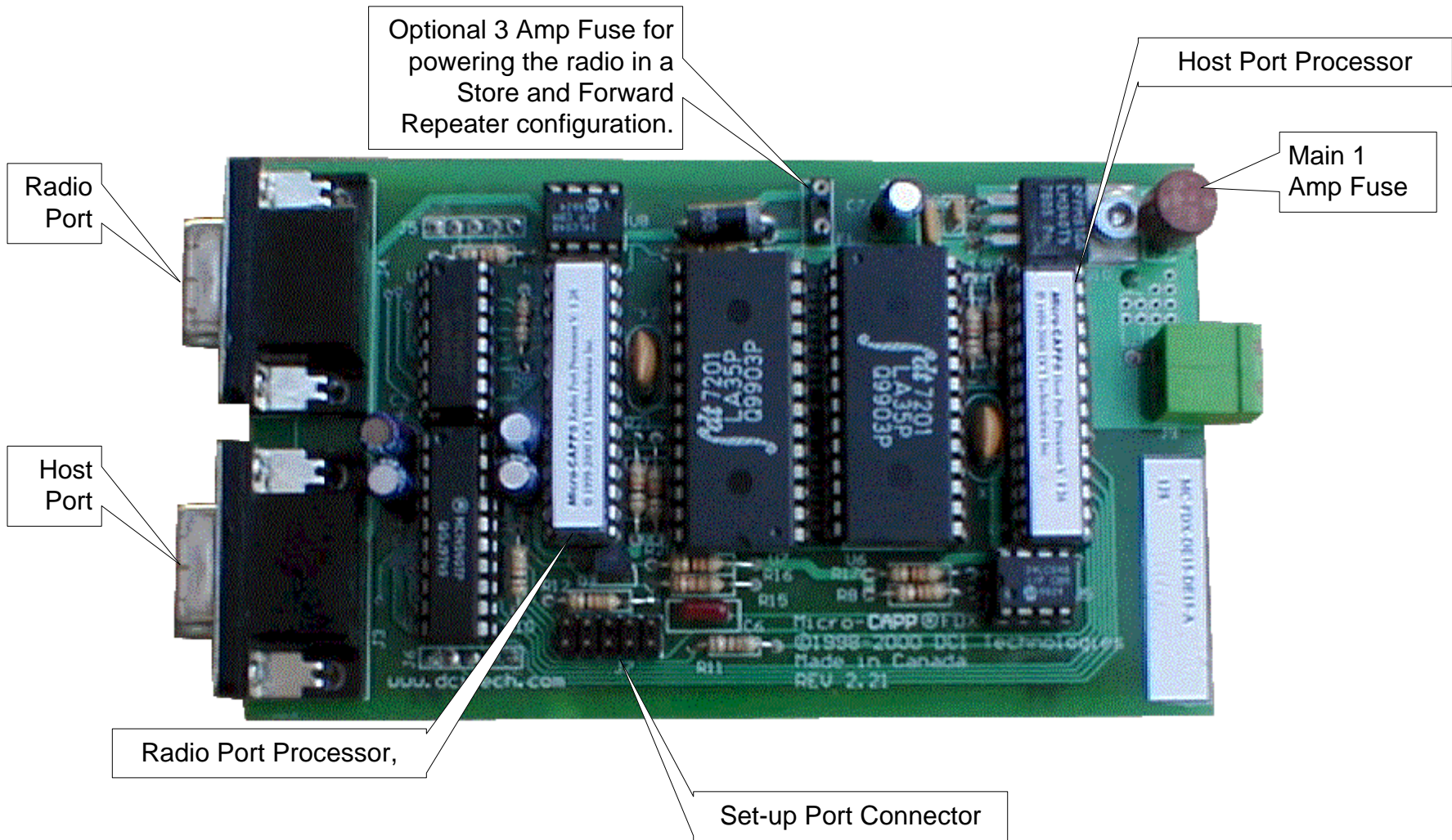
Micro-CAPP to Dataradio Integra (Radio Port) Cable D



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Project: Micro-CAPP FDX	
Subject: Quick Start Guide	
Detail: Custom Cables	Revision: 1.3
Company: DCI Technologies Inc.	Designer: W.E.(Ted) Skinner
Filename: Micro-CAPP QS Ver1_3.vsd	Date: Mar 1, 2002 09:38

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Project: Micro-CAPP FDX	
Subject: Quick Start Guide	
Detail: Chip Locations	Revision: 1.3
Company: DCI Technologies Inc.	Designer: W.E.(Ted) Skinner
Filename: Micro-CAPP QS Ver1_3.vsd	Date: Mar 1, 2002 09:38

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1. *What data formats can the Micro-CAPP handle?*

The *Micro-CAPP* is an asynchronous serial device that will transparently pass 8 data bits, 1 start bit and 1 stop bit at rate from 1200 Baud to 19,200 Baud. What this means is that any data format that has a combined total of the 10 bits will pass thru ok. For example 7 bits, even or odd parity and 1 stop has the same bit count hence it will pass ok.

2. *Can I use a Micro-CAPP to interface between two types of Radio Modems?*

Yes. The two ports on the *Micro-CAPP* buffer are set-up independently for baud rate and timing. Any data that is received on one port will be transferred and transmitted out the other port, but will have its speed changed to whatever the settings are on the respective port. Also one port (Radio Port) has full RTS/CTS control so you can use the *Micro-CAPP* as a buffer to add radio control what was otherwise just a data stream. This effectively enables a standard transparent radio like the Dataradio T96SR to have DOX (data operated switch) control. This feature works very well if you want to connect a T96SR and an Integra-TR or Integra-H back to back.

3. *I have a T96SR system but I have one RTU site that needs to operate at a different baud rate than the rest of the network. Can the Micro-CAPP help with this?*

Yes. As noted in question two the two ports on the *Micro-CAPP* buffer are set-up independently for baud rate and timing. Any data that is received on one port will be transferred and transmitted out the other port, but will have its speed changed to whatever the settings are on the respective port. This will allow you to have RTU's connected at various data rates on a T96SR transparent radio system.

4. *What protocols with the Micro-CAPP Handle?*

The *Micro-CAPP* can operate in one of two modes, Buffer and Parrot, each has some considerations when it comes to protocols.

The buffer mode is completely protocol transparent, but it can change the character timing. By setting the Inter-Character delay time and Rate Padding parameters you can determine exactly how you want to pace data out of the buffer. Some protocols that require specific time gaps between messages may be affected.

The store and forward "Parrot" option in the *Micro-CAPP* is a very simple implementation. It is called a "Parrot" option because it will repeat everything it hears, hence it is protocol transparent. However because it repeats everything, both your host system and the RTU must be able to handle hearing their own transmissions reflected back to them.

5. *What about using multiple Micro-CAPP "Parrot" repeaters?*

Suppose you have a radio network with 3 links cascaded between 4 points: A --- B --- C--- D and you want to use the *Micro-CAPP* in intermediary points B and C. In a single frequency system you cannot have two *Micro-CAPP*s back to back (sites B and C) with Store and Forward turned on or you will start generating a lot of looping traffic.

The best solution is to use a real repeater (two frequencies) at either site B or C. You can also use the *Micro-CAPP* in Buffer mode to interface between two different radio systems. For example if you have a store and forward *Micro-CAPP* located at point B you could still install a *Micro-CAPP* buffer at Point C connected to a Spread Spectrum link (such as the Integra-H) to Point D. The *Micro-CAPP* also works as a great interface between a back to back T96SR and Integra radio. Another option is to set up a submaster system at Point C that polls Point D over a different radio or frequency.

6. *Should I use a Full Duplex Repeater or a Micro-CAPP "Parrot" Store and Forward Repeater?*

As a general summary a Store and Forward Repeater should never be your first choice. Always try and implement the system with a full duplex repeater. If frequencies are not available and you have to operate on a single frequency or cost is a big issue then store and forward can be considered. If you do decide to use a store and forward repeater then the system needs to be carefully designed taking into consideration multipath signals and protocol tolerance of echoed messages.

7. *What happens if some radio sites are in range of both the host and the "Parrot" repeater?*

This is no problem if you are using Integra Radios in the system. The Integra has a setting where you can select the "Unit Type". This will allow you to set the Integra radio to two different modes, "Master" and "Remote". There is also a second parameter called "Data Delivery" and this can be set to "All" or "Selective". What you need to do is set all radios in the system to "Remote" except for the radio that is connected to the Micro-CAPP "Parrot", which needs to be set to "Master". Then set data delivery to "selective" on all radios in the system that are in range of both the "Host" and "Parrot". What this does is effectively disables communications between radios of "Like Types", hence eliminating duplicate messages arriving at sites that are within radio range of both the "host" site and the "Parrot" repeater site.

8. *Is there a speed difference between a full duplex repeater and a Store and Forward Repeater?*

Yes. As the name suggests, in a store and forward repeater all messages are stored in memory and then repeated again, hence all messages are transmitted twice. This then makes the maximum effective throughput of the system $\frac{1}{2}$ of what it would be with a full duplex repeater system. However, if you have a system with gaps in polling that are more than twice the size of the average data message, you may experience no effective system speed reduction.

9. *Can I have a local RTU located at the same site and use the same radio as the Micro-CAPP when using the Store and Forward Repeater Option?*

Yes. You can select an option with the set-up software to enable "Local Drop" when in "Parrot" mode. This causes all repeated messages to be sent out the Host Port in addition to being sent back out to the radio port for re-transmission. Keep in mind that the Micro-CAPP will repeat all messages even if the message is destined for the local RTU. For some protocols you may need to set-up your local RTU to delay its reply to enable a message gap to occur. Under some conditions the RTU Reply may get stacked in the buffer immediately behind the repeated message.

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