

A Simple 1553 Setup for Testing and Application

Application Note

AN/253

Making a test or simulation setup for a MIL STD-1553 data bus system is made easy with North Hills 70 Series™ Data Bus Coupler Kit. This “Kit” can be tailored to your specific needs and includes all couplers, cables, terminators, bulkhead jacks and connectors with the possible exception of the mating connectors to your system specific hardware.

Most test or simulation setups are rather simple, as shown in Figure 1. In this system multiple remote terminals are either not considered or may be simulated in either the bus controller or the tester. It is also possible for the tester to be the bus controller.

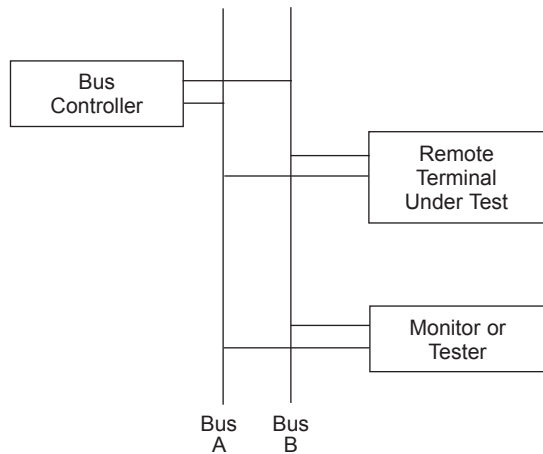


Fig. 1. A Simple 1553 Setup

The hardware implementation is shown in Figure 2. The terminators can be plugged directly on the bus ports of the couplers while the cables between the stub ports and the equipment should not be more than 20 feet long. It is good practice to make them only slightly longer than necessary for the mechanical arrangement of the setup.

The most common mating connectors for the couplers are Trompeter PL-75-47 types available from North Hills. The terminators are 78 ohm but are also available in 70 ohm for 1553A applications (as are the couplers). Completed cables can be ordered as shown in Figure 3.

For simulation or evaluation tests it may be more desirable to use the actual system configuration complete with

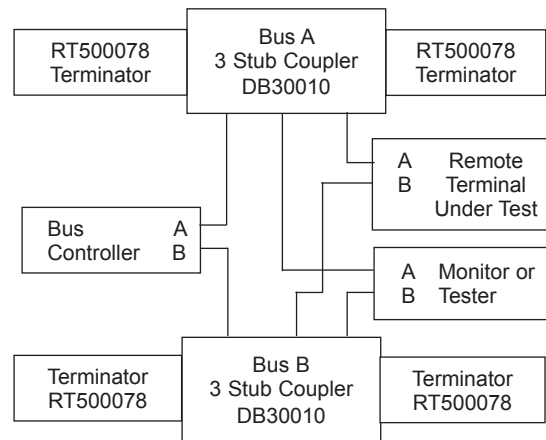
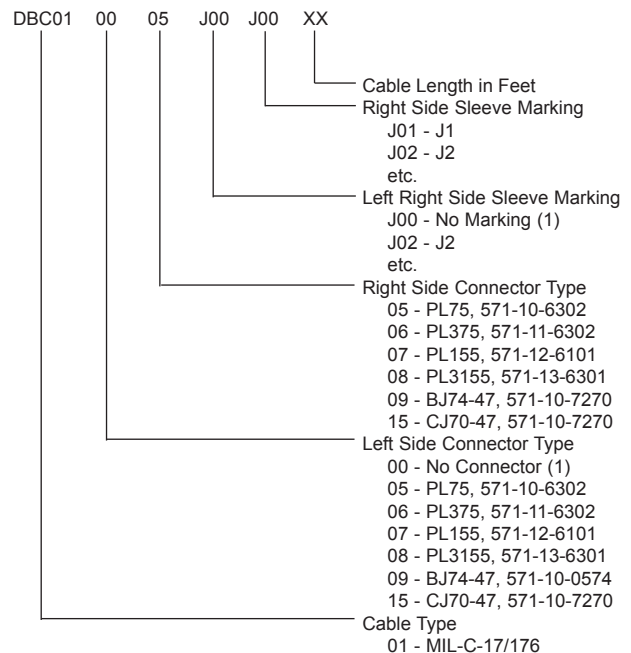


Fig. 2. A 1553 Implementation of Figure 1.

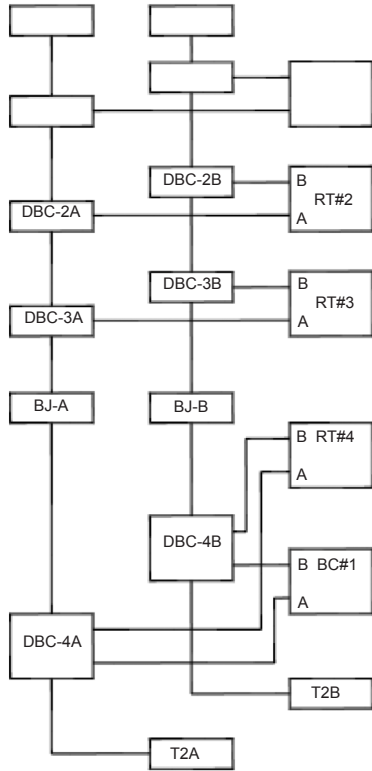
bulkhead connectors, actual cable lengths and coupler configurations (i.e., single and multiple stub couplers as used in the system). In these types of systems it is important that the various cable lengths be the same



(1) Left Side Only

Fig. 3. Completed cables part designation system.

as the actual system and the shield terminations be representative of how it will be done in manufacturing. Many times, unless a special effort is made, the pigtails and unshielded wire lengths can be quite long in production harnesses. An example of a full system simulation is shown in Figure 4.



Key:

- | | |
|--------------------------------|--------------------------|
| T1A = RT500078 | T1B = RT500078 |
| T2A = RT500078 | T2B = RT500078 |
| DBC-1A = DB02M01E | DBC-2A = DB02M01E |
| DBC-3A = DB02M01E | DBC-3B = DB02M01E |
| DBC-4A = DB20010 | DBC-4B = DB20010 |
| BJ-1A = 571-10-0302 | BJ-1B = 571-10-0302 |
| RT# 1-4 system equipment | BC#1 = system controller |
| Cables: DBC01 05 05 JNN JMM XX | |

Fig. 4. Full System Simulation Example.

Some testers have only a single bus input and in dual bus configurations you must manually switch the unit from bus A to bus B and vice-versa. With the 2P2T relay of the DBR2000 connected as shown in Figure 5 the buses can be switched remotely with a 28VDC signal. Using the DBR2000 as shown in Figure 6 allows a user to rapidly reconfigure a system without a lot of manual cable changes.

Whatever your test or simulation needs North Hills can help you implement the bus cabling. It has the couplers, connectors, switching devices and will even make up the cables for you; all at reasonable prices.

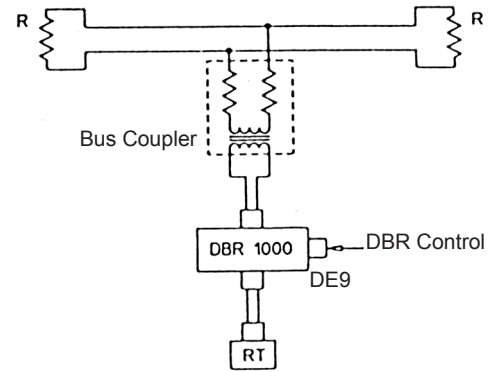


Fig. 5. Stub Switching.

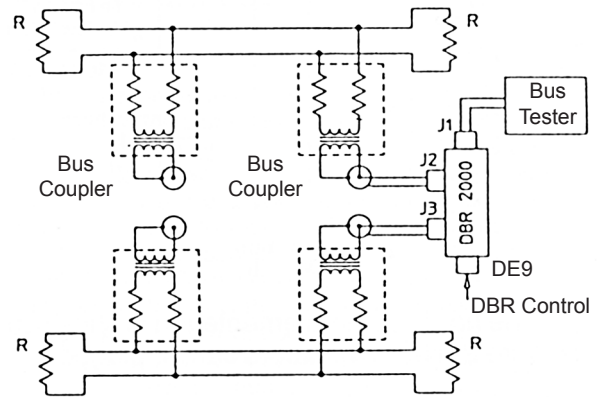
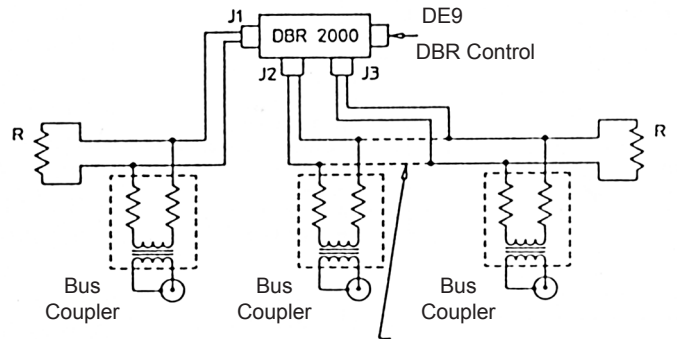


Fig. 6. Bus Switching.



When relay contacts are in the de-energized position there is a through path to the termination "R".

Fig. 7. Bus Segmenting.



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