Intelligent Multidropping Device
IMD

The Intelligent Multidropping Device (IMD) was developed by H2NS to allow more than one instrument or instruments of different manufacturers to share a common serial RS-232 or RS-485 line. The IMD contains a microcontroller that controls the operation of the unit. A single 4 conductor (5 conductor for RS-485) cable is connected from the CPP to the IMD's. The IMD's can be connected in a star configuration, a daisy chain configuration or a mixture of both configurations.

In the CPP system initialization, a comm port is assigned to each instrument that is initialized. The CPP then asks if an IMD is installed in this comm port. If so an IMD - ID is entered, if not an ID of zero is entered. In this fashion, any number of instruments can be connected to a single communication line. As the CPP polls each instrument, if an IMD is installed, the CPP reaches the instrument by addressing the IMD.

When the CPP is going to poll an instrument that has an IMD installed, the CPP raises the RTS line, which is detected by all IMD's connected to this line. Then at 9600 baud the CPP sends the ID of the IMD that is connected to the instrument being polled. The CPP then lowers the RTS line. When the RTS line is lowered the addressed IMD makes a connection between the instrument and the serial line. All other IMD's remain in the quiescent mode. The CPP can then communicate with this instrument in its format and at any baud rate. Once communications with this instrument are completed, the CPP can communicate with other instruments connected to this serial line in a similar fashion.

This approach allows a mixed assortment of instrumentation to share a common serial line. This approach is valid only when the CPP is polling the instrumentation connected to this line. Instruments that broadcast must be connected to independent comm ports on the CPP. Any of the comm ports of the CPP can be configured to accept a broadcast input. The CPP can accept broadcast inputs on some comm ports, and be polling other instrumentation, with or without IMD's installed, on other comm ports.

Consideration should always be given to the network topology when setting up multidropping configurations. The IMD is most useful when the instrumentation is located at some distance from the CPP. The IMD approach requires that only one serial line be run between the two locations, as the IMD's can be daisy chained among instruments at the remote location. If the instruments are in relatively close proximity, then the addition of independent comm ports is more cost effective and in the long term will provide more system flexibility.