Interfacing With Siemens Instruments Using ELAN Protocol

1.0 General

The CPP offers a serial interface with the Siemens Ultramat 6 and Ultramat 23 instruments using the ELAN protocol.

2.0 Set Up

This is part of the I keyin of the CPP. After selecting Seimens as a manufacturer, the CPP presents the following component selection.

        Siemens
        Component #
        01 = Cmp#1
        02 = Cmp#2
        03 = Cmp#3
        04 = Cmp#4
        05 = Cmp#5
        06 = Cmp#6
        07 = Cmp#7
        08 = Cmp#8

        Selection = **1<cr>**

The actual components are set up in the Siemens units, and any component number can be used, as long as the component numbers match in the Seimens and the CPP. From the above example, the component set up as component #1 in the ELAN set up of the Siemens instrument should be the desired component. More than one parameter can be set up with the same component number in the Siemens instruments. **If the instrument is set up this way, this must be changed.**

From the front panel of the Siemens instrument push the pushbutton associated with the desired parameter (component). This brings up a second menu. Select configuration. A password may have to be entered to get through this menu. When enabled, a third menu is presented. Select ELAN set up. This brings up a final menu. The top selection allows the ELAN component number to be set up. Set this number to the desired number and matching the Cmp# intended to be used in the CPP to collect data from this parameter. Depressing the pushbutton toggles the ELAN component number from 1 through 12 and repeats. Make sure that the Telegraph selection is OFF.

If other components are available in the instrument, make sure that none of them have the same component number as the one just set up.

The Siemens instruments default to 9600 Baud as does the CPP for Siemens interfacing. This can be changed, but it must be changed and made the same in both the Siemens instrument and the CPP.

3.0 Siemens UltraMat 6 & 23 Connections

The Siemens instruments have a 9 pin female DB rear panel connector for the serial interface. The Siemens units operate RS-485 and are half duplex. The below defines the DB9 male to RJ-11 wiring mating plug to the Siemens units. With this connector wired as indicated below, a standard telephone cable can be used to connect the CPP to the Siemens units. Since the Siemens instruments operate half duplex, the Tx+ and Rx+ and the Tx- and Rx- signals can be tied together if desired. The CPP should be configured for half duplex operation.

DB9 Male to RJ-11

Siemens Signal	DB Pin	RJ-11
Tx+	3	5
Tx-	8	4
Rx+	7	3
Rx-	9	2

1   2 3 4 5 6
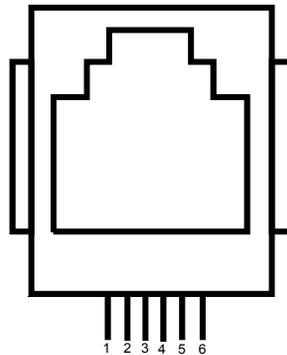
1   RTS Output
2   TX+ Output of CPP
3   Gnd (TX- in RS-422/485)
4   Gnd (RX- in RS-422/485)
5   RX+ Input to CPP
6   CD Input

4.0 Instrument Status
The data string returned by the Siemens instruments contains status information regarding the operation of the instrument. The CPP decodes this returned status information. If any status other than good is being received the CPP flags the data with an I modifier indicating that the data point is in question, and also indicating a possible problem.

5.0 Off Line Pass Through
The CPP also supports an off line, unabated pass through mode. This allows the user to communicate with a connected instrument without adhering to any CPP protocol. Even the manufacturers diagnostic routines can be conducted remotely using this feature. More discussion of this is provided in Tech Note 36 included below.

6.0 Modbus Outputs
The CPP can also convert data collected form a variety of instruments, communicating in different protocols, into a common protocol, such as a Modbus format.   This feature is described in detail in Tech Note 33.

7.0 Ethernet Connection
H2NS can also provide a mechanism for connecting the CPP to an Ethernet connection.

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Comm #1 Pass Through

General
Communication port number 1 is the port that is normally connected to a central facility and is the port over which data is retrieved from the CPP. Using simple commands, comm port #1 can be electrically connected to comm port #4 or the comm #3 ports.

On Line Pass Through to Instruments
The CPP supports two types of pass through operation. One is an on line mode in which commands received on comm port #1 are interleaved with CPP polling commands and sent to connected instrumentation. The instruments response is then returned to comm port #1. This mode has the benefit of the instrumentation staying on line with the CPP, but has the drawback that a certain protocol must be maintained for proper operation.

To communicate with an instrument, connect to comm port #1 with the $ID, and enter SETQ<cr>. Then enter D43<cr> and the CPP will respond with a list of instruments connected to the unit. Select the channel of the desired instrument and begin communications. The on line pass through is discussed in more detail in the CPP manual and in each application note for each manufacturer.

Off Line Pass Through
The second type of pass through places the instrument in an off line mode with the CPP. In this mode, commands from comm port #1 are passed unabated to the instruments comm port, and instrument responses are returned to comm port #1. The CPP does not send commands to an instrument that is this type of pass through. This allows the user to conduct manufacturer supplied diagnostics on the instrument without interference from the CPP. The disadvantage is that the instrument is off line with the CPP and data is not being collected during this time.

Commands
Connect with comm port #1 by entering $ID ($1 for example). The CPP echoes the ID. Table 1 below presents the commands used to pass through comm port #1 to another comm port in a CPP offline mode.

Table 1
Pass Through Commands

SETQ<cr> = Pass comm port #1 to comm port #4
SET0<cr> = Pass comm port #1 to comm port #3-0
SET1<cr> = Pass comm port #1 to comm port #3-1
SET2<cr> = Pass comm port #1 to comm port #3-2
SET3<cr> = Pass comm port #1 to comm port #3-3
SET4<cr> = Pass comm port #1 to comm port #3-4
SET5<cr> = Pass comm port #1 to comm port #3-5
SET6<cr> = Pass comm port #1 to comm port #3-6

To pass through to an instrument, select the appropriate comm port, *e.g.* SET0<cr>. This connects comm port #1 to comm port #3-0. Commands and instrument responses can now be exchanged between the user and the instrument, without interference from the CPP. The CPP will remain in this mode until either a $ is received on comm port #1, or one hour elapses, at which time the CPP will switch out of the pass through mode and return to normal operation.