Connecting UniOP to the Parker COMPAX Controller

This Technical Note contains the information needed to connect UniOP to the Parker COMPAX controller. The Parker COMPAX protocol is associated to the Designer file UPLC163.DLL.

Contents

1. Introduction

Connecting the UniOP operator panel to the Parker COMPAX controller, you will be able to provide friendly interface to the end user. Using the Designer application, you can configure the UniOP panel to meet your exact needs.

2. Installation

The file UPLC163.DLL containing the driver has to be copied to the Designer installation folder together with the UPLC163.INI file. The initialization file contains the list of supported commands and data types. It has to be present in the Designer directory.
Once Designer is started the “Find All” command will link the new available protocol.

3. Setting up the COMPAX controller

The UniOP operator panel can be connected directly to the RS232 connector of the COMPAX controller. The RS232 interface is standard equipment of the controller. UniOP can also be connected

to the COMPAX controller through its optional RS485 interface. No adjustment on UniOP for one or the other connection type is necessary, but a differently wired cable must be used for each case.

Refer to the COMPAX controller documentation for more information.

3.1 Connecting UniOP to the RS-232 Communication Port

For a point-to-point communication (UniOP connected to only one COMPAX controller), you will typically connect the PLC port of the UniOP to the controller's RS-232 communication port. For this connection, use cable CA55.

Standard communication parameters are:
- 8 data bits,
- 1 stop bit
- parity: none

Other communication parameters are configurable in the COMPAX controller through the P19 and P20 registers.

Parameter	Description
P19	RS232 baud rate - set to 4800 for 4800 bit/s - set to 9600 for 9600 bit/s
P20	RS232 handshake (enter the sum of specified values) - Software handshake (**0**: without, **1**: with XON/XOFF) - Error transmission: **0**: Error only when there is activity at the interface and if the transmitted command triggers an error. **2**: No transmission of error or negative command acknowledgments **4**: Messages are indicated for all errors and negative command acknowledgments when they occur using Exx CRLF>. **6**: Error and negative command acknowledgement only when there is activity at the interface - End sign selection (**0**: CRLF, **8**: CR) - Binary transfer (**0**: without, **16**: with) - BCC error check (**0**: without, **128**: with)

It is suggested the use of use 9600 baud rate without XON/XOFF software handshake, no binary transfer and the use CR as the end sign mark.

Values entered will take effect only after a power cycle of the drive.

3.2 Connecting UniOP to the RS-485 Communication Port

The UniOP connection to more than one COMPAX controller is allowed through the controller's RS-485 interface. The RS-485 interface is optional for the COMPAX controllers. UniOP can be connected to the RS-485 line using the CA213 cable.

Standard communication parameters are:
- 8 data bits,
- 1 stop bit

- parity: none

Additional communication parameters are configurable accessing to the P194, P195 and P196 registers on the controller.

Parameter	Description
P194	Device address (must be unique for every Parker COMPAX slave in the controller network) - set value form 1 to 31 (broadcast, value 32, is not supported by UniOP)
P195	RS485 Baud Rate - set to 4800 for 4800 bit/s - set to 9600 for 9600 bit/s (no other values are supported by UniOP)
P196	Operating mode - used to select party, timeout and software handshaking.

Values entered will take effect only after a power cycle of the drive.

4. Setting up the UniOP

To be able to communicate to the COMPAX controller, the UniOP panel has to be properly configured.

Only issues specific for the COMPAX controllers will be discussed here. Refer to the Designer documentation for all other information.

4.1 Controller Setup

The Controller Setup dialog box is shown in the figure below.

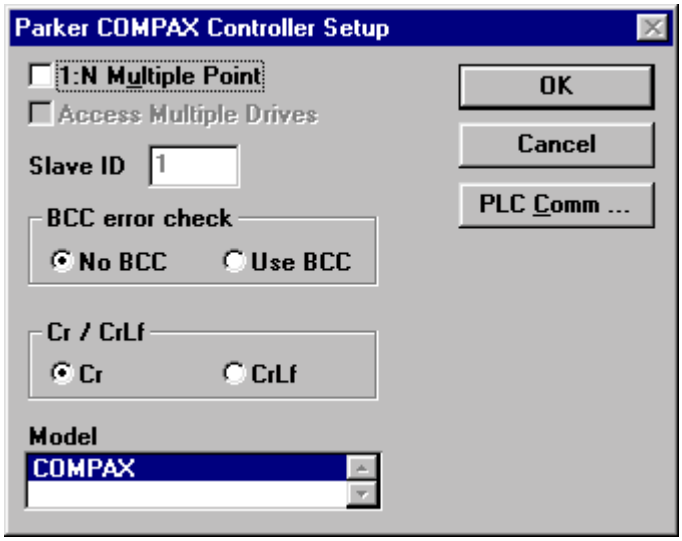

Figure 1 – Controller Setup Dialog Box

Communication parameters must match the driver settings.

Connection to more than one controller is enabled using the "1:N Multiple Point" option and the "Access Multiple Drives" option. The Controller Setup dialog will change as shown in the Figure below.

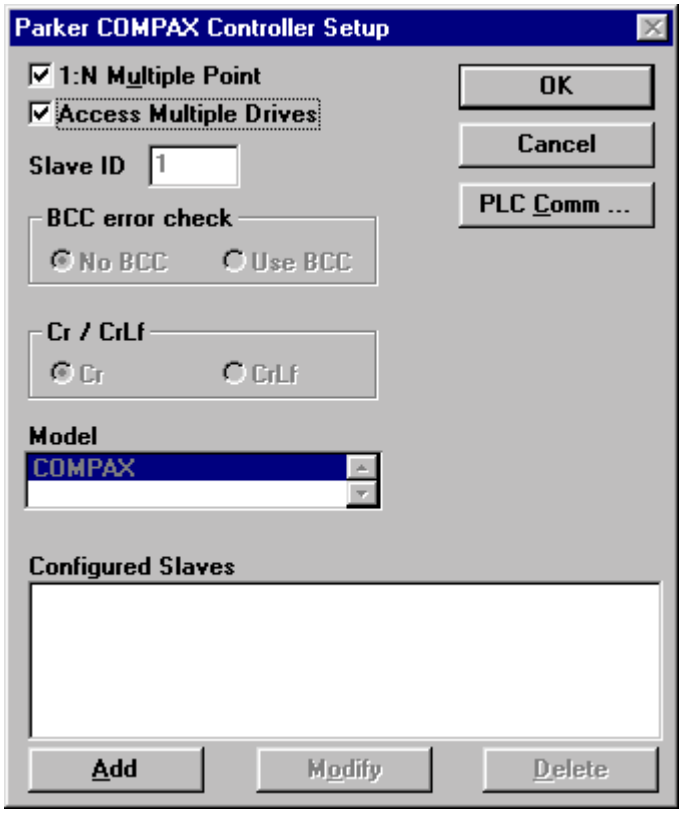

Figure 2 – Controller Setup Dialog Box for multiple controllers setup

Pressing the "Add" button a new COMPAX controller will be added as slave to the network. Unique Slave ID number must be assigned to each of the configured Slaves. This Slave ID number must be the same entered into the P194 parameter for that the particular controller.

Communication parameters like Error Check, and CR or CRLF end mark character, are separately configurable for each COMPAX controller in the network. The other communication parameters (baud rate and parity) must be the same for all controllers in the network.

4.2 The Define Field Dialog Box

The Define Field Dialog Box for the Parker COMPAX controller is shown on the figure below.

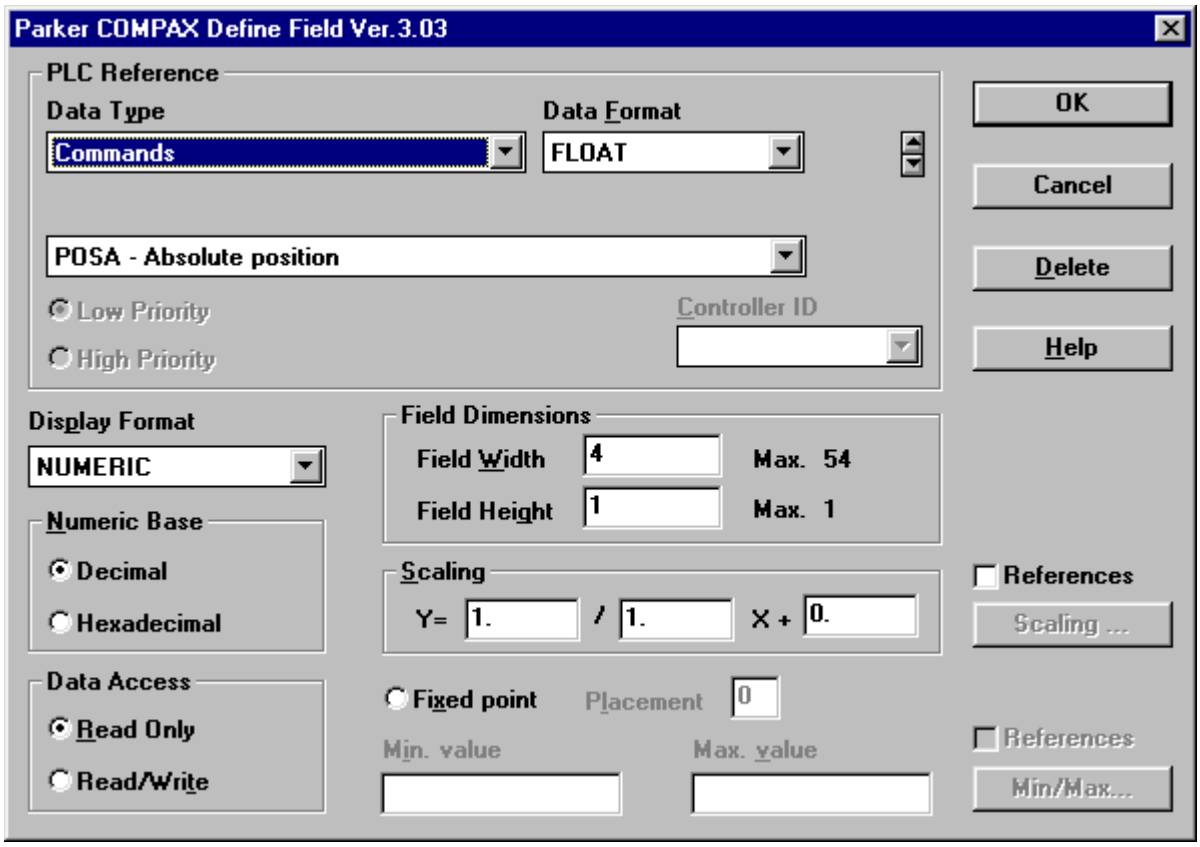

Figure 3 – Define Field Dialog Box

The Data Type Combo Box allows to select the Data Type. The Combo Box below the Data Type allows to specify the particular command, parameter, status register or variable related to the selected Data Type.

The Data Format Combo Box shows the format in which the data will be displayed on the UniOP panel. For all the Data Types resident in the controller, except for some Status registers, the Data Format will be fixed to the one indicated by the controller manufacturer. Only in case of the "Internal Panel Memory" Data Type and the mentioned Status registers, the selection will allow to choice from more than one Data Format.

The Controller ID Combo Box will be enabled if the Controller Network with more than one Parker COMPAX slave is enabled.

The COMPAX driver for UniOP allows to access to several Data Types described in the table below:

Data Type	Description
Internal Panel Memory	Represents the memory available inside the UniOP panel. This memory can be used for several different purposes; for example to hold the RDA, or in Data Transfer operations. Internal Panel memory is made of 512 bytes accessible in read and write in units of bit, byte, word and double word. Accessing this memory will not result in any data exchange with the controller.

Commands	It is possible to issue most commands supported by COMPAX controllers. Commands are “write-only” data types and therefore can be issued using the “Write to Controller” keyboard macro. Exceptionally, there are few commands that are read/write and so they can also be used as dynamic fields onto the UniOP display: the POSA, POSR, SPEED, ACCEL and the ‘V’ DESTINATION VARIABLE / ‘TN’ DESTINATION VARIABLE commands. To make them read/write, the POSA, POSR, SPEED and ACCEL commands are combined with appropriate "read-only" variables. When displayed, the contents of the S1, S3, P2 and P6 status registers and parameters will be shown, respectively. The special ‘V’ DESTINATION VARIABLE and ‘TN’ DESTINATION VARIABLE commands are to be used along with the Teach-in feature (see chapter 4.3 for additional information on these commands).
Status Registers	All status registers (S01 to S49) are accessible from the UniOP panel; they are "read-only". For most Status registers the data format selection is not allowed. However there are few exceptions. For S16, S17 and S19 to S26 Status registers can be displayed using data format byte and bit. S18, S27, S30, S31 and S32 can be chosen only if the ASCII data format is selected.
Parameters	All parameters (P01 to P250) are accessible from the UniOP panel. For parameters P30 to P34 and P40 to P49, the description can be assigned at run time and can also be read from the controller. The ASCII display format allows to access to the parameter description associated with the register. Select “NUMERIC” to display the value. If needed, the UniOP Driver will automatically send the “VP” or the “VC” command to the Controller every time a value is written to the Parameter ensuring parameter change will take effect.
V Variables	UniOP can read and write variables V0 to V70. For variables V1 to V70, descriptions can also be read. To read and display the description, instead of the value, select “ASCII” in the Display Format Combo Box. (Select “NUMERIC” to display the value.)
TN Variables	UniOP can read and write variables TN1 to TN250. For variables TN1 to TN199, descriptions can also be read. To read and display the

	description, instead of the value, select “ASCII” in the Display Format Combo Box. (Select “NUMERIC” to display the value.)

Other controls in the Define Field Dialog Box are standard for Designer application. Refer to Designer documentation for more information.

4.3 The Teach-In Feature

The Teach-In feature makes it possible to store the current controller position into a specified variable. Furthermore, a command can be issued to the controller to make it moving to a stored position.

The current controller position can be stored either into the V variables or into the TN variables.

Inside the Keyboard macro editor the “Send Command...” macro can be used to store the current controller position into a variable. The COPY S001 INTO THE ‘V’ DESTINATION VARIABLE command can be used to store the current position into a V variable; the COPY S001 INTO THE ‘TN’ DESTINATION VARIABLE can be used to store the current position into a TN variable.

Values contained at run time in the ‘V’ DESTINATION VARIABLE and the ‘TN’ DESTINATION VARIABLE will designate to which particular V or TN variable the current position will be stored. If, for example, the ‘V’ DESTINATION VARIABLE contains value 14 and the COPY S001 INTO THE ‘V’ DESTINATION VARIABLE command is issued, then the current controller position will be stored into the V14 variable.

To make the controller moving to a stored position the MOVE TO TEACH-IN POSITION Vxx or MOVE TO TEACH-IN POSITION TNxxx command can be issued. Again, values contained in the ‘V’ DESTINATION VARIABLE / ‘TN’ DESTINATION VARIABLE will reference the particular V / TN variable that is holding the stored position.

4.4 RDA & Alarms Information

The RDA can be placed into “Internal Panel Memory” only. As an exception, for the “Alarms” part of the RDA (used for the “compatibility mode” alarms) S16, S17 and S19 to S26 Status registers can be used.

For the “enhanced mode” alarms, the Internal Panel Memory and S16, S17, S19-S26 Status registers can be used.

If you choose to use Status registers as alarm-triggers you define only the address of the first status register.
For example, if you define the S016 status register as the beginning status register of the alarm block you have:

- Alarms 1-8 corresponding to bits 1-8 of the S016 status register
- Alarms 9-16 corresponding to bits 1-8 of the S017 status register
- Alarms 17-24 are invalid because the S018 is not enabled for alarms and you should not use alarms 17-24 in our example

- Alarms 25-32 corresponding to bits 1-8 of the S019 status register and so on...

4.5 The “Password Issue” mechanism

The Protocol driver will send the “GO620” password to the controller first time the particular controller has to be accessed. After sending the password, the driver will read the S17 Status register and check if bit 02 is set to one. If not, the driver will resend the password. The password-send/S17-check procedure will be repeated until the bit 02 of the S17 status register is set.

Once the bit 02 is set, the driver will engage normal communication and will not resend the password until next power-up or after a communication time-out.

Appendix A. Communication Error Codes

Current communication status is displayed in the System Menu of the UniOP.
A message and a numeric error code describe the error status.
The message reports the current communication status. The number shows the code of the current communication error or, if the communication is correct, the code of the last error encountered. When the error code 0 is shown, it means there have been no communication errors since this system start-up.

Code	Description	Notes
00	No error	There are no communication errors and there have been no errors since start-up.
05	Time out	No response received from the controller within the timeout period.
07	General communication error	Should never happen
12	BCC check error	Only if BCC is enabled.