1   DESCRIPTION

The Simplex Time Recorder Company - 4100 Computer Port Protocol driver allows the FieldServer to transfer data to and from devices over RS-232 using Simplex Time Recorder Company - 4100 Computer Port Protocol.

This driver is designed to connect to a Simplex 4100 panel equipped to support the "4100 Computer Port Protocol" as defined in Simplex's document 950-004 Revision E dated 28 July 2000. The implementation provides a selected subset of protocol functions and subset of functionality for each of these selected functions. It is important to note the exclusions and limitations described in this document.

The driver is capable of parsing and storing information sent by a panel in the form of unsolicited messages which are typically generated when there is a state change in the panel or one of the connected devices. The driver is also capable of polling for point and panel status data and some additional data such as the panel's time and revision information. In addition the driver is capable of setting some control points in the panel – acknowledging and resetting alarms and writing data (where permitted) to some analog and discrete points.

This is a client only driver and is not capable of emulating a Simplex Panel. Server emulation is provided for test purposes only and is not supported or documented.

2   FORMAL DRIVER TYPE

Serial

Client Only

3   COMPATIBILITY MATRIX

FieldServer Model	Compatible
FS-B35	Yes
SlotServer	No
ProtoNode	Yes
QuickServer FS-QS-10xx	No
QuickServer FS-QS-12xx	Yes
ProtoCessor FPC-ED2	No
ProtoCessor FPC-ED4	Yes

4   CONNECTION INFORMATION

Connection Type: RS-232 (Two wire, Full-Duplex)

Baud Rates: 110; 300; 600; 1200; 2400; 4800; **9600**; 19200; (vendor limitation)

Data Bits: 7,**8**

Stop Bits: **1**,2

Parity: Odd, **Even (4100)**, Mark, Space, **None (4100U)**

Multidrop Capability: No

5   DEVICES TESTED

Device	Tested (FACTORY, SITE)
4020 Panel Firmware Revision 9.02	Site
4100U Panel Firmware Revision 11.03	Site
4100ES	Site
4010ES	Site
NDU (Network Display Unit)	Site

6   SUPPORTED COMMUNICATION FUNCTIONS

6.1   Data Types Supported

Function	Read/ Write	Description
AckAll	Client Writes	This command acknowledges all card-point-sub states. The points to be ack'd are determined by inspection of a data array. This is a data driven command.
Ack	Client Writes	This command allows the driver to acknowledge a single point. The points to be ack'd are determined by inspection of a data array. This is a data driven command
Clist	Client reads	This command returns the current point status for one point. When a point's status is obtained, the FieldServer will write one byte of data to a data array. The byte will contain the following information:

Function	Read/ Write	Description
		<table><tr><th>Bit</th><th>Identifier</th><th>Description</th></tr><tr><td>0 (First Bit)</td><td>F</td><td>Fire Alarm</td></tr><tr><td>1</td><td>P</td><td>Priority 2</td></tr><tr><td>2</td><td>S</td><td>Supervisory</td></tr><tr><td>3</td><td>T</td><td>Trouble</td></tr><tr><td>4</td><td>U</td><td>Utility</td></tr><tr><td>5</td><td>C</td><td>Control</td></tr><tr><td>6</td><td>D</td><td>Disable</td></tr><tr><td>7</td><td>A</td><td>Primary state (based on point type - F if smoke detector, C if signal circuit, etc.)</td></tr></table> The acknowledge state of the point is not available.
Seta	Client Writes	This command allows the user to Modify the value of an analog pseudo point. The port access level must be set appropriately in the Simplex device otherwise the device returns an error.
Setd	Client Writes	This command allows the user to: Manipulate the status and/or priority of a control point Modify the value of an analog pseudo point. Set the sensitivity of a TrueAlarm sensor. Set the rate-of-rise threshold of a TrueAlarm heat sensor.
Xpoint	Client listens for panel generated messages.	Point Status Change. This is an unsolicited message sent automatically by a Simplex Device to report some or other points status if there is a change of interest. When one of these messages is received then the card-point-sub are used to calculate an offset into the associated data array
Reset	Client Writes	Used to send a reset signal to the Simplex device. This is a triggered command.
Revision	Client Reads	Used to request revision information from the simplex panel.
Time	Client Reads/ Writes	Allows Panel time to be read/set.

Function	Read/ Write	Description
Show	Client Reads	This function reads information about a point other than just the status. Only the point format of this command is implemented. The driver is only capable of processing responses from a sub-set of point types and is not tolerant to variations in the formatting of responses. The function can be used to read the current analog value (for TrueAlarm devices and Analog pseudo points only).
Value	Client Reads	This driver function used the Simplex 'CSHOW c-p-s CVAL' command. A subset of the function is implemented to allow the analog values of certain points to be read and stored. It is only supported by panels with firmware revision numbers greater than 10.
Earths	Client Reads	This driver function uses the Simplex 'SYSDIAG Earths' command. It is only supported by panels with firmware revision numbers greater than 10. A subset of this function is implemented to allow device and panel earth states to be read and stored.

6.2 Unsupported Functions and Data Types

Function
Symbolic point formatting is not supported.
The following command and message are not supported. XLOG, TERM, DISARM, DISABLE, HELP, LOGIN, RESTART, LIST, PRINT, TYPE, SELECT, CLEAR, DIAGNOSTIC, WALKTEST, CTRL-D, SYSDIAG, SWAP, TICMODE.
For all commands, a subset of the command capability has been implemented. The subset is chosen to exclude most ASCII based responses.

6.3   Functions Described

Information	Functions Supported
Point Status	The driver reports the state by setting a Data Array element to a value corresponding to each possible state. This data is obtained using the *Clist* and *Xpoint* functions. The *Setd* function can be used to set the state of selected points if access levels are set appropriately.
Panel Information	The panel time and software revision information may be read. The panel may be sent an ack, reset command or silence command. A number of methods for triggering these commands are provided. The panel time may be set.
Device Information	Additional information about device attributes is provided using the protocol's SHOW command. The Show command provides an ASCII response formatted for printing. The driver parses these messages and converts the data to numbers so that they can be sent to Client devices using another protocol. The driver compares the state keyword to a table of state keywords which it uses to set the value of the array point. The offset into the Data Array is determined by the attribute and the value stored is determined by the attribute state value. The position of the array element to be set for each attribute is determined using an attribute table. A range of array locations must be reserved for each device being polled to allow the driver to set array values for all the possible attributes of that device. The table of attributes and attribute states is extendable by modifying the configuration of the driver.

Notes

The driver can only recognize known attributes. if the device response is spelled, spaced or formatted differently from the expected response the whole response may be ignored, the attribute may be ignored or the driver may report that the state of the attribute is not recognized.

The driver can only process responses where the address of the point is provided in card-point-subpoint format.

The driver can only process responses where a dashed line separates the header and attribute information.

The user is able to define a list of additional attributes that the driver will recognize.

The driver can only interpret attribute states/values that it recognizes. If he attribute is spelled, spaced for formatted differently from the expected response the driver will report the state/value as unknown.

The possible attribute states/values are unknown. The driver/manual cannot provide information on what states/values can be expected for a particular attribute or device.

The Driver will report attribute states/values by setting a data array element to a value corresponding to the index number associated with the attribute state.

A table of attribute states will be maintained. The user can add to this table so that additional attribute states can be recognized.

Examples

A pull station reports that its primary status is 'Alarm', the driver will set the value of array position 1 to 20 because the state word 'alarm' has in index of 20 in the table of attribute states.

A smoke detector reports that the device attribute is 'On-Line'. The driver sets the value of array position 9 to a value of 1 because the device attribute's array position is 9 and the state word 'on-line' has an index of 9 in the table of attribute states.

A smoke detector reports that the device attribute is 'On Line'. The driver sets the value of array position 9 to a value of 999 because it does not recognize the way that the attribute state is formatted.

Analog Values

The current analog value for TrueAlarm devices and Analog pseudo points can be read from the panel. This is only true of panels with firmware revisions 10.x and later. Typically this excludes older panels such as the 4020 and 4100 unless they have had their firmware updated.

TrueAlarm smoke devices show the triplet current count/current % of alarm/current smoke level.

TrueAlarm heat devices show the pair current count/current temperature.

Analog monitor ZAM devices show their current sensor counts (0-255).

Analog pseudo points show their current value (0-65535).

When multiple values are returned they are stored in consecutive array location.

Some points may have their values set if access levels are set appropriately. The seta function is used for this purpose.

Earth States

The Sysdiag function may be used to monitor the current raw state of the earth statuses in the panel. It displays the earth statuses for 1) SPS/XPS, 2) Mapnet/IDNet, 3) TrueAlert cards. This is only true of panels with firmware revisions 10.x and later. Typically this excludes older panels such as the 4020 and 4100 unless they have had their firmware updated.

6.4 Unsupported Functions and Data Types

Function	Reason
Programming messages	FieldServer is a data transfer device, and as such, programming messages are not required.

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