

### 1 DESCRIPTION

This FieldServer driver can be used to poll or emulate EN.54 Exchanges. The driver also supports a data tap mode to simply collect data from exchanges if another device is already polling the exchanges. The driver can handle 5 exchanges in full configurations (80 zones, 16 loops per exchange).

The driver starts up in a configuration mode during which configuration data is fetched from the exchanges to determine the zone labels and point to zone mappings. After finishing configuration mode, the driver proceeds to normally poll the exchanges for alarm, trouble or event data on points and zones. The driver also supports the special event code 138 from exchanges which is used to indicate that a programming change has taken place on the exchange. The driver will enter configuration mode again after receiving this event code to update the change i.e. a zone label has been changed.

The driver also supports the sending of general resets. The data tap looks for a command accepted response from an exchange or Server before clearing the point status and point faults bitmap Data Arrays. The Server will also clear point statuses when receiving the reset command. The Client or master driver will only reset its own point statuses and point faults bitmap Data Arrays when the Server responds with a command accepted message.

#### 1.1 Client and Data Tap Configuration File Structure

The client can poll exchanges or act as a data tap when specifying a Node\_Type of Data\_Tap in the connection setup.

Data from the exchanges can be stored in Data Arrays by specifying the CEI data type in the map descriptors. The following CEI data types can be used:

CEI Data Type	Nodes Comments
Points	Point Statuses (0=normal, 1=Alarm, etc,)
P_faults_bmp	Point faults bitmap (0=Normal, 1=Fault). Faults are alarms and troubles combined.
analog	Point analog values 0-255
P_devices	Point devices that caused the event (refer to CEI-ABI for list)
P_events	Point event codes associated with statuses (refer to CEI-ABI for list)
Zones	Zone statuses (0=Normal, etc)
Z_devices	Zone devices that caused the event (refer to CEI-ABI for list)
Z_events	Zone event codes associated with statuses (refer to CEI-ABI for list)
Labels	Zone labels (32 characters per zone)
Zone_points	Point statuses per zone as defined in setup data
Setup	Point to zone mappings setup data

Every map descriptor also maps to a specific exchange address' data. The addresses may be 1,2,4,8 and 16 giving a total of 5 exchanges on a port.

The Data Arrays must be set up to provide enough storage space for a fully configured exchange. The required space for Data Arrays can be calculated by noting an exchange's setup:

#### Example: Loops

Exchanges have 16 loops each. Each loop contains 99 sensors and 99 modules. A loop therefore contains  $99 * 2 = 198$  points. The collection of all the sensors and all the modules on all the loops are collectively referred to as points. A total of  $16 * 198 = 3,168$  points exist on an exchange. Data Arrays for point statuses, analog values, point device codes and point event codes need to be each at least 3,168 bytes long per exchange.

**Example: Zones**

Exchanges have 80 zones each. Each zone's zone label consists of 32 characters (bytes) giving a total of  $80 * 32 = 2,560$  characters for the zone labels on one exchange. The zone statuses, zone device codes and zone event codes can each be stored in a data array of 80 bytes per exchange. Finally, the zone setup data is also stored on the Client. The zone setup data consists of 64 bytes per zone on an exchange. This gives  $80 * 64 = 5,120$  bytes of storage needed. The zone setup data provides the mapping of points to zones. Each zone can have 32 points mapped into it.

**Reset configuration:**

A Client only map descriptor with a cei data type of "reset" can be added to the configuration file. The Client driver monitors the databit pointed to by the reset map descriptor. Whenever the databit goes high, the Client will send a reset to the Server. It will reset the databit to zero before sending the reset. No reset map descriptors must be added to the data tap and Server configuration files.

### 1.2 Server Configuration File Structure

The driver can also be used to emulate an EN.54 Exchange. The following cei data types may be used to specify the type of data in storage Data Arrays:

CEI Data Type	Nodes Comments
points	Point statuses (0=Normal, 1=Alarm, etc )
analogs	Point analog values 0-255
devices	Point or zone devices that caused the event (refer to CEI-ABI for list)
events	Point or zone event codes associated with statuses (refer to CEI-ABI for list)
zones	Zone statuses (0=Normal, etc)
labels	Zone labels (32 characters per zone)
setup	Point to zone mappings setup data

The driver Server will respond to configuration (alignment) requests as well as normal polling form the Client driver.

## 2 FORMAL DRIVER TYPE

Serial  
Client or Server/Passive Client

## 3 COMPATIBILITY MATRIX

FieldServer Model	Compatible with this driver
FS-x30	Yes
SlotServer	Yes
ProtoNode	Yes
QuickServer FS-QS-10xx	No
QuickServer FS-QS-12xx	Yes
ProtoCessor FPC-ED2	Yes
ProtoCessor FPC-ED4	Yes

## 4 CONNECTION INFORMATION

Connection type: RS-232 or RS-485 (Two wire, Half-Duplex)  
 Baud Rates: 2400; 4800; 9600; 19200 (vendor limitation)  
 Data Bits: 8  
 Stop Bits: 1  
 Parity: Even  
 Multidrop Capability: Yes

## 5 DEVICES TESTED

Device	Tested (FACTORY, SITE)
EN.54 Exchanges, Models AM-6000, AM-2000, FSP-402	SITE