



**Driver Manual**  
**(Supplement to the FieldServer Instruction Manual)**  
**FS-8700-39 EST3 ECP**

**APPLICABILITY & EFFECTIVITY**

**Effective for all systems manufactured after September 2008**

<b>Driver Version:</b>	<b>1.08</b>
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## 1. EST3 Description

The EST3 External Communications Protocol (ECP) driver allows the FieldServer to transfer data to and from EST devices over RS-232 or RS-485 (with converter) serial ports using the EST3 ECP protocol. In the EST application the FieldServer always emulates a Client.

The FieldServer makes use of the following ECP Services:

Read Operations:

- Report Service
- Delta Service

Write Operations:

- Command Service

All read points are continually updated using the Report Service; response times are enhanced using Delta Service broadcasts by the EST3 panel.

The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer.

## 2. Driver Scope of Supply

### 2.1. Supplied By FieldServer Technologies for this Driver

FIELDSEVER TECHNOLOGIES PART #	DESCRIPTION
FS-8915-10	7' Patch Cable
FS-8917-03	RJ45 to DB9M Connector adapter
FS-8917-10	DB9F to terminal Adapter
FS-8700-39	EST3 ECP Driver Manual

### 2.2. Provided By the Supplier of 3<sup>rd</sup> Party Equipment

#### 2.2.1. Hardware

PART #	DESCRIPTION	VERSION
	EST3 Gateway	

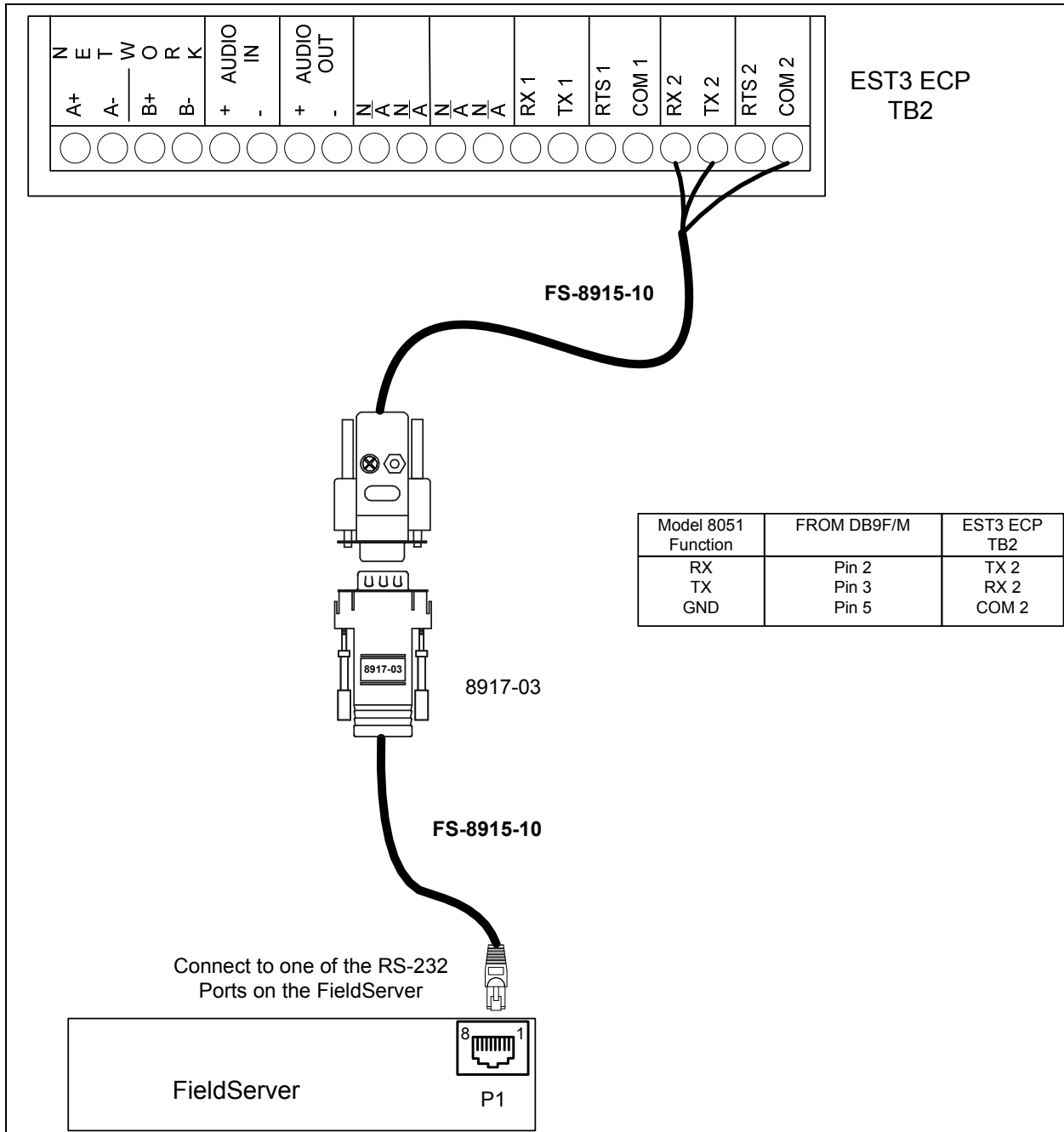
#### 2.2.2. Required 3<sup>rd</sup> Party Configuration

The EST3 panel has to be set into the "Gateway Mode" using the EST3 Configuration tool (3-SDU)

Possible Protocols

ECP Type II	Supported
ECP Type II with Text	Not Supported
ECP Type III	Supported
ECP Type III with Text	Not Supported

### 3. Hardware Connections



#### 4. Configuring the FieldServer as a EST3 Client

For a detailed discussion on FieldServer configuration, please refer to the FieldServer Configuration Manual. The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer (See “.csv” sample files provided with the FieldServer).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with an EST3 Server.

##### 4.1. Data Arrays

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for EST3 communications, the driver independent FieldServer buffers need to be declared in the “Data Arrays” section, the destination device addresses need to be declared in the “Client Side Nodes” section, and the data required from the servers needs to be mapped in the “Client Side Map Descriptors” section. Details on how to do this can be found below.

Note that in the tables, \* indicates an optional parameter, with the **bold** legal value being the default

Section Title		
Data Arrays		
Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	UINT16
Data_Array_Length	Number of Data Objects	1 - 10000

##### Example

```
// Data Arrays

Data_Arrays
Data_Array_Name           ,Data_Format           ,Data_Array_Length
DA_AI_01                  ,Float                 ,200
DA_AO_01                  ,Float                 ,200
DA_DI_01                  ,Bit                   ,200
DA_DO_01                  ,Bit                   ,200
```

**4.2. Client Side Connection Descriptors**

Section Title		
Connections		
Column Title	Function	Legal Values
Port	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2 <sup>1</sup>
Baud	Specify baud rate	9600, 19200 <sup>2</sup>
Parity*	Specify parity	None
Data_Bits*	Specify data bits	8
Protocol	Specify protocol to be used by this port	EST3

**Example**

```
// Client Side Connections

Connections
Port          ,Baud          ,Parity          ,Data_Bits      ,Protocol
P8            ,19200             ,None           ,8              ,EST3
```

**4.3. Client Side Node Descriptors**

Section Title		
Nodes		
Column Title	Function	Legal Values
Node_Name	Provide name for Node	Up to 32 alphanumeric characters
Node_ID	MAC ID of FieldServer	1 – 24 (normally 1)
Protocol	Specify protocol used	EST3
Port	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2 <sup>1</sup>
Timeout	Specify time allowed between poll and response	≥10 seconds

**Example**

```
// Client Side Nodes

Nodes
Node_Name     ,Node_ID       ,Protocol       ,Port          ,Timeout
EST_1        ,1             ,EST3          ,P8            ,10s
```

<sup>1</sup> Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

<sup>2</sup> Edwards Recommends 19200-baud minimum in order to prevent buffer overruns in the EST3 panel

**4.4. Client Side Map Descriptors**

**4.4.1. FieldServer Related Map Descriptor Parameters**

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	One of the Data Array names from "Data Array" section above
Data_Array_Offset	Starting location in Data Array	0 to maximum specified in "Data Array" section above
Function	Function of Client Map Descriptor	RDBC, WRBC <sup>3</sup> , WRBX

**4.4.2. Driver Related Map Descriptor Parameters**

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from	One of the node names specified in "Client Node Descriptor" above
EST_Panel	Panel	0 - 63
EST_Card	Card	0 - 255
Address	Starting address of read block	0 - 1023
Length	Length of Map Descriptor	For Reads: 1 to 34 For Writes: 1
EST_Object_Type	Object type parameter	Relay, Led, ServGroup, GuardPtrl, ChkInGrp, AltMessage, Reset, PanelSil, AlarmSil, Drill, GAIInhibit, Reboot, Evacuate, AltSensitiv, Partition, CmdList, Input, Zone, Card, AndGroup, Matrix, TimeCtrl, InstructionText, AmpPower, AudMsg, CmdList, MCmsg, SetDate, SetTime
EST_Index	Index parameter	0 - 65535
EST_Route	Route parameter	0 - 255
EST_Priority	Pri parameter	0 - 4 (see note below)
EST_Chan	Chan parameter	0 - 255
EST_Msg_Index	MsgIndex parameter	0 - 65535
EST_Account	Account parameter	0 - 255
EST_ConfCL	ConfCL parameter	0 - 65535
EST_Panel_Mask_1	PanelMask(1) parameter (LSB)	0 - 255
EST_Panel_Mask_2	PanelMask(2) parameter	0 - 255
EST_Panel_Mask_3	PanelMask(3) parameter	0 - 255
EST_Panel_Mask_4	PanelMask(4) parameter	0 - 255
EST_Panel_Mask_5	PanelMask(5) parameter	0 - 255
EST_Panel_Mask_6	PanelMask(6) parameter	0 - 255
EST_Panel_Mask_7	PanelMask(7) parameter	0 - 255
EST_Panel_Mask_8	PanelMask(8) parameter (MSB)	0 - 255
Data_Array_Low_Scale*	Scaling zero in Data Array	-32767 to 32767, <b>0</b>
Data_Array_High_Scale*	Scaling max in Data Array	-32767 to 32767, <b>100</b>
Node_Low_Scale*	Scaling zero in Connected Node	-32767 to 32767, <b>0</b>
Node_High_Scale*	Scaling max in Connected Node	-32767 to 32767, <b>100</b>

<sup>3</sup> WRBC is not recommended, as startup values may be invalid

Column Title	Function	Legal Values
EST_Alarm_DA*	Data Array to store Alarm state <sup>4</sup>	One of the Data Array Names declared in Data Arrays section
EST_Trouble_DA*	Data Array to store Trouble state <sup>4</sup>	
EST_Supervisory_DA*	Data Array to store Supervisory state <sup>4</sup>	
EST_Monitor_DA*	Data Array to store Monitor state <sup>4</sup>	
EST_Others_DA*	Data Array to store state other than Alarm, Trouble, Supervisory or Monitor <sup>4</sup>	
EST_Active_DA	Data Array to store the raw value of the active bit.	
EST_Relay_Conf_DA	Relay confirmation state. Refer to Appendix A.5 for more information.	
EST_Types_DA	Data Array to hold Types category. Refer to Appendix A.5.2	
EST_Types_Update	Update the default Types list or refer to new list. Requires 'EST_Types_DA' parameter to be defined. Refer to Appendix A.5.3	-, <b>yes</b> , new list
DA_Bit_Name	Acknowledge State. Refer to Appendix A.5.4	One of the Data Array Names declared in Data Arrays section
EST_Report_Type	Store information from particular Report	-, <b>Point I/O Status</b> , Sensitivity, Date Time

<sup>4</sup> Refer to Appendix A.4 and Section 4.4.4



**4.4.3. Map Descriptor Example 1**

```
// Client Side Map Descriptors
Map_Descriptors
Map_Descriptor_Name ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name ,EST_Panel ,EST_Card ,Address ,Length ,Scan_Interval
MD_LED_1 ,DA_AI_01 ,0 ,Rdbc ,EST_1 ,1 ,0 ,0 ,20 ,5.0s
```

**4.4.4. Map Descriptor Example 2:**

This Map Descriptor will cause the specified EST point to be read every 50 seconds (subject to throughput constraints); the full 16-bit status values received from regular polls will be stored in Data Array DA\_AI\_01 at offsets 0 – 19, and the Alarm, Trouble, Supervisory, Monitor or Other status (received by regular poll, or Delta message) will be stored in Data Arrays TROUBLES and ALARMS, SUPERVISORY, MONITOR, OTHERS also at offsets 0 – 19. Refer also to Appendix C.

```
// Client Side Map Descriptors
Map_Descriptors
Map_Descriptor_Name ,Data_Array_Name ,Data_Array_Offset ,Function ,EST_Trouble_DA ,EST_Alarm_DA ,Node_Name ,EST_Panel ,EST_Card ,Address ,Length ,Scan_Interval
MD_LED_1 ,DA_AI_01 ,0 ,Rdbc ,TROUBLES ,ALARMS ,EST_1 ,1 ,0 ,0 ,20 ,50s
```

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**Appendix A. Driver Notes**

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**Appendix A.1. PanelMasks:**

The 8 PanelMask parameters combine to form a 64-bit field in which each bit denotes an EST panel in the network. Commands that use the PanelMasks are executed by each panel for which the corresponding bit is set. The Map Descriptor need only define non-zero bytes in the PanelMask. Typically this will be EST\_Panel\_Mask\_1 with a value of 1.

**Appendix A.2. Setting up Multiple Parameters**

The multiple parameters required by a command must be stored in consecutive locations in the Data Array specified by the Map Descriptor, starting at the specified Data\_Array\_Offset. All parameters must be set up before the EST command is executed. This is done using a Block Write (if supported by the protocol originating the data) – all parameters are set up in a single write operation, and the EST command is triggered with all values in place.

**Appendix A.3. Priority:**

The write priority has the possible values of Set, Latch, Low, Medium, and High. These are encoded as 00h, 01h, 02h, 03h and 04h respectively.

**Appendix A.4. Report and Delta Service:**

The EST ECP3 Report and Delta services report point status slightly differently. The FieldServer EST3 driver deals with these differences as follows:

- **Report Service (regular polling):**  
The full 16-bit point status is stored to the Read Map Descriptor's Data Array. If optional Data Arrays are configured, then the point status is also interpreted according to its Alarm, Trouble, Supervisory or Monitor status and the corresponding Data Array is updated. See Appendix A.5 for detail.
- **Delta Service (unsolicited messages):**  
Delta Service messages do not provide the same 16-bit status value as supplied by the Report Service. For this reason, ONLY the optional Data Arrays will be updated when a Delta message is received. Delta messages will therefore only have an effect when optional Data Arrays have been configured. See 0 for detail.

**Appendix A.4.1. Example Configuration using Delta Mode only**

Note: It is recommended that at least one active Map Descriptor is defined to alert the Driver if the connection fails. As many passive Clients as desired can then be appended.

Ports	Port,	Baud
P1,	P1,	9600

Nodes	Node_Name,	Node_ID,	Port,	Protocol,	Timeout
Node_A,	1,	P1,	EST3,	4s	

Data_Arrays	Data_Array_Name,	Data_Format,	Data_Array_Length
DA_TEST1,	Uint16,	100	
DA_TROUBLE,	Bit,	40	
DA_ALARM,	Bit,	40	

Map_Descriptors	Map_Descriptor_Name	Scan_Interval	Data_Array_Name	Data_Array_Offset	Function	Node_Name	EST_Panel	EST_Card	Address	Length	EST_Trouble_DA	EST_Alarm_DA
MD_TEST1	,10.0s	,DA_TEST1	,0	,Rbcb	,Node_A	,1	,0	,DA_TROUBLE	,.130	,20	,DA_TROUBLE	,DA_ALARM
MD_TEST2	,	,DA_TEST1	,20	,Passive_Client	,Node_A	,7	,3	,.130	,.130	,20	,DA_TROUBLE	,DA_ALARM

**Appendix A.5. Optional Data Arrays**

When optional parameters (EST\_Alarm\_DA, EST\_Trouble\_DA, EST\_Supervisory\_DA, or EST\_Monitor\_DA) are used, the driver automatically separates the Alarm Trouble, Supervisory, and Monitor bit from the incoming EST message and places the bit(s) in these Data Arrays at the same offset as the incoming message. Other types can be stored in EST\_Others\_DA Data Array. Only one Data type will be reported as active at a particular time; i.e. if Alarm is reported Driver will set Alarm bit and reset corresponding bits from Trouble, Supervisory and Monitor Data Arrays. The Driver does not correlate Other types with Alarm, Trouble, Supervisory or Monitor types. For different point types the active bit has a different meaning. If the user is interested in the meaning, the EST\_Supervisory\_DA Data Array should be configured. If the user is interested in the raw value of the Active bit, the data array EST\_Active\_DA should be configured.

**Appendix A.5.1. Relay Confirmation State**

The driver can store the relay confirmation state of a point in a Data Array under the parameter EST\_Relay\_Conf\_DA parameter.

0 - Relay state is not confirmed;                      1 – Relay state confirmed.

**Appendix A.5.2. EST\_Types\_DA**

If it is necessary to override the default Types and Category list (Appendix C.1) the EST\_Types\_DA parameter should be used.

**Example:**

To put HEAT type into the “Monitor” category where all other defaults remain the same, preload the data array as follows:

Preloads				
Data_Array_Name	,Preload_Data_Index	,Preload_Data_Value	,Length	
DA_Types	,2	,4	,1	

Preload\_Data\_Index is the type of device and Preload\_Data\_Value holds the category for the specified device type. The legal values for Preload\_Data\_Value are listed below

Alarm	1
Supervisory	2
Trouble	3
Monitor	4
Others	5

**Appendix A.5.3. EST\_Types\_Update**

If this parameter is not defined or is “yes”, the driver will update its internal driver list according to the parameters preloaded under EST\_Types\_DA. If the parameter is set to “New List”, the driver will use ONLY the parameters defined under EST\_Types\_DA and will not reference or update the default list at all. The driver will therefore not store any data for types that do not have preloaded categories.

**Appendix A.5.4. DA\_Bit\_Name**

The “Acknowledge<sup>5</sup>” state of a point is stored under this Data Array if configured.

0 – Acknowledged or Acknowledge not required.

1 – Point is not Acknowledged yet. To Acknowledge the point change the value to “0”.

<sup>5</sup> The EST3 panel is only able to send/accept Acknowledgement when the panel is in Proprietary Mode. Contact EST (Edwards Systems Technology) for information on configuring the panel.

**Appendix A.5.5. EST\_Report\_Type**

The dirtiness of a device can be stored as a value \*10 for System Sensor Devices and as the actual value for other Device Types (The panel sends % for other Device Types)

Map_Descriptors	.Data_Array_Name	.Data_Array_Offset	.Function	.Node_Name	.EST_Report_Type	.EST_Panel	.EST_Card	.Address	.Length	.Scan_interval
Map_Descriptor_Name	.DA_Dirtiness	.0	.Rdbc	.EST_1	.1	.2	.1	.3	.5.0s	
MD_Poll_Sensitivity										

## Appendix A.6. Object Types and Required Parameters

The tables below list the fields required for the Map Descriptor implementing each object type.

Object Type	Required Parameters
<b>Activate and Restore Commands (01h and 11h)</b>	
Relay	EST_Panel, EST_Card, Address, EST_Priority
Led	EST_Panel, EST_Card, Address, EST_Priority
ServGroup	EST_Index
GuardPtrl	EST_Index, EST_Route
ChkInGrp	EST_Index
AltMessage	EST_Panel_Mask(1..8) Refer to Appendix A.1
AmpPower	EST_Panel, EST_Card, EST_Priority, EST_Chan
AudMsg	EST_Panel, EST_Card, EST_Msg_Index, EST_Priority, EST_Chan
Reset	EST_Panel_Mask(1..8) Refer to Appendix A.1
PanelSil	EST_Panel_Mask(1..8) Refer to Appendix A.1
AlarmSil	EST_Panel_Mask(1..8) Refer to Appendix A.1
Drill	EST_Panel_Mask(1..8) Refer to Appendix A.1
GAInhibit	EST_Panel_Mask(1..8) Refer to Appendix A.1
Reboot	EST_Panel_Mask(1..8) Refer to Appendix A.1
Evacuate	EST_Panel_Mask(1..8) Refer to Appendix A.1
AltSensitiv	EST_Panel_Mask(1..8) Refer to Appendix A.1
MCmsg	EST_Panel, EST_Card, EST_Priority, EST_Account, EST_ConfCL
Partition	EST_Index
Cmd List	EST_Index
AndGroup	EST_Index
SetDate	EST_Object_Type. Refer to Appendix A.7
SetTime	EST_Object_Type. Refer to Appendix A.7
<b>Enable and Disable Commands (02h and 12h)</b>	
Relay	EST_Panel, EST_Card, Address
Led	EST_Panel, EST_Card, Address
Input	EST_Panel, EST_Card, Address
Zone	EST_Index
Card	EST_Panel, EST_Card
ServGroup	EST_Index
AndGroup	EST_Index
Matrix	EST_Index
TimeCtrl	EST_Index
GuardPtrl	EST_Index, EST_Route
ChkInGrp	EST_Index
AmpPower	EST_Panel, EST_Card
Partition	EST_Panel, EST_Card, Address
Instruction Text	EST_Panel, EST_Card, Address

**Appendix A.7. Set Date and Time To Panel**

The following Map Descriptors are required to set the Date and Time of the EST Panel

// First poke month(1-12) ,day(0-31) and year(yyyy) at offset 1 ,2 and 3 then poke 1 at offset 0 to issue SetDate command  
 // First poke hour(0-23) ,min(0-59) and sec (0-59) at offset 1 ,2 and 3 then poke 1 at offset 0 to issue SetTime command

Map_Descriptors						
Map_Descriptor_Name	,Data_Array_Name	,Data_Array_Offset	,Function	,Node_Name	,EST_Object_Type	,Length
MD_Set_Date	,DA_Set_Date	,0	,Wr bx	,EST_1	,SetDate	,1
MD_Set_Time	,DA_Set_Time	,0	,Wr bx	,EST_1	,SetTime	,1

The following Map Descriptor will enable the FieldServer to synchronize its clock with the EST panel clock

Map_Descriptors						
Map_Descriptor_Name	,Data_Array_Name	,Data_Array_Offset	,Function	,Node_Name	,EST_Report_Type	,Length
MD_SLV_TIME	,DA_TIME	,0	,Passive	,EST_1	,Date Time	,6

---

**Appendix B. Troubleshooting Tips**

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**Appendix B.1. Multiple Com Errors**

To solve multiple com errors, try adding an IC\_Timeout parameter to the Client Side connections and set it to 0.5s.



## Appendix C. EST3 Data Format:

### Appendix C.1. Input data format

Each input device is associated with a 16-bit value. The contents of the 16 bits are used to generate status types as shown in the table below. Each incoming event is allocated to a status type depending on its device type as shown in the table. It is possible to override this default status type allocation. Refer to Appendix A.5 for more information.

Type	Encode Value	Alarm	Trouble	Supervisory	Monitor	Others
Smoke	0	Y				
Pull	1	Y				
Heat	2	Y				
Waterflow	3	Y				
Stageone	4	Y				
Zone	5	Y				
AlarmVerify	6		Y			
PreAlarm	7		Y			
Security	8		Y			
Station	9					Y
Emergency	10		Y			
Supervisory	11			Y		
Valve	12			Y		
GateValve	13			Y		
Tamper	14			Y		
Temperature	15			Y		
Power	16			Y		
Signal	17			Y		
TroubleOpen	18		Y			
TroubleShort	19		Y			
LocalTrouble	20		Y			
MaintAlert	21		Y			
DirtyHead	22		Y			
DeviceComm	23		Y			
GroundFault	24		Y			
InternalTrouble	25		Y			
BadType	26		Y			
BadPersonality	27		Y			
UnexpectedDevice	28		Y			
CommonTrouble	29		Y			
RelayConfirmation	30					Y
Monitor	31				Y	
LocalMonitor	32				Y	
Damper	33				Y	
Fan	34				Y	
Door	35				Y	
Switch	36					Y
FirePhone	37		Y			

Type	Encode Value	Alarm	Trouble	Supervisory	Monitor	Others
TestEvent	38					Y
DeviceCompatabilityFault	39					Y
LogicAnd	40	Y				
LogicMatrix	41	Y				
ServiceGroup	42	Y				
TimeControl	43					Y
GuardPatrol	44		Y			
CheckInGroup	45					Y
<i>Internal use only</i>	46					Y
Disabled	47					Y
<i>Internal use only</i>	48					Y
Instruction Text	49					Y
Object Running	50					Y
Audible	64		Y			
Visual	65		Y			
SupervisedOutput	66					Y
NonSupervisedOutput	67		Y			
CommonAlarmPutput	68		Y			
CommonTroubleOutput	69		Y			
CommonSupervisoryOutPut	70		Y			
CommonMonitorOutput	71		Y			
LEDOutput	72				Y	
AnalogOutput	73					Y
AudioMessage	74					Y
Amplifier	75					Y
Card	127					Y
SecurityAlarm	128					Y
SecurityTrouble	129					Y
SecurityTamper	130					Y
SecurityMaintenance	131					Y
SecurityCommunicationFault	132					Y
SecurityDisarmed	133					Y
SecurityExitTimer	134					Y
SecurityEntryTimer	135					Y
SecurityBypassed	136					Y
SecurityStay	137					Y
SecurityAway	138					Y
SecurityStayFail	139					Y
SecurityAwayFail	140					Y
SecurityClosingTrouble	141					Y
SecurityNoClose	142					Y
SecurityPartitionUpdate Complete	143					Y
Spare	144					Y
AccessACFail	145					Y
AccessLowBattery	146					Y
AccessStrikeFault	147					Y

Type	Encode Value	Alarm	Trouble	Supervisory	Monitor	Others
AccessReaderFault	148					Y
AccessInternalFault	149					Y
AccessCommunicationFault	150					Y
CmdList	151					Y

**Appendix C.2. Output data format**

Each output device is associated with a 16-bit value. This value consists of two byte fields, the device type (LSB) and the device state (MSB).

FieldServer Data Array Object (16-bit)	
Attribute (8-bit)	Command (8-bit)

These values are provided by the EST panel and are described in the EST3 ECP protocol specification as follows. These values will be put in the Command field.

Command	Encode Value
Activate / Away	01h
Enable	02h
Restore / Disarm	11h
Disable	12h

The attribute byte must be set for writes to Relay and LED outputs. For Relays, the attribute values are:

Attribute (Relay)	Encode Value
Enable	2h
Activate	101h
Restore	11h
Disable	12h

For LED's, the attribute values are:

Attribute (LED)	Encode Value
On	101h
Slow Flash	201h
Fast Flash	301h
Disable	12h
Enable	2h
Off	1h

## Appendix D. EST3 ECP Connection Statistics:

The EST3 ECP protocol has two distinct levels:

- A poll-response connection is maintained by the EST panel acting as the master. The bytes transferred in this process are displayed on the FieldServer as SCADA bytes transmitted and received.
- The FieldServer acts as a client by inserting requests into its response messages; the EST panel then inserts the requested data into its subsequent polling messages. The bytes transferred in this process are displayed on the FieldServer as PLC bytes transmitted and received.

The following statistics are available on the Driver Aspects screen when viewing Connection Details (select the EST Connection in Connection Overview, and press space repeatedly to page to this screen):

Statistic Name	Description
DLL Rx Char	Data Link Layer Bytes Received
DLL Rx Msg	Data Link Layer Messages Received
DLL Tx Char	Data Link Layer Bytes Transmitted
DLL Tx Msg	Data Link Layer Messages Transmitted
DLL Timeouts	Data Link Layer Timeouts
DLL IC Timeouts	Data Link Layer Inter-Character Timeouts
DLL Streaming	Data Link Layer Streaming Errors
DLL Bad Replies	Data Link Layer Bad Replies
DLL Link Control	Data Link Layer Link Control Events
Gateway Type	ECP Gateway Type I/II/III
Data Rx Char	Data Bytes Received
Data Rx Msg	Data Messages Received
Data Tx Char	Data Bytes Transmitted
Data Tx Msg	Data Messages Transmitted
Conn Rx Char	Total Bytes Received on Connection
Conn Rx Msg	Total Messages Received on Connection
Conn Tx Char	Total Bytes Transmitted on Connection
Conn Tx Msg	Total Messages Transmitted on Connection
Delta Rx Char	Delta Message Bytes Received
Delta Rx Msg	Delta Messages Received

## Appendix E. Driver Error Messages

Error Message	Description and Action Required
EST3:#01 FYI. For an Old EST3 Panel, Read MD length must be even.	This message will be displayed once if any Map Descriptor in a configuration file has an odd length. Old EST3 Panels (before 2002) simply do not communicate if length is odd. This message can be ignored if it is new EST3 panel. But if it is old or unknown, try making Map Descriptor having even length before contacting technical support.
EST3:#02 Err. Read MD length must > 0 and <= %d	Numbers of addresses to be read per request are limited. Edit configuration file to set Map Descriptor length within specified range. <sup>6</sup>
EST3:#03 Err. Write MD must have length = 1	One Map Descriptor can write only 1 value. Change length to 1 <sup>6</sup> .
EST3: #04 Unknown Escape Sequence 1B %02X considered as %02X	This message is printed if the FieldServer receives sequences that are not specified. Specified sequences are 1B 82, 1B 8D and 1B 9B. This message is for information only and can be ignored unless the data stored by the FieldServer is invalid in which case, call Tech support.

<sup>6</sup> Download the configuration file, make the necessary changes, upload to the FieldServer and cycle power to the FieldServer for the changes to take effect.

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