A Sierra Monitor Company

Driver Manual
(Supplement to the FieldServer Instruction Manual)

FS-8700-74 Veeder-Root

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after May 1, 2001

Driver Version:	**1.01**
Document Revision:	**3**

TABLE OF CONTENTS

1. Veeder-Root Driver Description 3

2. Driver Scope of Supply 4
2.1. Supplied by FieldServer Technologies for this driver 4
2.2. Provided by the Supplier of 3rd Party Equipment 4
2.2.1. Required 3rd Party Hardware 4

3. Hardware Connections 5

4. Configuring the FieldServer as a Veeder-Root Client 6
4.1. Data Arrays 6
4.2. Client Side Connections 7
4.3. Client Side Nodes 8
4.4. Client Side Map Descriptors 8
4.4.1. FieldServer Specific Map Descriptor Parameters 8
4.4.2. Driver Specific Map Descriptor Parameters 9
4.4.3. Timing Parameters 9
4.4.4. Map Descriptor Example 1 - Alarms 10
4.4.5. Map Descriptor Example 2 - Inventory 11
4.4.6. Map Descriptor Example 3 – Most Recent Delivery Report 12

5. Configuring the FieldServer as a (Veeder-Root Driver) Server 13

Appendix A. Advanced Topics 14
Appendix A.1. Data Type and Required Lengths 14
Appendix A.2. Supported Functions 15
Appendix A.3. Alarm Types 16
Appendix A.4. Security Codes 20

Appendix B. Trouble Shooting and Driver Error Messages 21
Appendix B.1. Driver Stats 24
Appendix B.2. Table of Module Types 25

Appendix C. Advanced Map Descriptor Examples 26
Appendix C.1. Advanced Example 1 – Polling for Tank / Sensor / Input / Relay / Device Status 26
Appendix C.2. Advanced Example 2 – Resetting Remote Alarms 27
Appendix C.3. Advanced Example 3 – System Configuration 27
Appendix C.4. Advanced Example 4 – System Diagnostics 28
Appendix C.5. Advanced Example 5 – System Revision Level Report 29
Appendix C.6. Advanced Example 6 – System Revision Level Report II 30
Appendix C.7. Advanced Example 7 – Stick Height Report 31
Appendix C.8. Advanced Example 8 – Active Alarm Report 31
Appendix C.9. Advanced Example 9 – Cleared Alarm Report 32

1. Veeder-Root Driver Description

The Veeder-Root Serial Driver allows the FieldServer to transfer data to and from devices over either RS-232 or RS-485 ports using Veeder-Root protocol as defined in Veeder Root Document 576013-635 Revision J.

The FieldServer emulates a Client.

The Veeder-Root Serial Driver is a poll response driver. Only one query or command can be processed at a time.

A limited set of the queries and commands defined in the protocol specification have been implemented. The reason for the limitation is two-fold. Firstly, not all commands/queries will have any meaning to a downstream device as they are principally defined to configure the Veeder-Root Device. Secondly some commands return very complex data sets which cannot be processed in a method suitable for loading into the FieldServer's Data Arrays.

The driver is capable of exposing its communications statistics. This can be useful if you wish to monitor them using a downstream device. In this way you can ensure that you are using valid data and can generate alarms if communication problems arise.

2. Driver Scope of Supply

2.1. Supplied by FieldServer Technologies for this driver

FieldServer Technologies PART #	Description
FS-8915-10	UTP cable (7 foot) for RS-232 use
FS-8917-01	RJ45 to DB25M connection adapter
FS-8700-74	Driver Manual.

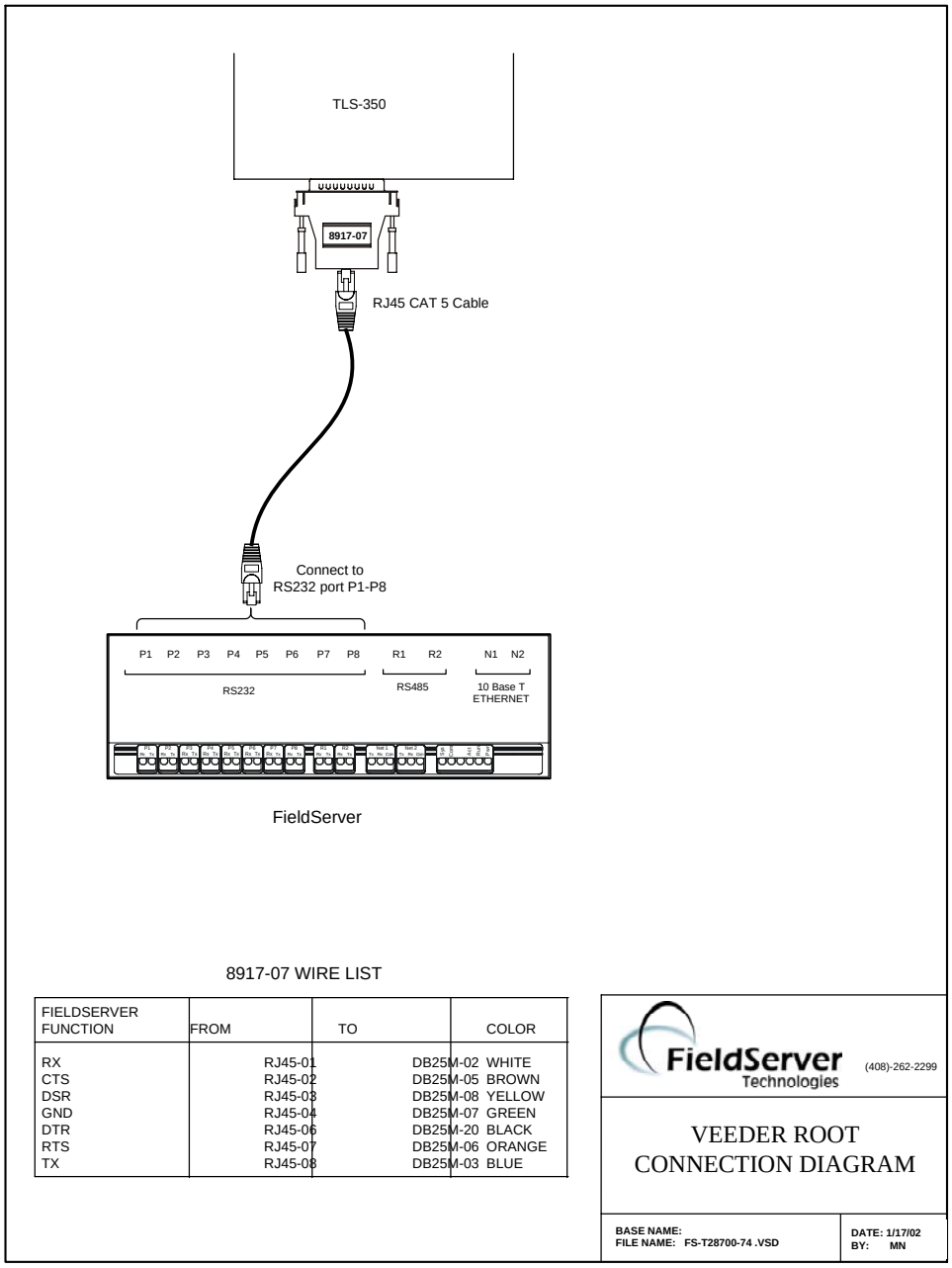
2.2. Provided by the Supplier of 3rd Party Equipment

2.2.1. Required 3rd Party Hardware

PART #	DESCRIPTION
	Veeder-Root Panel

3. Hardware Connections

The FieldServer is connected to the Veeder-Root Panel as shown below.
Configure the Veeder-Root Panel according to manufacturer's instructions.



8917-07 WIRE LIST

FIELDSERVER FUNCTION	FROM	TO	COLOR
RX	RJ45-01	DB25M-02	WHITE
CTS	RJ45-02	DB25M-05	BROWN
DSR	RJ45-03	DB25M-08	YELLOW
GND	RJ45-04	DB25M-07	GREEN
DTR	RJ45-06	DB25M-20	BLACK
RTS	RJ45-07	DB25M-06	ORANGE
TX	RJ45-08	DB25M-03	BLUE

FieldServer Technologies (408)-262-2299

VEEDER ROOT
CONNECTION DIAGRAM

BASE NAME:
FILE NAME: FS-T28700-74 .VSD

DATE: 1/17/02
BY: MN

4. Configuring the FieldServer as a Veeder-Root 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.

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Veeder-Root Device.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Veeder-Root Driver 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.

4.1. Data Arrays

Section Title
Data_Arrays

Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provide data format. Each Data Array can only take on one format.	FLOAT, BIT, UInt16, SInt16, Packed_Bit, Byte, Packed_Byte, Swapped_Byte
Data_Array_Length	Number of Data Objects. Must be larger than the data storage area required for the data being placed in this array.	1-10,000

Example

```
//  Data Arrays
//
Data_Arrays
Data_Array_Name,    Data_Format,    Data_Array_Length
DA_AI_01,           UInt16,         200
DA_AO_01,           UInt16,         200
DA_DI_01,           Bit,            200
DA_DO_01,           Bit,            200
```

4.2. Client Side Connections

Section Title
Connections

Column Title	Function	Legal Values
Port	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2[1]
Baud*	Specify baud rate	300 – 9600, standard baud rates only – Vendor limitation.
Parity*	Specify parity	Even, Odd, **None**
Data_Bits*	Specify data bits	7, **8**
Stop_Bits*	Specify stop bits	**1,** 2
Protocol	Specify protocol used	**Vroot, Veeder**
Handshaking*	Specify hardware handshaking	**None**
Poll Delay*	Time between internal polls	0-32000 seconds, **1 second**

Example

```
// Client Side Connections

Connections
Port,       Baud,     Parity,   Protocol,   Handshaking,   Poll_Delay
P1,         9600,     None,     Vroot,      None,          0.100s
```

[1] Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

4.3. Client Side Nodes

Section Title
Nodes

Column Title	Function	Legal Values
Node_Name	Provide name for node	Up to 32 alphanumeric characters
Node_ID	This commonly used parameter is not required for this driver.	
Protocol	Specify protocol used	Vroot, Veeder
Port	Specify which port the device is connected to the FieldServer Only one node per port.	P1-P8, R1-R2[2]
*Route	This parameter is only required if security is enabled on the Veeder-Root device. In this case the route must be set to contain the 6 digits that form the security code. Example. If the security code is 556741 then enter route as 5.5.6.7.4.1	a.b.c.d.e.f a,b,c,d,e,f must be decimal digits in the range 0 to 9.

Example

```
//    Client Side Nodes

Nodes
Node_Name,          Protocol,       Port
VR_Node1 ,          Vroot   ,       P1
```

4.4. Client Side Map Descriptors

4.4.1. FieldServer Specific 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_Location	Starting location in Data Array	0 to maximum specified in “Data Array” section above
Function	Function of Client Map Descriptor	RDBC, WRBC, WRBX

[2] Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

4.4.2. Driver Specific 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
Data_Type	Data type	System, Tank, Liquid Sensor, Vapor Sensor, Input, Volumetric Line, Groundwater Sensor, Type-B Sensor, Universal Sensor, Auto-Dial, Mech. Dispenser, Elec. Dispenser, Product, Press. Line, External, WPLLD
*Address[¥]	The address is used to specify the Tank/Sensor/Input /Relay … Number to be used in the poll. For some data types the address has no meaning and should be set to 1. Veeder-Root Tanks / Sensors … are numbered from 1. The maximum tank number is 12 and the maximum sensor number if 64. When zero is used as the value of the address then (in most cases) the driver polls for all Tanks/ Sensors belonging to that data type. This is discussed in the Advanced Topics Section.	0, 1, 2, 3…
Length[¥]	Length of Map Descriptor The length is used to tell the driver how many elements of the Data Array are under the control of the Map Descriptor. This is important because the driver uses the length to, for example, clear Data Array elements when a Tank/Sensor has no alarms.	1 - 1000

4.4.3. Timing Parameters

Column Title	Function	Legal Values
Scan_Interval	Rate at which data is polled	>0.1s

[¥] See Appendix A.1 for Data Type, Address and Length Limitations.

4.4.4. Map Descriptor Example 1 - Alarms.

This example provides one Map Descriptor to poll for alarm data and many Map Descriptors to store the response from the poll. One Map Descriptor is required for each tank/sensor/input/device defined for the system. The address of each of these passive Map Descriptors must correspond to the tank/sensor/input/device number. For example, where 5 tanks are defined as tanks 1,2,3,6,7 then 5 Map Descriptors with the data type 'Tank' are required and the address of each of these 5 Map Descriptors must be set to 1,2,3,6,7. The length parameter tells the driver how much array space is reserved for each tank/sensor… for storing alarms.

```
Map_Descriptors
Map_Descriptor_Name,  scan_interval,  Data_Array_Name,  Data_Array_Offset,  Function,  node_name,  Address,  Length,  Data_Type,
Poller                1.0s            DA_101            0                  rdbc       Node_A       1         30         System Status
Map_Descriptors
Map_Descriptor_Name,  Data_Array_Name,  Data_Array_Offset  Function,  node_name,  Address,  Length,  Data_Type
Sys_alms01            DA_S1             0                 passive    Node_A       1         30         System
Tank_Alms1            DA_T1             0                 passive    Node_A       1         30         Tank
LiqSensor_Alm1,       DA_L1             0                 passive    Node_A       1         30         Liquid Sensor
VaporSens_Alm1,       DA_V1             0                 passive    Node_A       1         30         Vapor Sensor
Input_Alm1            DA_I1             0                 passive    Node_A       1         30         Input
VolLine_Alm1          DA_O1             0                 passive    Node_A       1         30         Volumetric Line
GWater_Alms1          DA_G1             0                 passive    Node_A       1         30         Groundwater Sensor
TypeB_SensALm1        DA_B1             0                 passive    Node_A       1         30         Type-B Sensor
Univ_SensAlm1         DA_U1             0                 passive    Node_A       1         30         Universal Sensor
AutoDial_Alms1        DA_F1             0                 passive    Node_A       1         30         Auto-Dial
MechDisp_Alm1         DA_M1             0                 passive    Node_A       1         30         Mech. Dispenser
ElecDisp_Alm1         DA_E1             0                 passive    Node_A       1         30         Elec. Dispenser
Product_Alms1         DA_P1             0                 passive    Node_A       1         30         Product
PressLine_Alm1        DA_R1             0                 passive    Node_A       1         30         Press. Line
External_Alm1         DA_X1             0                 passive    Node_A       1         30         External
WPLLD_Alms1           DA_W1             0                 passive    Node_A       1         30         WPLLD
```

Only the Map Descriptor used to generate the poll requires a scan interval.

These Map Descriptors are passive because they do not generate messages. They are used to store data returned by the system *status poll.*

The address must correspond to the tank/sensor/input/device number.

One Map Descriptor required for each tank/sensor/input/device.

The length parameter tells the driver how much array space must be reserved for storing alarms for a given tank/sensor/input/device.

When an alarm occurs for tank 1 the driver stores the alarm type by setting the array position corresponding to the alarm type to a non-zero value as well as setting the first element of the reserved space non-zero as a summary. **See Table 6.3 for alarm type numbers and descriptions.**

Example: Tank 1 has two alarms
02 = Tank Leak Alarm
05 = Tank Low Product Alarm
The driver sets array DA_T1 as follows
Index=0 : Value=1 (Summary)
Index=2 : Value=2 (Leak)
Index=5 : Value=5 (Product)

4.4.5. Map Descriptor Example 2 - Inventory

This example illustrates how you can poll for Tank Inventory Data. You need one Map Descriptor for each tank. Change the address to correspond to the tank number. The Length parameter DOES NOT tell the driver how many tanks to process but it does tell the driver how much storage space to reserve for storing the inventory data. The inventory data is stored as follows.

Index Contents
0. Product Code (Example Array value = 49 indicates product code = ASCII '1')
1. Tank Status (Bit 1 - (LSB) Delivery in Progress, Bit 2 - Leak Test in Progress, Bit 3 - Invalid Fuel Height Alarm (MAG Probes Only))
2. Volume
3. TC Volume
4. Ullage
5. Height
6. Water
7. Temperature
8. Water Volume

.

Map_Descriptor_Name,	Data_Array_Name,	Data_Array_Offset	Function,	Scan_Interval,	node_name,	Address,	Length,	Data_Type
InventoryPoll1,	DA_INVENTORY ,	0 ,	rdbc ,	1.0s ,	Node_A ,	1 ,	10 ,	In-Tank Inventory

Reading the inventory requires an active Map Descriptor.

Set the address equal to the tank number. One Map Descriptor per tank.

This is the minimum number of Data Array elements required to store inventory data.

Tanks 1's data will be stored in the array DA_INVENTORY starting at the zero'th element (offset=0) and 10 elements of the array are reserved for this data.

Setting the data type generates the correct poll. Ensure that spelling, periods, hyphens in exactly the same as this example.

4.4.6. Map Descriptor Example 3 – Most Recent Delivery Report

This example illustrates how you can poll for Tank Delivery Data. You need one Map Descriptor for each tank. Change the address to correspond to the tank number. The Length parameter DOES NOT tell the driver how many tanks to process but it does tell the driver how much storage space to reserve for storing the delivery data. The delivery data is stored as follows. (This function corresponds to the function 20C in the Veeder-Root protocol specification.)

Index Contents
0. Product Code
1. Number of Deliveries
2. Start Time
3. Stop Time
4. Starting Volume
5. Starting TC Volume
6. Starting Water
7. Starting Temp
8. Ending Volume
9. Ending TC Volume
10. Ending Water
11. Ending Temp
12. Starting Height
13. Ending Height

.

Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Function	Scan_Interval	node_name	Address	Length	Data_Type
DeliveryPoll01	DA_DELIVERY	0	rdbc	1.0s	Node_A	1	30	In-Tank Delivery

5. Configuring the FieldServer as a (Veeder-Root Driver) Server

The server functionality of this driver was developed for testing the Client. Its features are not documented and not intended for end-users. It may be possible to extend and document the server at the request of an end-user.

Appendix A. Advanced Topics

Appendix A.1. Data Type and Required Lengths

The following table provides a list of possible values for the data type parameter as well as the minimum value that the length parameter should be set to for each Map Descriptor of that data type.

Data Type	Length Parameter Setting
Normal	1
System	30
Tank	30
Liquid Sensor	30
Vapor Sensor	30
Input	30
Volumetric Line	30
Groundwater Sensor	30
Type-A Sensor	30
Type-B Sensor	30
Universal Sensor	30
Auto-Dial	30
Mech. Dispenser	30
Elec. Dispenser	30
Product	30
Press. Line	30
WPLLD	30
External	30
Relay	30
Configuration	1
In-Tank Inventory	10
Misc	20
In-Tank Delivery	100
System Reset	20
Clear Power Reset	20
Remote Alarm Reset	20
Confirm Clear	20
Clear Delivery Reports	20
Start In-Tank Leak Detect Test	20
Stop In-Tank Leak Detect Test	20
Delete CSLD Rate Table	20
Start P-Line Leak Detect Test	20
Stop P-Line Leak Detect Test	20
Start WPLLD Leak Detect Test	20
Stop WPLLD Leak Detect Test	20
System Status	1

Appendix A.2. Supported Functions

The Veeder-Root protocol specification defines a large number of enquiries and commands that may be sent to a Veeder-Root device. This driver supports a limited set of the functions. The revision number indicates the minimum Veeder-Root firmware revision required for support of the function.

Function_	Revision_	Description
SYSTEM REPORTS (7.2.1)		
101	1	System Status Report
102	1	System Configuration Report
113	14	Active Alarm Report
114	19	Cleared Alarm Report
IN-TANK REPORTS (7.2.2)		
201	1	In-Tank Inventory Report
202	1	In-Tank Delivery Report
203	1	In-Tank Leak Detect Report
204	1	In-Tank Shift Inventory Report
205	1	In-Tank Status Report
20C	15	In-Tank Most Recent Delivery Report
20D	15	In-Tank Stick Height Report
SENSOR REPORTS (7.2.3)		
301	1	Liquid Sensor Status Report
306	1	Vapor Sensor Status Report
311	1	Groundwater Sensor Status Report
341	2	Type A (2 Wire CL) Sensor Status Report
346	2	Type B (3 Wire CL) Sensor Status Report
34B	4	Universal Sensor Status Report
LINE LEAK REPORTS (7.2.4)		
381	7	Pressure Line Leak Status
386	10	WPLLD Line Leak Status
I/O DEVICE REPORTS (7.2.6)		
401	1	Input Status Report
406	1	Relay Status Report
SYSTEM DIAGNOSTIC REPORTS (7.4.1)		
901	1	Self Test Results Report
902	1	System Revision Level Report
905	15	System Revision Level Report II
CONTROL FUNCTIONS (7.1)		
1	1	System Reset
2	1	Clear Power Reset Flag
3	1	Remote Alarm Reset
31	10	Confirm Clear Function
51	1	Clear In-Tank Delivery Reports
52	1	Start In-Tank Leak Detect Test
53	1	Stop In-Tank Leak Detect Test
54	5	Delete CSLD Rate Table
81	7	Start Pressure Line Leak Test (3.0 GPH only in V18)
82	7	Stop Pressure Line Leak Test
83	10	Start WPLLD Line Leak Test (3.0 GPH only in V18)
84	10	Stop WPLLD Line Leak Test

The function numbers in Appendix A.1are hexadecimal numbers. If you specify them in the CSV file using the Veed_Function parameter then either convert them to decimal or specify them in the CSV file using the notation 0xnnn where nnn is the function number.

Example:
…..,Veed_Function, ….
….., 0x901 ,….

Appendix A.3. Alarm Types

Category	Alarm Type & Description
1 System	1 Printer out of Paper
1 System	2 Printer Error
1 System	3 EEPROM Configuration Error
1 System	4 Battery Off
1 System	5 Too Many Tanks
1 System	6 System Security Warning
1 System	7 ROM Revision Warning
1 System	8 Remote Display Communications Error
1 System	9 Autodial Error
1 System	10 Software Module Warning
1 System	11 Tank Test Shutdown Warning
1 System	12 Protective Cover Alarm
1 System	13 BIR Shift Close Pending
1 System	14 BIR Daily Close Pending
1 System	15 PC(H8) Revision Warning
1 System	16 System Self Test Error
1 System	17 System Clock Incorrect Warning
1 System	18 System Device Poll Timeout
2 Tank	1 Tank Setup Data Warning
2 Tank	2 Tank Leak Alarm
2 Tank	3 Tank High Water Alarm
2 Tank	4 Tank Overfill Alarm
2 Tank	5 Tank Low Product Alarm
2 Tank	6 Tank Sudden Loss Alarm
2 Tank	7 Tank High Product Alarm
2 Tank	8 Tank Invalid Fuel Level Alarm
2 Tank	9 Tank Probe Out Alarm
2 Tank	10 Tank High Water Warning
2 Tank	11 Tank Delivery Needed Warning
2 Tank	12 Tank Maximum Product Alarm
2 Tank	13 Tank Gross Leak Test Fail Alarm
2 Tank	14 Tank Periodic Leak Test Fail Alarm
2 Tank	15 Tank Annual Leak Test Fail Alarm
2 Tank	16 Tank Periodic Test Needed Warning
2 Tank	17 Tank Annual Test Needed Warning
2 Tank	18 Tank Periodic Test Needed Alarm
2 Tank	19 Tank Annual Test Needed Alarm
2 Tank	20 Tank Leak Test Active
2 Tank	21 Tank No CSLD Idle Time Warning
2 Tank	22 Tank Siphon Break Active Warning
2 Tank	23 Tank CSLD Rate Increase Warning
2 Tank	24 Tank AccuChart Calibration Warning
2 Tank	25 Tank HRM Reconciliation Warning
2 Tank	26 Tank HRM Reconciliation Alarm

Category	Alarm Type & Description
2 Tank	27 Tank Cold Temperature Warning
2 Tank	28 Tank Missing Delivery Ticket Warning
2 Tank	29 Tank/Line Gross Leak Alarm
3 Liquid Sensor Alarm	2 Sensor Setup Data Warning
3 Liquid Sensor Alarm	3 Sensor Fuel Alarm
3 Liquid Sensor Alarm	4 Sensor Out Alarm
3 Liquid Sensor Alarm	5 Sensor Short Alarm
3 Liquid Sensor Alarm	6 Sensor Water Alarm
3 Liquid Sensor Alarm	7 Sensor Water Out Alarm
3 Liquid Sensor Alarm	8 Sensor High Liquid Alarm
3 Liquid Sensor Alarm	9 Sensor Low Liquid Alarm
3 Liquid Sensor Alarm	10 Sensor Liquid Warning
4 Vapor Sensor Alarm	2 Sensor Setup Data Warning
4 Vapor Sensor Alarm	3 Sensor Fuel Alarm
4 Vapor Sensor Alarm	4 Sensor Out Alarm
4 Vapor Sensor Alarm	5 Sensor Short Alarm
4 Vapor Sensor Alarm	6 Sensor Water Alarm
4 Vapor Sensor Alarm	7 Sensor Water Out Alarm
4 Vapor Sensor Alarm	8 Sensor High Liquid Alarm
4 Vapor Sensor Alarm	9 Sensor Low Liquid Alarm
4 Vapor Sensor Alarm	10 Sensor Liquid Warning
5 Input	1 Input Setup Data Warning
5 Input	2 Input Normal
5 Input	3 Input Alarm
6 Volumetric Line Leak	1 VLLD Setup Data Warning
6 Volumetric Line Leak	2 VLLD Self Test Alarm
6 Volumetric Line Leak	3 VLLD Shutdown Alarm
6 Volumetric Line Leak	4 VLLD Leak Test Fail Alarm
6 Volumetric Line Leak	5 VLLD Selftest Invalid Warning
6 Volumetric Line Leak	6 VLLD Continuous Handle On Warning
6 Volumetric Line Leak	7 VLLD Gross Line Test Fail Alarm
6 Volumetric Line Leak	8 VLLD Gross Line Selftest Fail Alarm
6 Volumetric Line Leak	9 VLLD Gross Pump Test Fail Alarm
6 Volumetric Line Leak	10 VLLD Gross Pump Selftest Fail Alarm
6 Volumetric Line Leak	11 VLLD Periodic Test Needed Warning
6 Volumetric Line Leak	12 VLLD Annual Test Needed Warning
6 Volumetric Line Leak	13 VLLD Periodic Test Needed Alarm
6 Volumetric Line Leak	14 VLLD Annual Test Needed Alarm
6 Volumetric Line Leak	15 VLLD Periodic Line Test Fail Alarm
6 Volumetric Line Leak	16 VLLD Periodic Line Selftest Fail Alarm
6 Volumetric Line Leak	17 VLLD Periodic Pump Test Fail Alarm
6 Volumetric Line Leak	18 VLLD Periodic Pump Selftest Fail Alarm
6 Volumetric Line Leak	19 VLLD Annual Line Test Fail Alarm
6 Volumetric Line Leak	20 VLLD Annual Line Selftest Fail Alarm
6 Volumetric Line Leak	21 VLLD Annual Pump Test Fail Alarm
6 Volumetric Line Leak	22 VLLD Annual Pump Selftest Fail Alarm
6 Volumetric Line Leak	23 VLLD Pressure Warning
6 Volumetric Line Leak	24 VLLD Pressure Alarm
6 Volumetric Line Leak	25 VLLD Gross Test Fault Alarm
6 Volumetric Line Leak	26 VLLD Periodic Test Fault Alarm
6 Volumetric Line Leak	27 VLLD Annual Test Fault Alarm
6 Volumetric Line Leak	28 VLLD Fuel Out Alarm

Category		Alarm Type & Description	
7	Groundwater Sensor Alarm	2	Sensor Setup Data Warning
7	Groundwater Sensor Alarm	3	Sensor Fuel Alarm
7	Groundwater Sensor Alarm	4	Sensor Out Alarm
7	Groundwater Sensor Alarm	5	Sensor Short Alarm
7	Groundwater Sensor Alarm	6	Sensor Water Alarm
7	Groundwater Sensor Alarm	7	Sensor Water Out Alarm
7	Groundwater Sensor Alarm	8	Sensor High Liquid Alarm
7	Groundwater Sensor Alarm	9	Sensor Low Liquid Alarm
7	Groundwater Sensor Alarm	10	Sensor Liquid Warning
8	Type-A Sensor Alarm	2	Sensor Setup Data Warning
8	Type-A Sensor Alarm	3	Sensor Fuel Alarm
8	Type-A Sensor Alarm	4	Sensor Out Alarm
8	Type-A Sensor Alarm	5	Sensor Short Alarm
8	Type-A Sensor Alarm	6	Sensor Water Alarm
8	Type-A Sensor Alarm	7	Sensor Water Out Alarm
8	Type-A Sensor Alarm	8	Sensor High Liquid Alarm
8	Type-A Sensor Alarm	9	Sensor Low Liquid Alarm
8	Type-A Sensor Alarm	10	Sensor Liquid Warning
12	Type-B Sensor Alarm	2	Sensor Setup Data Warning
12	Type-B Sensor Alarm	3	Sensor Fuel Alarm
12	Type-B Sensor Alarm	4	Sensor Out Alarm
12	Type-B Sensor Alarm	5	Sensor Short Alarm
12	Type-B Sensor Alarm	6	Sensor Water Alarm
12	Type-B Sensor Alarm	7	Sensor Water Out Alarm
12	Type-B Sensor Alarm	8	Sensor High Liquid Alarm
12	Type-B Sensor Alarm	9	Sensor Low Liquid Alarm
12	Type-B Sensor Alarm	10	Sensor Liquid Warning
13	Universal Sensor Alarm	2	Sensor Setup Data Warning
13	Universal Sensor Alarm	3	Sensor Fuel Alarm
13	Universal Sensor Alarm	4	Sensor Out Alarm
13	Universal Sensor Alarm	5	Sensor Short Alarm
13	Universal Sensor Alarm	6	Sensor Water Alarm
13	Universal Sensor Alarm	7	Sensor Water Out Alarm
13	Universal Sensor Alarm	8	Sensor High Liquid Alarm
13	Universal Sensor Alarm	9	Sensor Low Liquid Alarm
13	Universal Sensor Alarm	10	Sensor Liquid Warning
14	Auto-Dial	1	Autodial Setup Data Warning
14	Auto-Dial	2	Autodial Failed Alarm
14	Auto-Dial	3	Autodial Service Report Warning
14	Auto-Dial	4	Autodial Alarm Clear Warning
14	Auto-Dial	5	Autodial Delivery Report Warning
18	Elec. Dispenser	2	DIM Disabled Alarm
18	Elec. Dispenser	3	DIM Communication Failure Alarm
18	Elec. Dispenser	4	DIM Transaction Alarm
20	Product Alarm	1	BIR Setup Data Warning
20	Product Alarm	2	BIR Threshold Alarm
20	Product Alarm	3	BIR Close Shift Warning
20	Product Alarm	4	BIR Close Daily Warning
21	Pressure Line Leak	1	PLLD Setup Data Warning
21	Pressure Line Leak	2	PLLD Gross Test Fail Alarm

Category	Alarm Type & Description
21 Pressure Line Leak	3 PLLD Annual Test Fail Alarm
21 Pressure Line Leak	4 PLLD Periodic Test Needed Warning
21 Pressure Line Leak	5 PLLD Periodic Test Needed Alarm
21 Pressure Line Leak	6 PLLD Sensor Open Alarm
21 Pressure Line Leak	7 PLLD High Pressure Alarm (Obsolete V19)
21 Pressure Line Leak	8 PLLD Shutdown Alarm
21 Pressure Line Leak	9 PLLD High Pressure Warning (Obsolete V19)
21 Pressure Line Leak	10 PLLD Continuous Handle On Warning (Obsolete V19)
21 Pressure Line Leak	11 PLLD Periodic Test Fail Alarm
21 Pressure Line Leak	12 PLLD Annual Test Needed Warning
21 Pressure Line Leak	13 PLLD Annual Test Needed Alarm
21 Pressure Line Leak	14 PLLD Low Pressure Alarm
21 Pressure Line Leak	15 PLLD Sensor Short Alarm (Obsolete V19)
21 Pressure Line Leak	16 PLLD Continuous Handle On Alarm
21 Pressure Line Leak	17 PLLD Fuel Out Alarm
21 Pressure Line Leak	18 PLLD Line Equipment Alarm
26 Wireless PLLD	1 WPLLD Setup Data Warning
26 Wireless PLLD	2 WPLLD Gross Test Fail Alarm
26 Wireless PLLD	3 WPLLD Periodic Test Fail Alarm
26 Wireless PLLD	4 WPLLD Periodic Test Needed Warning
26 Wireless PLLD	5 WPLLD Periodic Test Needed Alarm
26 Wireless PLLD	6 WPLLD Sensor Open Alarm
26 Wireless PLLD	7 WPLLD Communications Alarm
26 Wireless PLLD	8 WPLLD Shutdown Alarm
26 Wireless PLLD	9 WPLLD Continuous Handle On Warning (Obsolete V19)
26 Wireless PLLD	10 WPLLD Annual Test Fail Alarm
26 Wireless PLLD	11 WPLLD Annual Test Needed Warning
26 Wireless PLLD	12 WPLLD Annual Test Needed Alarm
26 Wireless PLLD	13 WPLLD High Pressure Warning (Obsolete V19)
26 Wireless PLLD	14 WPLLD High Pressure Alarm (Obsolete V19)
26 Wireless PLLD	15 WPLLD Sensor Short Alarm (Obsolete V19)
26 Wireless PLLD	16 WPLLD Continuous Handle On Alarm
26 Wireless PLLD	17 WPLLD Fuel Out Alarm
26 Wireless PLLD	18 WPLLD Line Equipment Alarm
99 Externally Detected Alarm	1 Externally Detected Communication Alarm
99 Externally Detected Alarm	2 Communications - Data Reception Timeout
99 Externally Detected Alarm	3 Communications - Failed Checksum
99 Externally Detected Alarm	4 Communications - Parity Error
99 Externally Detected Alarm	5 Modem - Line Busy
99 Externally Detected Alarm	6 Modem - No Answer
99 Externally Detected Alarm	7 Modem - No Carrier
99 Externally Detected Alarm	8 Modem - No Dial Tone
99 Externally Detected Alarm	9 Modem - Modem Error
99 Externally Detected Alarm	10 Modem - Modem Not Responding
99 Externally Detected Alarm	11 Modem - Port Not Available
99 Externally Detected Alarm	12 Polling - Could Not Update Queue
99 Externally Detected Alarm	13 Polling - Invalid Data Type Requested

Appendix A.4. Security Codes

The RS-232 security code is an optional six-digit code used to limit external serial access to the system for security purposes. It can be set to any unique set of characters using either the front panel switches or the external communication interface setup commands. The system will not respond to a command without the proper security code, if the DIP switch is set to enable RS-232 security.

A four-position DIP switch is located on the CPU board, which is mounted in the right-back of the console printer compartment. The DIP switch is next to the battery switch. The DIP switch enables the security code and the switch positions are assigned as follows:

Switch	
1	Front Panel Setup Security Enable
2	RS-232 Security Enable
3, 4	Unused

If RS-232 security is enabled then the **Route parameter** must be specified for the node. Set the route parameter equal to the security code. Use a period to separate each digit of the code.

Example: Security Code=234419
Set Route = 2.3.4.4.1.9

Special Note for security codes with alphabetic characters : Alphabetic characters cannot be directly specified in the route field. They need to be specified as ASCII values.

Example : Security Code = 123abc
Set Route = 1.2.3.97.98.99

If the security feature has been disabled on the panel the set the route to zero as illustrated in the following CSV file fragment.

Nodes
Node_Name, Port, Protocol, Route
Node_A , P1 , VEEDER , 0

Appendix B. Trouble Shooting and Driver Error Messages

Driver statistics provide an effective troubleshooting method.

Generally RUINET may be used to monitor the driver stats. The connection overview screen displays the number of messages & bytes sent / received as well as the number of errors.

As a point of departure:

- The number of messages received should equal the number of messages sent.
- The number of errors should be zero (in a perfect world) or should represent a small percentage of the total number of messages sent (less then 5%).
- Several errors in consecutive messages may cause the FieldServer kernel to place the node offline in which case polling is slowed significantly until good communications are re-established.

If the number of messages received is zero and the number of timeouts is equal to the number of messages sent then

- The connection is bad. Check the cables …
- The security configuration is invalid
- The port settings are incorrect. Check the baud rate ….

If the number of messages received and the number of messages sent are roughly equal and the number of errors is small but the Data Arrays do not update then

- If you are polling for System Status – Check the 1st element of the Data Array associated with the poll Map Descriptor. The driver sets or clears the element as a summary alarm state for the Veeder-root device. Check that the data age is no more than the scan interval.

If the number of messages ignored is non-zero then this indicates that some data cannot be stored and is being discarded. Generally this arises when the driver cannot find an appropriate Map Descriptor to store data received in response to a poll (for composite data such as system status). For example: A system alarm occurs but you have not defined Map Descriptors to store system alarms or an alarm occurs for a sensor for which you have not defined a Map Descriptor.

You can monitor the error log to see if the driver has reported any errors or important information. These messages arise in two ways. Firstly, there are configuration errors and warnings which arise from the way that the CSV file has been configured. You should eliminate all these errors before putting your system into production. Secondly there are errors that arise from some run-time condition. Many of these errors are produced in the error log only once even though they may be produced over and over. The driver suppresses repetition so that the log does not overflow or hide other meaningful information.

Messages proceeded with an* are ones where multiple occurrences are suppressed by the driver. Thus the error may occur continuously but only one occurrence will be reported in the error log.

Error	Action Required
VRoot:#1 FYI. The mapDesc called <%s> is too short.[§]	The length of the Map Descriptor used to expose driver statistics is too short. Set the length to at least 600.
VRoot:#2 FYI. You could have used a mapDesc called <%s> to expose diagnostic info.	You can safely ignore this message. It is a prompt. Refer to Appendix B.1.
*VRoot:#3 Err. Data Type=%d is unknown. Data will be discarded.	The driver has encountered a message reporting an alarm for an equipment category/data type the driver does not recognize. Take a port log and consult with FieldServer Technical Services.
VRoot:#4 FYI. If there is more than one VRoot node then connect each node to a dedicated port	You may ignore this message if only one Veeder-Root node is connected to the FieldServer. If more than one node is connected then, you must explicitly connect each node to a separate port. Do this by editing the CSV file and then reset the FieldServer to eliminate the message. The CSV fragment below illustrates explicit connection of a node to a port. Connections, Port,…,Protocol. P1,…….,VRoot Nodes,…., Port, ….,Protocol N1 ,…., P1 ,…..,Vroot
VRoot:#5 Err. Data Type invalid for this driver. Md=<%s>[§]	The Data types must be spelled, spaced and punctuated exactly as in Appendix A.1
VRoot:#6 Err. No Default Poll Function for this data type. Md= <%s>[§]	Some data types require an addition Map Descriptor parameter 'VEED_Function' to be specified. Read the notes / example in the Advanced Topics section to determine the requirements to correct this error.
VRoot:#7 Err. Length too short. Rqd=%d. Md=<%s>[§]	The message reports the offending Map Descriptor and the number of array elements required. Adjust the length parameter accordingly. Ensure that the new length coupled with the offset fits in the array size.
VRoot:#11 Err. Command 0x54 cannot specify all tanks[§]	For the Data Type (or Veed_Function) specified the address may not be set to zero. You need one Map Descriptor per tank/sensor/input/device. There are a few variations of this error message each reporting the offending function.
VRoot:#12 Err. Command 0x54. Bad confirmation code.	You cannot take any corrective action to eliminate this error. Report the message to FieldServer support. It will assist in the diagnosis of the error if you can take a port log. . There are a few variations of this error message each reporting the offending function.

[§] This is a configuration error which can be eliminated by correcting an error in the CSV file and resetting the FieldServer.

Error	Action Required
*VRoot:#13 Err. Device Rejected message. Md=<%s>	This message is generated the first time that the Error Statistic 'Function Error' is produced. This error can arise in several ways. The firmware version of the Veeder-Root device may not support the poll generated by the Map Descriptor. The Veeder-Root device may not have the tank/sensor/device specified or it may arise if the message received by the Veeder-Root device is corrupted. If there are a significant number of these errors then use Appendix A.2 to determine if the firmware supports the poll. You can also check the devices configured against the address specified in the Map Descriptor.
*VRoot:#16 Err. Array too short to store. Md=<%s> Rqd=%d	When this error is produced incoming data is being discarded and alarm or other data will not be updated. There are a few variations on this message. Some do not report the Rqd length. This message is produced as a run-time error. It may arise from a configuration error that has not been corrected. Check for Error #7 messages. If there are any correct the errors by editing the CSV file. Then reset the FieldServer. If the driver is still producing error 16 then you should report this to FieldServer support. Provide a copy of your configuration file and a port log to assist in the diagnosis of this error.
*VRoot:#17 Err. Array too short to store. Md= <%s> ByteArray	This error is similar to #16 except that it applies to the array named in the DA_Byte_Name parameter for the Map Descriptor.
*VRoot:#18 Err. Array too short to store. Md= <%s> Float Array	This error is similar to #16 except that it applies to the array named in the DA_Float_Name parameter for the Map Descriptor.
VRoot:#19 Err. Cant process msg type= %x	You cannot take any corrective action to eliminate this error. Report the message to FieldServer support. It will assist in the diagnosis of the error if you can take a port log and provide a copy of your CSV file.
*VRoot:#20 FYI. Incoming data is being abandoned. Func= %x DT= <%s> Addr=%d	This message is a warning. It indicates that a response to a poll contains data for which a Map Descriptor cannot be found to store the data. For example: The response to poll for System Status returns an alarm for Liquid Sensor #3 but you have not defined a Map Descriptor for Liquid sensor #3. You may be able to use the Data Type and the Address to determine what kind of Map Descriptor is required. If, however, you are satisfied that you have Map Descriptors for the data of interest to you then you may safely ignore this message.
*VRoot:#21 Err. Md=<%s> not bound to a port. Can't be used. [§]	Read the notes for Error #4 to see how to correct this problem.
Vroot:#22 FYI. Config reported zero modules.	You may ignore this message. The Veeder-Root device reported zero configured modules in response to a configuration enquiry.
*VROOT:#23 Err. Address= 0 invalid for this command.	Set the address to a positive number corresponding to the tank/sensor/input/device whose data you are polling for.

[§] This is a configuration error which can be eliminated by correcting an error in the CSV file and resetting the FieldServer.

Error	Action Required
Md= <%s>[§]	
*VROOT:#24 Err. Function=%x not supported. Md= <%s>[§]	Check the data type's spelling spacing and punctuation. If this is correct and you have specified the Veed_Function parameter in the Map Descriptor then check that the function is supported by the driver (Table 6.1) and check that you specified it correctly. The functions numbers in table 6.1 are hexadecimal numbers. Either convert them to decimal or specify them in the CSV file using the notation 0xnnn where nnn is the function number.
VROOT:#25 FYI. Node=<%s> No password. Is security disabled on panel?	This message may be safely ignored. It does not indicate an error. This message is printed once for each node which does not have a password. This message provides confirmation that your configuration is not using a password and suggests that you check the panel configuration for the corresponding node to ensure that the security feature has been disabled. Additional information is provided in Appendix A.4
VROOT:#26 FYI. Node=<%s> Password=<%s>. Is security enabled on panel?	This message may be safely ignored. It does not indicate an error. This message is printed once for each node which does have a password configured in the CSV file. This message provides confirmation that your configuration is using a password and suggests that you check the panel configuration for the corresponding node to ensure that the security feature has been enabled. Additional information is provided in Appendix A.4

Appendix B.1. Driver Stats

In addition to the standard FieldServer communication statistics described in the FieldServer User's Manual Veeder-Root Driver can also expose some driver statistics by writing data to a Data Array. A special Map Descriptor named "vroot-stats" is required.

The following example shows how this special Map Descriptor can be configured. You can copy this section of text directly into your CSV file.

```
Nodes
Node_name,              Protocol
null_node   ,           VRoot

Data_Arrays,
Data_Array_Name,        Data_Format,        Data_Array_Length
VROOT_STATS  ,          UINT32      ,       1000

Map_Descriptors,
Map_Descriptor_Name,    Data_Array_Name,    Node_name,          Length,   Data_Type
VRoot-stats       ,     VROOT_STATS  ,      null_node   ,       1000  ,   Stats
```

When the driver sees this Map Descriptor it uses the Data Array VROOT _STATS (in this example) to store driver specific statistics. Only one of these Map Descriptors may be specified per FieldServer.

[§] This is a configuration error which can be eliminated by correcting an error in the CSV file and resetting the FieldServer.

The driver stores the following data.

1 VEED_MASTER_SENDS_MSG
2 VEED_MASTER_SENDS_BYTES
3 VEED_MASTER_TIMEOUT
4 VEED_MASTER_STREAMING
5 VEED_MASTER_RCVS_NAK
6 VEED_MASTER_RCVS_CHECKSUM
7 VEED_MASTER_RCVS_PROTOCOL
8 VEED_MASTER_COMPLETE_ERR
9 VEED_MASTER_RCVS_MSG
10 VEED_MASTER_RCVS_BYTES
11 VEED_MASTER_IC_TIMEOUT
12 VEED_MASTER_SEND_BAD_MSG
13 VEED_STAT_MSG_IGNORED
14 VEED_MASTER_RCV_BAD_FUNC_RESPONSE

Appendix B.2. Table of Module Types

00 - Not used	0A - Four Probe w/ Ground Temp Module
01 - FourProbe Module	0B - Groundwater Sensor Module
02 - Vapor Sensor Module	0C - Type A Sensor Module
03 - Liquid Sensor Module	0D - Remote Display Module
04 - FourRelay Module	
05 - I/O Combo Module	
06 - Printer Module	
07 - RS-232 Module	
08 - Modem Module	
09 - Volumetric Line Leak Module	
10 - Type B Sensor Module	1A - Pressure Line Leak Sensor Module
11 - Universal Sensor Module	1B - Pressure Line Leak Controller Module
12 - Fax/Modem (1785) Module	1D - Remote Printer Module
13 - Remote/Local Printer Module	1E - External Fax/Modem Module
14 - Pump Sensor Module	1F - RS-485 Module
15 - European RS-232 Module	
17 - EightProbe Module	
18 - Mechanical Dispenser Interface Module	
19 - Electronic Dispenser Interface Module	
20 - Wireless PLLD AC Interface Module	
21 - Wireless PLLD Communications Module	
22 - Wireless PLLD Controller Module	
23 - Hughes Satellite J-Box Module	
24 - Fax/Modem (1786) Module	
25 - Serial Satellite Module	
26 - Three Probe / Three Liquid Sensor Module	
27 - Three PLLD Sensor Module	

Appendix C. Advanced Map Descriptor Examples

Appendix C.1. Advanced Example 1 – Polling for Tank / Sensor / Input / Relay / Device Status

In section 4.4.1 we polled for the system status. This returns the alarm states for the whole system which includes tank status information. In this example we poll directly for the status of a particular tank. Only the status of this tank is returned. The length parameter reserves space in the array for the driver to store the possible alarm states for the tank. The table in section 6.2 provides details of the alarm types.

The first element of the array is used to store an alarm summary state. The array element is set non-zero if there are any alarms and is set to zero if there are none. The remaining array elements are set non-zero based on the types of alarms active for the tank.

Example: Tank 1 has two alarms 02 = Tank Leak Alarm 05 = Tank Low Product Alarm
The driver sets array DA_TANK1_ALMS as follows
Index=0 : Value=1 (Summary) Index=2 : Value=2 (Leak) Index=5 : Value=5 (Product)

Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Function	Scan_Interval	node_name	Address	Length	Data_Type
Tank1_01_status	DA_TANK1_ALMS	0	rdbc	1.0s	Node_A	1	30	Tank

The biggest difference between this Map Descriptor and the one provided in example 4.4.4 is that this is an active Map Descriptor producing a poll whereas the other example is passive relying on the response to a different poll.

The address must correspond to the tank number (in this example or the sensor / input / relay / device number depending on the data type.)

Amount of array space required to store the alarm types.

Other possible values are
System
Liquid Sensor
Vapor Sensor
Input
Groundwater Sensor
Type-A Sensor
Type-B Sensor
Universal Sensor
Press. Line
WPLLD
Relay

Appendix C.2. Advanced Example 2 – Resetting Remote Alarms

This example provides a 'write-on-change' Map Descriptor used to send the Veeder-Root device a remote alarm reset command. When the value of the first element of the array named DA_COMMANDS changes value the driver will send the command. The driver stores the Veeder-Root System time in the array on completion of the command.

```
Map_Descriptor_Name,    Data_Array_Name,    Data_Array_Offset,    Function,    node_name,    Address,    Length,    Data_Type
Reset_Alms_01  ,        DA_COMMANDS  ,      0                ,    wrbx   ,     Node_A   ,    1     ,     30   ,     Remote Alarm Reset
```

Appendix C.3. Advanced Example 3 – System Configuration

This example reads the configuration of the Veeder-Root Panel. The module type is stored in the location corresponding to the slot number. Slot 1's data is stored at index location 0, slot 2 at index location1, and if you define the DA_Byte_Name and DA_Float_Name arrays then the driver also stores the Power on Reset and Current Values in the corresponding array locations.

Table 6.7 provides a listing of module types.

```
Map_Descriptor_Name,    Data_Array_Name,    Data_Array_Offset,    Scan_interval,    Function,    node_name,    Address,    Length,    Data_Type,
Config_poll_1  ,        DA_MODULES   ,      0                ,    10.0s     ,       rdbc ,       Node_A   ,    1     ,     30   ,     Configuration,


Map_Descriptor_Name,    Data_Array_Name,    DA_Byte_Name,    DA_Float_Name    Data_Array_Offset,    Scan_interval,    Function,    node_name,    Address,    Length,    Data_Type
Config_poll_1  ,        DA_MODULES   ,      DA_POWER   ,     DA_CURRENT       0                ,    10.0s     ,       rdbc   ,     Node_A   ,    1     ,     30   ,     Configuration
```

Power-On-Reset and Current values are also stored if you define the DA_Byte_Name and the DA_Float_Name.

Make sure that both of these arrays are UINT32 or FLOAT if you use them.

Appendix C.4. Advanced Example 4 – System Diagnostics

This example reads the System Diagnostics Report from the Veeder-Root Panel. The results are stored in 3 consecutive array elements. If the value is set non-zero then the test FAILED. A value of zero means the test passed.

Index Contents
I/O test result
Ram test result
Prom test result

Map_Descriptor_Name,,	Data_Array_Name,	Data_Array_Offset,	Scan_interval,	Function,	node_name,	Address,	Length,	Veed_Function,	Data_Type
System1poll_1	DA_SELF_TEST ,	0 ,	10.0s ,	rdbc ,	Node_A ,	1 ,	3 ,	0x901 ,	Misc.

Appendix C.5. Advanced Example 5 – System Revision Level Report

This example reads the System Revision Level from the Veeder-Root Panel. The result is stored in ascii using up to 100 consecutive array elements. Use an array whose format is BYTE or STRING for this function. The notes below explain how the data should be interpreted.

YYMMDDHHmmSOFTWARE# nnnnnn-vvv-rrrCREATED - YY.MM.DD.HH.mm&&CCCC<ETX>
Notes:
1. YYMMDDHHmm - Current Date and Time
2. nnnnnn-vvv - Software version number (ASCII text string)
3. rrr - Software revision level (ASCII text string)
4. YY.MM.DD.HH.mm - Date and time of software creation
5. && - Data Termination Flag
6. CCCC - Message Checksum

.

Map_Descriptor_Name,	Data_Array_Name,	Data_Array_Offset,	Scan_interval,	Function,	node_name,	Address,	Length,	Veed_Function,	Data_Type
System1poll_1 ,	DA_REVISION ,	0 ,	10.0s ,	rdbc ,	Node_A ,	1 ,	100 ,	0x902 ,	Misc.

Appendix C.6. Advanced Example 6 – System Revision Level Report II

This example reads additional System Revision Level data from the Veeder-Root Panel. The result is stored in ascii using up to 100 consecutive array elements. Use an array whose format is BYTE or STRING for this function. The notes below explain how the data should be interpreted.

i90500YYMMDDHHmmSOFTWARE# 346abb-Tvv-rrrCREATED - YY.MM.DD.HH.mmnnAABBCCDDEEFFGGHHIIJJS-MODULE# nnnnnn-vvv-r
YYMMDDHHmm - Current Date and Time
346 - Software Base number (fixed)
a – Platform
(0 = Standard CPU, PLLD only 1 = Enhanced CPU 2 = (Unused) 3 = Enhanced CPU 16 Tank 4 = Standard CPU without PLLD & WPLLD 5 = Standard CPU, WPLLD only)
bb - Version level (egg version "15")
T - Software Type (1 = "Real" 2 = "Demo" 3 = "IFSF")
vv - Language
rrr - Revision level (e.g. revision "AX1")
YY.MM.DD.HH.mm - Date and time of software creation
nn - number of 2 byte values to follow (Hex)
AA - PERIODIC IN-TANK TESTS (00 = DISABLE, 01 = ENABLE)
BB - ANNUAL IN-TANK TESTS (00 = DISABLE, 01 = ENABLE)
CC - CSLD (00 = DISABLE, 01 = ENABLE)
DD - BIR (00 = DISABLE, 01 = ENABLE)
EE - FUEL MANAGER (00 = DISABLE, 01 = ENABLE)
FF - PRECISION PLLD (00 = DISABLE, 01 = ENABLE)
GG - TANKER LOAD (00 = DISABLE, 01 = ENABLE)
HH - 0.2 GPH PLLD (00 = DISABLE, 01 = ENABLE)
II - PRECISION PLLD ON DEMAND (00 = DISABLE, 01 = ENABLE)
JJ - SPECIAL 3-TANK/LINE CONSOLE (00 = DISABLE, 01 = ENABLE)
nnnnnn-vvv-r - SEM Info 3 parts, if none "NO SOFTWARE MODULE"
nnnnnn - SEM number (ASCII text string)
vvv - SEM Software version number (ASCII text string)
r - SEM Software revision level (ASCII text string)
.

Map_Descriptor_Name,	Data_Array_Name,	Data_Array_Offset,	Scan_interval,	Function,	node_name,	Address,	Length,	Veed_Function,	Data_Type
System1poll_1 ,	DA_REVISION2 ,	0 ,,	10.0s ,	rdbc ,	Node_A ,	1 ,	100 ,	0x905 ,	Misc.

Appendix C.7. Advanced Example 7 – Stick Height Report

This example reads the Stick height Report from the Veeder-Root Panel. The result is stored as a (scaled if scaling specified in the Map Descriptor) real number. Use one Map Descriptor per tank.

```
Map_Descriptors
Map_Descriptor_Name,  Data_Array_Name,  Data_Array_Offset,  Scan_Interval,  Function,  node_name,  Address,  Length,  Data_Type
Poll_Height1  ,       DA_STICKHEIGHT,   0                ,  0.8s         ,  rdbc    ,  Node_A,    1,        1       ,  In-Tank Stick Height
```

Appendix C.8. Advanced Example 8 – Active Alarm Report

This example reads the Veeder-Root Panel for active alarms (includes acknowledged and active). If there are any active alarms then the 1st element of the Data Array is set non-zero. If there are no active alarms then the array element is set to zero. You need a number of passive Map Descriptors to store alarms for the tanks. Sensor / inputs / devices just like in example 4.4.4

```
Map_Descriptors
Map_Descriptor_Name,  Data_Array_Name,  Data_Array_Offset,  Scan_Interval,  Function,  node_name,  Address,  Length,  Data_Type
AlarmPoll-11  ,       DA_ACTIVEALM  ,   0                ,  2.0s         ,  rdbc    ,  Node_A,    1,        1       ,  Active Alarm Report
```

Appendix C.9. Advanced Example 9 – Cleared Alarm Report

This example reads the Veeder-Root Panel for cleared alarms. If there are any cleared alarms then the 1st element of the Data Array is set non-zero. If there are no cleared alarms then the array element is set to zero. You need a number of passive Map Descriptors to store the cleared alarm info for the tanks / sensors / inputs / devices just like in example 4.4.4

The data is stored in the array specified using the DA_Byte_Name parameter of the passive Map Descriptors.

```
Map_Descriptor_Name,  Data_Array_Name,  Data_Array_Offset,  Scan_Interval,  Function,  node_name,  Address,  Length,  Data_Type
AlarmPoll-11 ,        DA_ACTIVEALM ,    0 ,                 2.0s ,          rdbc ,     Node_A,      1,         1 ,      Active Alarm Report

Map_Descriptors
Map_Descriptor_Name,  Data_Array_Name,  DA_Byte_Name,  Data_Array_Offset,  Function,  node_name,  Address,  Length,  Data_Type
Sys_alms01 ,          DA_S1 ,           DA_S1_CLEAR ,  0 ,                 passive ,  Node_A ,    1 ,        30 ,     System
Tank_Alms1 ,          DA_T1 ,           DA_T1_CLEAR ,  0 ,                 passive ,  Node_A ,    1 ,        30 ,     Tank
```

If there are active alarms they will get stored in the primary array. The cleared alarm information gets stored in the secondary array specified with the DA_Byte_Name

The value stored is a 1 to show alarm cleared
Or 1 2 to show alarm occurred.

The value is stored at the location which corresponds to the alarm type.

Thus if a 02 = Tank Leak Alarm was cleared then at index=2 the value stored will be a one.

This page intentionally left blank.