Sigma 4+

Quick Start

Mark Day



DOCUMENT REVISIONS

VERSION	DATE	CHANGES	AUTHOR
1.0	4/4/2019	Initial Draft	Mark Day

©2017 Seismic Source Co. • All rights reserved. This document may not be reproduced in any form without prior express written consent from Seismic Source Co.

Seismic Source reserves the right to make changes and improvements to its products without providing notice.

Seismic Source Co. 2391 East Coleman Rd. Ponca City, OK 74604 USA Telephone: (580) 762-8233 Fax: (580) 762-1785

Email: mail1@seismicsource.com www.seismicsource.com Printed in U.S.A.

Introduction	
System Overview	
Sigma 4+ Status LEDs	
Network Settings	7
Software Overview	
Sigma Setup	
DAQ Settings	
Sensor/Instrument Test	
Debug	
Data Collector	
Setup	
Data Collection	
Data Location	
Source Signature (SrcSig)	
Load From Unit	
Load Data from USB	
Appendix	
Sigma 4+ Overview	Error! Bookmark not defined.
26-Pin Connector Wiring	
10-Pin Ethernet Data Cable	
3-Pin Power Cable	Error! Bookmark not defined.

Contents

Introduction

The Sigma 4+ is a simple yet powerful 3-channel seismograph node. It can be used for active or passive recording, and can record data collected in real-time, or to be collected later.



System Overview



The Aux port is used to connect a USB stick for saving data, or connect a trigger cable to trigger

the unit.

Sigma 4+ Status LEDs

Battery LED:

- Green Flashing Battery voltage is good
- Yellow Flashing Battery voltage is low
- Red Flashing Battery voltage is critical, Sigma 4+ no longer writing to flash card

Status LED:

- Green Flashing GPS Acquired, ready to record
- Green Solid Recording data (GPS Acquired)
- Yellow Flashing Internal Sensor or Instrument test fail
- Red Flashing Quickly Flash card error
- Red Flashing Slowly No GPS, ready to record
- Red Solid Recording data (No GPS)

Network Settings

Sigma 4+ units are set up on a 10.x.x.x IP address, so your computer needs to be set-up the same network to establish communication.

Begin by opening your Network Settings.

1. Click on **Ethernet** under Network & Internet on the left-side menu.

Settings	- 🗆 X
命 Home	Status
Find a setting	Network status
Network & Internet	
🖨 Status	
// Wi-Fi	Not connected
토 Ethernet	You aren't connected to any networks.
Dial-up	▲ Troubleshoot
% VPN	Show available networks
r_{D}^{n} Airplane mode	Change your network settings
(۱۳) Mobile hotspot	Change adapter options View network adapters and change connection settings.
🕒 Data usage	Sharing options For the networks you connect to, decide what you want to share.
Proxy	View your network properties

2. Select Change Adapter Options.

 Right click Ethernet and select Properties.





4. Select Internet Protocol Version 4 and click Properties.



- 5. Click Use the following IP address
- 6. Set your IP address to **10.0.0.101**
- 7. Set your Subnet mask to 255.0.0.0
- 8. Click OK

u can get IP settings assigned aut	tomatically if your network supports
r the appropriate IP settings.	
Obtain an IP address automatic	cally
Use the following IP address: –	
IP address:	10 . 0 . 0 . 101
Subnet mask:	255.0.0.0
Default gateway:	
Obtain DNS server address aut	romatically
Use the following DNS server a	ddresses:
Preferred DNS server:	
Alternate DNS server:	
Validate settings upon exit	Advanced

Finally, connect your unit to your computer through the network port.

NOTE: If your computer is unable to communicate with the unit, temporarily disable your virus protection and firewall, as they may be blocking the connection. Windows Defender can also block this connection.

Software Overview

Sigma Setup

Sigma Setup is used to set acquisition parameters in the Sigma 4+ unit, perform sensor/instrument tests, and otherwise debug the system.

After powering on your Sigma 4+, connect it to a computer using a 10-pin ethernet data cable.

DAQ Settings

- 1. Open Sigma Setup
- 2. Click 'Detect' to connect to the unit

Here, you can configure your Sigma 4+ by setting the options on the left, then click "Set Config".

Sigma Setup v. 1.33 File Options Help SIGMA Unit 51011	 ✓ Detect 	-	D X
DAQ Settings Sensor Tes Line 51011 Stations (Up - Down)	t GM Sensor Instrument Te	rt Status Pulse Response Test Limits GPS Monitor Advanced Debug Firmware rev. 17.23 IP Address 10.5.10.11	Т
1 Auto Increment Static Sample Interval, msec Record Length, sec Gain Low Cut Filter, Hz Filter Type	ns 2 ~ 60 16 ~ Linear ~	2 3 Get Config Set Config	
Sensor Type	Passive V		

Sensor/Instrument Test

To test your unit, begin by navigating to the Sensor Test tab and click Start Test (F1).

🔏 Sigma Setup v.	. 1.33								_		×
ile Options Help	lp										
SIGMA Unit	51011 V Det	ect 📃									
DAQ Settings	Sensor Test GM Sensor Instrume	ent Test Status	Pulse Response	Test Limits	GPS Monitor	Advanced	Debug				
Start Test	t (F1) Get Test Results (F2)					2					
Resistance Ohm 3	-	3.	719			3885					_
Frequency, Hz 2	>	2	2			21					
Damping, %	0.5		05		0.5	05					
Sensitivity 3	37.9		38.6		38.5	38.5					
Lookago MOhm 1	10		10		10	10					

The test will take a few moments to complete, and the results will come back automatically. You can click Get Test Results (F2) to get the results of the last Sensor Test completed by the unit.

🔏 Sigma Setup 🛛 v.	. 1.33										-	×
<u>F</u> ile <u>O</u> ptions <u>H</u> el	lp											
SIGMA Unit	51011	~	Detect									
DAQ <u>S</u> ettings	Sensor Test	GM Sensor	Instrument Tes	st Status	Pulse Response	Test Limits	<u>G</u> PS Monitor	Advanced	Debug			
Start Test	t (F3)	Get Test Re	sults (F4)									
Channels	1				2			3				
Noise, uV	0.11				0.1			0.1				
CMRR, dB	-142				-127			-129				
Crosstalk, dB	-130				-140			-135				
THD, %	0.002				0.002			0.002				
Gain Err, %	0.17				0.18			0.32				
Offset, mV	1.13				1.13			1.17				
Amplitude Err, dB	0.046				0.046			0.046				
Phase Error, deg	0.2				0.202			0.199				
	-2.3				-2.3			-2.1				

The steps are the same for the Instrument Test.

Debug

To enable the Debug window, navigate to the Debug Tab and click "Enable". Next, click anywhere within the Debug window to place your text cursor inside. Press Enter to display a list of commands. The Debug window displays information about the current state of the Sigma 4+.

V Secretary v 12		_	~
A sigma setup V. 1.35	-		^
ile <u>Options</u> Help			
SIGMA Unit 51011 V Detect			
DAQ Settings Sensor Test GM Sensor Instrument Test Status Pulse Response Test Limits GPS Monitor Advanced Debug			
Monitor commands:			
P - Print Test Results			
Q - System Time			
F - Compact Flash Speed Test			
C - Compact Flash Directory Listing			
W - Compact Flash Free Space			
Z - Format Compact Flash			
Y - Reset Memory			
I - IP Address			
N - Display NMEA/GPS data (On/Off)			
L - LED Test			
S - Sensor Test			
D - Polarity Test			
G - Leakage Test			
H - Low Drive Z Test			
X - Instrument Test			
/ - Stop Recording			
V - WiFi power up interval			
1 - Transmit Time Stamps			
2 - Time Control Mode			
A - LTA/STA status			
R - Reset			
U - Usage			
Esc - Exit			
1			

Data Collector

Data Collector can be used to collect data from one or multiple USB sticks, or directly from the Sigma 4+ through an ethernet connection. Begin by opening Data Collector.



Setup

- 1. Click Setup on top menu bar
- 2. Enter a name for the Project
- 3. Click Create



- 4. Click "Download Settings"
- 5. In the Download Records section, you can either select "All" to download everything from the Sigma 4+ or select "By Date Range" to specify a set of time that you want to download
- 6. Also ensure that External Converter is deselected

Settings Dialog	×
Settings Dialog Settings Project Settings Image: Constraint of the setting set	✓ Download records By Event Time (ASI File) By Box Events Check Period By Date From 08:00:00 1200 By Date From 08:00:00 14 Jan 2016 To 07:00:00 14 Jun 2017 Current From Or:00:00 Search records in folder C:\iSeis_Projects\DataColle\Test 2 Store Drive Store Drives List Clear Local Disk (C:) Add Drive C: free 313.4 GB from 487.5 GB
Test system performance	Delete record after download

Data Collection

Once your project is setup, simply connect either the Sigma 4+ or a USB stick to your computer and click "Start" in Data Collector. Data Collector should automatically detect the unit and begin downloading the specified data.



Data Location

Once data has been downloaded, you can find it on your computer at

C:/iSeis_Data/\$PROJECT_NAME_Data/Receivers. These are stored as sgy files that can be opened in the SrcSig program.

Source Signature (SrcSig)

SrcSig can be used to view data directly from the Sigma 4+, or you can use it to view data previously downloaded with Data Collector.

Load From Unit

After connecting the Sigma 4+ to your computer, open SrcSig.

While the Sigma 4+ is recording, SrcSig will automatically show each minute of data as it is recorded. This needs to be disabled to view past records.

Open Options -> Network Comm -> Disabled



- 1. Click File -> Load from Unit
- 2. Click "Detect" to show the connected unit
- 3. Select the unit in the dropdown menu and click the "Connect" icon next to Detect
- 4. Select DAQ3 on the left and select a day



Each minute of recorded data can be seen here as .DAT files. Select one and click "Load" to view the data in SrcSig.

	51011 (IP: 10.5.10.11)	- 3	Detect		
	File Name 🛆	Size	Date		
	00109895.DAT	285696	Jun-23-2017 15:45:00		
	00109896.DAT	285696	Jun-23-2017 15:46:00		
	00109897.DAT	190976	Jun-23-2017 15:47:00		
	00109898.DAT	285696	Jun-23-2017 15:49:00		
	00109899.DAT	285696	Jun-23-2017 15:50:00		
	00109900.DAT	285696	Jun-23-2017 15:51:00		
	00109901.DAT	285696	Jun-23-2017 15:52:00		
	00109902.DAT	285696	Jun-23-2017 15:53:00		
	00109903.DAT	285696	Jun-23-2017 15:54:00		
	00109904.DAT	285696	Jun-23-2017 15:55:00		=
					•
starting FTP transfer Transfer complete					
Starting FTP transfer					
Transfer complete					=
				Load	incel
Online	Transfer o	omplete			li.

Load Data from USB

To load data into SrcSig from a USB:

- 1. Click File -> Open
- 2. Navigate to the USB drive using the navigation window on the left

You can also use this window to open sgy files collected with Data Collector.

E:\ 51011 00109884.DAT 285696 2017-06-23 15:33:00 N/A 00000109 00109885.DAT 285696 2017-06-23 15:34:00 N/A 00109886.DAT 285696 2017-06-23 15:35:00 N/A 00109886.DAT 285696 2017-06-23 15:35:00 N/A 00109887.DAT 285696 2017-06-23 15:36:00 N/A 0010988.DAT 285696 2017-06-23 15:37:00 N/A 0010988.DAT 285696 2017-06-23 15:37:00 N/A 0010989.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A	Image: Note of the second se	e: 🔻	File Name	Size	Date	Comm 🔺
S1011 00109885.DAT 285696 2017-06-23 15:34:00 N/A 00109886.DAT 285696 2017-06-23 15:35:00 N/A 00109887.DAT 285696 2017-06-23 15:35:00 N/A 00109887.DAT 285696 2017-06-23 15:36:00 N/A 00109888.DAT 285696 2017-06-23 15:37:00 N/A 00109889.DAT 285696 2017-06-23 15:37:00 N/A 00109890.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:40:00 N/A 00109894.DAT 285696 2017-06-23 15:40:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:46:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A	00109 00109885.DAT 285696 2017-06-23 15:34:00 N/A 00109886.DAT 285696 2017-06-23 15:35:00 N/A 00109887.DAT 285696 2017-06-23 15:35:00 N/A 00109888.DAT 285696 2017-06-23 15:37:00 N/A 00109889.DAT 285696 2017-06-23 15:37:00 N/A 00109889.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:47:00 N/A 00109898.DAT <t< td=""><td>E:\</td><td>00109884.DAT</td><td>285696</td><td>2017-06-23 15:33:00</td><td>N/A</td></t<>	E:\	00109884.DAT	285696	2017-06-23 15:33:00	N/A
00109886.DAT 285696 2017-06-23 15:35:00 N/A 00109887.DAT 285696 2017-06-23 15:36:00 N/A 00109887.DAT 285696 2017-06-23 15:36:00 N/A 00109888.DAT 285696 2017-06-23 15:37:00 N/A 00109889.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:49:00 N/A 00109893.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A	00109886.DAT 285696 2017-06-23 15:35:00 N/A 00109887.DAT 285696 2017-06-23 15:36:00 N/A 00109888.DAT 285696 2017-06-23 15:37:00 N/A 00109889.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:40:00 N/A 00109895.DAT 285696 2017-06-23 15:40:00 N/A 00109895.DAT 285696 2017-06-23 15:40:00 N/A 00109896.DAT 285696 2017-06-23 15:40:00 N/A 00109896.DAT 285696 2017-06-23 15:40:00 N/A 00109897.DAT 190976 2017-06-23 15:40:00 N/A 00109898.DAT 285696 2017-06-23 15:40:00 N/A 00109898.DAT 285696 2017	51011	00109885.DAT	285696	2017-06-23 15:34:00	N/A
00109887.DAT 285696 2017-06-23 15:36:00 N/A 0010988.DAT 285696 2017-06-23 15:37:00 N/A 0010988.DAT 285696 2017-06-23 15:37:00 N/A 0010989.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A	00109887.DAT 285696 2017-06-23 15:36:00 N/A 00109888.DAT 285696 2017-06-23 15:37:00 N/A 00109889.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A	00000105	00109886.DAT	285696	2017-06-23 15:35:00	N/A
00109888.DAT 285696 2017-06-23 15:37:00 N/A 00109889.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A	00109888.DAT 285696 2017-06-23 15:37:00 N/A 00109889.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A		00109887.DAT	285696	2017-06-23 15:36:00	N/A
00109889.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A	00109889.DAT 285696 2017-06-23 15:38:00 N/A 00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A 00109896.DAT 285696 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109899.DAT 285696 2017-06-23 15:49:00 N/A		00109888.DAT	285696	2017-06-23 15:37:00	N/A
00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A	00109890.DAT 285696 2017-06-23 15:39:00 N/A 00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A 00109896.DAT 285696 2017-06-23 15:47:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109899.DAT 285696 2017-06-23 15:49:00 N/A		00109889.DAT	285696	2017-06-23 15:38:00	N/A
00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:43:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A	00109891.DAT 285696 2017-06-23 15:40:00 N/A 00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109899.DAT 285696 2017-06-23 15:49:00 N/A		00109890.DAT	285696	2017-06-23 15:39:00	N/A
00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A	00109893.DAT 285696 2017-06-23 15:43:00 N/A 00109894.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A		00109891.DAT	285696	2017-06-23 15:40:00	N/A
00109894.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A	00109894.DAT 285696 2017-06-23 15:44:00 N/A 00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A		00109893.DAT	285696	2017-06-23 15:43:00	N/A
00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A	00109895.DAT 285696 2017-06-23 15:45:00 N/A 00109896.DAT 285696 2017-06-23 15:46:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109899.DAT 285696 2017-06-23 15:49:00 N/A		00109894.DAT	285696	2017-06-23 15:44:00	N/A
00109896.DAT 285696 2017-06-23 15:46:00 N/A	00109896.DAT 285696 2017-06-23 15:46:00 N/A 00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109899.DAT 285696 2017-06-23 15:49:00 N/A		00109895.DAT	285696	2017-06-23 15:45:00	N/A
	00109897.DAT 190976 2017-06-23 15:47:00 N/A 00109898.DAT 285696 2017-06-23 15:49:00 N/A 00109899.DAT 285696 2017-06-23 15:50:00 N/A		00109896.DAT	285696	2017-06-23 15:46:00	N/A
00109897.DAT 190976 2017-06-23 15:47:00 N/A	00109898.DAT 285696 2017-06-23 15:49:00 N/A		00109897.DAT	190976	2017-06-23 15:47:00	N/A
00109898.DAT 285696 2017-06-23 15:49:00 N/A	00100899 DAT 285696 2017-06-23 15:50:00 N/A		00109898.DAT	285696	2017-06-23 15:49:00	N/A
00109899 DAT 285696 2017-06-23 15-50-00 N/A			00109899 DAT	285696	2017-06-23 15:50:00	N/A

Appendix

The following contains technical drawings and information about the Sigma 4+ unit.

26-Pin Connector Wiring

26 Pin	Sigma 3-26	Sigma 4+	DX6
н	Ch1 +	Ch1 +	Ch1 +
J	Ch1 -	Ch1 -	Ch1 -
К	Ch2 +	Ch2 +	Ch2 +
L	Ch2 -	Ch2 -	Ch2 -
М	Ch3 +	Ch3 +	Ch3 +
Ν	Ch3 -	Ch3 -	Ch3 -
U	Attenuated Ch1+	Internal Geophone 1+	Ch4 +
С	Attenuated Ch1-	Internal Geophone 1-	Ch4 -
Α	Attenuated Ch2 +	Internal Geophone 2 +	Ch5 +
S	Attenuated Ch2 -	Internal Geophone 2 -	Ch5 -
<u>a</u>	Attenuated Ch3 +	Internal Geophone 3 +	Ch6 +
Р	Attenuated Ch3 -	Internal Geophone 3 -	Ch6 -
x			
<u>c</u>			
F	+12 v (battery +)	+12 v (battery +)	+12 v (battery +)
D	GND	GND	GND

10-Pin Ethernet Data Cable

