BenchMark Wireline Products
36220 FM 1093
P. O. BOX 850
Simonton, Texas 77476
Phone: 281.342.6415
Fax: 281.342.4848
benchmarkwireline.com

ALS4A100 SERIAL DATA RECORDER
USER MANUAL

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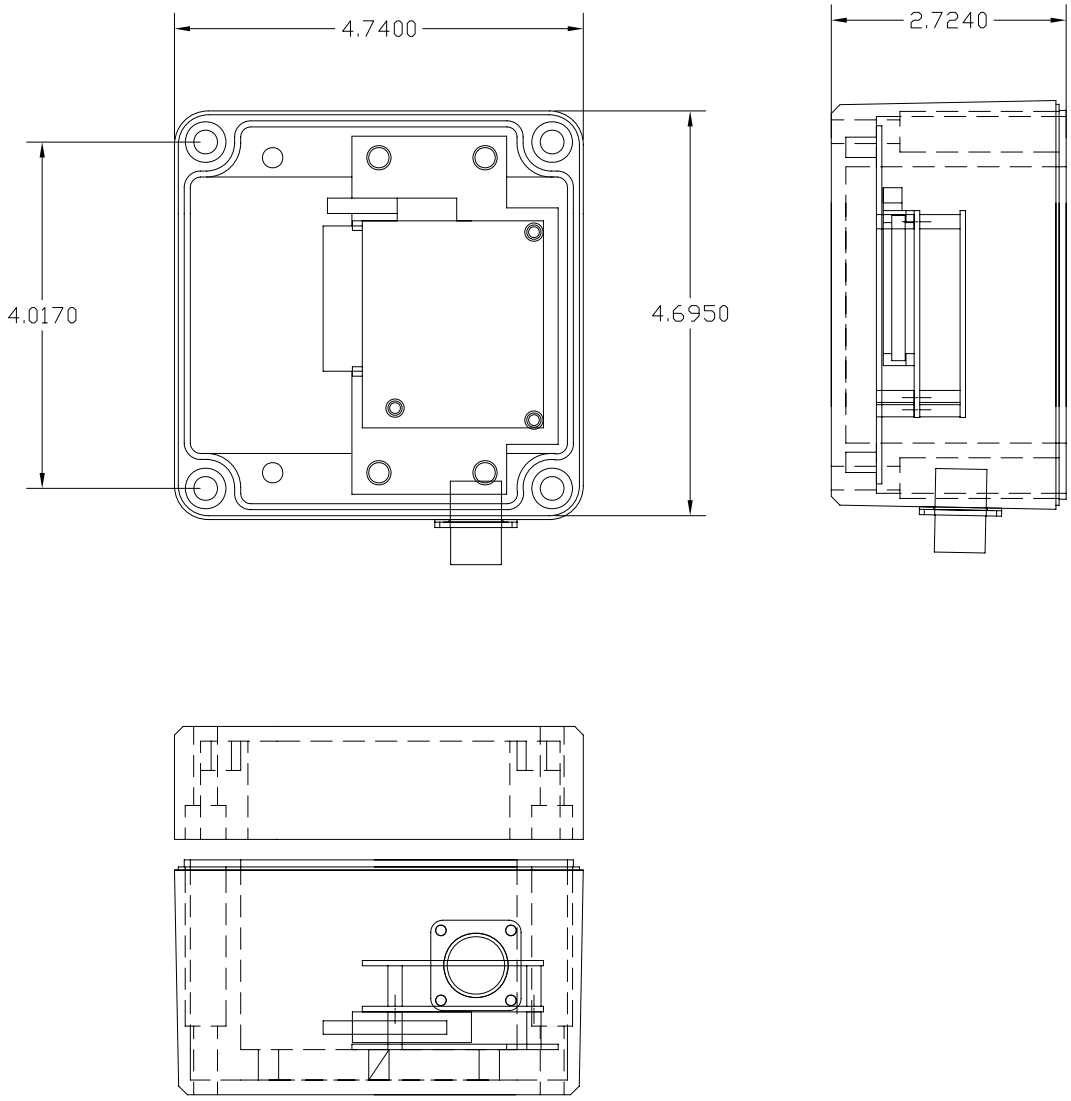
1.0 DESCRIPTION

This device is typically used to store frac or pumping unit parameters (see example file on following page). The data is provided from a serial input. No characters such as line feed or carriage return are added by the data recorder except the header record (if selected – refer to section 3.2).

The data is stored in a DOS text file format onto a 512MB compact flash card.

The device is certified for use in a zone 2 or Class 1 Div 2 area. It is certified to an ATEX standard (see certification document on last page).

2.0 DIMENSIONS



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3.0 OPERATING AND SETUP INSTRUCTIONS

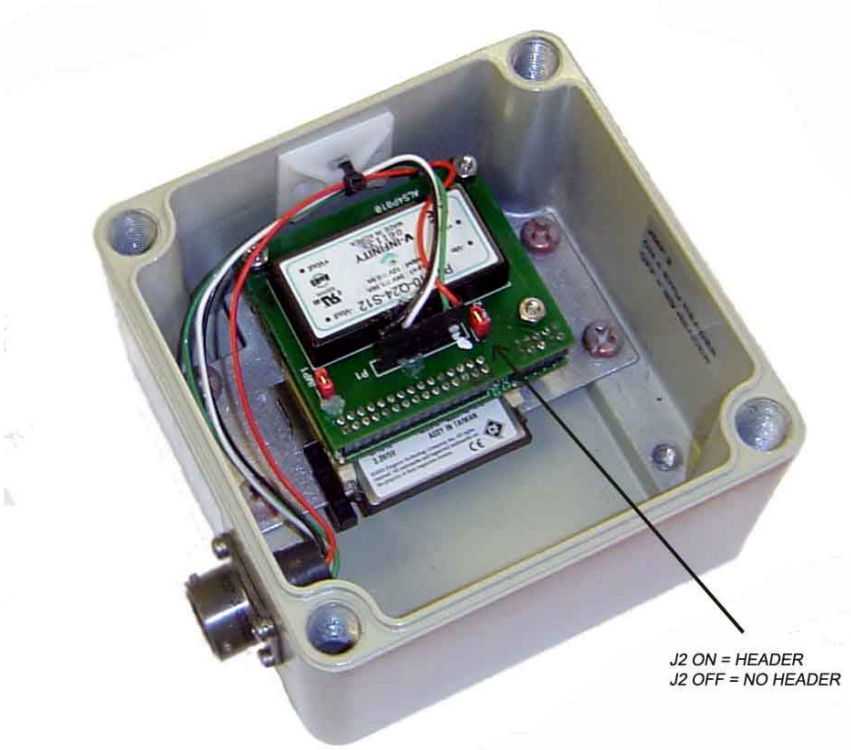
3.1 MOUNTING

To mount the box, first remove the lid. Locate the hole in each of the four corners (refer to section 2.0). Insert ¼" socket head screws into these holes. The screws can then attach it to a plate or screw into matched drilled holes.

3.2 SET THE HEADER RECORD JUMPER

Jumper J2 on the PCB board (see below) determines if the header block (refer to section 4) is written at the beginning of each date file.

Jumper J1 is used for programming and must remain on for operation.



3.3 CONNECT POWER AND DATA COMMUNICATIONS INPUT

PIN A = 12 – 36 VDC
PIN B = POWER GROUND
PIN C = RS232 SERIAL IN

19,200	BAUD
8	DATA BITS
NO	PARITY
1	STOP BIT
NO	HANDSHAKING

PIN D = SIGNAL GROUND

3.4 INSTALL COMPACT FLASH

Make sure the compact flash card is installed and has adequate space.

The maximum size allowed is 512MB. Smaller sizes can be used but not recommended.

The recommended file system is FAT-16. FAT-32 can be used with some flash cards but will not work properly with others.

4.0 DATA RECORDS

4.1 TYPICAL RECORD WITH HEADER RECORD

```
[Serial Port Initialize]
[Communication Restored]
Time: 00:00:02
4
[Version: 2.5]
[Source:]
[Begin Channels]
Num_Channels=16
Channel1:Circulating Pressure,psi,4,1,2,0,1.5e+04,8.304182e-01,-
7.573697e+01
Channel2:Wellhead Pressure,psi5,1,10,1.5e+04,8.238757e-01,6.301403e+01
Channel3:Stripper 1,psi,01603.e+03,9.84839e-01,-1.424789e+01
Channel4:Stripper 2,psi,01703.e+03,1.022615,-2.774906e+01
Channel5:Top Traction,psi,0,1,10,0,3.e+03,1.026653,7.052422
Channel6:Middle Traction,psi,0,1,9,0,3.e+03,1.,0
Channel7:Bottom Traction,psi,0,1,8,0,3.e+03,1.030046,7.665047e+01
Channel8:Chain Tension,psi,0,1,5,0,3.e+03,1.,0
Channel9:Pipe Heavy,lbs,3,1,3,0,8.e+04,4.3e-01,0
Channel10:Pipe Light,lbs,6,1,4,0,-4.e+04,4.3e-01,0
Channel11:Speed,ft/min,2,3,1,0,3.,1.2e-01,0
Channel12:Fluid Rate,bbl/min,0,3,2,0,8.,1.,0
Channel13:N2 Rate,scfm,0,3,3,0,5.,1.,0
Channel14:Spare,bbl/min,0,3,4,0,1.e+03,1.,0
Channel15:Spare,bbl/min,0,3,5,0,1.5e+03,1.,0
Channel16:Depth,feet,1,4,1,0,1.e+04,2.e-03,0
[End Channels]
[Begin Controllers]
Num_Controllers=0
Controller1:/ORI,234,Cyrano Version 5.0.0,R3.1a
[End Controllers]
[Begin Data Capture]
081605,080646,000003.00, 0000020.00, 0000002.00, 0000003.00, 0000010.00,
0000004.00, 0000008.00, 0000020.00, 0000002.00, 0000008.00, 0000000.00,
0000000.00, 0000000.00, 0000005.00, 0000005.00,
0002471.23081605,080646,081605,080646,081605,080646,081605,080646,081605,0
80646,081605,080647,081605,080648,081605,080649,081605,080650,081605,08065
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,080702,081605,080703,081605,080704,081605,080705,081605,080706,081605,080
707,081605,080708,081605,080709,081605,080710,081605,080711,081605,080712,
081605,080713,081605,080714,081605,080715,081605,080716,081605,080717,0816
05,080718,081605,080719,081605,080720,081605,080721,081605,080722,081605,0
80723,081605,080724,081605,080725,081605,080726,081605,080727,081605,08072
8,081605,080729,081605,080730,081605,080731,081605,080732,081605,080733,08
1605,080734,081605,080735,081605,080736,081605,080737,081605,080738,081605
,080739,081605,080740,081605,080741,081605,080742,081605,080743,081605,080
744,081605,080745,081605,080747,081605,080748,081605,080749,081605,080750,
081605,080751,081605,080752,081605,080753,081605,080754,081605,080755,
```

4.2 WITHOUT HEADER RECORD

```
081605,080646,000003.00, 0000020.00, 0000002.00, 0000003.00, 0000010.00,
0000004.00, 0000008.00, 0000020.00, 0000002.00, 0000008.00, 0000000.00,
0000000.00, 0000000.00, 0000005.00, 0000005.00,
0002471.23081605,080646,081605,080646,081605,080646,081605,080646,081605,0
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,080702,081605,080703,081605,080704,081605,080705,081605,080706,081605,080
707,081605,080708,081605,080709,081605,080710,081605,080711,081605,080712,
081605,080713,081605,080714,081605,080715,081605,080716,081605,080717,0816
05,080718,081605,080719,081605,080720,081605,080721,081605,080722,081605,0
80723,081605,080724,081605,080725,081605,080726,081605,080727,081605,08072
8,081605,080729,081605,080730,081605,080731,081605,080732,081605,080733,08
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,080739,081605,080740,081605,080741,081605,080742,081605,080743,081605,080
744,081605,080745,081605,080747,081605,080748,081605,080749,081605,080750,
081605,080751,081605,080752,081605,080753,081605,080754,081605,080755,
```
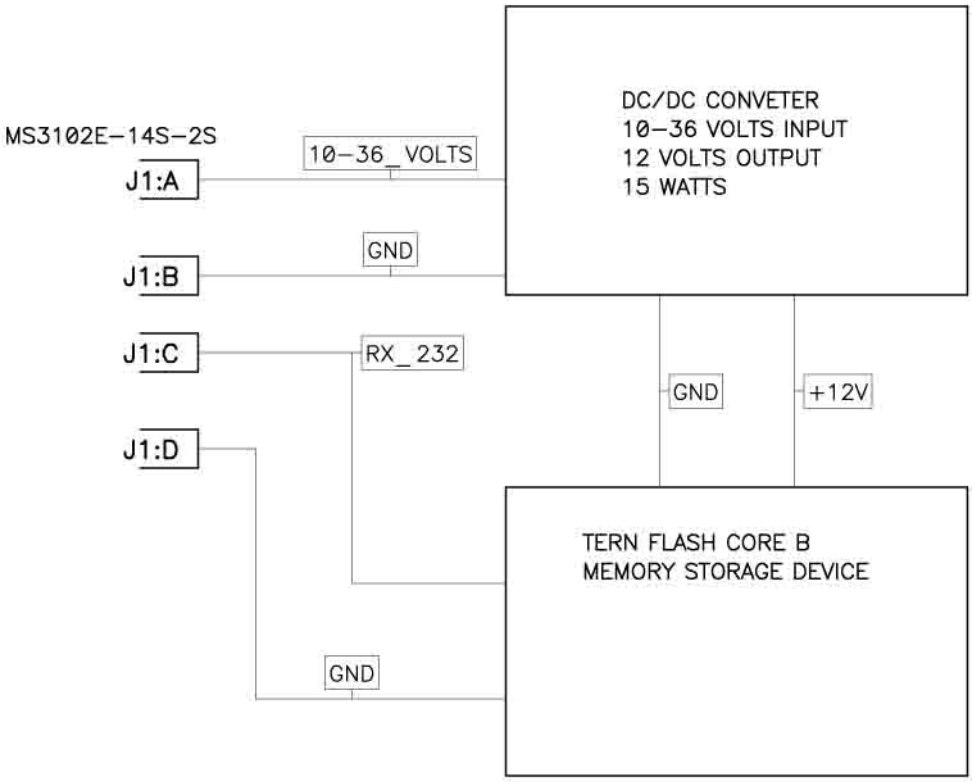

4.0 SCHEMATIC AND PARTS LIST

4.1 BLOCK DIAGRAM



4.2 PARTS LIST

ALS4A100 DEVICE SERIAL DATA RECORDER

Component	Description	Qty Required	UM
ALS4M002	ENCLOSURE MOD SERIAL DATA RX	1	EA
ALS4A010	PCB ASSY DATA RECORDER PS	1	EA
AMS4P286	PCB ASSY TERN FLASHCORE-B	1	EA
AMS4P303	MEMORY COMPACTFLASH 512MB	1	EA
AMS4P270	CONN KPSE02E12-8P RECEPTACLE	1	EA
AMS4P269	CONN KPSE06J12-8S STR PLUG	1	EA
ALS4M003	PLATE MT FCB SERIAL DATA RX	1	EA
AMS4P260	INSERT CLINCH STANDOFF 4-40 X	3	EA
AMS4P190	GASKET 10-40450-12 BENDIX	1	EA
FSU1P032	SCREW 4-40 X 3/8 PHIL PAN SST	4	EA
ALS4P007	SCREW 4-40 X 3/4 PHIL PAN SST	3	EA
ALS4P011	STANDOFF 4-40 X 13/32 M/F HEX	1	EA
ALS4P009	STANDOFF 4-40 X 15/32 M/F HEX	2	EA
C276P158	NUT 4-40 MACHINE SST	3	EA
AMS4P446	CONN 16-02-0097 CRIMP TERMINAL	8	EA
AMS4P604	CONN 50-57-9008 SNGL RW 5CKT P	1	EA

5.0 CERTIFICATION DOCUMENTS

Epsilon Compliance

ATEX Conformity Certificate

Epsilon Certificate Number:

Epsilon 05ATEX1403

This certificate is issued for the following equipment:

Data Storage Device

Manufactured and submitted by:

Kerr Measurement Systems, Inc.
6415 Reading Road
Rosenberg
Texas 77471
USA

The equipment shall be designed and constructed in accordance with the specification set out in the schedule herein and documents referred to therein.

This Certificate is issued subject to the conditions of Epsilon Compliance and any additional conditions as may be prescribed.

This Certificate does not imply that the equipment meets all statutory requirements in any particular industry or circumstance.

Directive:

ATEX Directive: 94/9/EC

Standard:

EN50021: 1999

Coding:

CE Ex II 3 G EEx nA II T6

Project Number:

ETS1415

Report Number:

ETS(A)1415/A/1

Issue Date:

14th July 2005

On Behalf of Epsilon Compliance

S L D'Henin
Certification Manager

ASCB(E) Accrediting Certifying Bodies

This certificate may only be used in its entirety and without change

Ex

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Fax: +44(0)1244 543888