SO N° SO-106-310708

Cliente INFN Sezione di Catania

Strumento WH Monitor 600 – 6000m depth

S/N 11750

Metodologia di collaudo

Rev. 0 del 09giu08

- Collaudo documentale
- Collaudo strumentale con esecuzione dei comandi ps0, ol, pa, pc1, pc2, pt4, pt200 e verifica risultati

Strumenti utilizzati

- ADCP
- Cavo in dotazione
- Alimentatore in dotazione
- Personal Computer

Collaudo

```
[BREAK Wakeup A]
WorkHorse Broadband ADCP Version 16.31
Teledyne RD Instruments (c) 1996-2008
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>ps0
  Instrument S/N:  11750
       Frequency:  614400 HZ
   Configuration:  4 BEAM, JANUS
     Match Layer:  10
      Beam Angle:  20 DEGREES
    Beam Pattern:  CONVEX
     Orientation:  UP
       Sensor(s):  HEADING  TILT 1  TILT 2  DEPTH  TEMPERATURE  PRESSURE
Pressure Sens Coefficients:
              c3 = +1.467383E-11
              c2 = -1.228756E-06
              c1 = +1.515849E+00
          Offset = -6.357081E+01

Temp Sens Offset:  -0.28 degrees C

    CPU Firmware:  16.31 [0]
   Boot Code Ver:  Required:  1.13   Actual:  1.13
    DEMOD #1 Ver:  ad48, Type:  1f
    DEMOD #2 Ver:  ad48, Type:  1f
    PWRTIMG  Ver:  85d3, Type:   6

Board Serial Number Data:
   01  00 00 04 3A 2B E8  09 CPU727-2000-00J
   AC  00 00 05 22 2B D2  09 REC727-1000-03E
   70  00 00 05 8B 93 5E  09 DSP727-2001-03G
   7E  00 00 04 3A 0C B3  09 PIO727-3000-00G
>ol                              FEATURES
```

```
------------------------------------------------------------------------
Feature                                                      Installed
------------------------------------------------------------------------
Bottom Track                                                        No
Water Profile                                                      Yes
High Resolution Water Modes                                         No
LADCP/Surface Track/WM15                                            No
Wave Gauge Acquisition                                              No
Shallow Bottom Mode                                                 No
High Rate Pinging                                                   No

See your technical manual or contact RDI for information on how to
install additional capability in your WorkHorse.

>pa

PRE-DEPLOYMENT TESTS

CPU TESTS:
  RTC.....................................PASS
  RAM.....................................PASS
  ROM.....................................PASS
RECORDER TESTS:
  PC Card #0..............................DETECTED
    Card Detect...........................PASS
    Communication.........................PASS
    DOS Structure.........................PASS
    Sector Test (short)...................PASS
  PC Card #1..............................NOT DETECTED
DSP TESTS:
  Timing RAM..............................PASS
  Demod  RAM..............................PASS
  Demod  REG..............................PASS
  FIFOs...................................PASS
SYSTEM TESTS:
  XILINX Interrupts... IRQ3  IRQ3  IRQ3 ...PASS
  Wide Bandwidth..........................PASS
  Narrow Bandwidth........................PASS
  RSSI Filter.............................PASS
  Transmit................................PASS
SENSOR TESTS:
  H/W Operation...........................PASS
>pc1


BEAM CONTINUITY TEST

When prompted to do so, vigorously rub the selected
beam's face.

If a beam does not PASS the test, send any character to
the ADCP to automatically select the next beam.

Collecting Statistical Data...
  45  48  44  43
  44  47  43  42
  44  47  43  42
  44  48  43  43
....

Rub Beam 1 = PASS
Rub Beam 2 = PASS
Rub Beam 3 = PASS
Rub Beam 4 = PASS
```

```
>pc2

Press any key to quit sensor display ...

All Sensors are Internal Only.
Heading   Pitch    Roll   Up/Down    Attitude Temp    Ambient Temp    PRESSURE
137.53ø  -1.38ø  -1.09ø     Up          22.18øC          21.42øC        -25.1 kPa
137.57ø  -1.39ø  -1.10ø     Up          22.21øC          21.45øC          4.0 kPa
137.55ø  -1.38ø  -1.11ø     Up          22.21øC          21.45øC          5.2 kPa
137.61ø  -1.36ø  -1.09ø     Up          22.20øC          21.43øC         -6.9 kPa
137.67ø  -1.39ø  -1.10ø     Up          22.20øC          21.47øC         34.3 kPa
137.49ø  -1.38ø  -1.09ø     Up          22.19øC          21.44øC        -22.9 kPa
137.59ø  -1.37ø  -1.10ø     Up          22.22øC          21.44øC          5.5 kPa
137.59ø  -1.37ø  -1.09ø     Up          22.20øC          21.43øC        -15.1 kPa
137.57ø  -1.37ø  -1.09ø     Up          22.21øC          21.42øC          0.1 kPa
137.51ø  -1.36ø  -1.08ø     Up          22.21øC          21.43øC          6.8 kPa
137.57ø  -1.36ø  -1.09ø     Up          22.22øC          21.44øC         25.6 kPa
137.52ø  -1.37ø  -1.09ø     Up          22.20øC          21.45øC          7.7 kPa
137.53ø  -1.37ø  -1.08ø     Up          22.19øC          21.45øC         -5.1 kPa
137.51ø  -1.38ø  -1.08ø     Up          22.21øC          21.46øC         -9.9 kPa
137.59ø  -1.36ø  -1.08ø     Up          22.22øC          21.44øC         -9.0 kPa
137.48ø  -1.36ø  -1.06ø     Up          22.20øC          21.43øC          9.5 kPa
>pt4

IXMT    =      2.9 Amps rms  [Data=ffh]
VXMT    =     74.6 Volts rms [Data=c4h]
   Z    =     25.6 Ohms
Transmit Test Results = $10 ... PASS
>pt200

  Ambient  Temperature =    21.45 Degrees C
  Attitude Temperature =    22.35 Degrees C
  Internal Moisture    = 8C6Ah

Correlation Magnitude: Wide Bandwidth

               Lag  Bm1  Bm2  Bm3  Bm4
                 0  255  255  255  255
                 1  179  176  177  180
                 2   61   55   60   65
                 3   36   46   51   42
                 4   56   57   55   50
                 5   42   39   28   33
                 6   25   18   20   18
                 7   16   26   33   24

  High Gain RSSI:    43   47   42   39
   Low Gain RSSI:    20   23   17   16

  SIN Duty Cycle:    50   47   48   47
  COS Duty Cycle:    49   48   49   50

Receive Test Results = $00000000 ... PASS

IXMT    =      2.9 Amps rms  [Data=ffh]
VXMT    =     75.8 Volts rms [Data=c7h]
   Z    =     25.9 Ohms
Transmit Test Results = $10 ... PASS

   44    0    0   90
   17    8    0    0
    0    8    0    8
   26    0    0   25
  255  255  255  247
    8    0    0   70
```

```
    8     8     0     8
  255   255   255   255
   35     0     0    19
    0    17     0    12
   39     0     0    71
  255   255   255   246
Electronics Test Results = $10010000
Receive Bandwidth:
    Sample       bw     bw     bw     bw     bw
      rate   expect    Bm1    Bm2    Bm3    Bm4
       614      200    139    139    134    141 Khz
   results           PASS   PASS   PASS   PASS
RSSI Time Constant:

RSSI Filter Strobe 1 =   38400 Hz
  time    Bm1    Bm2    Bm3    Bm4
  msec   cnts   cnts   cnts   cnts
     1      6      9      6      7
     2     12     16     12     13
     3     17     22     16     19
     4     22     27     20     24
     5     26     31     24     28
     6     29     35     27     31
     7     31     38     30     34
     8     34     41     32     37
     9     36     43     34     39
    10     38     45     36     41
   nom     50     57     47     52
result     PASS   PASS   PASS   PASS
>
```

Esito del Collaudo

Collaudo positivo

Data: 30 ottobre 2008	Responsabile: Alessandro Giordano

TELEDYNE
RD INSTRUMENTS
A Teledyne Technologies Company

Workhorse Configuration Summary

Date	10/22/2008
Customer	COMMUNICATION TECHNOLOGY
Sales Order or RMA No.	4019900
System Type	Sentinel
Part number	WHS600-I-UG149
Frequency	600 kHz
Depth Rating (meters)	6000

SERIAL NUMBERS: **REVISION:**

System	11750		
CPU PCA	12286	**Rev.**	J3
PIO PCA	7562	**Rev.**	G0
DSP PCA	15336	**Rev.**	G1
RCV PCA	16101	**Rev.**	E4
AUX PCA		**Rev.**	

FIRMWARE VERSION:

CPU	16.31

SENSORS INSTALLED:

Temperature ☑ **Heading** ☑ **Pitch / Roll** ☑ **Pressure** ☑ **Rating** 6000 **meters**

FEATURES INSTALLED

- ☑ **Water Profile**
- ☐ **Bottom Track**
- ☐ **High Resolution Water Modes**
- ☐ **LADCP/Surface Track**
- ☐ **High Rate Pinging**
- ☐ **Shallow Bottom Mode**
- ☐ **Wave Guage Acquisition**
- ☐ **River Survey ADCP ***

** Includes Water Profile, Bottom Track and High Resolution Water Modes*

COMMUNICATIONS:

Communication	RS-232	
Baud Rate	9600	
Parity	NONE	
Recorder Capacity	256	**MB (installed)**
Power Configuration	20-60 VDC	
Cable Length	5	**meters**

14020 Stowe Drive, Poway, CA 92064, (858)842-2600, FAX (858)842-2822, Internet: rdi@rdinstruments.com

DEEPSEA Power & Light
4033 Ruffin Road San Diego CA 92123 Tel 858-576-1261

GUNSHELL PRESSURE LOG

Customer Teledyne RDI
Product WH5600-I-UG149
Product S/N 11750
Chamber Gunshell #1
Gauge Last Cal. 12-8-07
S/O, SFO PO # 50761

Date 10-16-08
Tech Jeff Webster
Rated Pressure 20,000
Gauge S/N CM994577C
Gauge Next Cal 12-8-08
JOB # 4019900

Cycle Number	Time In	Time Out	Elapsed Time	Start Pressure	End Pressure	Tech Initials	COMMENTS
1	12:43	12:46	3	Ø	10000	JW	
1	12:46	12:57	11	10000	10000	JW	
1	12:57	1:00	3	10000	Ø	JW	
2	1:00	1:03	3	Ø	10000	JW	
2	1:03	1:14	11	10000	10000	JW	
2	1:14	1:17	3	10000	Ø	JW	
3	1:17	1:20	3	Ø	10000	JW	
3	1:20	1:31	11	10000	10000	JW	
3	1:31	1:34	3	10000	Ø	JW	
4	1:34	1:37	3	Ø	10000	JW	
4	1:37	1:49	12	10000	10000	JW	
4	1:49	1:52	3	10000	Ø	JW	
5	1:52	1:55	3	Ø	10000	JW	
5	1:55	2:06	11	10000	10000	JW	
D	2:06	2:06	.10	10000	8600	JW	

Notes

As the testing technician, I certify that this unit (X Passed) (Failed___) these tests.
Signature: JW Webster Date of Test 10-16-08

89.2

DEEPSEA Power & Light

4033 Ruffin Road San Diego CA 92123 Tel 858-576-1261

GUNSHELL PRESSURE LOG

Customer Teledyne RDI
Product WH5600-I-UG49
Product S/N 11750
Chamber Gunshell #1
Gauge Last Cal. 12-8-07
S/O, SFO PO# 50761

Date 10-16-08
Tech Jeff Webster
Rated Pressure 20000
Gauge S/N CM9945TC
Gauge Next Cal 12-8-08

JOB # 4019900

Cycle Number	Time In	Time Out	Elapsed Time	Start Pressure	End Pressure	Tech Initials	COMMENTS
6	7:06	7:12	6	8600	8600	JW	
6	7:12	7:12	.10	8600	7200	JW	
7	7:12	7:18	6	7200	7200	JW	
7	7:18	7:18	.10	7200	5700	JW	
8	7:18	7:24	6	5700	5700	JW	
8	7:24	7:25	.10	5700	4300	JW	
9	7:25	7:31	6	4300	4300	JW	
9	7:31	7:31	.10	4300	2800	JW	
10	7:31	7:37	6	2800	2800	JW	
10	7:37	7:37	.10	2800	1400	JW	
11	7:37	7:43	6	1400	1400	JW	
11	7:43	7:43	.10	1400	0	JW	
12	7:43	7:44	1	0	0	JW	

Notes

As the testing technician, I certify that this unit (X Passed) (Failed ___) these tests.
Signature: Jeff Webster Date of Test 10-16-08