

TEST PROGRAM: **AUTO TEST**

Objective:

The aim of this test is to exercise batteries to maintain optimum performance. This is the recommended method in routine maintenance of batteries.

The Auto Test reconditions Nickel chemistry batteries that do not reach target capacity. Reconditioning is to deep discharge below 1V/cell with a controlled current so that the large crystals inside the battery can be broken down to restore the battery to fully capacity. This is applied to all Nickel-based batteries.

Other chemistry rechargeable batteries are not reconditioned, but exercised instead. Batteries in use are typically cycled every three months on Auto. If batteries are failing prematurely, increase frequency of service by Auto testing.

Procedure and Standard:

The battery is first cycled to determine its true capacity. If NiCd and NiMH batteries do not meet the target capacity at the end of a discharge cycle, they are reconditioned to reduce battery memory. Following recondition, the battery is cycled again to determine the recovered or final capacity. The battery is fully charged before test finishes.

SLA, Li-ion and Li-Ph batteries are cycled once. If it fails, another cycle will be carried out again. Reconditioning is not performed for these batteries. The duration of Auto Test is:

- 2.5 to 10 hours for Nickel chemistry batteries
- 20 to 40 hours for SLA
- 6 to 20 hours for Li-ion and Li-Ph with default C-codes.

Equipment:

Cadex C5100



Cadex C7x00



Cadex C8000



Vencon UBA



Result:

Detailed display shows cell voltage, analyser charge or discharge current in mA, battery temperature and duration of service. Batteries considered in good condition shall be greater than 80% under recommended test settings of manufacturing datasheet.

Note: C5100 can only test Li-ion battery up to 7.4V.

Sample reports on following page/s.

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Sample Report 1: CADEX

BatteryShop Report **Master Instruments**

2/1/2016 7:03:16 AM

Battery Information

Battery ID:	N/A
Battery manufacturer:	BANKSYS ATOS
Battery model:	3032610137
Used in:	Payment Terminals
Customer:	Sample Company

Service Information

Service ID:	20943
Port/Station number:	10/2 (7450ER/1.1)
Start date:	1/29/2016 7:02:11 AM
End date:	1/29/2016 1:30:18 PM
Duration:	0:6:28:7 [dd:hh:mm:ss]
Charge cycles:	2
Discharge cycles:	1
Recondition cycles:	0
Station program:	Auto
Target capacity:	80%

Battery Status

Capacity:	94%, 94%
State-of-health:	N/A
OhmTest:	313 mOhms
Test result:	PASS
Fault code:	N/A

Battery Parameters

Battery chemistry:	LiPh
Nominal voltage:	3.30 Volts
Battery rating:	600 mAh
Charge rate:	360 mA
Discharge rate:	120 mA
Capacity offset:	0%
Temperature sensing:	5C - 45C
Max. charge voltage:	3.60V/Cell
Standby voltage:	3.45V/Cell
End of charge:	0.03C
End of discharge:	2.00V/Cell

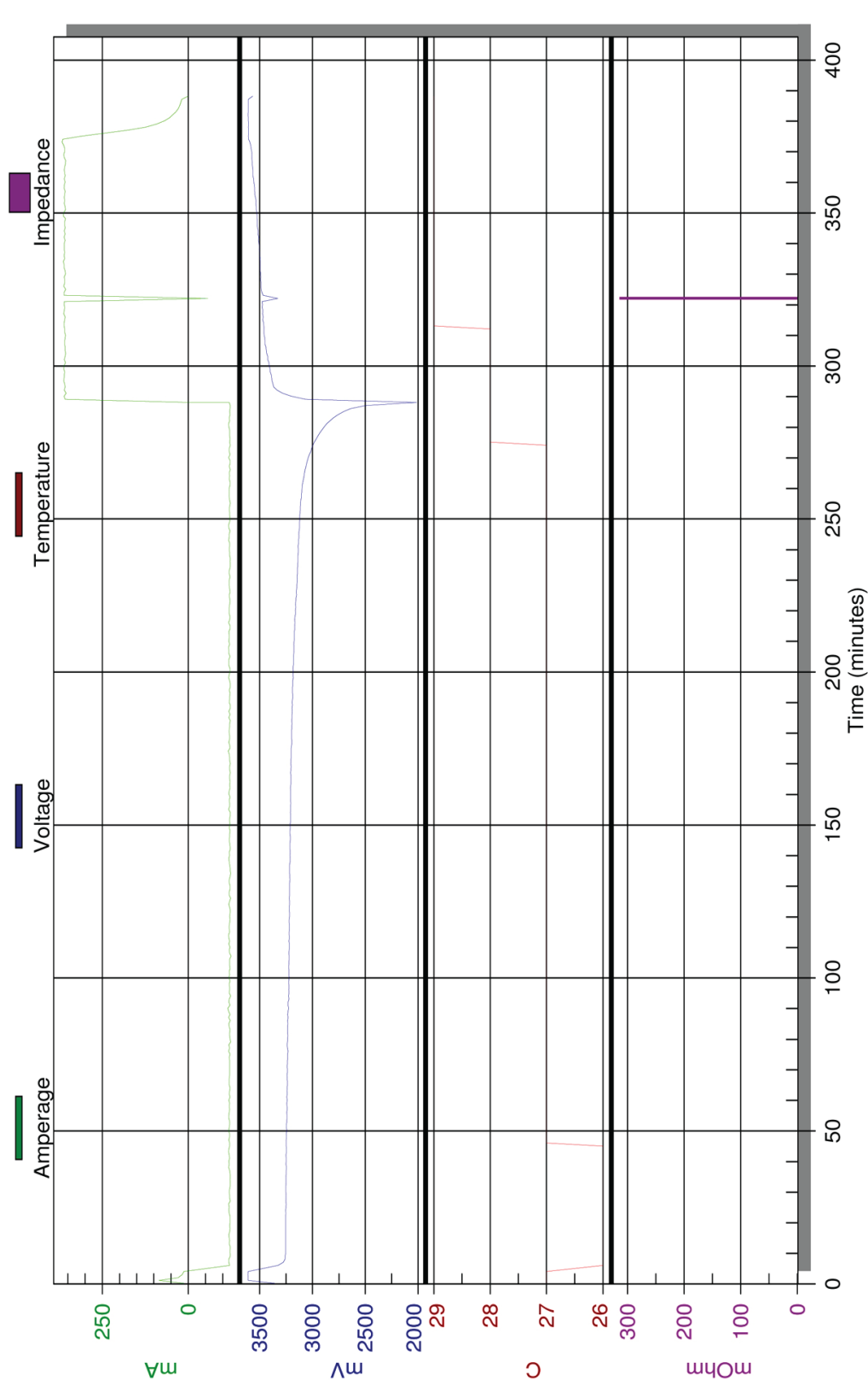
Service Notes

N/A

BatteryShop Report: 7.1.1.0.8 - C7400ER C-Series/1.1

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Sample Report 1: CADEX

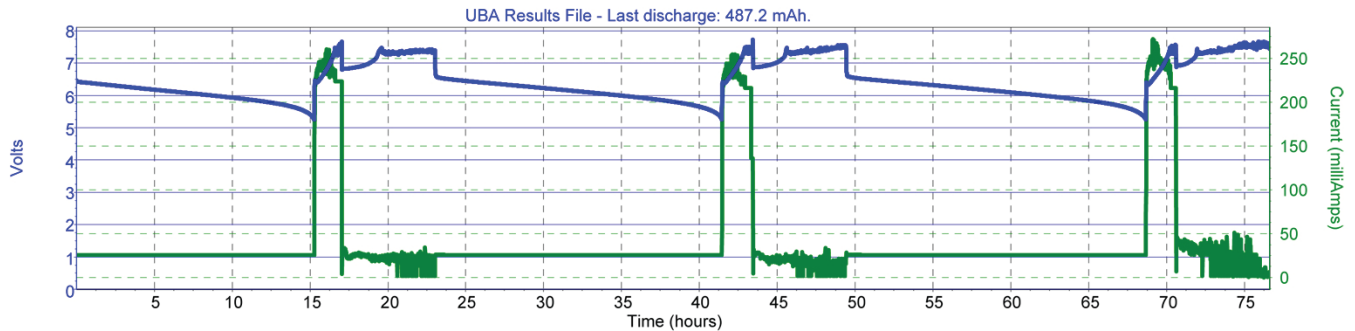


Total points: 390; Displayed: 390
 Service started: 1/29/2016 7:02:11 AM
 Service ended: 1/29/2016 1:30:18 PM
 Program: Auto
 Printed: 2/1/2016 7:03:32 AM

Service ID: 20943
 Battery ID:
 Port #: 10
 Station #: 2

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Sample Report 2: UBA



Battery Analysis Results

BAR: S:\USERDATA\JoshyP\Backup\UBA4_DATA\SLA 3 Cycle 2.5V Per Cell Charged.bar
 Filename: D:\Vencon\UBA4_DATA\6V 500mA SLA PS-605WL New Stock # 14.uba
 Serial number: 6875 Chan1
 Number of cells: 3
 Rated capacity: 500.0 mAh
 Start time: 2011-10-07 15:54

Summary:

Capacity: 386.2mAh (77.2% rated). Fail.
 Capacity: 466.3mAh (93.3% rated). Pass.
 Capacity: 487.2mAh (97.4% rated). Pass.

SLA Discharge

Duration (h:m:s): 15:15:43
 Load current: 25.36 mA
 Cut-off voltage: 1.750 V
 Battery discharged capacity: 386.2 mAh
 Exit condition: Battery cut-off voltage reached

SLA Fast Charge

Duration (h:m:s): 01:45:48
 Charge current: 200.0 mA
 Battery charged capacity: 326.2 mAh
 Exit condition: Final charge current reached

SLA Float Charge

Duration (h:m:s): 06:00:00
 Charge current: 25.00 mA
 Battery charged capacity: 137.5 mAh
 Exit condition: Maximum time reached

Goto

Branching

SLA Discharge

Duration (h:m:s): 18:24:50
 Load current: 25.70 mA
 Cut-off voltage: 1.750 V
 Battery discharged capacity: 466.3 mAh
 Exit condition: Battery cut-off voltage reached

SLA Fast Charge

Duration (h:m:s): 01:59:19
 Charge current: 200.0 mA
 Battery charged capacity: 401.3 mAh
 Exit condition: Final charge current reached

SLA Float Charge

Duration (h:m:s): 06:00:00
 Charge current: 25.00 mA
 Battery charged capacity: 117.4 mAh
 Exit condition: Maximum time reached

Goto

Branching

SLA Discharge

Duration (h:m:s): 19:14:00
 Load current: 25.75 mA
 Cut-off voltage: 1.750 V
 Battery discharged capacity: 487.2 mAh
 Exit condition: Battery cut-off voltage reached

SLA Fast Charge

Duration (h:m:s): 01:56:36
 Charge current: 200.0 mA
 Battery charged capacity: 396.9 mAh
 Exit condition: Final charge current reached

SLA Float Charge

Duration (h:m:s): 06:00:00
 Charge current: 25.00 mA
 Battery charged capacity: 167.4 mAh
 Exit condition: Maximum time reached

Goto

Branching

Exit condition: Count 3 iterations