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# Automated Cable Test System (ACTS)

# for MU 27 pin Cables





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## Introduction

The Automated Cable Test System for MU 27 pin cables (ACTS) provides a reliable & repeatable method of qualifying MU cables for in-field use. The system measures conductivity, dielectric isolation between conductors and dielectric isolation from a conductor to chassis ground. All pin combinations are scanned in sequence to detect and identify faults. The test sequence is fully automated and controlled by a user-friendly software package running on an integrated PC. The software interface reports the test results in an easy to read database type table. Based on the results and customer requirements, the cables can be repaired to correct the indicated faults or removed from service. The test sequence is done through a pre-scan if the pre-can passes, the cable is ready to go into service. During the pre-scan test, if a problem is detected with leakage then an automatic "deep scan" will take over. The total pre-scan tact time to test a functional cable is less than 2 minutes. If a "deep scan" is required, the tact time will be different and based on the number of detected faults.



Figure 1 – MU 27 pin Cables



Figure 2 – Test Ports A & B



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## **Specifications**

The ACTS meets the following specifications:

- Input supply: 110~120Vac @ 0.75A (fused)
- Output Voltage for Conductor to Conductor Dielectric Tests: 250Vdc +/- 5% @ 20mA
- Output Voltage for Continuity Tests: 12V @ 150mA
- Output Voltage for Conductor to Ground Isolation Dielectric Tests: 250Vdc +/- 5% @ 20mA
- Continuity Test accuracy: +/-5% impedance @ 150mA
- Dielectric Leakage Threshold (pin-pin) : 200K ohm +/- 5% (>210K = Pass, <190K = Fail)
- Dielectric Leakage Threshold (pin-ground): 150K +/- 30%
- Operating Temperature: 0C to + 40C
- USB 2.0 connectivity
- Windows based Software controls test sequences and generates reports
- LED status indicators for "Power" and "Busy" states



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## **Functionality**

The unit is powered by 120Vac standard supply plug. The system is connected to an integrated window based PC via an internal USB connection. Software indicates ACTS hardware is present. The user connects each end of an MU 27 pin cable (DUT) to the test ports of the ACTS.

User clicks "Start" on the software interface screen of the PC. The test sequence begins.

The ACTS performs the following test sequence for all conductor pairs indicated in the test program:

- 1- Pin to Pin Continuity Test.
- 2- Pre-Scan for Conductor to Conductor Dielectric Isolation.
- 3- If any pin yields a fault, then that pin is scanned to all the other remaining pins individually in order to determine the subsequent pin or pins involved in the leakage, they will be identified by number to the pin first detected with the leakage.
- 4- Conductor to Ground Dielectric Isolation.
- 5- Repeat Steps #1 to #4 for the next Cable Under Test.

\*See following section for description of these test steps.



Figure 3 – DUT Cable plugged into Test Ports.



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The software records and stores the test results. A unique Serial Number of the cable is generated for the cable.

New Test Sequences can be setup and saved for custom in-house applications.

## **Test Definitions**

The following section defines three types of electrical tests to determine the DUT cables electrical properties. The tests are identified as Continuity, Conductor to Conductor Dielectric Isolation along with Deep-Scan properties and Conductor to Ground Dielectric Isolation.

## Continuity

A low voltage current supply of 12V @ 150mA is passed through a conductor (CUT). The impedance of the conductor is measured.

### **Conductor to Conductor Dielectric Isolation**

A voltage of 250V is applied to the Conductor under Test at one Test Port only. The leakage current is measured based on the resulting voltage at the second Test Port.

"**Pre-Scan**": The isolation of the conductor under test to all other pins are measured. If this test yields a Pass result, no other action will be required.

"Deep-Scan feature": When the "Pre-Scan" indicates there is dielectric breakdown between a conductor under test, then the system will automatically preform a Deep-Scan in order to identify the corresponding leaking pin or pins. On the display screen the associated leaking pin or pins will be displayed with the associated numbers. Thus, the Deep-Scan process checks the individual conductor pairs to indicate where the breakdown has occurred and to which pin the breakdown is associated. When this type of problem occurs with one of the cable, the completion of the test will have an extended duration in order to detect all the problems and annunciate the information on the screen. Consider that: Deep-Scan is a unique and an advance feature of this system

## **Isolation to Ground**

A voltage of 250V is applied to the Conductor under Test at one Test Port only. A dielectric breakdown to chassis ground is detected based on the resulting voltage of the conductor under test at the second Test Port.



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## Software

The main interface displays test results, status information and controls.

On LEFT of screen the following system information is displayed:

- Test Date
- DUT Identification
- Current Test Program
- Enabled Tests within Program
- High/Low Test Switch Status
- Hardware Connection Status
- Software Version
- Duration of Test
- IP Address

EKYRAIL	Français
Date dd/mm/yyyy	Save
06-06-2019 DUT Number DUT Number	Export As CSV
Program	Load
	Fritt
S peterson	
Printe Geologi Bolation	Advanced Menu
<ul> <li>Fin to Fin tools</li></ul>	
🕑 Plin Puint	
2 Pin Mapping	Sign Off
Cable A 00000000000000000000000000000000000	Comments -
Cable B 000000000000000000000000000000000000	
Main Connected	
Mezzanin Connected	RUN
Hep : No Hardware Detected	KUN
Software Version: VE01.31FA	
Test Time:	
IP Address: 192 168 2 28	

Figure 4 – Main Screen, System Information

During the test sequence, active pins are displayed on the left-hand side of the screen showing the system activity in real-time.

When the test sequence is complete, PASS results are displayed in Green the FAIL's pins are listed in Red along with resistance value of the failure shown in Red highlighted area. When dielectric isolation tests



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between pins fails, in addition to the "FAIL" Red highlight, the corresponding leaking pin is also listed. In the case of a fault to ground, "GND" is determined then the grounded pin or pins are listed as ground on the display and highlighted in Red.

EKYRAIL	Cable	Cable B	Continuity	Isolation	Français
ALTHOUGH AND	1	1	PASS	PASS	
	2	2	PASS	PASS	Save
ate dd/mm/yyyy	3	3	PASS	PASS	Gave
06/06/2019	4	4	PASS	PASS	The second second
UT Number	5	5	PASS	PASS	Export As CSV
Express	5	6	PASS	PASS	
rogram	7	7	PASS	PASS	Load
Cable MU 27 pin	8	8	PASS	PASS	Load
Sable Wo 27 pm	9	9	PASS	PASS	
ABLE TEST	10	10	PASS	PASS	Print
V. Centinum	11	11	PASS	PASS	
C. Pinte Dound scales	12	12	PASS	PASS	
	13	13	PASS	PASS	Advanced Menu
🗹 Film in Film (stranger	14	14	PASS	PASS	
Fir Fain	15	15	PASS	PASS	Cian Off
Pir Mapping	16	16	PASS	PASS	Sign Off
	17	17	PASS	PASS	also see a
able A 11111111111111111111111111111	18	18	PASS	PASS	Comments :
able 8	19	19	PASS	PASS	
000000000000000000000000000000000000000	20	20	PASS	PASS	
lain Connected	21	21	PASS	PASS	
Instantin Connected	22	22	PASS	PASS	-7.47
ap Concedied	23	23	PASS	PASS	RUN
offware Version: VE01.31FA	24	24	PASS	PASS	
	25	25	PASS	PASS	Delivery Design
est time: 1.02.20	26	26	PASS	PASS	
Address: 192.168.2.28	27	27	PASS	PASS	

Figure 2 - Test Results in Main Window



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## Keyboard

For text entry an On-Screen Keyboard is display. Use keyboard buttons to enter text.

Click Done when finished.

								DONE		CANCEL
								-	+	->
q	w	е	r	t	у	u	i	0	р	$\langle \mathbf{X}$
а	s	d	f	g	h	j	k	I	;	$\mathbf{X}$
z	x	С	v	b	n	m	-	2	,	分
(	)	1	1		_	•	•	۸	Ç	L
88				S	SPAC	E				&123

Figure 3 - On-Screen Keyboard, Click Done when finished



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## User Login

On system startup, the User Login screen is displayed.

Enter operator identification and click Sign In. The operator identification will be saved with each test result. The Main Screen will then be displayed.

In addition to the standard Sign In, click Express to enter "Express Cable Mode". This allows operator to test cables using the default program with minimal setup (see Express Mode section).

		-
	ed Cable Test S	ystem
Enter/Scan User ID :		
	Sign In	
	Express	
	Close	

Figure 4 - User Login



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## **Running a Test**

To start a test, click the green RUN button in the left hand corner.

EKYRAIL	Français
Date dd/mm/yyyy	Save
06-06-2019 <sup>OUT</sup> Number DUT Number	Export As CSW
rogram	Load
	Louis
	Print
- Domphony	
(w) The Designed Region	Advanced Menu
En la Pin boastar	Advanced menu
- Die Parts	
2 Ein Mapping	Sign Off
ale A 000000000000000000000000000000000000	Comments
able B 000000000000000000000000000000000000	
ain Connected	
ezzanin Connected ep : No Hardware Defected	RUN
Itware Version: VE01.31FA	
st Time:	THAT THE
Address 192 108 2 28	

Figure 5 - Run Button

	TEST PF	ROGRAM
		Select Tests
Select		Continuity
Program :		Pin to Ground
Test Type :		☑ Pin to Pin
Goal of test:		D Pin Pairs
Goal of test.		Pin Mapping
Can		Next

Figure 6 – User must define Test Sequence

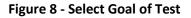


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		Select Tests
Select Program :	Cable MU 27 pin	Continuity
	Cable MU 27 pin	☑ Pin to Ground
Test Type :	Custom Cable test1	⊠ Pin to Pin
Goal of test:	Cable Comm. GO	Pin Pairs
		Pin Mapping
Can	cel	Next

Figure 7 - Select Program

		Select Tests
Select Program :	Cable MU 27 pin	Continuity
Togram .		Pin to Ground
Test Type :	CABLE_TEST	☑ Pin to Pin
Goal of test:	£	D Pin Pairs
oour or toot.		Pin Mapping
	Reception	
	Deficiency	
	Final Quick Test	Next



## **Goal of Test**

Goal of Test can be Reception, Deficiency, Final or Quick Test. The selected goal of test will be shown in test report. Based on the selected goal of test, user may be prompted for additional information.

Reception: Cable is received and initially tested before any repairs/maintenance. User is prompted for

Deficiency: Cable is tested after being identified as defective.

Final: Perform Final test before expediting.

Quick Test: No additional information is required from user.



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imployee ID.	-	
Cable Origin:		
Problem Date:	-	
Comments:	[	
	Back	Run

Figure 9 – Reception/Deficiency User can enter additional information

□ I hereby confirm that device ha	as been cleaned before perform	ing test on it.
I hereby confirm that device has a second	as been cleaned before perform	ing test on it.

Figure 10 - Special Instruction for User are listed on screen. Cleaning of equipment prior to test may be required.



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Figure 11 – Goal of Test Final: user enters repairs performed.

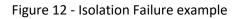


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#### Example (Below):

In the example below, pins 23, 24, 25, 26 and 27 have dielectric breakdown and leakage current flows between these pins.

and a to	Cable A	Cable B	Continuity	Isolation	
EKYRAIL	1	1	PASS	PASS	Français
ENTERPRISES INC.	2	2	PASS	PASS	-
	2 3	3	PASS	PASS	
Date dd/mm/yyyy	4	4	PASS	PASS	Save
25/03/2019	5	5	PASS	PASS	
	6	6	PASS	PASS	Export As CSV
cable	7	7	PASS	PASS	Export As Gav
cable	8	8	PASS	PASS	
rogram	9	9	PASS	PASS	Load
No Cross	10	10	PASS	PASS	Luau
	11	11	PASS	PASS	
CABLE_TEST	12	12	PASS	PASS	Print
	13	13	PASS	PASS	
	14	14	PASS	PASS	1
	15	15	PASS	PASS	Advanced Menu
	16	16	PASS	PASS	
	17	17	PASS	PASS	
- and the second s	18	18	PASS	PASS	Sign Off
	19	19	PASS	PASS	
Sia A	20	20	PASS	PASS	Gomments
000000000000000000000000000000000000000	20	20	PASS	PASS	Employee ID
nia 8 2020220000000000000000000000000000000	22	22	PASS	PASS	Cable Orgn
	22	22	PASS		Problem Date:
ta		27.7.7		FAIL(GND,24,25,26,27)	
	24	24	PASS	FAIL(GND,23,25,26,27)	1
en Compates	25	25	PASS	FAIL(GND,23,24,26,27)	
	26	26	PASS	FAIL(GND,23,24,25,27)	
Alware Version VBD1 18FC	27	27	PASS	FAIL(GND,23,24,25,26)	RUN
al time 2.74 18					
Access: 112.156.5.01					



In the next example, pins 11, 12, 13, 14, 26 and 27 show continuity failure where the measured resistance of each is indicated (ranging from 0.96R to 1.11R).



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Subject:	·	Automa	ated Cable Test S	ystem (ACTS)	-
				-	
	Cable A	Cable B	Continuity	Isolation	(
EKYRAILE	1	1	PASS	PASS	Français
NTERPRISES INC	2	2	PASS	PASS	
	3	3	PASS	PASS	
ate dd/mni/yyyy	4	4	PASS	PASS	Save
25/03/2019	5	5	PASS	PASS	
	6	6	PASS	PASS	Export As CSV
IUT Number est cable	7	7	PASS	PASS	Export AS CSV
est value	8	8	PASS	PASS	
rogram	9	9	PASS	PASS	Load
lo Cross	10	10	PASS	PASS	
	11	11	FAIL 1.11R	PASS	
CABLE_TEST	12	12	FAIL 1.07R	PASS	Print
	13	13	FAIL 1.11R	PASS	
1.1.1	14	14	FAIL 1.06R	PASS	
	15	15	PASS	PASS	Advanced Menu
	16	16	PASS	PASS	
	17	17	PASS	PASS	
	18	18	PASS	PASS	Sign Off
	19	19	PASS	PASS	
ableA	20	20	PASS	PASS	(Commands)
ante B	21	21	PASS	PASS	Employee ID
3603602030303030300005030	22	22	PASS	PASS	Cable Orgen Problem Date:
	23	23	PASS	PASS	1
ata	24	24	PASS	PASS	The second se
avi Connècted	25	25	PASS	PASS	
	26	26	FAIL 0.96R	PASS	
Onware Version: VE21 15PG	27	27	FAIL 0.97R	PASS	RUN
int linne: 1 04.00					
Address 192 166.5.01					

Figure 13 - Continuity Failure example

The test result may be saved for future viewing. A hardcopy of the report may also be printed.



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Cable Test Report Program: Cable MU 27 pin Date: 16/11/2016 SN: 11160017

	Pin to Pin Isolation	Pin to Gno Isolation
Impedance	600K	1M
Tolerance	5%	5%

CABLE A	CABLE B	CONTINUITY	ISOLATION
1	1	PASS	PASS
2	2	PASS	PASS
3	3	PASS	PASS
4	4	PASS	PASS
5	5	PASS	PASS
6	6	PASS	PASS
7	7	PASS	PASS
8	9	PASS	PASS
9	8	PASS	PASS
10	10	PASS	PASS
11	11	PASS	PASS
12	12	PASS	PASS
13	13	PASS	PASS
14	14	PASS	PASS
15	15	PASS	FAIL(17,23)
16	16	PASS	PASS
17	17	PASS	FAIL(15,23)
18	18	PASS	PASS
19	19	PASS	PASS
20	20	PASS	PASS
21	21	PASS	PASS
22	22	PASS	PASS
23	23	PASS	FAIL(15,17)
24	24	PASS	PASS
25	25	PASS	PASS
26	26	PASS	PASS
27	27	PASS	FAIL 597.39K(GND )

Figure 14 - Example of hardcopy of a test record



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Cable Test Report Program: Cable MU 27 pin			r	Pin to Pin Isolation	Pin to Gnd Isolation
Date: 16/11/2016 SN:			Impedance	200K	200K
			Tolerance	5%	5%
CABLE A	CABLE B	CONTINU	JITY	ISOLAT	ION
1	1	PASS		PASS	
2	2	PASS		PASS	
3	3	PASS		PASS	k
4	4	PASS		PASS	1
5	6	PASS		PASS	1
6	6	PASS		PASS	
7	7	PASS		PASS	
8	9	FAIL 0.23R		PASS	
9	8	FAIL 0.23R		PASS	
10	10	FAIL 0.28R		PASS	
11	11	FAIL 0.30R		PASS	
12	12	FAIL 0.30R		PASS	1
13	13	FAIL 0.34R		PASS	
14	14	FAIL 0.33R		PASS	
15	15	PASS		PASS	
16	16	PASS		PASS	
17	17	PASS		PASS	
18	18	PASS		PASS	
19	19	PASS	1.1	PASS	
20	20	PASS		PASS	
21	21	FAIL 0.3	8R	PASS	
22	22	FAIL 0.3	3R	PASS	
23	23	FAIL 0.30R		PASS	
24	24	FAIL 0.27R		PASS	
25	25	FAIL 0.21R		PASS	
26	26	PASS		PASS	
27	27	FAIL 0.2	3R	PASS	

Figure 9: Example of hardcopy of continuity test

### **Express Cable Mode**

From the Sign In screen, click Express to enter "Express Cable Mode".

In this mode, operator can test cable using the default program.

Simply connect Cable to System and click Run.

In this mode, DUT is stored as "Express".

The default program is "Cable MU 27 pin".

An Advanced User may modify the program named "Cable MU 27 pin". The default program used for Express test will be updated with the new program.



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## Pause & Step Back

When running a test, the "Pause" button is used to suspend test.

The "Step Back" button allows operator to perform a test step over. When stepping back, some results are erased to be recorded again.

To redo a test step:

- Click "Pause" (once)
- Click "Step Back" until the test step to redo is highlighted.
- Click "Continue" (Play) button

EKYRAIL	Cable	Cable	Continuity	Isolation	Français
Delineative ALTITLE	1	1	PASS	PASS	
	2	2	PASS	PASS	Sam
Date dd/mm/yyyy	3	3	PASS	PASS	2,810
06/06/2019	4	4	PASS	PASS	
DUT Number	5	5	PASS	PASS	Enjion As CSV
Express	6	6	PASS	PASS	
Program	7	7			1000
Cable MU 27 pin	8	8			Load
ouble mo zr pm	9	9			
CABLE TEST	10	10			Prmt
Continues.	11	11			
2 Fit to Broad hoteon	12	12			14 10 10 10 10 10 10 10 10 10 10 10 10 10
2. Pro to Pro legality	13	13			Advanced Menu
	14	14			
The Paper	15	15			Size Off
Ele Marring	16	16			Sign Off
	17	17			Comments :
Cable A	18	18			Comments .
Cable B	19	19			
	20	20			
Main Connected	21	21			
Merzanin Connected	22	22			
les Comeses	23	23			STOP
oftware Version: VE01.31FA	24	24			
	25	25			
esi time: 0 13.95	26	26			
P Address 192 108.2.28	27	27			

Figure 15 - Pause & Step Back Buttons

EKYRAIL	Cable	Cable	Continuity	Isolation	Français
ATTITUS - ALTITUS	1	1	PASS	PASS	
	2	2			Save
Date dd/mm/yyyy	3	3			
06/06/2019	4	4			The other designs of the
DUT Number	5	5			Export As CSV
Express	6	6			
Program	7	7			
Cable MU 27 pin	8	8			Later
	9	9			and the second s
CABLE_TEST	10	10			
Community	11	11			
W. Rivito Pround Issuero	12	12			Advanced Men
The is Pin sources	13	13			
Per Page.	14	14			
Pirchlampiog	15	15			Sign Off
C. La mante L	16	16			
Cable A	17	17			Comments :
11111111111111111111111111111111111111	10	10			
000000000000000000000000000000000000000	20	20			
	20	20			1
Main Connected	22	22			
Nezzanin Conservat Rei Conservat	23	23			STOP
	24	24			
Software Version. VED1.31FA	25	25			Section Section
Test time: 0.13.75	26	26			
P Address 192 168 2 28	27	27			

Figure 16 - Continue (Play) Button



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#### Setup

The Test Program setup page allows the user to configure custom cable tests to adapt the system to any cable of 27 pins or less. Each Test Program can be saved to a "TestRecord.xml" file which catalogs all saved programs for future use.

The Continuity Test parameters are customizable. User can set end to end connection points, maximum impedance and tolerance. Cable A & Cable B columns identify pin numbers of an internal wiring. Impedance unit is OHM and Tolerance unit is %. Test result is "Pass"/" Fail" based on measurement below or above maximum impedance set by the user. Where continuity measurement is above maximum impedance within & the tolerance, the test result will be displayed as "Pass (Tolerance)". This result indicates a marginal result.

Cable A	CableB	Max Impedance	Tolerance (in %)	Program Name
1	1	0.65	5	
2	2	0.65	5	Cable MU 27 pin
3	3	0.65	5	
4	4	0.65	5	
5	5	0.65	5	Test Mode
6	6	0.65	5	
7	7	0.65	5	Cable
8	9	0.65	5	Car
9	8	0.65	5	
10	10	0.65	5	Apply All
11	11	0.65	5	
12	12	0.65	5	Tmpedance
13	13	0.65	5	V Tolerance
14	14	0.65	5	
15	15	0.65	5	
16	16	0.65	5	1000 m
17	17	0.65	5	Keyboard
18	18	0.65	5	
19	19	0.65	5	
20	20	0.65	5	Save
21	21	0.65	5	
22	22	0.65	5	
23	23	0.65	5	Delete
24	24	0.65	5	
25	25	0.65	5	
26	26	0.65	5	Close
27	27	0.65	5	Ciuse

Figure 10 – Test Setup Page



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The Pin to Pin Isolation and the Pin to Ground Isolation Tests are also customizable. User sets minimum impedance and tolerance. Cable A identifies a pin number of wire under test. Impedance unit is OHM and Tolerance unit is %.

	Cable A	CableB	Max Impedance	Tolerance (in %)	<ul> <li>Program Name</li> </ul>
-		1	0.65	5	
	2	11	0.65	5	comm
	3	3	0.65	5	
	4	4	0.65	5	
	5	5	0.65	5	Test Mode
	6	6	0.65	5	
	7	7	0.65	5	<ul> <li>Cable</li> </ul>
	8	8	0.65	5	Carl
	9	9	0.65	5	2-3-5
	10	10	0.65	5	Apply All
	11	2	0.65	5	V Impedance
	12	12	0.65	5	
	13	13	0.65	5	V Tolerance
	14	14	0.65	5	
	15	15	0.65	5	
	16	16	0.65	5	Keyboard
	17	27	0.65	5	Reyboard
	18	26	0.65	5	
	19	19	0.65	5	
	20	20	0.65	5	Save
	21	21	0.65	5	
	22	22	0.65	5	
	23	23	0.65	5	Delete
	24	24	0.65	5	
	25	25	0.65	5	
	26	18	0.65	5	Close
	27	17	0.65	5	

Figure 11 – Test setup page continued

In this case, where isolation is below minimum impedance and within the set tolerance, the test result will be "Pass (Tolerance)".

When checked, the "Apply All" option allows editing all rows simultaneously for Impedance and/or Tolerance. When unchecked, individual cells may be edited one by one.

Cable A	Min Ground Impedance	Tolerance (in %)	<ul> <li>Program Name</li> </ul>
	200000	5	
2	200000	5	comm
3	200000	5	
4	200000	5	
5	200000	5	Test Mode
6	200000	5	
7	200000	5	@ Cable
8	200000	5	( Fra)
9	200000	5	
10	200000	5	Apply All
11	200000	5	✓ impedance
12	200000	5	
13	200000	5	V Tolerance
14	200000	5	H
15	200000	5	
16	200000	5	Keyboard
17	200000	5	Neyboard
18	200000	5	
19	200000	5	
20	200000	5	Save
21	200000	5	<u>p</u>
22	200000	5	
23	200000	5	Delete
24	200000	5	
25	200000	5	
26	200000	5	Close
27	200000	5	Chose

Figure 12 – Test setup page continued



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#### Administrator Credentials

To setup a test sequence for a DUT, click the "Setup" button. The Setup page is restricted to administrator access. A Password prompt will appear. Using the onscreen keyboard enter the password: the default password is "ekyrail" and close the keyboard.

### **Operator Credentials**

When setup operations are complete, use the "Return to operator on Close" checkbox to release administrator credentials. Close the Setup Page.

0.65

0.65 0.65 0.65

0.65 0.65 0.65 0.65 0.65

0.65 0.65 0.65 0.65 0.65

0.65 0.65 0.65 0.65 MU 27 pin

gram Setup	100 Mar				
Continuit	Pin To Pin Isolation Pin To G	round Isolation			Return 1
	Cable A	CableB	Max Impedance	Tolerance (in %)	Beck to
	1	1	0.65	5	Program N
	2	2	0.65	5	
	3	3	0.65	5	Cable M
	4	4	0.65	5	
	5	5	0.65	5	
	6	6	0.65	5	Test Mode
	7	7	0.65	5	
	8	9	0.65	5	

To reenter the Setup Page, password will once again be required.

11 12 13

Figure 17 - Return to operator on close.

### **Password Setup**

Occasionally, the administrator password must be modified. In the Setup Page, click the "Change Password" button.

Enter the new password and click "Save".



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Continuity	Pin To Pin Isolation Pin To Gr	ound isolation			Return to operator on close
	Cable A	CableB	Max Impedance	Tolerance (in %)	E Back to Default Program
•	1	1	0.65	5	Program Name
	2	2	0.65	5	
	3	3	0.65	5	Cable MU 27 pin
	4	4	0.65	5	
	5	5	0.65	5	
	6	6	0.65	5	Test Mode
	7	7	0.65	5	(iii) Cable
	8	9	0.65	5	C Car
	9	8	0.65	5	Con
	10	10	0.65	5	Apply All
	11	11	0.65	5	V Impedance
	12	12	0.65	5	
	13	13	0.65	5	
	14	14	0.65	5	
	15	15	0.65	5	
	16	16	0.65	5	Keyboard
	17	17	0.65	5	
	18	18	0.65	5	Change Password
	19	19	0.65	5	Citaliga Password
	20	20	0.65	5	de la companya de la
	21	21	0.65	5	Save
	22	22	0.65	5	
	23	23	0.65	5	
	24	24	0.65	5	Dolete
	25	25	0.65	5	
	26	26	0.65	5	
	27	27	0.65	5	Close

Figure 18 - Change Password.

1.0		
ge	Cancel	
	99	ge Cancel

Figure 19 - Password Change form.

### Windows access

To access Windows Desktop to perform tasks such as setting up Network connectivity or installing a printer follow these steps:

- Open onscreen keyboard by pointing cursor to a text input box (example: S/N).
- Press "Windows" button + "L"
- In the windows screen, click "Switch User"
- Log in as Administrator.
- Password: "admin"



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## Installation of tester

The tester is designed for shop use and is to be installed at eye level in order to allow adequate view of the monitor screen, adequate working space is also needed. This screen is a touch type screen allowing easy use by the operator at all time.

#### Here are a few recommendations:

- 1. Because this tester is used for Cable jumper testing, the test unit should be placed in an area where there is adequate area to allow the user space for the movement of the cables.
- 2. The tester should be place at eye level in order for the operator to adequately view the screen. We recommend that the top of the tester be set between 50 & 52 inches from a level floor area this will meet average height of people using this equipment preventing overbending of the back when applying and removing the cables from the receptacles.
- 3. Because MU27 pins are to be connected and disconnected in a repetitive way, the tester panel should be fixed on a solid wall or a shop beam that will provide a sturdy support. The tester is provided with a sturdy back panel that is already drilled with 3 mounting holes on each side of the panel for this purpose.

**IMPORTANT NOTE:** The internal electronics is designed to meet mill spec for temperatures from - 40C to + 85C. However, the touch screen has temperature limits of -0 C to + 40 C which required that the system should not be exposed to extreme climates.

