

Welcome !



Do's & Don'ts

In the design & realization of your Automatic Test Equipment.

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*fast*ATE
technology

Decision process and typical arguments.



Do's & Don'ts

6TL You need a test system to test your DUT's

- 
- 6TL Highest Quality
 - 6TL Maximum Flexibility
 - 6TL Highest reliability
 - 6TL Fastest throughput etc.
 - 6TL Lowest Price
 - 6TL Shortest Delivery time



Decision process and typical arguments.

Don'ts



- ⑥ You need a test system to test your DUT's
- ⑥ Ask yourself, "What is the best way for us to realize this?"
AND should reconsider some thoughts like;
- ⑥ I am an Engineer and I can design and build the tester myself.
- ⑥ I design my own test board including the switching and I/O
- ⑥ I create my own test software it is cheaper, a student / stagier will design it for me
- ⑥ I build my own interface and save on cost for a Mass Interconnect Interface.
- ⑥ I let my operators connect to the DUT in production, using our own cables.
- ⑥ I designed the system and I am always here, I can save on Documentation.



Do's and Don'ts in building ATE's

- 6TL It is all about quality, We all want the best system for the lowest price.



What can you expect.



“Optimizing, Design and Build of end of line ATE’s”.

- 6TL Who is 6TL and what do we do
- 6TL What is *fast*ATE
- 6TL ATE Core configurations; What more is needed before it's a test system.
- 6TL Mass Interconnect the heart of each test system.
- 6TL Optimize and minimize internal tester wiring makes sense.
- 6TL High speed Data, a challenge for a mass interconnect interface.
- 6TL Independent Building blocks enable efficient tester design and build.
- 6TL Custom step types provide easy and consistent program development.
- 6TL Conclusion and questions.

Who are we ?



About 6TL.

- ⑥ “6TL is a pioneer in developing and applying innovative and intelligent products to test system engineers worldwide, by combining modular technologies with a focus on ease of integration, so they can **save on engineering resources and time without sacrificing quality** while developing and building their ATE's”.

David Batet
General Manager

*fast*ATE[®]
technology



TestStand™



Do's and Don'ts in building ATE's

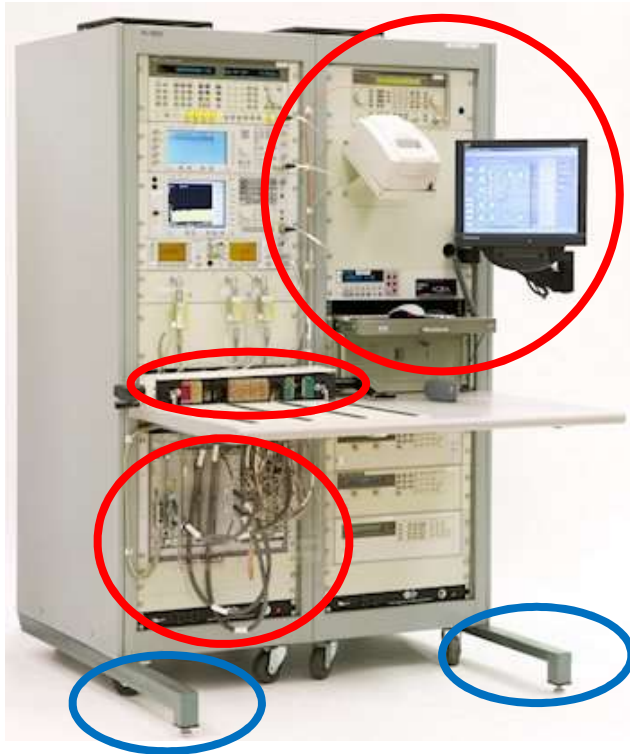
ATE Core Configurations.



“Building test system is a difficult job – one that even the best organizations spend many months accomplishing purely because of the number of components, suppliers and interoperability challenges present,” “The new ATE Core Configurations can help users dramatically simplify the purchasing process for a common set of requirements and reduce the time and cost of building a system.

And when you ultimately want a turn-key system, they form a great bridge to the integration expertise of our Alliance Partner Network.”

Building an ATE is more than just configuring.



Add tools like printers and barcode scanners, a Light Tower, communication to the operator, controlled cooling, guard temperature, monitor & keyboard, energy efficiency, include safety and CE Marking, etc.

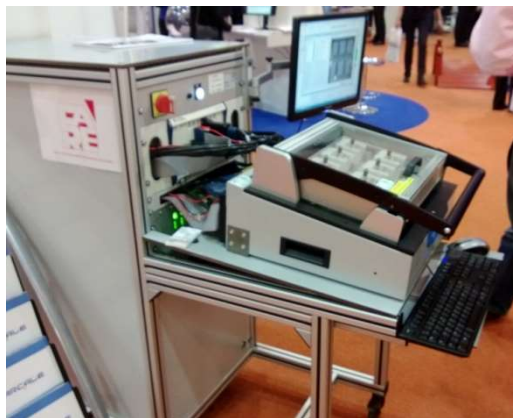
Mass Interconnect You introduce a mass interconnect to benefit from its reliability and it provides you with a standard interface. But it adds additional cabling inside the tester.

Create ITA's

For each different UUT you need to design a reliable way of connecting them to your Mass Interconnect Interface. And when they are heavy you need to take measures.

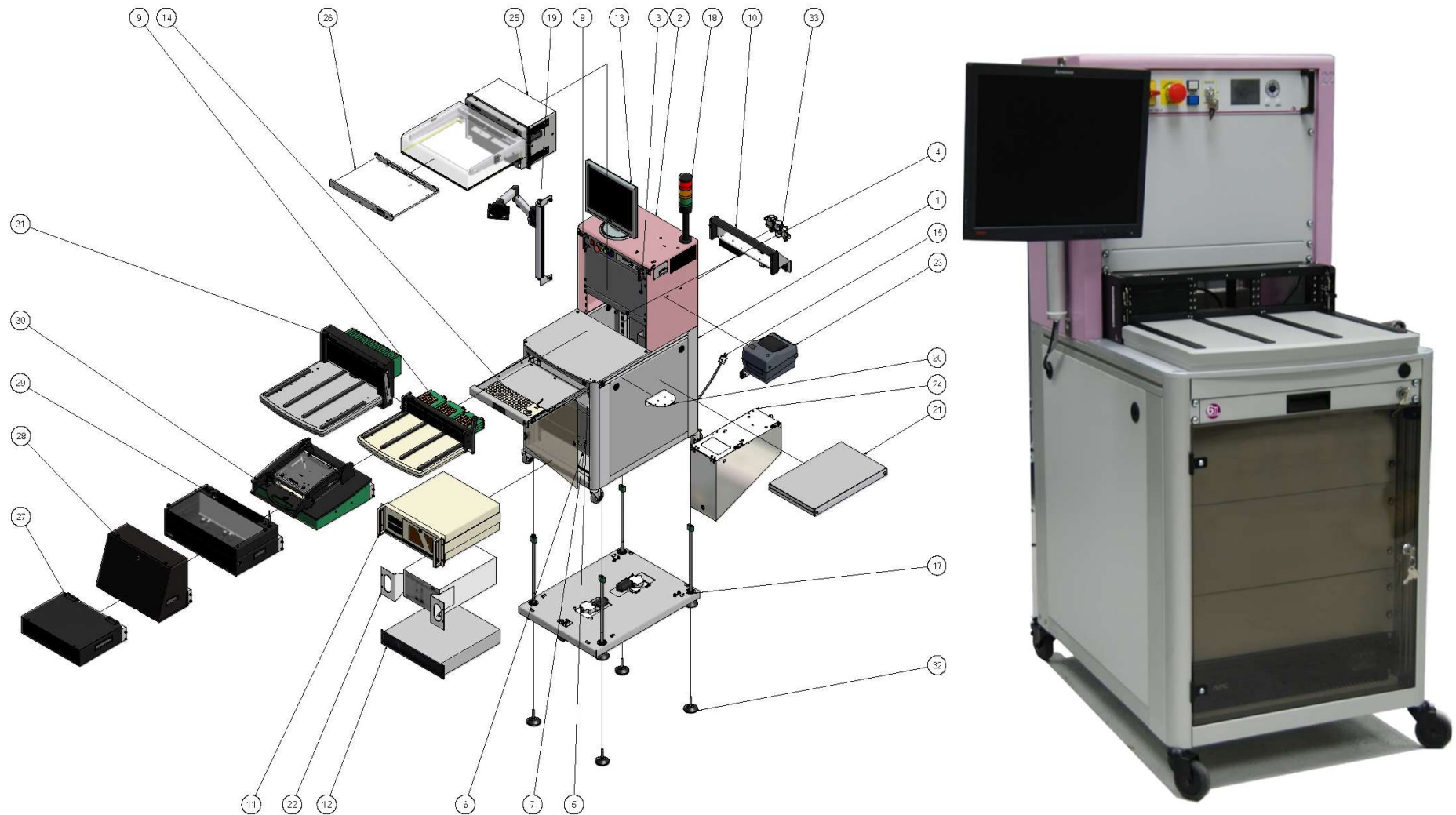
Create Documentation

To be able to maintain and debug your tester and ITA's you need good documentation.



Building an ATE is more than just configuring.

6TL Adding tools can only be done efficiently if your rack is ready for these tools.



Adding tools in an efficient way.

- 6TL Minimize engineering effort, by offering modularity in the choice of your base test platforms.
- 6TL Design them to be ready to receive additional options and tools.



6TL-10

6TL-19

6TL-22

Adding tools in an efficient way.

- 6TL Minimize engineering effort, by offering modularity in the choice of your base test platforms.
- 6TL Design them to be ready to receive additional options and tools.



6TL-19

6TL-28

Building is more than configuring an ATE.



Another thing is connecting instruments to the UUT (Unit Under Test)
Can you imagine the wiring of this system?

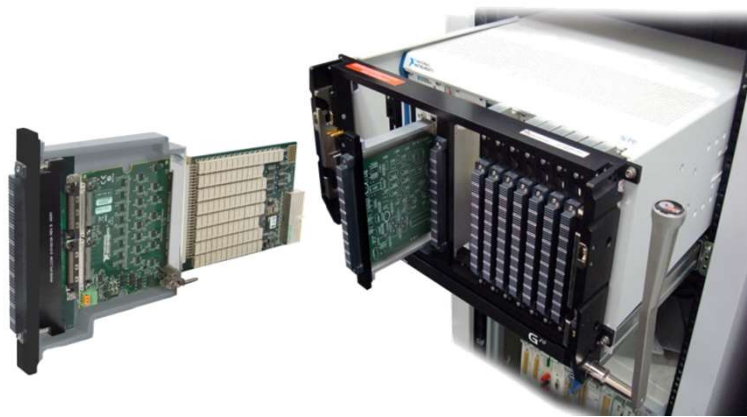


Building is more than configuring an ATE.

CHAOS



ORDER



Another thing is connecting instruments to the UUT (Unit Under Test)

Can you imagine the wiring of this system?



Typically you add a Mass Interconnect and use an ITA (Interchangeable Test Adapter) for each UUT to create order in this chaos.

What are the benefits of *fast*ATE

- 6TL Improve the **reliability** of the test system using a Mass interconnect.

Pylon Interface



What are the benefits of *fast*ATE

- 6TL Improve the **reliability** of the test system using a Mass interconnect.

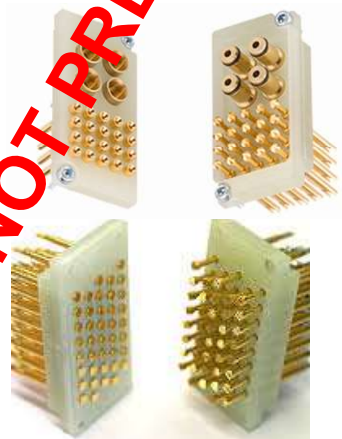
Pylon Interface



ITA

Receiver

NOT PREFERRED

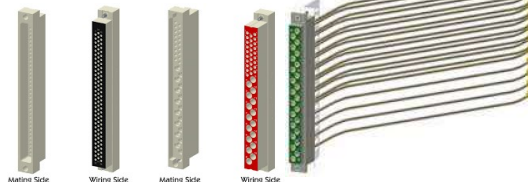


MacPanel Interface



ITA

Receiver

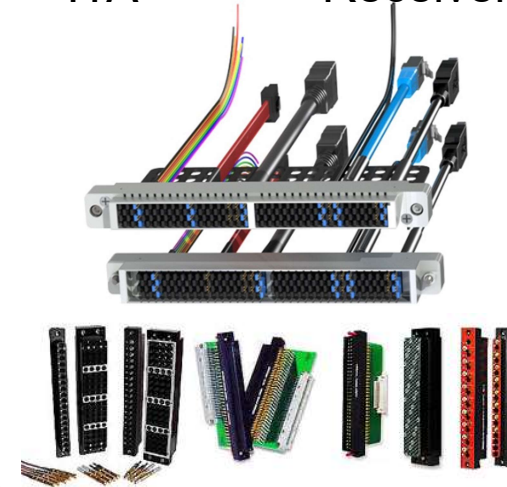


VPC Interface



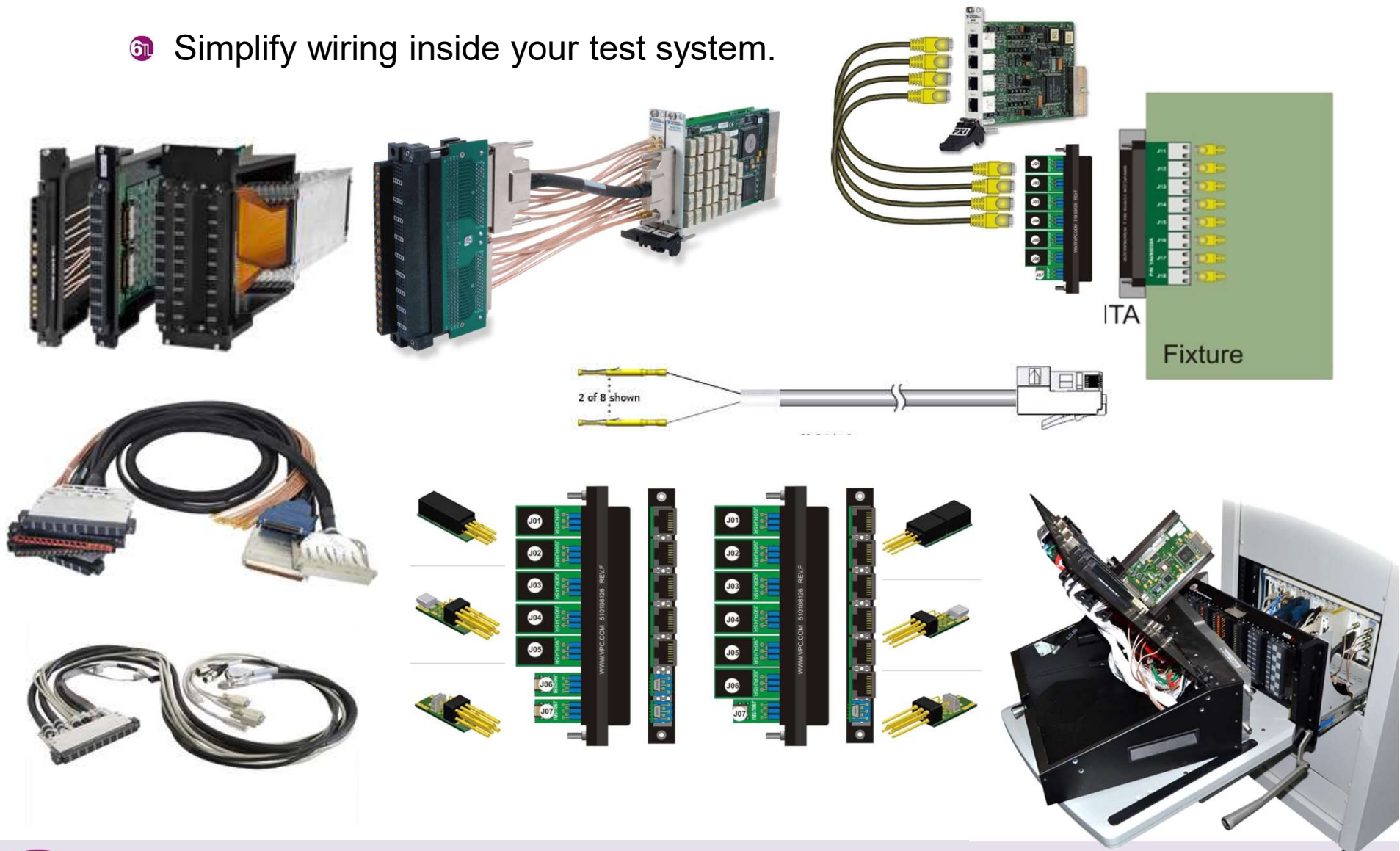
ITA

Receiver

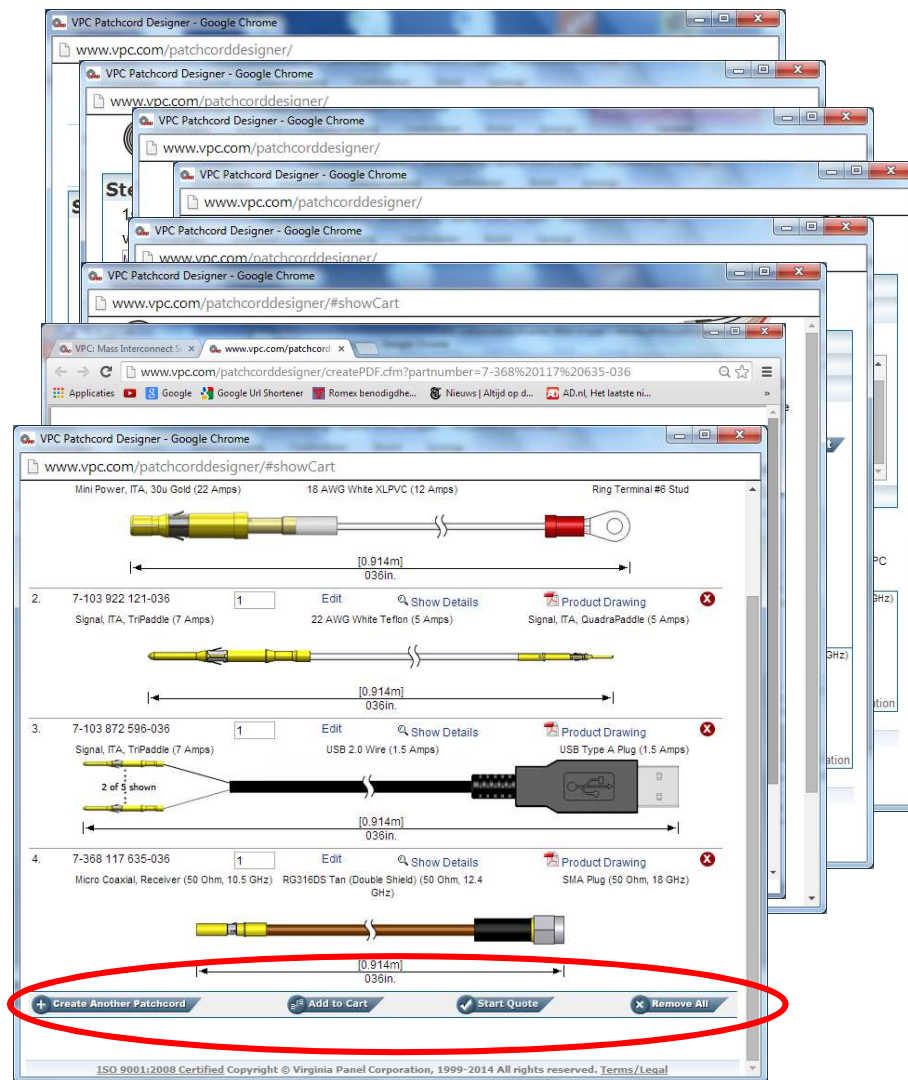


What are the benefits of *fast*ATE

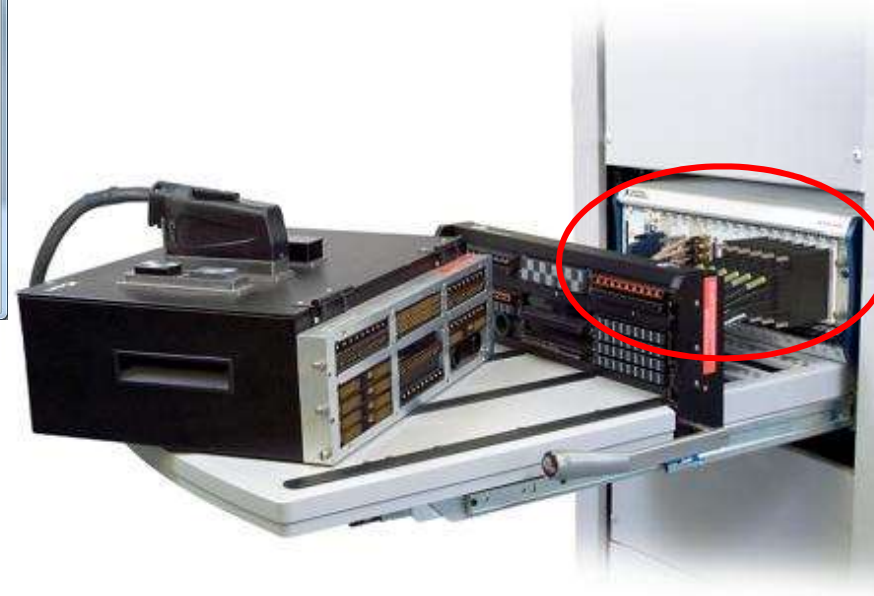
- 6TL** Simplify wiring inside your test system.



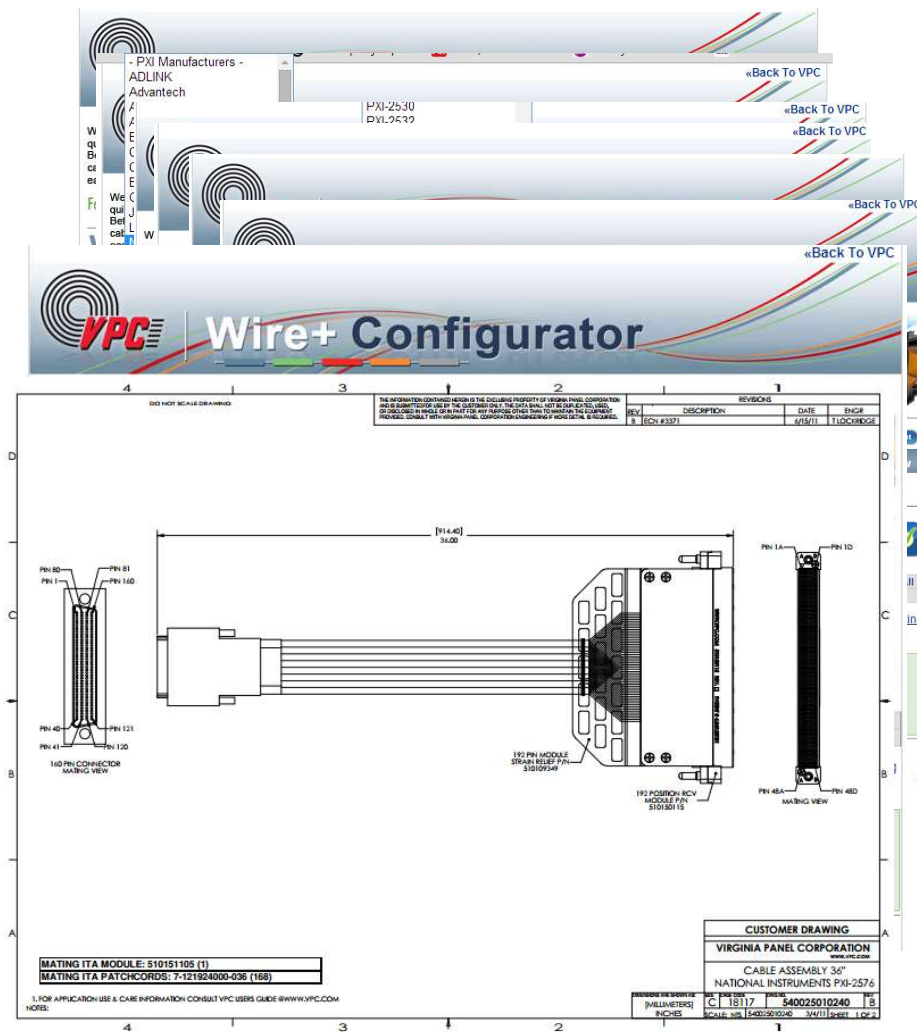
Powerfull wiring tools from Virginia Panel Corporation



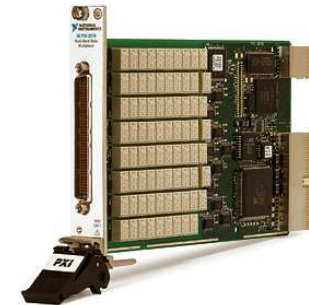
NI PXI-5650



Powerfull wiring tools from Virginia Panel Corporation



PXI-2576

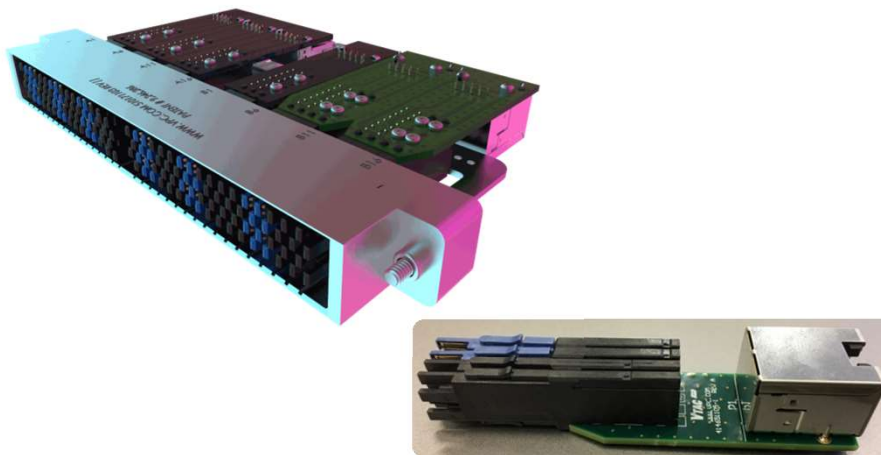


High Speed Data through a Mass interconnect.

- 6TL High speed wiring up to 12Gbs is realized using VTAC from VPC.

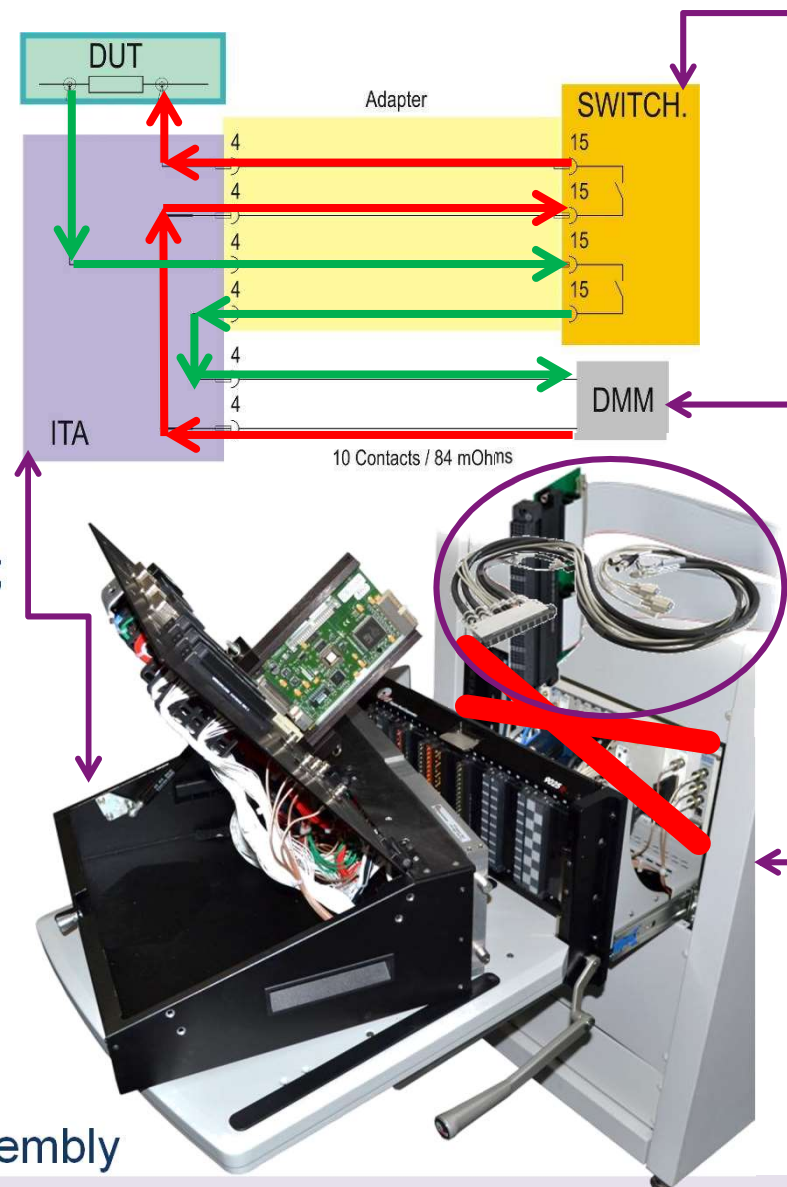


- 6TL USB3, DVI, HDMI, Display port, Gigabit LAN, LVDS, etc.



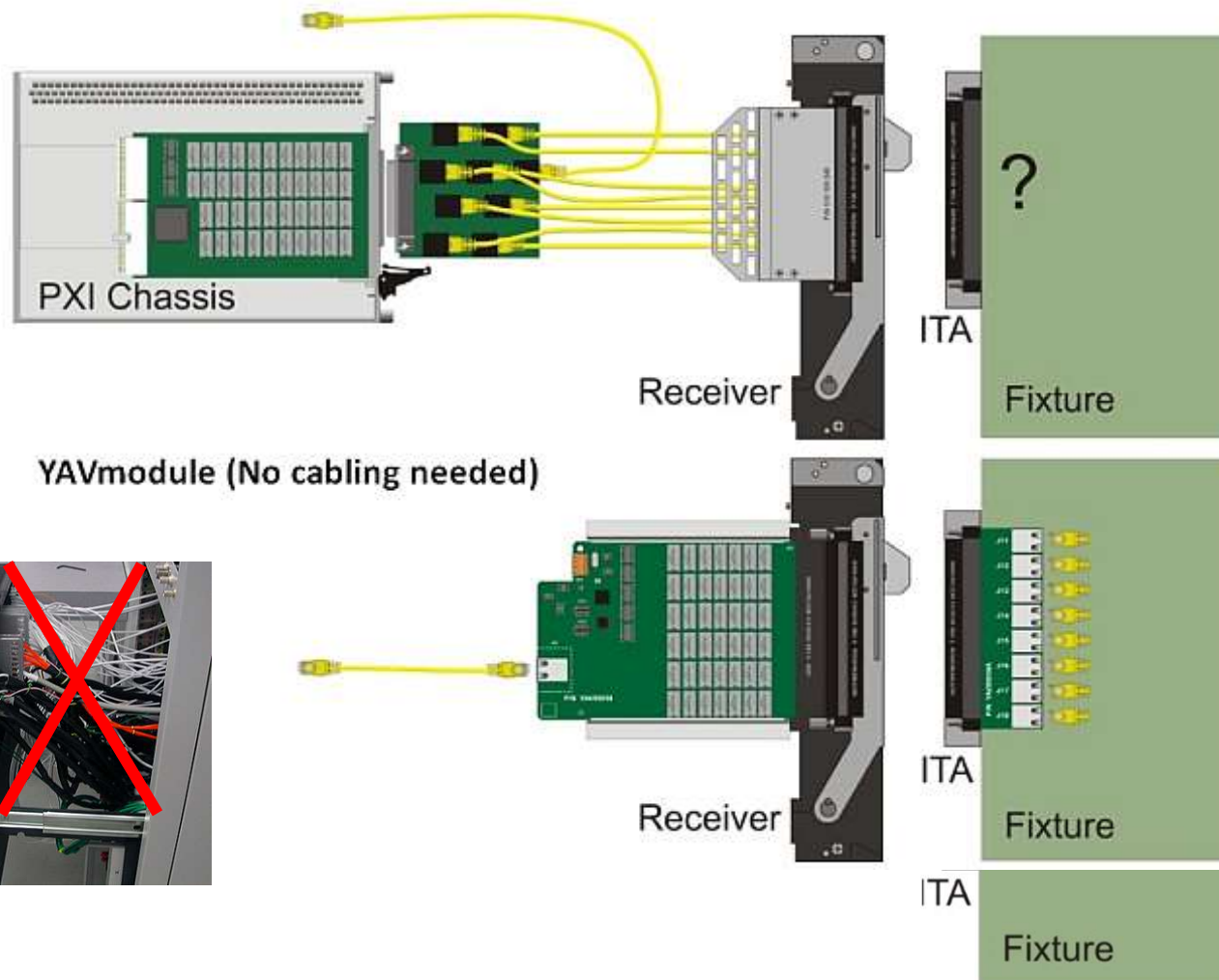
What are the benefits of *fast*ATE

- ⑥L Minimize wiring inside your test system.
- ⑥L Total Signal length: **460 cm**
- ⑥L Minimizing cable length minimizes the risk off;
 - ⑥L Variation in signal length
 - ⑥L Adding resistance
 - ⑥L Adding capacitance
 - ⑥L More contact area's (Connectors)
 - ⑥L Adding noise, cross-talk
 - ⑥L Adding cost
 - ⑥L Adding complexity to schematics
 - ⑥L Fault finding more complex
 - ⑥L Debugging more complex
 - ⑥L Risk for human error during assembly



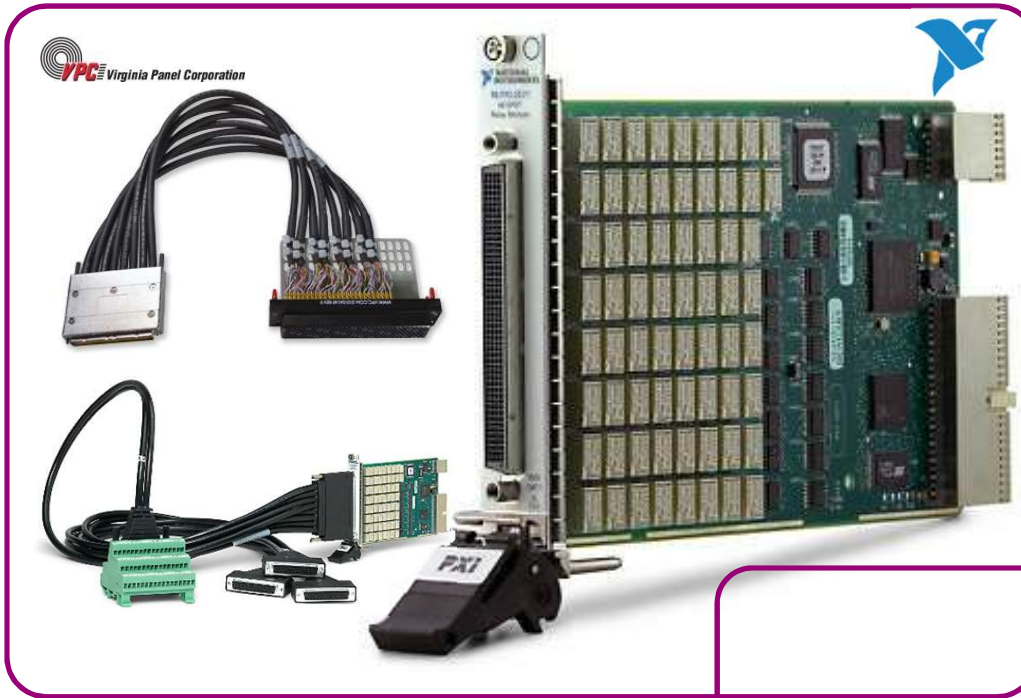
What are the benefits of *fast*ATE

- 6TL Minimize wiring inside your test system.



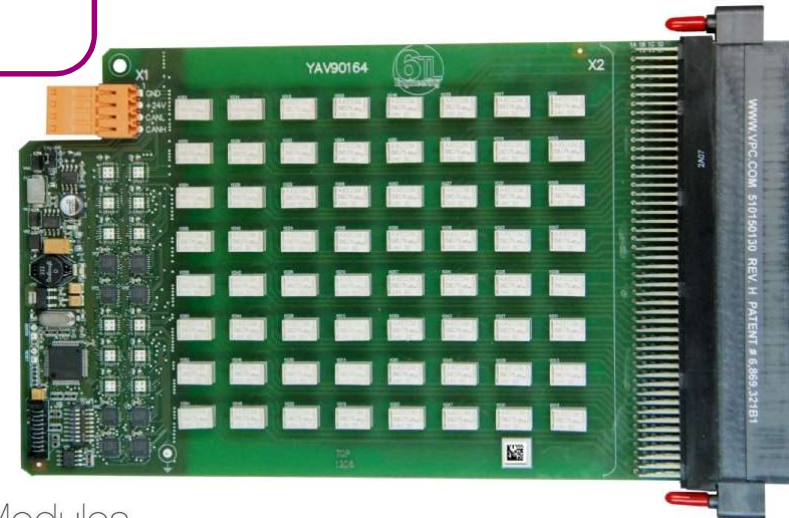
fastATE - Less cabling, Price benefit

NI PXI-2571 €1.770,- + €1.888,- = €3.658,-
66 Channel G-P Relay Switch, 1A

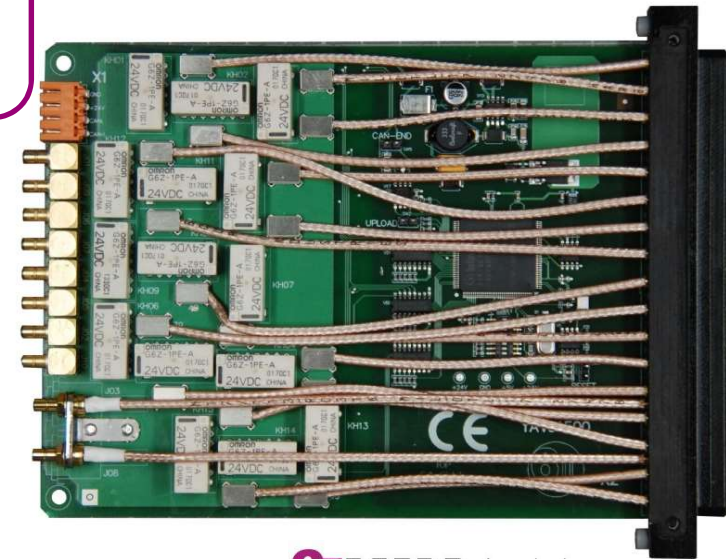
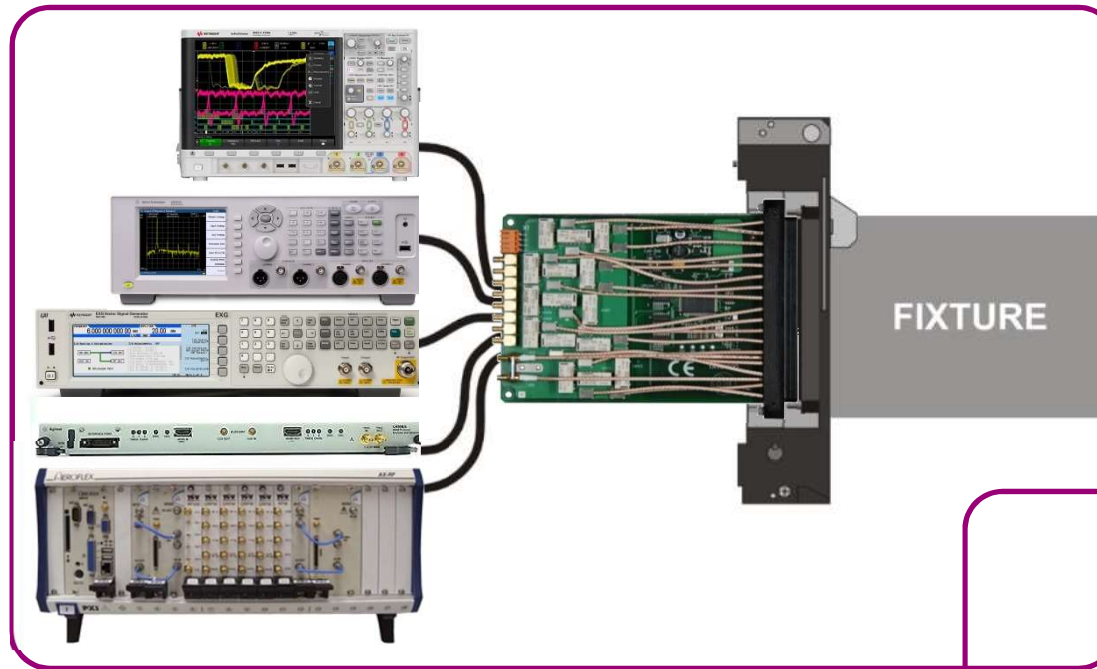


YAV90164 € 1.642,-
64 Channel 2A SPDT relays

6TL YAV Modules



*fast*ATE - Efficient wiring flow.



6TLYAVModules

*fast*ATE - Before and after.

BEFORE

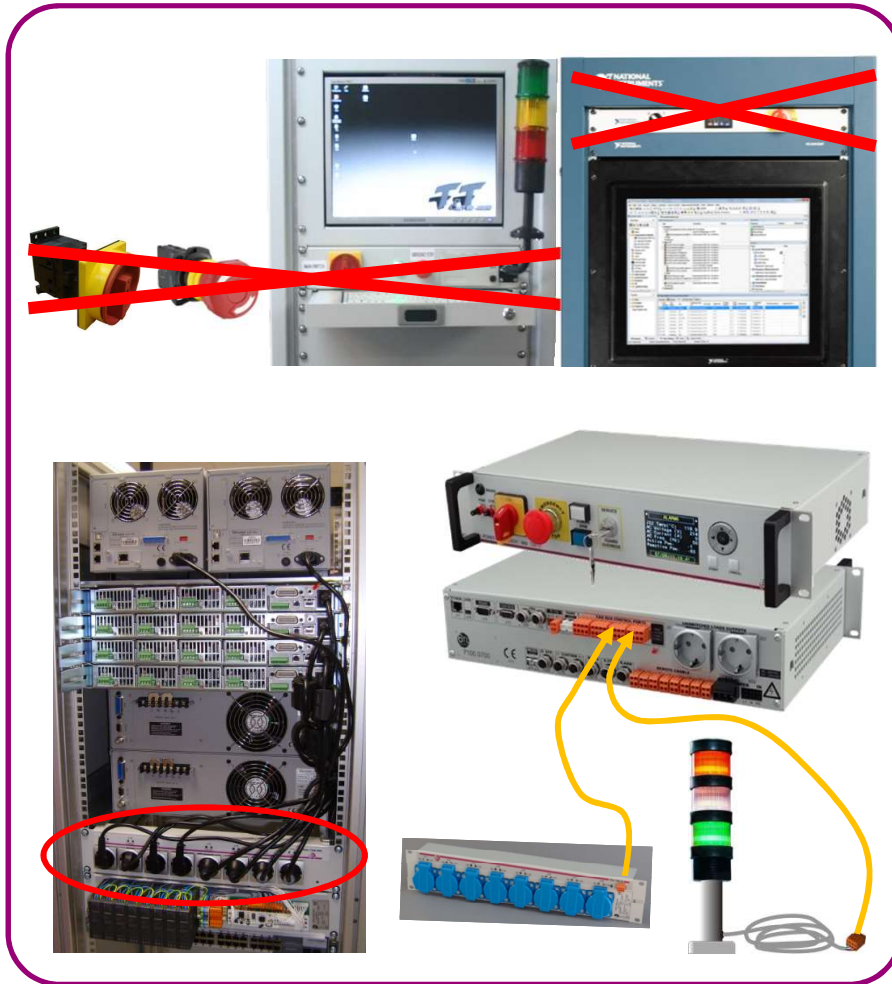


AFTER



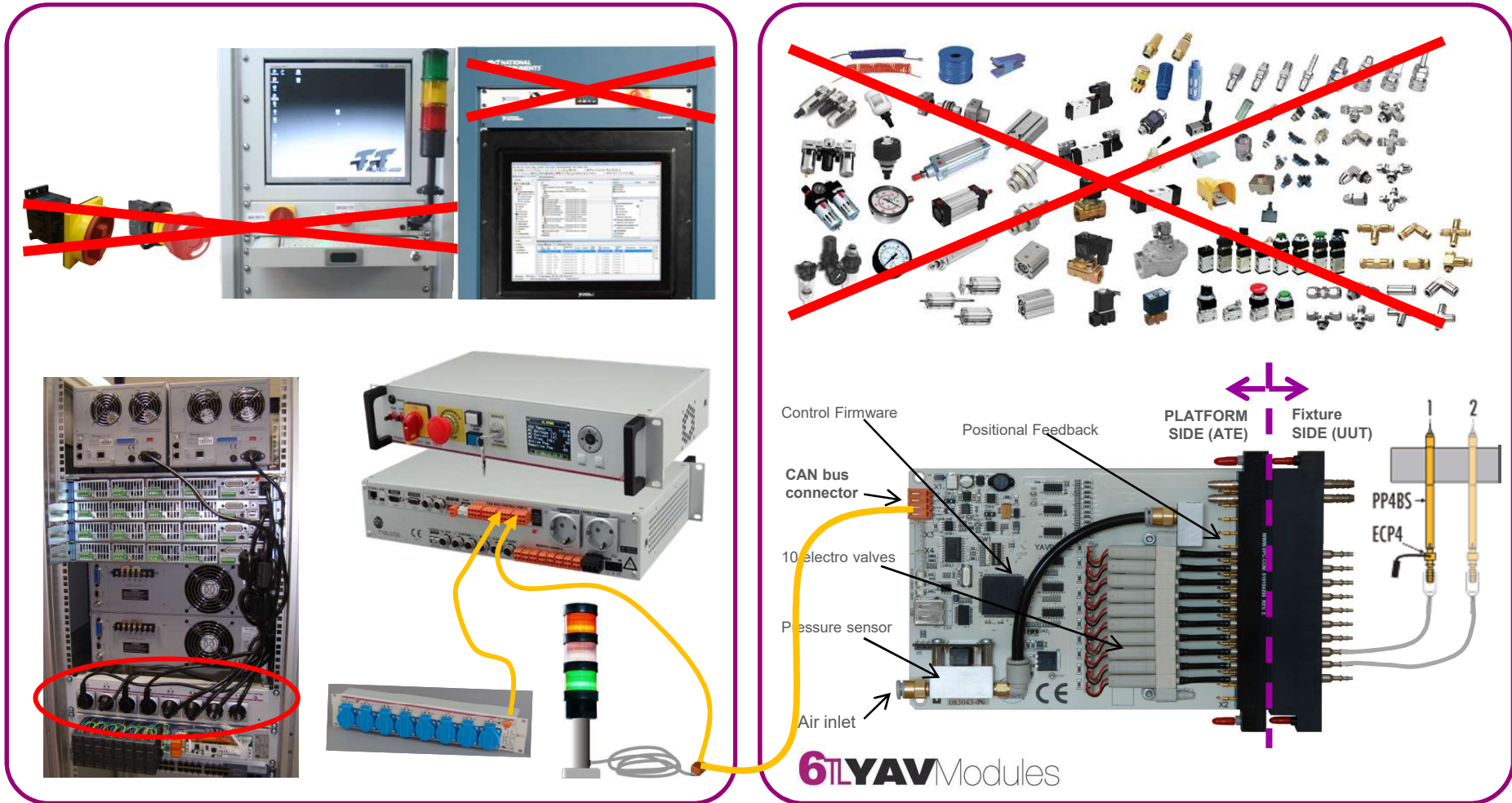
What are the benefits of *fast*ATE

- 6TL Put recurring engineering in one efficient building block or module.



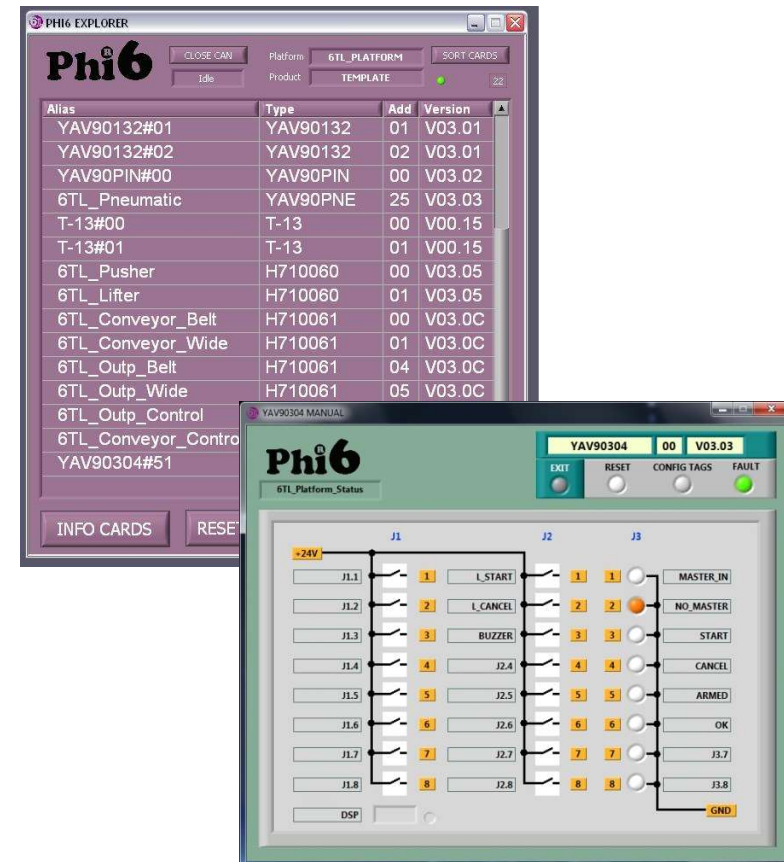
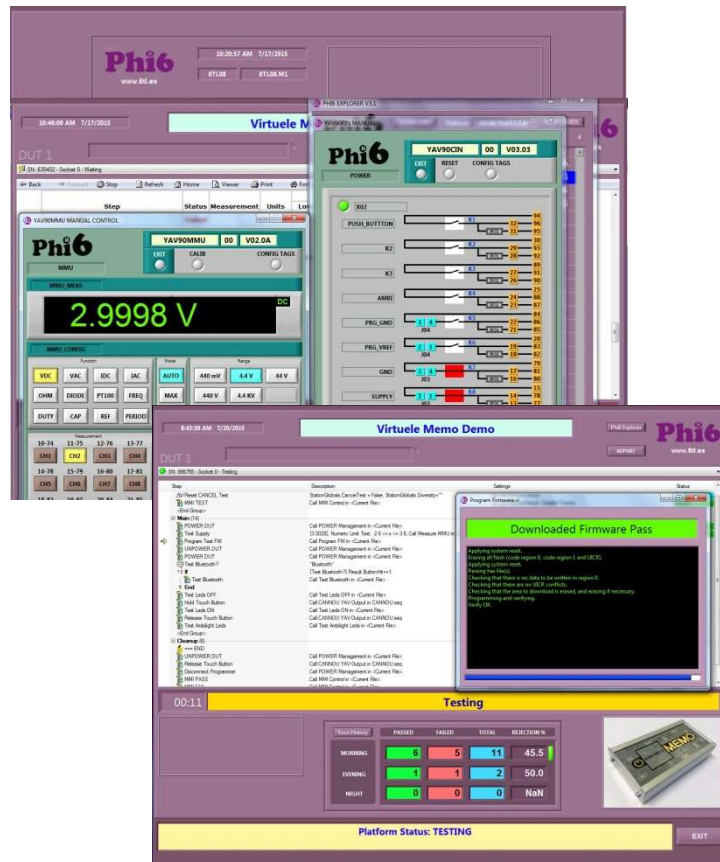
What are the benefits of *fast*ATE

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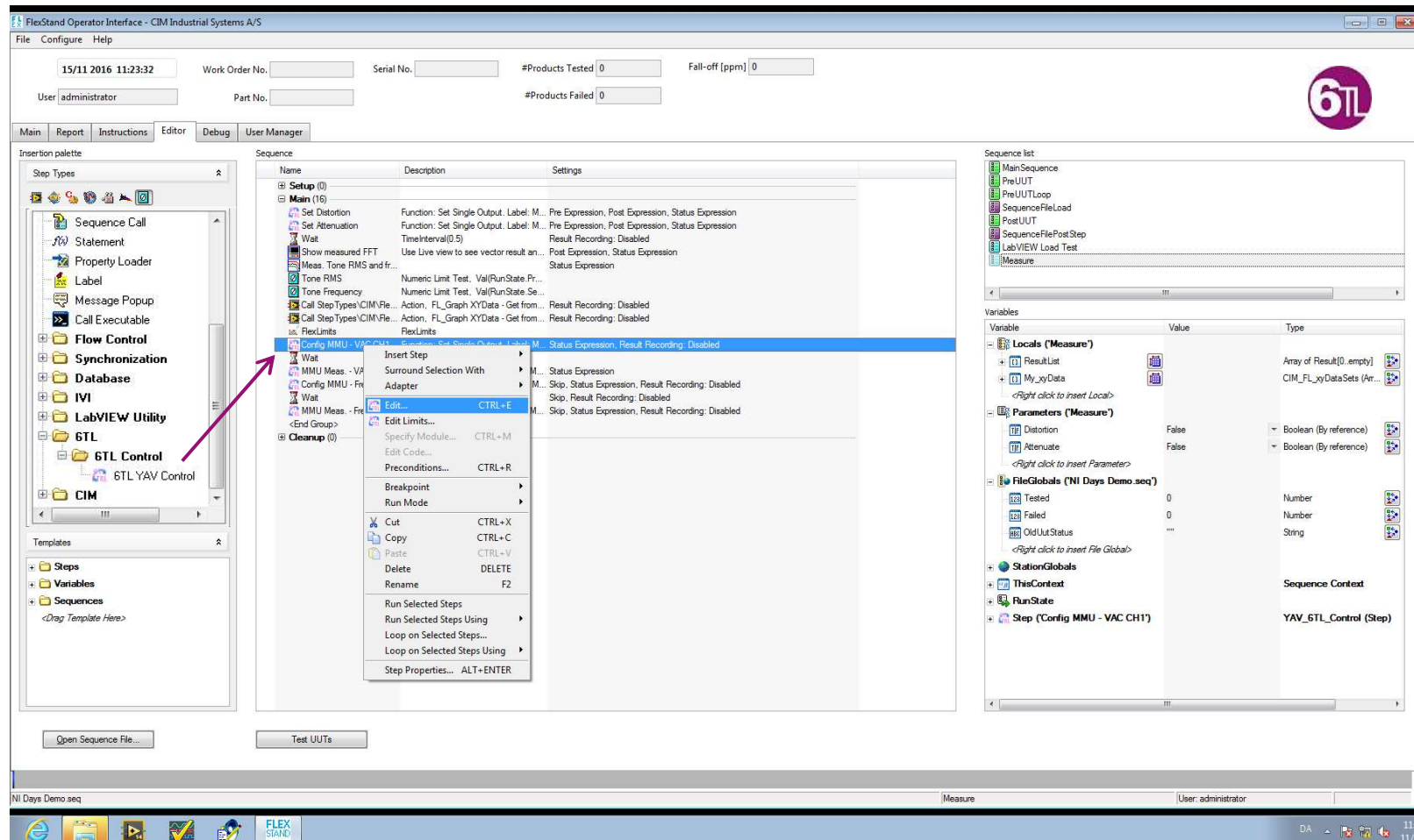
What are the benefits of *fast*ATE

- 6TL Tools to make programming test sequences easier and more structured.
- 6TL Phi6 Explorer & OI, Flexstand, Custom step type tool.



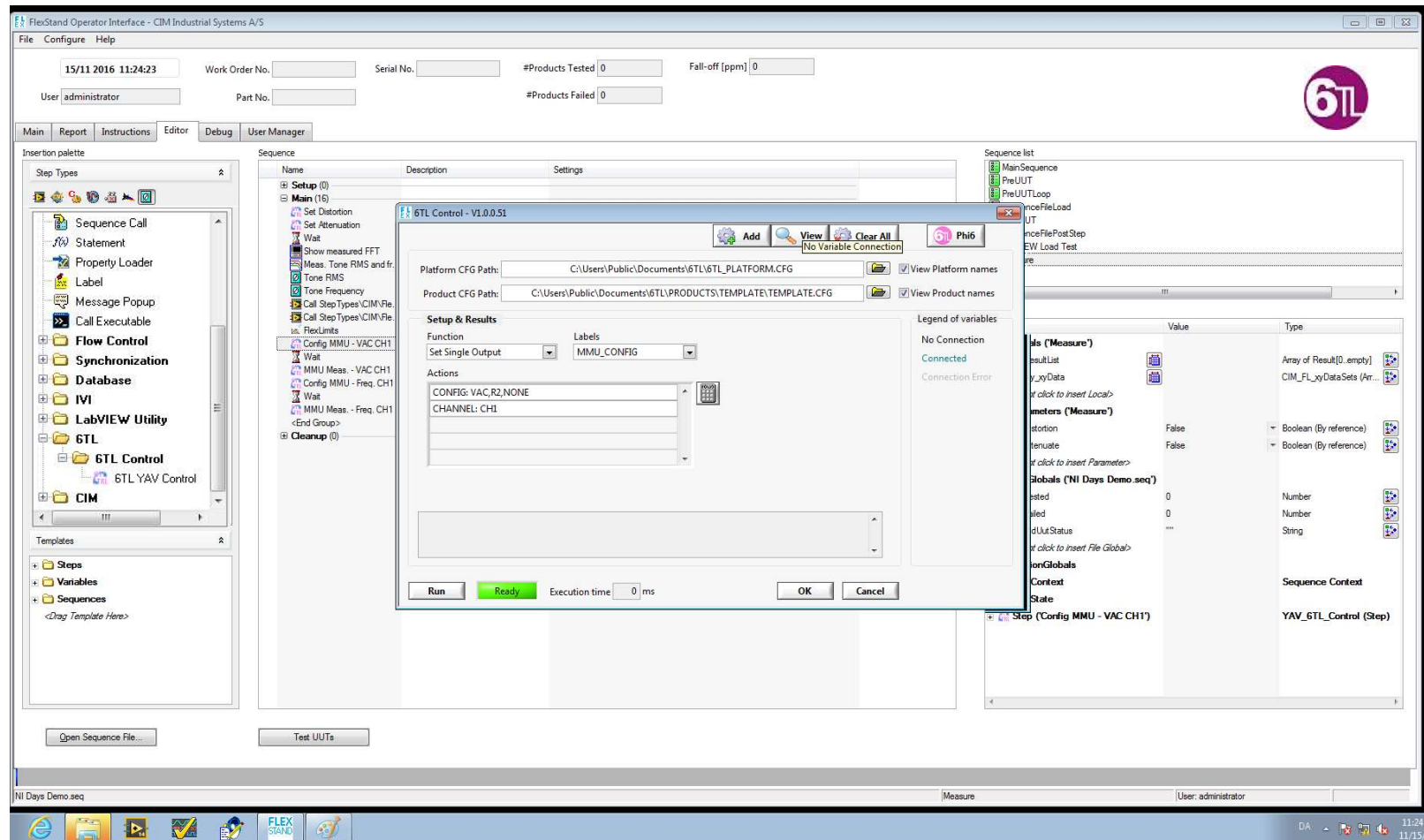
What are the benefits of *fast*ATE

- 6TL Using Teststand or Flexstand in combination with our Custom step type tools.



What are the benefits of *fast*ATE

- 6 Ease & standardize generation of test sequences using our Custom step type tool.



What are the benefits of *fast*ATE

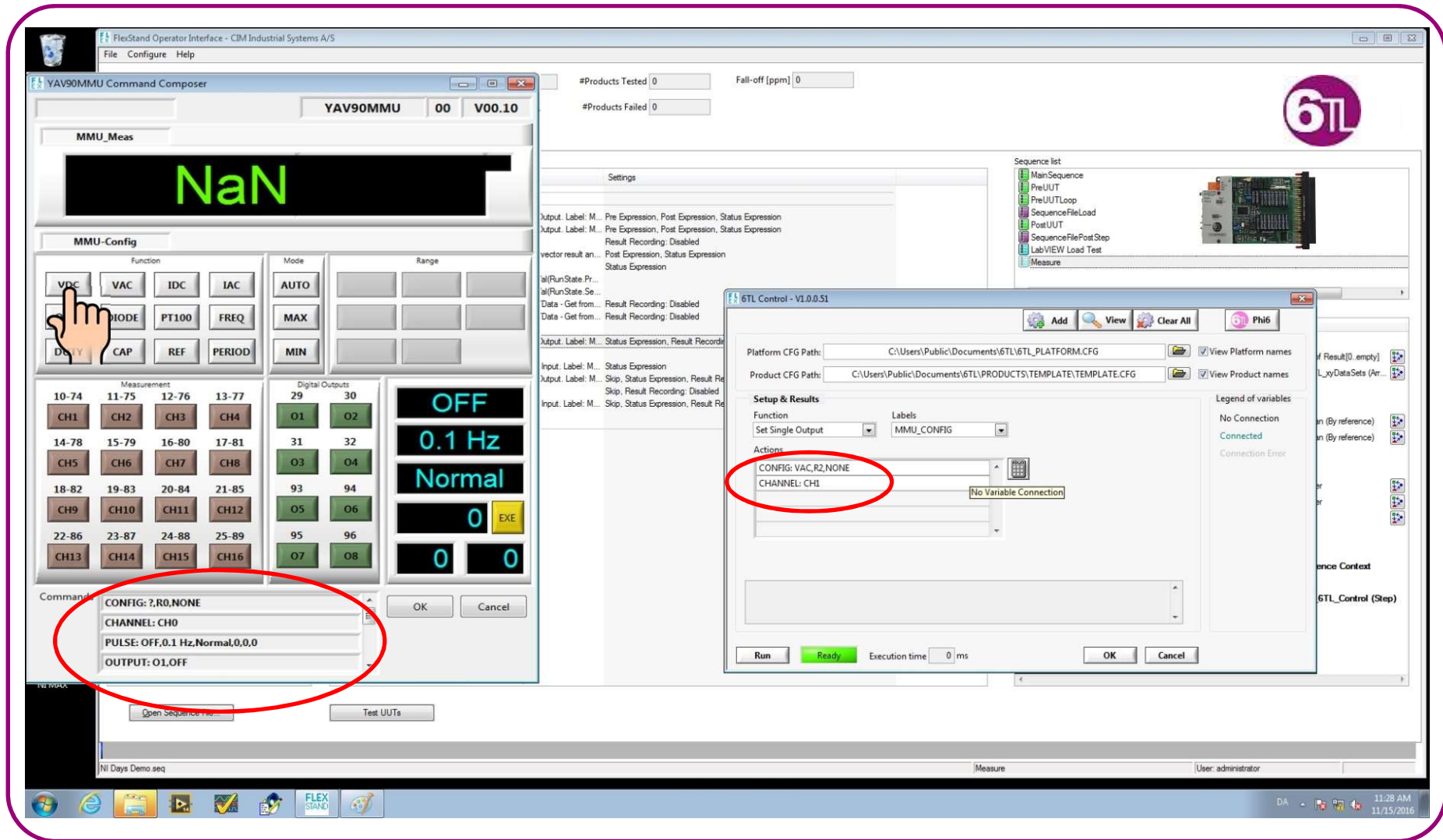
- 6TL Check the result in Phi6 Explorer directly from the Custom step type tool.

The screenshot displays the Phi6 Explorer V3.2 application window. On the left, a table lists various test items with columns for Alias, Type, Add, and Version. The 'YAV904X8#02' item is selected. Below this table, a circuit diagram is shown with components labeled K1 through K32. To the right of the main window, a '6TL Control - V1.0.0.51' dialog box is open. This dialog contains fields for Platform CFG Path and Product CFG Path, both pointing to files in the C:\Users\Public\Documents\6TL\ directory. It also has sections for 'Setup & Results' and 'Legend of variables'. A red circle highlights the 'Phi6' button in the top right corner of the 6TL Control dialog. The bottom of the screen shows the Windows taskbar with various icons and the system clock indicating 11:25 on 11/15.

Alias	Type	Add	Version
MYTESTER	YAV90MMU	01	V02.0A
YAV904X8#02	YAV904X8	02	V03.02
YAV90132#05	YAV90132	05	V03.02
YAV90PIN#04	YAV90CIN	04	V03.03
6TL_Fixture_ID_Master	YAVCANCON	00	V03.03
YAV90059#08	YAV90059	08	V01.01

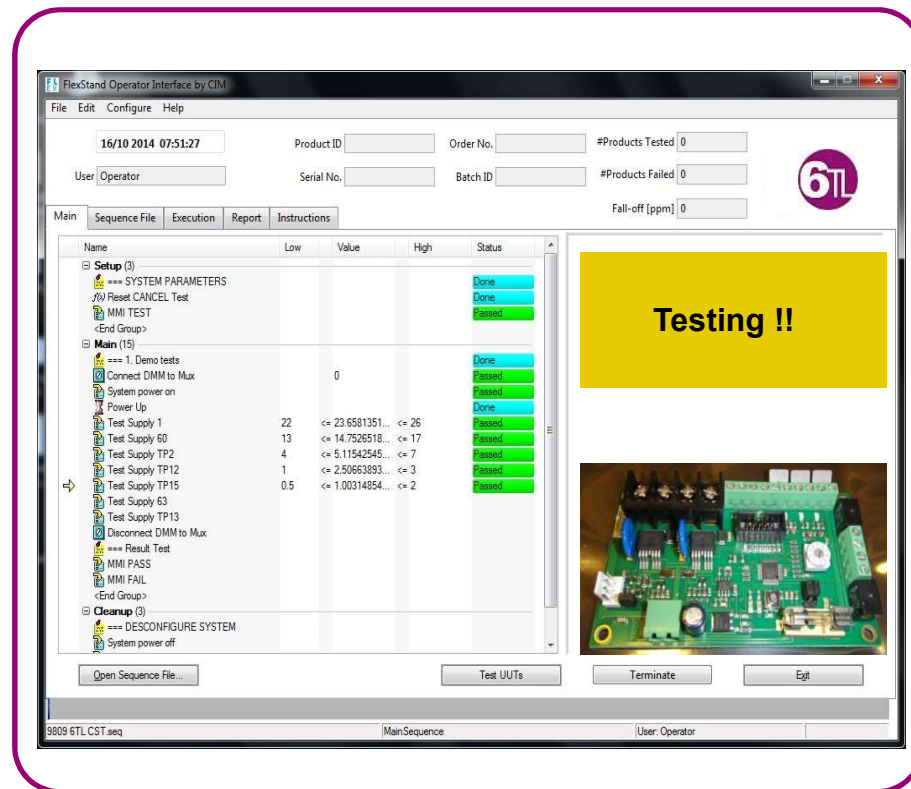
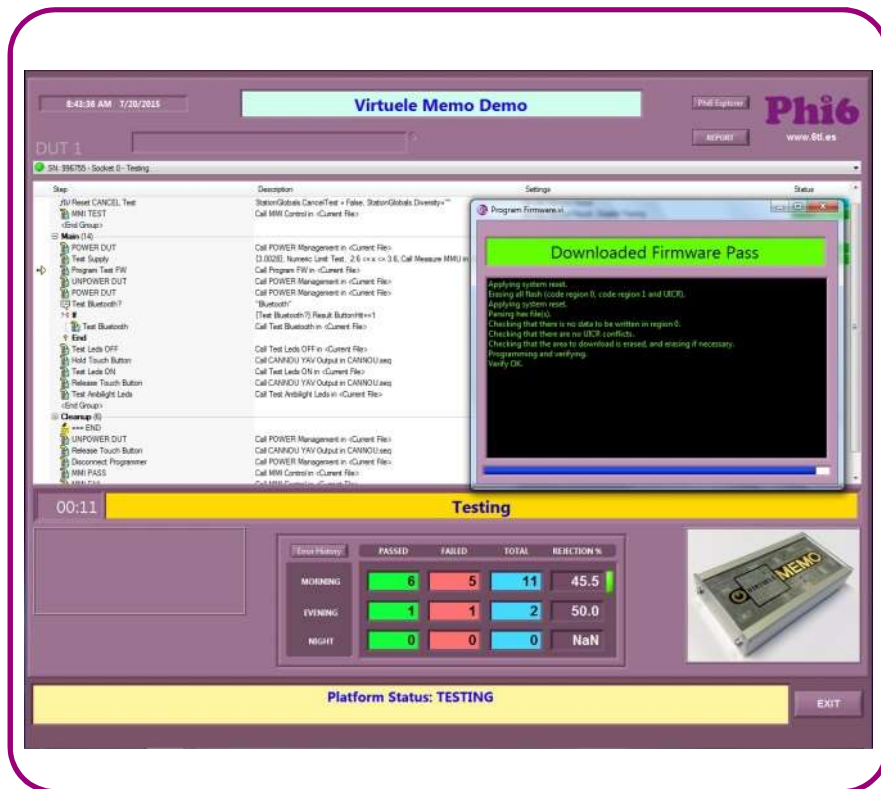
What are the benefits of *fast*ATE

- 6TL Program the custom step type test step instruction using Phi6 explorer.



What are the benefits of *fast*ATE

- 6TL test solutions enable more efficient programming with Custom step type tools.
- Start testing with Phi6 OI (Operator Interface), Flexstand OI or your own OI.



What are the benefits of *fast*ATE

- 6TL *fast*ATE is ready for FCT, FCT & Bscan, ICT, ICT & BScan and any type of combinational testing, in- and off-line, manual and automatic.



6TL-10

6TL-19

6TL-22

6TL-24

What are the benefits of *fast*ATE

- 6TL *fast*ATE is ready for FCT, FCT & Bscan, ICT, ICT & BScan and any type of combinational testing, in- and off-line, manual and automatic.



6TL-28

6TL-29

6TL-31

6TL-33

What are the benefits of *fast*ATE

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6TL-33

What are the benefits of *fast*ATE

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6TL-33



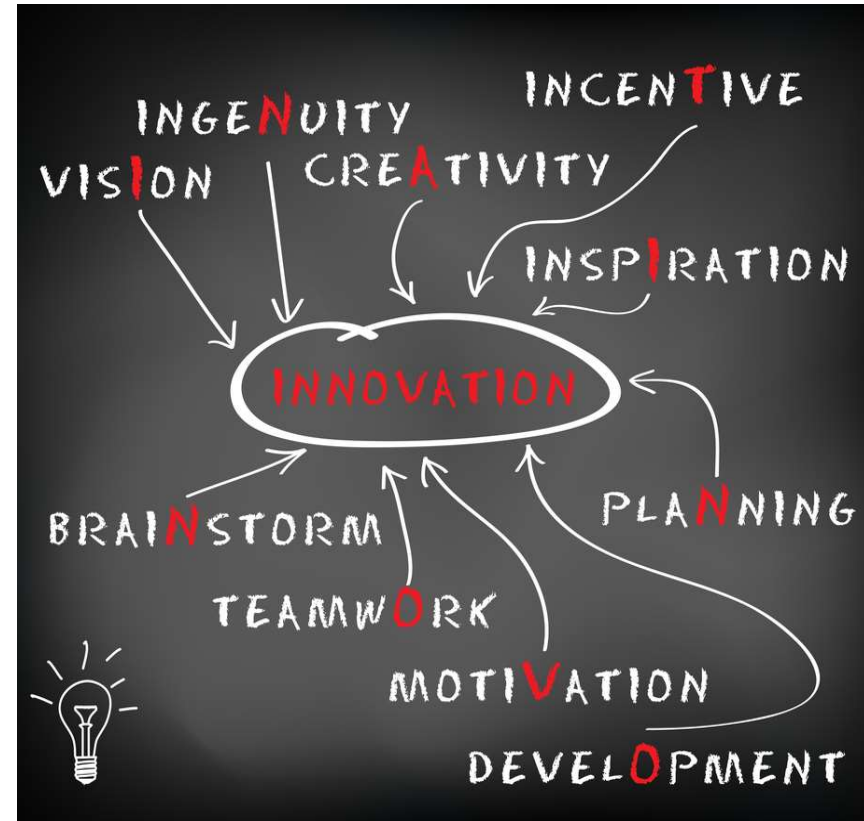
6TL-34

What are the benefits of *fast*ATE

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6TL-35



6TL-??

What are the benefits of *fast*ATE

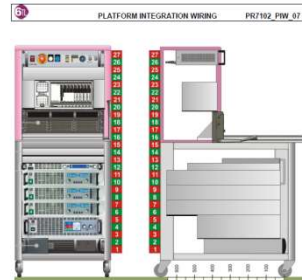


6TL Receive your turn-key test solution including all documentation (PIW & FIW).

6TL

PLATFORM INTEGRATION WIRING PR7102_PIW_07

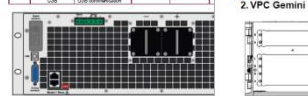
Created: 6/14/2016
Updated: 9/15/2016



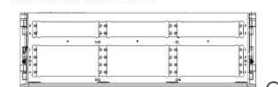
1.9 Elektro-Automatik Load 9080-170B

Device ID	A224
Function	Programmable DC Load
Brand	Elektro-Automatik
Model	EAEI 9080-170 B
Manufacturer	Elektro-Automatik
Form Factor	19" / 1U
Mounting	Vertical
Mounting Pins	None
Mounting Slot	None
Power (VA)	2400
Weight (kg)	5
PCU Lockout	Yes
Lockout ID	None

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None



2. VPC Gemini 12X 18-Slot RCV



Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

6TL

PIW (Platform Integration & Wiring).

6TL

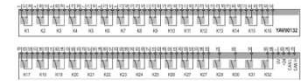
FIXTURE INTEGRATION WIRING PR7102_FIW_00

Created: 7/13/2016
Updated: 7/13/2016



2.3.1 Module Position A1

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
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A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None



Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

2.3.4 Module Position A4

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

Device ID	Function	Connector	Cable type	Cable length	Connector	Receiver
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None
A224	DC Load	DB15	DB15	1.5m	DB15	None

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FIW (Fixture Integration & Wiring).

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*fast*ATE
technology

What are the benefits of *fast*ATE

6TL Building, Base, Turn-Key or multiple systems, 6TL has the solution.



Our capabilities – Your advantage:

- 6TL **Understanding customer needs:** Detailed requirement gathering
- 6TL **Information transparency:** Precise and updated documentation,
- 6TL **System traceability:** Detailed Bill of Materials (BOM)
- 6TL **Repeatability:** Optimization of wiring & cable fixtures
- 6TL **Ability to ramp up:** In-house production flexibility
- 6TL **Timely sourcing:** Easy procurement through trusted partners
- 6TL **Skilled Labor:** Cost effective resources
- 6TL **Quality:** Inherent in our core values Agile purchasing department
- 6TL **Extended reach:** Global delivery system
- 6TL **Continuous support:** Established warranty system and worldwide support to serve your needs

Conclusion.



Most important Do's

- 6TL Minimize engineering, use it wisely and focus on engineering key competences
- 6TL Pick the right partners and products
- 6TL Build-in reliability and flexibility
- 6TL Use the same strategy on software
- 6TL Minimize internal wiring, optimize system build.
- 6TL Prepare for Documentation and CE.
- 6TL Standardization (design only ones)
 - 6TL Include future needs & expectations
- 6TL Use REAL specifications for TEST, don't Under- or Over-specify your instruments and use the “best in their field” suppliers.
- 6TL Use a Mass Interconnect interface.
 - 6TL Provides reliability and Flexibility
- 6TL Use well established software tools and build-in standardization and modularity.
- 6TL Disadvantage of Mass Interconnect
 - 6TL Use modules dedicated to test
- 6TL Thanks to standardization no issue
 - 6TL Each building block is CE and has its own documentation.

Conclusion.



Most important Don'ts

- ❖ I am an Engineer and can design and build the tester myself.
- ❖ I do not need partners as I can do all myself, I am the designer of the DUT.
- ❖ Mass Interconnect is expensive
- ❖ I use my own software is much cheaper a student or stagier will design it for me
- ❖ I let my operators connect to the DUT in production, using our own cables.
- ❖ I designed the system and I am always here, I do not need Documentation.
- ❖ Your engineers should not re-invent the wheel or become your buyer.
- ❖ Use partners that add to your own key competences, together you are stronger
- ❖ Saving money on the interface will fire back on you in the long run.
- ❖ Use software that is designed for test and If you need support use the correct tools that add to your own expertise.
- ❖ Cables are a cost and a reliability and stability risk and add to the complexity.
- ❖ But what if you have multiple testers in multiple locations, you become ill or worse.

What are the benefits of *fast*ATE

- 6TL *fast*ATE is ready for FCT, FCT & Bscan, ICT, ICT & BScan and any type of combinational testing, in- and off-line, manual and automatic.



Some References



Thanks you for your attention, Any Questions?



*Only God We Trust,
Everything Else We Test !*



Thank You!



Represented in your country by:

