PBA.pro GUIDE

AIM
RIGHT ON TARGET

Avionics Databus Solutions

Analysis Software

Testing for the Future – Today!

www.aim-online.com

PBA.pro™ –
A Good Choice!

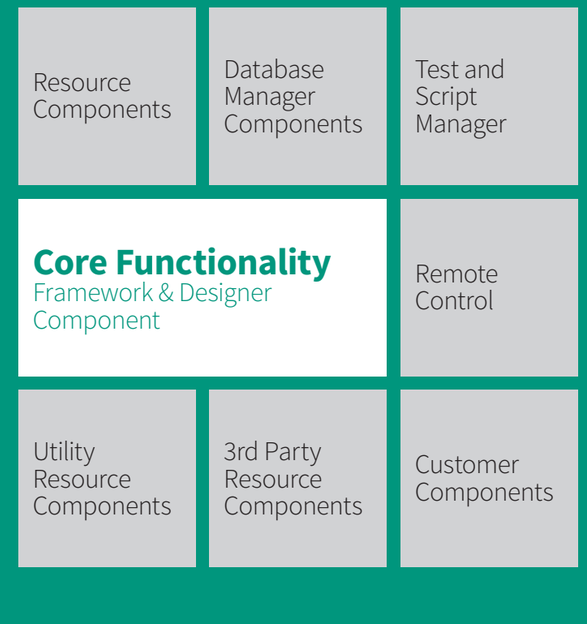
Test, Simulation, Analysis Solutions

The ▸ **PBA.pro** is the AIM core software platform for Avionics Test and Analysis application with AIM's family of high performance avionics test and simulation interface modules plus a wide range of 3rd party hardware. PBA.pro is modular, scalable and customizable by the user to cover a wide range of applications in an extremely efficient manner.

The PBA.pro software runs on Windows and Linux platforms and integrates the essential features for today's and tomorrow's Avionics test, development, simulation, monitoring and analysis applications. Various customization capabilities via Scripts, user defined Panels and dedicated GUIs support the PBA.pro for use as a simple Databus Protocol Analyzer up to System Test and Integration tool for handling multiple data buses via single software solution.

Core Functionality

- Modular, scalable and integrated Software platform
- Support for Windows and Linux
- Fully automatable and customizable via Scripts, Remote Control and User Dialogs
- Manage single or multiple AIM Avionics Interfaces and 3rd party hardware resources within a single Framework
- Software Platform for:
  - Low and high level Protocol/Network analyzers
  - Recording/Monitoring/Data Logging Systems
  - Special-To-Type Test Equipment (STTE)
  - Test benches and integration rigs
  - 'Hardware in the Loop' simulation rigs
  - In-Service and maintenance toolsets
- Flexible licensing options (Full, Light, Runtime)
- PBA.pro Server/Client support for data distribution to multiple workstations
- Complete Add-On Script Packages to support:
  - AS4111 and AS4112 Test Plans
  - EFAbus RT Production Test Plan
  - ARINC664P7 End System/Switch compliance tests
  - Useful PBA.pro utility scripts, panels, etc. are available via AIM Download Area



PBA.pro™
Resource Components

Everything Starts Here

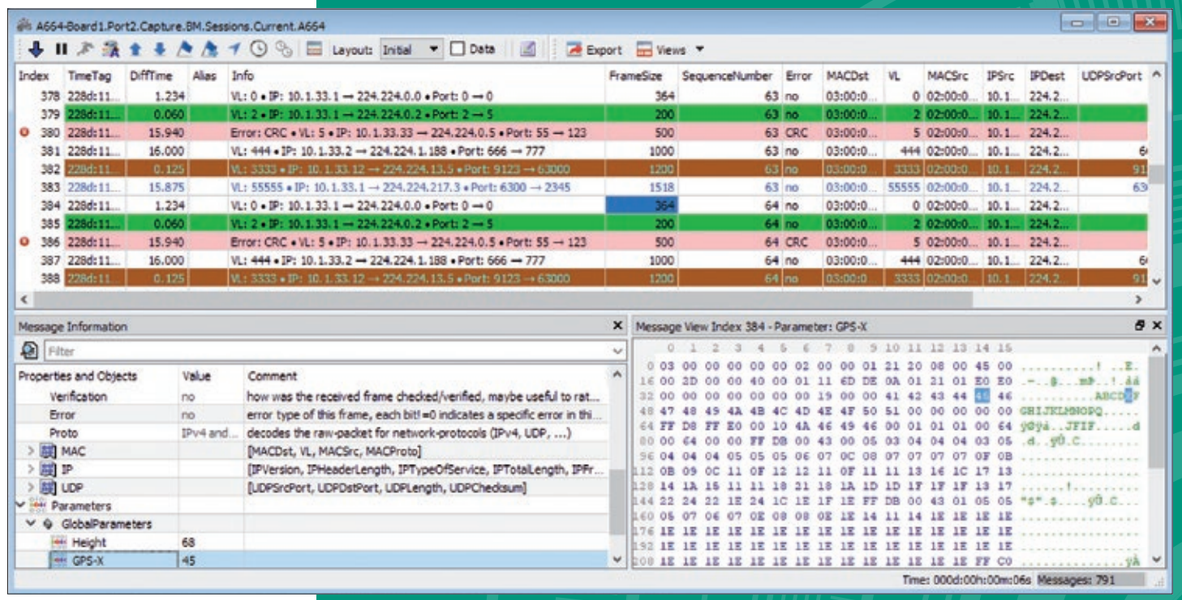
The ▸ **PBA.pro Resource Manager** provides easy access to view and control all resources available within the PBA.pro system. AIM interfaces include for example MIL-STD-1553A/B, STANAG3910/EFEX, ARINC429, AFDX®/ARINC664P7, Standard Ethernet, ARINC825 (CANbus) or Fibre Channel.
Further 3rd party and utility resources like various types of digital or analog hardware, serial COM ports, 10G Ethernet, TCP/IP or UDP network sockets (and many more) to meet extensive system demands by one application, are supported as well.

All resources are accessible from the PBA.pro framework by a single Resource Tree. Visualization and control of each resource is provided by standard and dedicated displays. These can be customized, configured and automated easily using the powerful ▸ **PBA.pro Designer** or scripting components. In addition to real interfaces, AIM hardware can be simulated as virtual boards (so called NTG – No Target). The PBA.pro NTG simulates the hardware to enable the user to setup and configure a system or even analyze hardware specific information like recordings without the need of the real physical hardware interface.

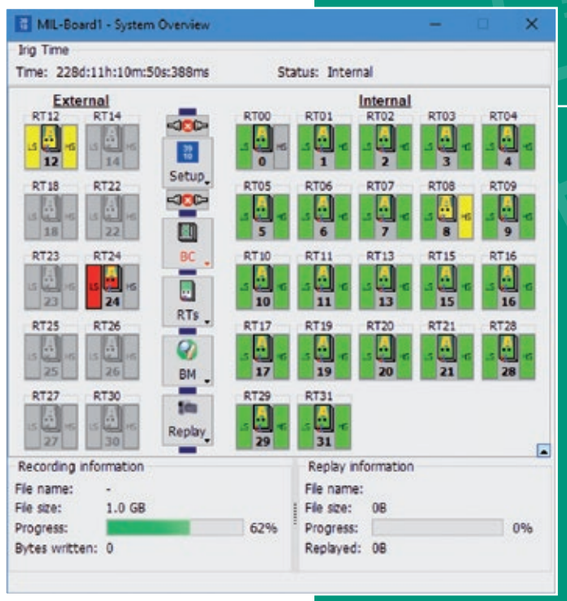
Features

- Support for all AIM interface types, current and future
- Simulation of virtual AIM hardware via so called NTG (No Target) licenses
- Intuitive resource handling by a hier-archical, logical tree structure
- Manage, control and display resources in real time
- Add new resources as required
- Integrate and facilitate AIM, 3rd party and utility resources
- Intercommunication between different resources

Functions



Bus Monitor Session



System Overview

- MIL-STD-1553/1760
- ARINC429
- ARINC664/AFDX®
- ARINC825/CANbus
- 10/100/1000 Ethernet
- Fibre Channel
- STANAG3910/EFEX

PBA.pro™
Designer Component

Be Creative

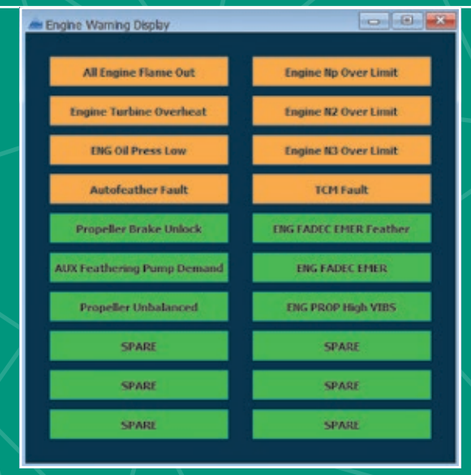
Included within the PBA.pro framework, the Designer component is offering the core functionalities for building applications with the PBA.pro. The Designer is an easy to use drag and drop tool to design and build your own, user-defined dialogs for visualization and control of any PBA.pro information or data source. This gives the ability to easily tailor the PBA.pro display and control features to meet individual and unique needs for any user application.

The ► **PBA.pro Designer** offers an extensive and very powerful set of widgets that can be added interactively or completely automated. Dialogs can also be created, modified, arranged and controlled by PBA.pro scripts to create user defined/ customized dialogs and displays.

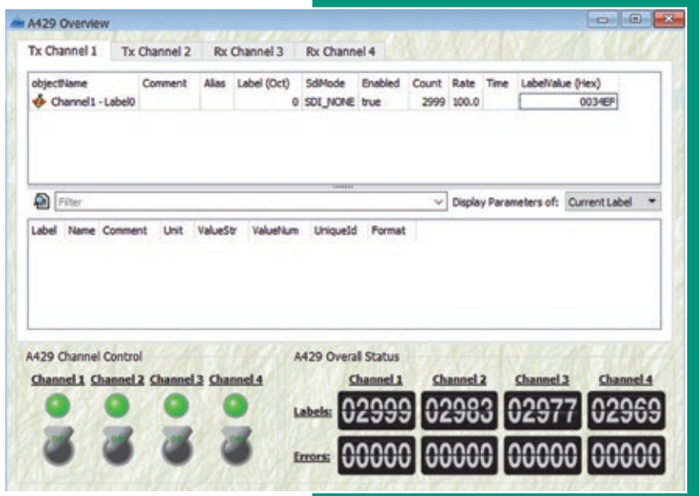
Features

- Easily build dialogs for visualization, display and control using Drag and Drop
- Extensive, expanding and dynamic widget library
- Simple to use GUI to build custom dialogs
  - Display/control of any PBA.pro object information/value
  - Embed existing PBA.pro dialogs (e.g. any view provided by a resource component)
  - ActiveX support (Windows only)
  - Use layouts to auto resize and arrange widgets
  - Automated dialog creation for parameters with context menu or Drag and Drop
- Flexible connection definitions between PBA.pro objects and/or widgets
- No coding required
- Fully scriptable
- Standalone or frameless execution of dialogs outside the PBA.pro main window

Functions



Examples of Control and Visualization Displays created with the Designer Component



PBA.pro™
Database Manager

Import Your ICD

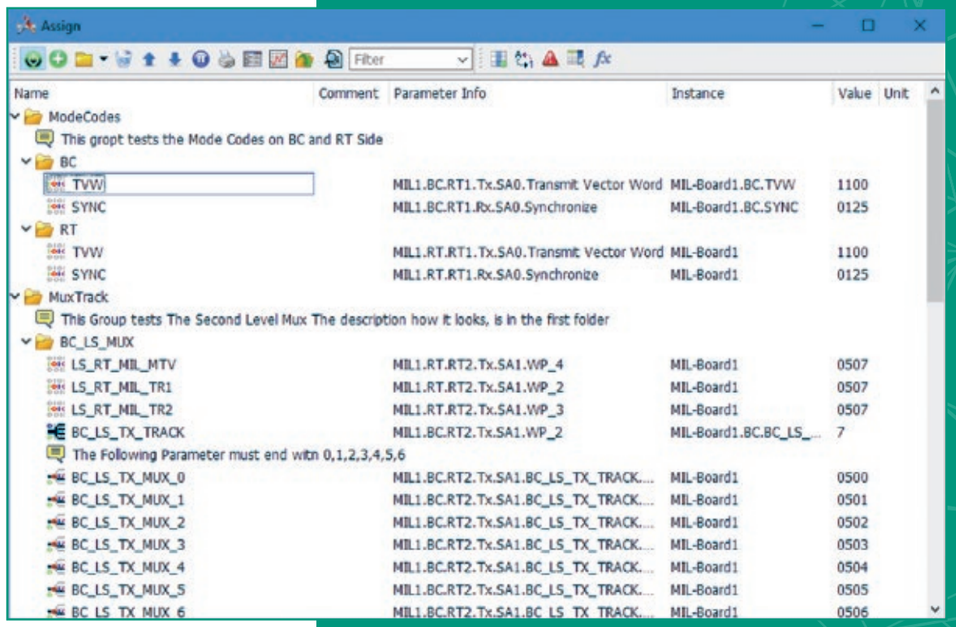
Use the powerful and flexible PBA.pro ▸ **Database Manager** to define conversion rules for visualization and modification of buffer or message raw data, acquired by various PBA.pro resources, into Engineering Units as so called Parameters.

For quick visualization and modification of any information like parameter values or status information a powerful Assign Window is included. Any Parameter information can be added to the Assign Window by Drag and Drop and – if added once – graphically visualized and controlled by a designer dialog and time plots. Parameters in the Assign Window can be individually animated with PBA.pro generated functions, supported by a comprehensive formula editor or by script. For post recording analysis the Database Manager offers an off-line parameter replay functionality to perform a virtual play back of previously recorded data of a resource. The parameter values are updated by the replay and e.g. their data profile can be visualized by a time history plot.

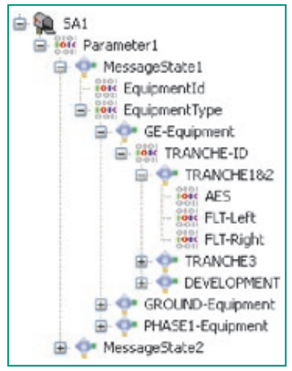
Features

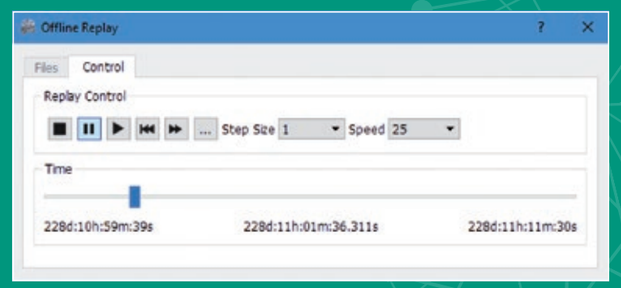
- Defines Engineering Unit Conversions of the Raw Data
- Fully scriptable
- Expandable for future data sources
- Quick and easy Drag and Drop information display (Assign Window)
- Higher level protocol support via conditions and parameter structures
- Available to convert online (buffers/messages) and offline data (recording files)
- Fully controllable offline parameter replay
- Graphical parameter representation of a whole recording file in a time plot
- Import of any custom databases via scripts
- Storage in XML format
- Built-in import of AIM legacy databases in PDI format

Functions

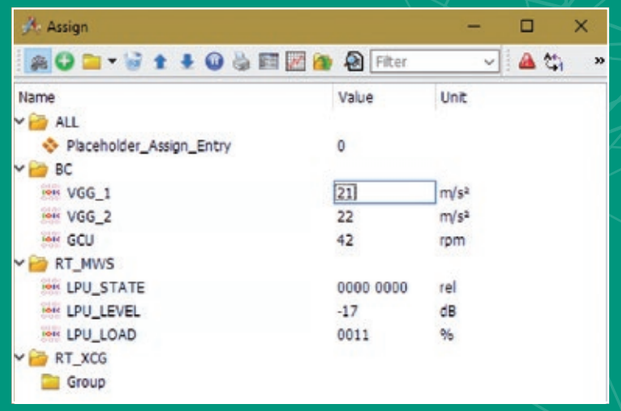


Assign Display





Offline Display



PBA.pro™
Test and Script Manager

Automate Your Tasks

The ▸ **PBA.pro Test and Script Manager** offers access to any PBA.pro object as well as to the PBA.pro framework. The Test and Script Manager component combines a Script Manager and a Test Manager component including an interface for PBA.pro Remote Control over TCP/IP.

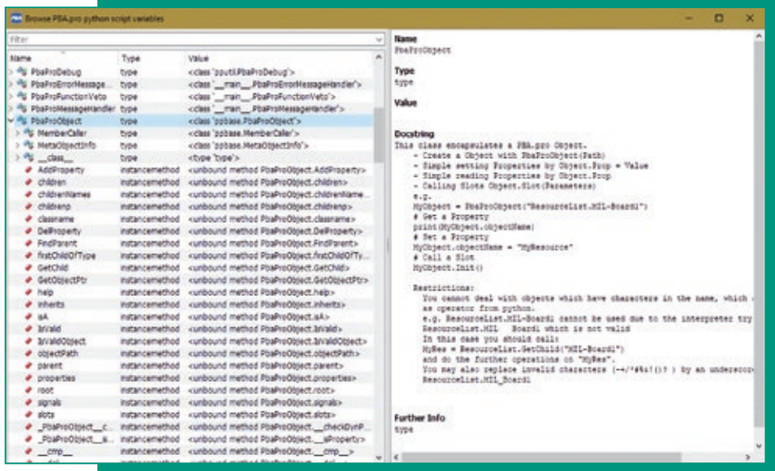
The Script Manager provides a simple interface to setup and run individual test scripts whilst the Test Manager executes automated or semi-automated test procedures including handling of configuration data and the execution/evaluation of tests by documenting test results with fully user customizable test reports in ASCII, XML or PDF format.

Scripts can do everything the user would do interactively:

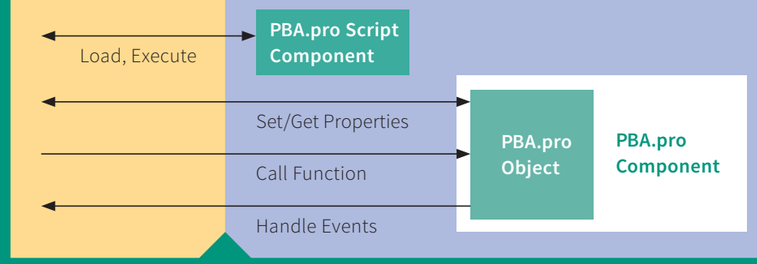
- Python and Tcl scripts supported
- Setup and control PBA.pro Resource Components
- Import and creation of engineering unit databases to PBA.pro Database Manager
- Access and customization of PBA.pro framework
- User interaction (message boxes, input dialogs)
- Interactive message modification
- Evaluation and export of recorded data into user definable formats
- Execution of test cases and simulations building user dedicated dialogs via the PBA.pro Designer
- ▸ **Optional script packages** are available off-the-shelf to support:
  - MIL-STD-1553 Protocol and Waveform Validation (AS4112 RT Production Test Plan)
  - MIL-STD-1553 Protocol Validation (AS4111 RT Validation Test Plan)
  - Protocol Testing of EFA TRD-J-017-E-0002-EFA RT Production Test Plans
  - ARINC664P7 End System Compliance Test
  - ARINC664P7 Switch Compliance Test

Functions

python powered



PBA.pro Scripting



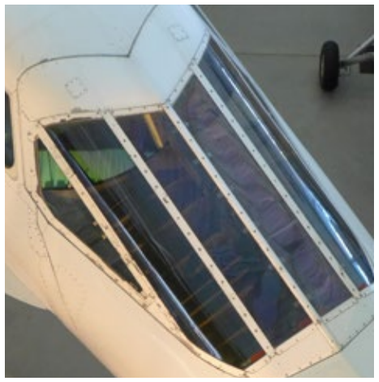
PBA.pro Remote Control

PBA.pro™ 3rd Party and Utility Components

Integrate and Extend Your Toolbox

An unique feature of the PBA.pro is the open PBA.pro concept which allows an efficient and smooth integration of ▸ **3rd party and utility interfaces** via corresponding components.

This extends the PBA.pro for use with additional hardware and functionality to cover your unique system needs. Starting for various 3rd party (COTS) hardware like digital and analog I/O devices a wide and steadily growing range of 3rd party hardware and utility components can be added to the PBA.pro to meet your specific needs. Utility components like data exchange with the MS Flight Simulator are provided. All PBA.pro 3rd party and utility components are available inside the PBA.pro framework for visualization, scripting and control as well as for intercommunication with other hardware components.



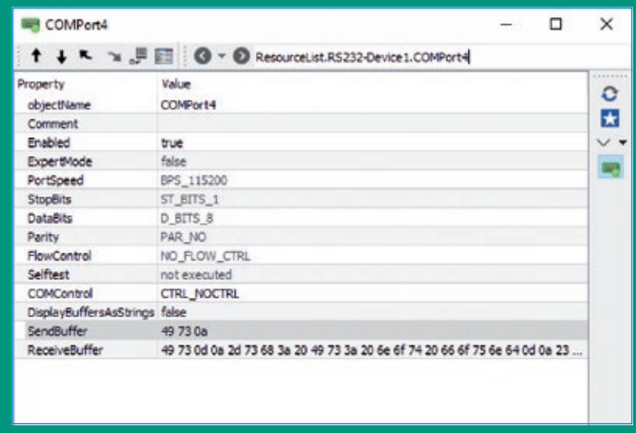
Extract of currently supported PBA.pro 3rd party and utility components:

- 10G Ethernet Monitoring
- Ethernet UDP/TCP Sockets
- Serial RS232, RS422, RS485 COM Ports
- Digital I/O
- Analog I/O
- User Administration Utility Component
- Microsoft Flight Simulator

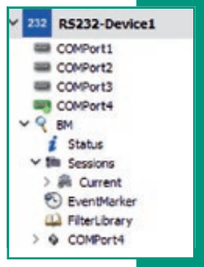
Further PBA.pro 3rd party or utility components can be offered on request.
Please contact AIM for details.

Functions

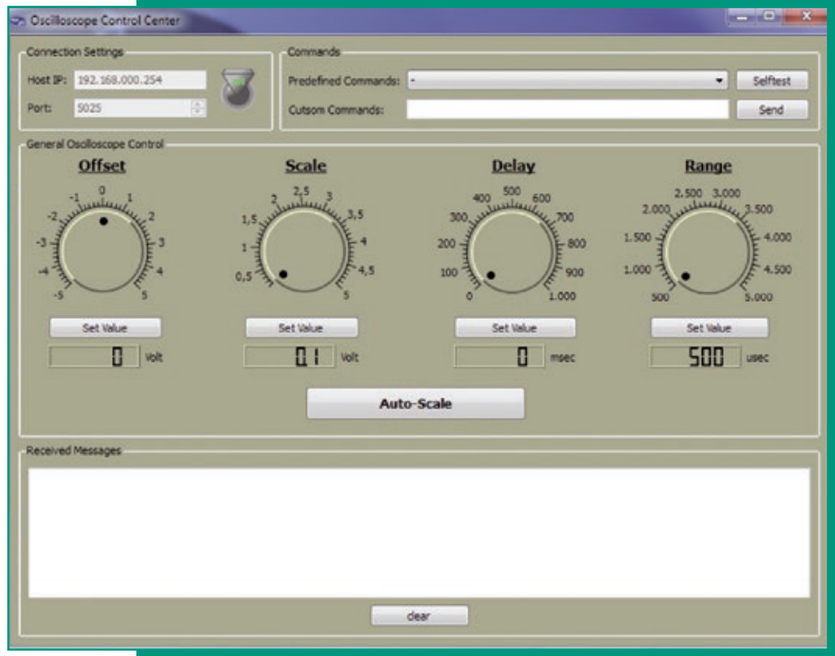
COMPort4



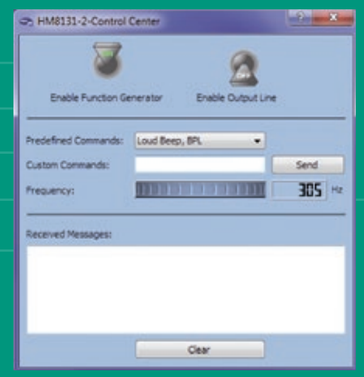
RS232-Device



Oscilloscope Control Center



Function Generator Control Center



PBA.pro™
Customer Components

Get Plugged in

The open PBA.pro concept supports an efficient integration of customer written PBA.pro components representing a certain customer or application specific functionality.

This can be either purely software related or for the support of customer specific or further 3rd party hardware interfaces. Those components can easily benefit from lots of existing PBA.pro core features like the default GUIs for interactive use or scripting interfaces for automated use of the customer component via the PBA.pro Test and Script Manager.

As a part of the ▶ **PBA.pro Training packages**, a dedicated workshop for PBA.pro Component programming can be booked (C/C++ programming knowledge required).

Add Hardware
Add Software
Custom Widgets
Complete Integration

PBA.pro™
Remote Control

Take control

The PBA.pro Remote Control offers the control of the PBA.pro via a TCP/IP socket connection and an open communication protocol. This can be performed by any TCP/IP capable system, independent from the Controller's operating system.

The communication protocol for the PBA.pro Remote Control is derived from the PBA.pro's scripting concept, therefore the Remote Control capability is an integral part of the PBA.pro ▶ **Test and Script Manager** component.

Via the Remote Control, a PBA.pro setup can be done either by setup and control every component and its objects from scratch, or by simply commanding PBA.pro to load existing projects, databases etc.An explicit enabling of the Remote Control on the PBA.pro system which is to be controlled, addresses the locking against unauthorized use.
With these features, PBA.pro based systems can be easily integrated into bigger test system infrastructures.

PBA.pro™ Applications

Test System

Aircraft Ground Equipment

Data Acquisition Recording, Simulation System

High Level Bus Analyzer

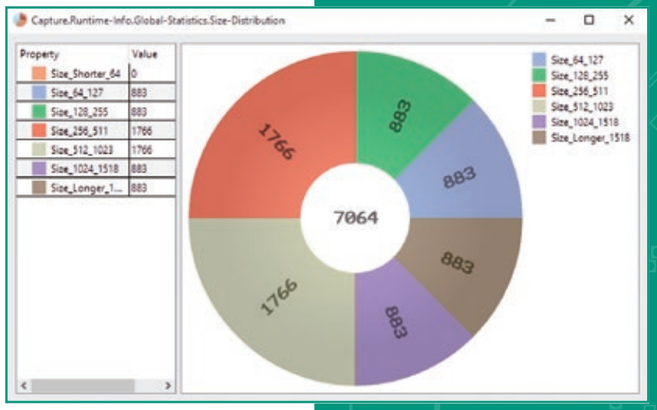
More than just a Tool

With the component approach and flexible customization capabilities via the Designer and Test and Script Manager, more closed and dedicated PBA.pro Applications can be imple-mented based on the PBA.pro framework and its components.

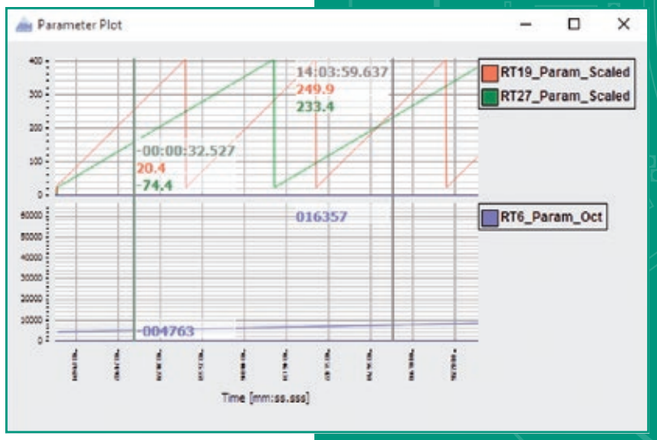
Customer application specific Scripts, Panels and Dialogs e.g. support user skill level specific GUIs in a wide variety from a simple GO/NOGO Tester, Parameter Viewer to more complex Data Acquisition and System Integration PBA.pro Applications based on the powerful PBA.pro. The ▶ **User Administration Utility Component** and a flexible license model with a Runtime license type, address typical needs for closed and dedicated PBA.pro Applications without losing the interactive PBA.pro tool capabilities, if required.

- MIL-STD-1553 RT Validation
- Custom ATP
- AFDX® Test Plans
- Flight Test Units

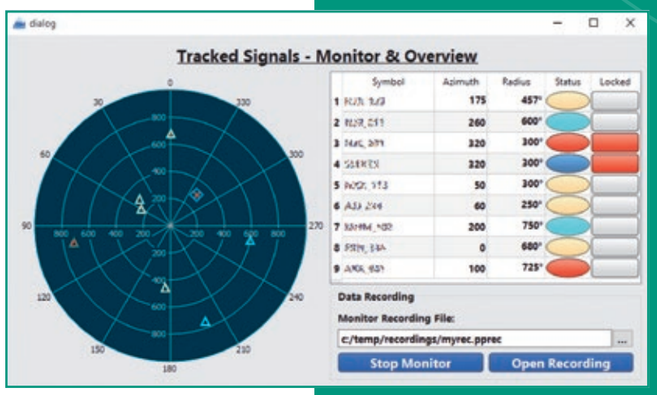
Functions



Engine Control Display



Parameter Plot



Tracking Display

PBA.pro™ Light

Lighten Your Testing

As the name implies the ▸ **PBA.pro Light** is the reduced function option for the PBA.pro. The 'cut back' version has been deployed to realize simple or reduced application and system needs.

Pre-configured displays are offered to visualize and control the essential information and data of interest providing only a subset of the full PBA.pro functionality using Runtime Mode. The PBA.pro Light is the simple to use, quick and easy one-click solution covering many typical user cases with the underlying core features of the PBA.pro. Upgrade to the full PBA.pro functionality is possible at any time.

The main features of the PBA.pro Light include:

- One-click solution solves typical use cases like:
  - Basic Resource resp. Interface Board setup
  - Basic Resource resp. Interface Board control
  - Data Monitoring and Recording
  - Data Visualization
- No in depth PBA.pro knowledge needed for fast and effective solutions
- Performance remains the same – reduced function set only
- Look and feel of the displays just like the PBA.pro full version for an easy upgrade to the full version
- Can be further customized
- Upgrade to full version available
- Offered for:
  - MIL-STD-1553
  - AFDX®/ARINC664P7
  - ARINC429

PBA.pro-FD-Client

Share Your View

The ▸ **PBA.pro-FD-Client** option allows the use of 1 or more PBA.pro Clients on the same network (LAN).

A Standard PBA.pro is acting as a Master and can serve the data bus information to 1 or more PBA.pro Clients, which can have their individual database and setups for monitoring and visualization of data bus traffic and associated parameters. This allows sharing of acquired data bus information between multiple users, which can configure their PBA.pro Client targeted to their individual needs. Further automation capabilities of the ▸ **PBA.pro Test and Script Manager** are also available on the PBA.pro Clients for a maximum of flexibility and efficiency on your testing task.

Training and Services

Get Your Certificate

AIM offers a range of training courses for PBA.pro users at all levels. Comprehensive training courses are conducted by expert trainers and can be adapted to individual needs and requirements. Furthermore, special tool customization and development services can also be offered.

PBA.pro Training Courses:

- Basic PBA.pro Tool Introduction – (1 Day)
- In depth PBA.pro workshop focussing on the customer's specific interests – (2 Days)

Full Service Website

The ▸**www.aim-online.com** website provides our customers with the very latest product information, technical support, databus tutorials and a rich and powerful download resource maximizing the investment and use of AIM products with an exceptional online experience.

We serve our customers online features including support for mobile platforms, a product filter and finder plus access to downloads for product related documentation and software directly from the product page.

The website also supports a quick and efficient routing of all ▸**your online requests** to your AIM sales representative and the AIM technical support team at the head office.

Visit us at ▸aim-online.com!

AIM Office Contacts:

AIM GmbH
Sasbacher Str. 2
D-79111 Freiburg / Germany
Phone +49 (0)761 4 52 29-0
Fax +49 (0)761 4 52 29-33
sales@aim-online.com

AIM GmbH – Munich Sales Office
Terofalstr. 23a
D-80689 München / Germany
Phone +49 (0)89 70 92 92-92
Fax +49 (0)89 70 92 92-94
salesgermany@aim-online.com

AIM UK Office
Cressex Enterprise Centre, Lincoln Rd.
High Wycombe, Bucks. HP12 3RB / UK
Phone +44 (0)1494-446844
Fax +44 (0)1494-449324
salesuk@aim-online.com

AIM USA LLC
Seven Neshaminy Interplex
Suite 211 Trevose, PA 19053
Phone 267-982-2600
Fax 215-645-1580
sales@aim-online.us

AIM Representative: