# INTECRIO V5.0.2
# What’s new

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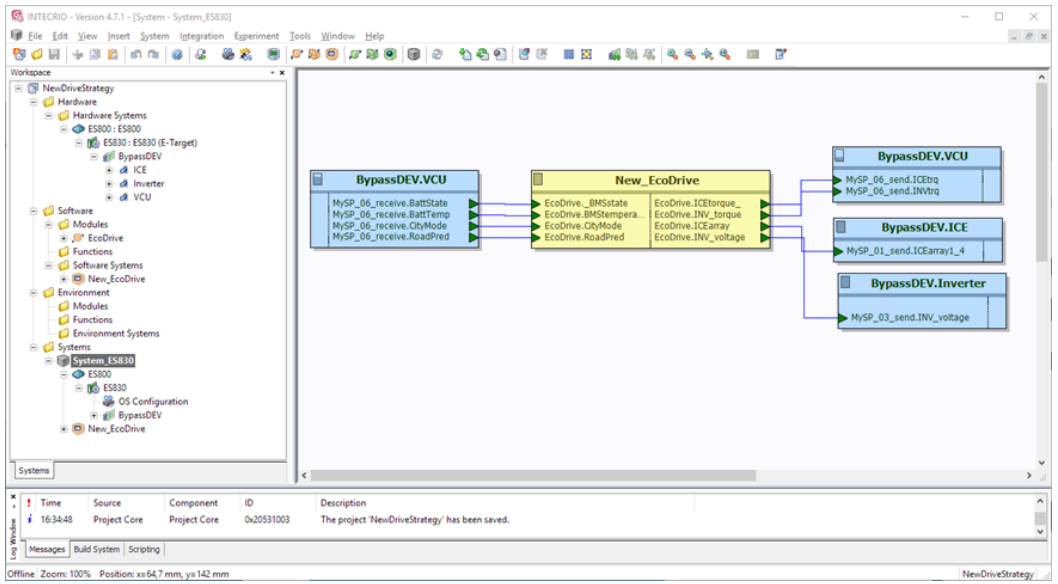
# What’s new INTECRIO V5.0.2

## Content





# What’s new INTECRIO V5.0.2

## Overview

New features in this version:

– CDFX file generation to enable Offline Calibration with INCA-EIP
– ARXML Importer for CAN & FlexRay
– Support of Simulink R2021a/b
– Check on A2L import if A2L file was prepared with EHOOKS
– Support of TAB_INTP CompuMethod for A2L files



# What’s new INTECRIO V5.0.2

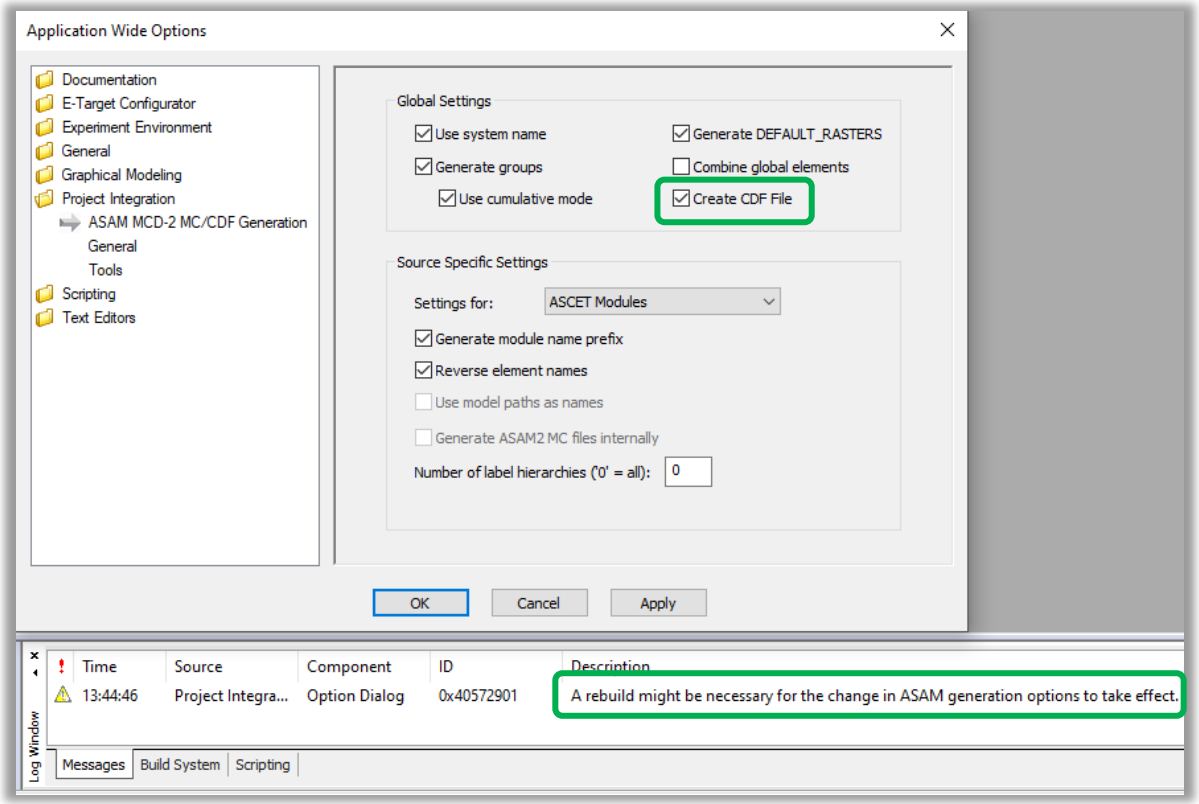
## CDFX file generation 1/3

In the “Application Wide Options” you can enable “Create CDF File” in the “ASAM MCD-2 MC/CDF Generation” settings.

If this option is enabled a CDFX File is created by system build in addition to the A2L and COD file in the results folder.
Default setting is disabled.

The CDFX file contains the initial values of variables and characteristics of your INTECRIO system.

It can be used to create an initial data set in INCA-EIP when project is imported in INCA-EIP.



# What's new INTECRIO V5.0.2

## CDFX file generation 2/3

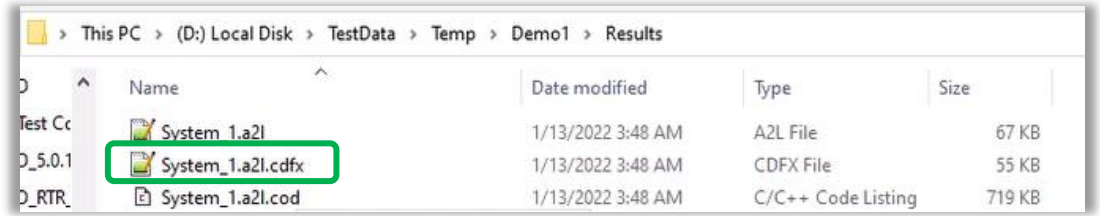
The created CDFX File has the same base name as the COD and the A2L file.

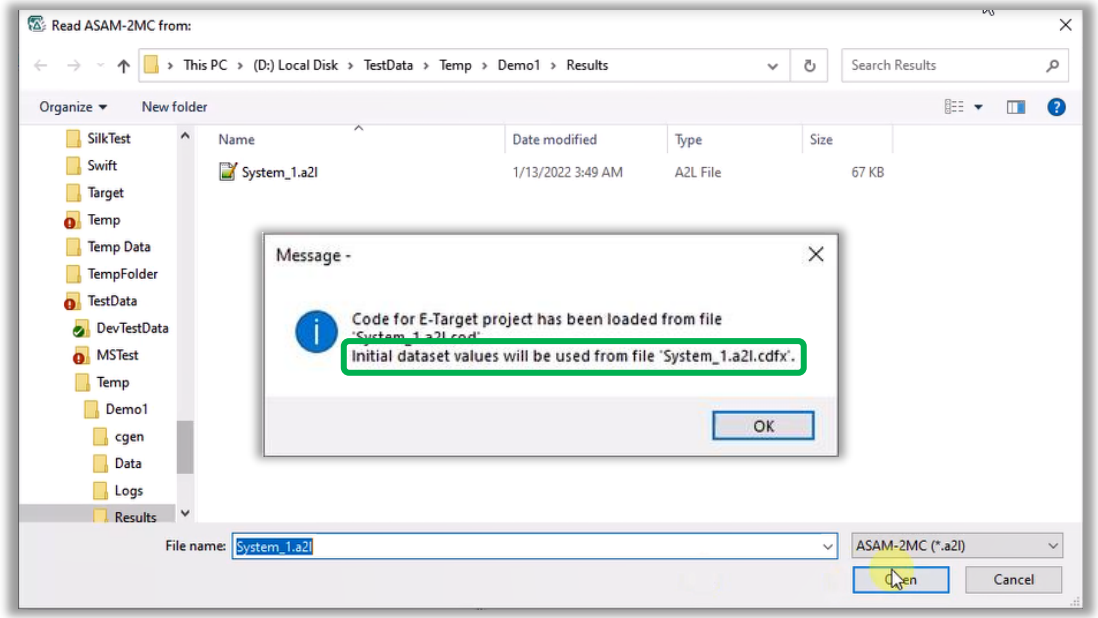
If a CDFX file with the same name is available, it is automatically imported in INCA-EIP together with the generated A2L and COD file. An initial data set is created and can be used for calibration directly after import.

When using a CDFX file it is not needed to connect a Simulation-Controller (ES830 or ES910) to create an initial data set in INCA.

See INCA-EIP manual for further information.

The CDFX Format is standardized by ASAM CDF.



# What’s new INTECRIO V5.0.2

## CDFX file generation 3/3

**Restrictions for CDFX file generation:**

– Initial values from ASCET can only be processed correctly, if they are defined in the physical domain.
– Adaptive Characteristics do not support initial values and thus they are not created in the CDFX file.
  This is particularly relevant for INTECRIO hardware send signals, which are configured as adaptive characteristics in order to allow calibration in case they are not connected to the model. Also for these, no value will be created in the CDFX file.
– When using ASCET models, at least SCOOP-IX generation version 1.5 needs to be used as a prerequisite for CDFX file generation. ASCET code generation needs to be configured accordingly.
– In Simulink models only column-major mode is supported for 2D lookup tables and parameters.

**Hint:** If an E-Target hardware (ES910 or ES830) is connected, the initial values are uploaded from the connected E-Target hardware. The E-Target hardware values are always the master and the imported CDFX values will be overwritten. However, before overwriting the datasets, the Memory Page Manager displays a message that the datasets differ. You can change the Action from Upload to Download to avoid overwriting.
For further information please check INCA-EIP manual.

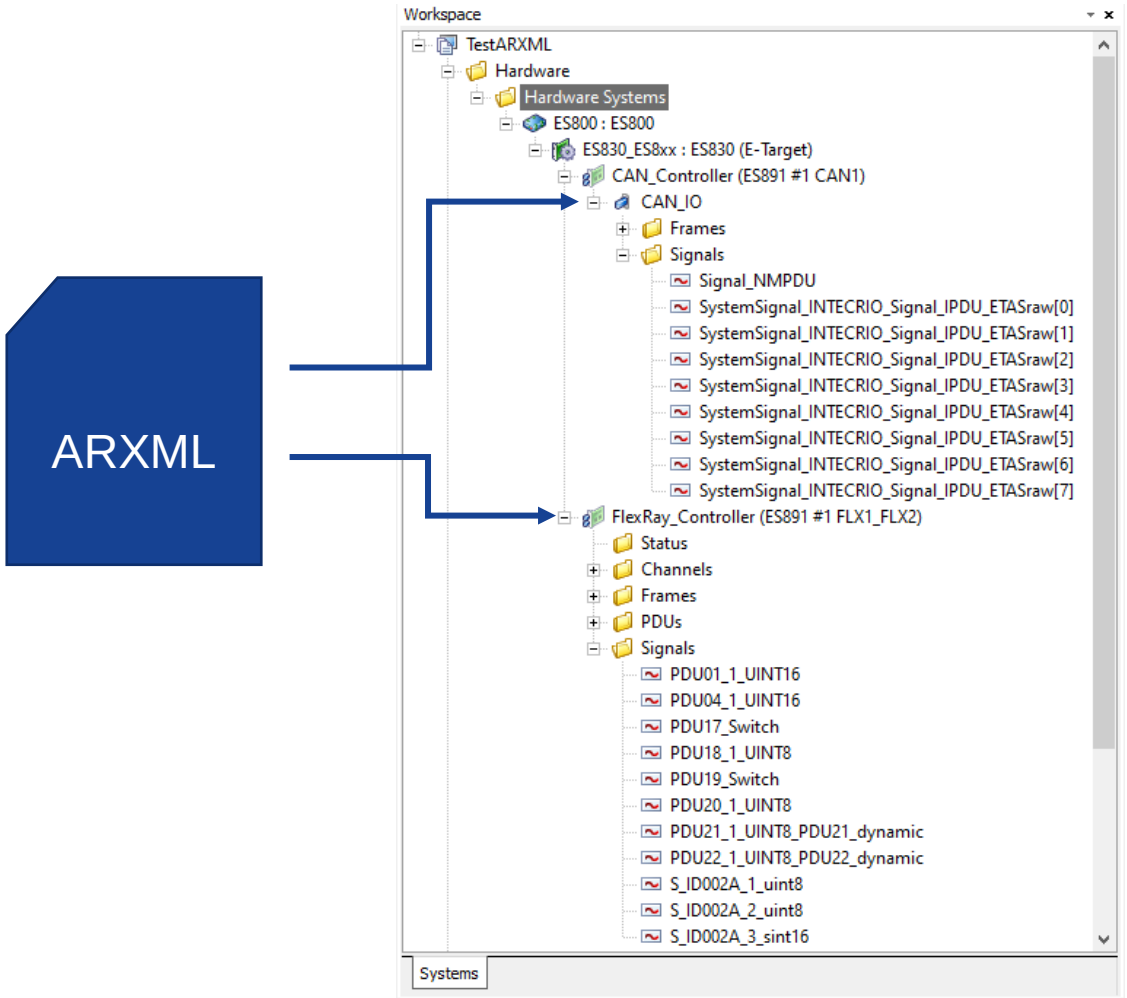
# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 1/10

INTECRIO now supports the import of CAN and FlexRay configurations from AUTOSAR ARXML files.

ARXML files can be selected in the file selection dialog in addition to CANdb and FIBEX XML files.

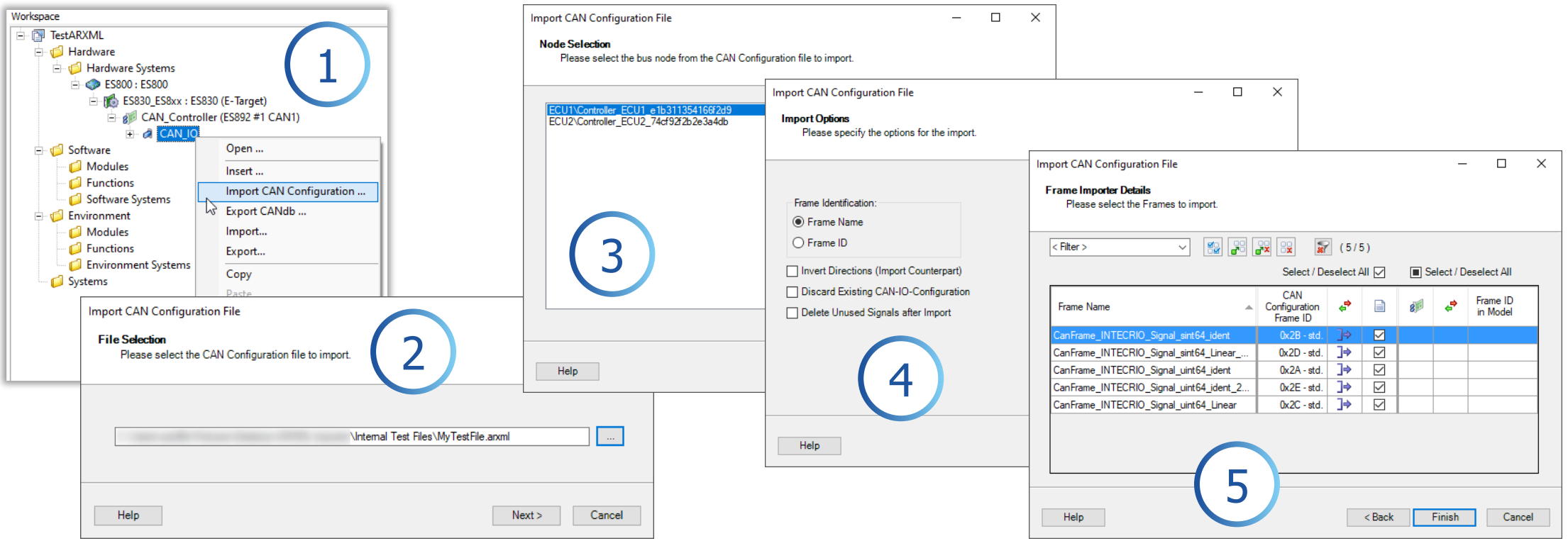
The Import process of ARXML files is identical to the import of CAN/FlexRay configurations with CANdb/FIBEX files.



# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 2/10

The import of ARXML files is identically to the import of CAN/FlexRay configurations with CANdb/FIBEX files.



# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 3/10

INTECRIO is a Configuration and Integration Tool for Rapid Prototyping. Focus is on flexibility and on fast modifying and testing algorithms. The focus of AUTOSAR and ARXML files is very different.

INTECRIO is not based on the AUTOSAR Architecture and therefore cannot support all mechanisms and features of AUTOSAR ARXML files.

AUTOSAR ARXML files are much more than a simple replacement for CANdb and FIBEX files!
They often contain specific AUTOSAR functionalities that are not possible with CANdb and FIBEX files.

The following pages list the most important topics to be considered when using ARXML files for FlexRay and CAN configuration in INTECRIO.

# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 4/10

General topics:

– **All frames defined in the ARXML file will be imported in INTECRIO.** No Frames are skipped, but some Frame types, PDU types and Signal types will be handled in a special way.

– PDU and Signal Update Bit for CAN are not supported

– Signal Update Bit for FlexRay is not supported

– AUTOSAR PDU-Triggering/Signal-Triggering is not supported.
Timing specification for sending and receiving from ARXML file are ignored (for example: every 10 ms, only if value is changed, only if signal has dedicated value, … ).
INTECRIO OS Auto mapping feature maps all CAN signal groups to the fastest timer task which is usually 10ms task.

– Imported ARXML bus configurations are sometimes quite large and can exceed the maximum number of frames and signals supported by the RP system (INTECRIO/ES910/ES830). A build of the system is not possible then. The number of frames of affected bus nodes need to be reduced by disabling (CAN) or deleting (FlexRay) frames or slots.

# What’s new INTECRIO V5.0.2

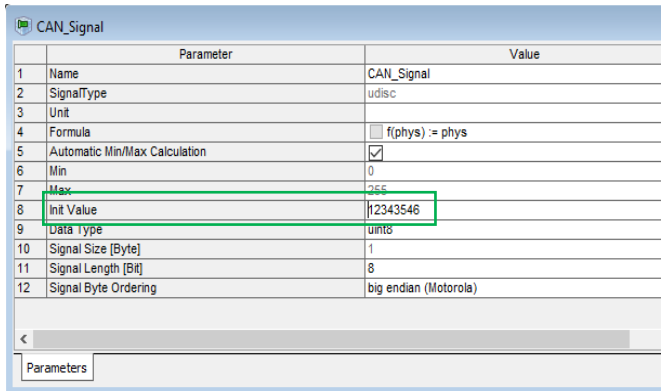
## ARXML Importer for CAN and FlexRay 5/10

Further restrictions:

**Initial Values:**

For the definition of initial values two options are possible in ARXML:

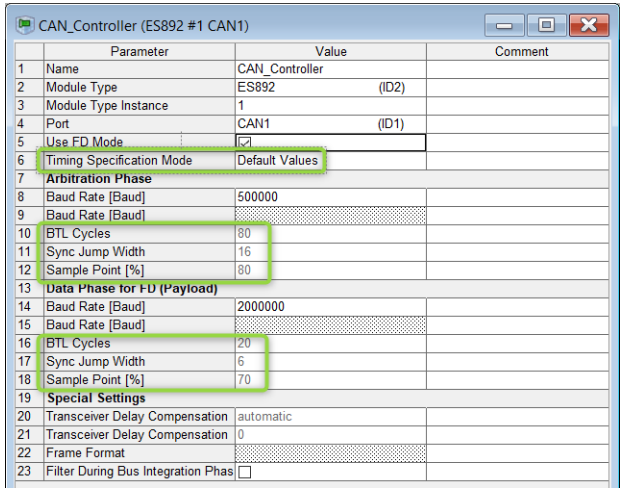
1. Default value of CompuMethods can be imported by INTECRIO.
2. INIT-VALUE assigned to ISignals cannot be imported in INTECRIO, initial value is set to 0 (zero) or the smallest allowed number.
   Workaround: Init values can manually be entered in INTECRIO.




**Extended CAN(FD) Controller Settings:**

– Currently only the baud rate for arbitration and data phase is imported

– CAN Bus parameter definitions of type
CAN-CONTROLLER-CONFIGURATION
CAN-CONTROLLER-FD-ATTRIBUTES
CAN-CONTROLLER-CONFIGURATION-REQUIREMENTS and
CAN-CONTROLLER-FD-REQUIREMENTS are not supported.



# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 6/10

The following ARXML **PDU types** are not fully supported and treated in a special way:

**ContainerPDUs** cannot be handled automatically by INTECRIO. They are imported as disabled, the PDU data is imported as a sequence of one byte raw signals (unsigned bytes with IDENTICAL CompuMethod), „_ETASraw[i]“ is added to the signal names.

**SecuredPDUs** are imported in INTECRIO. In general the payload is not encrypted and the imported signals can be directly used in the model. The checking and calculation of Checksums and Alive Counters is not supported. The appropriate signals needs to be handled manually in model.

**Special purpose PDUs:**
These are for example: Dcm PDUs(Diagnostic Communication Manager), J1939 Dcm, Multiplexed PDUs, N PDUs (used internal for transport layer), Nm PDUs (Network Management), UserDefined PDUs and XCP PDUs
They have no signals defined in the ARXML file and are imported as disabled with one byte raw signals.

# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 7/10

Several PDU types are automatically imported as disabled Frames/PDUs in INTECRIO. See table below.
These are mainly PDUs without defined signals or special purpose PDUs that are not fully supported by INTECRIO.

| PDU type | CAN import | FLEXRAY import |
|---|---|---|
| ISignalPDU | enabled | enabled |
| DCMPDU | disabled | disabled |
| ContainerPDU | disabled | disabled |
| Secured PDU | enabled if payload is defined, otherwise disabled | enabled if payload is defined, otherwise disabled |
| UserIPDU | disabled | disabled |
| UserPDU | disabled | disabled |
| MultiplexPDU | disabled | disabled |
| NMPDU | disabled | disabled |
| NPDU | disabled | disabled |
| GeneralIPDU | disabled | disabled |
| GeneralPDU | disabled | disabled |
| XcpPDU | disabled | disabled |
| J1939PDU | disabled | skipped |

If these disabled PDUs/Frames are to be used for Rapid Prototyping, they can be enabled, but the user must take special care in the model to handle these PDUs/Frames/Signals correctly.

# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 8/10

The following ARXML **Signal types** are treated in a special way by INTECRIO.

**Arrays** are split into sequence of single element signals, „[i]“ is added to the signal names

**Strings** (in all variations) are  treated like Arrays, element signal type is set to uint8 or uint16.
Model can access Strings character wise.

**Alive Counter and Checksum signals**  are imported in INTECRIO, but the calculation/checking of Alive Counter und Checksum signals are not supported for CAN. These have to be handled by the model.

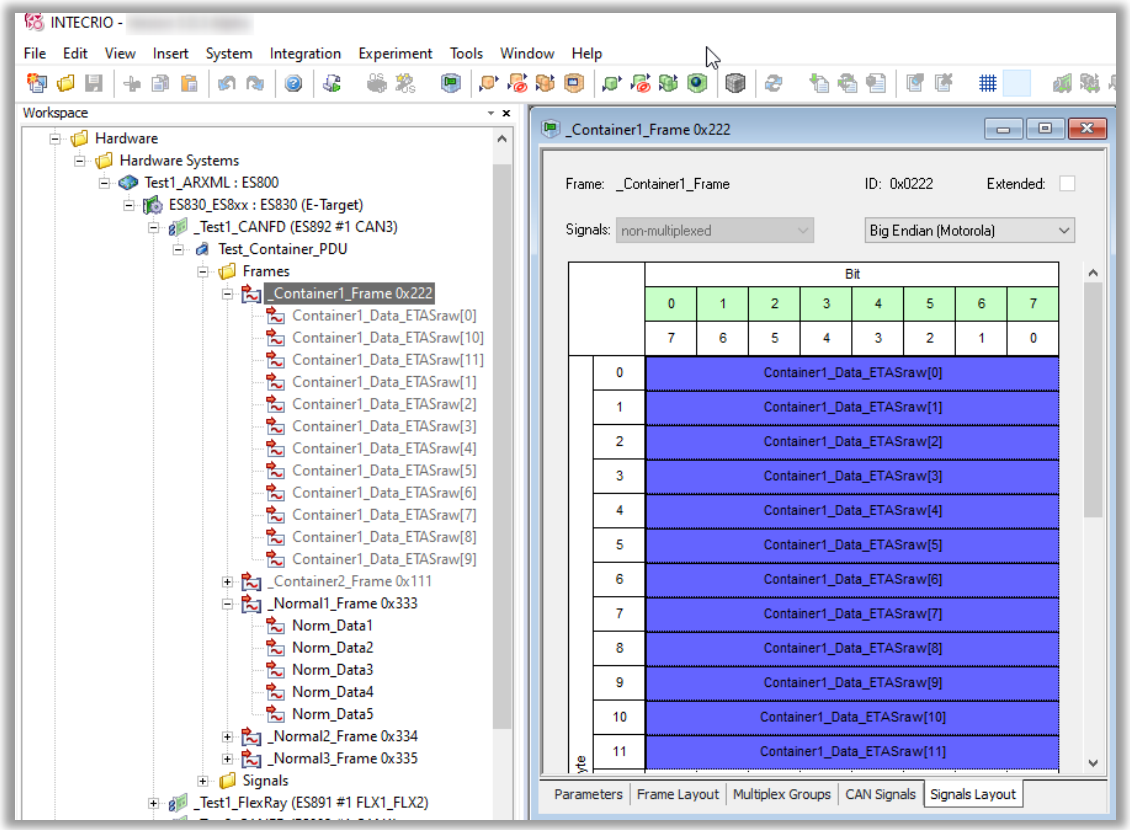
**64 bit integer signals** are split into a sequence of one byte signals (unsigned bytes with IDENTICAL CompuMethod), „[i]“ is added to signal name.

**Record** Signal type is a complex data type. All elements of a Record are imported as scalar signals.

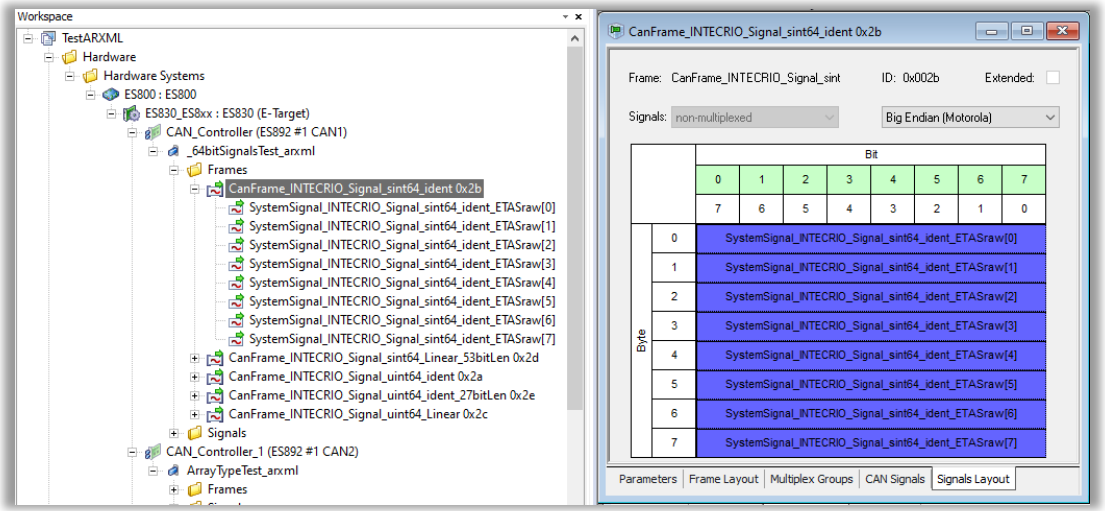
To all **signals** that **can not be represented correctly** in INTECRIO (e.g. several ranges with formulas, unknown CompuMethod, unknown data type, ….) „_ETASraw“ is added to the signal name and IDENTICAL CompuMethod is used. In this case a log message indicates that the user must take special care in the model to handle these signals correctly.

# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 9/10




Example: ContainerPDU, disabled (grey)




Example: Signal of Type 64bit Integer, split in 8 bytes

# What’s new INTECRIO V5.0.2

## ARXML Importer for CAN and FlexRay 10/10

Not all ARXML **CompuMethods** can be supported by INTECRIO.

**Supported:** IDENTITY, LINEAR, TEXTTABLE, BITFIELD_TEXTABLE

**Partly supported:** SCALE_LINEAR, SCALE_LINEAR_AND_TEXTTABLE, RAT_FUNC, SCALE_RAT_FUNC and SCALE_RATIONAL_AND_TEXTTABLE
INTECRIO can support this **only if it can be reduced to one simple linear formula**.
If additional to linear formula further TEXTTABLE entries are defined, then INTECRIO transforms these additional entries also along with the formula; the model code must be adapted if these values shall be used.

**Not supported:**
TAB_NOINTP, PHYS_TO_INTERNAL

For not supported CompuMethods the IDENTITY CompuMethod is used and the model is provided the raw signal value as long as the data type and data length can be evaluated. Log messages are displayed.

For **signals without CompuMethod** definition the IDENTITY CompuMethod is used and suffix “_ETASraw” is added to the signal name. Log messages are displayed.

# What’s new INTECRIO V5.0.2

## Matlab®/Simulink® version support for R2021a/b

In total, INTECRIO V5.0.2 Beta supports the following Simulink versions:

- Simulink R2016a and R2016b
- Simulink R2017a and R2017b
- Simulink R2018a and R2018b
- Simulink R2019a and R2019b
- Simulink R2020a and R2020b
- Simulink R2021a and R2021b

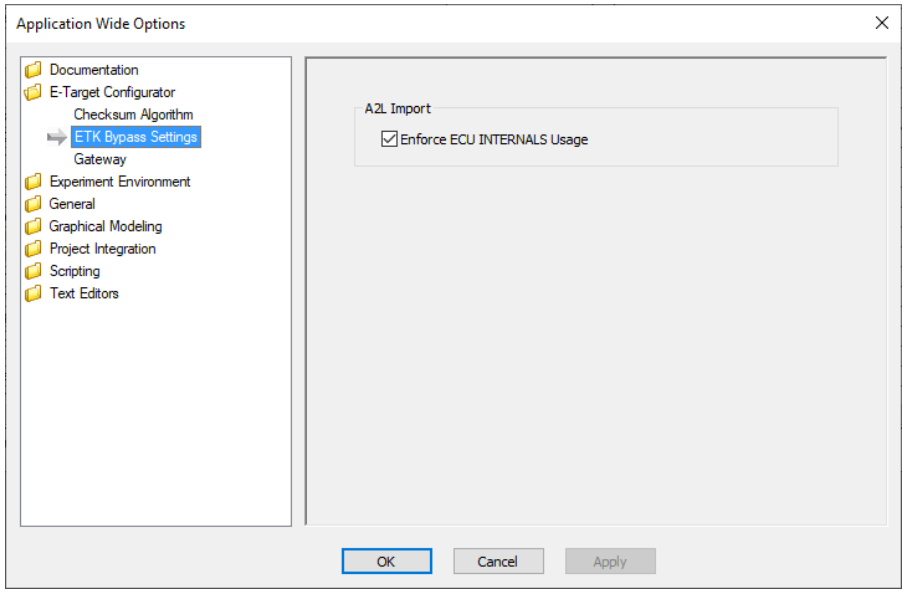
# What’s new INTECRIO V5.0.2

## A2L “ECU_INTERNALS” checking

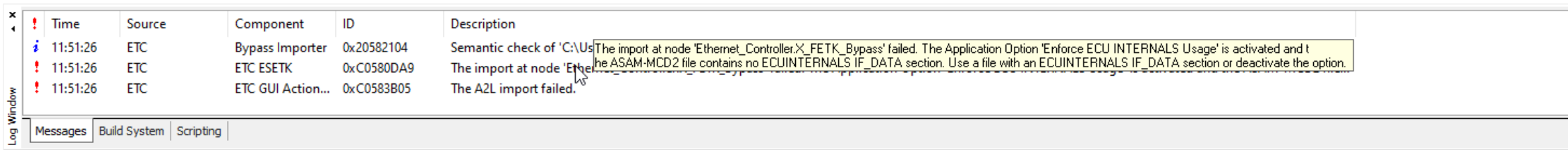
Some customers want to ensure that only EHOOKS prepared A2L files are used.

Therefore, the option “Enforce ECU INTERNALS Usage” was added to “ETK Bypass Settings” in the “Application Wide Options” dialog.

Default setting is “off”.



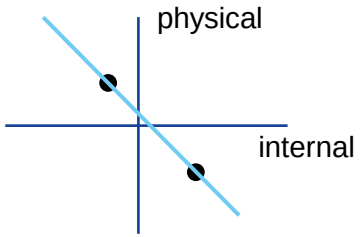

Message logs if option is enabled and no ECUINTERNALS section is contained in the A2L file



# What’s new INTECRIO V5.0.2

## Support of TAB_INTP CompuMethod for A2L files

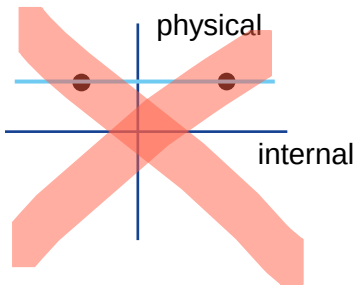
TAB_INTP CompuMethod: Table with interpolation between data points

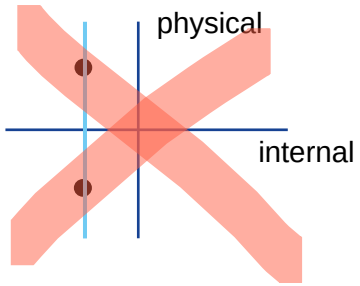


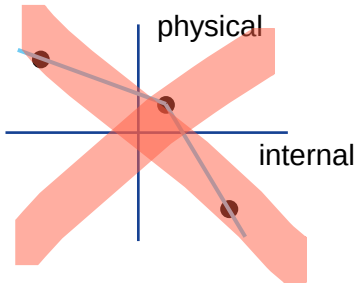

TAB_INTP CompuMethod is now supported for A2L files with following **restrictions**:

– Only two points are supported

– The two points must not have the same physical or internal values



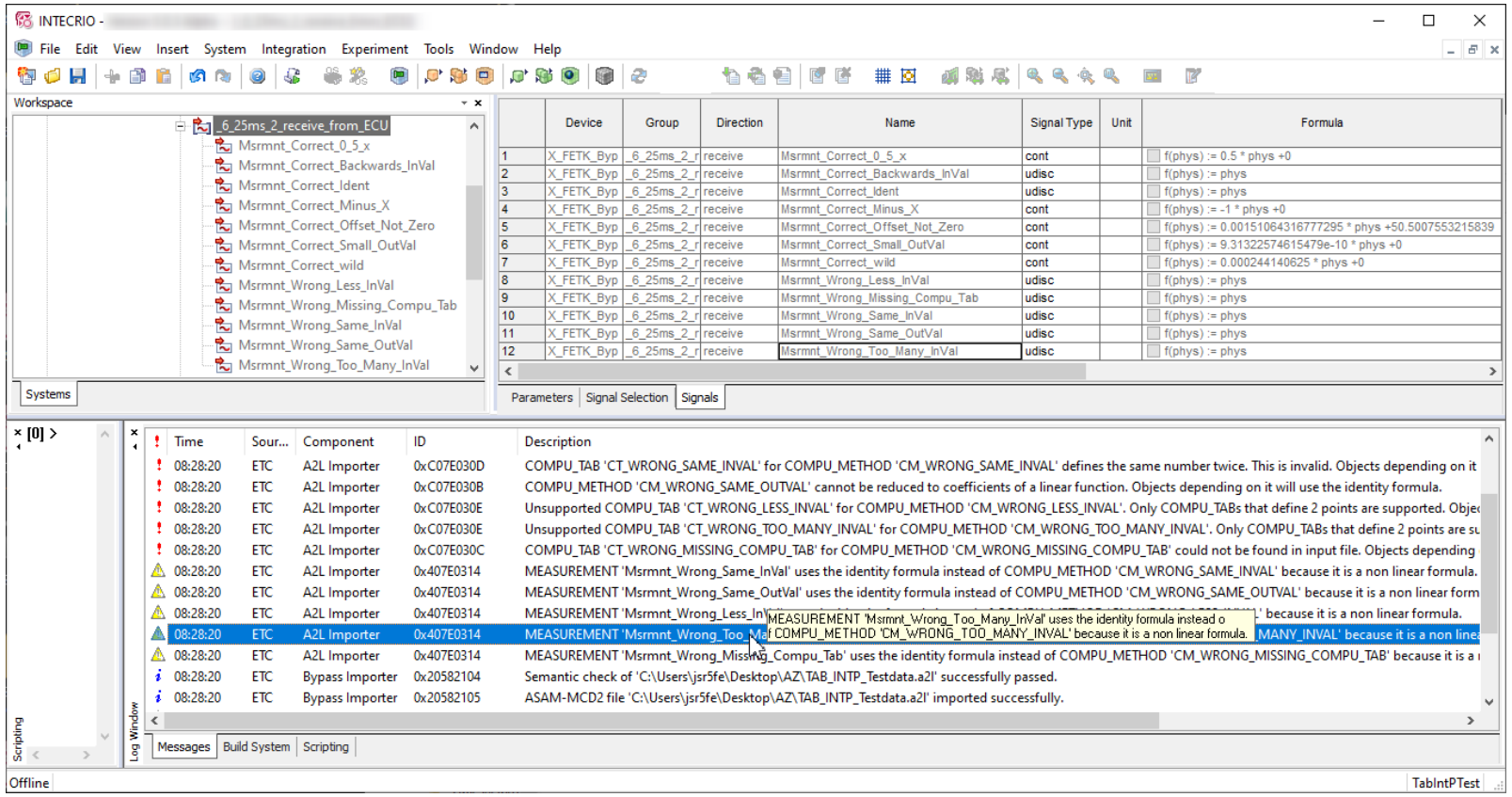




When the TAB_INTP definition is not supported by INTECRIO then the IDENTITY CompuMethod is used and a message is displayed in the log window.

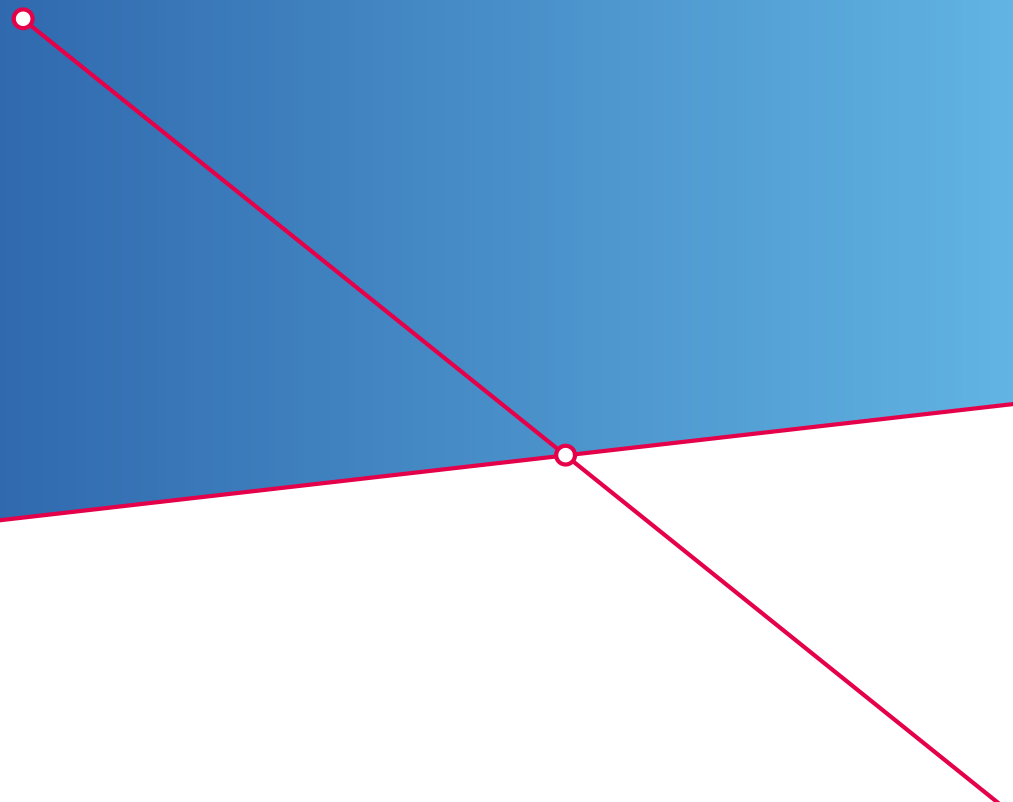
# What’s new INTECRIO V5.0.2

## Support of TAB_INTP CompuMethod for A2L files

For unsupported TAB_INTP definitions log messages with explanations are displayed.



# Thank you



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