imc WFT Assistant

The WFT-Plug-in provides a convenient Assistant for configuration of wheel force transducers, plus pre-made Panel pages designed for optimal display of measurement results.

⬥ Reference	Manuals for CRFX/WFT-2 and WFT-sensor

For info on utilization and operation of
- the CRFX/WFT-2 module, see the imc CRONOS Manual
- the WFT-sensor, see imc WFT Manual.

Prerequisites:
- Device software: imc STUDIO 5.2 R25
- The "imc WFT Assistant" is activated in the "*Product configurator*".
- Only one device may be selected for measurement.
- The base unit **CRFX-2000GP** is supported (**recommended: CRFX-2000GP-WFT**) with at least one WFT-2 module.
- When using remote control:
  - The **CRFX-2000GP-WFT** base unit is required. This special base unit includes a terminal for remote control.
  - Remote control requires 1 DIn-bit and 4 DOut-bits. For this purpose, the last bits of the respective port are reserved. They may not be utilized for any other purpose.
  - The control commands in imc Online FAMOS must be activated.
  - Timer 8 may not be in use.
- During configuration, the connection with the device must be active; no measurement may be running.

Opening the Assistant

Select the item "WFT" in the menu ribbon. The WFT Assistant is then displayed in a dialog.

Ribbon	View
Start > WFT (🔘)	all
Setup-configuration > WFT (🔘)	Complete

Menu item: WFT Load

- loads the previous configuration, if applicable
- checks whether any WFT-sensors are connected

When there are more than two WFT-2 modules, the first two module-IDs are always used.

The parameter "*Status*" lists the respective results.

Status	Color	Description
Active	green	sensor recognized • all channels are active and • all channel names match the [prefix/postfix-pattern] [2]
Connected	yellow	sensor recognized • not all channels are active, or • at least one channel name does not match the [prefix/postfix-pattern] [2], or • the serial number does not match that of the last one connected
Missing	red	sensor missing
Passive	transparent	no sensor recognized

> 🛈 **Note** **A different WFT-sensor is connected**
>
> When the WFT-sensor is connected, if its serial number does not match the serial number of the sensor, this sensor is displayed as "connected". Additionally, the serial number of the previously connected WFT-sensor is listed.
>
> When the sensor information is imported, the serial number in the experiment is updated so that in consequence, updating the configuration again causes the serial number to no longer be displayed!

Rename channels - Prefix/postfix-pattern

A WFT-sensor's channels can be renamed to feature a prefix before and a postfix after the specified middle portion of the name. Empty elements are allowed, as long as all WFT-sensors each have different names. Any changes to the channel names are highlighted in yellow.

> 🛈 **Notes** **Renaming via the Channels table not recommended**
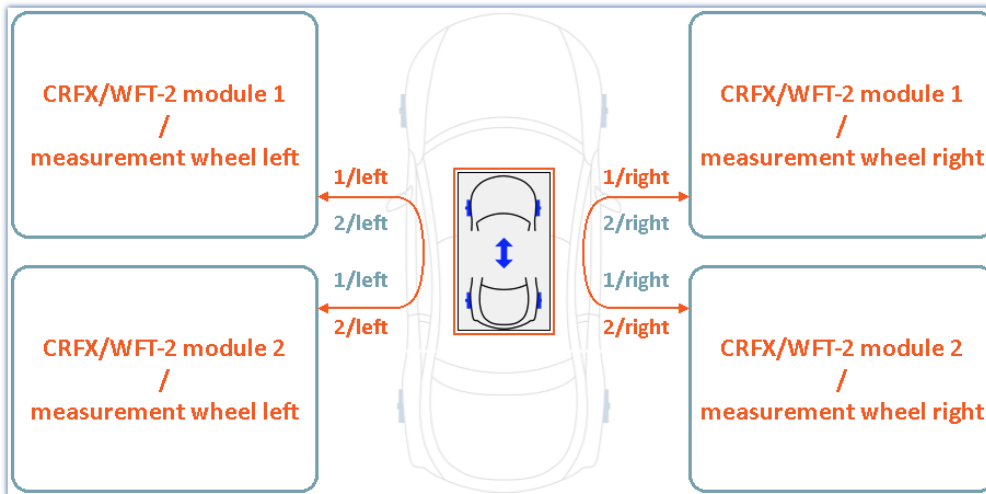>
> Changing the channel names in the Channels table is not recommended. The changes will be reversed upon the next call of the WFT-Assistant. Ideally you would use the prefix and postfix in order to be able to jointly modify the channel names of associated channels.

Positioning modules/sensors and modifying the axis configuration

Positioning of the WFT-modules and sensors is performed by means of the buttons in the middle of the Assistant.

Two WFT-modules

When using **two WFT-modules**, it is only possible to switch the assignment from front to back. A module having two sensors is always assigned to an axis.
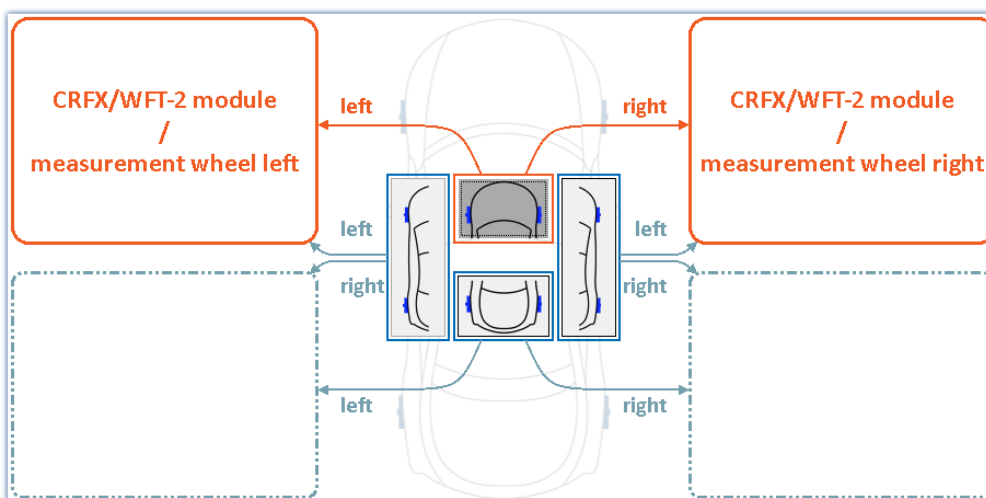

Two CRFX/WFT-2 modules, each with two wheel force transducers

One WFT-module

When using **one WFT-module**, the two sensors can be positioned in front, back, right or left.

When only one CRFX/WFT-2 module and a single-sided configuration (left/right side of vehicle) is used, the system automatically makes an internal correction to apply the reversal of the WFT's coordinate system to the new wheel position. For a configuration for the left vehicle side, the right-side sensor is corrected, and for a configuration for the right vehicle side, the left-side sensor is corrected.

One CRFX/WFT-2 module with two wheel force transducers

Correction of names upon change of axis assignment

When the axis assignment is changed in this way, the following actions are performed automatically:

- Default postfix names are automatically modified. For instance, if the sensor is now located at "**r**ear **l**eft", then "_fl" (**f**ront **l**eft) is automatically changed to "_rl".
  - Any manually modified postfix names remain unchanged. The channel names "migrate" with the axis assignment.
- Any manual changes to the channel names via the Channels table are reset (see notes on "*Renaming via Channels table* 2 ").
- Any missing or wrong names are replaced with the default names (e.g. "WFT_", "_fl").

Menu item: Apply Setup

Various actions are performed when the item "*Apply Setup*" is selected. The system checks the configuration and applies it in accordance with the "*Status*". The channels' names are set, and the actions for angle compensation are enabled. Closing options (Panel/Remote Control) can now also be enabled.

Status	Actions which depend on the Status	Additional actions
Active	all of the sensor's channels 1. are renamed, as defined by the prefix and postfix 2 and 2. are activated	3. if applicable, modification of the algebraic sign in case of single-sided configuration with only one WFT-2 module
Connected		4. channel parameter "*Balance at device startup*" is deactivated
		5. imc Online FAMOS source text of the remote control is deleted (see explanation regarding imc Online FAMOS 7)
Missing	all of the sensor's channels 1. are reset to their default names 2. are deactivated (passive)	6. if appropriate, the Digital-In/Out-bits used are reset to their default names
Passive		

⓵ Notes   Re-activating remote control

When remote control is used, it must be re-activated before closing the Assistant.

Menu item: Show Angle

The angles of the individual wheel force transducers are displayed. It is possible to check the position and, if appropriate, to adjust it.

- The button is active as soon as the current configuration is loaded.
- Only WFT-sensors having the Status "*Active*" are displayed. If necessary, first run the function "*Apply Setup*".

Menu item: Angular Zero

The spirit level angle adjustment is started. The Assistant guides you through the necessary steps. Once adjustment of the angle has been performed successfully, the display of the wheel force transducers should match the alignment of the wheel force transducers to the vehicle.
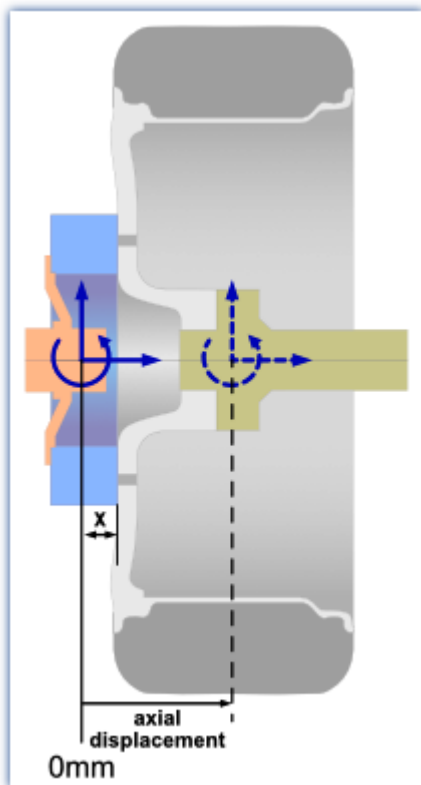
⬥ Reference	Spirit level angle adjustment
More information on the spirit level angle adjustment is presented in the WFT manual.	

Axial displacement

The wheel force transducer is not mounted axially in the center of the vehicle wheel, in consequence of which there is an offset along the wheel's axis (see graphic for axial displacement). Since the forces are exerted orthogonally to this axis, torque effects result in the x- and z-planes in proportion to the offset. If the offset is known, the software can compensate for the discrepancies.

Axial displacement

In order to apply a calculated shift of the coordinate system along the axis, follow the instructions in the dialog for the axial offset.

Menu item: Close

This performs concluding actions and closes the Assistant. There are two options for closing the Assistant: "*Remote Control*" and "*Panels*"

With "*Remote Control*" option activated:

- Activates the Remote Control (imc Online FAMOS-source text is integrated into the existing text - see explanations regarding [imc Online FAMOS](#) ⁷).
- The Digital-In/Out-bits are activated and renamed.
- The channel parameter "*Balance at device startup*" is activated for the active sensors.

With "*Panels*" option activated:

- The Panel pages are imported (and [overwritten if appropriate](#) ⁶).
- The channel names in the curve windows are modified according to the current configuration. Channels which are not active are deleted from the curve window.
  Any curve windows which no longer contain channels once the channel names have been replaced are hidden. Any Panel pages which no longer have visible curve windows after replacement of the channel names are deleted.

Panel page

There are pre-configured Panel pages which are imported when the pertinent option offered upon closing the Assistant is activated. These Panel pages are located in the following folder:

`"C:\Users\Public\Documents\imc\imc STUDIO\WFT"`

The pages are named according to the following pattern: "WFT_WIDGET_*.dbv". If no pages exist there yet, they will be newly created there by the WFT-Assistant.

> ⓘ Notes   Pages with "WFT_WIDGET_" in their name will be overwritten
>
> Upon importing, any Panel pages having the same internal "Name" (not the same "Title") as one of the pages to be imported are deleted without any warning message and replaced with the new page. If you do not intend for the pages generated by the WFT-Assistant to be deleted, the internal "Name" of the page must be changed. The WFT-Assistant does not change or delete any pages which do not match the name pattern.

Changing the templates

The Panel page templates can be modified and changed in accordance with your personal wishes. During import, the channels in the curve windows are assimilated to the current names of the channels. For this purpose, the names specified must adhere to the following pattern:

`"WFT_WIDGET_*_FL"`, `"WFT_WIDGET_*_FR"`, `"WFT_WIDGET_*_RL"`, `"WFT_WIDGET_*_RR"`

The asterisk * stands for the channel name in English (e.g. "Angle", "RPM", "Revs"). Important! Only the channels in the **curve windows** are replaced by the WFT-Assistant! Other Widgets remain unaffected.

Deleting templates

Individual Panel-files can be deleted from the folder. They are then no longer imported by the WFT-Assistant. Only once there is no longer any pertinent Panel-file present will the WFT-Assistant save the files in the folder again.

Preallocation of the Digital In/Out-bits

Remote control requires 1 DIn-bit and 4 DOut-bits. For this purpose, the last bits of the respective port are allocated automatically. In order for the bits to be recognizable by the WFT-Assistant, they are renamed accordingly.

imc Online FAMOS

Some of the remote control options require their own imc Online FAMOS-source text. For this purpose, the existing imc Online FAMOS-source text is modified. The WFT-Assistant modifies only regions within the keywords `;WFT_WIDGET` and `;/WFT_WIDGET`. The other regions remain unchanged and can be used as accustomed. Only the "Timer (8)" is needed. This may not be used for other purposes.

The control commands are used and must be activated manually. In order for exchange of the source text to be possible, the control commands must be uniquely identifiable. For this reason, please do not insert any comments in the control command's keyword line. The source text elements are always inserted at the beginning of a control command by the WFT-Assistant. Any control commands which are not yet present are appended at the end.

The template for the imc Online FAMOS-source text is saved in the following folder:

`"C:\Users\Public\Documents\imc\imc STUDIO\WFT"`

The template may not be changed. If the file is missing, it is saved there again upon the next start of the WFT-Assistant. Additionally, all temporary files such as the exported and unmodified imc Online FAMOS-file are saved there.

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imc ACADEMY - Training center

The safe handling of measurement devices requires a good knowledge of the system. At our training center, experienced specialists are here to share their knowledge.

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