CANary FD CAN Channel Settings

The CANary FD offers 4 CAN channels that support Flexible Data Rate CAN networks (CAN FD) in a compact, ruggedized enclosure. Each of the 4 CAN channels are galvanically isolated from channel to channel and USB to channel to provide better signal integrity. In addition each of the channels can be configured in the CANary FD CANChannels settings tab. The channel settings are minimal and consist of the configurations under the Bus Setup and the Bit Timing Setup groups.

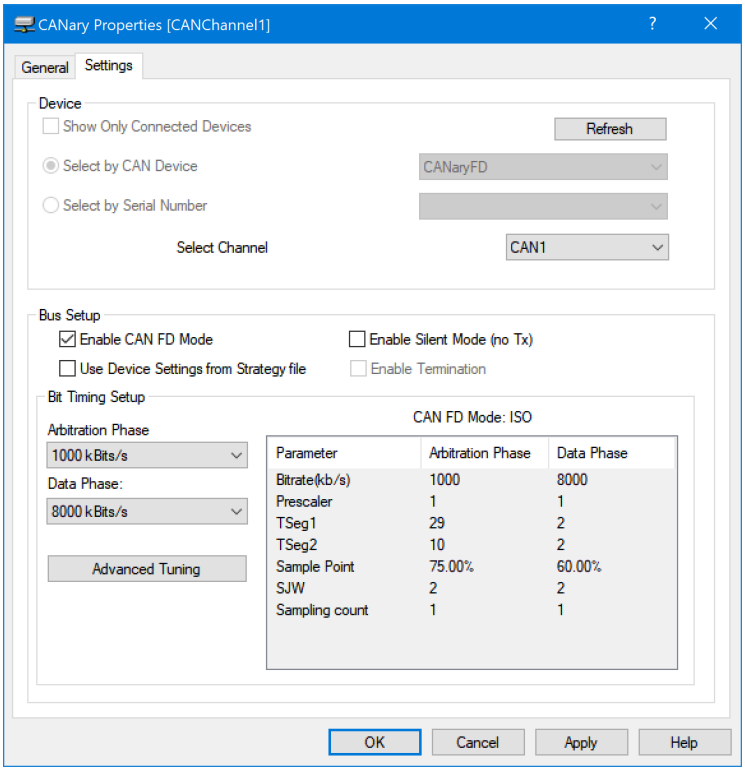
The CANary FD CAN Channels properties window contains two tabs, General and Settings, that can be accessed via selecting the CANary's CANChannel and pressing the "F6" key or by right-clicking on the CANary CANChannel and selecting "properties" from the context menu.

Devices Group: Some settings within this group are disable and not available for the CANary FD.

- **Select Channel:** Enables selecting an unassigned channel from the drop-down list. Unassigned channels appear when the channel has been removed from the VISION Device Tree (refer to section "Assigning CANChannels" for information).

Bus Setup Group

- **Enable CAN FD Mode:** Enables FD mode on the CANary FD. Unselected, the CANary FD runs in "Classic CAN" mode. Option also enables additional configuration settings in the "Bit Timing Setup sub-group."
- **Use Device Settings from Strategy file:** Device settings from the strategy file are used to configure the CAN interface. Manual configuration in the "Bit Timing Setup sub-group" is disabled.
- **Enable Silent Mode (no Tx):** Enables the CANary FD CAN device to only monitoring CAN messages and prohibits sending Tx (transmission) messages.
- **Enable Termination:** Option disabled for the CANary FD. Termination is manually set on the CANary FD device (refer to section "CANary FD Termination" for information).



Bit Timing Setup Sub-Group

- **Arbitration Phase/ Data Phase:** Configures the data bit rate speed for the CAN device during arbitration. Field name and settings are dependent upon the "Enable CAN FD Mode" option state.
  - **Arbitration Bit Rate range (Classic CAN):** 33.333 kBits/s to 1000 kBits/s.
  - **Arbitration Bit Rate range (CAN FD enabled):** 100 kBits/s to 1000 kBits/s.
  - **DataPhase Bit Rate range (CAN FD enabled):** 1000 kBits/s to 8000 kBits/s.
- **Advanced Tuning Button:** Opens the "Advanced Bus Tuning" settings to enable custom configuration of the CAN Channel.
- **Setup Summary:** (read only) Displays the configured "Bitrate" settings. When "Enable CAN FD Mode" is active (checked), the displayed information is as shown in the above image.

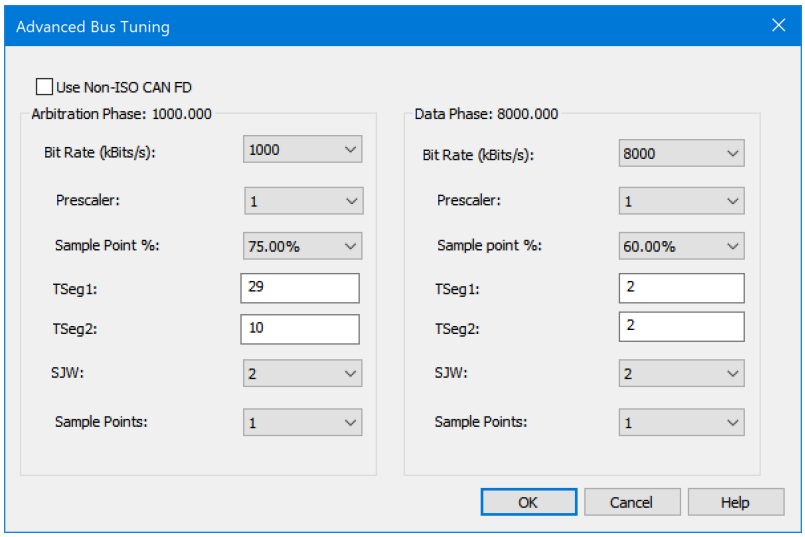
Advanced Bus Tuning Settings

Selecting the "Advanced Tuning" button opens the "Advanced Bus Tuning" window which enables configuring the CAN bus timing, prescaler, Tseg1, Tseg2, SJW, and number of sample points for the "Arbitration Phase" and the "Data Phase" section. Modifying the sub-configurations sets the "Bit Rate (Kbits/s)" field to "Custom." When the "Enable CAN FD Mode" option is deselected, then the "Arbitration Phase" settings are mirrored in the "Data Phase" section.

Use Non-ISO CAN FD: Enables the use of the Non-ISO compliant CAN FD protocol. Option is only available when the "Enable CAN FD Mode" option is selected on the "Settings" tab.

Arbitration Phase: Displays the "Bitrate" settings configured on the "Settings" tab.

Data Phase: Displays the "Bitrate" settings configured on the "Settings" tab when the "Enable CAN FD Mode" option is selected.



- **Bit Rate (Kbits/s):** Configures theCAN device data bit rate speed.
- **Prescaler:** Select the CAN hardware prescaler to determine the time quanta value. Prescaler settings range is based on the selected "Bit Rate."
- **Sample Point %:** Select the sample point location within the CAN bit timing. TSeg1 and Tseg2 settings automatically adjust based on the selected "Sample Point %" (refer to next section "Configuring the Advanced Tuning Settings" for details on the "TSeg1" and "Tseg2" fields).

- **Sample Point %:** Select the sample point location within the CAN bit timing. TSeg1 and Tseg2 settings automatically adjust based on the selected “Sample Point %” (refer to next section “Configuring the Advanced Tuning Settings” for details on the “TSeg1” and “Tseg2” fields).
- **SJW (Synchronization Jump Width):** Select the maximum allowed time quanta change to the phase segments of the nominal bit time from the options in SJW drop-down list.
- **Sampling Points:** Select “1” or “3” sampling points to use during the nominal bit time. Setting “3” will reduce error probability, but adds delay in signal processing.

Configuring the Advanced Tuning Settings

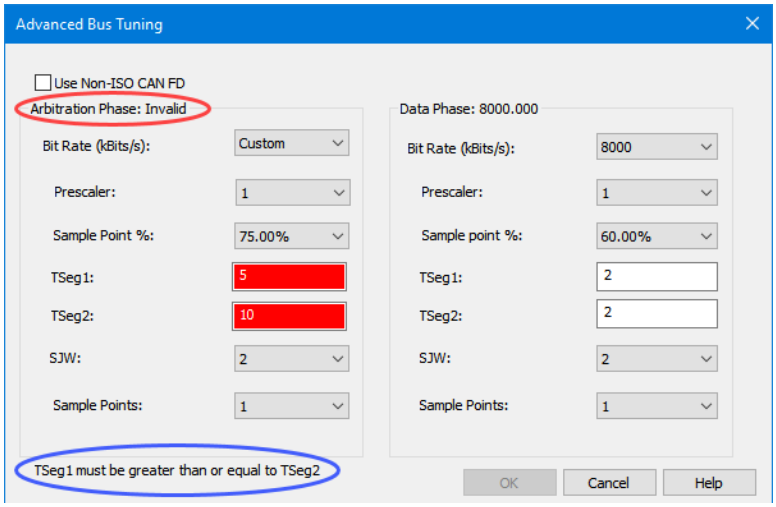
Important: A thorough understanding of CAN hardware configuration is essential before setting these fields. Third party devices typically use a Phillips SJA1000 CAN controller with a 16 MHz clock.

VISION automatically adjusts the “TSeg1” and “TSeg2” values when modifying the “Prescaler” and “Sample Point %” settings. The “TSeg1” and “TSeg2” values can be manually configured thus overriding the predefined settings configured when setting the “Prescaler” and “Sample Point %” options. Manually setting the “TSeg1” and “TSeg2” values requires the following conditions to be adhered to:

Note: All modifications are mirrored to the “Data Phase” group.

“TSeg1” and “TSeg2” values are restricted by the following conditions:

- Values cannot be zero or a negative integer.
- Values cannot be left blank.
- “TSeg2” value cannot be greater than the “TSeg1” value.



When one or more of the conditions are not met, then VISION changes the value box(es) to red and disables the “OK” button until one or both values are corrected. Additional error indicators are: “Invalid” displayed after the “Arbitration Phase” and/or “Data Phase” header (circled in red) and a message outlining the issue displayed in the lower left corner of the window (circled in blue). The message in the image describes the error as the “TSeg1” value is set lower than the “TSeg2” value.

For additional questions, contact ATI support at support@accuratetechnologies.com.

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