GenMsgMinAcceptLength with Il_Vector in Geny

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Abstract	This Application Note describes the reception of messages with a DLC smaller or equal than the described DLC in the database with the Il_Vector and the database attribute GenMsgMinAcceptLength.

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1.0 Overview

The Specification of PSA defines, that a CAN message has to be accepted by the ECU with different lengths. The minimum length can be equal to the DLC of a message defined in the database for an ECU or smaller.

If a message is received, where the DLC is smaller than defined in the database, the application has to be implemented with care according to the rules described in this document. All messages received with a DLC smaller than the configured GenMsgMinAcceptLength, the messages are discarded by the ECU, because received length is smaller than the minimum expected one.

1.1 Database Attributes

The following table describes the properties of the database attribute GenMsgMinAcceptLength.

Name	GenMsgMinAcceptLength
Description	This value defines the minimum acceptance length in bytes of a CAN message. If no value is specified, set the value to the DLC.
Type Of Object	Message
Value Type	Integer
Default	8
Minimum	0
Maximum	8

Table 1 – Properties of database attribute

1.2 Particularities and Limitations

1.2.1 Indication Notification

If the received DLC of a message is greater or equal to the GenMsgMinAcceptLength configured in the database, the indication notification (first value flags and indication flags are set and indication functions are called) is performed for all signals or signal groups which are entirely contained in the received DLC of the message. If a grouped signal is entirely within the received DLC, but the signal group is not within the received DLC, the indication notification is not performed.

Note:	The application must check the indication flag or function before the signal value can be read by the IlGet<SignalName>() signal access function or macro. If the indication flag is not set or the indication function is not called, the application has to use the default value of the signal.

1.2.2 Example Without DLC Change

The following code is an example if a message is received with a DLC smaller as defined in the database but the DLC does not change during runtime (GenMsgMinAcceptLength < DLC < DatabaseDLC).

The example function is the application task which reads the signals “Speed” and “Rpm” of the message “EngineInfo”.

```
/* Declare variables for the signal values. */
vuint8 ApplicationSpeedVariable;
vuint8 ApplicationRpmVariable;

void ApplicationTask(void)
{
  if(IlGetSpeedIndication())
  {
    /* Read the received signal value. */
    ApplicationSpeedVariable = IlGetRxSpeed();
    /* Reset the indication flag. */
    IlClrSpeedIndication();
  }
  else
  {
    /*
      The signal has not been received yet.
      Set the default value, if the default value is not configured.
    */
    ApplicationSpeedVariable = 5;
  }
  /*
      Read the received signal value or the default value,
      which is configured in the generation tool.
  */
  ApplicationRpmVariable = IlGetRxRpm();
}
```

1.2.3 Example With DLC Change

The following code is an example if a network is used where the DLC of a received messages changes during runtime. The example function is the application task which reads the signals “Speed” and “Rpm” of the message “EngineInfo”.

Note:	The application has to implement a message based CAN Driver PreCopy function which has to clear all signal indication flags of the message and the polling feature of the Il_Vector must be activated for this message. The following figure shows the configured attributes in GENy.

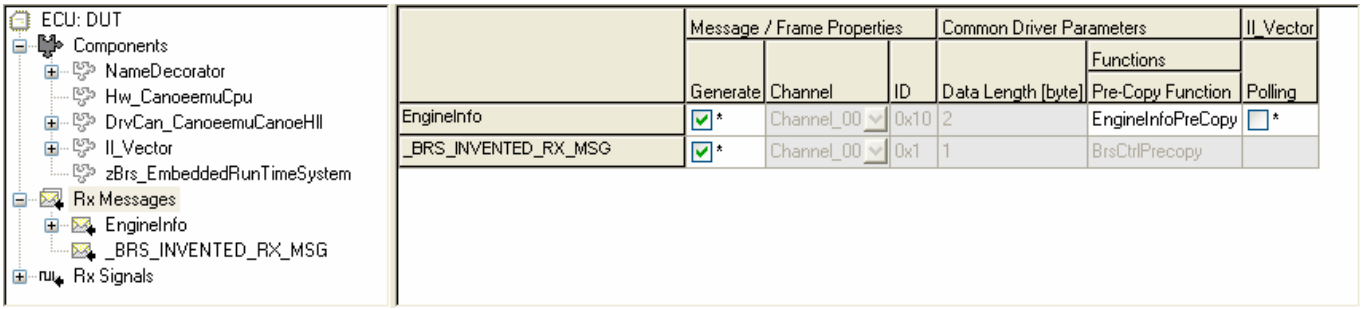

Figure 1 – Rx Messages of GENy

```
/* Declare variables for the signal values. */
vuint8 ApplicationSpeedVariable;
vuint8 ApplicationRpmVariable;

void ApplicationTask(void)
{
  if(IlGetSpeedIndication())
  {
    /* Read the received signal value. */
    ApplicationSpeedVariable = IlGetRxSpeed();
    /* Reset the indication flag. */
    IlClrSpeedIndication();
  }
  else
  {
    /*
      The signal has not been received yet.
      Set the default value, if the default value is not configured.
    */
    ApplicationSpeedVariable = 5;
  }
  /*
      Read the received signal value or the default value,
      which is configured in the generation tool.
  */
  ApplicationRpmVariable = IlGetRxRpm();
}
```

```
vuint8 EngineInfoPreCopy(CanRxInfoStructPtr rxStruct)
{
  rxStruct = rxStruct;
  /*
    Clear all signal indication Flags of the message to guarantee,
    that only received signals are processed by the application.
  */
  IlClrSpeedIndication();
  IlClrRpmIndication();
  return kCanCopyData;
}
```

1.2.4 Data Changed Flags

The “Data Changed Flag” of a rx signal is only valid, if the indication flag is set or the signal indication function is called previously.

Note:	Indication Flags have to be cleared by the application, or use the IlGetClr macros to get and clear the indication flags.

1.2.5 Timeout Flags and Functions

Message is never received after IlRxStart

Timeout flags are set and timeout functions are called for all signals in the message if the timeout is elapsed.

Message is received minimum once after IlRxStart

Timeout flags are set and timeout functions are called for all signals in the message, which are received with a DLC greater than GenMsgMinAcceptLength, but smaller than the Size of the receive buffer.

1.2.6 Multiplexed Signals

The database attribute GenMsgMinAcceptLength must not be used with messages containing multiplexed signals.

2.0 Additional Resources

See additional in the Technical Reference of the Il_Vector.

3.0 Contacts

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