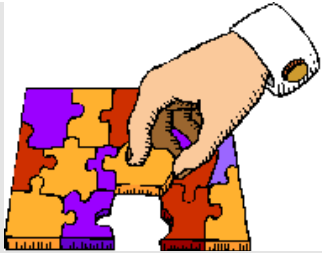


CAN protocol stacks for FIAT/RENAULT/PSA embedded electronic units

NSI is recognized for its know-how in communication protocols for multiplexed electronic control units (ECU) on the CAN network. Our expertise has been consolidated through the development, integration and validation of several communication stacks of embedded ECU for different car-makers. The delivered source code is fully compliant to the last FIAT, RENAULT-NISSAN or PSA network specifications and is already configured for the target bus, thus allowing the ECU designer to focus on its application and reduce its delivery time, saving development and validation costs.

These software components are delivered as source files written in ANSI C language to be linked with the application. The modular architecture of the stack follows the OSEK layers model, which helps easy and error-free integration into the application of the ECU. Moreover, the CAN Driver provides as hardware abstraction layer AUTOSAR-compatible interfaces making it possible to re-use it in the AUTOSAR environment with no modification on application side.

Software components

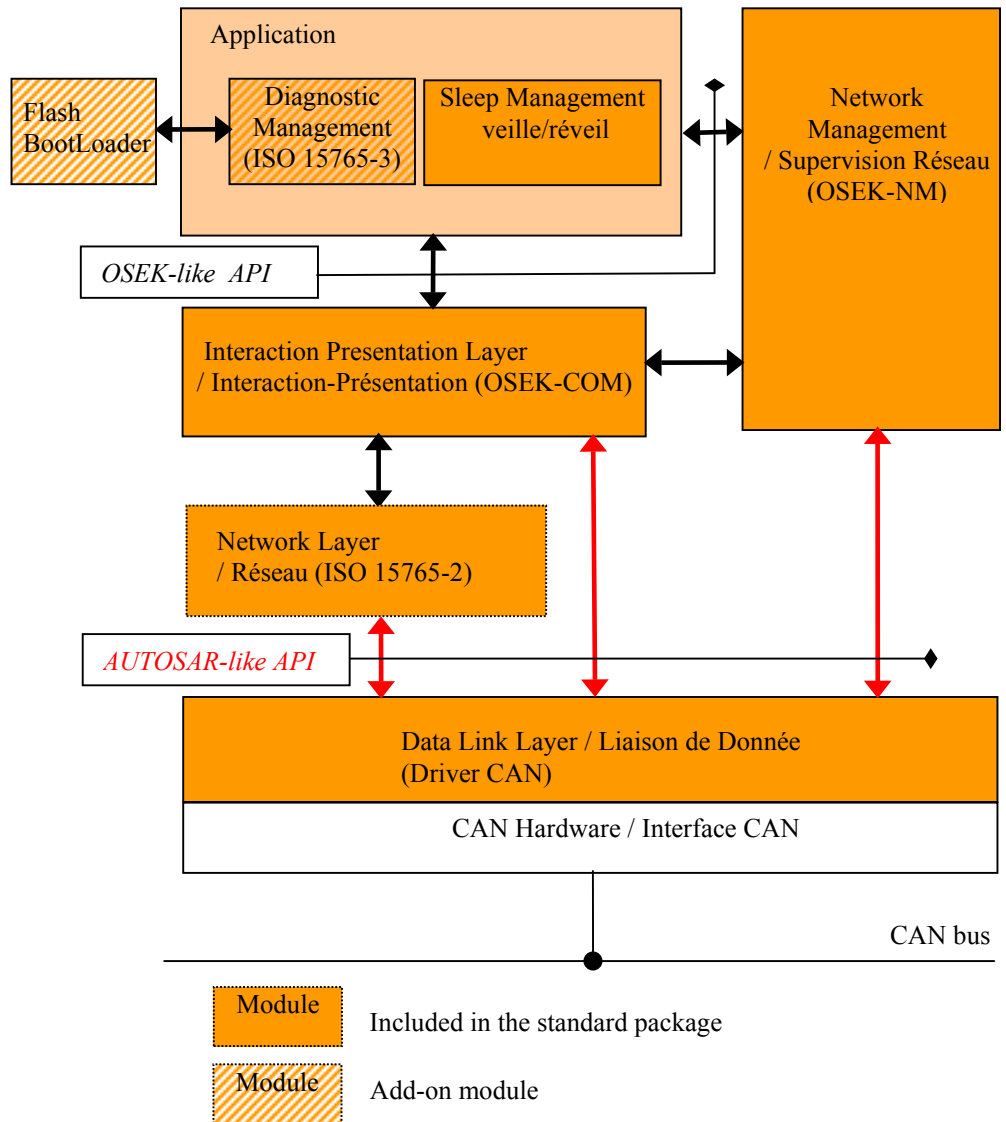


Standard Package :

- Re-usable CAN protocol stack
- Based on OSEK-COM / OSEK-NM standards customized for each car-maker specifications: versions for FIAT, RENAULT-NISSAN and PSA available
- CAN Low Speed and CAN High Speed versions
- Written in ANSI 'C' language compliant to the MISRA rules
- AUTOSAR-compatible Driver Interfaces (API)
- Optimized for optimal use of microcontroller resources
- Already validated stacks
- Comes with CANalyzer programs for supporting integration tests with the application (to be adapted)

Add-On modules :

- Diagnostic Session & Services Management (ISO15765-3)
- Flash BootLoader for downloading through the CAN



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Applicable car-makers network specifications for the CAN stacks

Reference	Title	Functionalities supported
PSA version		
<i>CAN Low Speed</i>		
STE 96 431 968 9E Ind. OR	Spécification des couches physique et protocole à 125 kb/s	Bit Timings
STE 96 431 967 9E Ind. B	Spécification des règles de communication	All
STE 96 431 966 9E Ind. B	Spécification des phases de vie réseau	Type 1 to 4
<i>CAN High Speed</i>		
STE 96 311 921 9B Ind P1	Spécification des couches de communication génériques pour le multiplexage RENAULT & PSA	All
	<i>ECU/platform functional specifications (contact us)</i>	
<i>Diagnostic/Reprogramming</i>		
STE 96 463 229 99 Ind. C	Implémentation de la couche réseau pour le diagnostic – Réseaux CAN & LIN -	CAN bus
STE 96 253 521 99 Ind D	Keyword Protocol 2000-3F	All
STE 96 285 582 9A Ind F	Application Flash Eprom PSA	All
RENAULT/NISSAN version		
<i>CAN Low Speed</i>		
65610/2003/607 V1.0	CAN LSFT Hardware Renault Design Standard	Bit Timings
65610/2003/573	RDS for CAN LSFT Communication Software	All
<i>CAN High Speed</i>		
36-02-026 / ---	CAN Physical Interface	Bit Timings
36-02-030 / Amendment 1	RNDS for CAN Communication Software	All
<i>Sleep management (HS+LS)</i>		
36-02-027 / --A	CAN Sleep Management	All
<i>Diagnostic/Reprogramming</i>		
36-02-031 / --A	RNDS Diagnostic On CAN / Implémentation of ISO 15765-2	All
36-02-013 / --A	Diagnostic On CAN / Diagnostic Service Implementation	All
01-58-137 / --A Draft	ECU Reprogramming Light Specification	All
01-58-110 / --B Draft	ECU Reprogramming Full Specification	All
01-58-110 / --B Draft	ECU Reprogramming RENAULT-NISSAN Specificity	All
FIAT version		
<i>CAN Low Speed</i>		
07320 3 rd Edition	Network Operational Specifications for the Class-B Network	All
<i>CAN High Speed</i>		
07324 2 nd Edition	CAN Physical Layer Specifications	Bit Timings
07321 3 rd Edition	Network Operational Specifications for the Class-C Network	All
07326 Edition 6	Fiat Standard Message Map for the Class-C Network	All
<i>Diagnostic/Reprogramming</i>		
07274	FIAT Standard Diagnostic Protocol On CAN	All
07284	General Programming Requirement for Flash Eprom	All

On request, NSI may provide tools and experimented people to perform the integration of the CAN stack into the application and/or a “black box” validation of the ECU CAN communication requirements, at NSI or on customer site.

Complementary developments based on customer specifications may also be done by the NSI software department using the standard modules or part of them : please contact our representative.