

Scope of new feature

Scope of implementation

The default mode of assigning a node address to SCS200 modules will be changed from a CAN message based method to a wiring based one. When using this method, the SCS200 will use the states of its analog inputs 1-3 to determine its node address, thus allowing modules to be installed/replaced without requiring that they be programmed by the customer or service personnel.

To utilize this feature, the harness connection for each module will need to be terminated in a specific fashion. Inputs 1-3 must be steadily supplied with >5V or GND potential to create a combination of high and low input states that the module will use to determine an offset value added to its base ID. The SCS200's default Base ID is 0xA0. The module will then add the numerical offset value to its Base ID in order to fully establish its node address. In this type of system, regular use of the Base ID as node address (Base ID + 0) should be avoided. The Base ID should be reserved for modules that are not (properly) addressed via inputs 1-3. Furthermore, the presence of a module that is using the Base ID (with no offset) as node address, should be viewed as an error condition by the vehicle control system.

If desired, the Base ID can always be changed via CAN message. The Wiring based offset value would then be applied to the new Base ID. In applications that use more than seven SCS200 modules, one or more modules would need to be assigned a Base ID that falls outside of the range of the other modules' node addresses. There are only seven possible offset values per Base ID (see table).

Wiring Based Node Address Assignment - Wiring Scheme

SCS200 Node Address	In 1	In 2	In 3
Base ID + 0*	0	0	0
Base ID + 1	1	0	0
Base ID + 2	0	1	0
Base ID + 3	1	1	0
Base ID + 4	0	0	1
Base ID + 5	1	0	1
Base ID + 6	0	1	1
Base ID + 7	1	1	1

Example	Node Addr
Base ID = D0	D0
Base ID + 1	D1
Base ID + 2	D2
Base ID + 3	D3
Base ID + 4	D4
Base ID + 5	D5
Base ID + 6	D6
Base ID + 7	D7

0 = Less than 5V at input

1 = 5V or greater at input

*Use of Base ID + 0 as a valid node address is not recommended

Other Noteworthy Info

When using physical module addressing (PMA) to addressing the SCS200, Inputs 1-3 are no longer available for use as standard analog inputs. Inputs 4-6 still remain available for standard usage. The wiring based method of addressing can be activated/deactivated at any time via CAN message. When it's activated, the offset value set via 1-3 inputs is checked at every module start. When it's deactivated, all inputs can serve as standard analog inputs and the module's node address can then only be changed via CAN message (the set Base ID will be used as node address).

The SCS200 supports address claiming according to SAE J1939 as underlying safety feature. This ensures that each module has its own unique CAN ID and remains addressable on the bus, even in cases of unforeseen issues and errors.

After manually changing a module's Base ID or configuration via CAN commands, its power source must be cycled or a module reset command must be sent. See "Related CAN Messages" below.

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Related CAN messages

To change the SCS200 Base ID, send this message:

CAN ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18EFxxyy	0x63	0xD8	0x03	0xYY	0x00	0x00	0x00	0x00
Priority 6, PGN 61184 (0xEF00) xx= Dest Addr yy= Source Addr				0xYY = New Base ID				

By default, inputs 1-3 will only be used to determine the node address offset, in reference to the newly assigned Base ID.

To deactivate physical module addressing, send this message:

CAN ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18EFxxyy	0x63	0xD8	0x06	0x01	0x00	0x00	0x00	0x00
Priority 6, PGN 61184 (0xEF00) xx= Dest Addr yy= Source Addr				Deactivate PMA				

Inputs 1-3 will now serve as +V analog inputs.

To reactivate physical module addressing, send this message:

CAN ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18EFxxyy	0x63	0xD8	0x06	0x00	0x00	0x00	0x00	0x00
Priority 6, PGN 61184 (0xEF00) xx= Dest Addr yy= Source Addr				Reactivate PMA				

To reset SCS200 after changing its Base ID or configuration, cycle its power source or send this message:

CAN ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18EFxxyy	0x83	0xD8	0x01	0x00	0x00	0x00	0x00	0x38
Priority 6, PGN 61184 (0xEF00) xx= Dest Addr yy= Source Addr								

Configuration changes will not take effect until module power is cycled or this message is sent.

Scope of new feature

To request the PMA configuration status send this message:

CAN ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18EFxyy	0x33	0xD8	0x08	0x00	0x00	0x00	0x00	0x00
Priority 6, PGN 61184 (0xEF00) xx= Dest Addr yy= Source Addr								

The module will respond with the following message, indicating whether PMA is active or inactive.

SCS200 Tx status message:

CAN ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18FF07yy	0xPP	0xPP	0xQQ	0xQQ	0x00	0x00	0x00	0xSS
Priority 6, PGN 65287 (0xFF07) yy= SCS200 node address	0xPPPP= Analogue input 5		0xQQQQ= Analogue input 6					0xSS: 0x00= PMA active 0x01= Analogue inputs active

Address Claimed message according to J1939 (after start-up the module will notify itself on the bus with this frame):

CAN-ID	PGN	CAN data	meaning
0x18EEFFxx	60928	Name of Controller Application (to J1939-81, see below)	Address Claimed / Cannot Claim

xx SCS200 node address

PGN 60928 – Message for Address Claimed

Transmission Rate: as requested
 Data Length: 8 bytes
 Data Page: 0
 PDU format: 238
 PDU Specific: 255 (global address)
 Default Priority: 6
 Parameter Group Number: 60928 (00EE00h)

Name of Controller Application

Byte 1	Bits 8-1	Least significant byte of Identity Number
Byte 2	Bits 8-1	Second byte of Identity Number
Byte 3	Bits 8-6	Least significant 3 bits of Manufacturer Code
	Bits 5-1	Most significant 5 bits of Identity Number
Byte 4	Bits 8-1	Most significant 8 bits of Manufacturer Code
Byte 5	Bits 8-4	Function Instance
	Bits 3-1	ECU Instance
Byte 6	Bits 8-1	Function
Byte 7	Bits 8-2	Vehicle System
	Bit 1	Reserved
Byte 8	Bit 8	Arbitrary Address Capable
	Bits 7-5	Industry Group
	Bits 4-1	Vehicle System Instance