SIEMENS

SED2 LON Module

Operating Instructions

LONMARK 3.3

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1.1 Manual organization

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Startup procedures	Instructions to start up the LON module
Application note	Parameter settings for PID loop control via the LON module
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Troubleshooting	Guidelines for troubleshooting the LON module

1.2 Manual notations

WARNING: Indicates that personal injury or loss of life may occur if you do not perform a procedure as specified

CAUTION: Indicates that equipment damage, or loss of data may occur if you do not perform a procedure as specified

NOTE: Provides other important information or helpful hints

1.3 Reference documents

The following SED2 documentation is available from your local Siemens Building Technologies representative:

CE1N5193en SED2 LON module Data Sheet, a synopsis of the SED2 LON module and its technical data.

CM1G5192en SED2 Variable Speed Drives commissioning guide and application examples

CM1U5192en SED2 Variable Speed Drives operating instructions

CM1N5192en SED2 Variable Speed Drives Data Sheet

2 LON module overview

2.1 General description

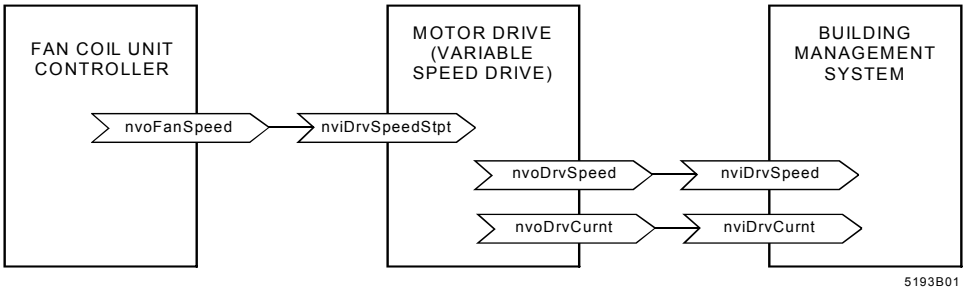
The LONMark® certified SED2 LON module provides direct digital control of SED2 Variable Speed Drives (VSDs). The SED2 can reside on a LONWorks® network, enabling information sharing with all other LONMark products from multiple vendors.

The SED2 LON module is LONMark-compliant with Variable Speed Motor Drive Functional Profile Number 6010. It uses standard network variable types for communication, allowing a SED2 VSD to be configured, controlled, and monitored via the LONTalk® network. A network management tool installs the VSD on the network and binds the network variables to other devices on the network for seamless integration.

The LON module's modular snap-on design facilitates simple installation and enables easy control system integration via any existing or new VSD. The LON module offers a cost-effective solution by reducing system installation and by allowing direct integration to control systems.

For example, an air handling unit controller sends messages to control the start/stop and speed reference of the SED2. The VSD outputs messages such as the actual drive speed and the output current to the controller, operating interfaces, and energy management systems.

Example of using the SED2 LON module



2.2 LON module functionality

The foundation of the SED2 LON module is a Neuron 3120 processor, which manages the LON software functionality. The LON software functionality is based on LONMark Functional Profile Number 6010 for Variable Speed Motor Drives. In addition to the Standard Network Variable Types (SNVTs) of this Functional Profile, several others have been added:

- Two sets of inputs were added for feedback and setpoint. Two sets of outputs were added for local drive information and controlled feedback. Each input and output set consists of five points, including:
  - High pressure point
  - Low pressure point
  - Temperature point
  - CO_2 point (measured in PPM)
  - IAQ point (measured as a percentage)

  Only one of these points may be accessed for each set.
- Six output points were added for status of digital inputs
- One point was added for alarm
- One point was added for drive reset

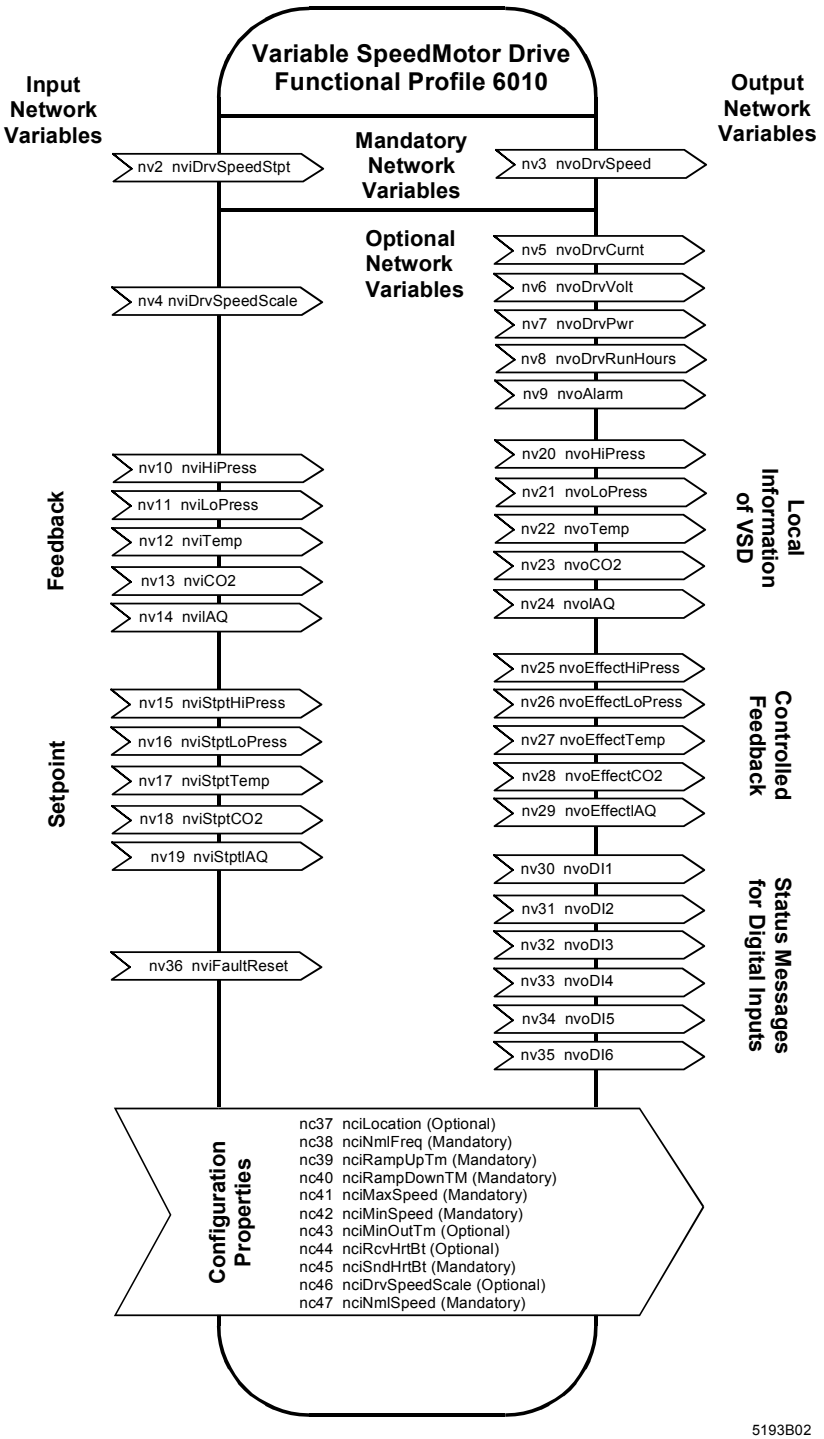
2.3 Network Variable Types and Config. Properties

The LON module communicates with the LONWorks network using real units in the form of Standard Network Variable Types (SNVTs) and Standard Configuration Property Types (SCPTs). Figure 5193B02 provides a summary of the LON module network variables and configuration properties.

To provide an interoperable interface, the LON module uses two standard LONMark objects:

- Object 0 (Functional Profile 0 – Node Object) – handles node-specific variables, including object status and file transfers
- Object 1 (Functional Profile 6010) – handles drive-specific variables including variables related to how the drive functions such as drive speed and drive current

LON module Network Variables and Configuration Properties



2.4 Network Variables for Object 0 (node object)

Network Variable	Input or output	Units of measurement	Description
nviRequest	Input		Object request
nvoStatus	Output		Object status

2.5 Network Variable Inputs (nvi) for object 1

Index	Network Variable Input (nvi)	Units of Measurement	Description
nv2–	nviDrvSpeedStpt	On/off switch and speed setpoint (0...100 %) Value (0…100%) State (0…1)	Drive speed setpoint; the speed setpoint value is fed into the drive register r2050[1]
nv4	nviDrvSpeedScale	Percent (0 to 100 %)	Drive speed setpoint scaling
nv10	nviHiPress	Pressure (-32768 Pa to 32766 Pa, Res: 1 Pa)	* Feedback signal for high pressure LON sensor, which is fed into the drive register r2050[2]
nv11	nviLoPress	Pressure (-32768 Pa to 32766 Pa, Res: 1 Pa)	* Feedback signal for precise low pressure LON sensor, which is fed into the drive register r2050[2]
nv12	nviTemp	Temperature in ° C	* Feedback signal for temperature LON sensor, which is fed into the drive register r2050[2]
nv13	nviCO2	ppm	* Feedback signal for CO2 LON sensor, which is fed into the drive register r2050[2]
nv14	nviIAQ	Percent (0-100 %)	* Feedback signal for IAQ LON sensor, which is fed into the drive register r2050[2]
nv15	nviStptHiPress	Pressure (-3276.8 kPa to 3276.7 kPa)	* Setpoint signal for high pressure, which is fed into the drive register r2050[3]
nv16	nviStptLoPress	Pressure (-32768 Pa to 32766 Pa, Res: 1 Pa)	* Setpoint signal for precise low pressure, which is fed into the drive register r2050[3]
nv17	nviStptTemp	Temperature in ° C	* Setpoint signal for temperature, which is fed into the drive register r2050[3]
nv18	nviStptCO2	Ppm	* Setpoint signal for CO2, which is fed into the drive register r2050[3]
nv19	nviStptIAQ	Percent (0-100 %)	* Setpoint signal for IAQ, which is fed into the drive register r2050[3]
nv36	nviFaultReset	On/off switch	Drive fault reset Value or State ≠ 0 = reset

* Only one of these signals may be bound at any time

2.6 Network Variable Outputs (nvo) for object 1

Index	Network Variable Output (nvo)	Units of measurement	Description	SED2 Parameter
nv3	nvoDrvSpeed	Percent (0 to 100 %)	Feedback drive speed	r0024
nv5	nvoDrvCurnt	Amp	Feedback drive output current	r0027
nv6	nvoDrvVolt	Volt	Feedback drive output voltage	r0025
nv7	nvoDrvPwr	Power-kilowatt	Feedback drive output power	r0032
nv8	nvoDrvRunHours	time-hours	Feedback drive total run hours	P2114
nv9	nvoAlarm	On/off switch	Drive fault indication	r0052.3
nv20	nvoHiPress	Pressure (-32768 Pa to 32766 Pa, Res: 1 Pa)	* Information on high pressure, which is read from the drive register r0754[0]	r0754[0]
nv21	nvoLoPress	Pressure (-32768 Pa to 32766 Pa, Res: 1 Pa)	* Information on precise low pressure, which is read from the drive register r0754[0]	r0754[0]
nv22	nvoTemp	Temperature in ° C	* Information on temperature, which is read from the drive register r0754[0]	r0754[0]
nv23	nvoCO2	Ppm	* Information on CO2, which is read from the drive register r0754[0]	r0754[0]
nv24	nvoIAQ	Percent (0-100 %)	* Information on IAQ, which is read from the drive register r0754[0]	r0754[0]
nv25	nvoEffectHiPress	Pressure (-32768 Pa to 32766 Pa, Res: 1 Pa)	* Controlled high pressure feedback, which is read from the drive register r0754[1]	r0754[1]
nv26	nvoEffectLoPress	Pressure (-32768 Pa to 32766 Pa, Res: 1 Pa)	* Controlled precise low pressure feedback, which is read from the drive register r0754[1]	r0754[1]
nv27	nvoEffectTemp	Temperature in ° C	* Controlled temperature feedback, which is read from the drive register r0754[1]	r0754[1]
nv28	nvoEffectCO2	Ppm	* Controlled CO2 feedback, which is read from the drive register r0754[1]	r0754[1]
nv29	nvoEffectIAQ	Percent (0-100 %)	* Controlled IAQ feedback, which is read from the drive register r0754[1]	r0754[1]
nv30	nvoDI1	On/off switch	Status of digital input 1	r0722.0
nv31	nvoDI2	On/off switch	Status of digital input 2	r0722.1
nv32	nvoDI3	On/off switch	Status of digital input 3	r0722.2
nv33	nvoDI4	On/off switch	Status of digital input 4	r0722.3
nv34	nvoDI5	On/off switch	Status of digital input 5	r0722.4
nv35	nvoDI6	On/off switch	Status of digital input 6	r0722.5

* Only one of these signals may be bound at any time

2.7 Standard Configuration Property Type (SCPTs)

The following SCPTs are network configuration property inputs (nci).

Index and mandatory (M) or optional (O)	Configuration property *Language-dependent name*	Network Variable (nvi, nvo)	Units of measurement	Description	SED2 Parameter
nc37 (O)	nciLocation Location	Entire Object		Location label; used to provide physical location of the node; not passed to motor drive	
nc38 (M)	nciNmlFreq nomFreq	Entire Object	Hz	Nominal motor frequency	P0310
nc39 (M)	nciRampUpTm rampUpTm	Entire Object	s	Minimum ramp up time	P1120
nc40 (M)	nciRampDownTm rampDownTm	Entire Object	s	Minimum ramp down time	P1121
nc41 (M)	nciMaxSpeed maxSetpoint	Entire Object	Percent (0 to 100 %)	Maximum motor speed	P1082
nc42 (M)	nciMinSpeed minSetpoint	Entire Object	Percent (0 to 100 %)	Minimum motor speed. nciMinSpeed is a protected and read only parameter. It is calculated as follows: $\text{nciMinSpeed} = \frac{\text{nciMinFreq}}{\text{nciNmlFreq}*}$	P1080
nc43 (O)	nciMinOutTm minSendTime	nv3 nv5 nv6 nv7 nv8 nv30	s	Minimum send time. The amount of time that must pass before the value of a network variable is fed to the LONTalk network	
nc44 (M)	nciRcvHrtBt maxRcvTime	nv2 nv4	s	Receive heartbeat time; the amount of time that must pass before an incoming value is considered not valid. Affected input variables are set to a predefined value when there is no NV update$^{\nabla}$	
nc45 (M)	nciSndHrtBt maxSendTime	nv3 nv5 nv6 nv7	s	Send heartbeat time; the minimum amount of time that must elapse before a network variable's value can be propagated to the LONTalk network	
nc46 (O)	nciDrvSpeedScale defScale	nv4	Percent (0 to 100%)	Default value for nviDrvSpeedScale	P2000
nc47 (M)	nciNmlSpeed nomRPM	Entire Object	r.p.m.	Nominal motor speed; read only	P0311

* If nciNmlFreq is changed, nciMinSpeed will automatically assume a new value according to the formula.

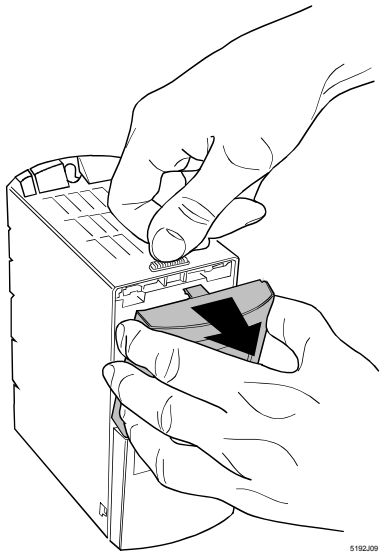
$^{\nabla}$ nci basic configurations are adopted by the SED2 on initialization.

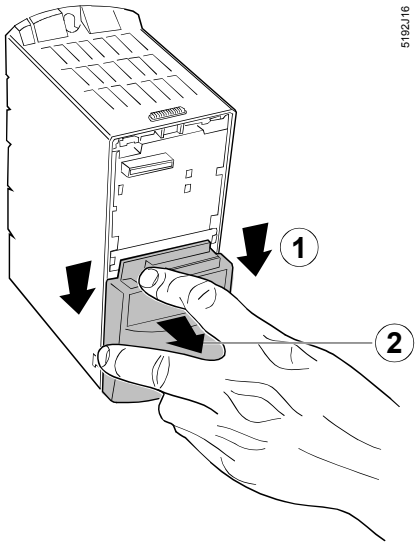
3 Installation and wiring

3.1 With SED2 frame sizes A…C IP20

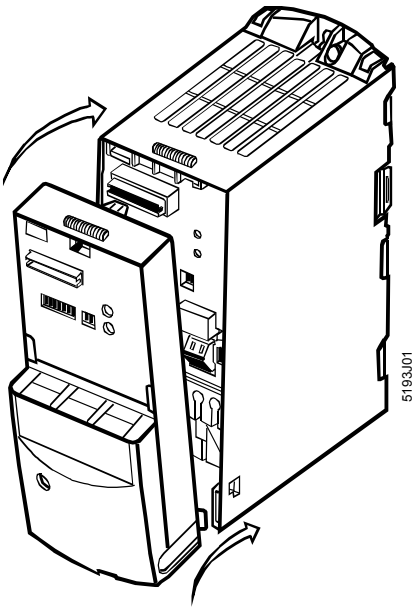
WARNING: Make sure that the VSD is deenergized (off) before you install or remove the LON module.

1. Remove the SED2 operator panel and the terminal cover of the I/O module.

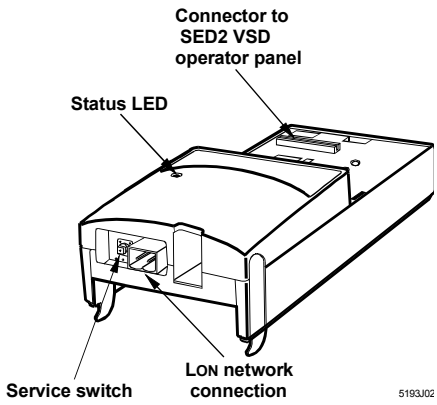




2. Install the LON module on the SED2 I/O module by inserting the two bottom guides into the appropriate slots at the sides of the I/O module and pushing the upper section inward until the locking mechanism latches (Figure 5193J01).



Installing LON module on
SED2 frame sizes A, B, and C



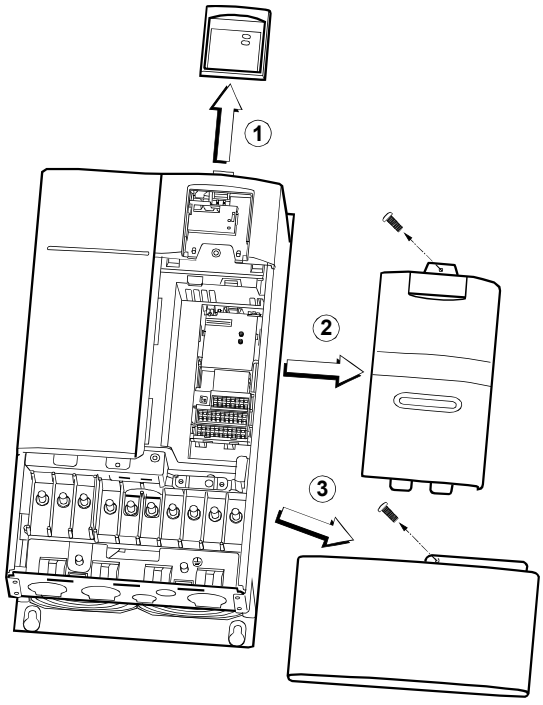
3. Route the network cable (without connector) to the LON module.
4. Terminate end of network cable with a single, two-pin, female LONWorks FTT-10A connector.
5. Attach network cable FTT-10A connector to connector at bottom of LON module (Figure 5193J02).
6. Reinstall SED2 operator panel on LON module.

3.2 Installation in SED2 frame sizes D…F IP20

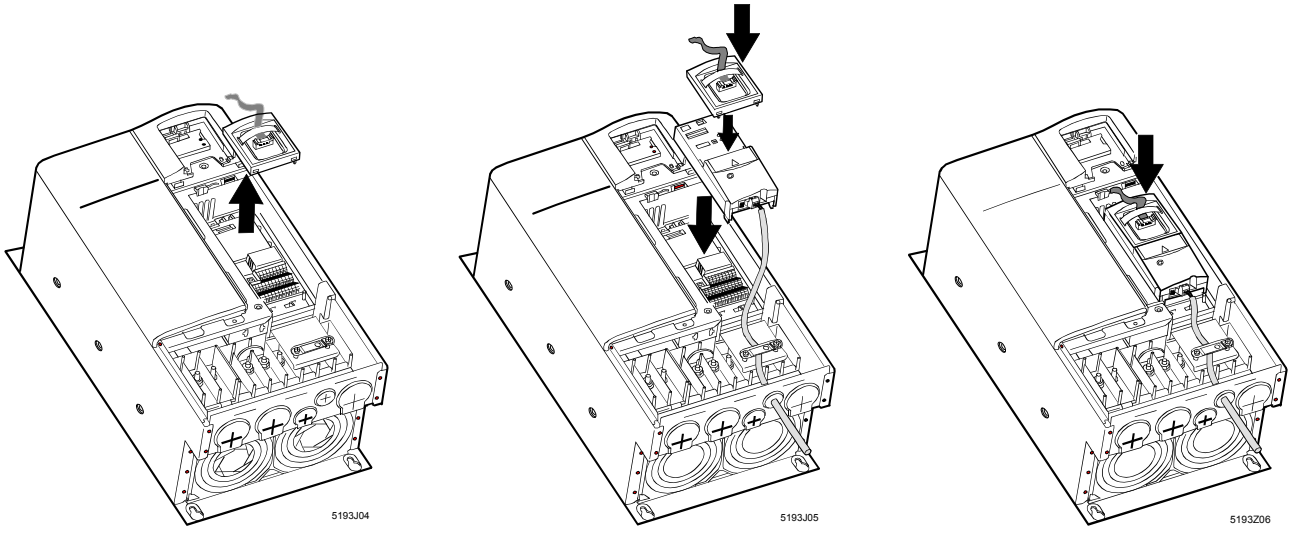
WARNING: Make sure that the VSD is deenergized (off) before you install or remove the LON module.

For frame sizes D, E, and F, the LON module mounts inside the VSD housing.

1. Remove the operator panel, lower and upper front cover. See drawing 5193J03 below.
2. Disconnect operator panel extension module (with ribbon cable) from I/O module by pushing lever above extension module upwards and simultaneously pulling extension module from the upper sides and rocking it downward.
   NOTE: Do not disconnect the ribbon cable.
3. Install LON module on the I/O module by inserting the two bottom guides into the appropriate slots of the I/O module and pushing the upper section inward until the locking mechanism latches.
4. Install operator panel extension module on LON module by inserting the two bottom guides into the appropriate slots of the LON module and pushing the upper section inward until the locking mechanism latches.
5. Route the network cable (without connector) through a suitable cable opening to the LON module.
6. Terminate end of network cable with a single, two-pin, female LONWorks FTT-10A connector.
7. Attach network cable FTT-10A connector to connector at bottom of the LON module. See illustration below.
8. Reinstall upper and lower front cover, and the operator panel.



Removing the covers of frame sizes D, E, and F

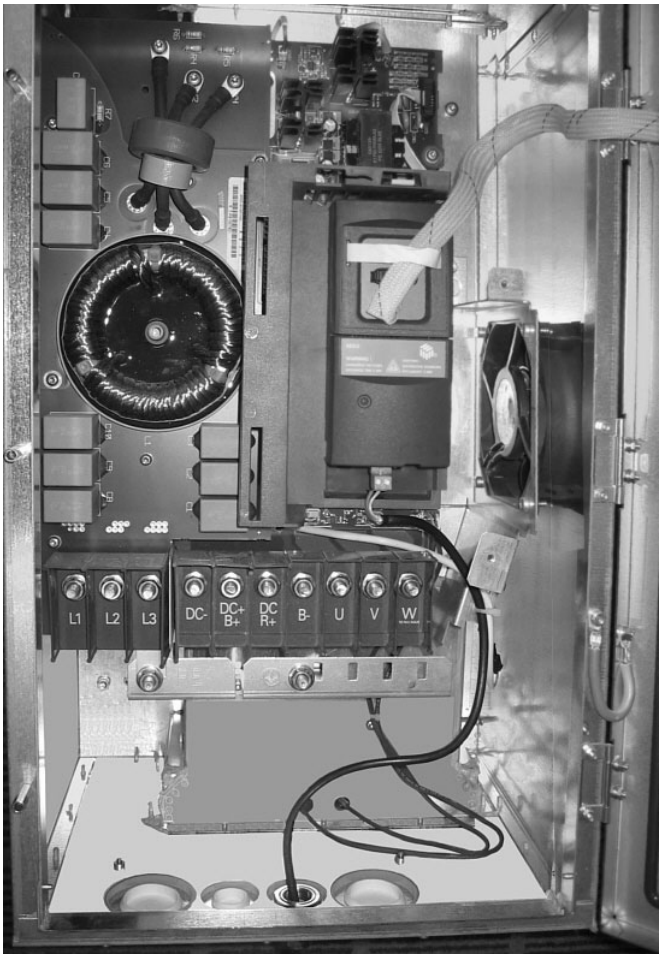


Installing LON module on SED2 frame sizes D, E, and F

3.3 Installation in SED2 frame sizes B…F IP54

WARNING: Make sure that the VSD is deenergized before you install or remove the LON module.

1. Loosen the door fixing screws on the front of the IP54 housing and open the door.
2. Remove the operator panel extension module (with ribbon cable) from the EI/A module by pushing the lever above the extension module upward and, at the same time, pulling the extension module downward.
   NOTE: Do not disconnect the ribbon cable.
3. Install the LON module on the SED2 I/O module by inserting the two bottom guides into the appropriate slots at the sides of the I/O module and pushing the upper section inward until the locking mechanism latches.
4. Install the operator panel extension module by inserting the two bottom guides into the appropriate slots of the LON module and pushing the upper section inward until the locking mechanism latches.
5. Route the network cable through a suitable cable opening to the LON module's mains inlet. To ensure proper contacting of shielding, use an EMC cable gland made of metal for the cable entry.
6. Run the LON cable at the greatest possible distance from power cables and terminals.



5193P02

3.4 Installation and wiring notes

WARNING: A VSD can be switched on unintentionally if the serial bus installation is not operated correctly. The bus must be started by personnel who are qualified and trained in installing systems of this type.

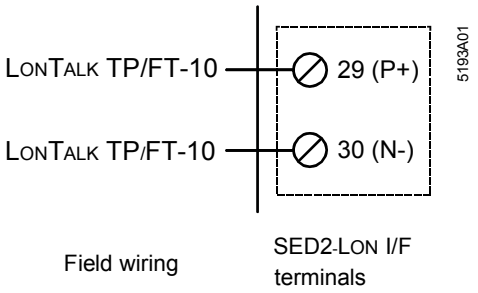
1. **DIP switches**
   Leave the DIP switches on the front of the LON module in OFF position (factory setting) to ensure proper operation of the LON module.

2. **Wiring**
   Wiring must conform to local codes and ordinances.

3. **Wire routing**
   - Maintain a minimum of 1.5 m between VSDs and network or sensor wiring
   - If it is necessary for network and sensor wiring to cross VSD wiring, it should cross at 90-degree angles

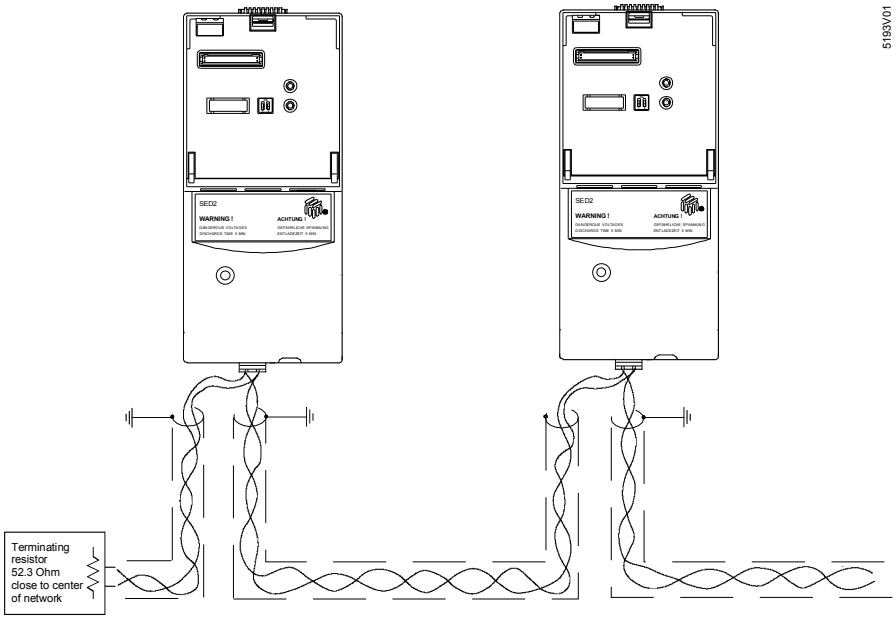
4. **POWER**
   The LON module receives power through its SED2 connection. If VSD power is switched off, the LON module will not communicate on the network.

5. **LONTalk NETWORK**
   The LONTalk network connection is on the bottom edge of the LON module (see illustration 5193J02 on page 10). Figure 5193A01 below shows the wiring schematic for this connection. See http://www.echelon.com/ for more details on the network cable and the FTT-10A connector.



NOTE: This connection supports twisted pair, polarity-insensitive, peer-to-peer communications at 78 Kbps.

3.4.1 Cabling of the LON module



Recommended twisted pair cable type

For LON bus cables, either shielded or unshielded twisted pair cables can be used. All types of bus cables used should be approved by ECHELON. For the bus cables of the SED2 LON modules, we recommend the exclusive use of **shielded** twisted pair cables (earth shielding on one side only). The following types of (shielded) twisted pair cable have been tested and approved by ECHELON:

Cable type[1]	Wire diameter	AWG	Conductor cross section	R_{loop} Ω/km	nF/km
JY(St)Y 2x2x0.8	0.80 mm	20.4	0.503 mm^2	73	98
TIA 568A Category 5*	0.51 mm	24	0.21 mm^2	28	48

Max. bus length per physical segment

The maximum transmission distances that can be covered depend on the selected bus topology and the type of cable used.

Twisted pair bus length with FTT-10A / LPT-10-channel				
Cable type	Free topology		Bus topology (serial)	
	Max. node-to-node distance	Max. total wire length[2]	Only FTT wire length	FTT / LPT wire length
TIA 568A Category 5	≤ 250 m	≤ 450 m	≤ 900 m	k.A.
JY(St)Y 2x2x0.8	≤ 320 m	≤ 500 m	≤ 750 m	≤ 750 m

The max. branch line in bus / line topology is 3 m.

[1] See Document 005-0023-01M *Junction Box and Wiring Guideline for Twisted Pair LONWORKS® Networks* on: http://www.echelon.com/support/documentation/bulletin/005-0023-01M.pdf

[2] The maximum cable length in free topologies corresponds to the total length of all network cables connected within the segment. For further information regarding LON bus topology, see document *LONMARK Interoperability Guidelines* on http://www.lonmark.org/press/download/lyr1630.pdf

* Don't use cables of category 6 or 7! These degrade the communication signal.

4 Startup procedures

4.1 Setting Up SED2 parameters

See *SED2 Getting Started Guide*, document no. *CM1G5192en* for procedures to commission and start up the VSD.

The following table lists the SED2 parameter settings that are required for correct communications and control of the VSD with a LON module.

CAUTION: Changes made to the parameters other than what is listed in the table below can result in damaging the VSD or building equipment.

4.1.1 Required SED2 parameter settings for the operation of the LON module

Parameter number/name	Value
P0003: User access level	Set to **3** to allow access to required parameters (reset back to the original value after adjustments are done)
P2040: CB telegram off time	Set to **0** (watchdog disabled) to tell the VSD to start looking for communications
P2041 (index 0): CB parameter	Set to **1** for FLN (LONWorks) network control
P0700 (index 0): Verify settings. This is usually done during the Quick Commissioning procedure	Set to **6** tells the VSD to look for a start command via LON in the auto mode
P1000 (index 0): Verify settings. This is usually done during the Quick Commissioning procedure	Set to **6** tells the VSD to look for its speed source via LON in the auto mode

NOTE: To commission the SED2 LON module, it is mandatory to use the SED-LON.XIF and SED2-LON.NXE files contained on the supplied CD-ROM. All files required for commissioning are on the CD-ROM. Program ID 80:00:81:3C:0A:04:04:03.
Files of earlier versions with Program ID 80:00:81:3C:0A:04:04:00 cannot be used.

NCI (network configuration characteristics)

When configuring the LON node point during commissioning of the LON module, the settings of the VSD are read out.

Changing the Network Configuration Characteristics

To change the communication parameters, the VSD must have stopped. Otherwise, the parameters can only be written, but cannot be transferred to the VSD.

Network Configuration Characteristics NCI – SCPT

The configuration characteristics exist as network variables (nci) and configuration properties (SCPT). When making the settings, always use the nci network variables since some LNS tools do not correctly implement the display of the configuration properties (SCPT).

4.2 Verifying parameter operations

After setting VSD parameters, perform the following steps to verify parameter operations using the drive keypad:

Step	Press	Action
1	P	Displays r0000
2	▲ and ▼	Enables scrolling to the appropriate parameter number
3	P	Displays the value of the selected parameter
4	▲ and ▼	Enables scrolling to the appropriate parameter value
5	P	Confirms parameter value setting and enables scrolling to other parameter numbers
6	Fn and then P	Returns to the display readout when finished

4.3 Setting up SED2 LON module

NOTE: To make use of the VSD's functionality in the building automation and control system, the Siemens Building Technologies representative is responsible for proper configuration of the VSD for its primary application. This is a prerequisite for commissioning the LON module.

- Start the VSD by locally setting the keypad parameters per table in section 4.1 Setting Up SED2 parameters.

  NOTE: Some parameters may be broken down into index functions. These functions are indicated by the letters "in" within the selected parameter.

  For example, for parameter P2041, set [0][3] to 1 for LON control.

- Install the appropriate file(s) for the network manager tool being used.

  NOTES: The device name = Sed2Vfd.

  Set the start/stop and speed setpoint via nv2 (nviDrvSpeedStpt).

Use of a Tridium interface

The JAR Script file is already implemented if a Tridium interface of the version R2.301.428 or higher is used. In case of an older version, please contact:

Siemens Building Technologies Inc. / HVAC Products
Kevin Belles
1000 Deerfield Parkway
60089 Buffalo Grove
USA

E-Mail: kevin.belles@siemens.com
Tel. +1 847 215 1000

[3] [0] denotes index and is displayed as "in000"

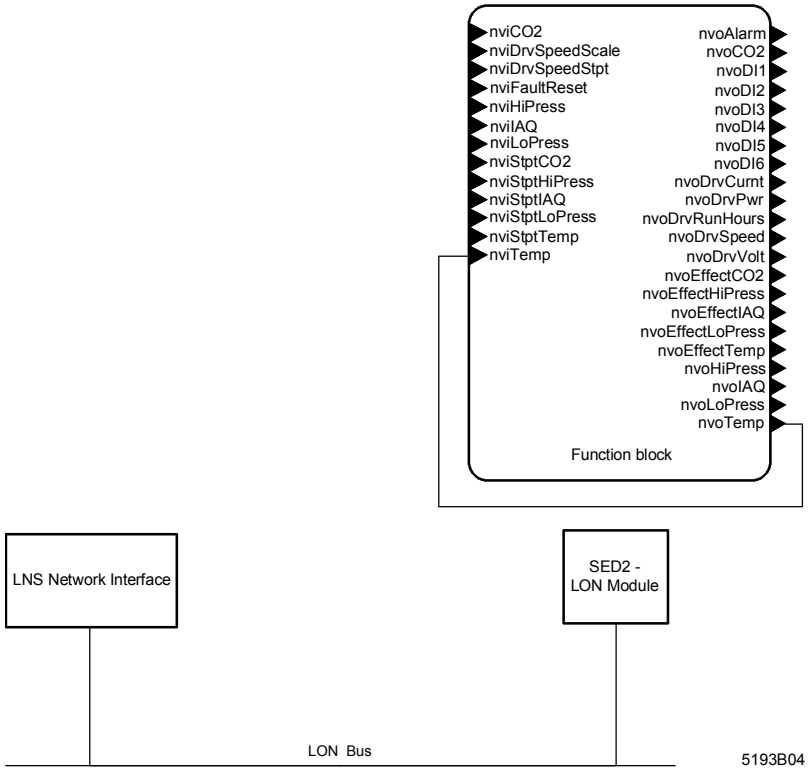
5 Application note using LG-Ni 1000 sensor example

Use the following parameter settings for PID loop control via the LON module.

Parameter and setting	Value of parameter	Explanation of value
P2201, set to appropriate setting for your installation.	Fixed PID setpoint in °C	
P2253[0], set to one of the following: • 755[0] for analog input 1 on the drive • 2050[1] for nviDrvSpeedStpt • 2050[3] for setpoint nvi (nvi15 through nvi19)	Selection of setpoint source	LON-mapped setpoint
P0701[0], set to 16.	Local drive enable	Sets digital input 1 as the enable for fixed setpoint PID
P0756[1], set to 5. Alternately set P0756[1] = 1 for 0 to 10V or P0756[1] = 3 for 4 to 20 mA	Feedback input type for analog input 2 (index 0 means analog input 1, which is not used in fixed setpoint applications)	Setting 5 is for Ni 1000 sensor only
P0757[1], set to appropriate setting for your installation	Low-end signal range °C	Input scaling
P0758[1], set to appropriate setting for your installation	Low-end sensor range °C	Input scaling
P0759[1], set to appropriate setting for your installation	High-end sensor range °C	Input scaling
P0760[1], set to appropriate setting for your installation	High-end sensor range °C	Input scaling
	Sensor ranges	QAD21 = -30 °C to 121 °C QAP22 = -25 °C to 95 °C
P2264[0], set to either 2050[2] for feedback nvi (nvi10 through nvi14) or 755[1] for analog input 2	PID feedback	LON-mapped feedback
P2306, set to 1	Direct acting or reverse acting	0=direct acting 1=reverse acting
P2200, set to 1	Enable PID loop	
r0752[0]] for analog input 1 or r0752[1] for analog input 2	Read only; check actual value	
r0754[0] for analog input 1 or r0754[1] for analog input 2	Read only; check scaled value	
P2280, set to 1.2	P-gain	
P2285, set to 30	I-gain	
Confirm P0700=6	LON communication link	
Confirm P1000=6		
Press **P** to exit programming		

5.1 Turn-around binding

When using an analog value (e.g. from the LG-Ni 1000 temperature sensor), the measured value is per default downloaded to the *nvoEffectIAQ* variable. To place the measured value on the *nvoTemp* variable, a turn-around binding must be applied.



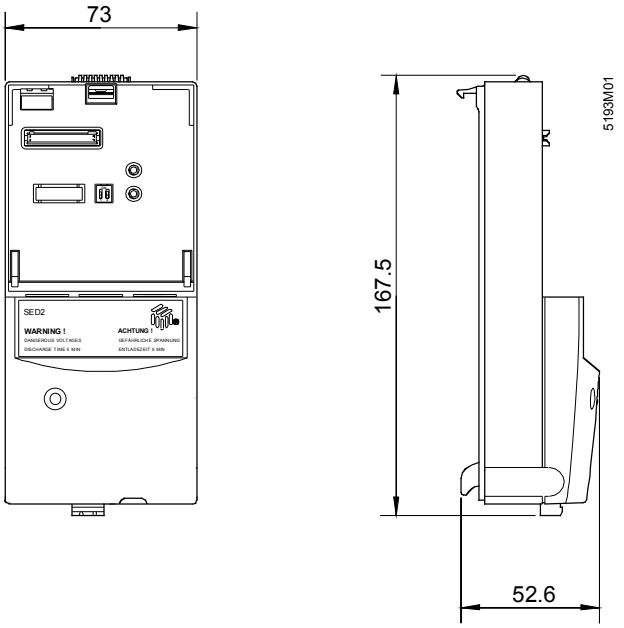
6 Technical specifications

Environmental conditions	Permissible ambient temperature	
	Transport and storage	-25…+70 °C (13…158 ° F)
	Operation	-10…+50 °C (14…122 ° F)
	Permissible air humidity	
	Transport and storage	≤ 95 % r.h.
	Operation	≤ 85 % r.h. (noncondensing)
General unit data	Operating voltage	the LON module receives power through its SED2 VSD connection
	Processor type	Neuron® 3120
	Processor clock speed	40 MHz
	Memory size	16 KB ROM, 2 KB RAM
	Status LED	tri-color (green, orange, red), LED provides indication of current operating state
	Service Pin	provides external activation of service pin message
	Physical Interface	free topology: FTT-10
	Connector	short-circuit proof, isolated, FTT-10 bus connector
	Network terminator	bus topology: 105 Ohm at both ends free topology: 52.3 Ohm close to the center of the network
	Network communication	78 Kbps (FTT-10)

	Output rates	bidirectional and configurable transmission rates for output network variables
	Dimensions	height: 161 mm (6-11/32 in.) width: 73 mm (2-7/8 in.) depth: 43.5 mm (1-23/32 in.)
	Interface	uses Standard Network Variable Types (SNVTs) exclusively
	Node identification	fixed, unique Neuron ID, software configurable node ID
	Configuration	all drive parameters can be updated through network variables
	Feedback	monitor actual values and drive status on output network variables
	Control	drive control and frequency references are available through input network variables
Norms and standards	Conforms to and is certified to	LONMARK® Interoperability Guidelines
	LONMARK compliance	LONMARK-compliant with Variable Speed Motor Drive Profile Number 6010
	Electromagnetic compatibility	
	Emissions	EN 55011 1991 Class A
	Immunity	IEC 801-3 and EN 61000-4-3
	CE-conformity	
	Electromagnetic compatibility	89/336/EEC
	Low-voltage directive	73/23/EEC

NOTE: For technical specifications on the SED2, see Data Sheet *Variable Speed Drives SED2*, document no. *CM1N5192en*.

Dimensions



7 Troubleshooting

WARNING: Make sure that the VSD is deenergized (off) before you install or remove the LON module.

7.1 Status LED functionality

A tri-color LED provides indication of current LON module operating status and error conditions, such as if more than one SNVT is bound by LONWorks. The following table describes the LED indication.

Status LED indication

LED Color & State	Indication
Dark	No power is supplied
Red, flashing	A hardware fault or software error has occurred. If this status is steady (remains flashing), the LON module or VSD could be defective. On the LON side, the LON module is *unconfigured* (normal state when not put into operation or when decommissioned with the tool).
Red, on steady	The LON module starts, but it does *not* communicate with the VSD; VSD operation is disabled. There could be a possible binding error on SNVT 9-13 or SNVT 14-18. LON module with no application (NXE file not available?).
Green/Red flashing	The LON module starts, and the VSD operates normally. There could be a possible binding error on SNVT 19-23 or SNVT 24-28. The LON module is in the configuration bypass state.
Yellow, flashing	The LON module starts, and it communicates with the VSD. There is no connection to the LONWorks network, or the network connector is not inserted in the LON module, or the network connector is disconnected.
Yellow, on steady	The LON module starts, it communicates with the VSD, and connection to the LONWorks network is established. No cyclical data exchange is occurring.
Green, flashing	The LON module starts and it communicates with the VSD. The connection to the LONWorks network is established and cyclical process data exchange is in progress. Setpoint data is invalid. The LON module has received a handshake command. The LED flashes for about 60 seconds.
Green, on steady	The LON module starts and communicates with the VSD. The connection to the LONWorks network is established and cyclical process data exchange is in progress and OK.

Use of advanced operator panel (AOP) on the LON module

If the advanced operator panel (AOP) is plugged into the LON module during operation, communication of the relevant node can be interrupted and must be reopened by the LON module. This means that the VSD will stop the motor and requires a new start command when communication is restored.
By contrast, the basic operator panel (BOP) can be plugged in and removed without impacting communication.

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