

NETWORK DISPLAY



- High visibility vacuum fluorescent 2x16 alphanumeric display.
- Wide operating temperature range.
- Large 0.43" high numeric display format.
- Available in explosion-proof NEMA 4 housing or 1/8 DIN panel-mount enclosure.
- Multiple display parameters from a single display.
- Operates from a wide-input voltage range. 12-36 VDC or 14-26 VAC.
- Efficient DC/DC switching power supply design only draws 1.2 VA typical. (About 50 mA at 24 VDC).
- Firmware is upgradeable via network communication interface.
- Open communication standard using LonWorks® protocol
- User selectable display format of one, two, or four parameters per screen.

DESCRIPTION

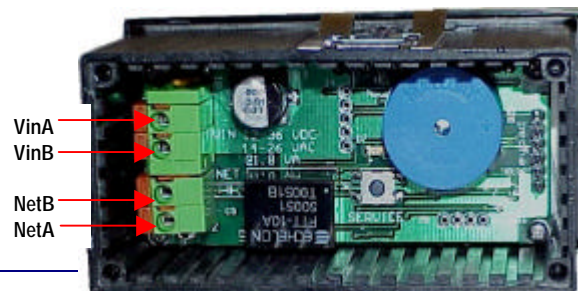
The Model 1600 Network Display is a 2 line by 16-character alphanumeric display using the highly visible vacuum fluorescent technology. The unit integrates the display, Neuron network processor, FTT-10 network communication interface, and a wide-input voltage switching power supply. The hardware also integrates future support for a warning buzzer, two digital outputs, and a keypad interface. The Model 1600 is available in either an explosion proof rated NEMA 4 housing for hazardous environment or a 1/8 DIN panel-mount housing.

Display data and configuration information are exchanged with other devices via the Echelon® LONWORKS communication protocol.

Different versions of the Model 1600 firmware will address a variety of target applications. The initial Version, A, is described in this datasheet. It allows display of up to four different network variables. Each of the variables can be a temperature, percentage, digital, or text. Please see the Version A Firmware Description Section for more detail. Please contact us regarding any special application requirements.

WIRING AND INSTALLATION

The Model 1600 is wired using four terminals. Two terminals are used to connect power. The other two connect the network communication channel. For



MODEL 1600

convenience, the Model 1600 accepts low voltage AC and DC power. Power and network wiring is polarity insensitive and can be reversed.

Network installation can be accomplished via the on-board Service Switch or the “Wink” Network Command. The Service Switch and LED are on the back of the unit.

On the explosion proof rated enclosure, communication and network wiring enters the enclosure via two 3/4” NPT conduit entries. The electronics are attached to the housing via four thumbscrews. Simply remove the thumbscrews and pull out the electronics. Attach the power and communication wiring to the terminal blocks shown. The display and electronics can be rotated at 90-degree increments to accommodate different mounting orientations.

WARNING ON INSTALLATION OF EXPLOSION PROOF VERSION: Do not wire the unit in a hazardous environment with power or communication lines active. Make sure that the cover is tightly closed before applying power or connecting live communication signals. **Failure to do so, in a hazardous environment, could result in severe personal injury.** The Service Switch should be used to install the unit on to the network in a **safe non-hazardous environment** before putting the unit in service.

The **internal** ground screw provided in the enclosure must be used to earth-ground the equipment.

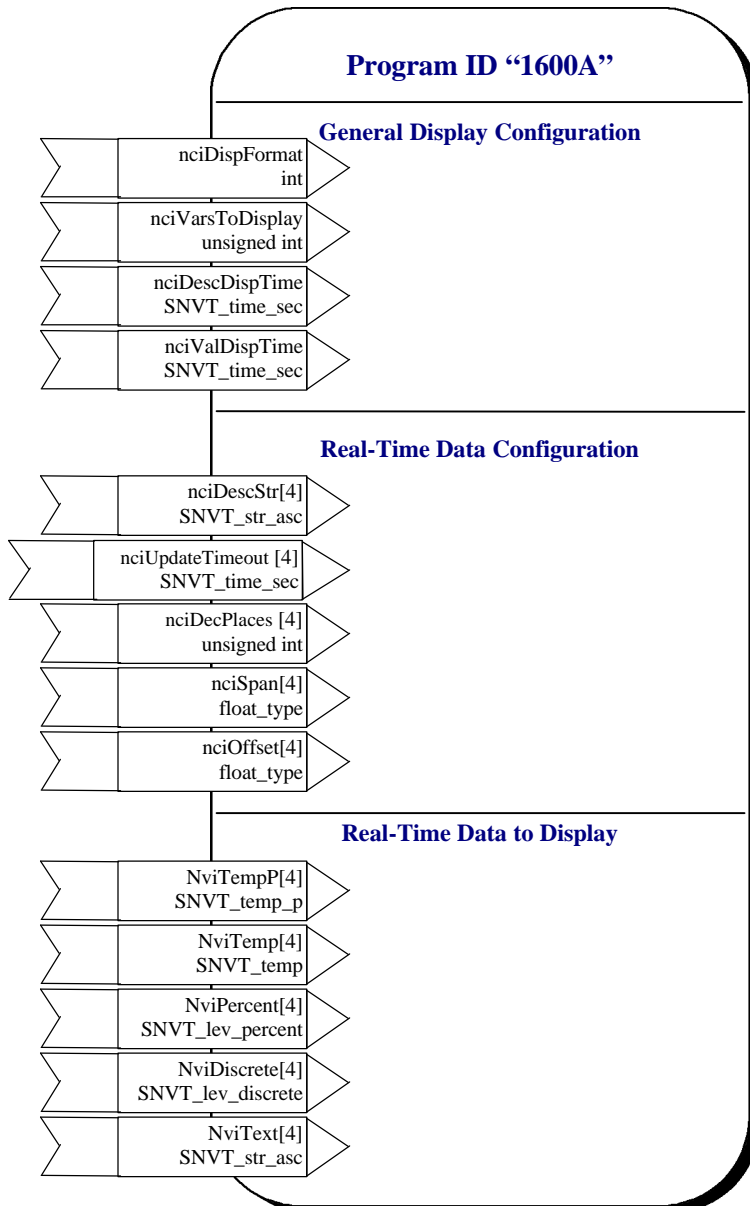
On the panel-mount housing a standard 1/8 DIN cutout is all that is needed to mount the Model 1600. Please see the Specifications section for details on the recommended panel cutout size.

APPLICATION AREAS

- Integration with other NeuroLogic Research’s temperature, humidity, pressure, and data conversion products.
- Industrial temperature monitoring.
- Wiring reduction
- Clean room monitoring.
- High-tech manufacturing environments
- Integration with other LonWorks Products

VERSION A NETWORK INTERFACE

Version A allows display of up to four different network variables. Each of the variables can be a temperature, percentage, digital, or text. The Standard Network Variable types supported are SNVT_temp, SNVT_temp_p, SNVT_lev_percent, SNVT_lev_disc, and SNVT_str_asc. The temperature and percentage values can be scaled to other custom units before display. Depending on the display format selected by the user, each variable can have up to a 16-character alphanumeric description string. The description string is displayed to identify the source of the data. In multi-display panel, this feature could eliminate additional labels normally placed under each display unit to identify the data source.



MODEL 1600

General Display Configuration Network Variables

The following configuration variables apply to display of all parameters. They are saved into non-volatile memory.

Name	Type	Input Range	Resolution	Default	Description
NciDispFormat	Int	0 - 4	N/A	0	Specifies how data is formatted for display. <ul style="list-style-type: none">• 0 – Single value per screen. The display toggles between displaying the description string and the numeric value. The first 16 characters of the description are displayed. The value is displayed using 8 large 0.43" high digits.• 1 – Single value per screen. Top line of display displays the first 16 characters of the description. The bottom line displays the value using 16 digits.• 2 – Two values per screen. The display toggles between the two description strings and the two values. The first 16 characters of the description are displayed. Values are displayed using 16 digits.• 3 – Two values per screen. The first 7 characters of the description are displayed followed by the value using 8 digits.• 4 – Four values per screen. The display toggles between the description text for each variable and the value. The first and second values are displayed on the left side of the screen with 8 positions each. The third and fourth values are displayed on the right side of the screen with 7 positions each.
nciVarsToDisplay	unsigned int	1 - 4	N/A	1	The total number of variables to display.
nciDescDispTime	SNVT_time_sec	0 - 30 seconds	0.1	0	On display formats where the display toggles between the description and the value, this variable controls how long to display the description string. If 0, it disables toggle between the values and the description text.
nciValDispTime	SNVT_time_sec	1 - 60 seconds	0.1	5	The length of time to display the value of a particular variable before displaying the next.

Real-Time Data Configuration Network Variables

The following network variables configure how data updates are to be displayed. They are saved into non-volatile memory. Each configuration is an array of four input network variables. Writing to index 0 affect the display of the first parameter on the display. Writing index 1 affects the display of the second parameter on the display and so on.

Name	Type	Input Range	Resolution	Default	Description
nciDescStr[4]	SNVT_str_asc	Text string	N/A	1, 2, 3, 4	User specified text description of each variable.
nciUpdateTimeout [4]	SNVT_time_sec	0 - 6553.5 seconds	0.1	0	Maximum amount of time allowed between network updates before the Model 1600 assumes loss of data. When this occurs the Model 1600 will display "?????" to indicate loss of data. A value of 0 will cause the Model 1600 to never assume data is lost and simply continue to display the last value received.
nciDecPlaces [4]	Unsigned int	0 – 5	N/A	2	Number of decimal places used to display each value.
nciSpan[4]	float_type	-1e-38 to 1e38	Floating point	1.0	Each value is multiplied by nciSpan and then nciOffset is added. Value Displayed = NetVariable*Span + Offset NetVariable is the converted network variable value. For SNVT_temp_p and SNVT_temp this is the temperature in C. To convert to degrees F, set nciSpan = 1.8 and nciOffset = 32.0. For SNVT_lev_percent this is the percentage value. For example to display actual current input from a 4-20 mA sensor use nciSpan = 0.16 and nciOffset = 4.0.
nciOffset[4]	float_type	-1e-38 to 1e38	Floating point	0	See nciSpan[] description

MODEL 1600

Real-Time Data Input Network Variables

The following network variables are the network variables that are actually displayed. The Model 1600 supports the following Standard Network Variable Types: SNVT_temp_p, SNVT_temp, SNTV_lev_percent, SNVT_lev_discrete, and SNVT_str_asc.

Each data type has four input network variables. Writing to index 0 updates the first parameter on the display. Writing index 1 updates the second parameter on the display and so on. The Model 1600 automatically figures out which variable is being updated and converts it to the appropriate units. The data is then multiplied by the nciSpan parameter and then the nciOffset parameter is added. Please see nciSpan description in the previous section.

Please note, the nviText type can actually be used to display other data types if the source node is able to format the data into an ASCII string.

Name	Type	Input Range	Resolution	Default	Description
nviTempP[4]	SNVT_temp_p	-273.17 .. +327.66 degrees C	0.01	N/A	Value written to display data in the SNVT_temp_p format.
nviTemp[4]	SNVT_temp	274 .. 6,279.5 degrees C	0.1	N/A	Value written to display data in the SNVT_temp format.
nviPercent[4]	SNVT_lev_percent	-163.84% .. 163.83%	0.005%	N/A	Value written to display data in the SNVT_lev_percent format.
nviDiscrete[4]	SNVT_lev_discrete	OFF, LOW, MED, HI, ON	N/A	N/A	Value written to display data in the SNVT_lev_discrete format.
nviText[4]	SNVT_str_asc	ascii text	N/A	N/A	Value written if data is in the SNVT_str_asc format.

Indication of Error Conditions

The following table describes what the Model 1600 displays under different error conditions:

Display	Condition
-----	No network updates have been received since the Model 1600 has been powered up.
???????	Excessive amount of time has elapsed since the last network update has been received. The time-out period is controlled by nciUpdateTimeout. Each of the four inputs has a separate value. By default, it is zero and the Model 1600 will continue to display the last value received.
*****	The number being displayed is too large for the number of display characters allowed.
#####	The data received for the type of network variable indicates that the data is invalid.

GENERAL SPECIFICATION

Electronics

CPU	3120 Neuron
Network Transceiver	TP/FT10
Display Capability	2 line x 16 character alphanumeric mode with 5 mm high characters 1 line x 8 numeric mode with 11 mm high characters
Display Technology	Vacuum Fluorescent

Input Power

DC Power	12 to 36 V
AC Power	14 to 26 V
Current Consumption	1.2 VA typical power consumption (50 mA @ 24VDC). 1.8 VA maximum.
Wiring	Two wire power connection (Polarity Insensitive)
Protection	Input power is fused and transient voltage protected. (Fuses do not need to be replaced)

Network Communication

Protocol	Echelon LonWorks Communication
Transceiver Type	Echelon FTT-10A transceiver at 78 kbps. DC blocking capacitors for LPT10 network.
Wiring	Two wire connection (Polarity Insensitive)

Explosion Proof Rated Enclosure

Enclosure	6 1/8" W x 5 15/64" L x 4 17/32" D Overall Dimensions
View Window	2 9/32" Round
Material	Aluminum
Finish	Gray
Mounting	2 x 1/4" Mounting Holes
Electrical Connection	2 x 3/4" NPT conduit entries
Enclosure Approvals	UL, CSA and FM Class I, Divisions 1 & 2, Groups B-D Class II, Divisions 1&2, Groups E-G Class III

Panel Mount Enclosure

Enclosure	96 mm W X 48 mm H x 63 mm D / 3.8" W x 1.9" H x 2.48" D Conforms to DIN43700 standard.
Finish	Black
Mounting	92 mm W x 45 mm H / 3.62" W x 1.77" H panel cutout.
Panel Thickness	1 to 3.5 mm / 0.04 to 0.138"

Note: Specifications subject to change without notice.

MODEL 1600

ORDERING INFORMATION

1600	Model 1600 Network Display
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Code	Network Transceiver Option
-0	TP/FTT-10A

Code	Housing
-01	Explosion Proof NEMA 4
-02	1/8 DIN Panel Mount

Code	Software Revision
-0A	Revision A Standard

1600	-0	-01	-0A	Model 1600 in explosion proof enclosure with FTT-10A transceiver and standard software
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