

TB 102E

**Belden Cables for  
LonWorks® Networks**



**Belden Offers High Quality  
Cables for LonWorks®  
Networks Including LSNH,  
PVC and SWA Versions for  
Demanding Environments.**

Echelon device networking technology enables end-users to remotely connect, monitor, control, sense, and diagnose intelligent devices. Today, thousands of intelligent devices and appliances are equipped with LonWorks® networks. You can find them in every aspect of the device networking environment – from HVAC and lighting in buildings, to collecting energy usage information or data across a grid of million homes – 24 hours a day. LonWorks® networks simplify system management, conserve energy, improve operations, and reduce costs.

**Network Structure**

The LonWorks® network can be setup as a bus, loop, star or a combination (so called free topol-

ogy) whatever the architect sees as the most appropriate for the application and/or the environment. Additionally one could use either single sided termination or double sided termination, this influences the total length of the segment.

Belden offers a wide range of cables suitable for usage in the various network topologies. For a cable suitable for one of the following network topologies: TP/FT-10, TP/XF-78 and TP/FT-1250 please consult the overview on the next page.

On the TP-RS485 channel Belden offers a series of cables for RS-485 connections as stated in the table below:

EIA RS-485 CAN open	Construction	Nominal Impedance	Nominal Capacitance	
9841	1 pair AWG 24 PVC	120 Ω	42.0 pF/m	75.5 pF/m
9841NH	1 pair AWG 24 LSNH	120 Ω	42.0 pF/m	75.5 pF/m
9841LS	1 pair AWG 24 LSNH steel wire armoured	120 Ω	42.0 pF/m	75.5 pF/m
3105A	1 pair AWG 22 PVC/PLTC	120 Ω	36.1 pF/m	65.5 pF/m

## LonWorks® Cabling Overview

Cable type:	Category 5e, 4 pair AWG 24/1 EIA/TIA 568 ISO 118012	TP/FT-10 free topology		TP/FT-10 bus topology		TP/FT-1250 bus topology <sup>1</sup>		TP/XF-78 bus topology <sup>1</sup>	
		Maximum cable length node to node	total	Maximum cable length drop	total bus	Maximum cable length drop	total bus	Maximum cable length drop	total bus
<b>Office grade</b>	1583E (UTP PVC)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	1583ENH (UTP LSNH)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	1633E (FTP PVC)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	1633ENH (FTP LSNH)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	1633E+ (STP PVC)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	1633E+NH (STP LSNH)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
<b>Industrial grade</b>	7923A (UTP PVC)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	BEB1212 (UTP LSNH)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	7929A (FTP PVC)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	7921A (STP PVC)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
	BEB3212 (STP LSNH)	250 m	450 m	3 m	900 m	0.3 m	130 m		not applicable
<b>Standard cable</b>	8471, 1 pair AWG 16/7, PVC unshielded	400 m	500 m	3 m	2700 m	not applicable		not applicable	
	8471NH, 1 pair AWG 16/7, LSNH unshielded	400 m	500 m	3 m	2700 m	not applicable		not applicable	
	8471LS, 1 pair AWG 16/7, LSNH with steel wire armour	400 m	500 m	3 m	2700 m	not applicable		not applicable	
<b>Standard cable</b>	8719, 1 pair AWG 16/7, shielded	400 m	500 m	3 m	2700 m	not applicable		not applicable	
<b>Plenum rated</b>	85102, 1 pair AWG 16/7, Tefzel	500 m	500 m	3 m	2700 m	not applicable		not applicable	
<b>Level 4 cable</b>	7701NH, 1 pair AWG 22, LSNH unshielded	400 m	500 m	3 m	1400 m	0.3 m	130 m	3 m	1400 m
	7702NH, 2 pair AWG 22, LSNH unshielded	400 m	500 m	3 m	1400 m	0.3 m	130 m	3 m	1400 m
	7703NH, 1 pair AWG 22, LSNH shielded	400 m	500 m	3 m	1400 m	0.3 m	130 m	3 m	1400 m
	7704NH, 2 pair AWG 22, LSNH shielded	400 m	500 m	3 m	1400 m	0.3 m	130 m	3 m	1400 m

Note 1: Please consult the Echelon TPT user guide before installing any cabling as there are topology restrictions associated with the use of this channel.  
 Note 2: Be aware that this is only a selection out of our total offering of category products.

