

2100-NS RS232 to RS422 Converter.

Converts RS232 from a computer to RS422 for communication to a field Datalogging system.

Features.

- Easy to Install.
- LED Status Indications.
- Compact Interface Module.
- Low Cost.
- Complete With a 9/25D Serial Cable & AC/DC Adapter.



Other 2100 models include:
 2100-A16 :16AI, 3DI, 2 Relay Out;
 2100-A4 :4AI, 4DI, 4 Relay Out;
 2100-A4e :4AI, 4DI, 8 Relay Out;
 2100-D :12DI, 12 Relay Out;
 2100-IS :Isolated RS232 to RS422/485;
 2100-ME :Memory Expansion for 2100-A;
 2100-M :16AI Multiplexer;
 2100-R :16 Relay Expansion for 2100-A.

Ordering Information.

Standard Unit:

2100-NS Non Isolated RS232 to RS422 Converter.

Accessories:

2100-IP RS232 Cable for Parallel Connection of up to Four 2100-NS Convertors.

2100-IB Adaptor Kit for Boosting RS422.

Description.

The 2100-NS is a compact interface Module that converts RS232 from a computer to RS422, for communication to a field data logging system. Its driver and receiver meet EIA standards RS-422-A and CCITT recommendations V.11 and X.27, and are designed for multipoint transmission on long bus lines in noisy environments. It includes thermal shutdown and over current limiting. It is powered by an external AC/DC adapter, making it suitable for working with many types of PCs and PLCs. It comes complete with the AC/DC adapter, and a 200mm 25way to 9way adapter cable for the PC.

2100-NS Specifications.

Comms Baud Rate	-Standard	9600baud.
	-Optional	4800 or 19200baud.
Power Supply		9Vdc, 200mA. (From Adapter Supplied).
EMC Emissions Compliance		EN 55022-A
EMC Immunity Compliance		EN 50082-1
Operating Temperature		0~60C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH Max. Non-Condensing.
Dimensions (Convertor Only)		L=75, W=55, H=20.
Weight		600g. (Includes AC/DC Adapter, Cables, and Packaging).

AC/DC Adapter Specifications.

Model	PSA9V2.
Input Voltage	230/240Vac \pm 10%; 50mA; 50/60Hz.
Output Voltage	9Vdc, 200mA
Australian Approval	N14866.
Polarity	White Stripe = +Ve.

Note 1. Specifications based on Standard Calibration Unit, unless otherwise specified.

Note 2. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification.
 No liability will be accepted for errors, omissions or amendments to this specification.

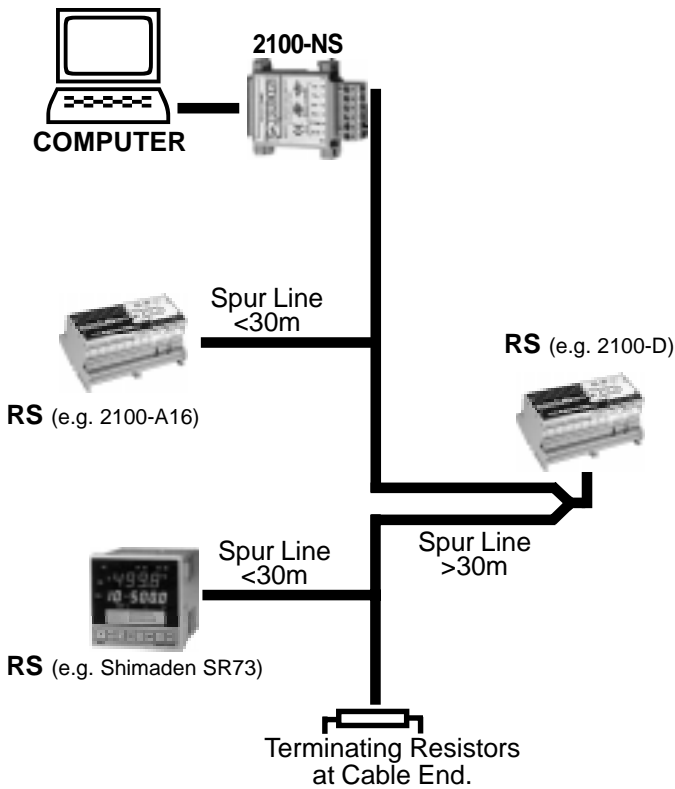
Description of LED Functions.

R.X.	LED	ON	Unit Receiving Data From the Field.
T.X.	LED	ON	Unit Transmitting Data to the Field.

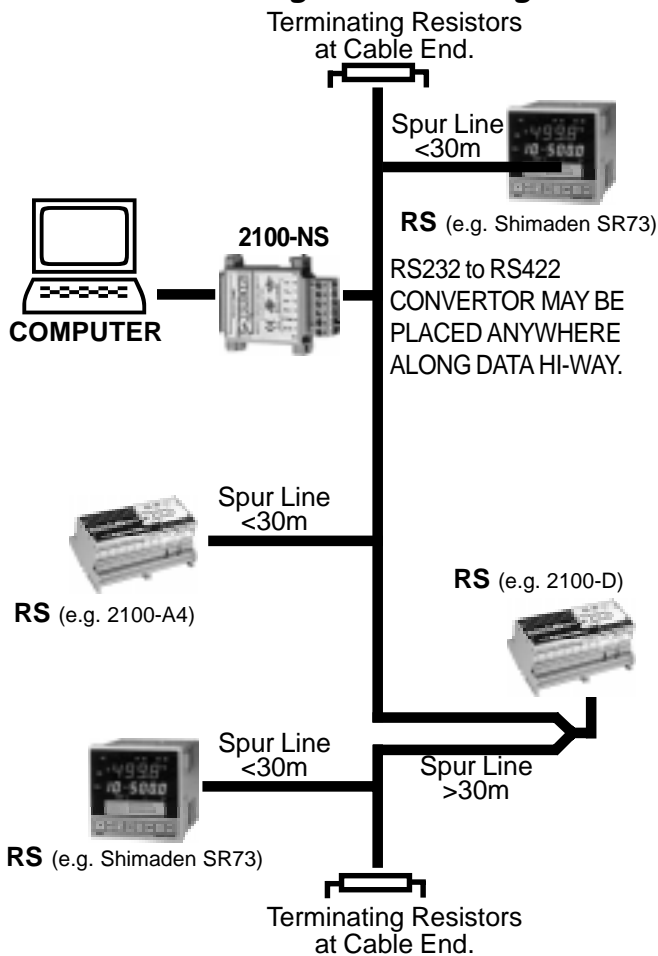
Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant long term reliability of the instrument. This instrument has been designed and built to comply with EMC and Safety Standards requirements.

**2100 SCADA.
RS422 Data Cabling Installation eg 1.**

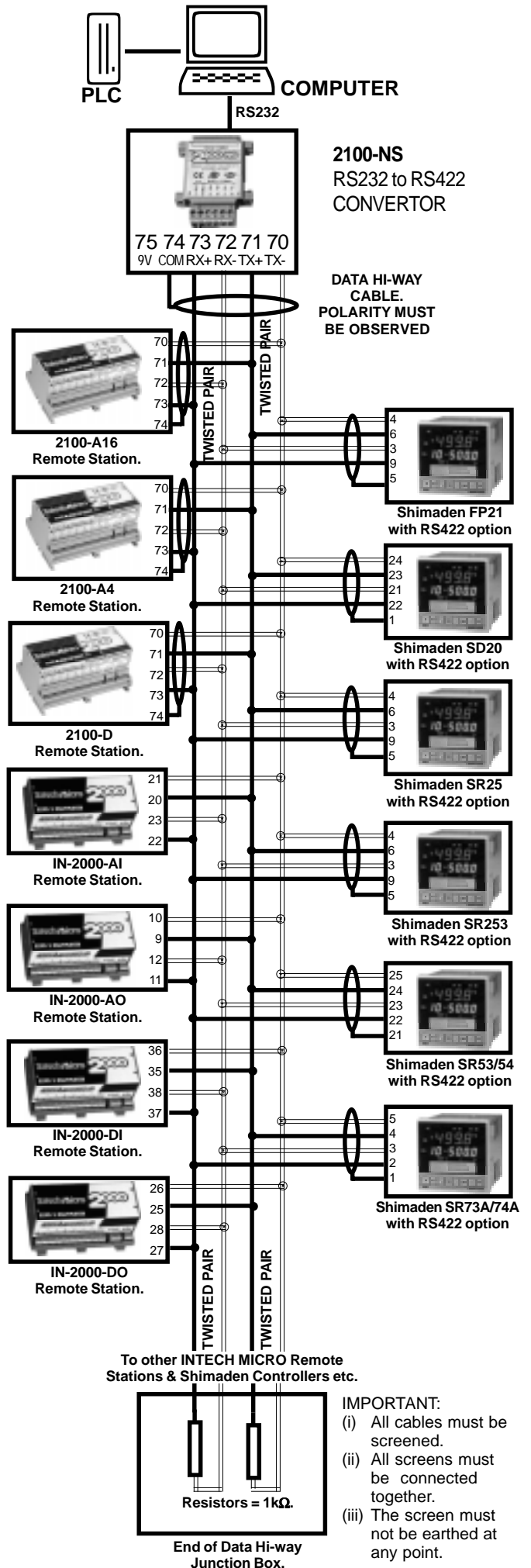


RS422 Data Cabling Installation eg 2.



Note: RS = MICRO 2000 or 2100 Remote Stations, or SHIMADEN CONTROLLERS.
IMPORTANT: The accompanying Installation Instructions must be strictly adhered to.

**OUTSTATION LAYOUT.
4-Wire RS422 Serial Connections.**



Terminations for all Models of 2100-IS / 2100-NS / IN-2000-IS.

Terminations								
Model	2100-IS		2100-NS		IN-2000-IS Rev.2		IN-2000-IS Rev.0, Rev.1	
	Term No	Connection	Term No	Connection	Term No	Connection	Term No	Connection
Mains Supply	93	230Vac			1	Phase(24~230Vac)	1	230Vac
	92	115Vac			2	Neutral	2	115Vac
	91	Neutral			3	Earth	3	Neutral
	90	Earth			4	Earth	4	Earth
Alarm Relay	62	N.C.			5	N.C.	5	N.C.
	61	N.O.			6	N.O.	6	N.O.
	60	COM			7	COM	7	COM
RS422 (RS485)			75	9Vdc, 200mA	8	0V	8	0V
	74	COM	74	COM	9	RX+	9	RX+
	73	RX+	73	RX+	10	RX-	10	RX-
	72	RX-	72	RX-	11	0V	11	0V
	71	TX+ (RS485)	71	TX+	12	TX+	12	TX+
	70	TX- (RS485)	70	TX-	13	TX-	13	TX-

RS232 Booster Connection Diagram.

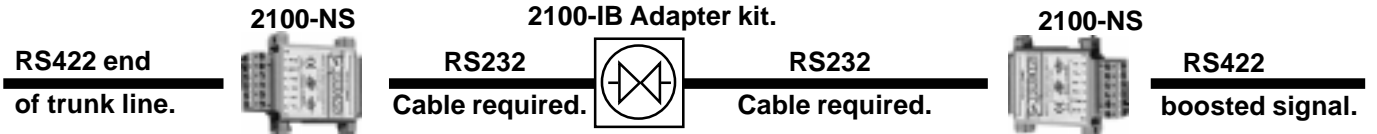
Where the RS232 is required to exceed it's specified cable length of 15m, two or more 2100-NS' can be used to extend the signal up to 1200m. (To extend further refer to the following section, using the 2100-IB Booster Adapter.)

Note. This cannot be used for hardware handshaking.



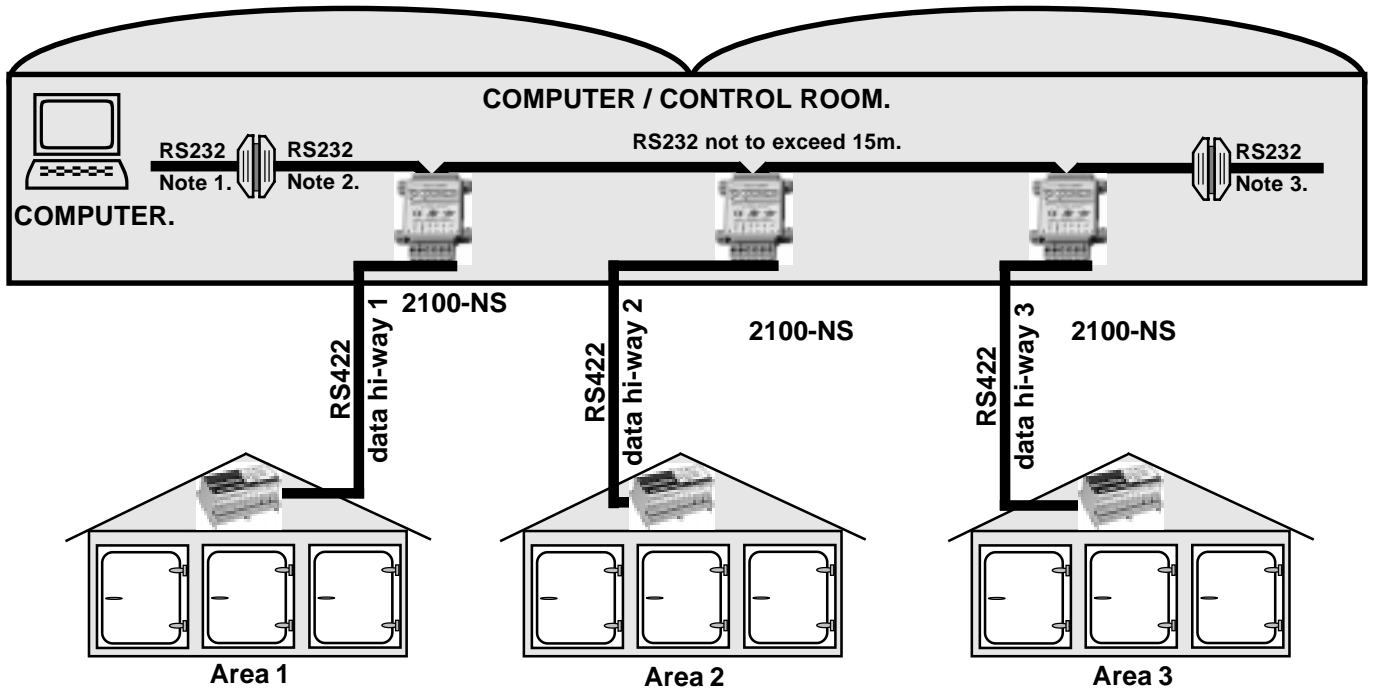
RS422 Booster Connection Diagram.

Where the RS422 Data Hi-way exceeds 1200m it is necessary to boost the signal. Detailed connection information supplied with 2100-IB Adapter Kit.



Parallel Connection of RS232 to Multiple 2100-NS.

Used in situations where the RS422 Data Hi-way is going in different directions in a plant. Up to six 2100-NS' can be connected in this configuration. If the overall Data Hi-way does not exceed 1200m, one 2100-NS should be sufficient.



Note.

- (1) RS232 Cable is required.
- (2) 2100-IP RS232 cable for parallel connection of up to four 2100-NS convertors.
- (3) For connection of more than four 2100-NS', two 2100-IP cables can be connected together.
- (4) This mode is not to be confused with the interfaces "Dual Port Mode" which is used to access more than 32 Shimaden Controllers on two serial ports.
- (5) Do not parallel a 2100-NS with an IN-2000-IS.

2100-NS Pinout of DB25 Connector.

2100-NS = DCE. (Data Communications Equipment.)

2100-NS DB25 Connector				
Pin Name	Signal Name	Direction	Pin No.	H2 STD
TD	Transmitted Data	In	2	TX
RD	Received Data	Out	3	RX
RTS	Request to Send	In	4	TXE
CTS	Clear to Send	Out	5	CTS
SG	Signal Ground	-	7	0V
DSR	Data Ready to Send	In	6	
CD	Carrier Detect	Out	8	
DTR	Data Terminal Ready	Out	20	
RI	Ring Indicator	N/C	22	N/C

linked
linked

The Proper Installation & Wiring of the 2100-NS.

MOUNTING.

- (1) Mount in a clean environment.
- (2) Do not subject to vibration, excess temperature or humidity variations.
- (3) Avoid mounting near power control equipment.

ANALOGUE SIGNAL CABLING.

- (1) All analogue cables should be good quality, overall screened, INSTRUMENTATION CABLE, with the screen earthed at one end only. (e.g. Austral Standard Cables B5102ES.)
- (2) Analogue signal cables should be laid a minimum distance of 300mm from power and data cables.
- (3) It is recommended that you do not ground current loops or use power supplies with ungrounded outputs.
- (4) Lightning arresters should be used on inputs and outputs when there is a danger from this source.
- (5) Refer to diagrams for connection details.

RS422 COMMS CABLING.

- (1) Use only low capacitance, twisted pair, overall screened data cable. The cable must equal or better the following specifications.

Cable Specifications.		
Conductor Size.		7/0.20mm, 24AWG
Conductor Resistance @ 20C.		8.9Ω/100m
Max. Working Voltage.		300Vrms
Capacitance between wires of a pair.		50pF/m
Capacitance between each wire to all others bunched together.		95pF/m
Cross-talk between pairs:	@ 1kHz @ 100kHz	>-90dB/100m >-50dB/100m
Characteristic Impedance .	@ 100kHz	135Ω
Attenuation of a pair:	@ 1kHz @ 10kHz @ 100kHz @ 150kHz @ 1MHz @ 1.5MHz	0.15dB/100m 0.42dB/100m 0.8dB/100m 0.9dB/100m 1.9dB/100m 2.4dB/100m

NOTE: All cables are to be subject during manufacture to in-process spark testing @ 4kVrms.
All cables are to be tested between conductors and conductors to screen for 1min @ 1500Vrms.

- (2) Minimum cable pairs: RS422 = 2. (Plus overall screen.)
- (3) Take care not to stress or damage cables during installation.
- (4) Total length of trunk line, including spurs, is not to exceed 1200m without isolating boosters.
- (5) Terminating resistors -1kΩ.
- (6) Cabling paths should avoid sources of radio frequency interferences such as fluorescent lights, variable speed motor drives, welding equipment, radio transmitters, etc.
- (7) There should be a minimum of 200mm physical separation between power cables and data cables.
- (8) Data cables should not be exposed to excessive heat or moisture, and should not be buried directly in the ground without protection.
- (9) Avoid powering a remote station or controller from the same power supply as a variable speed drive.

