Installation Instructions

Compact 1769-ASCII Module

Cat. No. 1769-ASCII

Inside…

Publication 1769-IN068B-EN-P - May 2005

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will Rockwell Automation be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Rockwell Automation office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

Throughout this publication, notes may be used to make you aware of safety considerations. The following annotations and their accompanying statements help you to identify a potential hazard, avoid a potential hazard, and recognize the consequences of a potential hazard:

WARNING

Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

ATTENTION

Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

IMPORTANT Identifies information that is critical for successful application and understanding of the product.

ATTENTION

Environment and Enclosure

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

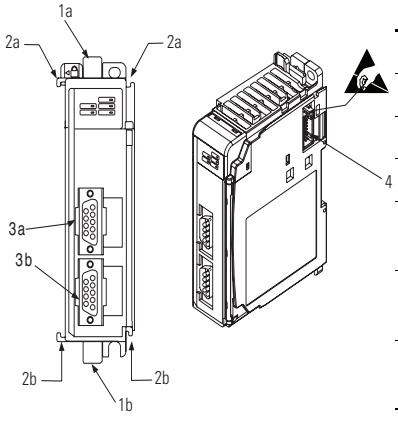
This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as "open type" equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

NOTE: See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 ("Industrial Automation Wiring and Grounding Guidelines"), for additional installation requirements pertaining to this equipment.

About the Module

The 1769-ASCII module provides a flexible network interface to a wide variety of RS-232, RS-485, and RS-422 ASCII devices. The module provides the communication connections to the ASCII device.



Item	Description
1a	Upper DIN rail latch
1b	Lower DIN rail latch
2a	Upper tongue-and-groove slots
2b	Lower tongue-and-groove slots
3a	Channel 0 isolated ASCII connector
3b	Channel 1 isolated ASCII connector
4	Stationary bus connector with male pins

Install the Module

Compact I/O is suitable for use in an industrial environment when installed in accordance with these instructions. Specifically, this equipment is intended for use in clean, dry environments (Pollution Degree 2[1]) and to circuits not exceeding Over Voltage Category II[2] (IEC 60664-1).[3]

ATTENTION

Preventing Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.

When not in use, store the equipment in appropriate static-safe packaging.

WARNING

If you connect or disconnect the serial cable with power applied to this module or the serial device on the other end of the cable, an electrical arc can occur. This can cause an explosion in hazardous locations. Be sure that power is removed or the area is nonhazardous before proceeding.

(1) Pollution Degree 2 is an environment where, normally, only non-conductive pollution occurs except that occasionally a temporary conductivity caused by condensation shall be expected.

(2) Over Voltage Category II is the load level section of the electrical distribution system. At this level transient voltages are controlled and do not exceed the impulse voltage capability of the product's insulation.

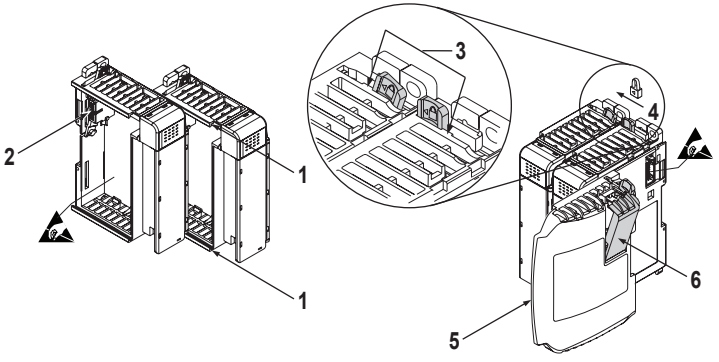
(3) Pollution Degree 2 and Over Voltage Category II are International Electrotechnical Commission (IEC) designations.

ATTENTION

This product is grounded through the DIN rail to chassis ground. Use zinc-plated, yellow-chromate steel DIN rail to assure proper grounding. The use of other DIN rail materials (e.g., aluminum, plastic, etc.), which can corrode, oxidize, or are poor conductors, can result in improper or intermittent grounding.

Assemble the System

Attach the module to the controller or an adjacent I/O module before or after mounting. For mounting instructions, see the Panel Mount or Mount on the DIN Rail sections. To work with a system that is already mounted, see Replace a Single Module Within a System section.



1. Disconnect power.

ATTENTION

Remove power before removing or inserting this module. When you remove or insert a module with power applied, an electrical arc may occur. An electrical arc can cause personal injury or property damage by:

- sending an erroneous signal to your system's field devices, causing unintended machine motion
- causing an explosion in a hazardous environment

Electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance.

2. Check that the bus lever of the module to be installed is in the unlocked (fully right) position.

3. Use the upper and lower tongue-and-groove slots (1) to secure the modules together or to a controller.

4. Move the module back along the tongue-and-groove slots until the bus connectors (2) line up with each other.

5. Use your fingers or a small screwdriver to push the bus lever back slightly to clear the positioning tab (3).

6. To enable communication between the controller and module, move the bus lever fully to the left (4) until it clicks.

   Ensure it is locked firmly in place.

ATTENTION

When attaching I/O modules, it is very important that the bus connectors are securely locked together to ensure proper electrical connection.

7. Attach an end-cap terminator (5) to the last module in the system by using the tongue-and-groove slots as before.

8. Lock the end-cap bus terminator (6).

IMPORTANT You must use a 1769-ECR or -ECL right- or left-end cap to terminate the end of the serial communication bus.

Mount Expansion I/O

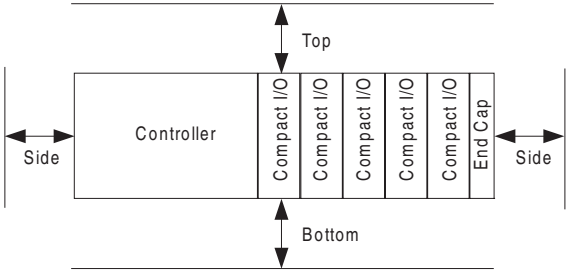
ATTENTION 

During panel or DIN rail mounting of all devices, be sure that all debris (metal chips, wire strands, etc.) is kept from falling into the module. Debris that falls into the module could cause damage on power up.

IMPORTANT When mounting the CompactLogix system, either use screws to panel mount the system **OR** use DIN rail. Do **NOT** use both. Use of both mounting methods may cause hardware damage and cause the system to fail.

Minimum Space

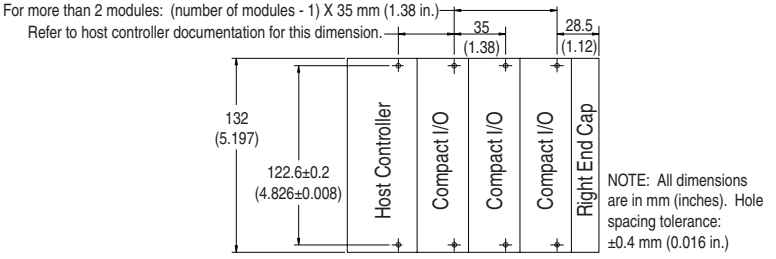
Maintain spacing from enclosure walls, wireways, adjacent equipment, etc. Allow 50 mm (2 in) of space on all sides for adequate ventilation.



Panel Mount

Mount the module to a panel by using two screws per module. Use M4 or #8 panhead screws. Mounting screws are required on every module.

Panel Mount Procedure With the Dimensional Template



Panel Mount Procedure With Modules as a Template

The following procedure lets you use the assembled modules as a template for drilling holes in the panel. Due to module mounting hole tolerance, it is important to follow these procedures.

1. On a clean work surface, assemble no more than three modules.
2. Using the assembled modules as a template, carefully mark the center of all module-mounting holes on the panel.
3. Return the assembled modules to the clean work surface, including any previously mounted modules.
4. Drill and tap the mounting holes for the recommended M4 or #8 screw.

5. Place the modules back on the panel, and check for proper hole alignment.

6. Attach the modules to the panel using the mounting screws.

   If mounting more modules, mount only the last one of this group and put the others aside. This reduces remounting time during drilling and tapping of the next group.

7. Repeat steps 1 to 6 for any remaining modules.

Mount on the DIN Rail

The module can be mounted on these DIN rails:

- 35 x 7.5 mm (EN 50022 - 35 x 7.5)
- 35 x 15 mm (EN 50022 - 35 x 15)

Before mounting the module on a DIN rail, close the DIN rail latches. Press the DIN rail mounting area of the module against the DIN rail. The latches will momentarily open and lock into place.

Replace a Single Module Within a System

The module can be replaced while the system is mounted to a panel or DIN rail.

1. Remove power.

ATTENTION

Remove power before removing or inserting this module. When you remove or insert a module with power applied, an electrical arc may occur. An electrical arc can cause personal injury or property damage by:

- sending an erroneous signal to your system's field devices, causing unintended machine motion
- causing an explosion in a hazardous environment

Electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance.

2. On the module to be removed, remove the upper and lower mounting screws from the module (or open the DIN latches using a flat-blade or Phillips-style screwdriver).

3. Move the bus lever to the right to disconnect (unlock) the bus.

4. Move the bus lever on the right-side adjacent module to the right (unlock) to disconnect it from the module to be removed.

5. Gently slide the disconnected module forward.

   If you feel excessive resistance, check that the module has been disconnected from the bus, and that both mounting screws have been removed (or DIN latches opened).

   You may need to rock the module slightly from front to back to remove it, or, in a panel-mounted system, to loosen the screws of adjacent modules.

6. Before installing the replacement module, be sure that the bus lever on the module to be installed and on the right-side adjacent module are in the unlocked (fully right) position.

7. Slide the replacement module into the open slot.

8. Connect the modules together by locking (fully left) the bus levers on the replacement module and the right-side adjacent module.

9. Replace the mounting screws (or snap the module onto the DIN rail).

Ground the Module

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel. Additional grounding connections from the module's mounting tabs or DIN rail (if used) are not required unless the mounting surface cannot be grounded. Refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1, for additional information.

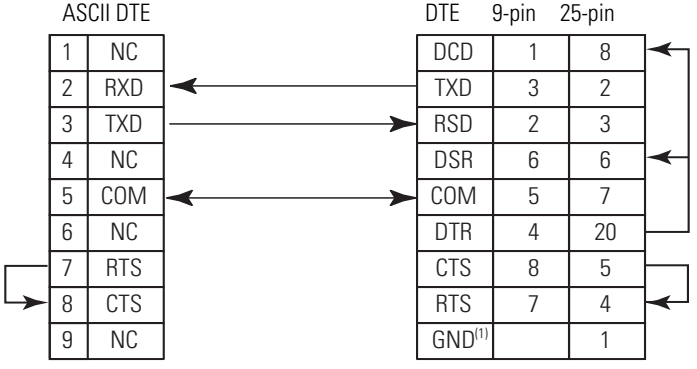
Connect the D-sub Connector Pins

All pins are active at all times.

IMPORTANT Pins unused for a particular physical network must not be connected via the serial cable to any other device. In particular, do not use cables 1747-CP3 and 1756-CP3.

Pin	RS-232	RS-422	RS-485
1	Do Not Connect	Transmit Data -	Transmit/Receive Data -
2	Receive Data	Do Not Connect	Do Not Connect
3	Transmit Data	Do Not Connect	Do Not Connect
4	Do Not Connect	Receive Data -	Do Not Connect
5	Common	Common	Common
6	Do Not Connect	Receive Data +	Do Not Connect
7	Request To Send	Request To Send	Request To Send
8	Clear To Send	Clear To Send	Clear To Send
9	Do Not Connect	Transmit Data +	Transmit/Receive Data +

Figure 1 RS-232 Wiring Diagram - Module to DTE Device (Hardware Handshaking Disabled)



(1) Connect to the shield of the cable.

Figure 2 RS-232 Wiring Diagram - Module to Printer (Hardware Handshaking Enabled, Standard Printer Adapter Cable)

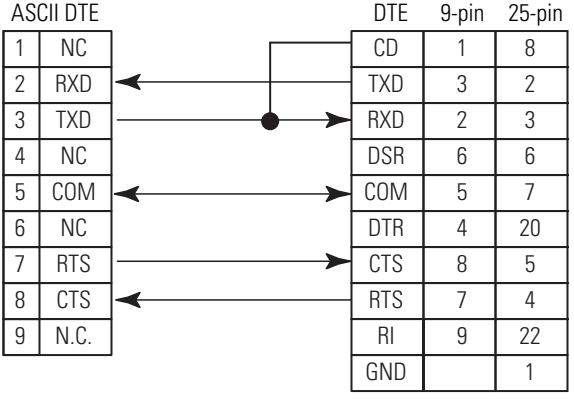


Figure 3 RS-422 Wiring Diagram

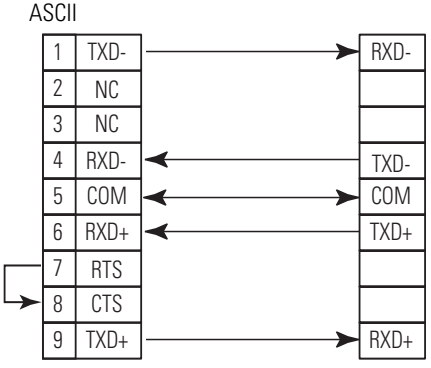
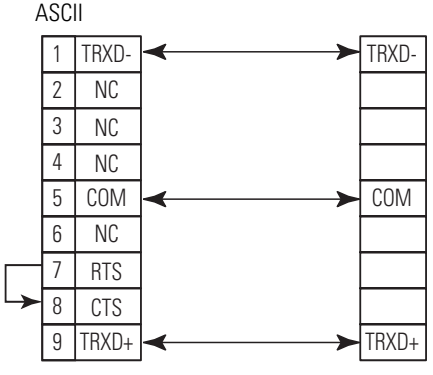


Figure 4 RS-485 Wiring Diagram



I/O Memory Mapping

The 1769-ASCII module supports an input assembly that is accessible through the Assembly Object (Class 4), Instance 101. The input assembly is up to 108 words. The module supports an output assembly that is accessible through the Assembly Object (Class 4), Instance 100. The output assembly is up to 108 words.

Alternate Mode (One Channel at a Time) Output File

Maximum size is shown below. Refer to the Compact I/O 1769-ASCII Module User Manual, publication 1769-UM012, to use smaller output files.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Reserved								Tx Transaction ID Ch0							
1	Reserved								Rx Transaction ID Request Ch0							
2	Reserved								Tx Transaction ID Ch1							
3	Reserved								Rx Transaction ID Request Ch1							
4	Reserved															CNI
5	Reserved															CNO
6	Reserved															
7	Length (Number of Bytes)															
8	Character 1								Character 0							
9	Character 3								Character 2							
…	Character …								Character …							
106	Character 197								Character 196							
107	Character 199								Character 198							

- Tx = Transmit
- Rx = Receive
- CNI = Channel number of requested input data. This bit is set by the PLC controller or other user program to tell the ASCII module which data to produce.

- CNO = Channel number of the output data being sent. This bit is set by the PLC controller or other user program to tell the ASCII module which port's data is being sent to the ASCII module.
- Reserved bits should be set to 0.

Alternate Mode (One Channel at a Time) Input File

Maximum size is shown below. Refer to the Compact I/O 1769-ASCII Module User Manual, publication 1769-UM012, to use smaller input files.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0	Tx ID 0 Acknowledged								Rx Transaction ID Ch0							
1	15	14	13	12	11	10	TG0	TS0	ND 0	HE0	NR 0	RF0	TF0	PA0	RO0	TO0
2	Tx ID 1 Acknowledged								Rx Transaction ID Ch1							
3	15	14	13	12	11	10	TG1	TS1	ND 1	HE1	NR 1	RF1	TF1	PA1	RO1	TO1
4	Reserved															CNI
5	Reserved															CNO
6	Firmware Revision, Major								Firmware Revision, Minor							
7	Length (Number of Bytes)															
8	Character 1								Character 0							
9	Character 3								Character 2							
…	Character …								Character …							
106	Character 197								Character 196							
107	Character 199								Character 198							

- Tx = Transmit
- Rx = Receive
- TS = Transmit sent. Indicates the ASCII module has sent the data indicated by the Tx Transaction ID and can accept more transmit data.
- ND = New data. Only used for Handshake mode.
- HE = Handshake error. Only used for Handshake mode.

- NR = Non-delimited record. An input record is received and sent to the Compact bus interface that was not triggered by a delimiter character. This occurs when either the buffer is filled to its maximum receive size or a Message Timeout has occurred.
- RF = Data in the receive FIFO. The FIFO is not empty. The input FIFO has not sent all of its data to the Compact bus interface.
- TF = Data in transmit FIFO. The FIFO is not empty. The output FIFO has not sent all of its data to the ASCII device.
- PA = Parity error. A parity error has occurred with the received data string. This usually indicates a mismatch in the serial port set-up of the ASCII device and the Compact module. It could also indicate that noise has occurred on the line and degraded the signal. This bit is set when the receive FIFO contains a message in which a parity error occurred in one of the incoming bytes. This bit is reset when the receive FIFO is emptied or when a new message is received with no parity error.
- RO = Receive buffer overflow. Some input data has been lost.
- TG = Transmit greater than Max Error. Transmit length in the output file is greater than the maximum transmit character length in the configuration file.
- TO = Transmit buffer overflow. Some output data has been lost.
- CNI = Channel number of the input data. This bit is set by the ASCII module to tell the user program from which port the data was received.
- CNO = Channel number of the output data most recently received. This bit is set by the ASCII module to tell the user program that it has received the data to transmit out the specified port.

Simultaneous Mode (Two Channels) Input File

Maximum size is shown below. Refer to the Compact I/O 1769-ASCII Module User Manual, publication 1769-UM012, to use smaller output files.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Channel 0 Data																
0	Tx ID Acknowledged								Rx Transaction ID							
1	Reserved						TG	TS	ND	HE	NR	RF	TF	PA	RO	TO
2	Firmware Revision, Major								Firmware Revision, Minor							
3	Length (Number of Bytes)															
4	Character 1								Character 0							
5	Character 3								Character 2							
…	Character …								Character …							
x[1]	Last Character								Character …							
Channel 1 Data																
x+1	Tx ID Acknowledged								Rx Transaction ID							
x+2	Reserved						TG	TS	ND	HE	NR	RF	TF	PA	RO	TO
x+3	Firmware Revision, Major								Firmware Revision, Minor							
x+4	Length (Number of Bytes)															
x+5	Character 1								Character 0							
x+6	Character 3								Character 2							
…	Character …								Character …							
y[2]	Last Character								Character …							

(1) X is calculated based on the size of Channel 0 data as specified in the input file. Both channels cannot contain 200 characters as the total configuration file size can be only 108 words.

(2) Y is equal to the connection size minus 1, with a maximum value of 107 for a buffer size of 108.

- Tx = Transmit
- Rx = Receive
- TG = Transmit greater than Max Error. Transmit length in the output file is greater than the maximum transmit character length in the configuration file.

- TS = Transmit sent. Indicates the ASCII module has sent the data indicated by the Tx Transaction ID and can accept more transmit data.
- ND = New data. Only used for Handshake mode.
- HE = Handshake error. Only used for Handshake mode.
- NR = Non-delimited record. An input record is received and sent to the Compact bus interface that was not triggered by a delimiter character. This occurs when either the buffer is filled to its maximum receive size or a Message Timeout has occurred.
- RF = Data in the receive FIFO. The FIFO is not empty. The input FIFO has not sent all of its data to the Compact bus interface.
- TF = Data in transmit FIFO. The FIFO is not empty. The output FIFO has not sent all of its data to the ASCII device.
- PA = Parity error. A parity error has occurred with the received data string. This usually indicates a mismatch in the serial port set-up of the ASCII device and the Compact module. It could also indicate that noise has occurred on the line and degraded the signal. This bit is set when the receive FIFO contains a message in which a parity error occurred in one of the incoming bytes. This bit is reset when the receive FIFO is emptied or when a new message is received with no parity error.
- RO = Receive buffer overflow. Some input data has been lost.
- TO = Transmit buffer overflow. Some output data has been lost.

Simultaneous Mode (Two Channels) Output File

Maximum size is shown below. Refer to the Compact I/O 1769-ASCII Module User Manual, publication 1769-UM012, to use smaller output files.

Word	Bit Position															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Channel 0 Data																
0	Reserved								Tx Transaction ID							
1	Reserved								Rx Transaction ID Request							
2	Reserved															
3	Length (Number of Bytes)															
4	Character 1								Character 0							
5	Character 3								Character 2							
…	Character …								Character …							
x[1]	Last Character								Character …							
Channel 1 Data																
x+1	Reserved								Tx Transaction ID							
x+2	Reserved								Rx Transaction ID Request							
x+3	Reserved															
x+4	Length (Number of Bytes)															
x+5	Character 1								Character 0							
x+6	Character 3								Character 2							
…	Character …								Character …							
y[2]	Last Character								Character …							

(1) X is calculated based on the size of Channel 0 data as specified in the configuration file. Both channels cannot contain 200 characters as the total configuration file size can be only 108 words.

(2) Y is equal to the connection size minus 1, with a maximum value of 107 for a buffer size of 108.

- Tx = Transmit
- Rx = Receive

Configuration File

The 1769-ASCII module supports a configuration assembly that is accessible through the Assembly Object (Class 4), Instance 102. The configuration assembly is 31 words. The addresses assume a 16-bit data structure where all 16-bit values are INT[1]. The least significant word occupies the smaller byte addresses.

Word	Description	Values	Valid Data Values
0	Data Buffer Mode	0…1	0 = alternate mode 1 = simultaneous mode
Channel 0			
1	Serial Character Framing	0…8	0 = 7N2, 1 = 7E1, 2 = 7O1, 3 = 8N1, 4 = 8N2, 5 = 8E1, 6 = 8O1, 7 = 7E2, 8 = 7O2
2	Serial Port Speed	0…7	0 = 9600, 1 = 1200, 2 = 2400, 3 = 4800, 4 = 19200, 5 = 38400, 6 = 57.6k, 7 = 115.2k (half-duplex only)
Serial Port Receive Data			
3	Max Number of Receive Characters	0…200	In Simultaneous mode, the total number of channel 0 characters plus channel 1 characters cannot exceed 200.
4	Receive Record Start Mode	0…2	0 = ignore, 1 = exclude, 2 = include start delimiter
5	Receive Start Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
6	Receive Record End Mode	0…2	0 = ignore, 1 = exclude, 2 = include end delimiter
7	Receive End Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data

(1) INT = Integer range of -32768 to +32767 decimal, 0000 to FFFF hexadecimal.

Word	Description	Values	Valid Data Values
Module Production Data			
8	Pad Character[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
9	Receive Swap Mode	0…2	0 = disabled, 1 = 16-bit, 2 = 32-bit
10	Master Handshake Mode	0…1	0 = master/slave handshake, 1 = produce immediate
11	Message Time Out	0…65535	0 = none, 1 to 65535 ms
Serial Port Transmit Data			
12	Max Number of Transmit Characters	0…200	In Simultaneous mode, the total number of channel 0 characters plus channel 1 characters cannot exceed 200.
13	Transmit Record End Mode	0…2	0 = ignore, 1 = exclude, 2 = include end delimiter
14	Transmit End Delimiter[1]	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
15	Transmit Swap Mode	0…2	0 = disabled, 1 = 16-bit, 2 = 32-bit
Channel 1			
16	Serial Character Framing	0…8	0 = 7N2, 1 = 7E1, 2 = 7O1, 3 = 8N1, 4 = 8N2, 5 = 8E1, 6 = 8O1, 7 = 7E2, 8 = 7O2
17	Serial Port Speed	0…7	0 = 9600, 1 = 1200, 2 = 2400, 3 = 4800, 4 = 19200, 5 = 38400, 6 = 57.6k, 7 = 115.2k (half-duplex only)

Word	Description	Values	Valid Data Values
Serial Port Receive Data			
18	Max Number of Receive Characters	0…200	In Simultaneous mode, the total number of channel 0 characters plus channel 1 characters cannot exceed 200.
19	Receive Record Start Mode	0…2	0 = ignore, 1 = exclude, 2 = include start delimiter
20	Receive Start Delimiter(1)	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
21	Receive Record End Mode	0…2	0 = ignore, 1 = exclude, 2 = include end delimiter
22	Receive End Delimiter(1)	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
Module Production Data			
23	Pad Character(1)	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
24	Receive Swap Mode	0…2	0 = disabled, 1 = 16-bit, 2 = 32-bit
25	Master Handshake Mode	0…1	0 = master/slave handshake, 1 = produce immediate
26	Message Time Out	0…65535	0 = none, 1 to 65535 ms
Serial Port Transmit Data			
27	Max Number of Transmit Characters	0…200	In Simultaneous mode, the total number of channel 0 characters plus channel 1 characters cannot exceed 200.
28	Transmit Record End Mode	0…2	0 = ignore, 1 = exclude, 2 = include end delimiter
29	Transmit End Delimiter(1)	0…127/255	0…0x7f (0…127) for 7-bit data 0…0xff (0…255) for 8-bit data
30	Transmit Swap Mode	0…2	0 = disabled, 1 = 16-bit, 2 = 32-bit

(1) To enter values from +128 to +255, use this conversion formula: Desired Decimal Value - 256 = Entered Decimal Value. For example, for an ASCII character value of 128, 128 - 256 = -128.

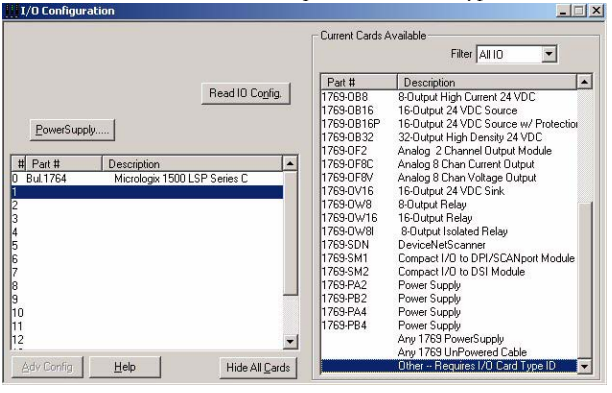
Configure the 1769-ASCII Module

Enter the configuration data for your 1769-ASCII application into RSLogix 500 software or RSLogix 5000 software. If your message sizes differ from the default, change the size of the input and output connection parameters.

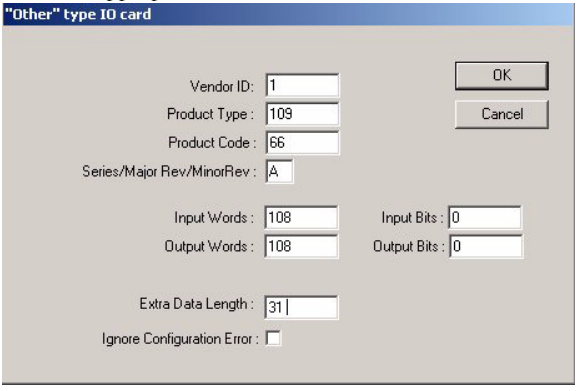
Configure with RSLogix 500 Software

RSLogix 500, version 7, will include a 1769-ASCII profile. If you use a previous version, follow this procedure to configure your module.

1. From the list, choose Other: Requires I/O Card Type ID.



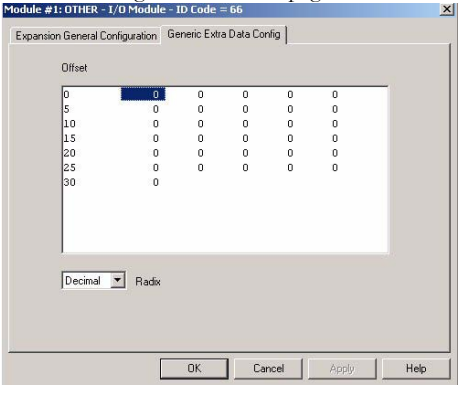
2. Enter the appropriate values as listed below.



3. Choose OK.

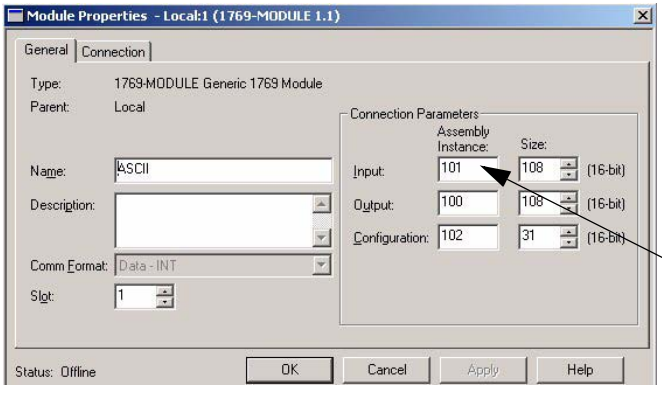
4. From the Generic Extra Data Config tab, enter your configuration data.

Refer to Configuration File on page 22.



Configure with RSLogix 5000 Software

1. Right-click on the 1769-ASCII module and choose Properties.



2. Enter the name of your module in the Name field.

3. Enter the connection parameters according to your controller.

Controller	Input Size(1)	Output Size(1)	Configuration Size(2)
1769-L31, -L32C, -L32E, -L35CR, -L35E	108	108	31

(1) Maximum size listed.

(2) The created tag will be 198 INTs long.

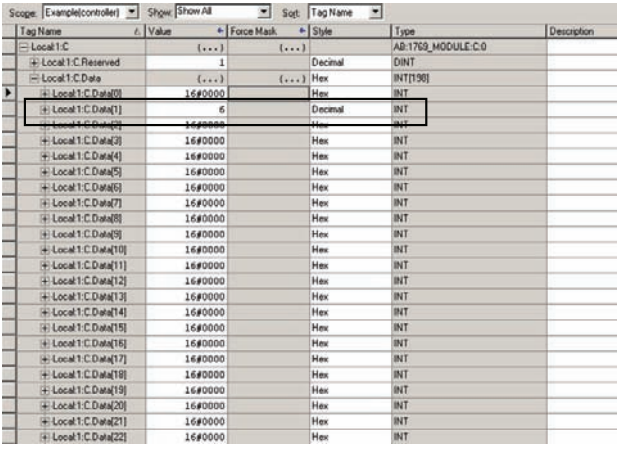
4. Choose OK.

5. Double-click on the controller tags.

6. Enter your configuration data.

   Refer to Configuration File on page 22.

   For this example, we entered the Serial Character Framing from Word 1.



Scope: Example(controller) Show: Show All Sort: Tag Name

Tag Name	Value	Force Mask	Style	Type	Description
Local:1:C	{...}	{...}		AB:1769_MODULE:C:0	
Local:1:C.Reserved	1		Decimal	DINT	
Local:1:C.Data	{...}	{...}	Hex	INT[198]	
Local:1:C.Data[0]	16#0000		Hex	INT	
Local:1:C.Data[1]	6		Decimal	INT	
Local:1:C.Data[2]	16#0000		Hex	INT	
Local:1:C.Data[3]	16#0000		Hex	INT	
Local:1:C.Data[4]	16#0000		Hex	INT	
Local:1:C.Data[5]	16#0000		Hex	INT	
Local:1:C.Data[6]	16#0000		Hex	INT	
Local:1:C.Data[7]	16#0000		Hex	INT	
Local:1:C.Data[8]	16#0000		Hex	INT	
Local:1:C.Data[9]	16#0000		Hex	INT	
Local:1:C.Data[10]	16#0000		Hex	INT	
Local:1:C.Data[11]	16#0000		Hex	INT	
Local:1:C.Data[12]	16#0000		Hex	INT	
Local:1:C.Data[13]	16#0000		Hex	INT	
Local:1:C.Data[14]	16#0000		Hex	INT	
Local:1:C.Data[15]	16#0000		Hex	INT	
Local:1:C.Data[16]	16#0000		Hex	INT	
Local:1:C.Data[17]	16#0000		Hex	INT	
Local:1:C.Data[18]	16#0000		Hex	INT	
Local:1:C.Data[19]	16#0000		Hex	INT	
Local:1:C.Data[20]	16#0000		Hex	INT	
Local:1:C.Data[21]	16#0000		Hex	INT	
Local:1:C.Data[22]	16#0000		Hex	INT	

Specifications

Vendor I.D. Code	1
Product Type Code	109
Product Code	66
Input Words	108
Output Words	108
Configuration Words	31
Recommended Cable	Belden™ 8761 (shielded)
Number of Inputs	2 full duplex (RS-232, RS-422) 2 half duplex (RS-485)
Serial Input Voltage Signal	3…25V dc with respect to signal ground (SG) “0”, Asserted, ON, Space, Active -3…-25V dc with respect to signal ground (SG) “1”, Disasserted, OFF, Mark, Inactive
Bus Current	425 mA @ 5V dc
Power Dissipation, Max.	2.13 W
Thermal Dissipation, Max.	7.3 BTU/hr
Power Supply Distance Rating	4
Isolation Voltage	30V Tested to withstand 710V dc for 60 s
Serial Port Status	TX FIFO overflow, RX FIFO overflow, RX parity error, handshake error, new data flag
Produce Assembly Size	108 words
Consume Assembly Size	108 words
Transmit Transaction ID	0…255
Handshaking	RTS/CTS hardware handshake always enabled

General Specifications	
Environmental Conditions	
Operational Temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): 0…60 °C (32…140 °F)
Storage Temperature	IEC 60068-2-1 (Test Ab, Unpackaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Non-operating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Non-operating Thermal Shock): -40…85 °C (-40…185 °F)
Relative Humidity	IEC 60068-2-30 (Test Db, Unpackaged Non-operating Damp Heat): 5…95% non-condensing
Vibration	IEC 60068-2-6 (Test Fc, Operating) 5g @ 10…500 Hz
Operating Shock	IEC 60068-2-27 (Test Ea, Un-packaged Shock): 30g
Non-operating Shock	IEC 60068-2-27 (Test Ea, Un-packaged Shock): 50g
Emissions	CISPR 11: Group 1, Class A
ESD Immunity	IEC 61000-4-2: 4 kV contact discharges 8 kV air discharges
Radiated RF Immunity	IEC 61000-4-3: 10 V/m with 1 kHz sine-wave 80% AM from 30…2000 MHz 10 V/m with 200 Hz 50% pulse 100% AM from 900 MHz 10 V/m with 200 Hz 50% pulse 100% AM at 1890 MHz
EFT/B Immunity	IEC 61000-4-4: ±2 kV at 5kHz on communications ports
Surge Transient Immunity	IEC 61000-4-5: ±2 kV line-earth (CM) on communications ports

Conducted RF Immunity	IEC 61000-4-6: 10 Vrms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz
Enclosure Type Rating	None (open-style)
Dimensions (HxWxL), Imperial	3.39 x 1.33 x 4.60 in
Dimensions (HxWxL), Metric	87 x 34 x 118 mm
Serial Port Connectors	Two DB-9 male (with pins)
Conductors Category	2[1]
Weight, Imperial	0.4 lb
Weight, Metric	0.18 kg
Certifications (when product is marked)	c-UL-us[2] - UL Listed for Class I, Division 2 Group A, B, C, D Hazardous Locations, certified for U.S. and Canada CE[2] - European Union 89/335/EEC EMC Directive, compliant with: EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions C-Tick[2] - Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions

1 Use this conductor category information for planning conductor routing as described in publication 1770-4.1, "Industrial Automation Wiring and Grounding Guidelines."

2 See the Product Certification link at www.ab.com for Declaration of Conformity, Certificates, and other certification details.

Status Indicators

The following table defines the ASCII module status indicators.

Status Indicator	State	Meaning
OK	Off	No power, module is not configured, or no bus master
	Solid green	In run mode. The led will blink red once during powerup.
	Blinking green	Bus master is detected, configuration is accepted, and in program mode
	Blinking red	Module configuration from bus master was not valid
Tx0, Tx1	Blinking green	Transmitting data on that serial port
Rx0, Rx1	Blinking green	Receiving data on that serial port

Troubleshoot with Error Codes

Value (Hex)	Meaning
0	No error
200…3FF	Hardware error
400…5FF	Configuration error
800…DFF	Reserved for future use
E00…FFF	Bus master detected error

Configuration Error Codes

Value (Hex)	Meaning	Description
Global Module Errors		
0	No error	The 1769-ASCII module adds no module-specific errors.
401	Max output array size exceeded	The maximum output array size is too large. In alternating mode, channel 0 and channel 1 must have less than 496 transmit characters. In simultaneous mode, channel 0 and channel 1 must have less than 496 transmit characters collectively.
402	Max input array size exceeded	The maximum input array size is too large. In alternating mode, channel 0 and channel 1 must have less than 496 receive characters. In simultaneous mode, channel 0 and channel 1 must have less than 496 receive characters collectively.

Value (Hex)	Meaning	Description
Channel 0 Module Errors		
430	Data buffer mode	0 = alternate mode; 1 = simultaneous mode. Anything else is invalid.
440	Invalid serial port framing	The serial port framing specified is invalid.
441	Invalid serial port speed	The serial port speed specified is invalid.
442	Invalid max number of receive characters	The maximum number of receive characters specified for channel 0 is too large.
443	Invalid receive record mode	The receive record mode specified is invalid.
444	Invalid receive start delimiter	The receive start delimiter specified is invalid.
445	Invalid receive record end mode	The receive record end mode specified is invalid.
446	Invalid receive record end delimiter	The receive record end delimiter specified is invalid.
447	Invalid pad character	The pad character specified is invalid.
448	Invalid receive swap mode	The receive swap mode specified is invalid.
449	Invalid master handshake mode	The master handshake mode specified is invalid.
44A	Invalid message timeout	The timeout delay specified is invalid.
44B	Invalid max number of transmit characters	The transmit characters specified is invalid.
44C	Invalid transmit record end mode	The transmit record end mode specified is invalid.
44D	Invalid transmit end delimiter	The transmit end delimiter specified is invalid.

Value (Hex)	Meaning	Description
44E	Invalid transmit swap mode	The transmit swap mode specified is invalid.
44F-77F	Undefined channel 0 error	An undefined error has occurred.
Channel 1 Module Errors		
480	Invalid serial port framing	The serial port framing specified is invalid.
481	Invalid serial port speed	The serial port speed specified is invalid.
482	Invalid max number of receive characters	The maximum number of receive characters specified for channel 1 is too large.
483	Invalid receive record mode	The receive record mode specified is invalid.
484	Invalid receive start delimiter	The receive start delimiter specified is invalid.
485	Invalid receive record end mode	The receive record end mode specified is invalid.
486	Invalid receive record end delimiter	The receive record end delimiter specified is invalid.
487	Invalid pad character	The pad character specified is invalid.
488	Invalid receive swap mode	The receive swap mode specified is invalid.
489	Invalid master handshake mode	The master handshake mode specified is invalid.
48A	Invalid message timeout	The timeout delay specified is invalid.
48B	Invalid max number of transmit characters	The transmit characters specified is invalid.

Value (Hex)	Meaning	Description
48C	Invalid transmit record end mode	The transmit record end mode specified is invalid.
48D	Invalid transmit end delimiter	The transmit end delimiter specified is invalid.
48E	Invalid transmit swap mode	The transmit swap mode specified is invalid.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations:	Informations sur l'utilisation de cet équipement en environnements dangereux:
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.	Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.

WARNING 	EXPLOSION HAZARD Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. Substitution of components may impair suitability for Class I, Division 2. If this product contains batteries, they must only be changed in an area known to be nonhazardous.	**AVERTISSEMENT** 	RISQUE D'EXPLOSION Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. S'assurer que l'environnement est classé non dangereux avant de changer les piles.

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using its products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running:

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned:

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

www.rockwellautomation.com

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