



SLC 500 BASIC and BASIC-T Modules

Catalog Numbers 1746-BAS and 1746-BAS-T

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Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (Publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://www.literature.rockwellautomation.com>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.





In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

<p>WARNING</p> 	<p>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.</p>
<p>IMPORTANT</p>	<p>Identifies information that is critical for successful application and understanding of the product.</p>
<p>ATTENTION</p> 	<p>Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard and recognize the consequences.</p>
<p>SHOCK HAZARD</p> 	<p>Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present.</p>
<p>BURN HAZARD</p> 	<p>Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be dangerous temperatures.</p>

Hazardous Location Considerations

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D or non-hazardous locations only. The following WARNING statement applies to use in hazardous locations.

ATTENTION

WARNING: EXPLOSION HAZARD

Substitution of components may impair suitability for Class I, Division 2.

Do not replace components or disconnect equipment unless power has been switched off.

Do not connect or disconnect components unless power has been switched off.

All wiring must comply with N.E.C. article 501, 502, 503, and/or C.E.C. section 18-1J2 as appropriate.

Environnements dangereux

Cet équipement est conçu pour être utilisé dans des environnements de Classe I, Division 2, Groupes A, B, C, D ou non dangereux. La mise en garde suivante s'applique à une utilisation dans des environnements dangereux.

ATTENTION

AVERTISSEMENT: DANGER D'EXPLOSION

La substitution de composants peut rendre cet équipement impropre à une utilisation en environnement de Classe 1, Division 2.

Ne pas remplacer de composants ou déconnecter l'équipement sans s'être assuré que l'alimentation est coupée.

Ne pas connecter ou déconnecter des composants sans s'être assuré que l'alimentation est coupée.

About the BASIC and BASIC-T Modules

The BASIC module is a single-slot module that resides in a SLC 500 fixed or modular controller chassis. The BASIC-T module is a higher speed version of the BASIC module with identical hardware features, including two configurable serial ports for RS-232/423, RS-422, and RS-485 communication with I/O devices. Communication to an SLC 500 controller can take place across the 1746 I/O backplane or on the DH485 network through the module's DH485 port. Both modules also feature 24K bytes of battery-backed RAM, optional 8K or 32K byte non-volatile memory modules, and multiple LED indicators for operator interface.

TIP

The 1746-BAS module is compatible with the 1747-M1 and 1747-M2 memory modules.

The 1746-BAS module is also compatible with existing 1747-M3 and 1747-M4 memory modules. The 1747-M3 and 1747-M4 memory modules are no longer available for sale from Rockwell Automation.

The 1746-BAS-T module is compatible with the 1771-DBMEM1 and 1771-DBMEM2 memory modules.

The modules can be programmed using an ASCII terminal or a personal computer equipped with 1747-PBASE BASIC development software

TIP

Due to the high speed of the 1746-BAS-T module, existing programs written for the 1746-BAS module may require adjustment for identical operation using the 1746-BAS-T module.

Before You Begin

Before you begin to install the BASIC module and BASIC-T module, you need to:

- identify the communication ports,
- locate the LED indicators, and
- set the module jumpers.

Identify the Communication Ports

There are three communication ports on the front of the BASIC module and BASIC-T module. They are:

- PRT1
- PRT2
- DH485

The PRT1 port is used to interface the module with user devices. This port is a serial port that accommodates RS-232/423, RS-422, and RS-485 communication modes. Port PRT1 is capable of operating full-duplex at 300, 600, 1200, 2400, 4800, 9600, and 19200 bps.

The PRT2 port is used to interface the module with user devices or a modem using DF1 protocol. This port is a serial port that accommodates RS-232/423, RS-422, and RS-485 communication modes. Port PRT2 is capable of operating full-duplex at 300, 600, 1200, 2400, 4800, 9600, and 19200 bps.

The DH485 port is used to interface the module with the DH485 network. This port is not isolated and cannot directly drive the DH485 network. You must use a 1747-AIC link coupler to link port DH485 with the DH485 network.

IMPORTANT

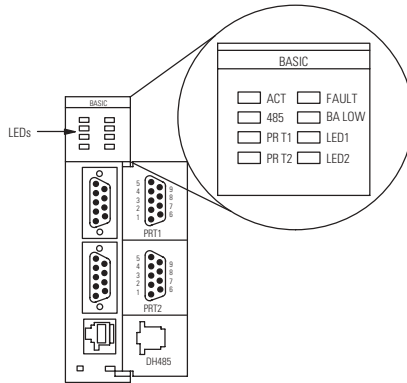
When DF1 protocol is selected on port PRT2, DH485 communications is disabled.

Refer to Figure 1 for the location of the communication ports.

Locate the LED Indicators

There are eight LED indicators on the front of the BASIC and BASIC-T modules. These LED indicators are used for module diagnostics and status indication. Refer to Figure 1 for the location of the LED indicators.

Figure 1 Communication Ports and LED Indicators

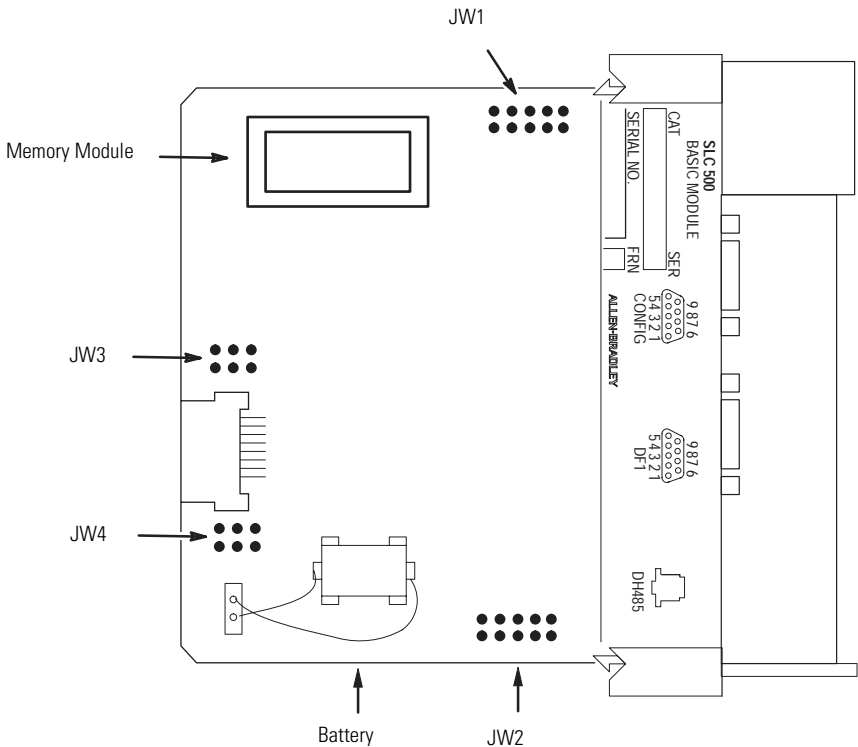


LED	Color	Status	Indication
ACT	Green	ON	The module is receiving power from the backplane and is executing BASIC code.
		Flashing	The module is in Command mode.
		OFF	The module is not receiving power from the backplane. A fault condition exists.
485	Green	ON	Port DH485 on the module is active for communication.
		OFF	Port DH485 on the module is not active for communication.
PRT1	Green	Flashing	Port PRT1 on the module is transmitting or receiving signals.
		OFF	Port PRT1 on the module is not transmitting or receiving signals.
PRT2	Green	Flashing	Port PRT2 on the module is transmitting or receiving signals.
		OFF	Port PRT2 on the module is not transmitting or receiving signals.
FAULT	Red	ON	A system problem was detected during background diagnostics. Contact your local Allen-Bradley representative.
		OFF	No system problems are detected during background diagnostics.
BA LOW	Red	ON	The voltage of the battery that backs up RAM is low. A new battery is needed.
		OFF	The voltage of the battery that backs up RAM is at an acceptable level.
LED1	Amber	ON	User definable. LED activated through the user program.
		OFF	User definable. LED de-activated through the user program.
LED2	Amber	ON	User definable. LED activated through the user program.
		OFF	User definable. LED de-activated through the user program.

Set the Module Jumpers

The BASIC module and BASIC-T module have four sets of jumpers that you need to set. Jumpers JW1 and JW2 configure ports PRT1 and PRT2. Jumper JW3 configures the type of optional memory module. Jumper JW4 configures the program port.

Figure 2 Jumper Locations



ATTENTION



Do not expose the module to surfaces or other areas that may typically hold an electrostatic charge. Electrostatic charges can alter or destroy memory.

ATTENTION

Settings other than those shown for each jumper may cause damage to the module.

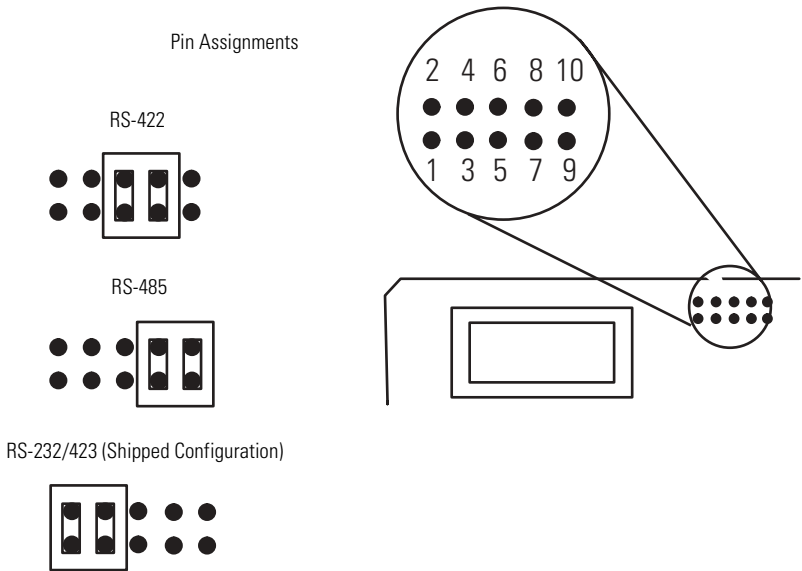


Module Jumper JW1

Use jumper JW1 to select one of the following configurations for port PRT1.

- RS-232/423
- RS-422
- RS-485

Figure 3 Jumper JW1 Pin Assignments and Settings

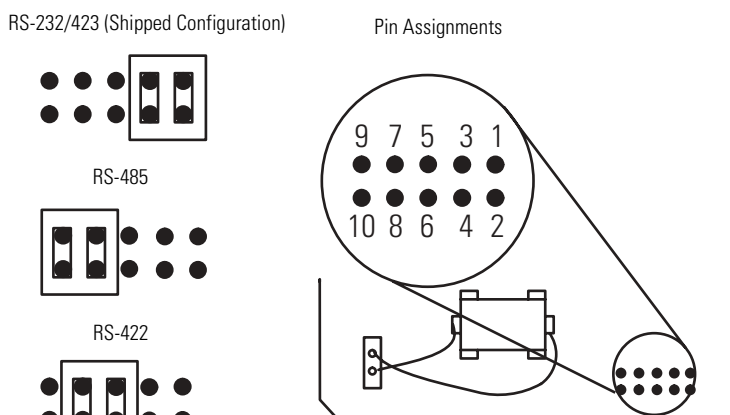


Module Jumper JW2

Use jumper JW2 to select one of the following configurations for port PRT2.

- RS-232/423
- RS-422
- RS-485

Figure 4 Jumper JW2 Pin Assignments and Settings



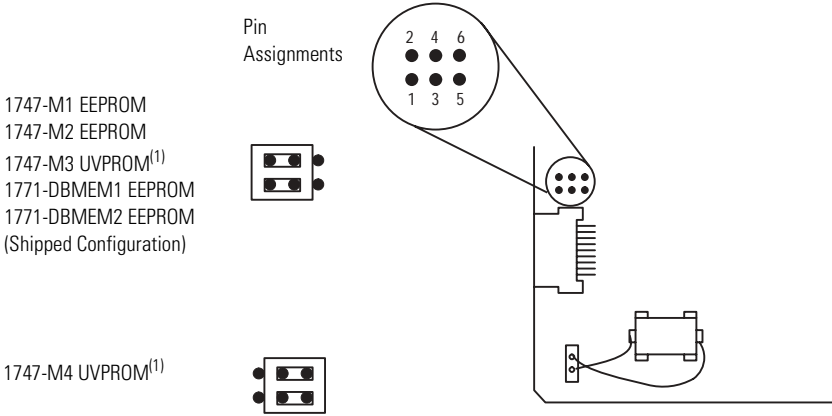
Module Jumper JW3

Use jumper JW3 to configure the memory module socket for one of the following optional memory modules.

Memory Module	Memory Size and Type	Compatible with
1747-M1	8 K bytes EEPROM	1746-BAS module
1747-M2	32 K bytes EEPROM	1746-BAS module
1747-M3 ⁽¹⁾	8 K bytes UVPR0M	1746-BAS module
1747-M4 ⁽¹⁾	32 K bytes UVPR0M	1746-BAS module
1771-DBMEM1	8 K bytes EEPROM	1746-BAS-T module
1771-DBMEM2	32 K bytes EEPROM	1746-BAS-T module

(1) This memory module is no longer available for sale from Rockwell Automation. Existing 1747-M3 and 1747-M4 memory modules are compatible with the 1746-BAS module and 1746-BAS-T module.

Figure 5 Jumper JW3 Pin Assignments and Settings



⁽¹⁾ This memory module is no longer available for sale from Rockwell Automation. Existing 1747-M3 and 1747-M4 memory modules are compatible with the 1746-BAS module and 1746-BAS-T module.

Module Jumper JW4

Use jumper JW4 to select one of the following configurations for the module ports.

- PRT1 Port = Program port with default communication settings
 PRT2 Port = ASCII interface port
 DH485 Port = Run time DH485 operation only
- PRT1 Port = ASCII interface port
 PRT2 Port = ASCII interface port
 DH485 Port = Program port with DH485 protocol
- PRT1 Port = Program port with programmed communication settings
 PRT2 Port = ASCII interface port
 DH485 Port = Run time DH485 operation only
- PRT1 Port = Program port with programmed communication settings
 PRT2 Port = DF1 protocol
 DH485 Port = Disabled

IMPORTANT

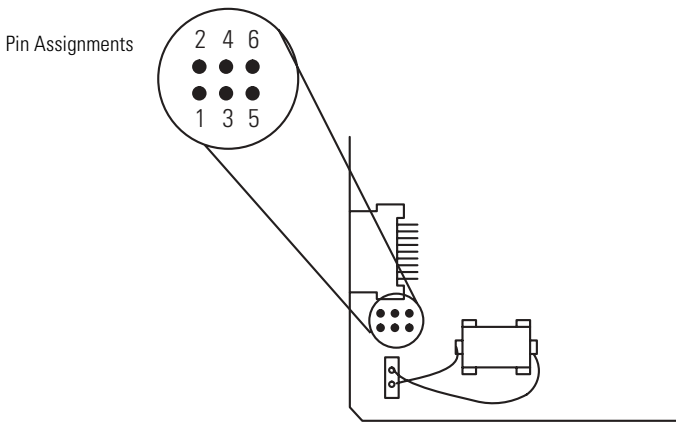
The first setting shown in Figure 6 is the default configuration. When the jumper is set in this position, the module always powers up in Command mode at 1200 bps, no parity, 8 data bits, and 1 stop bit.


IMPORTANT


When DF1 protocol is selected for port PRT2, port DH485 is not available for DH485 programming or run time operation.


DF1 communication must be enabled through the BASIC program.


Figure 6 Jumper JW4 Pin Assignments and Settings



- 

PRT1 Port = Program port with default communication settings
 PRT2 Port = ASCII interface port
 DH485 Port = Run time DH485 operation only
- 

PRT1 Port = ASCII interface port
 PRT2 Port = ASCII interface port
 DH485 Port = Program port with DH485 protocol (Shipped Configuration)
- 

PRT1 Port = Program port with programmed communication settings
 PRT2 Port = ASCII interface port
 DH485 Port = Run time DH485 operation only
- 

PRT1 Port = Program port with programmed communication settings
 PRT2 Port = DF1 protocol
 DH485 Port = Disabled

Install the 1746-BAS Module and 1746-BAS-T Module

Your BASIC module or BASIC-T module may be installed in any open slot of an SLC 500 1746 I/O chassis except the first slot of the first chassis. The first slot is reserved for the controller or adapter module. The BASIC module or BASIC-T module can also be installed in an SLC fixed controller expansion chassis.

ATTENTION



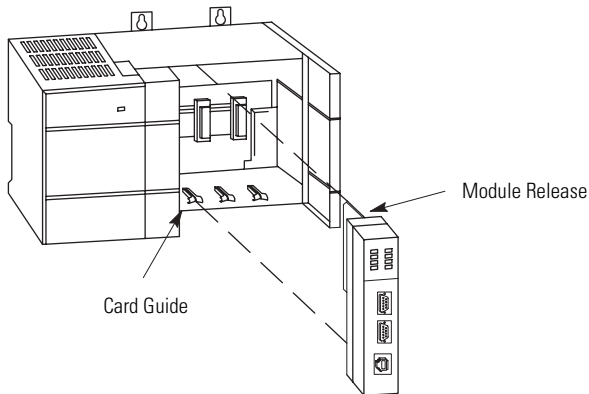
Never install, remove, or wire any module while power is applied. Also, do not expose the modules to surfaces or other areas that may typically hold an electrostatic discharge.

Electrostatic discharge can damage integrated circuits or semiconductors if you touch backplane connector pins.

If the equipment is not installed and used as described in the SLC 500 Modular Hardware Style User Manual, publication 1747-UM011, the protection provided by the equipment may be impaired.

1. Turn off power to the chassis where you will insert the module.
2. Align the circuit board of the module with the card guide of a slot (except slot 0) in the 1746 chassis.

Figure 7 Module Location in the Chassis



3. Slide the module in until the top and bottom retainer clips are secured.

Wire the PRT1 and PRT2 Communication Ports

Ports PRT1 and PRT2 can communicate to user devices through RS-232/423, RS-422, and RS-485 communication modes. The communication mode you select depends on the setting of jumpers JW1 and JW2. Refer to the MODE command in the BASIC Reference Manual, publication 1746-RM001, for the default programming port configuration information.

IMPORTANT

When default communications are selected via JW4, the module always powers up in the Command mode at 1200 bps, no parity, 8 data bits, and 1 stop bit.

Pin Assignments

Use these pin assignments to wire the mating connector of the cable used to interface a user device to port PRT1 or PRT2. The sockets of this connector must be wired to correspond to the selected communication mode.

Pin	RS-232/423	RS-422	RS-485	IBM AT Standard RS-232 Signals
1	Note 1	422 TXD -	TRXD -	DCD or CD
2	RXD	422 RXD -	(3)	RXD
3	TXD	(2)	(2)	TXD
4	DTR	(2)	(2)	DTR
5	COMMON	COMMON	COMMON	COMMON
6	DSR	422 RXD +	(3)	DSR
7	RTS	(2)	(2)	RTS
8	CTS	(2)	(2)	CTS
9	(1)	422 TXD +	TRXD +	RI

(1) In RS-423 mode, these pins are still connected to their RS-422 loads. Do not use these pins in RS-423 mode.

(2) In RS-422 and RS-485 modes, these pins are connected to their RS-423 drivers and receivers. Do not use these pins in either RS-422 or RS-485 mode.

(3) In RS-485 mode, these pins are still connected to their RS-422 receivers. Do not use these pins in RS-485 mode.

Wiring diagrams for the RS-232/423 communication mode are shown starting on page 16.

Hardware Handshaking

The module uses the following rules when hardware handshaking is enabled. The module:

- does not transmit until CTS (Clear to Send) becomes active, and
- examines DSR (Data Set Ready) following the receipt of a character.

If DSR is active, the character is placed in the input queue. If DSR is inactive, the character is assumed to be noise and is discarded.

DTE and DCE Overview

IMPORTANT

You need to know whether the device connecting to the module has a DTE or DCE interface. Figures 8 through 12, starting on page 16, are provided to help you make the appropriate connection.

DTE - Data Terminal Equipment

The serial ports are configured as 9-pin Data Terminal Equipment (DTE), as are most terminals or computer ports.

DTE 9 Pinout	Signal Description	Signal from DTE Perspective	DTE 25 Pinout	Signal Description
Pin #			Pin #	
1	NC-No Connection	Input	8	CD-Carrier Detect
2	RXD-Received Data	Input	3	
3	TXD-Transmitted Data	Output	2	
4	DTR-Data Terminal Ready	Output	20	
5	COM-Signal Common	Shared	7	
6	DSR-Data Set Ready	Input	6	
7	RTS-Request to Send	Output	4	
8	CTS-Clear to Send	Input	5	
9	NC-No Connection	Input	22	RI-Ring Indicator

DCE - Data Communication Equipment

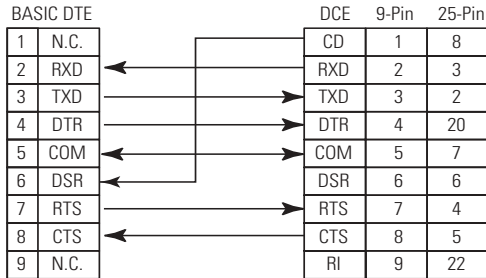
Devices such as modems are Data Communication Equipment (DCE). The pinouts on these terminals are defined for ease of interfacing with DTE equipment.

DCE 9 pinout	Signal Description	Signal from DCE Perspective	DCE 25 pinout
Pin #			Pin #
1	CD-Carrier Detect	Output	8
2	RXD-Received Data	Output	3
3	TXD-Transmitted Data	Input	2
4	DTR-Data Terminal Ready	Input	20
5	COM-Signal Common	Shared	7
6	DSR-Data Set Ready	Output	6
7	RTS-Request to Send	Input	4
8	CTS-Clear to Send	Output	5
9	RI-Ring Indicator	Output	22

IMPORTANT

All signal directions listed in the previous two tables are valid. For example, TXD, Transmitted Data, is a DTE output but is also a DCE input. The signal description is the same for DTE and DCE but the direction of the signal (perspective) has changed based on whether you have a DTE or DCE device.

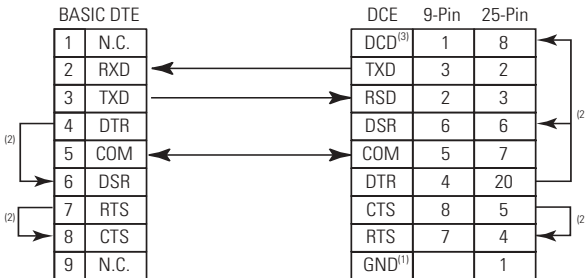
Figure 8 RS-232/423 Wiring Diagram - 1746-BAS Module or 1746-BAS-T Module to a Modem (Hardware Handshaking Enabled)



IMPORTANT

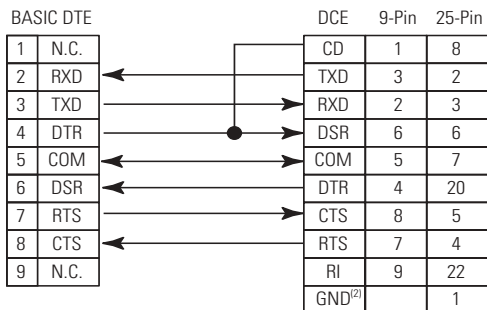
For DCE devices other than modems, connect the DSR of the module with the DSR of the device. The CD signal of the device (other than a modem) is not used.

Figure 9 RS-232/423 Wiring Diagram - 1746-BAS Module or 1746-BAS-T Module to DTE Device (Hardware Handshaking Disabled)



- (1) Connect to the shield of the cable.
- (2) Jumpers are only needed if you cannot disable the hardware handshaking on the port.
- (3) This is a N.C. for the 1747-KE module, 1746-BAS module, or 1746-BAS-T module.

Figure 10 RS-232/423 Wiring Diagram - 1746-BAS Module or 1746-BAS-T Module to Printer (Hardware Handshaking Enabled, Standard Printer Adapter Cable)⁽¹⁾



(1) The 1747-CP3 cable works in this application.

(2) Connect to the shield of the cable.

Figure 11 RS-422 Wiring Diagram

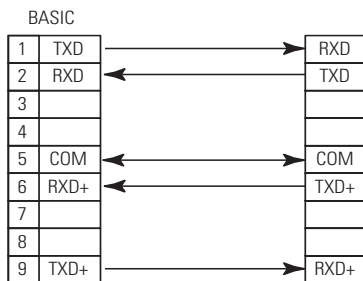
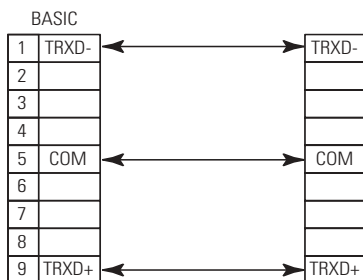


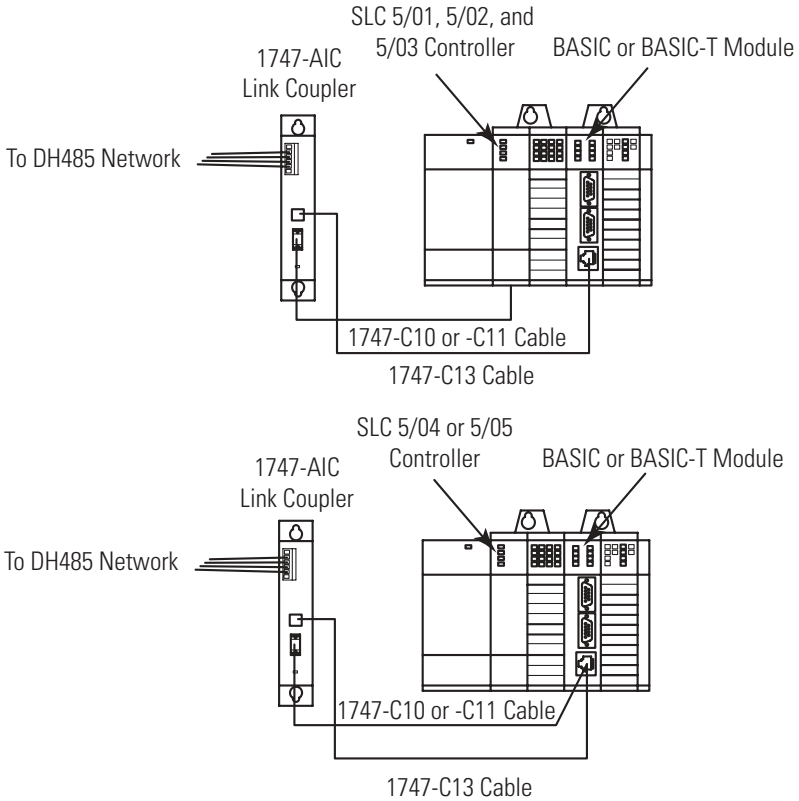
Figure 12 RS-485 Wiring Diagram



Wire to the DH485 Port

Port DH485 can communicate to user devices through the DH485 communication mode. Use a 1747-C10 cable or 1747-C13 cable to connect the module to a link coupler interfaced with the DH485 network.

Figure 13 Connecting the Module to a DH485 Network



IMPORTANT

The 1747-C13 cable acts only as a communication link and does not carry 24V dc power. Use a 1747-C10 cable or 1747-C11 cable to carry power from the controller to the link coupler, or from the module to the link coupler.

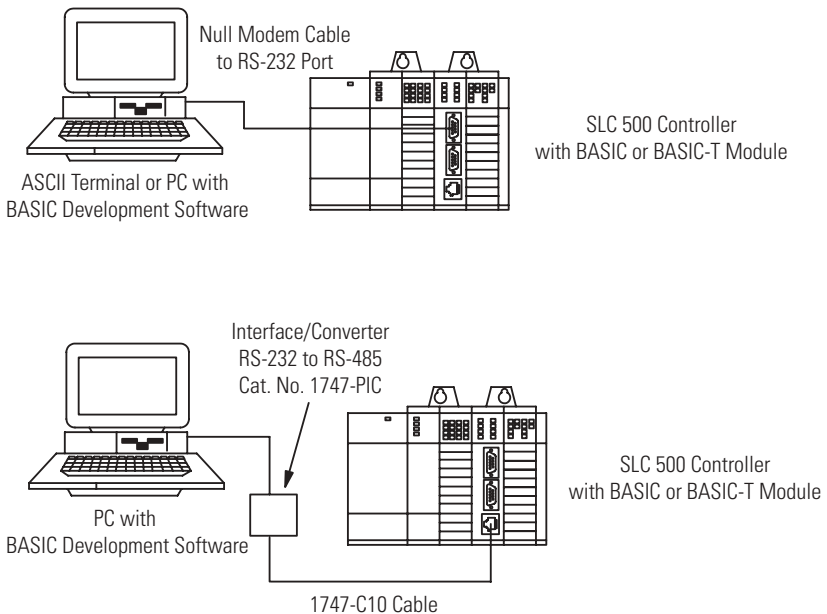
Apply Power to your BASIC Module and BASIC-T Modules

Once you have installed your BASIC module or BASIC-T module in your SLC 500 chassis, you are ready to apply power to your SLC 500 system and begin programming.

Configure the BASIC Module and BASIC-T Module

Your BASIC module or BASIC-T module can be programmed using an ASCII terminal or ASCII terminal emulation software. You can also use a personal computer with the BASIC Development Software (cat. no. 1747-PBASE). Use an ASCII terminal to enter a BASIC program one line at a time. Use a personal computer with the BASIC development software to create a BASIC program that is then downloaded to your module. Typical configurations are shown in Figure 14.

Figure 14 Module Configurations



Battery Replacement, Handling, Storage, and Transportation (Cat. No. 1747-BA)

Battery Replacement

Your module provides back-up power for RAM through a replaceable lithium battery (cat. no. 1747-BA). This battery provides back-up for approximately five years. A BAT LOW indicator on the front of the module alerts you when the battery voltage has fallen below the replace battery threshold level.

To replace the lithium battery:

1. Remove power from the SLC 500 power supply module.
-

ATTENTION



Do not remove the module from the SLC 500 chassis until all power is removed from the SLC 500 power supply.

2. Remove the module from the chassis by pressing the retainer clips at the top and bottom of the module.
-

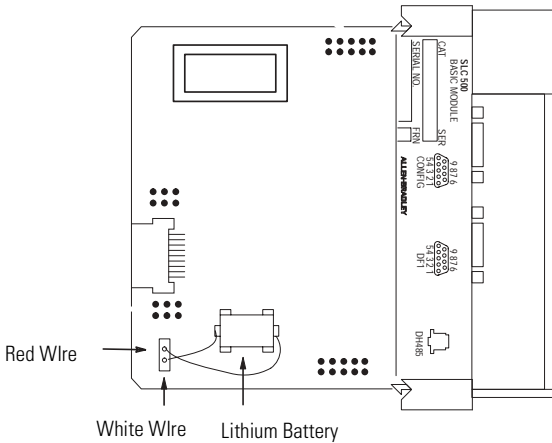
IMPORTANT

If the top or bottom retainer clips are broken while removing the module from the chassis, they can be easily replaced. Pry off any broken clips from the bottom with a screwdriver, if necessary. Do not twist off. Snap in the replacement clip. Order cat. no. 1746-R15 (two per package).

ATTENTION



Do not expose the module to surfaces or other areas that may typically hold an electrostatic charge. Electrostatic charges can alter or destroy memory.

Figure 15 Battery Location

3. Unplug the battery connector.

IMPORTANT

The module has a capacitor that provides 30 minutes of battery back-up while the battery is disconnected. Data in RAM is not lost if the battery is replaced within 30 minutes.

4. Remove the battery from the retaining clips.
5. Insert a new battery into the battery retaining clips.
6. Plug the battery connector into the socket with the red lead wire on top and the white lead wire on the bottom.
7. Insert the module into the SLC 500 chassis.
8. Restore power to the SLC 500 power supply.

Battery Handling**ATTENTION**

Do not charge the batteries. An explosion could result or cells could overheat causing burns.

Do not open, puncture, crush, or otherwise mutilate the batteries. An explosion may result, exposing toxic, corrosive, or flammable liquids.

Battery Storage

Store the lithium batteries in a cool, dry environment, typically +20 °C to +25 °C (+68 °F to +77 °F) and 40% to 60% relative humidity.

Battery Transportation

One or Two Batteries

You can ship up to two batteries together within the United States without restriction. Regulations governing shipment to or within other countries may differ.

Three or More Batteries

Procedures for the transportation of three or more batteries shipped together within the United States are specified by the Department of Transportation (DOT) in the Code of Federal Regulations, CFR49, "Transportation." An exemption to these regulations, DOT - E7052, covers the transport of certain hazardous materials classified as flammable solids. This exemption authorizes transport of lithium batteries by motor vehicle, rail freight, cargo vessel, and cargo-only aircraft, providing certain conditions are met. Transport by passenger aircraft is not permitted.

Shipment of depleted batteries for disposal may be subject to specific regulation of the countries involved or to regulations endorsed by those countries, such as the IATA Restricted Articles Regulations of the International Air Transport Association, Geneva, Switzerland.

IMPORTANT

Regulations for transportation of lithium batteries are periodically revised.

ATTENTION



Do not incinerate or dispose of lithium batteries in general trash collection. Explosion or violent rupture is possible. Batteries should be collected for disposal in a manner to prevent against short circuiting, compacting, or destruction of case integrity and hermetic seal.

For disposal, batteries must be packaged and shipped in accordance with transportation regulations, to a proper disposal site. The U.S. Department of Transportation authorizes shipment of "Lithium batteries for disposal" by motor vehicle only in regulation 173.1015 of CFR 49 (effective January 5, 1983). For additional information contact:

U.S. Department of Transportation
Research and Special Programs Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Although the Environmental Protection Agency at this time has no regulations specific to lithium batteries, the material contained may be considered toxic, reactive, or corrosive. The person disposing of the material is responsible for any hazard created in doing so. State and local regulations may exist regarding the disposal of these materials.

For a lithium battery material safety data sheet, contact the manufacturer.

Sanyo Energy Corporation
600 Supreme Drive
Bensenville, IL 60106
USA

or

Tadarand Electronics
2 Seaview Blvd.
Port Washington, NY 11050
USA

Specifications

BASIC and BASIC-T Modules Specifications

Specification	Value
Power Supply Loading at 5V dc	0.150 A (module only)
	0.150 A (module with link coupler)
Power Supply Loading at 24V dc	0.070 A (module only)
	0.125 A (module with link coupler) ⁽²⁾
Noise Immunity	NEMA Standard ICS 2-230
Vibration	Displacement: 0.015 in, peak-to-peak at 5...57 Hz
	Acceleration: 2.5 G at 57...2000 Hz
Shock (operating)	30 G
Port Isolation ⁽¹⁾	
Port PRT1	710V dc for 1 minute (backplane to port)
Port PRT2	710V dc for 1 minute (backplane to port)
Port PRT1 to Port PRT2	710V dc for 1 minute (port PRT1 to port PRT2)
Ambient Temperature Rating	Operating: 0...+60 °C (+32...+140 °F) Storage: -40...+85 °C (-40...+185 °F)
Humidity	5...95% without condensation
Clock/Calendar Accuracy	±1 minute/month at 25 °C (77 °F) +0, -6 minute/month at 60 °C (140 °F)

(1) Port DH485 is not isolated.

(2) If a Hand-Held Terminal, Data Table Access Module, or interface converter is connected to the link coupler, the additional backplane power draw of these components (listed on page 25) must be added to the 0.125 listed in the table above. This only applies when the module is connected to the network via the link coupler and 1747-C10 cable or 1747-C11 cable. This does not apply when the 1747-C13 cable is used.

Certifications

Certification	Value
Agency Certification	c-UL-us listed Class I, Groups A, B, C or D, Division 2 CE compliant for all applicable directives C-Tick marked for all applicable acts

Operating Voltage and Current Requirement

Component	Operating Voltage	Current Requirement
Hand-Held Terminal	24V dc	0.105 A
Data Table Access Module	24V dc	0.104 A
Interface Converter	24V dc	0.060 A

IMPORTANT

The module receives its power from the SLC backplane. The power consumption of the module must be taken into consideration when planning your SLC 500 system. Refer to the documentation supplied with your SLC 500 fixed or modular controller for additional information on power supplies and current requirements.

Communication Rate (bps)	Maximum Distance Allowed in Meters (Feet)			
	RS-232	RS-423	RS-422	RS-485
300	15 (50)	1230 (4000)	1230 (4000)	1230 (4000)
600	15 (50)	920 (3000)	1230 (4000)	1230 (4000)
1200	15 (50)	770 (2500)	1230 (4000)	1230 (4000)
4800	15 (50)	245 (800)	1230 (4000)	1230 (4000)
9600	15 (50)	120 (400)	1230 (4000)	1230 (4000)
19200	15 (50)	60 (200)	1230 (4000)	1230 (4000)

IMPORTANT

Use the RS-423 jumper settings when communicating in RS-232 mode.

Additional Resources

For	Refer to this document	Pub. No.
A more detailed description on how to install and use your modular SLC 500 controller.	SLC 500 Modular Hardware Style User Manual	1747-UM011
A reference manual that contains status file data, instruction set, and troubleshooting.	SLC 500 Instruction Set Reference Manual	1747-RM001

To view and download pdfs, go to Literature Library at <http://www.rockwellautomation.com/literature>.

To order printed copies, contact your Allen-Bradley Distributor or Rockwell Automation Sales Office.

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, it may need 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.

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