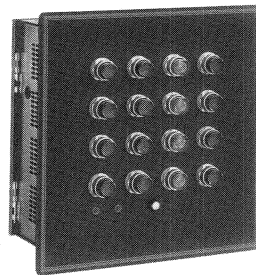




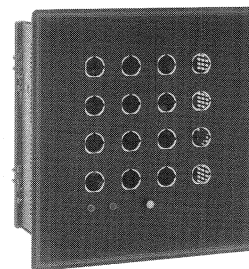
ALLEN-BRADLEY

RediPANEL™ Bulletin 800T and 800H Push Button Modules

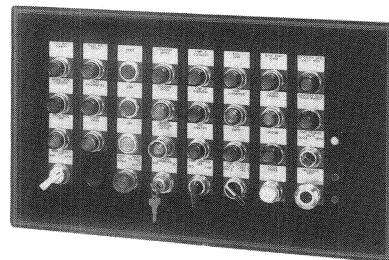
Product Data



90-005-2



90-005-2



90-005-2

Description

Bulletin 2705 RediPANEL Modules with Bulletin 800T or 800H Push Buttons are fully assembled stations that operate on the the remote I/O link of Allen-Bradley programmable controllers. A single twin-axial cable and power supply connections are all the wiring that is required to use the module. This eliminates costly hardwiring and provides fast installation and start-up.

Standard modules are equipped with 16 or 32 normally open (N.O.) illuminated push buttons. The rugged 800T version is suitable for oiltight/dust tight industrial environments. While the heavy duty 800H version is designed for hosedown and corrosive applications.

Push Button modules can be equipped with any of the following Allen-Bradley Bulletin 800T or 800H devices:

- Momentary illuminated or non-illuminated push buttons
- Push/pull or twist-release illuminated or non-illuminated push buttons
- Flush head, extended head or mushroom head operators
- Pilot lights: 120 Volts AC transformer or transformer LED
- Two or three position illuminated or non-illuminated selector switches
- Four position selector switch

RediPANEL 800T/800H modules can also be ordered as custom or unpopulated modules. These modules consist of the RediPANEL enclosure and all the necessary electronics and push button wiring connectors.

Bulletin 800T or 800H devices can be ordered with adapter kits as a complete device that are ready to install in the module. Adapter kits can also be ordered separately to install on 800T or 800H devices. The back of each module is hinged to allow access to the push buttons.

Features

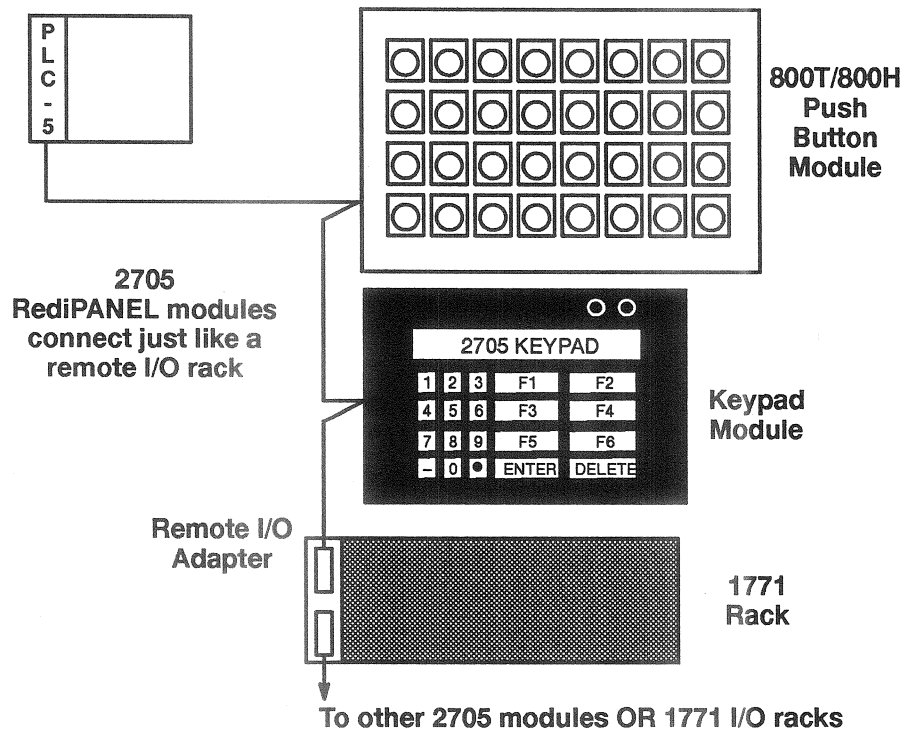
Easy Installation

Each module is supplied complete with pre-assembled wiring harnesses that plug directly into the 800T or 800H adapter boards, eliminating hardwiring of individual devices. RediPANEL modules make panel fabrication as easy as 1-2-3:

1. Cut an opening for the module.
2. Drill holes for the mounting studs.
3. Slide the module through the opening and secure the module in place with the enclosed locking nuts.

Remote I/O Communications

RediPANEL modules connect to Allen-Bradley remote I/O scanners and sub-scanners just like remote I/O racks. This replaces large wire bundles with a single twin-axial cable that connects the RediPANEL module to the programmable controller. Up to 16 separate modules can be located along a single cable up to 10,000 feet away from the programmable controller.



800T/800H devices in the RediPANEL module “appear” to the programmable controller as though they were hardwired to I/O cards in a remote I/O rack. No special instructions are required, the push button, lamp and switch selection are programmed as discrete I/O using the input and output image tables of the programmable controller.

Built-in Diagnostics

RediPANEL modules continually monitor the communications link and display its status on the two LEDs on the front of the module. The modules also contain special test functions to check lamps and the contact integrity of the push buttons. This function is activated via a push-to-test button located on the front of the push button modules.

Lamp/LED Test

When the push-to-test button is depressed, all lamps (including the diagnostic LEDs) will turn off for one second, then illuminate for two seconds. If the push-to-test button is held depressed beyond two seconds, the module will advance to the Push Button Contact Test mode.

Push Button Contact Test

This mode allows you to test the contacts of individual buttons by depressing each push button while the TEST button is being held depressed. If the push button has a normally open contact the light will go off. If the push button has a normally closed contact the light will illuminate.

While the push-to-test button is depressed no button depressions will be transmitted to the programmable controller. The module will exit the TEST mode two seconds after releasing the push-to-test button.

Note: To verify the operation of non-illuminated devices, release the push-to-test button and examine the corresponding input and output Image table locations while operating. Be sure the programmable controller is in the TEST mode before operating the devices.

Multiple Push Button Depressions

All push button devices in the modules are individually scanned by the programmable controller. This allows for applications that require simultaneous depression of more than one push button.

Timed Push Button Feature

RediPANEL push buttons modules have a standard TIMED feature that holds all push button depressions for a minimum of 100 milliseconds to allow the programmable controller to read the depression during its scan cycle. No special programming is needed for this function. For most system configurations, 100 milliseconds is adequate time to ensure that the button depression data is captured by the programmable controller.

However, for complex system configurations with long programs, multiple block transfers, or large amounts of I/O to be scanned, a 100 millisecond hold time may not be a sufficient length of time to be seen by the programmable controller. In this case, the Handshake feature can be selected to ensure that push button depressions are captured.

The Handshake feature holds push button depressions until the module receives acknowledgement from the programmable controller that it has received the depression. The Handshake feature is selected via a DIP switch setting on the RediPANEL module and utilizes an additional input and output bit from the input and output image tables of the programmable controller.

Lamp Status Feature

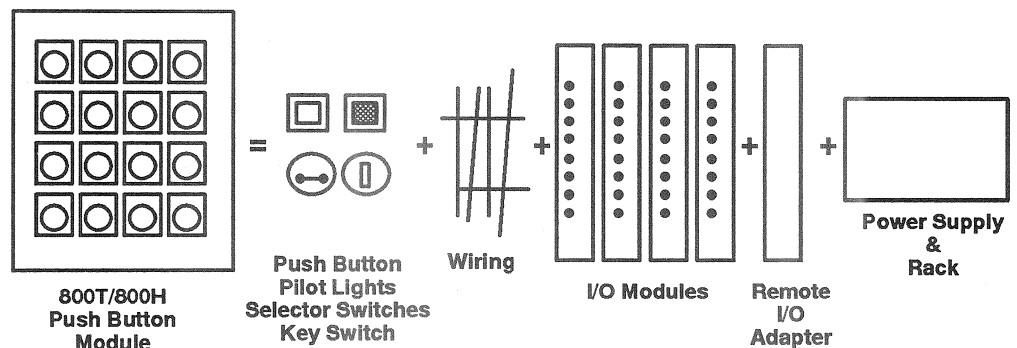
This is the last state indication that allows you to determine the status of the indicator lamps when communication between the programmable controller and the module is lost. You can choose to have all the lamps remain in the same state they were in when communications were lost or you can choose to have all lamps turn OFF. This feature is selected via a DIP switch setting on the module.

Large Legend Plates

The push button mounting holes are 2¹/₂ inches on center to center allowing “standard”, “jumbo” or “large” automotive legend plates to be mounted. These larger legend plates allow up to five lines of information required in many industrial applications.

How the Module Operate

RediPANEL modules combine the functions of standard push button devices with the capabilities of a remote I/O rack – all in one package.



RediPANEL modules communicate directly with the programmable controller via the remote I/O link. This approach enables you to install the module anywhere along the link by utilizing simple remote I/O connection procedures.

Programming the devices in the modules is identical to programming devices hardwired to remote I/O racks. This means that the devices in the RediPANEL modules that are connected to scanners are mapped directly into the I/O image tables of the programmable controller. Modules connected to sub-scanners require a block transfer from the programmable controller to the sub-scanner.

Configuration with Programmable Controllers

RediPANEL push button modules communicate with all Allen-Bradley programmable controllers that support the remote I/O link. To configure the modules to the programmable controller the following factors must be determined:

- 1. The rack size ($\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ or full) of the push button module**
Rack sizing refers to the amount of inputs and outputs reserved for the module in the programmable controller's image table. Rack size is automatically set by the features selected for that module and the number of push buttons of the module. Features are selected by DIP switches on the module.

The table below illustrates the rack size required for each module depending on the features selected.

Number of Buttons	Handshake	Lighted or Blinking	Lighted and Blinking
16	No	$\frac{1}{4}$	$\frac{1}{4}$
16	Yes	$\frac{1}{4}$	$\frac{1}{2}$
32	No	$\frac{1}{4}$	$\frac{1}{2}$
32	Yes	$\frac{1}{2}$	$\frac{3}{4}$

The following table compares the rack size to the amount of I/O. For the remote I/O network, the I/O is measured in terms of racks. The smallest unit is a $\frac{1}{4}$ rack.

Rack Size	Amount of I/O (Bits)
$\frac{1}{4}$	32 inputs + 32 outputs
$\frac{1}{2}$	64 inputs + 64 outputs
$\frac{3}{4}$	96 inputs + 96 outputs
Full	128 inputs + 128 outputs

- 2. Select the programmable controller model and its appropriate remote I/O scanner module**

The RediPANEL module communicates with the programmable controller through a remote I/O scanner or sub-scanner. RediPANEL modules contain all the necessary electronics to connect directly to the remote I/O cable.

The table on the top of Page 7 shows the corresponding scanner module for each programmable controller. Note that all programmable controllers will work with the 1771-SN sub-scanner module installed in the I/O rack.

For this Programmable Controller	Use this Scanner Module
PLC-2-Mini or PLC-5/10, PLC-5/12	1771-SN
PLC-2/30	1772-SD2, Rev. 3 or later
PLC-3	1775-S4A, 1775-S4B, 1775-S5
PLC-3/10	1775-SR, 1775-SR3
PLC-5/15, PLC-5/25	Integral
PLC-5/250	5250-RS

3. **Verify that both the “physical” and “logical” specifications for the scanner or sub-scanner are suitable for the application**
 “Logical” refers to the total quantity of I/O (measured in racks) used by all devices on the remote I/O link. RediPANEL modules, DL40 Dataliners, remote I/O racks, etc., are all considered devices.

“Physical” refers to the maximum number of devices that the scanner can support.

	Scanners		Sub-scanners	
	Physical	Logical	Physical	Logical
PLC-2-Mini, PLC-2/05, 2/07, 2/15, 2/17	-----	-----	16 Chassis ¹	7 Racks
PLC-5/10, PLC-5/12	-----	-----	16 Chassis ¹	7 Racks
PLC-5/15 ²	12 Chassis	3 Racks	16 Chassis ¹	7 Racks
PLC-5/25 ³	16 Chassis	7 Racks	16 Chassis ¹	7 Racks
PLC-2/30	16 Chassis/channel 2 channels/scanner	7 Racks total	16 Chassis ¹	7 Racks
PLC-3	16 Chassis/channel 4 channels/scanner	32 Racks total	16 Chassis ¹	7 Racks
PLC-5/250	8 Chassis/channel 2 channels/scanner	8 Racks total	16 Chassis ¹	7 Racks

NOTE: (1) Logical Full Rack = (4) Quarter Racks.

¹ Two of these can be 1771 chassis.

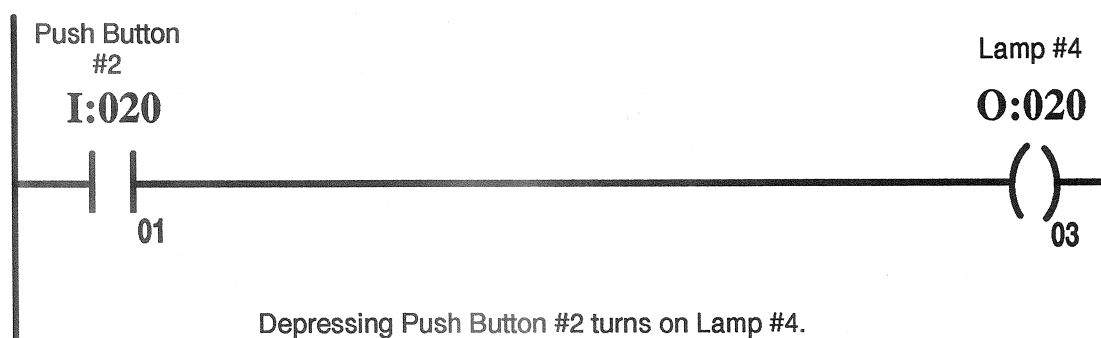
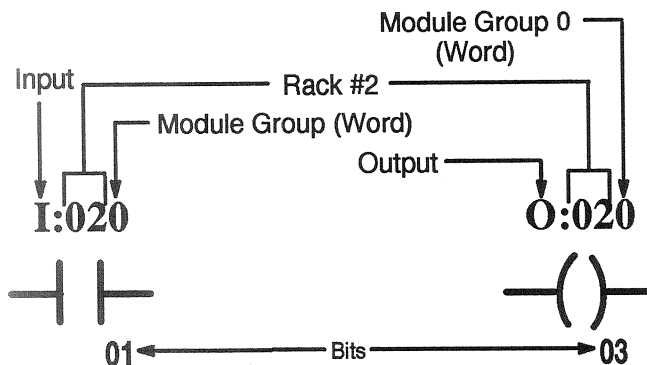
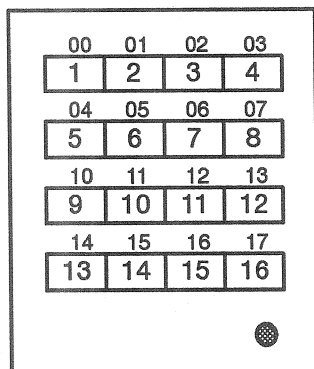
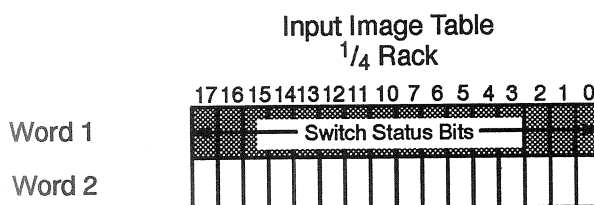
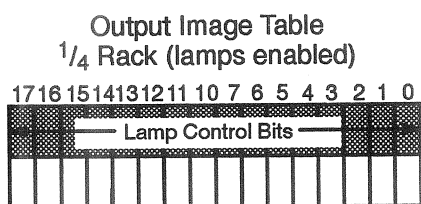
² PLC-5/15 Series B Revision H or later have partial rack addressing. Earlier versions were limited to three chassis.

³ PLC-5/25 Series A Revision D or later have partial rack addressing. Earlier versions were limited to seven chassis.

Typical Input and Output Image Tables

The table below shows a typical I/O image table configuration when using a 16 button RediPANEL push button module with a PLC-5/15 or PLC-5/25 programmable controller.

In this configuration the DIP switches on the module have been set to make it look like rack #2 with starting addresses beginning with module group 0. The “flashing lamps” and “handshake” switches have been “disabled”.



Modifications and Installation Procedure

There are variety of 800T/800H devices you can use to modify a standard module or fill an unpopulated module. Use one of the following two methods depending on your application requirements:

Method 1

Order 800T or 800H devices pre-assembled with the necessary adapter kit already installed on the device. This is accomplished by adding a **Z3** suffix to the standard 800T/800H catalog number.

Example 1: 800T-PB16GD1**Z3**

The catalog number above is for a green illuminated push button with 1 N.O. contact. An 800T-N305 adapter kit is factory assembled to an 800T-PB16GD1 push button. This is one of the push buttons that is supplied for the standard module. Red and amber can also supplied in the standard module by changing the 9th character in the catalog number to an "A" or "R".

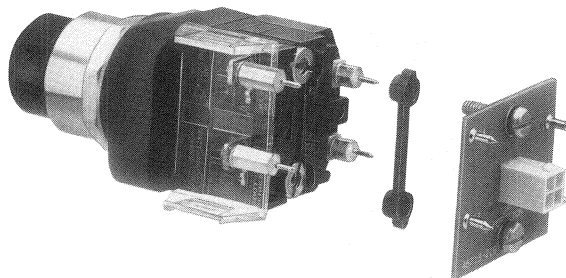
Example 2: 800T-FXJP16**RA4Z3**

The above catalog number is for an illuminated jumbo mushroom head push button with 2 N.C. contacts in a single 800T-XA4 contact block. One contact is connected to the RediPANEL module for use with the programmable controller. The second contact is available for external hardwiring applications such as "emergency stop".

These push buttons are ready to be installed in a standard or an unpopulated module.

Method 2

Order 800T/800H devices and adapter kits separately for field assembly. Adapter kits can be installed on most 800T/800H devices. There are four different adapter kits available. Each kit includes the circuit board, posts and spacers. Pages 10 and 11 list the catalog numbers for the adapter kits as well as a guide for compatible 800T/800H devices.



90-005-8

Catalog Number 800T-N305 Adapter Kit for Two Position Devices

Compatible devices:

1. All two position devices, illuminated and non-illuminated using a single shallow contact block. **Exceptions:** 1 N.C. contact block (800T-XD2) or 1 N.C.L.B. contact block (800T-XD4).
2. Push buttons, two position selector switches, push-pull or push-twist or pull to release push button units.
3. Illuminated devices must be either 120 Volt transformer or 120 Volt transformer LED. Push-to-test pilot lights are not valid devices.
4. Devices with an 800T-XA contact block (1N.O.-1N.C.) will have the N.O. contact connected to the RediPANEL input. All dual contact blocks use the rear contacts as the RediPANEL input. See Figure 1. Front contacts are available for hardwiring.

Catalog Number 800T-N306 Adapter Kit for Three Position Devices

Compatible devices:

1. All three position devices, illuminated and non-illuminated using a single shallow contact block.
2. Three position selector switches, three position push-pull.
3. Illuminated devices must either be 120 Volt transformer or 120 Volt transformer LED.
4. Three position devices use a dual contact block, this adapter board uses both front and rear contacts. See Figure 2.

Note: Each three position device requires two cables from the RediPANEL module. The pilot lights output from the 2nd cable can be used with an 800T-N309 connector cable to operate a separate pilot light.

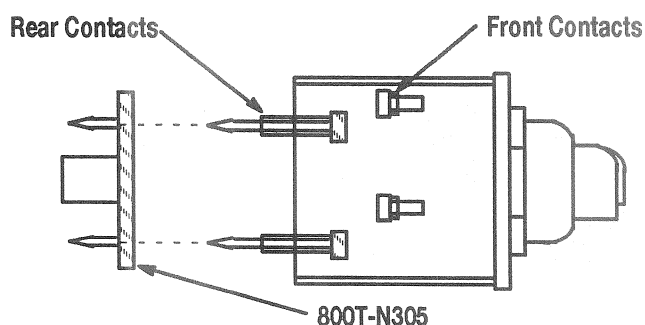


FIGURE 1

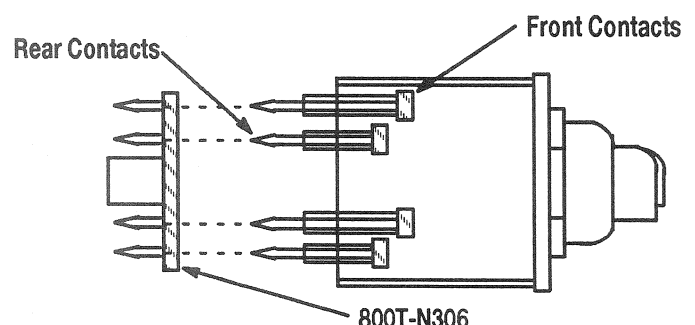


FIGURE 2

Catalog Number 800T-N307 Adapter Kit for Two Position Devices using 1 N.C. contact (800T-XD2) or 1 N.C.L.B. contact (800T-XD4)

Compatible devices:

1. Illuminated or non-illuminated push buttons, selector switches, push-pull or push-twist or pull to release push button units.
2. Illuminated devices must either be 120 Volt transformer or 120 Volt transformer LED. Push-to-test pilot lights are not valid devices.
3. The 800T-N307 is shown in Figure 3.

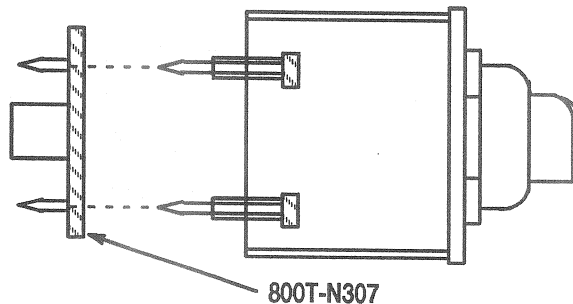


FIGURE 3

Catalog Number 800T-N308 Adapter Kit for Four Position Devices

Compatible devices:

1. The only acceptable device is a four position selector switch with cam block suffix number KK4B.
2. Four position selector switches use two dual contact blocks. Only the rear (A) contacts are used by the adapter board. See Figure 4. The front contacts are available for hardwiring.

Note: Each four position device requires two cables from the RediPANEL module. The pilot lights output from the 2nd cable can be used with an 800T-N309 connector cable to operate a separate pilot light.

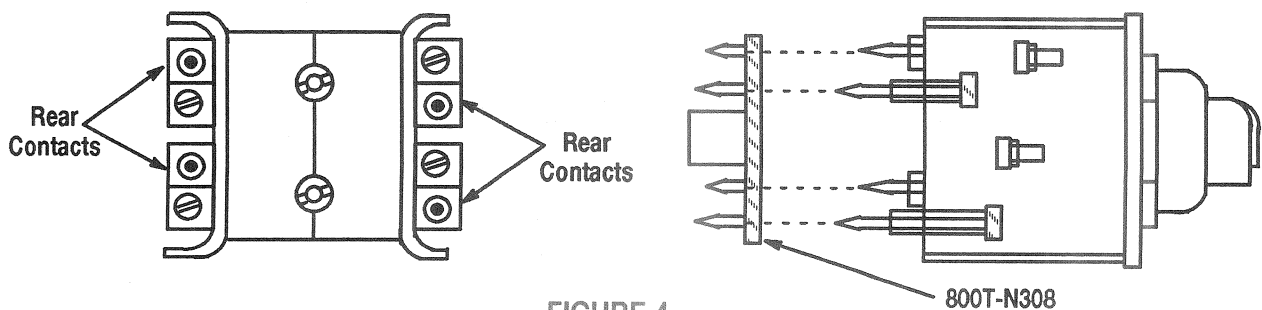
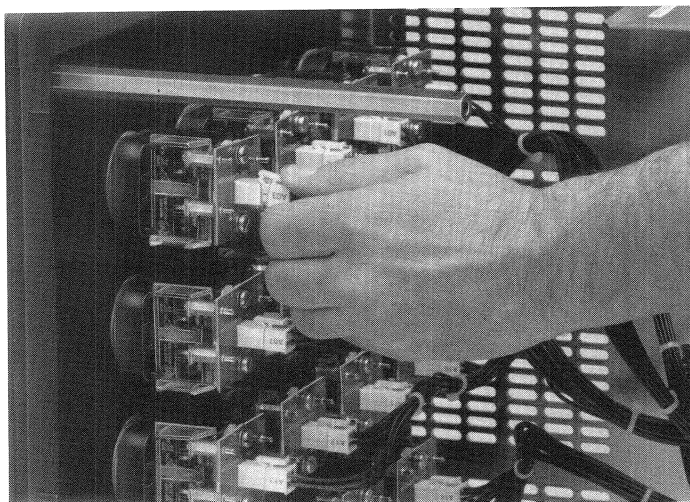


FIGURE 4

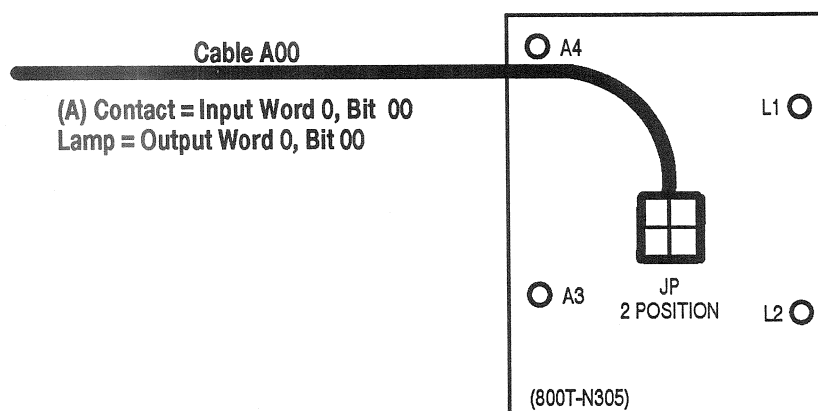
Selector Switch and Push Button Connection Examples

Inside each 800T/800H RediPANEL module is either a 16 or 32 pre-assembled wiring harness. This wiring harness plugs into the individual adapter boards mounted on the 800T/800H devices. Refer to the following illustration.



89-344-5

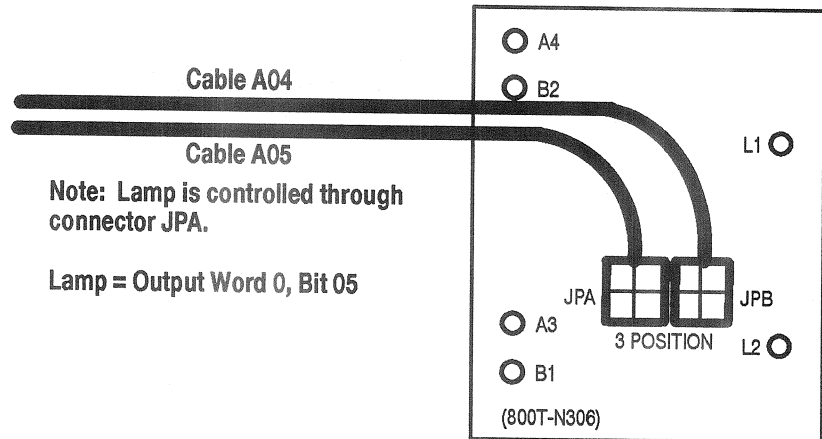
Following are examples of connections for installing 800T/800H devices in the module. These examples use PLC-5 addressing, rack 2, module group 0.



The diagram above shows the internal RediPANEL cable A00 plugged into the 800T-N305 adapter board. For this example the N.O. contact has an input address of I:020/00. The pilot light has an output address of O:020/00. These addresses will be in the I/O image table.

Each device in the RediPANEL module is addressed as if it were hardwired to a remote I/O rack. The letter A in Cable A00 indicates the module group and 00 indicates the bit or terminal address.

Illuminated Three Position Selector Switch Catalog Number 800T-16JR2KB7AXZ3



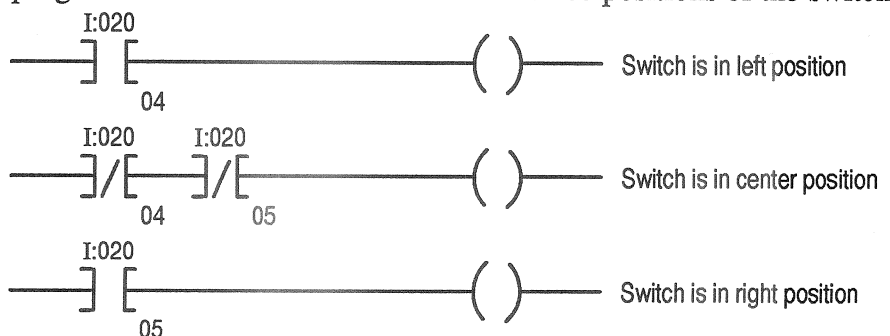
Contact				Bit Location
A	X	O	O	INPUT Word 0, Bit 04
B	O	O	X	INPUT Word 0, Bit 05

O = Open X = Closed

The diagram above shows the internal RediPANEL cable A04 and A05 plugged into the 800T-N306 adapter board. For this example the A contact is addressed in the input image table by I:020/04. The B contact is addressed by I:020/05. The pilot light is represented in the output image table by O:020/04. Each device in the RediPANEL module is addressed as if it were hardwired to a remote I/O rack.

Application Note:

Given the three position selector switch in the previous example, the A contact is closed in the left position, and open in the center and right. The B contact is closed in the right position and open in the left and center. The following programming example would allow the programmable controller to monitor all three positions of the switch.



In conventional hardwired relay ladder logic, this would be the equivalent of a three position selector switch with a closed contact in each position.

Specifications

Electrical

Built-in Power Supply	90-132 Volts AC, 47-63Hz 180-264 Volts AC, 47-63Hz						
Input Current and Power Ratings	120 Volts AC Input <table> <tr> <td>32 Buttons</td><td>16 Buttons</td></tr> <tr> <td>1.25 Amps, 150VA</td><td>0.75 Amp, 90VA</td></tr> <tr> <td>0.4 Amp, 48VA</td><td>0.3 Amp, 36VA</td></tr> </table>	32 Buttons	16 Buttons	1.25 Amps, 150VA	0.75 Amp, 90VA	0.4 Amp, 48VA	0.3 Amp, 36VA
32 Buttons	16 Buttons						
1.25 Amps, 150VA	0.75 Amp, 90VA						
0.4 Amp, 48VA	0.3 Amp, 36VA						
Lamps	6.3 Volts AC, Catalog No. 800T-N65 ANSI #755 or #1866 Illuminated Selector Switches, 6.3 Volts AC Catalog No. 800T-N15, ANSI #86 Push-to-test Button, 28 Volts DC Catalog No. 800M-N17, ANSI #85						
Communications Connector	Standard three prong female mating connector furnished with each module, A-B Part No. 22112-046-03						
UL Listing	800T Series C or later Approved 800H Pending						
CSA Certification	800T Series C or later Certified 800H Pending						

Mechanical

Enclosure	800T NEMA Type 12/13 800H NEMA Type 4/4X																
Configurations	32 Push Button Module – 2 ¹ / ₂ " on center Standard: 8 Red, 16 Green, 8 Amber 16 Push Button Module – 2 ¹ / ₂ " on center Standard: 4 Red, 8 Green, 4 Amber																
Replacement Illuminated Push Buttons	800T-PB16_D1Z3 – 1 N.O. contact 800H-PB16_D1Z3 – 1 N.O. contact																
Remote I/O Serial Data Link	Communicates with A-B programmable controller family via the following scanners modules: <table> <tr> <td>Scanner</td><td>PLC</td></tr> <tr> <td>1771-SN</td><td>PLC-2/05, 2/15, 2/16, 2/17, 5/10, 5/12</td></tr> <tr> <td>1772-SD2</td><td>PLC-2/30</td></tr> <tr> <td>Rev. 3 or later</td><td></td></tr> <tr> <td>1775-S4A, S4B, S5</td><td>PLC-3</td></tr> <tr> <td>1775-SR</td><td>PLC-3/10</td></tr> <tr> <td>5250-RS</td><td>PLC-5/250</td></tr> <tr> <td>Integral</td><td>PLC-5/15, 5/25</td></tr> </table>	Scanner	PLC	1771-SN	PLC-2/05, 2/15, 2/16, 2/17, 5/10, 5/12	1772-SD2	PLC-2/30	Rev. 3 or later		1775-S4A, S4B, S5	PLC-3	1775-SR	PLC-3/10	5250-RS	PLC-5/250	Integral	PLC-5/15, 5/25
Scanner	PLC																
1771-SN	PLC-2/05, 2/15, 2/16, 2/17, 5/10, 5/12																
1772-SD2	PLC-2/30																
Rev. 3 or later																	
1775-S4A, S4B, S5	PLC-3																
1775-SR	PLC-3/10																
5250-RS	PLC-5/250																
Integral	PLC-5/15, 5/25																

Communications

User Supplied Cable	I/O cable – Catalog No. 1770-CD or Belden cable #9463
Baud Rates	115.2k baud for communications up to 5000 feet 57.6k baud for communications up to 10,000 feet

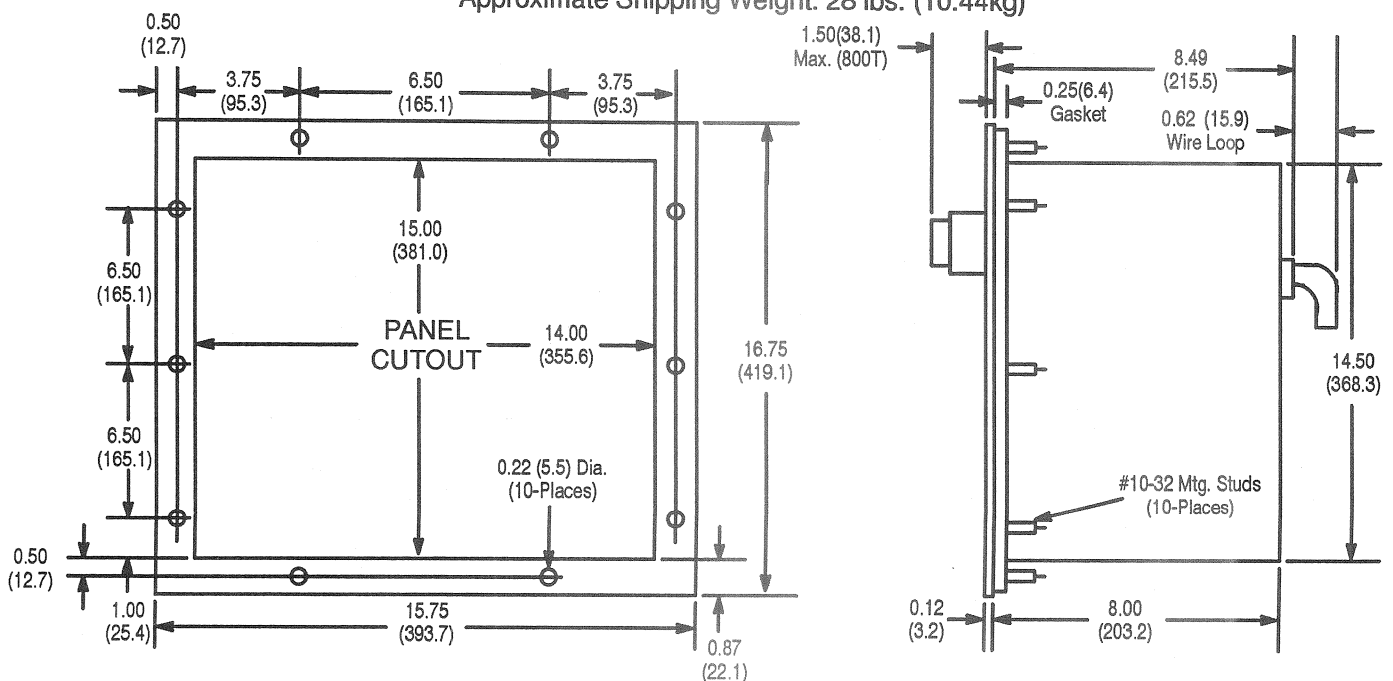
Environmental

Temperature	Operating: 0°C to +60°C for 800T 0°C to +40°C for 800H Note: 800H push buttons are rated at +40°C max. (Operating temperature at 0°C is based on the absence of freezing moisture or liquid) Storage: -40°C to +85°C
Humidity	5% – 95% non-condensing

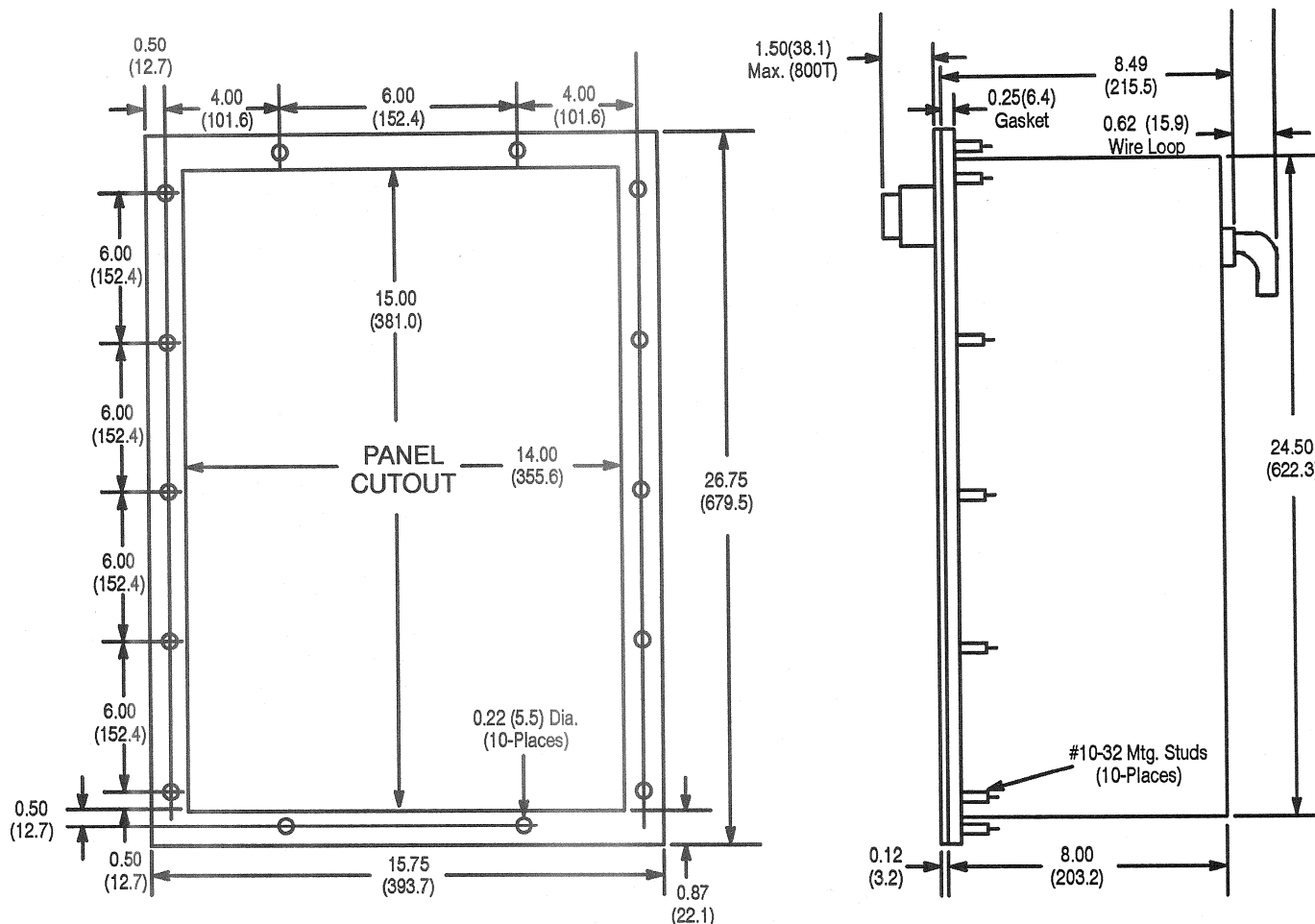
Approximate Dimensions and Shipping Weights

All dimensions are in inches.
(Dimensions in parentheses are in millimeters)

16 Push Button Module Approximate Shipping Weight: 28 lbs. (10.44kg)



32 Push Button Module
Approximate Shipping Weight: 45 lbs. (16.79 kg)



As a subsidiary of Rockwell International, one of the world's largest technology companies – Allen-Bradley meets today's challenges of industrial automation with 85 years of practical experience controlling manufacturing processes. More than 13,000 employees throughout the world design, manufacture and apply a wide range of automation hardware, software and supporting services to help our customers continuously improve quality, productivity and time to market. These products and services not only control and integrate the manufacturing process, but provide access to vital plant floor data that can be used to support decision-making throughout the enterprise.

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