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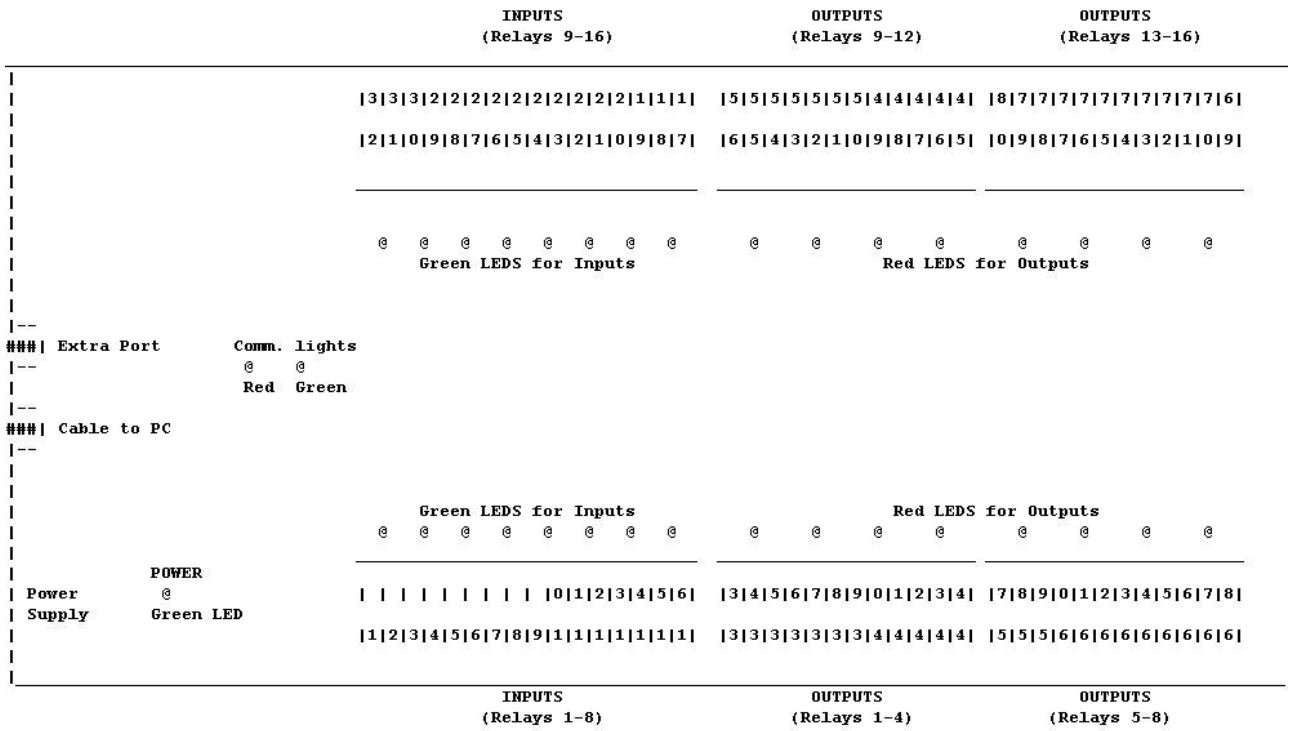
Broadcast Tools AT-1616L Controller

Instructions for use with ControlReady for Windows

This Accessory Sold Separately

Note: The new line of Broadcast Tools "SS" switchers have built in inputs/outputs which we can also use for detecting satellite closures or driving relays (with software version 4.5 and later). Btools also makes the PIP-21 – a device that gives you up to 21 additional inputs if you need more inputs in the future. (Versions 4.5 and later can support up to 4 1616's and 4 PIP devices for up to 164 inputs and outputs)

Broadcast Tools AT1616L Controller
Optional Rack Panel accessory: Broadcast Tools RM-2



Product Includes:

- One (1) Broadcast Tools AT1616L Controller
- One (1) RS-232/RJ-45 cable (connects Controller to PC)
- One (1) 9 pin RJ to RS-232 adapter, 1 25 pin RJ to RS-232 adapter
- One (1) 12V DC 500ma Power Supply (Or 9VAC 500ma) Either is ok

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OVERVIEW OF THE AT1616L

Setting the communication mode as OLD or NEW

The AT1616L replaces the original USN1616 Controller.

JUMPER J19 controls OLD vs. NEW mode.

J19 must be unjumpered for use in WireReady32. If you are using the AT1616L in WireReady32, and there is a jumper on J19, remove the jumper. This puts the AT1616L in NEW mode, which is required by WireReady32. The other mode works with our original DOS based Program, ControlReady. Generally we have preset the jumper, depending on the product you have purchased.

Generally, all the other jumpers have been factory set and should not be changed. However, J15 and J24 must be jumpered for use with any WireReady software product. The jumpers near the inputs of the controller support two modes - the default is for dry 'contact" closures, and the other mode (for use with open collector style/transitor connections) is shown in the Broadcast Tools engineering manual.

Purpose:

With WireReady32, we use the controller to interface audio playback with broadcast on-air consoles, or to detect external closures for automation (for triggering commercial breaks, liners, ids, or auto-records; or to fire relays to control other devices, such as dats, switchers, and console remote start/stop LEDs).

In the WireReady32 NOTEPAD and Audio PLAYER screens, START and STOP push buttons can be assigned for each audio card in the system so that up to three different channels of audio playback can be remote started/stopped from a studio console or button box (supplied separately).

For automation, WireReady32's AUTOMATE function can detect closures, so that automatic recording, and filling breaks, ids, or liners with a satellite network are possible. For example, automating satellite nets, or auto-recording programs. We wait for channels to go HI or LO within time windows you set, and we can pulse and latch the relays.

If you plan to use the NOTEPAD or PLAYER screens for playback, do not use channels B1-A through B1-F for satellite closures (both inputs and outputs) rather start with B1-G and higher for use with satellite networks and other devices. In this fashion, the controller can be used for both live-assist remote/start/stop playback from the NOTEPAD and PLAYER in addition to external interfacing used for AUTOMATE.

IF YOU HAVE QUESTIONS CONCERNING THE INSTALLATION OR USAGE OF THIS OR ANY WIREREADY PRODUCT, PLEASE CALL WIREREADY TECHNICAL SUPPORT AT (800)-833-4459 or (508)-393-0200.

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HOW TO CONNECT THE AT1616L TO THE PC

IMPORTANT: IT IS RECOMMENDED THAT THE COMPUTER BE TURNED OFF WHEN CONNECTING AND DISCONNECTING CABLES.

The AT1616L connects to the PC via the included RS-232/RJ-45 cable. RS-232 end (9 or 25 pin female) is connected to an available serial port on your PC. The RJ-45 end (phone connector) is connected to the AT1616L jack closest to the power supply (as shown in diagram on page 1). Use the appropriate RJ adapter to connect the AT1616L to your 9 or 25 pin COM port (labeled R-9)

How to Configure WireReady32 to Communicate with the AT1616L.

A setting in the INI file controls which COM port is connected to the AT1616L. The INI file is in the users directory for the individual user, named in the format username.ini. So, if you installed WireReady32 to the w:\wire directory, for the user ONAIR, you would edit the file w:\wire\users\onair\onair.ini. Add the section below if it does not exist:

```
[USN]
Port=<port number>
```

Replace <port number> with the COM port number. For example, for com2, use:

```
Port=2
```

Registering the AT1616L Control

Registering COMMX.OCX is not required if the AT1616L will be used with WireReady32 version 3.823 or higher. If you will be installing the AT1616L on a machine running a version earlier than 3.823, follow the below instructions. If running version 3.823, skip this section on registering the control file.

In order for the AT1616L to work in WireReady32, you much place a control file on the computer that will use the AT1616L, and register this control file.

Copy the file COMMX.OCX from the \wire\install\nr32\AT1616 directory (or from the WireReady32 CD) to the c:\windows\system directory. Do this by opening a DOS box, and typing:

```
COPY [server drive]:\wire\install\nr32\AT1616\COMMX.OCX C:\WINDOWS\SYSTEM
```

(You could also copy and paste, if you are familiar with Windows.)

Open a DOS box, and go to the c:\windows\system prompt, by typing CD\WINDOWS\SYSTEM. Register the file by typing

```
REGSVR32 COMMX.OCX
```

You will need to reboot the computer after registering the file.

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WIRE CONNECTIONS FOR PLAYING AUDIO FROM THE NOTEPAD AND PLAYER

Note: future versions will drive these contacts from the ONAIR screen too. The automation decks do not drive these inputs and outputs – individual input and output assignments are controlled in the automation logs.

Inputs:

WireReady32 supports 3 momentary starts and 3 momentary stops.

Name	Terminal	Function
1 START	1,2	Makes the next audio cut play out audio card #1
1 STOP	3,4	Stops whatever is playing on card #1
2 START	5,6	Makes the next audio cut play out audio card #2
2 STOP	7,8	Stops whatever is playing on card #2
3 START	9,10	Makes the next audio cut play out audio card #3
3 STOP	11,12	Stops whatever is playing on card #3

(Other inputs are reserved for use in automation. See below.)

These opto-inputs can accept dry closure/momentary reset style buttons on any console. The inputs can also be jumpered to accept other signals such as open collector output or wet closures (see Broadcast Tools manufacturer manual for more information).

Terminal refers to the numeric positions shown on the AT1616L silk-screen.

Outputs:

WireReady32 can provide a latched closure to drive an LED for each channel on the on-air console to indicate when a channel is playing and is in use.

Relay	Pins	Action
1	33 NO 34 Common	Closed when audio is playing on audio card 1
2	36 NO 37 Common	Pulsed for 1 second at end of audio card 1 playing
3	39 NO 40 Common	Closed when audio is playing on audio card 2
4	42 NO 43 Common	Pulsed for 1 second at end of audio card 2 playing
5	57 NO 58 Common	Closed when audio is playing on audio card 3
6	60 NO 61 Common	Pulsed for 1 second at end of audio card 3 playing

Other outputs are reserved for future use.

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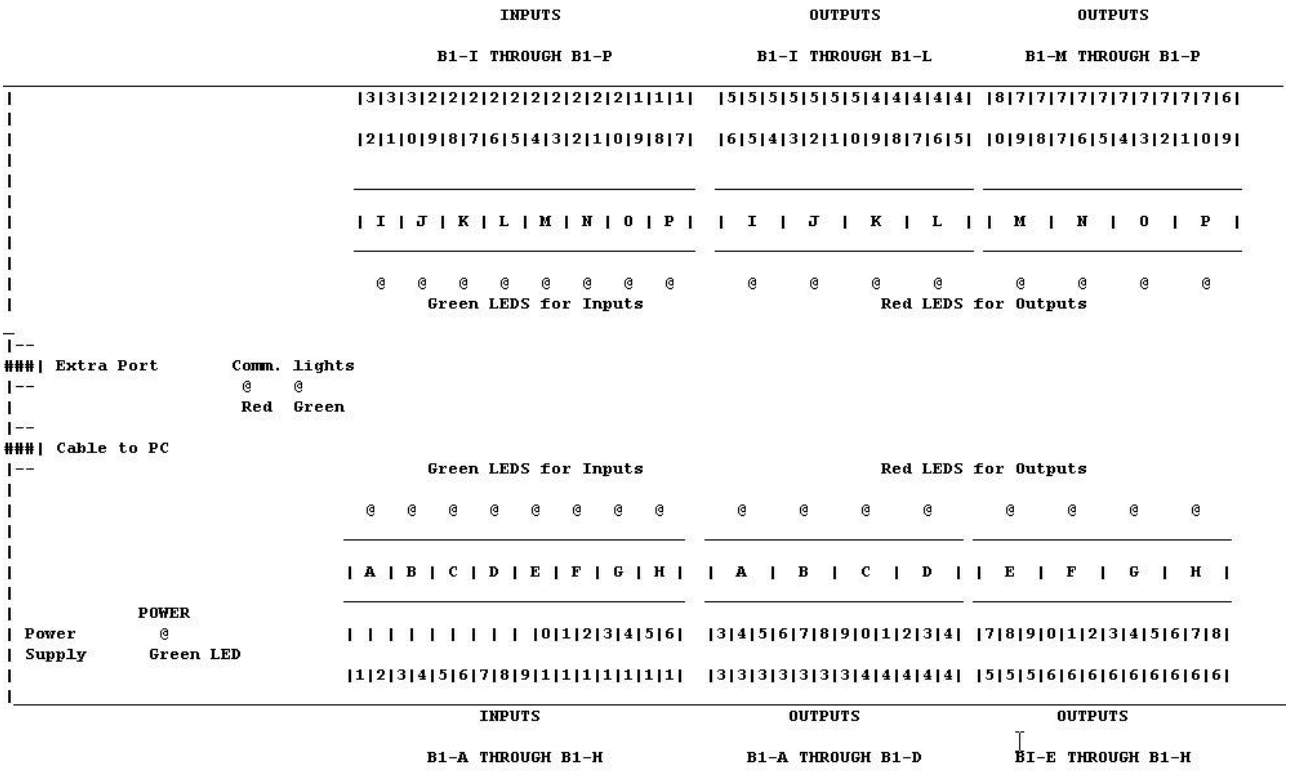
WIRE CONNECTIONS FOR AUTOMATION



NOTE: When connecting closures for automation, keep in mind that terminals 1 through 12 are used for playing audio in the Notepad/Player. If the Notepad or Player is going to be used to play audio on the automation computer, inputs B1-A through B1-F will not be available for other closures and you should start wiring from G onward. If you don't plan to use the notepad and player- then you may use these.

Note future versions will be available where you can disable the hard-wired input/output assignments for the notepad and player screens if you want to use these strictly for the automation decks.

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HOW TO CONNECT EXTERNAL DEVICES TO THE AT1616L FOR AUTOMATION

INPUTS

All connections to the AT1616L are made to the butterscotch colored barrier strips.

Input channels are constantly monitored by WireReady32 Automation, which can discern if a closure has been made. When the closure is made, the automation moves to the next line.

The input channels are:	The relay #'s on the controller are:		
B1-A	1	2	generally reserved for Notepad/Player
B1-B	3	4	""
B1-C	5	6	""
B1-D	7	8	""
B1-E	9	10	""
B1-F	11	12	""
B1-G	13	14	for use with Automate
B1-H	15	16	""
B1-I	31	32	""
B1-J	29	30	""
B1-K	27	28	""
B1-L	25	26	""
B1-M	23	24	""
B1-N	21	22	""
B1-O	19	20	""
B1-P	17	18	""

PLEASE NOTE: WHEN WIRING TO OPEN COLLECTOR/TRANSISTORS, NOTE POLARITY OF INPUTS (SEE BTOOLS MANUAL). The + and - are not sequential as you might think. For interfacing with dry closures (no voltage), polarity doesn't matter.

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HOW TO CONNECT EXTERNAL DEVICES TO THE AT1616L FOR AUTOMATION

OUTPUTS

All connections to the AT1616L are made via the butterscotch colored barrier strips.

Output channels, when PULSED/LATCHED* by AUTOMATE, will create a latched or pulsed contact closure which in turn will affect an external device.

If the external device acts on closures, you will want to connect the wires to the "NO" (normally open) and "C" (common) connectors of a channel. This way when ControlReady tells the AT1616L to make a closure, the closure will be made and the external device will respond accordingly.

If the external device acts on open circuit, you will want to connect the wires to the "NC" (normally closed) and "C" (common) connectors of a channel. This way when ControlReady tells the AT1616L to break a closure, the closure will be broken and the external device will respond accordingly.

The output channels are:	The relay #'s on the controller are: NC	COMMON	NO	
B1-A	35	34	33	generally reserved for player/notepad
B1-B	38	37	36	""
B1-C	41	40	39	""
B1-D	44	43	42	""
B1-E	59	58	57	""
B1-F	62	61	60	""
B1-G	65	64	63	for use with automate
B1-H	68	67	66	""
B1-I	56	55	54	""
B1-J	53	52	51	""
B1-K	50	49	48	""
B1-L	47	46	45	""
B1-M	80	79	78	""
B1-N	77	76	75	""
B1-O	74	73	72	""
B1-P	71	70	69	""

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PLANNING YOUR INSTALLATION

OUTPUTS

Relay Outputs on the AT1616L are used to control other devices. Examples are switchers, consoles, cart machines, reels, and DATS.

Some devices require Pulses, and others require Latches. Some are dry and others want to see a voltage or ground.

Relays on the AT1616L can be configured to "talk to" these devices electrically.

CONNECTED TO	PURPOSE	COMMAND USED
B1-A		
B1-B		
B1-C		
B1-D		
B1-E		
B1-F		
B1-G		
B1-H		
B1-I		
B1-J		
B1-K		
B1-L		
B1-M		
B1-N		
B1-O		
B1-P		

Example:

B1-A 6X1 Switcher CH 1, Pulse HI Turns ABC on, PULSE B1-A HI 100ms

* - For AUTOMATE commands to use for communicating with the AT1616L, see the WIREREADY32 AUTOMATE Manual.

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PLANNING YOUR INSTALLATION

INPUTS

INPUTS are signals sent to AUTOMATE by other devices. Satellite networks use dry closures to tell Automate when spot breaks, liners, ids etc. should be played.

Some satellite networks have built in relays on their audio card, others use a separate box or card that goes in the satellite receiver to decode the relays, and other networks send "tones" that separate tone-decoders turn into relay closures.

YOU MUST KNOW WHERE YOUR CLOSURES COME FROM AND WHERE THEY CONNECT

CONNECTED TO	PURPOSE	COMMAND USED
B1-A		
B1-B		
B1-C		
B1-D		
B1-E		
B1-F		
B1-G		
B1-H		
B1-I		
B1-J		
B1-K		
B1-L		
B1-M		
B1-N		
B1-O		
B1-P		

Example:

B1-A WESTWOOD ONE J1&2, LEGAL IDS, WAIT FOR CHANNEL B1-A HI

* - For AUTOMATE commands to use for communicating with the AT1616L, see the WIREREADY32 AUTOMATE MANUAL.

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IN ORDER TO RECEIVE 24 HOUR 800 SUPPORT, OR TO RECEIVE OUR TURNKEY & TRAINING INSTALLATION PACKAGE (if purchased), WE MUST HAVE THESE WORKSHEETS ON FILE. Simply fill out the Planning Your Installation pages, and fax them to us at (508) 393-0255.

Get these to us before you start programming since we offer free advice to all customers. We may see a better way to wire your station WHICH WILL SAVE YOU TIME AND ENERGY when you start to program ControlReady.

Toll Free Help Line is (800) 833-4459. Ask for Tech Support and tell them you are using Automate.

OTHER NOTES:

NAMING THE CHANNELS SO THEY LOOK FRIENDLY IN YOUR LOGS:

WIREREADY32 lets you configure user-friendly names for the inputs and outputs you use in your automation schedules so you don't have to remember what "B1-A" is. SETUP32 our admin program lets you configure alias names for these channels (See the Setup32 Utility instructions). These are saved in the user's INI file (found under WIRE\USERS\USERNAME, where username is the user name you use to start WireReady32. You can also edit the user.ini manually if you prefer. Please use dashes instead of spaces if you can.

CUSTOM COMMANDS

Outputs can be setup as custom commands, so instead of seeing just PULSE B1-A "ABC channel on switcher" HI for 1000ms, you see PUT ABC ON THE AIR. The Automate manual explains how custom commands are setup. The advantage of a custom command is that if you change a custom command it changes the true command settings everywhere instantly, instead of you changing a channel and having to manually edit 1000 Pulse commands through a week's schedule.

CUSTOM COMMANDS are also where we send RS-232 strings out to devices like Starguide receivers, audio switchers and other devices. These are not related to the 1616. The 1616 is simply our eyes and ears and lets us see and hear signals from other devices, or control them with the relay outputs that are also available.

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Detecting an Open Collector on the AT1616

The hardware giving the open collector (the "external equipment") should have two terminals for this signal: the open collector and the ground (ground might be labeled 'common').

Choose the input on the AT1616. Remove the jumpers near those terminals, and then place one jumper over the pair of pins furthest from the terminals. Wire the positive terminal to the +V terminal on the AT1616. Wire the negative terminal to the open collector.

The table below shows the terminal pairs for each input channel:

Channel	Negative Terminal (to Open collector)	Positive Terminal (to +V terminal)
B1-A	2	1
B1-B	4	3
B1-C	6	5
B1-D	8	7
B1-E	9	10
B1-F	11	12
B1-G	13	14
B1-H	15	16
B1-P	18	17
B1-O	20	19
B1-N	22	21
B1-M	24	23
B1-L	25	26
B1-K	27	28
B1-J	29	30
B1-I	31	32

Wire the ground on the external equipment to the COM terminal on the AT1616. [There are two locations of the +V and COM terminals on the AT1616, next to input terminals 1 and 32. It does not matter which pair you use.]

To test to make sure the wiring is correct: disconnect the wires from the open collector and the ground, both on the external equipment, and touch the ends together. The green input LED will go on.

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