
Installation KI-1977B

Rauland RANGER[®] Classroom Installation



Rauland-Borg Corporation

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Introduction

Scope of this Manual



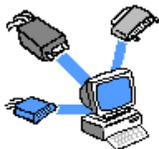
This manual tells how to install the Ranger classroom units. This includes mounting and wiring the individual units as well as configuring the related software on the Media Center computer.

Related Documents



For information on the wiring at the Media Center and configuring the system software, see KI-1856.

Obsolete Units



New installations will center on hand-held remote controls. Accordingly, the RANCLASS1, RANCLASS2, and RANCL201 are no longer available, and the RANCL101 will only be used in place of AVDS2 units. This manual includes information about these older units as a convenience for those working with older systems.

Classroom Installation

RANCL101 Classroom Controller



The RANCL101 is a baseband classroom electronics unit that mounts directly on either a Bretford or Peerless television mount (other mounts may require the drilling of 4 mounting holes) and is primarily designed to function in tandem with the RANCLASS1 or RANCLASS2 Classroom Control Panel. The unit resembles a small VCR and includes the following features: IR detector and transmitter, local/headend audio/video switching (when used with a RANCLASS1 or RANCLASS2), audio/video demultiplexing, connections for Level III laser disc control, stereo audio with improved performance and automatic stereo/mono switching, video coaxial equalizer for improved video signal, and accommodations for mounting a RANAVMS1 (stereo multiplexer for distributed local origination). **This unit is no longer available.**

Parts Required

- 1 AC Outlet
- 1 RANCLASS1 or RANCLASS2

Associated Equipment

- 1 Classroom monitor mount (e.g., RANHRDS27)
- 1 RANMON_{xx} (e.g., RANMON27)
- 1 RANCLASS1 (only for classrooms with classroom panel)
- 1 RANBOX2 (for surface mounting of RANCLASS1 only)
- 1 VW2290-372 (refer to drawing for the VW2290-372) (supplied with the RANCL101)
- 1 Control Link wire (e.g., WPD291, if used with a RANCLASS1)
- 1 175Ω video cable (e.g., WP815) or Fiber Optic cable (from headend)
- 1 VP0400, IR Transmitter Cable (supplied with the RANCL101)
- 1 RANCLINTF TV Interface Box (optional)

- 1 Two-Gang Electrical Box (if RANCLINTF is used)
- 1 AB3905 Mounting Bracket for the RANCL101CP (supplied with the RANCL101)
- 1 VW2290-336 (refer to drawing for the VW2290-336) (supplied with the RANCL101)

For Local Origination

- 1 RANAVJ Audio and Video Jack
- 1 RANAVMS1 Audio/Video Multiplexer Module (installs inside the RANCL101 for systems that require distributed local origination—see “RANAVMS1” for more information)

For Fiber Systems

- 1 RANFBINT, Fiber interface box (used instead of RANCLINTF)
- 1 RANFT1 or RANFT1FM Fiber Transmitter Card (only for return video on systems with local origination)
- 1 RANFR1 or RANFR1FM Fiber Receiver Card
- 1 RANBOX4 (only for surface mounting the RANFBINT) or Hoffman Engineering 8 × 10 × 4 back box, part number A-SE10X8X4.

Installation Steps

Headend to Classroom Wiring

Pull the following wires from each classroom to the Media Center.

Note: (a) The 1 Pair Shielded wire can be looped from one classroom to another as long as it does not exceed the maximum distance per AXLINK port specified in the “RANBROAD,” “RANEXP,” “RANEXPAD,” or “RANCPU” sections.

(b) The control pair can also be run as independent AXLINKS. Each link is subject to the specifications for maximum distance per AXLINK port specified in the “RANBROAD,” “RANEXP,” “RANEXPAD,” or “RANCPU” sections.

- 1 75 Ω Video Cable (e.g., WP815) This connects *J13* on the RANCLINTF (Headend Video) to the video matrix switch output.
- or
- 1 Fiber Optic cable (e.g., WP92022). This connects *J3* on the RANFR1 to the 0RANFT4 or RANFT1 (headend fiber transmitter).
- 1 1-Pair Shielded wire if using a RANCLASS1 (e.g. West Penn D291). This is the RS485 control link that originates at the headend from one of the following:
 - RANCC16
 - Punch Block
 - RANBROAD
 - RANEXP
 - RANEXPAD (a RANEXP is needed with this unit.)

Return Video to the Headend (Distributed Local Origination)

- 1 75 Ω Video Cable (e.g., WP815). This connects *J10* on the RANCLINTF to the video matrix switch input.
- or
- 1 Fiber Optic cable (e.g., WP92022) from *J3* on the RANFT1 to the RANFR4 or RANFR1 (headend fiber receiver).

Wiring the RANCLINTF

1. Mount the two-gang box that will hold the RANCLINTF. This must be located within five feet of the RANCL101.

2. Route the wires into the two-gang box that will hold the RANCLINTF and terminate the 75 Ω video cable with a phono plug connector.
3. Connect the 75 Ω video cable that you just have terminated and connect it to the J13 (Headend Video) terminal on the RANCLINTF.
4. If using a RANCLASS1, strip back the 1 Pair Shielded control wire (e.g., West Penn D291) and connect it to J11 on the RANCLINTF (see Table 1. for more information).

Table 1.		
Control Cable Wire Colors	(J11) on the RANCLINTF	Male DB25 Pinout (w/out RANCLINTF)
AXPI (Red)	J11-5 (AXPI)	3
AXMI (Black)	J11-6 (AXMI)	16
GND (Shield)	J11-7 (GND)	4 or 17

Note: The colors of the Control Cable wires may change depending on the type of cable you are using.

Connecting the RANCLINTF to the RANCLASS1

1. Strip back the outer case of the 9 pair shielded wire.
2. Strip 16 of the wires about 1/8 of inch.
3. Put electrical tape around the 2 unused wires so they do not cause a short.
4. Crimp the 16 remaining wires to the 16 pigtail wires according to the order specified in the following table:

Table 2. RANCLASS1 Wiring January 16, 1995 Version 1.1						
Signal	RANCLINTF Pin #	Pigtail Color	Pigtail Pin#	RANCLASS1/ RANCLASS2 V2.0 or later	Distributor Wire Color Used for Interconnect	Male DB25 Pinout without RANCLINTF
IRIN	J11-1	Black	1	J1-1		1
IROUT	J11-2	Brown	2	J1-2		14
+12V	J11-3	Red	3	J1-3		2
+12V	J11-4	Orange	4	J1-4		15
AXPI	J11-5	Yellow	5	J1-5		3
AXMI	J11-6	Pink	6	J1-6		16
GND	J11-7	Blue	7	J1-7		4
GND	J11-8	Violet	8	J1-8		17
IO1-Local / Headend Select	J11-9	Gray	9	J2-1		5
IO2-TV Off Sense	J11-10	White	10	J2-2		18
IO3-TV On Sense	J11-11	Red	11	J2-3		6
IO4-Motion Detector Output	J11-12	Black	12	J2-4		19

Table 2. RANCLASS1 Wiring January 16, 1995 Version 1.1						
Signal	RANCLINTF Pin #	Pigtail Color	Pigtail Pin#	RANCLASS1/ RANCLASS2 V2.0 or later	Distributor Wire Color Used for Interconnect	Male DB25 Pinout without RANCLINTF
IO5-Motion Detector Supervision	J11-13	Orange	13	J2-5		7
IO6-Future	J11-14	Yellow	14	J2-6		20
IO7-Future	J11-15	Pink	15	J2-7		8
IO8-Future	J11-16	Blue	16	J2-8		21
AXPI	J9-1	Black	1			
AXMI	J9-2	Brown	2			
Ground	J9-3	Red	3			
Ground	J9-4	Orange	4			
+12V	J9-5	Yellow	5			
-12V	J9-6	Pink	6			
+5V	J9-7	Blue	7			
RTS	J9-8	Violet	8	J3-5 (for level III only)		9
CTS	J9-9	Gray	9	J3-4 (for level III only)		10
TxD	J9-10	White	10	J3-2 (for level III only)		11
RxD	J9-11	Red	11	J3-3 (for level III only)		12
RxD	J9-12	Black	12			
Motion Detector Sense	J9-13	Orange	13			
IO6-Future	J9-14	Yellow	14			
IO7-Future	J9-15	Pink	15			
IO8-Future	J9-16	Blue	16			

Note: The colors of the wires do not matter, but make sure they match as described in the above chart.

Note: The RANCLASS1 will only read the DIP Switch setting when it powers up. If the address needs to be changed when the unit is on, power down for several seconds and power up again.

- After making all the necessary connections to the inside of the RANCLINTF, secure its front-cover plate. Then secure the RANCLINTF to the two-gang electrical box with four mounting screws.
- With the unit open set the DIP switches on the RANCLASS1 for the appropriate classroom (control) address. These addresses must be entered into the Media Center's classroom database—addresses should be after the RANCC16 addresses and up to 254. Make sure that there are no two panels with the same address code. The number in the code value row in the example below indicates the value of that DIP switch when it is in the “ON” position.

The following example shows the DIP switch settings (switch numbers 1,3,7,&8 ON) for a classroom whose address in 197 (1+4+64+128=197).

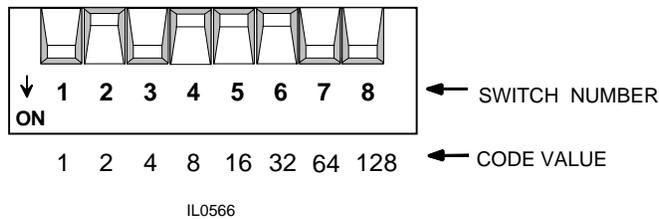


Figure 1. DIP Switch Settings Example

For Distributed Local Origination Coaxial Wiring

Use this procedure only if your classroom requires distributed local origination; otherwise, you can skip ahead to the next section.

1. Mount a single gang electrical box in the appropriate location. This will be used for the RANAVJ wall plate.
2. Mount the RANAVMS1 into the RANCL101 using the following procedure:
 - a. Add the four snap-in posts onto the board (look for mounting holes in the area near *J10*).
 - b. Connect the RANAVMS1 by pushing the pin holds over the pins marked *J10* on the RANCL101. Push the board so that it snaps-securely into place.
 - c. Secure the top cover to the RANCL101.
3. Route the 75Ω coaxial cable from the RANAVJ's video terminal (single gang box) to the RANCLINTF (or the RANFBINT) and terminate the 75Ω video cable with the Phono plug connector at the RANCLINTF (or the RANFBINT).
4. Route two 1- Pair shielded wires (e.g., West Penn D291) from the single-gang box to the RANAVJ.
5. Strip back the (2) 1- Pair shielded wires (e.g., West Penn D291) and terminate the ends with an RCA plug. Connect them to the RANCLINTF's Local Right Audio (*J8*) and Local Left Audio (*J7*). Connect the other end to the RANAVJ's Left Audio terminal and the Right Audio terminals.
6. Connect one end of the terminated 75 Ω video cables to the RANCL101 (Local Video).
7. Connect the other terminated 75Ω video cable to the RANCLINTF (*J13*) Headend Video.
8. Secure the RANAVJ to the single gang electrical box.

Mount and Wire the Classroom Television

1. Mount the RANMON_{xx} (e.g., RANMON27) as instructed in the classroom monitor mounting kit installation booklet.
2. Mount the RANCL101 mounting bracket to the monitor mount as described in the instructions.
3. Mount the RANCL101 to the RANCL101 mounting bracket as described in the instructions.
4. Connect the following cables between the TV and RANCLINTF.

Table 3. RANCLINTF to TV Connections

Type of Cable	Color of Cable or Cable Connector	From the RANCLINTF	To the TV
VW2290-336	Red	Right	Right Audio in
	White	Left	Left Audio in
	Yellow or Black	Video	Video in

5. After making all the necessary connections to the inside of the RANCLINTF its secure the front-cover plate to the RANCLINTF. Then secure the RANCLINTF to the two-gang electrical box with four mounting screws.
6. Install the IR cover. Locate the TVIR window. Center the IR Cover over the TVIR receiver (just behind the TVIR window) and install.
7. Connect the IR transmitter cable from the RANCL101 (MONITOR IR) to the TV's IR receiver. Do not secure the IR emitter into place until you have verified system operation.
8. Connect the TV power cord to the RANCL101's AC receptacle (To Monitor).
9. Connect the RANCL101's power cord to a wall outlet.
10. Connect the supplied data cable between the RANCL101's DB25 data jack and the RANCLINTF's DB25 port (marked data).

RANCL101CP Classroom Controller



Note: *the RANCL101CP cannot be used with the RANCLASS1.*

The RANCL101CP is a baseband classroom electronics unit that provides an efficient and cost-effective means of control for remote-control only systems. The RANCL101CP mounts directly on either a Bretford or Peerless television mount (other mounts may require the drilling of 4 mounting holes). The unit resembles a small VCR and includes the following features: IR detector and transmitter, local/headend audio/video switching, audio/video demultiplexing, connections for Level III laser disc control, stereo audio with improved performance and automatic stereo/mono switching, video coaxial equalizer for improved video signal, and accommodations for mounting a RANAVMS1 (stereo multiplexer for distributed local origination).

Parts Required

- 1 AC Outlet

Associated Equipment

- 1 Classroom monitor mount (e.g., RANHRDS27)
 1 RANMONxx (e.g., RANMON27)

- 1 VW2290-372 (refer to drawing for the VW2290-372) (supplied with the RANCL101CP)
- 1 RANCLINTF TV Interface Box
- 1 Control Link wire (e.g., WPD291)
- 1 75Ω video cable (e.g., WP815) or Fiber Optic cable (e.g., WP92022, from headend)
- 1 VP0400, IR Transmitter Cable (supplied with the RANCL101CP)
- 1 Two-Gang Electrical Box (if RANCLINTF is used)
- 1 AB3905 Wall Mounting Bracket (supplied with the RANCL101CP)
- 1 VW2290-336 (refer to drawing for the VW2290-336) (supplied with the RANCL101CP)

For Local Origination

- 1 RANAVJ Audio and Video Jack
- 1 RANAVMS1 Audio/Video Multiplexer Module (installs inside the RANCL101CP for systems that require distributed local origination—see “RANAVMS1” for more information)

For Fiber Systems

- 1 RANFBINT, fiber interface box (used instead of RANCLINTF)
- 1 RANFT1 Fiber Transmitter Card
- 1 RANFR1 Fiber Receiver Card
- 1 RANBOX4 (only for surface mounting)

Installation Steps

Headend to Classroom Wiring

Note: (a) The 1-pair shielded wire can be looped from one classroom to another as long as it does not exceed the maximum distance per AXLINK port specified in the “RANBROAD,” “RANEXP,” “RANEXPAD,” or “RANCPU” sections.

(B) The control pair can also be run as independent AXLINKS. Each link is subject to the specifications for maximum distance per AXLINK port specified in the “RANBROAD,” “RANEXP,” “RANEXPAD,” or “RANCPU” sections

Pull the following wires from each classroom to the Media Center:

- 1 75Ω Video Cable (e.g., WP815). This connects *J13* on the RANCLINTF (Headend Video) to the Video Matrix Switch output.
- 1 1-pair shielded wire (e.g., West Penn D291). This is the RS485 control link that originates at the headend from one of the following:
 - RANCC16
 - RANBROAD
 - RANEXP
 - Punch Block
 - RANEXPAD (a RANEXP is needed with this unit).

Return Video to the Headend (Distributed Local Origination)

- 1 75 Video Cable (e.g., WP815). This connects *J10* on the RANCLINTF to the Video Matrix Switch input.
- 1 Fiber Optic cable (e.g., WP92022) from *J3* on the RANFT1 to a RANFR4 or RANFR1 (headend fiber receiver).

Wiring the RANCLINTF

1. Mount the two-gang box that will hold the RANCLINTF. This must be located within four feet of RANCL101CP.
2. Route the wires into the RANCLINTF and terminate the 75 Ω video cable with a PHONO plug connector.
3. Connect the 75 Ω video cable that you just have terminated and connect it to *J13* (Headend Video) terminal on the RANCLINTF.
4. Strip back the 1 Pair Shielded control wire (e.g., West Penn D291) and connect it to *J11* on the RANCLINTF (see the following chart for more information).

Table 4. RANCLINTF Wiring		
Control Cable Wire Colors	RANCLINTF (J11)	Male DB25 Pinout (w/out RANCLINTF)
AXPI (Red)	J11-5 (AXPI)	3
AXMI (Black)	J11-6 (AXMI)	16
GND (Shield)	J11-7 (GND)	4 or 17

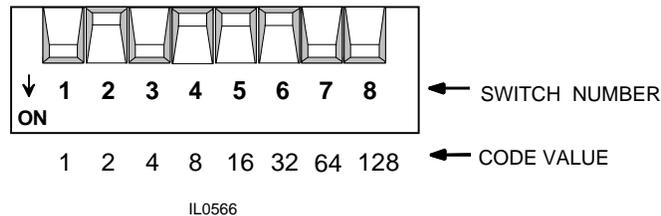
Note: The colors of the Control Cable wires may change depending on the type of cable you are using.

Wiring and Configuring the RANCL101CP

1. Remove the four Philips screws from the RANCL101CP's top cover.

2. Release the self-locking tabs located on rear of the unit by using a screwdriver to push on the tab.
3. With the unit open, set the RANCL101CP's DIP switches for the appropriate classroom (control) address. These addresses must be entered into the Media Center's classroom database—addresses should be after the RANCC16 addresses and up to 254. Make sure that there are no two panels with the same address code. The number in the code value row in the example below indicates the value of that DIP switch when it is in the “ON” position. Contact Rauland-Borg if more than 128 classrooms are to be configured.

The following example shows the DIP switch settings (switch numbers 1,3,7,&8 ON) for a classroom whose address in 197 ($1+4+64+128=197$).



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Figure 2. DIP Switch Setting Example

For Distributed Local Origination Coaxial Wiring

Use this procedure only if your classroom requires distributed local origination, otherwise you can skip ahead to the next section.

1. Mount a single-gang electrical box in the appropriate location. This will be used for the RANAVJ wall plate.
2. Mount the RANAVMS1 into the RANCL101CP using the following procedure:
 - a. Add the four snap-in posts onto the board (look for mounting holes in the area near *J10*).
 - b. Connect the RANAVMS1 by pushing the pin holds over the pins marked *J10* on the RANCL101CP. Push the board so that snaps-securely into place.
 - c. Secure the top cover to the RANCL101CP.
3. Route the 75Ω coaxial cable from the RANAVJ's “Video” terminal (single-gang box) to the RANCLINTF (or the RANFBINT) and terminate the 75Ω video cable with a phono plug connector at the RANCLINTF (or the RANFBINT).
4. Route two 1- Pair shielded wire (e.g., West Penn D291) from the single gauge box to the RANAVJ.
5. Strip back the (2) 1- Pair shielded wires (e.g., West Penn D291) and terminate the ends with an RCA plug. Connect them to RANCLINTF's Local Right Audio (*J8*) and Local Left Audio (*J7*). Connect the other end to the RANAVJ's left audio terminal and the right audio terminals.
6. Connect one of the terminated 75Ω video cables to the RANCL101CP (Local Video).
7. Connect the other terminated 75Ω video cable to the RANCLINTF (*J13*) Headend Video.

- Secure the RANAVJ to the single-gang electrical box.

Mount and Wire the Classroom Television

- After making the appropriate internal connections, secure the RANCL101CP's top cover.
- Mount the RANMONxx (e.g., RANMON27) as instructed in the classroom monitor mounting kit installation booklet.
- Mount the RANCL101CP mounting bracket to the monitor mount as described in the instructions.
- Mount the RANCL101CP to the mounting bracket as described in the instructions.
- Connect the following cables between the TV and RANCLINTF.

Table 5. RANCLINTF to TV Connections			
Type of Cable	Color of Cable or Cable Connector	From the RANCLINTF	To the TV
VW2290-336	Red	Right	Audio in
	White	Left	Audio in
	Yellow or Black	Video	Video in

- After making all the necessary connections to the inside of the RANCLINTF, secure the front cover plate to the RANCLINTF. Then secure the RANCLINTF to the two-gang electrical box with four mounting screws.
- Install the IR cover. Locate the TVIR window. Center the IR Cover over the TVIR receiver (just behind the TVIR window) and install.
- Connect the IR transmitter cable from the RANCL101CP (Monitor IR) to the TV's IR receiver. Do not secure the IR emitter into place until you have verified system operation.
- Connect the TV power cord to the RANCL101CP's AC receptacle (To Monitor).
- Connect the RANCL101CP's power cord to a wall outlet.
- Connect the supplied data cable between the RANCL101CP's DB25 data jack and the RANCL201INT's DB25 port (marked data).

RANCL201 Classroom Controller



The RANCL201 is a broadband classroom electronics unit. This unit must be used with a RANCLASS1. The RANCL201 mounts directly on either a Bretford or Peerless television mount (other mounts may require the drilling of 4 mounting holes). The unit resembles a small VCR and includes the following features: IR detector and transmitter, local/headend audio/video switching, connections for Level III laser disc control.

This unit is no longer available.

Parts Required

- 1 RANCLASS1 Classroom Control Panel
- 1 VP0400, IR Transmitter Cable (supplied with the RANCL201)
- 1 VW2287 (refer to the drawing for a VW2287. This cable supplied with the RANCL201INT)
- 1 Control Link wire (e.g., WPD291)
- 1 75Ω video cable (e.g., WP815)
- 1 AB3905 wall-mounting bracket (supplied with the RANCL201)
- 1 9-Pair shielded wire (e.g., West Penn 3655)

Associated Equipment

- 1 RANCL201INT Classroom Interface Box
- 1 RANMONxx (e.g., RANMON27) or customer supplied monitor
- 1 Classroom monitor mount (e.g., RANHRDS27)
- 1 Wall plate with F-type connector
- 1 Agile Modulator (e.g., Blonder Tongue Model # AM60-550)
- 1 Channel Combiner (e.g., Blonder Tongue Model # OC-8C)
- 1 RF Splitter (e.g., 4-way splitter)
- 1 Tapoff
- 1 AC Outlet
- 1 Single-Gang Electrical Box

Installation Steps

Headend to Classroom Wiring

1. Pull the following wires to each classroom (these can be looped):
 - 1 75 Ω Video Cable (e.g., WP815). This originates at the distribution amplifier in the headend and is wired to trunk lines down the corridors that are connected to the classrooms through tapoffs.
 - 1 1 Pair Shielded wire (e.g. West Penn D291). This is the RS485 control link that originates at the headend from one of the following:
 - RANCC16
 - Punch Block
 - RANEXP
 - RANEXPAD (a RANEXP is needed with this unit.)

Classroom Wiring

1. Pull one 9 Pair Shielded wire (e.g., West Penn 3655) between the RANCLASS1 and RANCL201INT.
2. Mount a two-gang electrical box within four feet of RANCL201 (this will hold the RANCL201INT).
3. Mount the RANBOX2 (this will hold the RANCLASS1).
4. Terminate the 75 Ω headend video cable with an F connector. Connect the terminated end to the RANCL201INT and secure it to the headend terminal on the back of the wall plate.
5. If your system will include local origination, run a 75 Ω video cable (e.g., WP815) between the RANCL201INT's local video input and the classroom's local origination wall plate (F-type connector).
6. Strip back the outer case of the 9 pair shielded wire and strip 16 of the wires about 1/8 of inch. Put electrical tape around the 2 unused wires so they do not cause a short.
7. Crimp the sixteen remaining wires to the 16 pigtail wires according to the order specified in the following table.

Table 6. RANCL201INT and RANCLASS1 Wiring February 25, 1994 Version 1.0				
Signal	RANCL201INT Data Pin #	Data Pigtail Color	RANCLASS1/ RANCLASS2 V2.0 or later	Distributor Wire Color Used for Interconnect
IR in	1	Brown	J1-1	
+12V Unregulated	2	Red	J1-4	
AXPI	3	Orange	J1-5	
Ground	4	Yellow	J1-8	
Local Headend	5	Green	J2-1	
HighPower Sense	6	Blue	J2-3	
IO5-Future	7	Violet	J2-5	
IO7-Future	8	Gray	J2-7	
RTS	9	White		
CTS	10	Black		
TxD	11	Brown		
RxD	12	Red		
No Connection	13	No connection		
IR out	14	Yellow	J1-2	
+12V Unregulated	15	Green	J1-3	
AXMI	16	Blue	J1-6	
Ground	17	Violet	J1-7	
LowPower Sense	18	Gray	J2-2	
Motion Detector Sense	19	White	J2-4	
IO6-Future	20	Black	J2-6	
IO8-Future	21	Brown	J2-7	
Motion Detector Power	22	Red		
+5V	23	Orange		
-12V	24	Yellow		
+12V	25	Green		

Note: The colors of wires does not matter, but make sure they match as described in the chart above.

- After making all the necessary connections to the inside of the RANCL201INT, secure the RANCL201INT to the two-gang box with four mounting screws.

Setting Up and Wiring the RANCL201 and the RANCLASS1

The RANCLASS1 will only read the DIP Switch setting when it powers up. If the address needs to be changed when the unit is on, power down for several seconds and power up again.

- With the unit open, set the RANCLASS1's DIP switches for the appropriate classroom (control) address. These addresses must be entered into the Media Center's classroom database—addresses should be after the RANCC16 addresses and up to 254. Make sure that there are no two panels with the same address code. The number in the code value row in the example below indicates the value of that DIP switch when it is in the “ON” position.

The following example shows the DIP switch settings (switch numbers 1,3,7,&8 ON) for a classroom whose address in 197 (1+4+64+128=197).

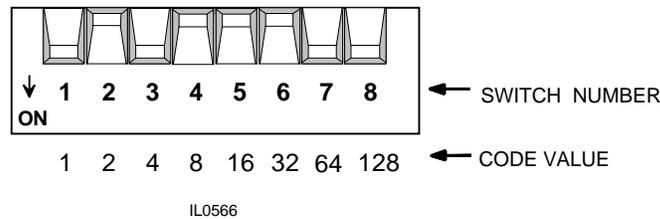


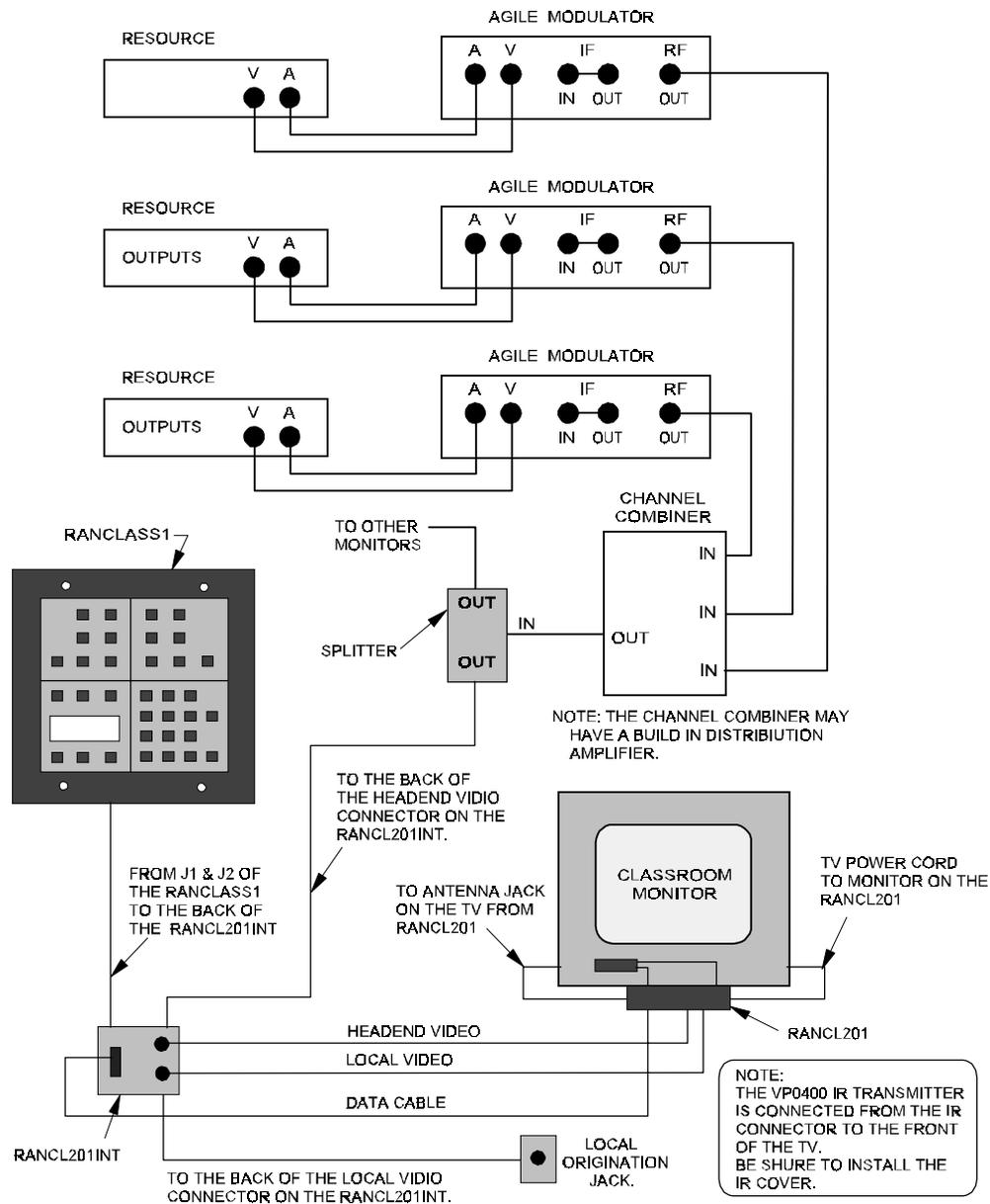
Figure 3. DIP Switch Settings Example

Mounting and Wiring the Classroom Television

1. Mount the RANMONxx (e.g., RANMON27) as instructed in the classroom monitor mounting kit installation booklet.
2. Mount the RANCL201 mounting bracket to the monitor mount as described in the instructions.
3. Mount the RANCL201 to the RANCL201 mounting bracket as described in the instructions.
4. Connect the following cables between the TV and RANCL201INT.

Table 7. RANCL201 to RANCL201INT Connections			
Type of cable	Color of cable or Cable Connector	From the RANCL201	To the RANCL201INT
VW2367	F to F	Headend Video	Headend Video
Option: VW2367 (Local Wall Plate)	F to F	Local Return	Local Return

5. Install the IR cover. Locate the TVIR window. Center the IR Cover over the TVIR receiver (just behind the TVIR window) and install.
6. Connect the IR transmitter cable from the RANCL201 (Monitor IR) to the TV's IR receiver. Do not secure the IR emitter into place until you have verified system operation.
7. Connect the TV power cord to the RANCL201's AC receptacle (To Monitor).
8. Connect the RANCL201's power cord to a wall outlet.
9. Connect the supplied Data Cable between the RANCL201's DB25 Data Jack and the RANCL201INT's DB25 port (marked data).



IL0534

Figure 4

RANCL201CP Classroom Controller



The RANCL201CP is a broadband classroom electronics unit that combines the functions of the CPU on the RANCLASS1 Classroom Control Panel with those of the RANCL201 providing an efficient and cost-effective means of providing control for remote-only systems. The RANCL201CP mounts directly on either a Bretford or Peerless television mount (other mounts may require the drilling of 4 mounting holes). The unit resembles a small VCR and includes the following features: IR detector and transmitter, local/headend audio and video switching,

connections for Level III laser disc control.

Parts Required

- 1 VP0400, IR transmitter cable (supplied with the RANCL201CP)
- 1 VW2287 (Refer to drawing on VW2287 and supplied with the RANCL201INT)
- 1 Control Link wire (e.g., WPD291)
- 1 75Ω video cable (e.g., WP815)
- 2 RCA to RCA (optional for local input)

Associated Equipment

- 1 RANCL201INT Classroom Interface Box
- 1 RANMON_{xx} (e.g., RANMON27) or customer supplied monitor
- 1 Classroom monitor mount (e.g., RANHRDS27)
- 1 RANBRDCTL (daughter board for sub-channel control)
- 1 F-type connector wall plate (for local origination)
- 1 Agile Modulator (e.g., Blonder Tongue Model # AM60-550)
- 1 Channel Combiner (e.g., Blonder Tongue Model # OC-8C)
- 1 RF Splitter (e.g., 4-way splitter)
- 1 Tapoff
- 1 AC Outlet

Note: (a) The 1 Pair Shielded wire can be looped from one classroom to another as long as it does not exceed the maximum distance per AXLINK port specified in the “RANBROAD,” “RANEXP,” “RANEXPAD,” or “RANCPU” sections.

The control pair can also be run as independent AXLINKS. Each link is subject to the specifications for maximum distance per AXLINK port in the specified “RANBROAD,” “RANEXP,” “RANEXPAD,” or “RANCPU” sections.

Installation Steps

Headend to Classroom Wiring

Pull the following wires to each classroom (these can be looped):

- 1 75Ω Video Cable (e.g., WP815). This originates at the headend's channel combiner and is likely to come off a 1 in/3 out splitter.
- 1 1 Pair Shielded wire (e.g. West Penn D291). This is the RS485 control link that originates at the headend from one of the following:

- RANCC16
- Punch Block
- RANEXP
- RANEXPAD (a RANEXP is needed with this unit.)

Classroom Wiring

1. Mount a two-gang electrical box within four feet of RANCL201 (this will hold the RANCL201INT).
2. Connect the 1-pair shielded wire (Control Cable) to the RANCL201INT's data connector. Use the chart below for the proper connections.
3. Terminate the 75 Ω headend video cable with an RF connector. Connect the terminated end to the RANCL201INT and secure it to the headend terminal on the back of the wall plate.
4. If your system will include local origination, run a 75 Ω video cable (e.g., WP815) between the RANCL201INT's local video input and the classroom's local origination wall plate (RANAVJ).

After making all the necessary connections to the inside of the RANCL201INT, secure the RANCL201INT to the two-gang box with four mounting screws.

Table 8		
Control Cable Wire Colors	DATA Connector on the RANCLINTF	DATA Connector Pigtail Colors
AXPI (Red)	Pin 3 (AXPI)	Orange
AXMI (Black)	Pin 16 (AXMI)	Blue
GND (Shield)	Pin 17 (GND)	Violet

Note: Control Cable wires colors may change depending on the type of wire you are using.

Wiring and Configuring the RANCL201CP

1. Remove the four Philips screws from the RANCL201CP's top cover.
2. Release the self locking tabs located on the back cover by using a screwdriver to push on the tabs.

- With unit open, set the RANCL201CP's DIP switches for the appropriate classroom (control) address. These addresses must be entered into the Media Center's classroom database—addresses should be after the RANCC16 addresses and up to 254. Make sure that there are no two panels with the same address code. The number in the code value row in the example below indicates the value of that DIP switch when it is in the “ON” position.

The following example shows the DIP switch settings (switch numbers 1,3,7,&8 ON) for a classroom whose address in 197 (1+4+64+128=197).

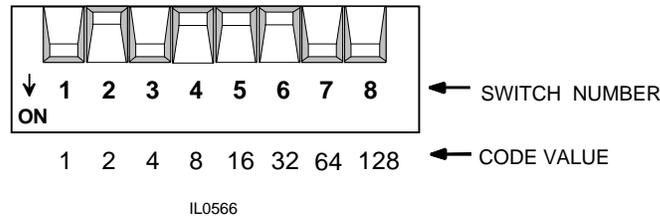


Figure 5. DIP Switch Settings Example

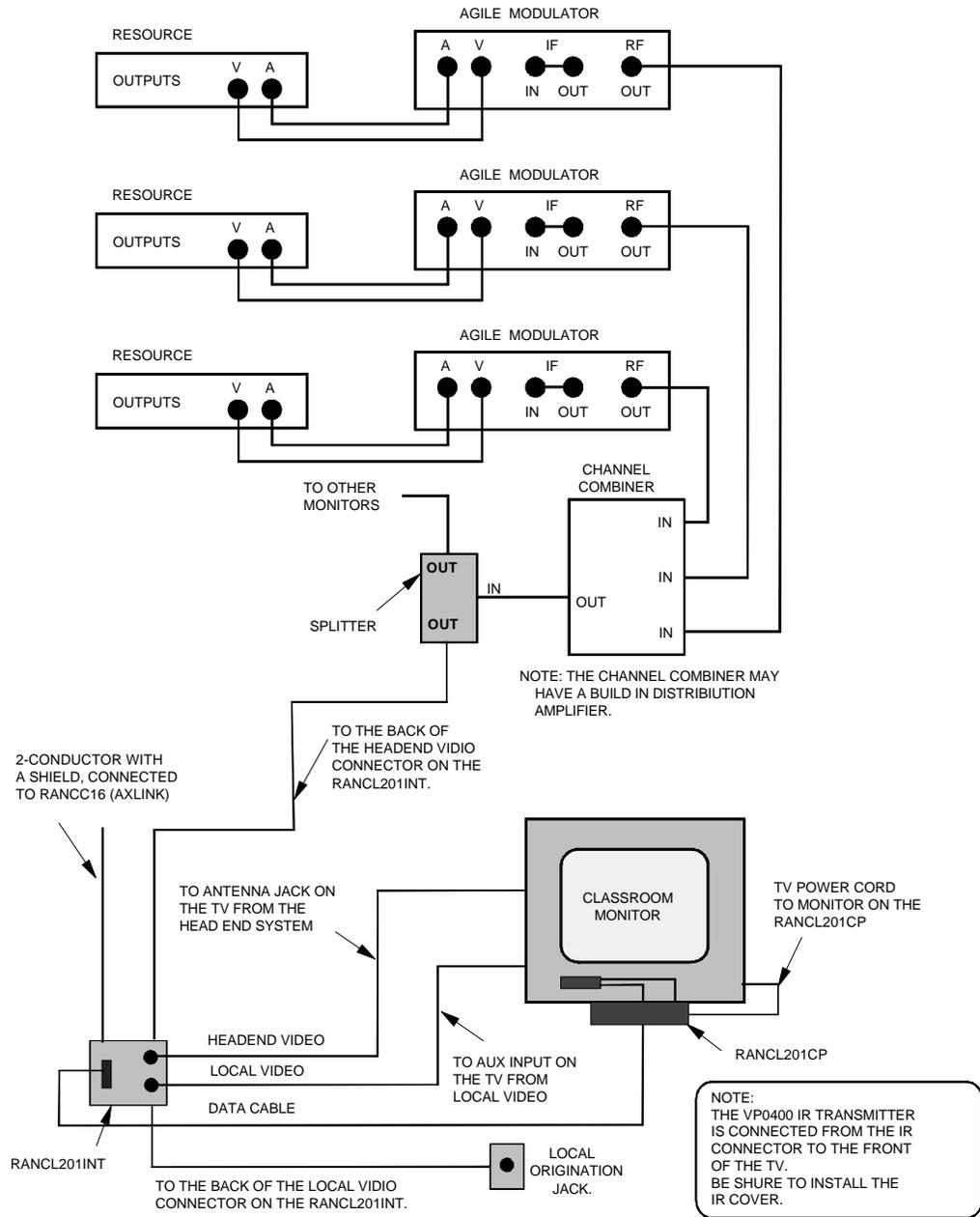
Mounting and Wiring the Classroom Television

- After making the appropriate internal connections, secure the RANCL201CP's top cover.
- Mount the RANMON_{xx} (e.g., RANMON27) as instructed in the classroom monitor mounting kit installation booklet.
- Mount the RANCL201CP mounting bracket to the monitor mount as described in the instructions.
- Mount the RANCL201CP to the RANCL201CP mounting bracket as described in the instructions.
- Connect the following cables between the TV and RANCL201INT.

Table 9. TV to RANCL201INT Connections			
Type of Cable	Color of Cable or Cable Connector	TV	To the RANCL201INT
VW2367	F to F	Headend Video	Headend Video
VW2290-372	RCA to RCA (Aux 1)	Local Return	Local Return

- After making all the necessary connections to the inside of the RANCL201INT, secure the front cover plate to the RANCL201INT. Then secure the RANCL201INT to the two-gang electrical box with four mounting screws.
- Install the IR cover. Locate the TVIR window. Center the IR Cover over the TVIR receiver (just behind the TVIR window) and install.
- Connect the IR transmitter cable from the RANCL201CP (Monitor IR) to the TV's IR receiver. Do not secure the IR emitter into place until you have verified system operation.
- Connect the TV power cord to the RANCL201CP's AC receptacle (To Monitor).

10. Connect the RANCL201CP's power cord to a wall outlet.
11. Connect the supplied data cable between the RANCL201's DB25 data jack and the RANCL201INT's DB25 port (marked data).



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Figure 6

RANPCVID Super Video Windows Card

The RANPCVID is an NTSC to VGA video adapter board that allows standard NTSC signals (like those that might originate from a laser disk player or VCR) to be displayed on a VGA computer monitor. In baseband RANGER systems these cards may serve as alternative outputs for video originating at the media center or in a classroom computer. In places where space is at a premium, such as Library study carrels, this may be an excellent choice. Normally these cards are used in conjunction with Lesson Plan workstations and require some type of demultiplexing unit (RANAVDS2, RANCL101, or RANCL101CP) to decode the video signals that originate at the headend.

Parts Required

- 1 RANLPSW (see section on RANLPSW for more information)
- 1 Windows™ compatible computer with a VGA card equipped with a feature connector (the RANPCVID will not run without the feature connector)
- 2 Interface cables (supplied with the RANPCVID)
- 1 VGA Plug Terminator (supplied with the RANPCVID)
- 1 Single-source audio/video cable (supplied with the RANPCVID)

Associated Equipment

- 1 RANAVDS2 Audio/Video Demultiplexer Module
- 1 RANCL101 or RANCL101CP Classroom Controller
- 1 Phono to Phono 75Ω video cable (refer to drawing VW2385)
- 1 Sound Card with external audio input jacks or headphone jack

Installation Steps

Note: When installation is complete the computer's monitor will no longer be hooked up to the standard VGA port. It will instead be connected to the RANPCVID's monitor port.

1. Make sure that the computer in which you will be installing the RANPCVID card is off and that the computer's power cords and interface cables are disconnected.
2. Remove the computer cover (for instructions, refer to the computer system's manual) and locate an open 16-bit slot. Remove the slot's cover plate.
3. Insert the RANPCVID into the 16 bit slot making sure that the board's connectors are appropriately oriented.
4. Make sure the RANPCVID is secure by replacing the screw on the cover plate.
5. Connect ribbon cable A or cable B from the VGA card's feature connector to the RANPCVID card feature connector.
6. Attach the terminator plug to the 15-pin connector to the computer's Video output port (the VGA out).
7. Replace the computer cover.
8. Connect the audio/video cable of the RANPCVID by attaching the male 26 pin D-shell type connector to the female 26 pin D-shell socket of the RANPCVID board.
9. Connect the VGA monitor to the RANPCVID by attaching the 15 pin D-shell connector to the RANPCVID board's female 15 pin D-shell socket.

Connecting the RANPCVID with the RANGER System

Once the RANPCVID is installed in the workstation computer, you need to make a connection between it and the headend source equipment. As the RANGER system outputs a multiplexed audio/video signal, before passing the audio/video signal through to the RANPCVID card, the signal must be decoded (via a demultiplexing device) before it can be used by the workstation. In order to establish this connection, use the following procedure:

1. If the RANPCVID card is located in classroom computer workstation, attach a phono to phono video cable from the "Video Out" jack on the RANCL101 or RANCL101CP to the RANPCVID's Audio/Video cable's "Video In" connection (marked on the video cable). For audio connections, attach phono to phono audio cable(s) from the RANCL101 or RANCL101CP's "Audio Out" jack to the RANPCVID's "Audio In" connection (marked on the cable—for stereo you can accommodate for left and right channels).
2. If the RANPCVID card is located in the Media Center computer, attach a BNC to BNC 75Ω cable (refer to drawing VW2375) from the RANAVDS2's Composite Video Out to one of the video matrix switch's output jacks. Attach a Phono to BNC 75Ω cable (refer to drawing VW2376) from the RANAVDS2's "Video Out" to the Audio/Video cable's "Video In" connection (marked on the video cable).

Aligning the RANPCVID's Display and Adjusting the Colors

The RANPCVID comes bundled with VConfig, configuration software that you must use to align your display and set it for the appropriate color palette. For more information on configuring the RANPCVID and running VConfig, see the *Super VideoWindows Installation Guide*.

3

Loading Firmware (Send Panel Program)

Starting the Send Panel Program

Start Windows on the Media Center computer and then follow this procedure:

1. Locate the RANGER Configuration group and open it so that the program icons contained within are displayed on your screen. The group should appear similar to that shown in the following example.

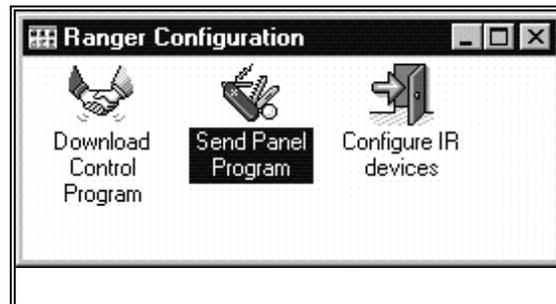


Figure 7. RANGER Configuration group



2. Double-click on the Send Panel Program icon to launch the Classroom Panel configuration program. This will launch a DOS session running the Soft Panel Program.
3. When the message following message appears, press the space bar:


```
Configured to search for Ranger panels.
**Press a key**
```

Once the program is running, it will appear as in the following example:

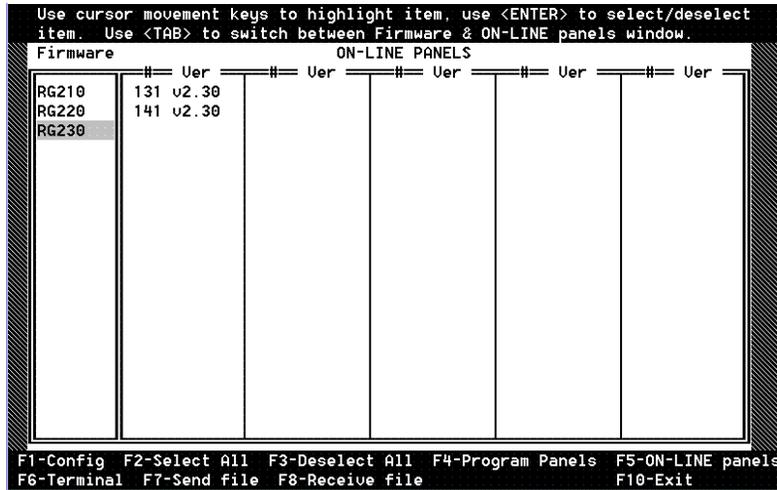


Figure 8. Send Panel Program Main Menu

The left-most column lists the versions of firmware that are available for downloading to classroom control units. In most cases only one or two firmware versions should appear here. Unless you have reason to do otherwise, use the version with the highest number (e.g. v2.10 is newer than v1.11). Most systems will have any or all of the following:

Table 10. Send Panel Program Software Versions	
Version	Reason for version
2.10	Fixed problems with bar code and current sensing
2.20	Required for Broadband systems. Channel changes are completed entirely within the classroom. Note that going from 2.10 to 2.20 requires that IR codes be redownloaded.
2.30	Allows the use of the Pioneer UC-V108BC bar code reader.

Note: When updating the software, you must also reload the IR codes in the classroom panels.

The adjacent columns details all of the available classroom control units, listed by DIP switch address. Assuming that there are not problems with wiring and hardware, all panels that have a control address (DIP switch settings) will appear in this list, regardless of whether they have been programmed or not. Locations whose panels are not appropriately configured will list the address and then v0.01.

If No Classroom Panels Appear to Be On-Line

If no panels appear in the “# Ver” column and there is an error message as in the following example, your control system many be inappropriately configured.

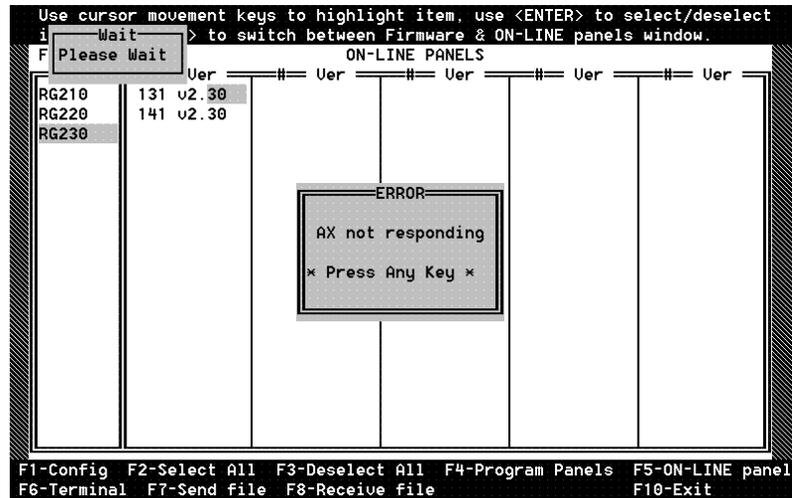


Figure 9. Send Panel Program Error Message

This usually indicates that the Media Center computer is not communicating with the control system. Check the following:

- ◆ Is the cable that you normally use for configuring control equipment (e.g., IR devices and classrooms) attached to a serial port on the computer? It may be necessary to share one of the Media Center’s serial ports, which may require you to swap cables.
- ◆ Is the cable connected to the serial port specified in the Send Panel Program?
- ◆ Does the baud rate for the program match the settings on your RANCPU (slot MC1)? You can check SOFTROM’s configuration by pressing the *F1* key. This will bring up a screen similar to the one shown in the following example (the checkmark next to a setting indicates that it is active).

Note: The standard configuration is Com 2 and 38,400 baud.

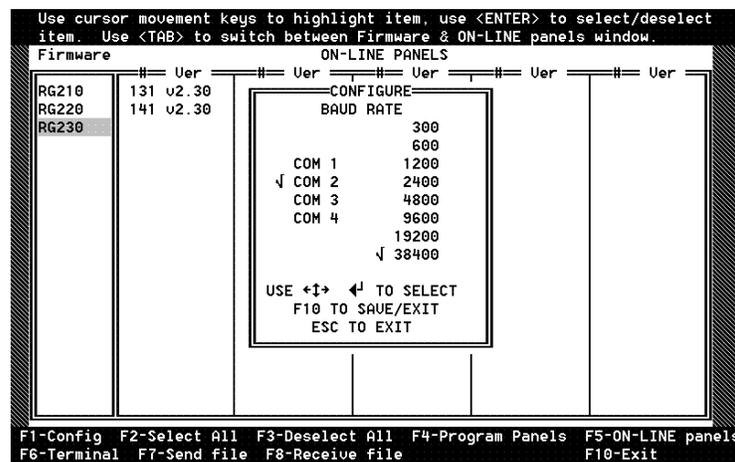


Figure 10. SOFTROM Configuration Information

- ✓ If necessary make changes to the configuration information. Use the cursor arrows to navigate this screen. Press *Enter* to make a selection. Press *F10* to save any changes.

Configuring a Single Classroom

To configure a location, use the following procedure:

Note: Your mouse will not work with this program. Use your cursor arrows to Cursor Up or Cursor down key to move up or down within a column.

1. Position your cursor in the Firmware column so that the version of Firmware that you will be using is highlighted in red. Now press *Enter*.
2. Now use your *Tab* key to move the cursor to the “# Ver” column. The version of firmware that you selected should now appear in green.
3. With the cursor arrow, select the location that you want to configure. When the cursor is in the correct position press *Enter*. To verify that you have selected a location, move the cursor away. The location you selected should appear in green.
4. Press the *F4* key (Program Panel) to configure the location. A status bar like the one shown in the following example will appear on your screen notifying you of the status of your “downloading.” If you want to program all panels, press the *F5* key instead of *F4*. A double-bar graph will appear, with the top being the panel being programmed, and the bottom the status of all the panels to be programmed.

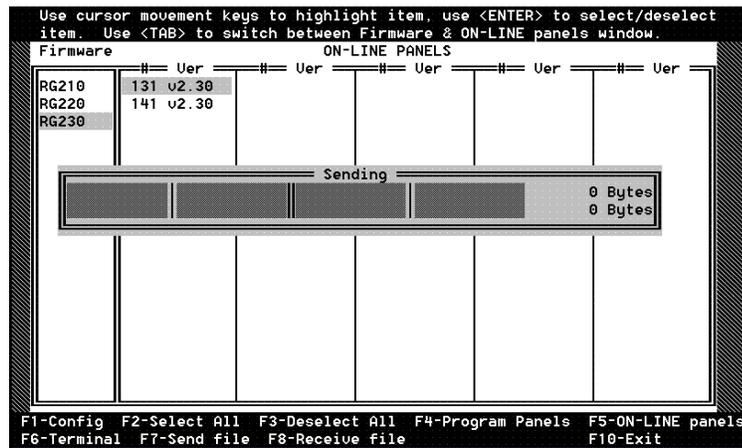


Figure 11. SOFTROM Downloading Status Bar

4

RANGER Classroom TV Controller Installation and Adjustment

The following is the power/current adjustment procedure for the RANCL101, RANCL101CP, RANCL201, and RANCL201CP. classroom television controllers. These panels have been factory tested and set for a Toshiba 20" monitor and may require additional adjustments. This procedure will potentially expose the installer to 110 VAC. Use caution when making the adjustments.

Required Equipment

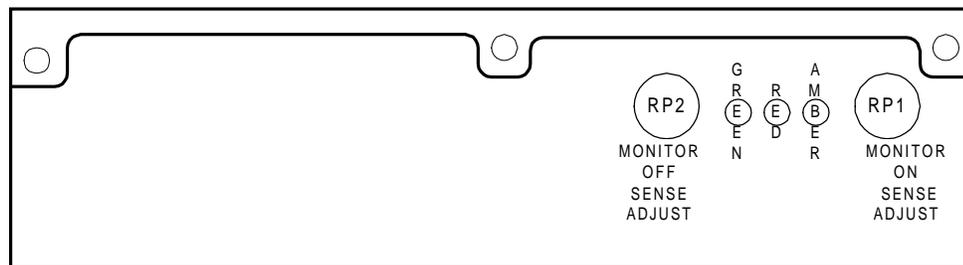
- Classroom monitor
- Security screwdrivers (p/ns G0388 and G0389)
- RANGER Media Center

Power/Current Adjustments

The following adjustments are made for Media Center classroom television detection and power management.

1. Remove the front lens of the controller to access the adjustment potentiometers. Use the appropriate security screwdriver.
2. Plug the controller's power cord into an AC power receptacle. The red power LED (middle LED on the front of the panel) should turn on.
3. The amber LED, (right LED on the front of the panel) should be off., with the classroom monitor power cord unplugged. Plug the classroom monitor power cord into the controller's AC power receptacle labeled "To Monitor." If the amber LED does not light, turn the "Monitor Off Sense Adjust" potentiometer (RP1) counter-clockwise until the LED is on. The potentiometer can be turned using a small flat blade screwdriver or your fingers. If you do not have a plastic (non-conductive) screwdriver, be careful not to touch any electronic components other than the potentiometer.

4. Unplug the classroom monitor. The amber LED (right LED on the front of the panel) should be off. If not, turn the “Monitor Off Sense Adjust” potentiometer (RP1) clockwise until this LED is off.
5. Repeat the two steps above until the amber LED is on when the classroom monitor power cord is connected, and off when the monitor power cord is disconnected. *Note:* In the on state, the amber LED should light solid and never flicker. If this LED flickers, readjust the potentiometer as described in the two previous steps.
6. The classroom television power cord should now be connected to the controller with the TV turned off. The green LED (left LED on the front of the panel) should be off. If not, turn the “Monitor On Sense Adjust” potentiometer (RP2) clockwise until the green LED is off. Once this LED is off, turn the potentiometer clockwise another quarter turn.
7. Turn on the classroom television. The green LED should turn on. If not, adjust the “Monitor On Sense Adjust” potentiometer (RP2) counter-clockwise until the green LED turns on.
8. Turn off the classroom monitor and verify that the green LED turns off. If not, repeat the two steps above until the green LED is on when the classroom monitor is on and off when the monitor is off. This adjustment is correct when the green LED follows the state of the television.
9. Disconnect the monitor power cord from the controller. The green and yellow LED’s should be off. If not, the controller is defective.
10. Replace the controller’s front lens.



RANCL201 (CP) Front Panel Adjustments Figure 12.

Video Adjustments: RANCL101/RANCL101CP

The following adjustments are critical for classroom viewing. The steps listed below will guide you through the fine tuning of the television controller’s audio and video outputs.

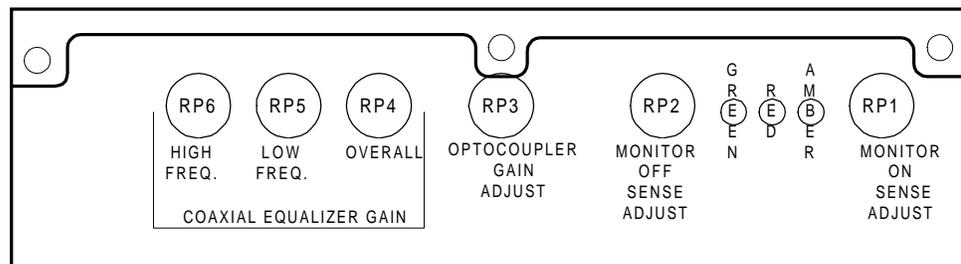
1. Using the RCA to RCA triple cable (p/n VW2290-336), connect the classroom controller connectors labeled “Monitor Left,” “Monitor Right” and “Video” to the Classroom Television’s “Audio Left,” “Audio Right,” and “Video” inputs.
2. Connect the cable from the headend equipment to the controller connector labeled “Headend Video.”
3. Make sure that the television power cord is still connected.

HINTS:

Use a laserdisc player if one with media is available. This resource has the ideal audio and video characteristics used when setting the controller's output signals.

The best way to send video to all classrooms is to use Video All Call. Video All Call is a feature that connects resources and destinations. When initiated, all classroom televisions are turned on and the video is switched to these destinations. The selected material is displayed on all classroom monitors without having to use classroom control devices. Make sure that all classrooms in the Classroom Database are configured to receive the All Page.

4. At the Media Center, assign a resource with audio to the classroom(s) you are working in.
5. Load and start the selected media from the Media Center.
6. Use the potentiometer labeled "Overall" (RP4) in the silk screened coaxial equalizer gain circuit. Turn the potentiometer, in either direction, until you have the clearest video possible. Use your best judgment.
7. Use the low frequency (RP5) and high frequency (RP6) potentiometers in the coaxial equalizer gain circuit for fine adjustments. Both can be turned in either direction.
8. If you are not satisfied with the audio and video outputs, repeat the Optocoupler Gain Adjust (RP3) and Overall (RP4) adjustments.
9. Replace the front lens of the controller.



RANCL101 (CP) Front-Panel Adjustments Figure 13.

Level III Control

RANGER classroom control devices can be wired to transmit serial data back to headend media devices that are appropriately configured. The most common application of this is for Level III laser disc control. Level III laser disc applications require a classroom computer and the appropriate serial/RS232 cable listed in the chart that follows. Using a laser disc program that includes the appropriate software (resides on classroom computer), the classroom computer can then send out instructions to a laser disc player that is located in the RANGER media center. Assuming that the laser disc is connected (either scheduled or attached via "Special") to the classroom that will be using a Level III program, the headend

laser disc will then respond interchangeably with either the RANGER classroom panel, remote control or the classroom computer.

Table 11. Level III Laser Disc Wiring Chart											
RANCLASS1 J3		Male DB25 Pinout w/out RANCLINTF		15-pin D-female (to emulate laser disc)		9-Pin D-Sub on Computer		25-Pin D-Sub on Computer		8-Pin Din on Mac	
Pin	Function	Pin	Function	Pin	Function	Pin	Function	Pin	Function	Pin	Function
1, 6, 7, 8	(GND)			1		5	GND	7		4 (SG), 8	(+RxD)
2	(RxD) Input	12		3	Receive Data (Input)	3	TxD (output)	2		3	(-TxD)
3	(TxD) Output	11		2	Transmit Data	2	RxD (Input)	3		5	(-RxD)
4	(CTS) Input	10		Not used		7	RTS (output)	4			
5	(RTS) Output	9		4	DTR (output)	8	CTS (input)	5		1	

Set Classroom Panel Baud Rate

Note: that the RANCL101CP nor the RANCL201CP allow user adjustments of these settings.

The default rate is 4800, no parity, 8 data bit, 1 stop bit. Set the Level III program to these settings, which is the standard for Pioneer LDV series laser disc players.

1. Hold down the upper left and lower left softkeys (above and below the LCD) for 3 seconds until LCD changes into configuration mode.
2. Press the *Next* key four times until you reach the “Baud Rate” menu.

Adjust the baud rate to the following settings:

Table 12. Classroom Panel Baud Rate Settings		
Baud	Parity	DA/St
4800	None	8 1

4. Press the *Exit* key.