BARCO

BARCO PROJECTION SYSTEMS

BARCO RCVDS 05

R9827880
R9827881
R9827888
R9827889

OWNER'S MANUAL

Date:	Revision :	Art. No.
30.06.98	06	R5975765

Due to constant research, the information in this manual is subject to change without notice.

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I. SAFETY INSTRUCTIONS

I.1 Notice on Safety

RCVDS05s are built in accordance with the requirements of the international safety standards IEC 950 and UL 1950, which are the safety standards of information technology equipment including electrical business equipment.

These safety standards impose important requirements on the use of safety critical components, materials and isolation, in order to protect the user or operator against risk of electric shock and energy hazard, and having access to live parts.
Safety standards also impose limits to the internal and external temperature rises, radiation levels, mechanical stability and strength, enclosure construction and protection against the risk of fire.

Simulated single fault condition testing ensures the safety of the equipment to the user even when the equipment's normal operation fails.

II.2. Installation instructions

Before operating the set please read this manual thoroughly, and retain it for future reference.

Installation and preliminary adjustments should be performed by qualified BARCO personnel or by authorized BARCO service dealers.

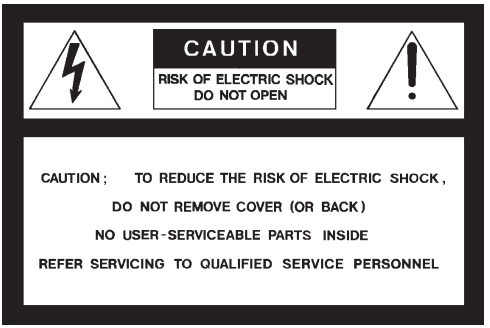
OWNER'S RECORD

The part number and serial number are located at the left side. Record these numbers in the spaces provided below. Refer to them whenever you call upon your BARCO dealer regarding this product.

PART NUMBER: _____

SER. NUMBER: _____

DEALER: _____



The lightning flash with an arrowhead within a triangle is intended to tell the user that parts inside this product may cause a risk of electrical shock to persons.

The exclamation point within a triangle is intended to tell the user that important operating and/or servicing instructions are included in the technical documentation for this equipment.

WARNING
TO PREVENT FIRE OR ELECTRICAL SHOCK HAZARD, DO NOT EXPOSE THIS RCVDS05 TO RAIN OR MOISTURE

FEDERAL COMMUNICATION COMMISSION (FCC STATEMENT)

This equipment has been tested and found to comply with the limits of a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

* All the safety and operating instructions should be read before using this unit.

* The safety and operating instructions manual should be retained for future reference.

* All warnings on the projector and in the documentation manuals should be adhered to.

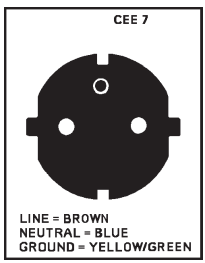
* All instructions for operating and use of this equipment must be followed precisely.

I.3. On safety

***** This product should be operated from an AC power source.
The power input is auto-ranging from 100 to 240 VAC
This RCVDS05 may be connected to an IT-power system.

***** This product is equipped with a 3-wire grounding plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

WARNING FOR THE CUSTOMERS: THIS APPARATUS MUST BE GROUNDED (EARTHED) via the supplied 3 conductor AC power cable.
(If the supplied power cable is not the correct one, consult your dealer.)

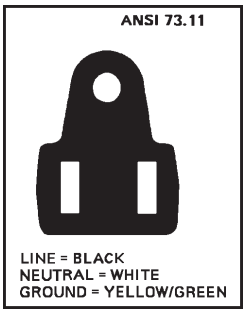


A. Mains lead (AC Power cord) with CEE 7 plug:

The colors of the mains lead are colored in accordance with the following code:

Green-and-yellow:	Earth (safety earth)
Blue:	Neutral
Brown:	Line (Live)

B. Power cord with ANSI 73.11 plug:



The wires of the power cord are colored in accordance with the following code.

Green/yellow:	ground
White:	neutral
Black:	line (live)

***** Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.

To disconnect the cord, pull it out by the plug. Never pull the cord itself.

***** If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating. Also make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

***** Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock.

Never spill liquid of any kind on the product. Should any liquid or solid object fall into the cabinet, unplug the set and have it checked by qualified service personnel before resuming operations.

***** Lightning - For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the RCVDS05 due to lightning and AC power-line surges.

I.4. On installation

***** Do not place this set on an unstable cart, stand, or table. The set may fall, causing serious damage to it.

***** Do not use this set near water.

***** Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the RCVDS05 and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface.

This product should never be placed near or over a radiator or heat register. This switcher should not be placed in a built-in installation or enclosure unless proper ventilation is provided.

I.5. On servicing

Do not attempt to service this RCVDS05 yourself, as opening or removing covers may expose you to dangerous voltage potentials and risk of electric shock!
Refer all servicing to qualified service personnel.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power cord or plug is damaged or frayed.

b. If liquid has been spilled into the RCVDS05.

c.If the product has been exposed to rain or water.

d. If the product does not operate normally when the operating instructions are followed. Note :
Adjust only those controls that are covered by the operating instructions since improper adjustment of the other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

e. If the product has been dropped or the cabinet has been damaged.

f. If the product exibits a distinct change in performance, indicating a need for service.

Replacement parts - When replacement parts are required, be sure the service technician has used original BARCO replacement parts or authorized replacement parts which have the same characteristics as the BARCO original part. Unauthorized substitutions may result in degraded performance and reliability, fire, electric shock or other hazards. Unauthorized substitutions may void warranty.

Safety check - Upon completion of any service or repairs to this switcher, ask the service technician to perform safety checks to determine that the switcher is in proper operating condition.

I.6. On cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

- To keep the cabinet looking brand-new, periodically clean it with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with mild detergent

solution. Never use strong solvents, such as thinner or benzine, or abrasive cleaners, since these will damage the cabinet.

I.7. On repacking

Save the original shipping carton and packing material; they will come in handy if you ever have to ship your set. For maximum protection, repack your set as it was originally packed at the factory.

II. INTRODUCTION

The RCVDS05 offers the possibility to connect a wide range of video, data and graphics sources to one or more projectors or other displays.
Its modular input design makes it possible to easily adapt the switcher to the user's input requirements. This RCVDS05 can be equipped with up to *10 input modules*.

The following input modules are available as option :

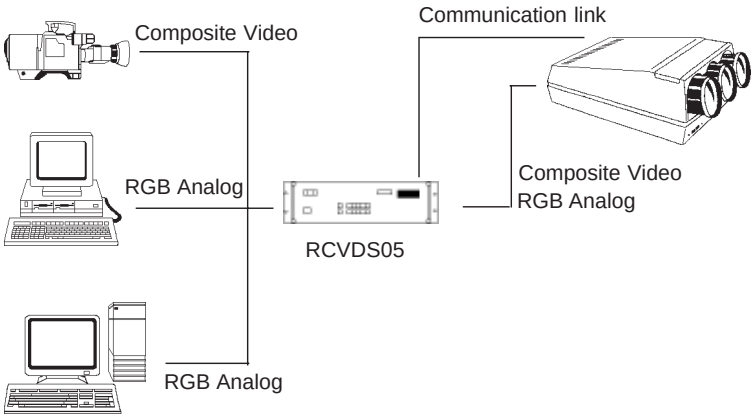
- RGB analog with standard sync input module 98 27910
- RGB analog with Tri-level sync input module 98 27920
- Video/S-video input module 98 27900
- Component video (R-Y, Y, B-Y) input module 98 27930

When using the *optional expansion module (98 28000)*, it is possible to connect several source switchers in series, which gives the opportunity to connect up to *90 sources* simultaneously to one projector or display.
Additional output modules can be added which makes it possible to connect up to four displays to one RCVDS05. It reconfigures the unit as a high bandwidth signal splitter.

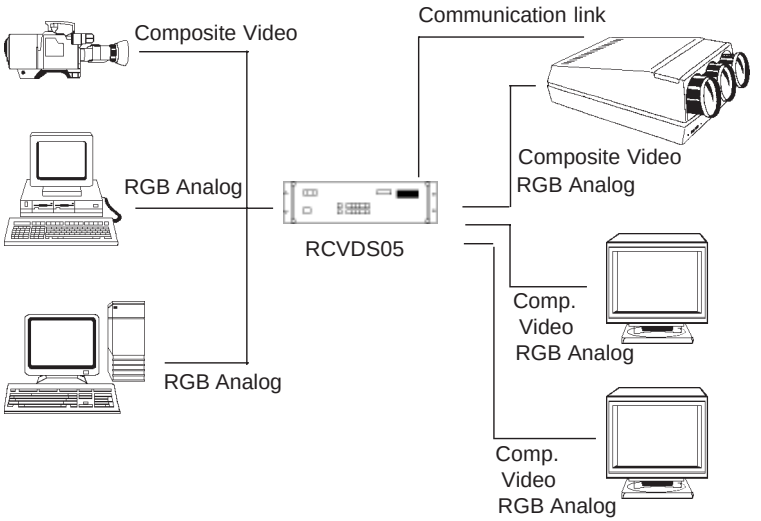
With the *additional communication module (98 28010)*, it is possible to control up to *16 RCVDS05* switchers (in stand alone use) from one central computer.

Principal connection diagrams.

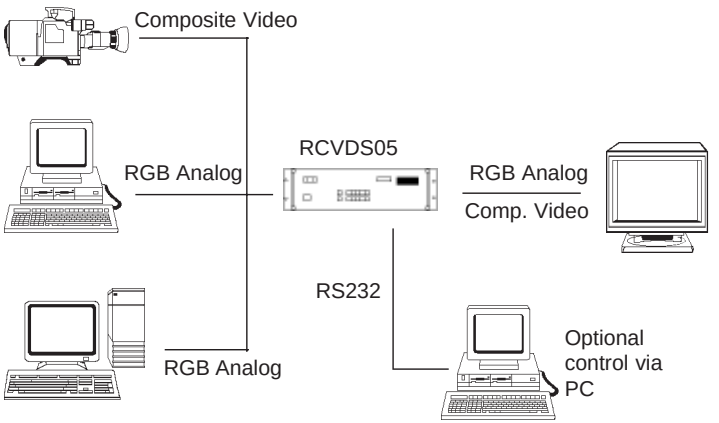
1. with BARCO projector.



2. As splitter.



3. As stand alone system switcher.



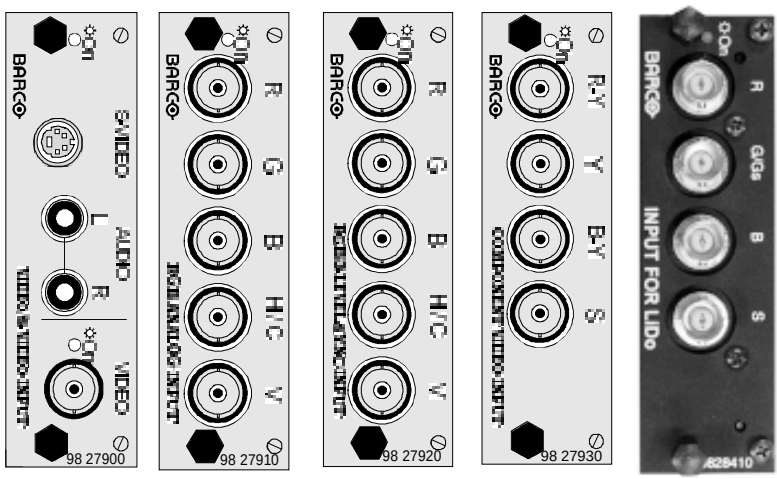
III. INPUT MODULES

As the RCVDS05 works as an interface between the different input sources and the display (projector or monitor) it connects the following sources through to the output module or modules (max 4):

- composite video
- S-video
- RGB analog with standard sync
- RGB analog with Tri-level sync
- Component video

Four input modules are available for the RCVDS05

- Video/S-video input module
- RGB analog input module with standard sync
- RGB analog input module with Tri-level sync
- Component video input module
- RGB analog input module with standard sync for LiDo (Line Doubling)



(1) **(2)** **(3)** **(4)** **(5)**

An independent audio connection is provided on the backplane of the RCVDS05 for each input slot. (The Video/S-Video module has a separate audio input for S-Video) Use slots 1 to 10 to insert the input modules (see Input module installation).

A. Input module installation.

Up to 10 input modules can be inserted in any order in the RCVDS05.

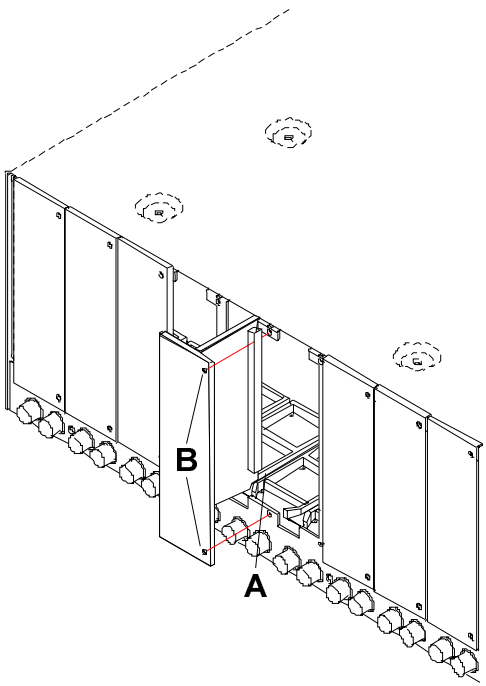
Install the input modules in the RCVDS05 as follows :

1. Power down the RCVDS05 and disconnect the power cord from the wall outlet.

2. Slide the input module into a free slot in the board rack (rear of the RCVDS05). Insure that the module is seated correctly in the guide grooves A.

3. Press the face of the input module until the module plug seats in the backplane connector of the RCVDS05.

4. Secure the input module by tightening the retaining screws B on top and bottom.



B. Source connection to the RCVDS05.

B.1. Input module : Video/S-Video.

Order number : 98 27900

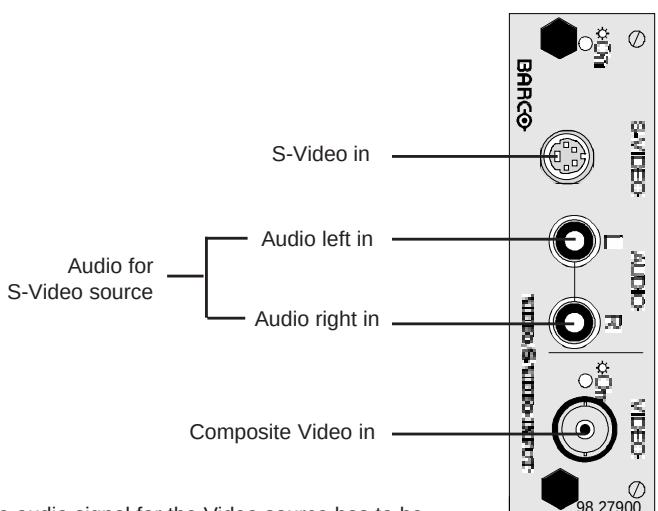
Signal connection : video composite, S-video and audio.

Composite Video : 1xBNC 1.0Vpp ± 3 dB
The audio signal, corresponding to the composite video signal must be connected to the audio connector on the base plate just below the slot where the module is inserted.
2 x RCA (cinch) 1 Vpp ± 3dB

S-Video : (luma/chroma) 1x4 pins plug (mini DIN)
pin configuration
1 ground luminance
2 ground chrominance
3 luminance 1.0 Vpp ± 3 dB
4 chrominance 282 mVpp ± 3dB
The audio signal, corresponding to the S-Video signal must be directly connected to the audio connectors on the input module.
2 x RCA (cinch) 1Vpp ± 3dB

Both sources on this input module are simultaniously available.

The Video/S-Video input module can be inserted in any input between 1 and 10.



The audio signal for the Video source has to be connected to the audio input just below the Video input slot.

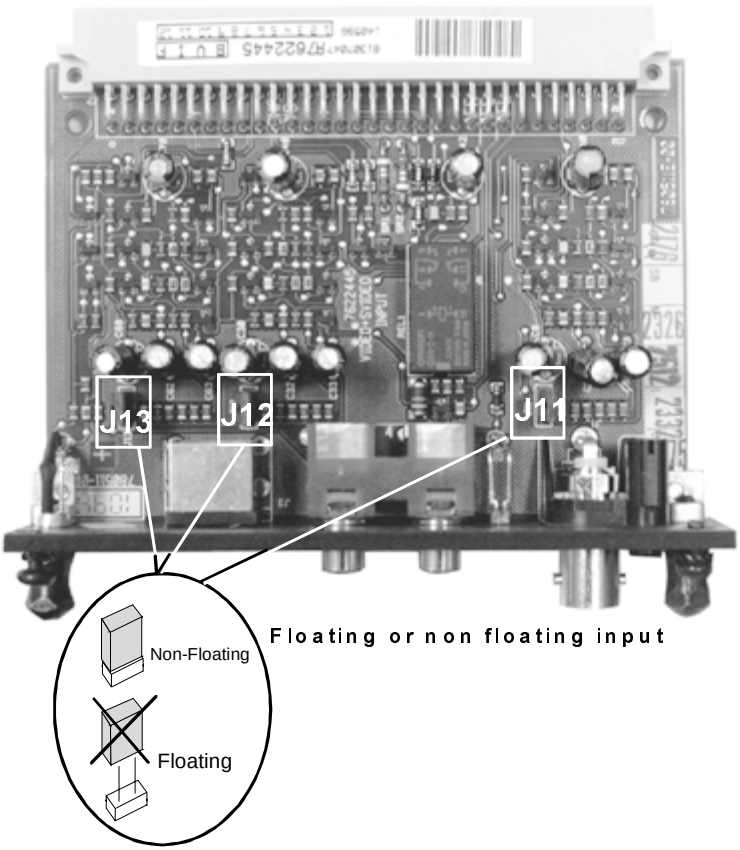
Straps on module level :

Floating or non-floating input.

Video input :
J11 : strap "yes" : non floating strap "no" : floating

S-Video input :
J12 : strap "yes" : non floating strap "no" : floating
J13 : strap "yes" : non floating strap "no" : floating

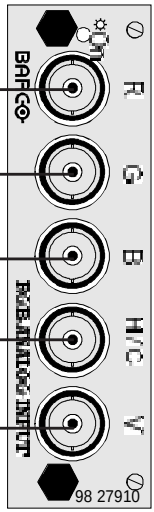
Factory preset : strap on, input non floating.



B.2. Input module : RGBS/RGsB analog.

Order number : 98 27910

RGBS/RGsB analog : 5 x BNC
- Red : 0.7 Vpp ± 3 dB
- Blue : 0.7 Vpp ± 3 dB
- Green : 0.7 Vpp ± 3 dB
  1 Vpp ± 3 dB if sync on green
- Vert. sync : 1 Vpp to 4 Vpp ± 3 dB
- Hor. sync / Composite sync :
  1 Vpp to 4 Vpp ± 3 dB



All input signals are always 75 ohm terminated, even in the "not selected" mode.

The audio signal corresponding to the source has to be connected to the audio input just below the RGBS analog input slot.

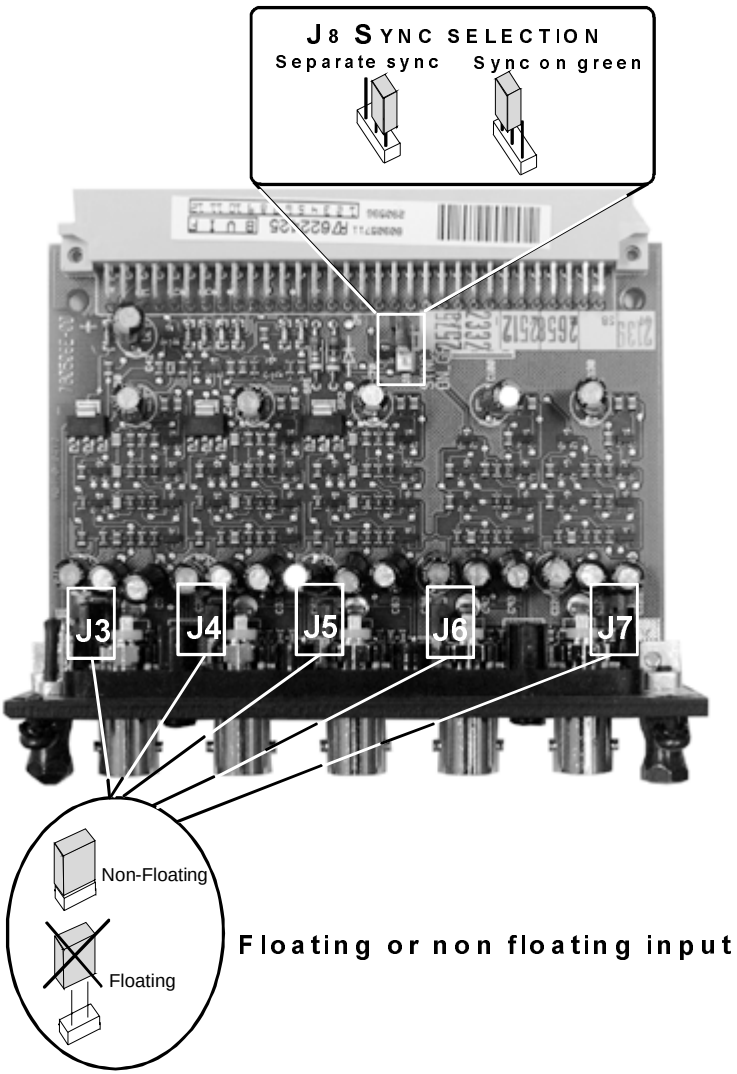
Straps on module level :
Floating or non-floating input.

Red :	J3 : strap "yes" : non floating	strap "no" : floating
Green :	J4 : strap "yes" : non floating	strap "no" : floating
Blue :	J5 : strap "yes" : non floating	strap "no" : floating
H/C :	J6 : strap "yes" : non floating	strap "no" : floating
V :	J7 : strap "yes" : non floating	strap "no" : floating

Factory preset : strap "yes", non floating input

Sync selection.
J8 : see drawing

Factory preset : separate sync.



Floating or non floating input

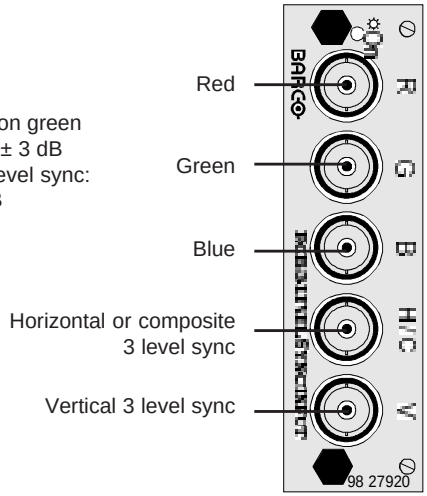
B.3. Input module : RGB3S/RG3sB analog.

Order number : 98 27920

RGB3S/RG3sB analog : 5 x BNC
Red : 0.7 Vpp ± 3 dB
Blue : 0.7 Vpp ± 3 dB
Green : 0.7 Vpp ± 3 dB
1 Vpp ± 3 dB if Tri-level sync on green
Vert. Tri-level sync : 1 Vpp to 4 Vpp ± 3 dB
Hor. Tri-level sync / Composite Tri-level sync:
1 Vpp to 4 Vpp ± 3 dB

All input signals are always 75 ohm terminated, even in the "not selected" mode.

The corresponding audio signal for this source has to be connected to the audio input just below the RGB3S analog input slot.



Straps on module level :(*see photo on page 20 'B.2. Input module : RGBS/RGsB analog*')
Floating or non-floating input.

Red :	J3 : strap "yes" : non floating	strap "no" : floating
Green :	J4 : strap "yes" : non floating	strap "no" : floating
Blue :	J5 : strap "yes" : non floating	strap "no" : floating
H/C :	J6 : strap "yes" : non floating	strap "no" : floating
V :	J7 : strap "yes" : non floating	strap "no" : floating

Factory preset : strap "yes", non floating input

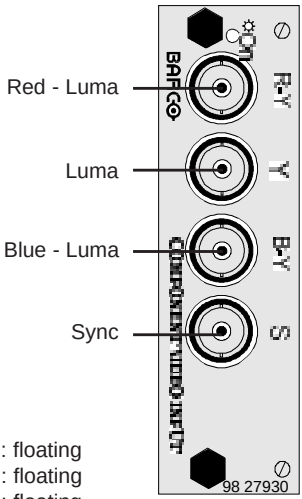
Sync selection.
J8 : separate sync or sync on green.

Factory preset : separate sync.

B.4. Input module : Component Video input

Order number : 98 27930

Component video : 4 x BNC
R-Y : 0.7 Vpp ± 3 dB
B-Y : 0.7 Vpp ± 3 dB
Y : 0.7 Vpp ± 3 dB
1 Vpp ± 3 dB if Tri-level sync on green
Composite sync : 1 Vpp to 4 Vpp ± 3 dB



All input signals are always 75 ohm terminated, even the module is "not selected".

The corresponding audio signal for this source has to be connected to the audio input just below the component video input slot.

Straps on module level :

Floating or non-floating input.

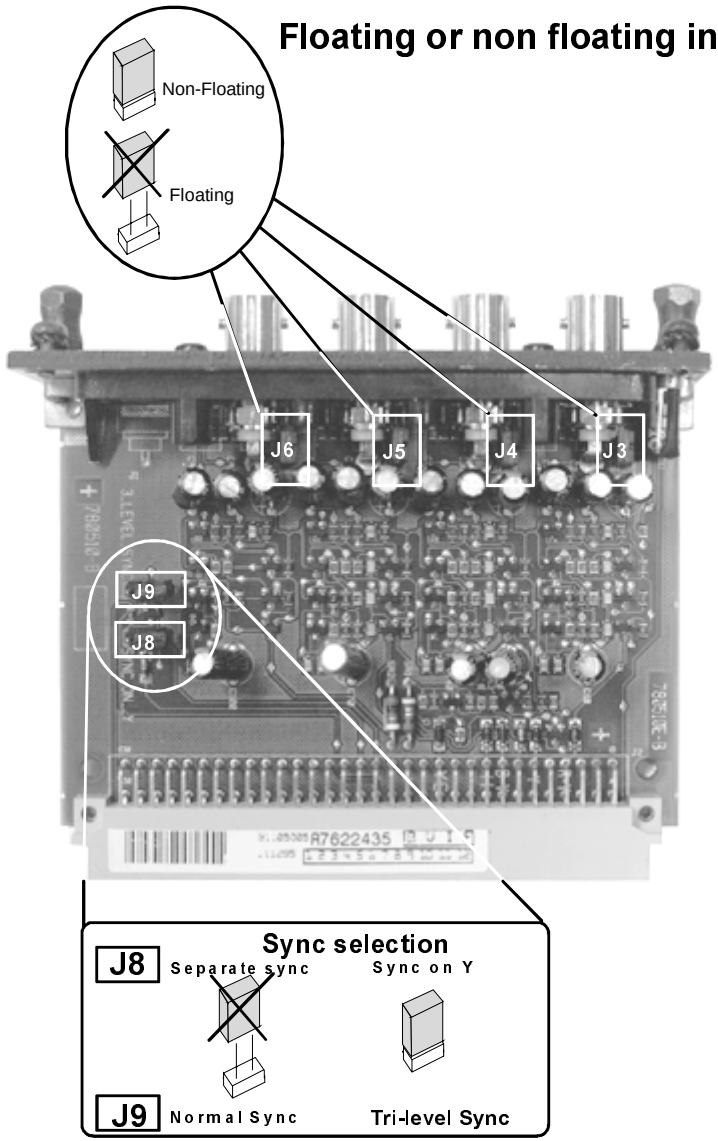
R-Y :	J3 : strap "yes" : non floating	strap "no" : floating
Y :	J4 : strap "yes" : non floating	strap "no" : floating
B-Y :	J5 : strap "yes" : non floating	strap "no" : floating
C :	J6 : strap "yes" : non floating	strap "no" : floating

Factory preset : strap "yes", non floating input

Sync selection.
J8 :
strap "no" : separate sync
strap "yes" : sync on Y.

J9 :
strap "yes" : Tri-level sync
strap "no" : normal sync.

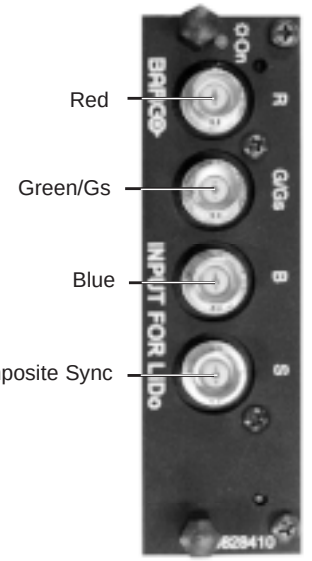
Factory preset :
separate sync and
normal sync.


Floating or non floating input
Non-Floating
Floating
J6
J5
J4
J3
J9
J8
Sync selection
J8
Separate sync
Sync on Y
J9
Normal Sync
Tri-level Sync

B.5. Input module : RGBS/RGsB analog for Line Doubling*

Order number : R9828410

RGBS/RGsB analog : 4 x BNC
- Red : 0.7 Vpp ± 3 dB
- Blue : 0.7 Vpp ± 3 dB
- Green : 0.7 Vpp ± 3 dB
  1 Vpp ± 3 dB if sync on green
- Comp. Sync : 0.3 Vpp to 4 Vpp ± 3 dB



Polarity of the input signals
- R, G and B signal: positive signal
- Sync Signals: negative Composite signal

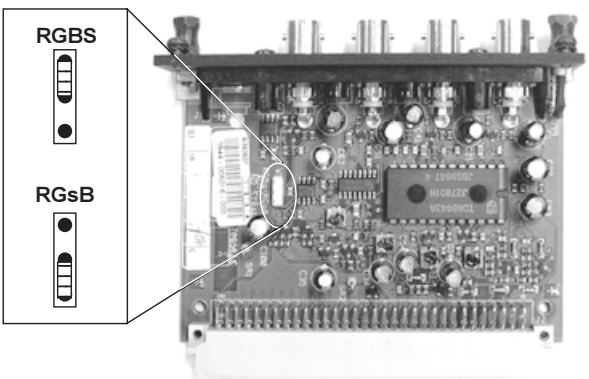
All input signals are always 75 ohm terminated, even in the "not selected" mode.

The audio signal corresponding to the source has to be connected to the audio input just below the INPUT FOR LIDO slot.

Strap on module level:

Insertion or non of a strap on the module determines the following Sync mode:

No strap = Automatic detection of Separate or Sync on Green.
Strap in position RGBS: separate Sync.
Strap in the position RGsB: Sync. on Green.



*Line Doubling if RCVDS05 is equipped with a line Doubler unit

IV. SPECIAL MODULES

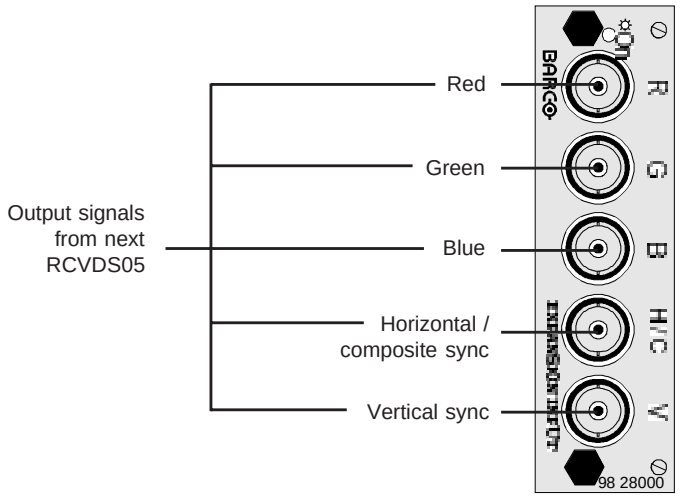
A. Expansion module

Order number : 98 28000

To allow more inputs than a RCVDS05 can normally accept, several RCVDS05's can be connected in series to allow swicthing of up to 90 sources.

Signal connection : 5 x BNC

The signal connection between RCVDS05 n and RCVDS05 (n+1) is established only by 5 coaxial cables. Video, S-video, RGB analog and component video signals are all transferred through these 5 cables (see installation, multiple RCVDS05).



B. COMMUNICATION INTERFACE MODULE

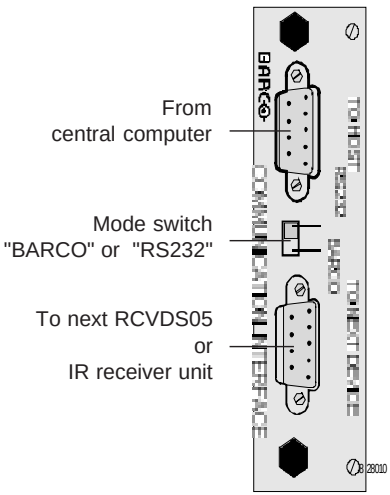
order number : 98 28010

When the RCVDS05's are linked or the optional IR remote receiver will be used or your RCVDS05 will be controlled by a central computer, a *communication module* must be installed in the slot near the output module.
For typical configurations see Installation.

Connections :

* The female D9 Sub-D connector, indicated as "to host" must be connected to the communication port RS232 on the computer.

* the male D9 Sub-D connector, indicated as "to next device" must be connected to :
  - to next RCVDS05 in the link (see installation)
or
  - the optional IR remote receiver unit.



Switch function RS232 - BARCO

a) RCVDS05 used with BARCO projector : switch in position "BARCO".

b) RCVDS05 used as stand alone unit : switch in position "BARCO".

c) RCVDS05 controlled by a central computer : switch in position "RS232"

Address setting on module level.

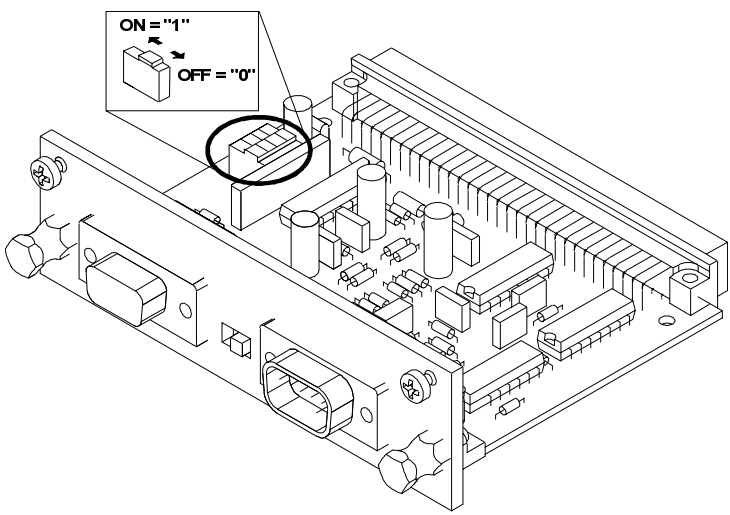
This address setting is only necessary in stand alone use and during the control with a central computer.
Addresses between 0 and 15 are possible.
Address setting is a hardware set up on the communication interface module. Therefore 4 DIP switches are provided on the module.
Each DIP switch has its own decimal value. The sum of the values associated with those DIP switches gives the address.

Switch	Value
1	1
2	2
3	4
4	8

Example : address 7

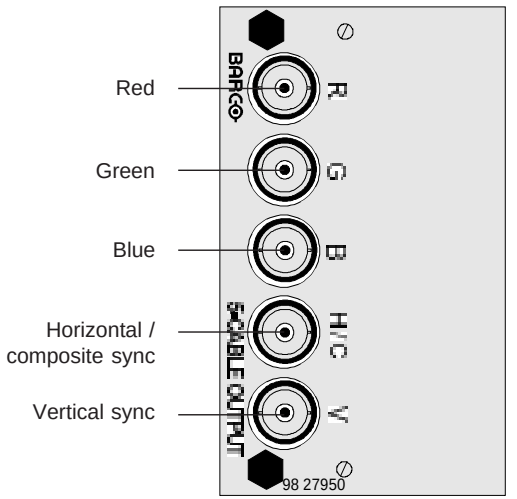
DIP switch	1	2	3	4
setting	1	1	1	0

Summary : 1x1 + 1x2 + 1x4 + 0x8 = 7



C. 5 cable output module.

Order number : 98 27950
All signals, Video, S-Video, RGB analog as well as Component video are transferred via 5 output BNC's.
This module is designed to be used as an output module in linked RCVDS's (as replacement for the standard output module), except in the first RCVDS05.



V. INSTALLATION

A. Power (mains) connection

A.1. Power requirements

The power input is auto-ranging from 100 to 240 VAC
100 - 240 V 0.8 - 0.4 A 60 - 50 Hz 50 Watt

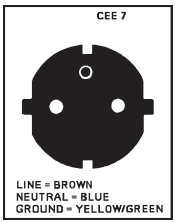
A.2. Power cord (mains lead) information.

If it becomes necessary to use a power cord with another plug standard as the one delivered with the RCVDS05, contact a qualified service technician.

a. Power cord (mains lead) with CEE7 plug :

The wires of the delivered mains lead (power cord) are colored in accordance with the following code :

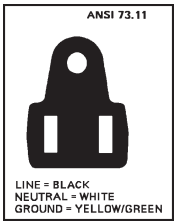
Green and yellow : ground (earth)
Blue : neutral
Brown : live



b. Power cord with an ANSI 73.11 plug.

The wires of the delivered mains lead (power cord) are colored in accordance with the following code :

Green and yellow : ground (earth)
White : neutral
Black : live



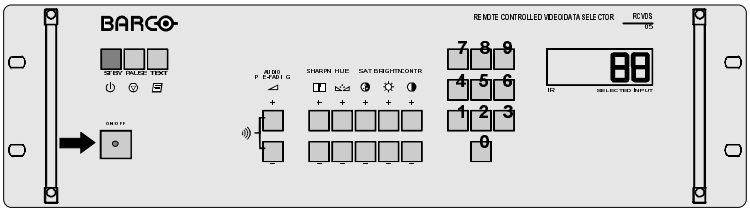
A.3. Power cord connection

Plug the male end of the power cord into an available power outlet.

A.4. Switching on

The RCVDS05 is switched ON and OFF using the power (mains) switch ON/OFF on the front of the RCVDS05.

pressed : ON
not pressed : OFF



B. RCVDS05 USED AS SOURCE SELECTOR FOR A BARCO PROJECTOR.

B.1. RCVDS05 to PROJECTOR communication link.

Plug the male D9 connector of a communication cable into the female D9 connector labelled "to projector" on the back plane of the RCVDS05.
Plug the female D9 connector of the other end of the communication cable into the male connector labelled "com port (800 peripherals)" on the rear or front panel of the projector (depending on the type of projector).

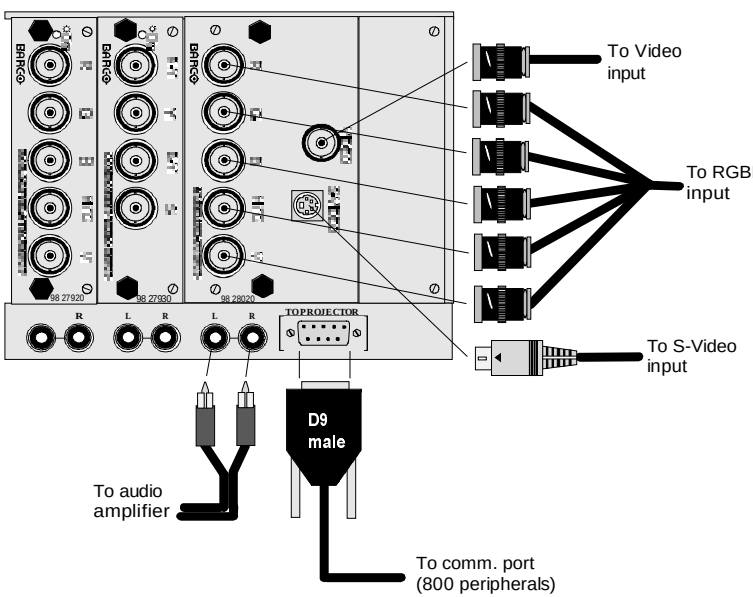
B.2. Signal connection.

B.2.1. RCVDS05 to PROJECTOR.

Connect the video output of the RCVDS05 to the video input of the projector using a coaxial cable with BNC connectors.

Connect the S-Video output of the RCVDS05 to the S-Video input of the projector using a 4-wire coaxial cable with 4 pin plugs.

Connect the Red, Green, Blue, H/S sync and V sync outputs of the RCVDS05 to the Red, Green, Blue, H/S sync and V sync inputs of the projector using coaxial cable with BNC connectors.



B.2.2. RCVDS05 to AUDIO AMPLIFIER.

Connect the left and right audio outputs (connectors below the output module) of the RCVDS05 to the left and right audio inputs of an audio amplifier using two conductor audio cables with RCA (cinch) connectors.

B.3. Using multiple RCVDS05's as source selector for a BARCO projector.

The communication link and signal connections between the first RCVDS05 (master RCVDS) and the projector remain the same as for one RCVDS05.

A communication module must be installed in each RCVDS05, except in the last one in the line.

B.3.1. Communication linking between multiple RCVDS05's.

Plug the female D9 connector of a data communication cable into the male D9 connector labelled "to next device" on the face of the RCVDS05 communication interface module.
Plug the male D9 connector of the other end of the communication cable into the female connector labelled "to projector" on the back plane of the second RCVDS05.

The position of the mode switch must be in the position "BARCO".

B.3.2. Signal connection between multiple RCVDS05's.

Each previous RCVDS05 in the link must be equipped with an expansion module.
Example : 4 RCVDS05's linked together, the first 3 RCVDS05's need an expansion module.
The expansion module must be inserted in the last free slot of each RCVDS05 (all input modules for this RCVDS must be on the left hand side of the expansion module).
Never insert an input module on the right hand side of the expansion module.

The signal transfer between two or more RCVDS05's happens on 5 coaxial cables with BNC connectors.

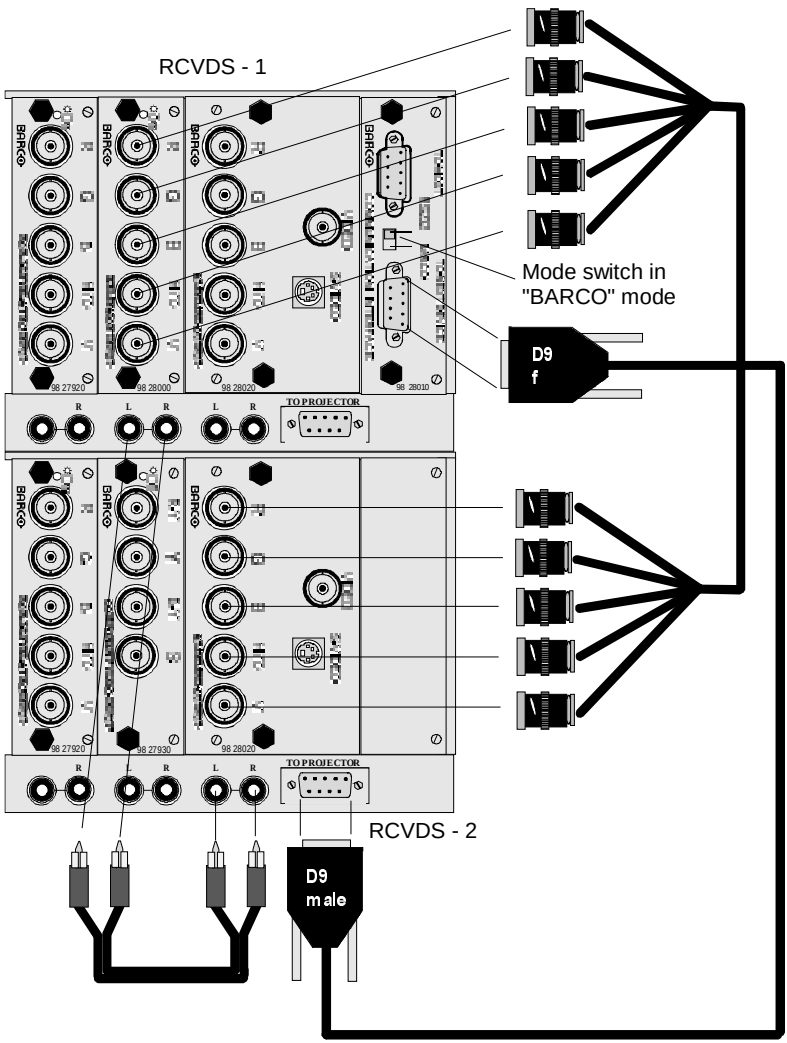
Connect 5 cables between the BNC connectors of the expansion module of the first RCVDS and the BNC connectors (R, G, B, H/C, V) of the output module of the second RCVDS.
The output module of the second RCVDS can be :
- a standard output module

or

- a 5 cable output module (optional).

Connect an audio cable between the output connectors of the second RCVDS05 and the audio connector below the expansion module of the first RCVDS05.

Connection diagram on next page.



B.4. Optional Remote IR receiver to RCVDS05.

The RCVDS05 must be equipped with a communication interface module to connect the optional Remote IR receiver to the RCVDS05.
The RCVDS05 and the projector may be controlled from a remote location via the optional remote IR receiver. This allows the RCVDS05 and the projector to be installed in a separate location from the control room. The selected source number

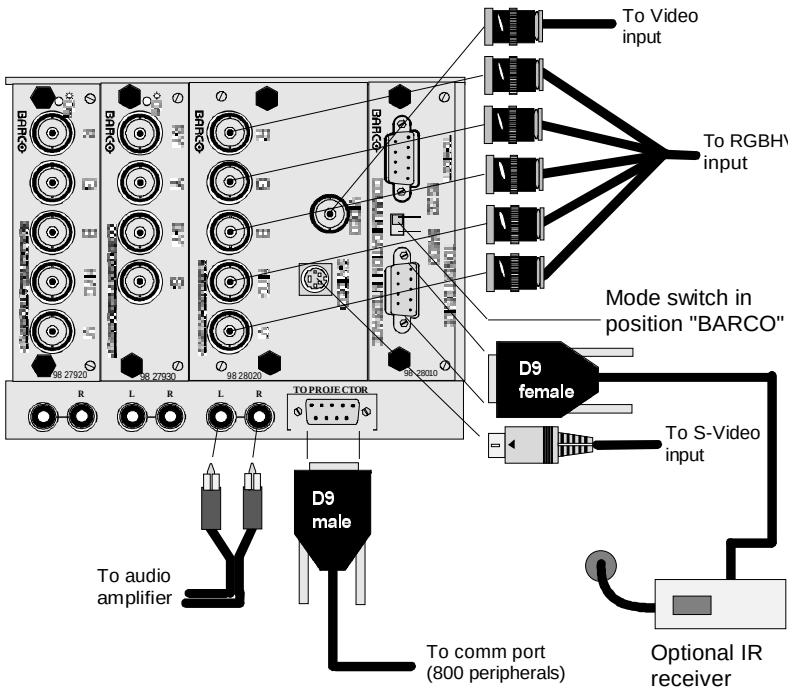
by the remote IR receiver.

Plug the male D9 connector of the communication cable into the female D9 connector on the rear of the IR remote receiver.

Plug the female D9 connector of the communication cable into the male D9 connector labelled "to next device" on the face of the RCVDS05 communication module.

The mode switch on the expansion module must be in the position 'BARCO'.

The power to the IR remote receiver is supplied via the communication cable from the RCVDS05.



C. RCVDS05 USED AS STAND ALONE SWITCHER.

C.1. Signal connection.

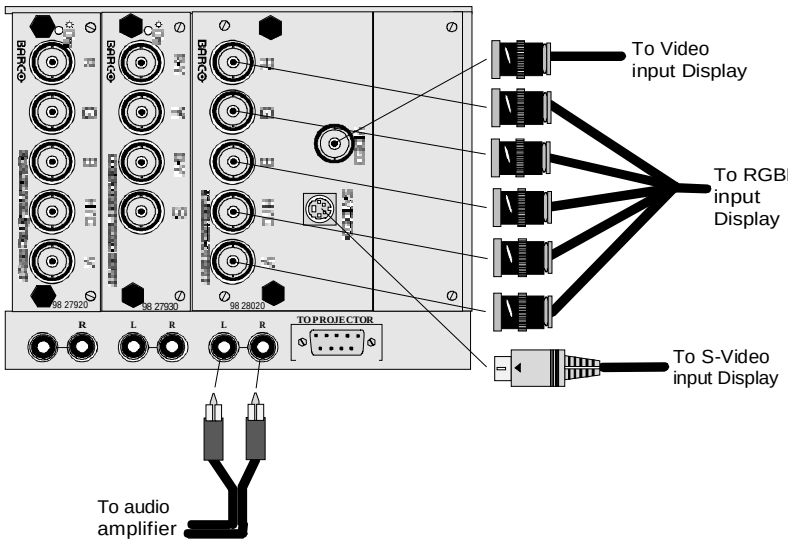
C.1.1. RCVDS05 to DISPLAY.

Connect the video output of the RCVDS05 to the video input of the display using a coaxial cable with BNC connectors.

Connect the S-Video output of the RCVDS05 to the S-Video input of the display using a 4-wire coaxial cable with 4 pin plugs.

Connect the Red, Green, Blue, H/S sync and V sync outputs of the RCVDS05 to the Red, Green, Blue, H/S sync and V sync inputs of the display using coaxial cable with BNC connectors.

When using an RCU to control the RCVDS05, the RCU address must be set to "9" or "0". When the address is set to "0", the RCVDS05 and all projectors in the room will listen to the IR commands.
With address "9", it is possible to control only the RCVDS05.
If you want to control the RCVDS05 with an RCU on another address other than "0" or "9", a communication interface module must be installed (see Special modules). With this module, it is possible to set the RCVDS05 address between 0 and 15. Only the addresses between 0 and 9 are valid when using an RCU.
Hint : the address can be displayed on the RCVDS05 by pressing the ADDR key on the RCU. During 1.5 sec. an A.x is displayed, where x has a value between 0 and F (hex).



C.1.2. RCVDS05 to AUDIO AMPLIFIER.

Connect the left and right audio outputs (connectors below the output module) of the RCVDS05 to the left and right audio inputs of an audio amplifier using two conductor audio cables with RCA (cinch) connectors.

C.2. Using multiple RCVDS05's as source selector for a display.

The signal connections remain the same as for one RCVDS05.
Each RCVDS05, *except the last one in the line*, must be equipped with a communication and an expansion module.

C.2.1. Communication linking between multiple RCVDS05's.

Plug the female D9 connector of the communication cable into the male D9 connector labelled "to next device" on the face of the RCVDS05 communication interface module.
Plug the male D9 connector of the communication cable into the female connector labelled "to projector" on the back plane of the second RCVDS05.

The mode switch on each communication interface module has to be set in the position "BARCO".
The IR address is only determined by the DIP switch setting on the communication module of the first RCVDS05 (see "Special Modules").

C.2.2. Signal connection between multiple RCVDS05's.

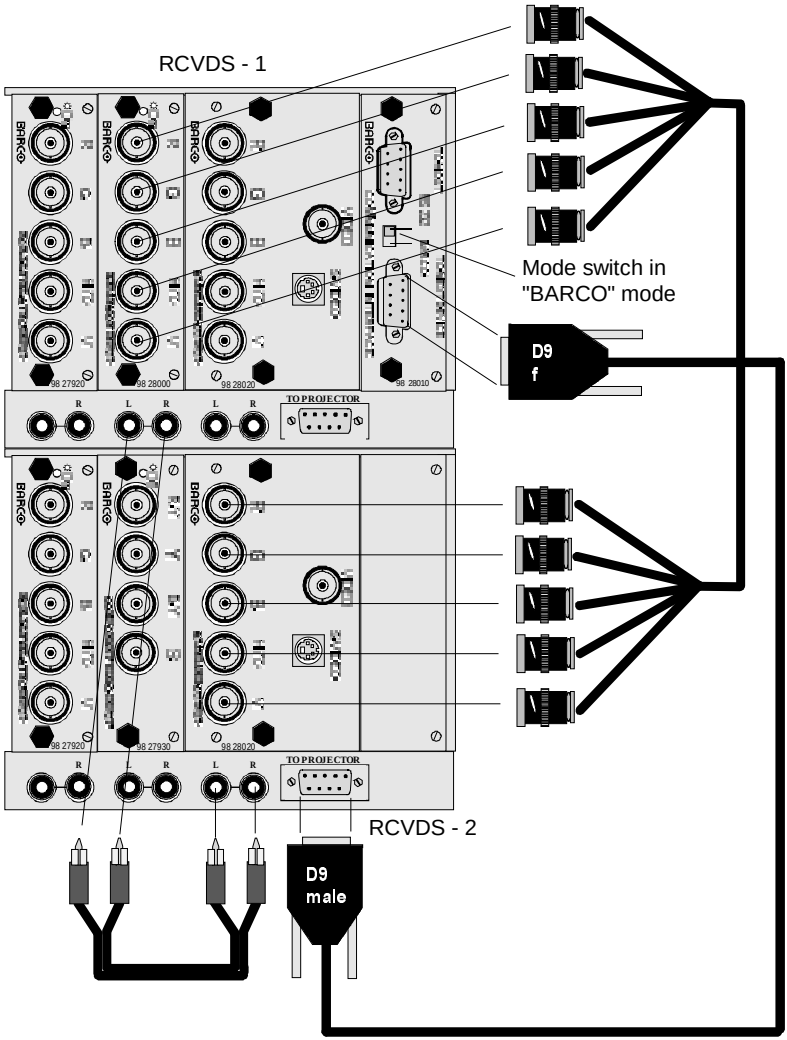
Each previous RCVDS05 in the link must be equipped with an expansion module.
Example : 4 RCVDS05's linked together, the first 3 RCVDS05's needed an expansion module.
The expansion module must be inserted in the last free slot of each RCVDS05.
Never insert an input module on the right hand side of the expansion module.

The signal connection between two RCVDS05's happens on 5 coaxial cables with BNC connectors.

Connect 5 cables between the BNC connectors of the expansion module of the first RCVDS and the output module of the second RCVDS.

The output module of the second RCVDS can be :
- a standard output module
or
- a 5 cable output module.

Connect an audio cable between the audio connectors below the output module of the second RCVDS05 and the audio connectors below the expansion module of the first RCVDS05.



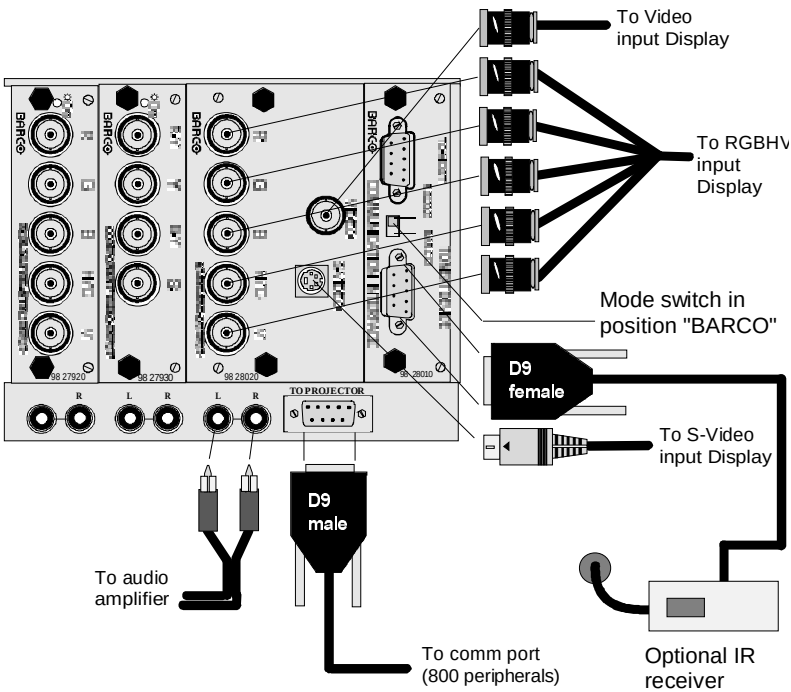
C.3. Optional Remote IR receiver to RCVDS05.

The RCVDS05 must be equipped with a communication interface module to connect the optional Remote IR receiver to the RCVDS05. The switch on the communication interface module has to be set in the position "BARCO".
The RCVDS05 may be controlled from a remote location via the optional remote IR receiver. This allows the RCVDS05 to be installed in a separate location from the control room. The selected source number is displayed by the remote IR receiver.

Plug the male D9 connector of the communication cable into the female D9 connector on the rear of the IR remote receiver.

Plug the female D9 connector of the communication cable into the male D9 connector labelled "to next device" on the face of the RCVDS05 expansion module.

The IR remote receiver is supplied by the RCVDS05 via the communication cable.



D. RCVDS05 USED AS HIGH BANDWIDTH SIGNAL SPLITTER.

D.1. Use of multiple output modules.

The RCVDS05 can be equipped with maximum 4 output modules. The selected input signal will be splitted to each output module.

D.2. Signal connection.

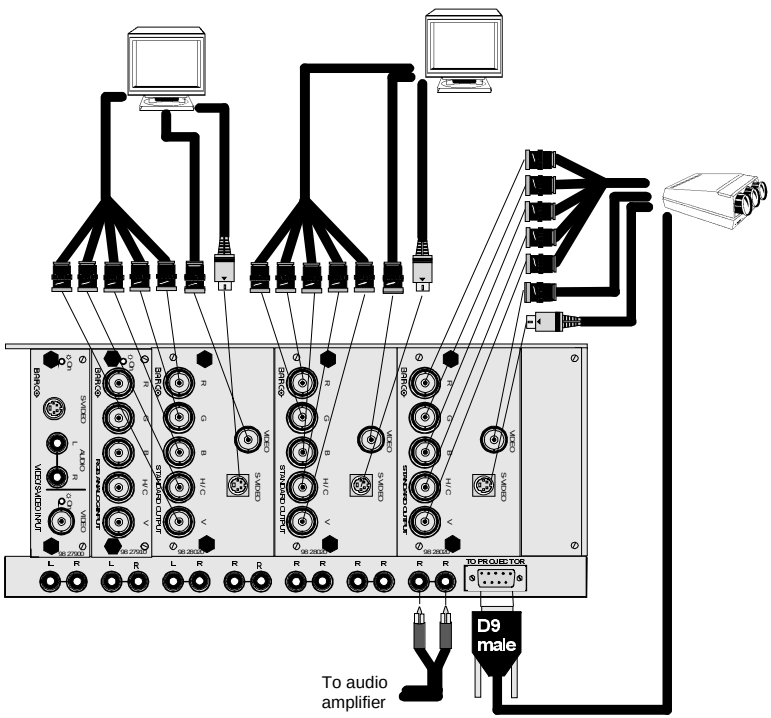
D.2.1. RCVDS05 to MULTIPLE DISPLAYS

Connect the signal from output 1 to display 1 as follows :

Connect the video output (output module 1) of the RCVDS05 to the video input of the display 1 using a coaxial cable with BNC connectors.

Connect the S-Video output (output module 1) of the RCVDS05 to the S-Video input of the display 1 using a 4-wire coaxial cable with 4 pin plugs.

Connect the Red, Green, Blue, H/S sync and V sync outputs (output module 1) of the



RCVDS05 to the Red, Green, Blue, H/S sync and V sync inputs of the display 1 using coaxial cable with BNC connectors.

Repeat these connections respectively for output module 2 to display 2, output module 3 to display 3 and output module 4 to display 4.

D.2.2. RCVDS05 to AUDIO AMPLIFIER.

Connect the left and right audio outputs of the RCVDS05 (below the most right output module) to the left and right audio inputs of an audio amplifier using two conductor audio cables with RCA (cinch) connectors.

D.3. Data communication link between the RCVDS05 and one BARCO projector.

Only one BARCO projector can have a communication link with the RCVDS05.

Plug the male D9 connector of a communication cable into the female D9 connector labelled "to projector" on the back plane of the RCVDS05.
Plug the female D9 connector the communication cable into the male connector labelled "com port (800 peripherals)" on the rear or front panel of the projector (depending on the type of projector).

E. RCVDS05 USED WITH A CENTRAL COMPUTER

E.1. RCVDS05 connected with a projector.

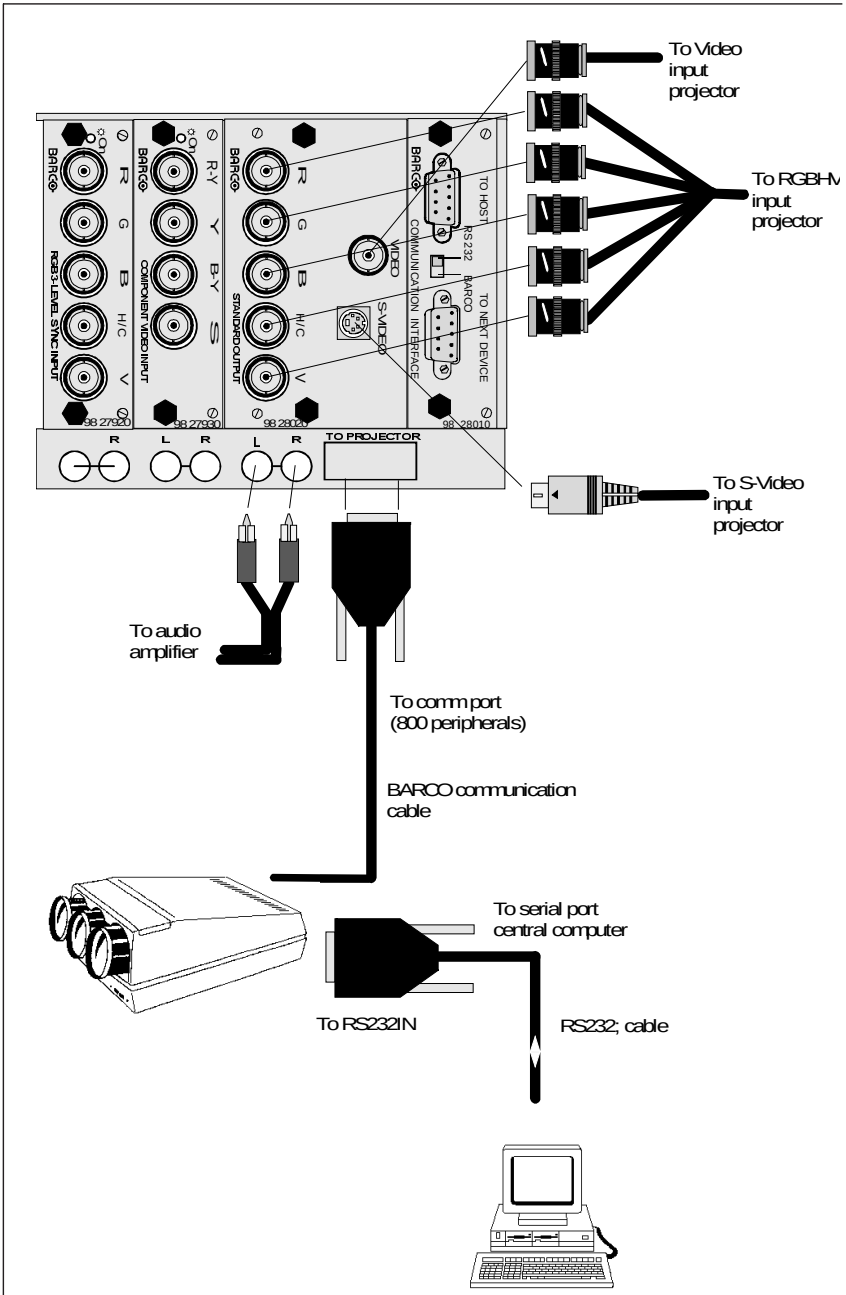
In this configuration (BARCO projector connected with a RCVDS05 via the BARCO communication cable) the RCVDS05 is always slave of the projector. The RS232 communication link must be made with the projector and not with the RCVDS05. No Communication interface module is needed.

E.1.1. Installing the link.

Plug the male D9 connector of a communication cable into the female D9 connector labelled "to projector" on the RCVDS05.

Plug the female D9 connector of a communication cable into the male D9 connector labelled "comm port - 800 peripherals" of the projector.

Plug the male D9 connector of serial cable into the female D9 connector labelled "RS232IN" of the projector.


To Video input projector
To RGBHV input projector
To S-Video input projector
To audio amplifier
To comm port (800 peripherals)
BARCO communication cable
To serial port central computer
To RS232IN
RS232; cable
TO PROJECTOR
TO HOST
RS232
BARCO
TO NEXT DEVICE
COMMUNICATION INTERFACE
VIDEO
S-VIDEO
RGB/3-LEVEL SYNC INPUT
COMPONENT VIDEO INPUT
STANDARD OUTPUT
98 27920
98 27930
98 28020
98 28010

Plug the female D9 connector of a serial cable into the male connector of the serial port of your computer.

All RS232 commands have to be sent to the projector. Only the comandfor the projector can be used. These commands are described for CRT projector in the manual "Projector Control Software", order number R9827530 and for LCD projectors in the manual "RS232 communication protocol", order number R5975236.

A projector controlled via the RS232 link acts in the same way as a projector controlled via the RCU (remote control) or via the key panel on the RCVDS05.
Selecting a source of the RCVDS05 with the RCU or via RS232 commands is the same.

E.2. RCVDS05 as stand alone switcher.

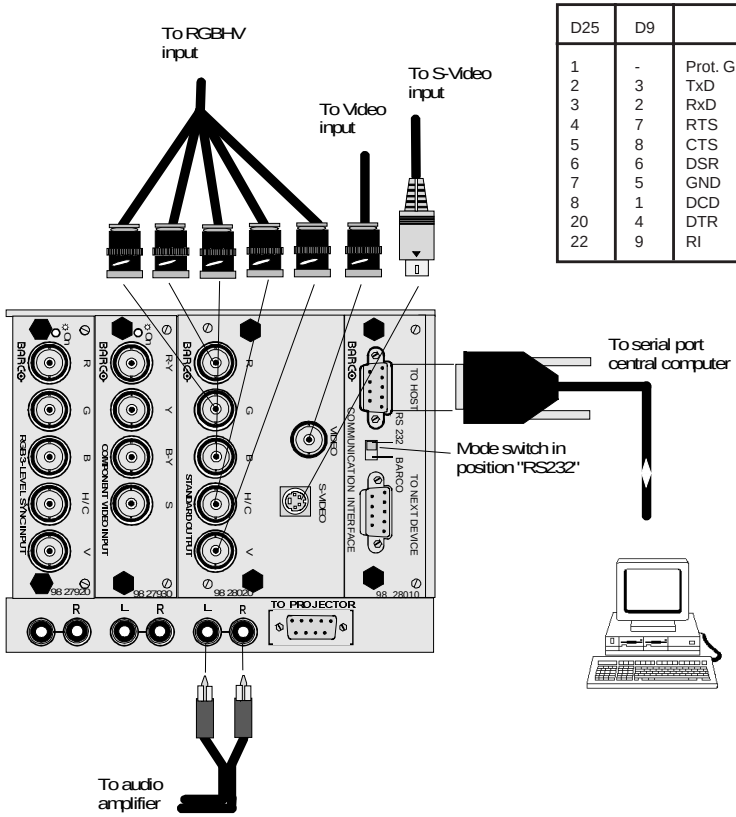
The RCVDS05 has to be equipped with a communication interface module.
No IR remote receiver can be connected to the RCVDS05.

E.2.1. Installing the link.

Plug the male D9 connector of a communication cable (straight cable) into the female D9 connector labelled "to host" on the face of the communication interface module in the RCVDS05.

Plug the female D9 connector of the communication cable into the male connector of the serial port of your computer.

The switch on the communication interface module has to be set in the position "RS232".



D25	D9	
1	-	Prot. GND
2	3	TxD
3	2	RxD
4	7	RTS
5	8	CTS
6	6	DSR
7	5	GND
8	1	DCD
20	4	DTR
22	9	RI

E.2.2. Address setting on the RCVDS05.

To communicate with the computer, a unique address must be set on the communication module.

That unique address must be an address between 0 and 15.
To set up the address, see chapter "Special modules", paragraph "Communication interface module".

E.3. Signal connection

E.3.1. RCVDS05 to DISPLAY

Connect the video output of the RCVDS05 to the video input of the display using a coaxial cable with BNC connectors.
Connect the S-Video output of the RCVDS05 to the S-Video input of the display using

a 4-wire coaxial cable with 4 pin plugs.

Connect the Red, Green, Blue, H/S sync and V sync outputs of the RCVDS05 to the Red, Green, Blue, H/S sync and V sync inputs of the display using coaxial cable with BNC connectors.

E.3.2. RCVDS05 to AUDIO AMPLIFIER.

Connect the left and right audio outputs (connectors below the output moduel) of the RCVDS05 to the left and right audio inputs of an audio amplifier using two conductor audio cables with RCA (cinch) connectors.

E.4. Using multiple RCVDS05's with one central computer.

E.4.1. Communication linking between multiple RCVDS05's.

Plug the female D9 connector of a communication cable into the male D9 connector labelled "to next device" on the communication interface module of the first RCVDS05. Plug the male D9 connector of the communication cable into the female D9 connector, labelled "to host" on the communication interface module of the second RCVDS05.
If more RCVDS's are linked, repeat above both steps.

On each RCVDS05, a unique address must be installed and each RCVDS05 must be controlled separately by the central computer. There is no communication between the RCVDS's.

E.4.2. Signal connection between multiple RCVDS05's to one Display.

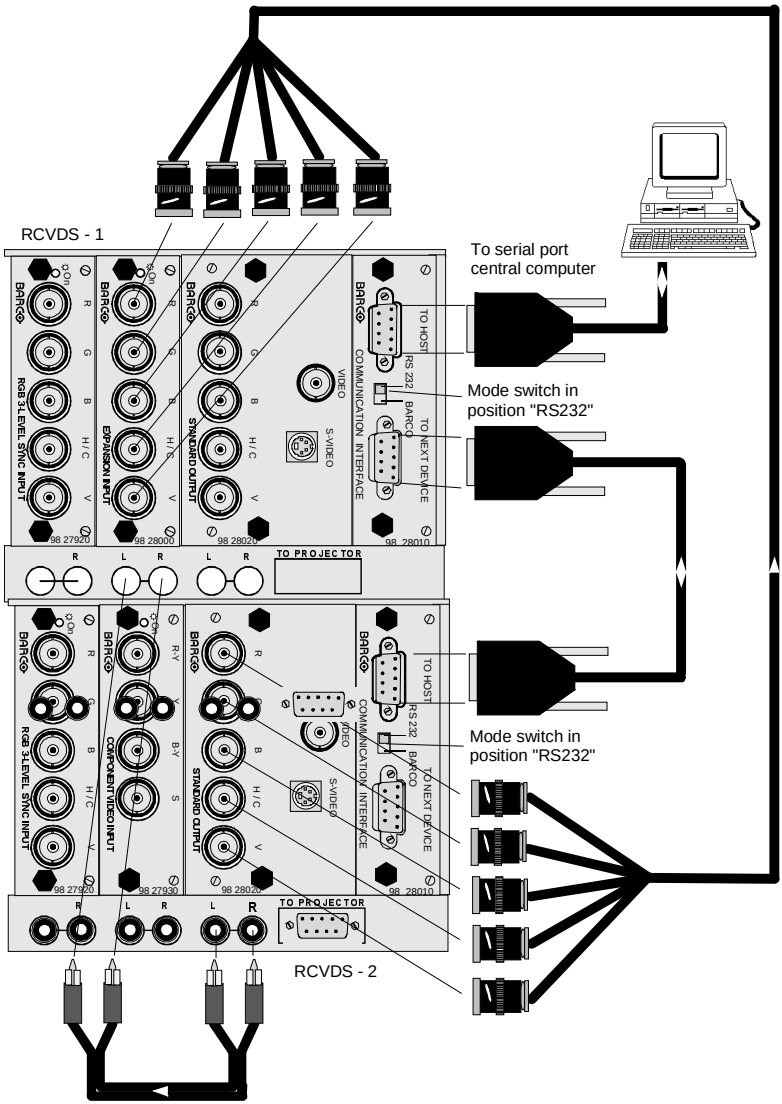
See installation diagram on next page.
Each RCVDS05 in the link must be equipped with an expansion module, except the last one. This expansion module is considered by the computer as an input module.
Example : 4 RCVDS's linked together, the first 3 RCVDS's needed an expansion module.
The expansion module must be inserted in the last free slot of each RCVDS05.
Never insert an input module on the right hand side of the expansion module.

The signal connection between two RCVDS's happens on 5 coaxial cables with BNC connectors.

Connect 5 coaxial cables between the BNC connectors of the expansion module of the first RCVDS and the output module of the second RCVDS.

The output module of the second RCVDS can be :
- a standard output module
or
- a 5 cable output module (optional).

Connect an audio cable between the audio connectors below the output module of

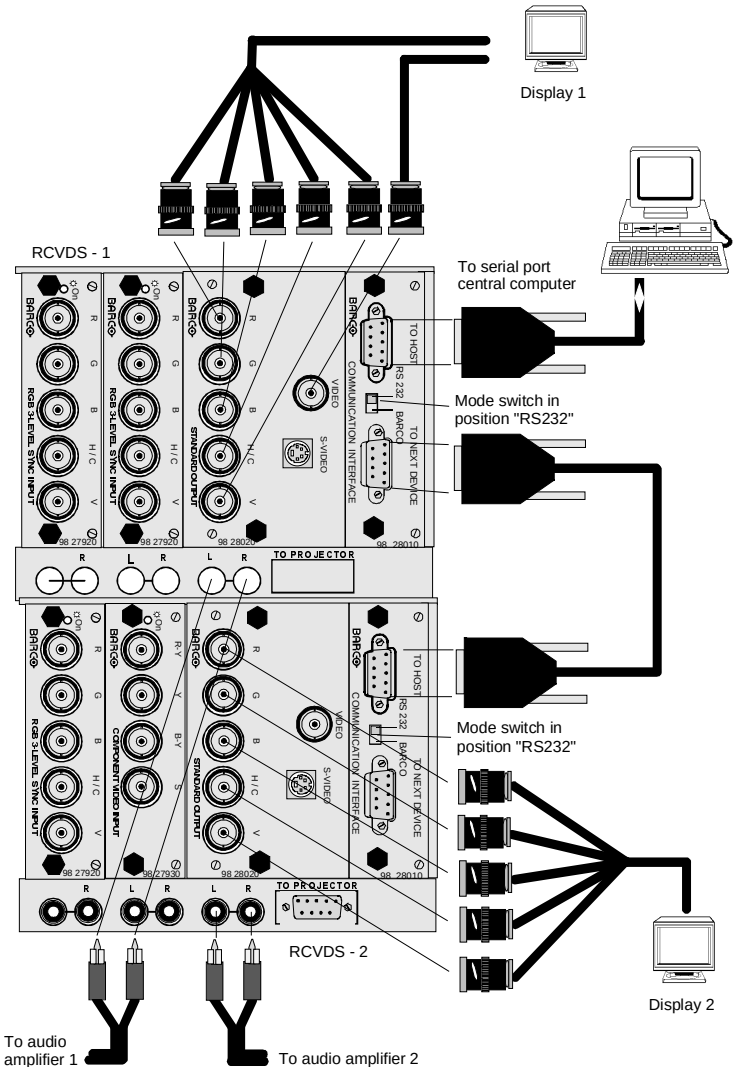


the second RCVDS05 and the audio connectors below the expansion module of the first RCVDS05.

E.4.3. Signal connection between multiple RCVDS's multiple displays.

No expansion module must be installed in the RCVDS's.
The switch on each communication module must be set in the position 'RS232'.

Example : 2 RCVDS's with 2 displays.



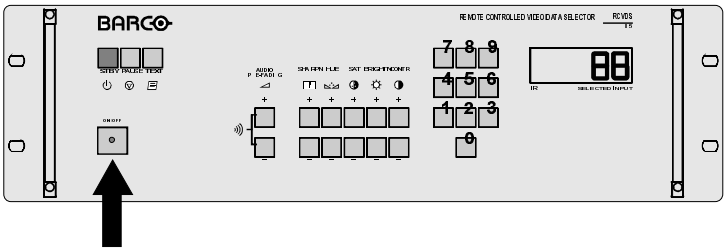
The output signals on the output module of the first RCVDS05 are connected to the inputs of the first display. The output signals on the output module of the second RCVDS05 are connected to the inputs of the second Display.
As each RCVDS05 has a unique address, the computer can order each RCVDS to display a different source.

VI. OPERATING INSTRUCTIONS

A. ON/OFF switching

The RCVDS05 is switched ON and OFF using the power (mains) switch ON/OFF on the front of the RCVDS05.

pressed : ON
not pressed : OFF

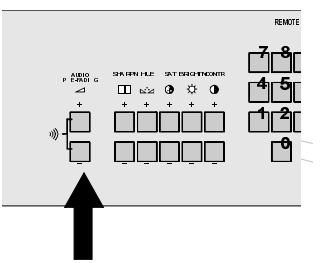


B. "BEEP" indication

Each time a button on the front panel is pushed , a single "beep" sound will be generated by the RCVDS05. This single "beep" sound indicates a correct action.

A double "beep" sound indicates an incorrect command, e.g. selecting a source without an installed input module for this source number or pushing on a not used key.

The "beep" sound can be toggled "off" and "on" by pushing simultaneously the "+" and "-" prefading buttons. The "beep" indication ON/OFF is memorized by the RCVDS05. Each time the RCVDS05 is switched on, it loads the latest saved "beep" indication.



C. Numbering of the sources.

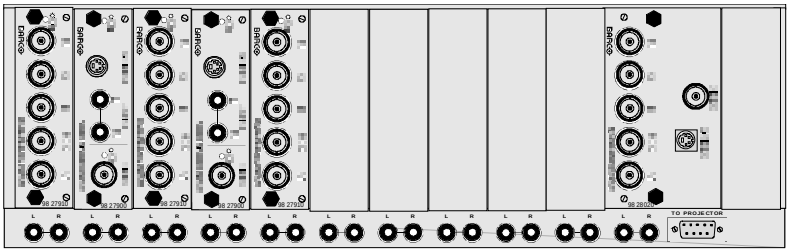
The RGB analog, RGB Tri-level sync analog and the Component Video inputs occupy one source number. The Video/S-Video input module occupies 2 source numbers, one for the S-Video source and one for the Video source as both sources are simultaneously available.

C.1. One RCVDS05.

The RCVDS05 counts its own inputs (free and occupied slots) starting with slot 1 (left most slot when viewing the backside).
Each empty slot before the last occupied slot will be counted by the RCVDS05 as one source number.

Some examples will explain the above :

Example one : RCVDS05 equipped with 5 input modules :
slot 1 : RGB analog input module
slot 2 : Video/S-video input module
slot 3 : RGB analog input module
slot 4 : Video/S-Video input module
slot 5 : RGB analog input module

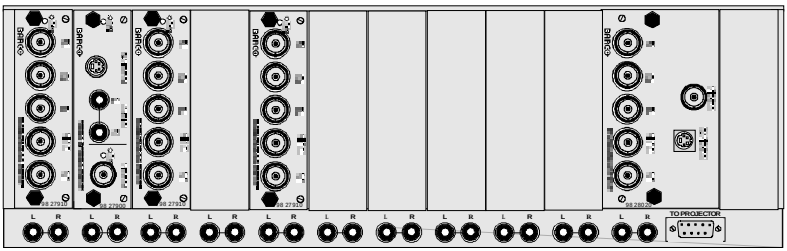


1 2 3 4 5 6 7 8 9 10 ← slot number

The RCVDS05 will count its source numbers as follows :

source number	source	slot
1	RGB analog	1
2 3	S-Video 2 Video	2
4	RGB analog	3
5 6	S-Video 4 Video	4
7	RGB analog	5

Second example : RCVDS05 equiped with the same modules as in example one, but the module in slot 4 is removed.



1 2 3 4 5 6 7 8 9 10 ← slot number

The RCVDS05 will count its source numbers as follow :

source number	source	slot
1	RGB analog	1
2 3	S-Video 2 Video	2
4	RGB analog	3
5	Empty slot	4
6	RGB analog	5

By pulling out the Video/S-Video input module, the RGB analog source on slot number 5 (example one) gets a new source number (source 6) (a Video/S-Video input module occupies two source numbers). When selecting this new source 6, a new adjustment block will be created by the projector.

C.2. Multiple RCVDS05's.

The source number counting starts with slot 1 of the first RCVDS05. It counts all source input slots of the first RCVDS until it finds the expansion module. The counting will be continued with slot 1 of the next RCVDS05.

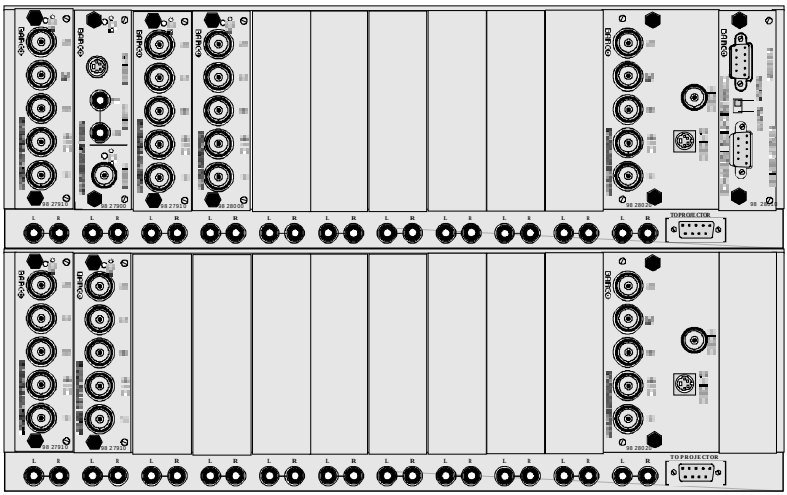
Note : the expansion module must always be located after the occupied input slots. Never insert an expansion module between two inputs, otherwise an error will be displayed (see chapter "Error codes").

If there are free slots between the last occupied slot and the expansion module, these slots will be taken into account to calculate the source numbers.

Example one : Double RCVDS05 with the following input slots.

RCVDS - 1 slot 1 : RGB analog input module
slot 2 : Video/S-Video input module
slot 3 : RGB analog input module
slot 4 : expansion module

RCVDS - 2 slot 1 : RGB analog input module
slot 2 : RGB analog input module



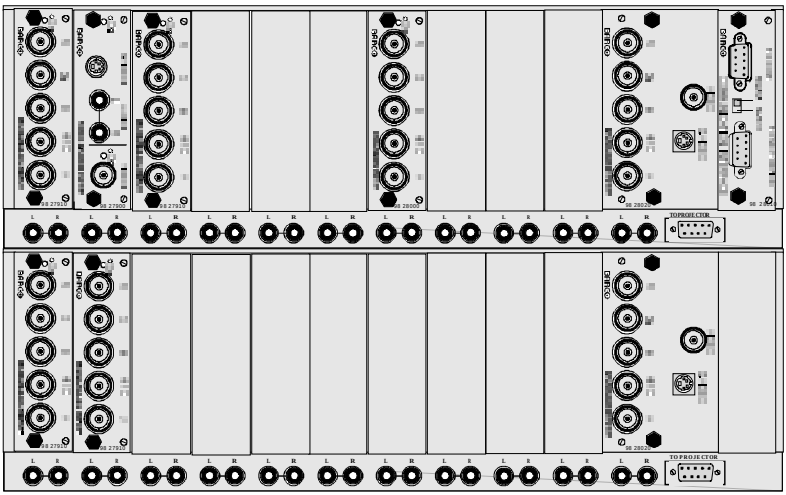
The RCVDS05 will count its source numbers as follows :

source number	source	slot
1	RGB analog	1 (1)
2	S-Video 2 (1)	
3	Video	2 (1)
4	RGB analog	3 (1)
5	RGB analog	1 (2)
6	RGB analog	2 (2)

Example two : Double RCVDS05 with the following input slots.

RCVDS - 1 slot 1 : RGB analog input module
slot 2 : Video/S-Video input module
slot 3 : RGB analog input module
slot 4 : empty
slot 5 : empty
slot 6 : empty
slot 7 : expansion module

RCVDS - 2 slot 1 : RGB analog input module
slot 2 : RGB analog input module



The RCVDS05 will count its source numbers as follows :

source number	source	slot
1	RGB analog	1 (1)
2	S-Video 2 (1)	
3	Video	2 (1)
4	RGB analog	3 (1)
5	no source	4 (1)
6	no source	5 (1)
7	no source	6 (1)
8	RGB analog	1 (2)
9	RGB analog	2 (2)

C.3. Multiple RCVDS05's controlled by a central computer.

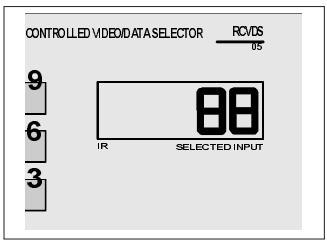
Each RCVDS05 restarts its counting with slot 1.
As each RCVDS has its own unique address, the central computer can make a difference between source 1 in the RCVDS - 1 and source 1 in the RCVDS - 2.
An expansion module will be considered as an input source and can be selected by the central computer.
If two RCVDS05's are linked to ne display and controlled by a central compute, the computer must select the expansion module in the first RCVDS05 and the desired source number in the second RCVDS05.

D. OPERATING THE RCVDS05 WITH THE BUTTON PANEL OR RCU.

The controls on the button panel of the RCVDS05 are :
- source selection
- analog image setting
- stand by switching
- text on/off
- pause function
- audio pre-fading

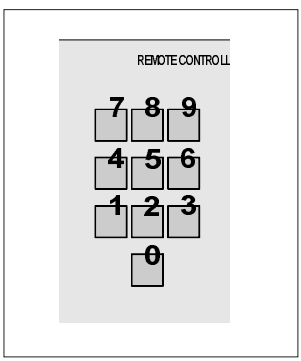
D.1. Source selection.

When an available source is selected, the corresponding selection lamp on the input module will light up and the source will be displayed on the screen. The source number will be displayed on the seven segment led display.
If the selected input module is not available, the RCVDS generates a double "beep" (if enabled) and returns to the previous selected source.

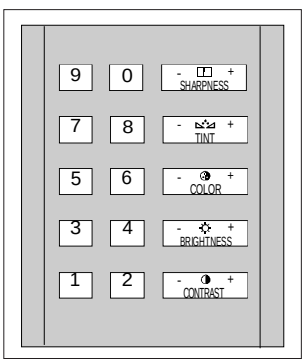


D.1.1. Source selection on a Single RCVDS05.

If there are 10 or less sources connected to the RCVDS05 :



Button panel RCVDS05



RCU

* Key in the source number with the numeric keys (button panel or RCU)

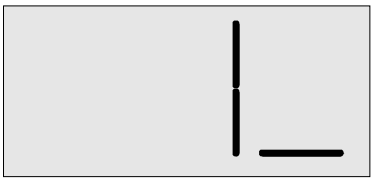
Source 10 can be selected by using numerique key "0".

Attention : If the RCVDS05 is connected with a BARCO projector and source 9 is selected by keying in 9, the display on the RCVDS05 will show 9_. After two seconds it will select source 9. When keying in 9, the RCVDS05 does not know if you want to select source 9 or source 91 to 99 (see owner's manual projector "Source numbers 91 - 99).

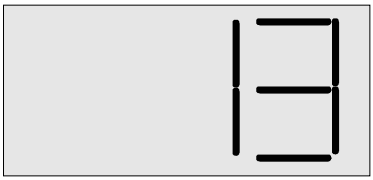
If there are more than 10 sources connected to the RCVDS05 (max. 20 sources possible):
When selecting a source between 2 and 9, key in the corresponding number with the numeric keys.
When selecting a source between 10 and 20:
key in the first digit and enter the second digit within two seconds to select the corresponding source number.
When the second digit is not entered within two seconds, source 1 or 2, corresponding to the entered digit will be selected.

Example : selecting source 13

Press 1, the display shows :



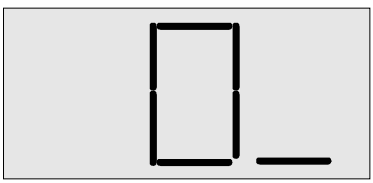
press 3 within 2 seconds, the display shows :



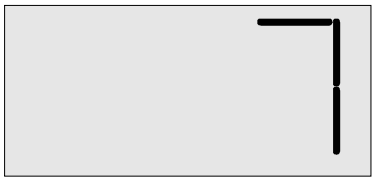
D.1.2. Source selection on Multiple RCVDS05's.

Use aways two digits to enter your source number.

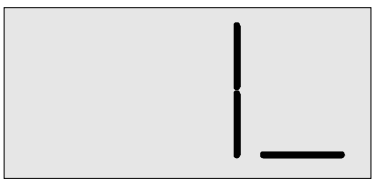
Example 1 : source 7
Enter "0" and



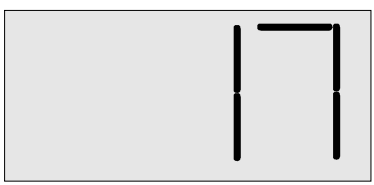
continue with 7.
Or enter 7 and wait two seconds, source 7 will selected.



Example 2 : source 17
Enter 1, the display shows :



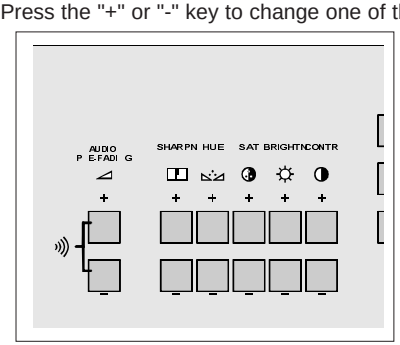
Enter 7 within two seconds, the corresponding source will be selected.



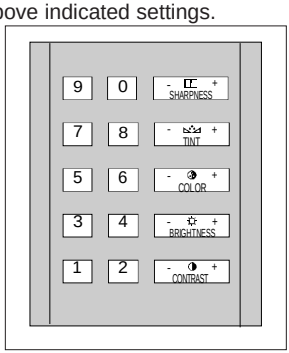
Only the first RCVDS will indicate the source number on its display. All others RCVDS's will display a double point. The optional IR receiver, if connect, will always display the source number.

D.2. Analog image settings

The analog image settings on the RCVDS05 are only active when a BARCO projector is connected to the RCVDS05.
Press the "+" or "-" key to change one of the above indicated settings.



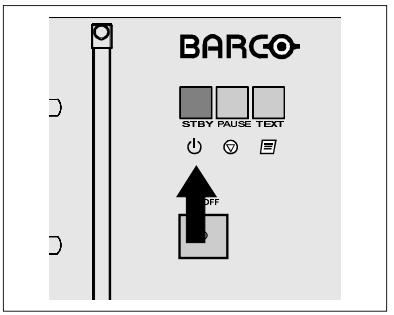
Analog settings on the button panel



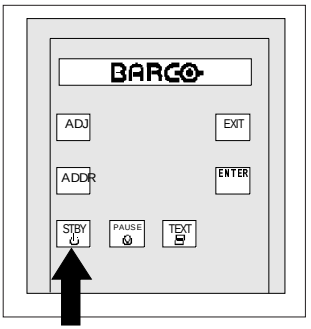
RCU

D.3. STAND BY

To go to stand by : press the stand by button (stby) once. All RCVDS05's will display '-'.



Button panel RCVDS05



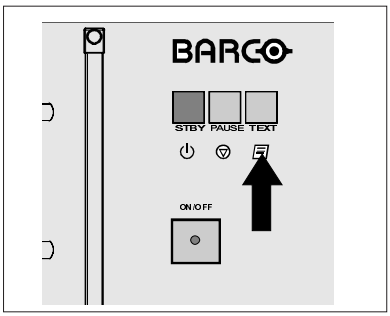
RCU

Restart :
Press stand by key : last selected source will be displayed.
or
Press a source number : the selected source will be displayed.

D.4. TEXT

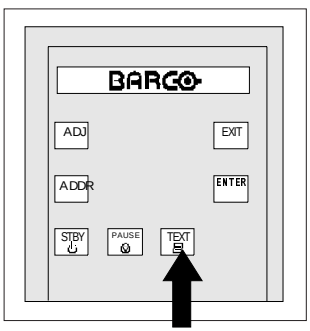
D.4.1. Software version display.

The software version of the RCVDS05 can be displayed by continious pressing during 1.5 seconds on the TEXT button on the front panel of the RCVDS05.



Button panel RCVDS05

D.4.2. TEXT ON/OFF function.



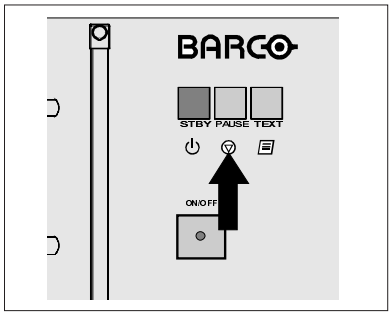
RCU

The text ON/OFF function does not exist in stand by mode.
This button acts as a toggle switch in operational mode between text ON and text OFF.

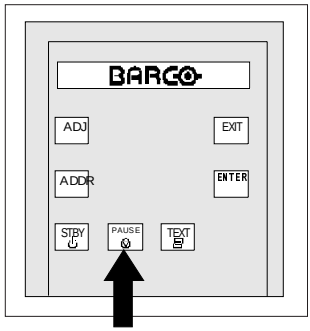
When text is ON, a bar scale and number indication will be displayed when activating an image control.
When text is OFF, no indication will be displayed on the screen when activating an image control.

D.5. PAUSE

This button is only active when the RCVDS05 is used as source selector for a BARCO projector.



Button panel RCVDS05



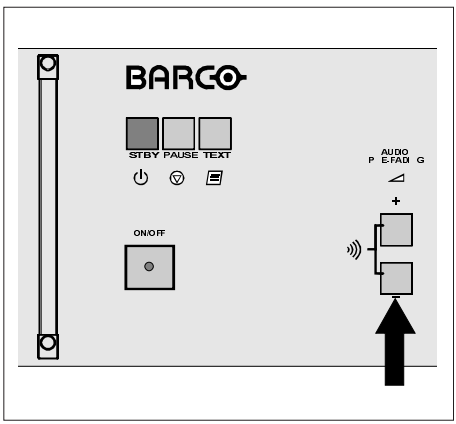
RCU

* Press Pause to interrupt the image projection and to switch off the audio .

* Restart :
- Press Pause again. The image will be redisplayed and the audio will be switched on
  or
- enter a source number.

D.6. Audio pre-fading.

The level of the output signal for each audio signal can be pre-adjusted with the audio pre-fading buttons on the button panel of the RCVDS05.
The level adjustment is possible between -52 dB and +6 dB.



Proceed as follow :
- Select a source.
- Adjust the audio pre-fading with the "+" and "-" pre-fading button. The adjusted level will be memorized by the RCVDS05 and recalled every time this source is selected.

During an adjustment, the RCVDS05 will display a number between 1 and 10 followed by a point.

E. Operating the RCVDS05 with the central computer.

The RCVDS05 can be controlled by a central computer when using :
* the Projector Control Software. With the simulated RCU on the computer display, image settings and source selections are possible.
  or
* a custom written program. Therefore, the communication protocol is given.

E.1. Communication protocol.

As already explained each RCVDS05 should have an unique address. The communication-settings are defined as fommows: -Baudrate 9600
- no parity
- 1 stopbit
- 8 Databits

When transmitting data from the computer to the RCVDS05, the transmission is started using the STX byte(02H). After the STX byte, an address byte is transmitted by the computer. All RCVDS's and Projectors compare this address byte with their own address. The one which recognises its address will interpret the following bytes and execute the commands requested by the computer.

If 02H (STX) appears in the data bytes following STX, the RCVDS05 or Projector which did not recognise their address will be confused. They might interpret the following bytes in a wrong way, reacting unpredictably.
To avoid this, a protocol is used which avoids the appearance of 02H (STX) in the data bytes.

The protocol introduces an offset byte in the transferred bytes OFFS.
ADRo, DAT1o...DATno are bytes which are "encoded" in a way that none of them is equal to 02. Their relation with the original bytes is :

ADRo = ADR + OFFS
DATio = DATi + OFFS

STX	start byte
ADR	addresss byte
CMD	command
DAT1	Data byte 1
DAT2	Data byte 2
DAT3	Data byte 3
DAT4	Data byte 4
CHKS	Check sum

Where the CHKS is : (ADDR + CMD + DAT1 + DAT2 + DAT3 + DAT4)MOD256.

Only the least significant byte (MOD256) of the sum (ADDR + CMD + DAT1 + DAT2 + DAT3 + DAT4) is used for the checksum.

Because the number of bytes used in a transmission is always smaller than 254, we are sure that we will always find a byte OFFS so that all the encoded bytes and OFFS are different from 02.

IMPORTANT : If only 1 RCVDS or projector is connected to the PC, than always OFFS = 0 may be used, which makes it easier to send the command

A possible solution to find OFFS and checksum :{}

```
#define STX '\x02'

unsigned char find_offacs (unsigned char *pstart_loc)
{ /* find offset and check sum */
  /* pstart_loc : pointer to record to be scanned */

int count;
int check[256];     /* check[i] == TRUE means code 'i' occurs in record */
unsigned checksum;

checksum = 0;                                   /* initialize checksum          */
for (count = 0; count <=255; count++)           /* init code checking array     */
    check[count] = FALSE
for (count = 0; count <6; count ++)             /* scan codes in record         */
{   check[pstart_loc[count]] = TRUE             /* mark in checking array       */
    checksum += pstart_loc[count];  }           /* build checksum value         */
checksum %= 256;                                /* keep least significant byte  */
check[checksum] = TRUE                          /* mark in checking array       */
for (count = 1; check[count] == TRUE; count++);

                                                /* search checkin array :       */
/* skip value 0 and continue as long as code 'count' is marked TRUE             */
pstart_loc[6] = (byte) checksum;                /* store checksum in record     */
return ((unsigned char) (STX-count));           /* offset=STX-not_occuring_code */
}
```

CMD is the command given to the RCVDS05 with address ADR. DAT1-4 can contain additional information, however, this information is not always used.

Format sent from PC to RCVDS

STX	OFFS	ADRo	CMDo	DAT1o	DAT2o	DAT3o	DAT4o	CHKSo

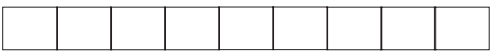
Because only the signals RxD and TxD are used for the communication, there is no way to detect if there is a RCVDS05 or projector listening and if it receives the data

correctly. Therefore, the communication works with an ackowledge protocol using the standard ASCII bytes **ACK** and **NAK** (06H and 15H). This protocol is only active for communication from computer to RCVDS05.

For communication from RCVDS05 to computer, there is no acknowledgement available. However there is only communication in this direction after a request is sent from the computer to the RCVDS05. It is important that when the computer asks the RCVDS05 for information that it is able to immediately receive the data from the RCVDS05.

The RCVDS05 returns an ACK byte if it has received the data correctly or a NAK byte if the received data is not correct. If no RCVDS05 is responding, then no byte is returned.

Computer to RCVDS05 :



RCVDS05 to computer :

How the RCVDS05 answers

When the computer communicates with the RCVDS05, it is possible that the computer requests for data from the RCVDS05.

Example :
computer to RCVDS :

STX OFFS ADRo CMDo DAT1o DAT2o DAT3o DAT4o CHKSo

The RCVDS answers ACK

ADR CMD DAT1b DAT2b DAT3b DAT4b CHKSb

With : ADR = ADRo - OFFS
CMD = CMDo - OFFS
CHKSb = (ADR + CMD + DAT1b + DAT2b + DAT3b + DAT4b)MOD256

The RCVDS05 will always return its own address and the received command to the computer. The computer checks these bytes as an extra control.
No offset is used in the RCVDS-answer.

E.2. The Command Codes.

"Category I" commands

These commands are keyboard or RCU commands.

bytes DAT1, DAT2, DAT3, DAT4 don't care.
The RCVDS answers only ACK or NAK

The available commands :

ADDR	01H	Address RCVDS is displayed on RCVDS
STDBY	0EH	Standby
NUM_0	10H	Numeric keys
NUM_1	11H	"
NUM_2	12H	"
NUM_3	13H	"
NUM_4	14H	"
NUM_5	15H	"
NUM_6	16H	"
NUM_7	17H	"
NUM_8	18H	"
NUM_9	19H	"
SAT_UP	2CH	Color saturation up
SAT_DN	2DH	Color saturation down
HUE_UP	2EH	Color tint up
HUE_DN	2FH	Color tint down
SHA_UP	36H	Sharpness up
SHA_DN	37H	Sharpness down
VOL_UP	38H	Prefading up
VOL_DN	39H	Prefading down

Example : STX OFFS ADR 15H x x x x CHKS will switch the RCVDS05 to source 5.
+OFFS
This action is exactly the same as pressing key 5 on the RCU or the frontpanel of the RCVDS05.

Another example : how to switch the RCVDS to source 12.
Example : RCVDS-address = 03
To switch the RCVDS05 to soruce 12, we have to send key 1 and then within 2 seconds key 2. This is exactly the same as pressing on key 1 and then key 2 on le local keyboard or remote control.

send key 1 :
02 00 03 11H 0 0 0 0 14H
└ offset 0 is permitted
RCVDS answers 06 (ACK)
send key 2 :
02 00 03 12H 0 0 0 0 15H
RCVDS answers 06 (ACK)

If we should use 10H for the offset, then we should have for sending key 1 :

02H 10H 13H 21H 10H 10H 10H 10H 74H
STX OFFS ADDR0 CMD0 DAT0 1....4 CHKS0

CHKS0 = ADDR0+CMD0+DAT01+DAT02+DAT03+DAT04

"Category II" commands.

CatII commands are commands which are not possible with the RCU.

READ_SOURCE 4AH

The RCVDS05 will return to the currently selected source and source type.
The DAT1, DAT2, DAT3, DAT4 transmitted to the RCVDS05 must be zero.

the RCVDS returns :

DAT1	decoder check 0 = no decoder & decoder interface installed. 1 = decoder interface installed. 3 = decoder & decoder interface installed.
DAT2	source number (1 to 20); 0 if no source selected (stand by)
DAT3	Source type 01 = Video 02 = S-Video 04 = RGsB 05 = RGBS 06 = RG3sB 07 = RGB3S 08 = Comp. Video, standard sync on Y 09 = Comp. Video, standard separate sync. 0A = Comp. Video, Tri-level sync on Y 0B = Comp. Video, sep. Tri-level sync. 0C = not used 0D = not used 0E = not used 7F = expansion module. 0 = no slot selected
DAT4	0

Example : current source is 7, source type : RGBS, no decoder installed.

Computer to RCVDS : STX OFFS ADR 4AH 0 0 0 0 CHKS

+OFFS

return for RCVDS : ACK
ADR CMD 0 7 5 0 CHKS'

Example : if the address of the RCVDS is 7, we have to send (for the example above):
02 0 07 4AH 0 0 0 0 51H

The RCVDS returns : 06H (ACK) and then
07 4AH 0 07 05 0 5DH

READ_POT 7AH

Reads the indicated EEPROM-value of the current selected source. The EEPROM value may be prefading, sharpness, hue (tint) or saturation.

Computer to RCVDS : STX OFFS ADR CMD DAT1 0 0 0 CHKS

+OFFS

DAT1	kind of setting	
	03 = saturation	
	05 = tint (hue)	
	06 = sharpness	
	C3 = prefading	
	C4 = prefading	
DAT2	0	
DAT3	0	
DAT4	0	

RCVDS to computer : ACK or NAK

ADR CMD DAT1' DAT2' DAT3' DAT4' CHKS'

DAT1'	DAT1	
DAT2'	DAT2	
DAT3'	returned value	
	22H ... 3FH	prefading
	00H ... 7FH	saturation or hue
	E0H ... E3H	sharpness
	FFH	if no slot selected
DAT4'	DAT4	

WRITE_POT 79H

Write a value to indicated EEPROM of current selected source, and updates this setting in the digital potentiometer.

Computer to RCVDS :

DAT1	kind of setting	
	03 = saturation	
	05 = hue	
	06 = sharpness	
	C3 = prefading	
	C4 = prefading	
DAT2	0	
DAT3	value	
	22H ... 3FH	prefading
	00H ... 7FH	saturation or hue
	E0H ... E3H	sharpness

DAT4 1

RCVDS05 only answers ACK or NACK.

Example : STX OFFS ADR 79H 06 0 3AH 1 CHKS

+OFFS

The computer will update the sharpness to the value 3AH and write it into the EEPROM for the current selected source

BLOCK_DEL 73H

Set all the settings of the indicated source to default in the EEPROM.

Computer to RCVDS : STX OFFS ADR 73H 0 DAT2 0 0 CHKS

+OFFS

DAT1	0
DAT2	the indicated source number(1 to 20)
DAT3	0
DAT4	0

RCVDS05 only answers ACK or NACK.

The default values are :

prefading	3CH (0dB)
tint (hue)	3FH (50%)
saturation	3FH (50%)
shapness	E1H (0dB)

(These values are the same after starting up the RCVDS05 for the first time)

FORCE_TOGGLE 51H

Forces a toggle to the desired state

Computer to RCVDS : STX OFFS ADR 51H DAT1 0 0 DAT4 CHKS

+OFFS

DAT1	0BH "BEEP" on/off
DAT2	0
DAT3	0
DAT4	0 = switched off 1 = switched on

RCVDS05 only answers ACK or NACK.

BLOCK TRANSFER EEPROM to PC 72H

Send all the used bytes in the EEPROM to the PC (168 bytes)

PC to RCVDS : STX OFFS ADR 72H FFH FFH FFH FFH CHKS
+OFFS

RCVDS to PC : ACK
ADR 72H FFH FFH FFH FFH CHKS
then 168 bytes (block) are sent
CHKS after the 168 bytes.

Block returned :1st byte = data addr 0 EEPROM
2 nd byte = data addr 1 EEPROM
....
168st byte = data addr 167 EEPROM

Meaning of these bytes

byte	0 - 7	contents source 1
	8 - 15	contents source 2
	16 - 23	contents source 3
	24 - 31	contents source 4
	.	.
	.	.
	.	.
	160-167	contents source 20

With for each source in this order (contents of all the sources)

byte	0	volume (22H .. 3FH)
	1	tint (0 .. 7FH)
	2	saturation (0 .. 7FH)
	3	sharpness (E0H .. E3H)
	4	source type
	5	reserved
	6	reserved
	7	reserved

source type : the same as the values returned in the command READ_SOURCE (01 = video, 2 = SVHS, 4 = RGsB, ..., 7FH = expansion module and 7EH = no module inserted.

Example : the 17 th receaved byte (if we give no. 0 to the first received byte (EEPROM address 0) contains the tint of source 2.

READ_VERSION 4CH

Reads the software version of the EEPROM of the RCVDS05.

PC to RCVDS : STX OFFS ADR 4CH 0 0 0 0 CHKS
+OFFS

DAT1	0
DAT2	0
DAT3	0
DAT4	0

RCVDS to PC : ACK
ADR 4CH 20H DAT2 DAT3 0CH CHKS

DAT1	20H
DAT2	version number before decimal point
DAT3	version number after decimal point
DAT4	0CH

Example software version 1.3

RCVDS to PC : ADR 4CH 20H 01 30H 0CH CHKS

BLOCK TRANSFER PC to EEPROM 71H

PC to RCVDS : STX OFFS ADR 71H FFH FFH FFH FFH CHKS
+OFFS

RCVDS to PC	ACK
PC to RCVDS	(168 data bytes + OFFS) + CHKS (169 bytes total)
RCVDS to PC	ACK

Meaning of the bytes : see command Block Transfer EEPROM to PC.
Insure that bytes 0 .. 7 will not be changed (therefore, execute first a block transfer from EEPROM to PC to know the values of byte 0 to 7)

The 168 data bytes represent the 168 bytes in EEPROM (start address 0).

CONTROL RCVDS 62H

Control functions of the RCVDS

Computer to RCVDS STX OFFS ADR 62H 01 DAT2 0 0 CHKS
+OFFS

RCVDS05 only answers ACK or NACK

DAT1	1	programming the output module
DAT2	1	programming for Video
	2	programming for S-Video
DAT3	0	
DAT4	0	

Example : 3 RCVDS05's linked and connected to one display, no decoder installed. The mode switches are set in the RS232 mode.
The output module of the first RCVDS05 has to be programmed when a Video or S-Video source is selected and no decoder is installed in the selected RCVDS. If a decoder is installed in the selected RCVDS, the output module of the first RCVDS has not to be programmed.
If a component video or RGB analog source is selected, these signals are available on the output module of the first RCVDS05 on the R, G, B BNC's.

Actions to be taken by the computer :
- select the expansion module in the first RCVDS and in the second RCVDS (with the cat. I commands).
- select an input module in e.g. the third RCVDS05 (also cat. I commands).
- Read with the command Read_Source (4AH) the source type in the 3th RCVDS. The returned bytes DAT1 and DAT3 give information about the source type and the decoder availability.

If a Video or S-Video source is detected, the output module of the first RCVDS05 has to be programmed for Video or S-Video.
With the information from READ_SOUCE, the output module of the first RCVDS05 can be programmed with the CONTROL RCVDS function (62H) as described above.

READ STATUS 4BH

Read status of the RCVDS (standby or playing)

Computer to RCVDS STX OFFS ADR 4BH 0 0 0 0 CHKS
+ OFFS

RCVDS to computer ACK
ADR 4BH 0 0 DAT3 0 CHKS

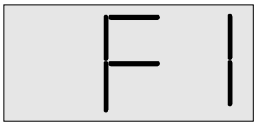
DAT3	80H	if RCVDS is operational
	81H	if RCVDS is in standby (no slot selected)

VII. ERROR CODES

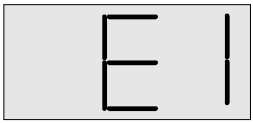
During operation, the RCVDS05 can display several error codes on its seven segment display.

The F error codes ask for an intervention by the operator himself.

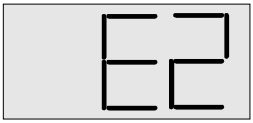
The E error codes ask for a service intervention by your dealer. Call your BARCO dealer for technical assistance.



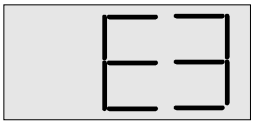
Error F1 : expansion module is not in correct slot. Power down the RCVDS05 and remove the expansion module. Re-insert the expansion module in the last free slot of the RCVDS05 so that all input modules are located to the left of the expansion module.



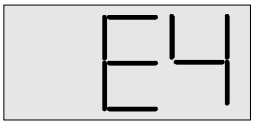
Error E1 : I²C error, call for technical assistance.



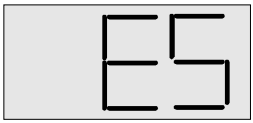
Error E2 : I²C error, PCF8574 fails on communication module, call for technical assistance.



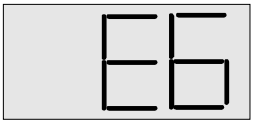
Error E3 : I²C error, Controller eeprom (24C16), call for technical assistance.



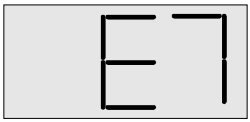
Error E4 : I²C error audioprocessor, call for technical assistance (TDA8425).



Error E5 : I²C error, PCF8574 fails on the audiomodule, call for technical assistance.



Error E6 : I²C error, TDA4670, call for technical assistance (decoder module).



Error E7 : I²C error on decoder interface.

VIII. OPTIONAL DECODER.

Order number : 98 28030

A decoder can be installed for Video, S-Video or Component Video decoding. All signals are converted into RGB. The decoder must always be installed in the master RCVDS05. So, in a multiple RCVDS05 installation, only one decoder has to be installed.

Attention : When multiple RCVDS05's are used in the RS232 mode, every RCVDS where decoder operations have to be done, must be equipped with such a decoder.

S-Video, Composite Video and Component Video with separate sync are converted into *RGBS* analog.
Component video, with sync on Y is converted into *RGsB*.

Example : Two RCVDS05's linked in BARCO mode. Video source connected to the second RCVDS05.
The video signals will be transported from the second RCVDS05 to the first RCVDS05.
The first RCVDS05 will decode and convert the Video signals into RGBS. These RGBS signals will be available on the output module of the first RCVDS05.

A. RCVDS05 with decoder, connected to a projector.

If the projector software is adapted to receive converted signals from a RCVDS05, the decoder inside the RCVDS05 will always be used even when the projector itself is equipped with a decoder.

B. RCVDS05 with decoder, used as stand alone switcher.

The decoder settings will be 'memorized' per input source in the master RCVDS05. During an adjustment, the RCVDS05 will display a number between 0 and 99 for saturation and hue (tint) and -3, 0, 3 or 6 for sharpness.