

Serial Protocol License MVS-FCOM-PRCL

APPLICABLE PRODUCTS/FW VERSION/PROTOCOLS/LICENSE REQUIRED

AUTODOME 4000i, AUTODOME 5000i, VG5-7000, MIC 7000, MIC 7000i, and MIC 9000i Series.

Minimum FW version is 6.43.0027.

The supported protocols are Bosch OSRD, Pelco P/D, Forward Vision, and Cohu.

Serial Protocol license MVS-FCOM-PRCL.

OVERVIEW

After the Serial Protocol License is installed, two application types are supported.

OPTION 1: ANALOG CONTROL SYSTEM CONNECTED WITH THE VJD-3000 TO THE IP CAMERA

The first is the use of a VJD-3000 decoder which will connect to the traditional analog serial port and it will forward the PTZ commands over IP. This connection type is for use with all of the models listed above.

OPTION 2: ANALOG CONTROL SYSTEM CONNECTED DIRECTLY TO THE MIC IP SERIAL PORT

The second application is a hybrid control capability that is only available for the MIC 7000 and 7000i. The serial com ports of traditional analog systems head end control systems connect directly to the RS485 input of the MIC IP models listed above.

NOTES:

1. This method cannot be used with the AUTODOMES.
2. The RS485 wires that normally connect to the Alarm I/O box are used for this connection, so it isn't possible to have alarm outputs with this configuration.
3. This is considered a hybrid operation, since the cameras can still be controlled over IP.
4. The first three steps are the requirements for both Options

STEP 1: PROTOCOL TYPE SELECTION (APPLICABLE TO BOTH OPTIONS)

The first command is a bicom command to select the protocol type being used. These are typically sent as CGI via a Web Browser. The commands only need to be sent one time. The protocol selection is saved so that a power interruption will not cause a loss in communications.

- The default protocol is Pelco D, so if this is the protocol in use, then this command isn't required.
- This command is the example to set the protocol mode to Pelco D, since this is the most common protocol used.

http://<IPAddress>/rcp.xml?command=0x09a5&type=P_OCTET&direction=WRITE&num=1&payload=0x80000201D5020003

- Replace <IPAddress> with the IP address of the camera. The last value in RED in the command sets protocol type. Here are options:

1	Bosch OSRD
2	Pelco P
3	Pelco D
4	Reserved
5	Bosch Bicom
6	Reserved
7	FV
8	Cohu

STEP 2: SERVICE PASSWORD UNLOCK (APPLICABLE TO BOTH OPTIONS)

Improved security features in 6.4x and higher require an RCP command to unlock the service password. Here is the command to use.

http://<ipaddress>/rcp.xml?command=0x0b1a&type=T_OCTET&direction=WRITE&num=0&payload=1

STEP 3: CAMERA CONFIGURATION (APPLICABLE TO BOTH OPTIONS)

License

Ensure that the 3rd party serial protocol MVS-FCOM-PRCL license is activated on the camera.

Configure the fast address

- A FastAddress (analog device ID) is required for the analog system to control the camera. This address is set match the camera number that is used on the Keyboard or the analog control software. The range is from 1 to 9999.
- In the Web GUI, browse to **CONFIGURATION\CAMERA\MISC** and enter the FastAddress of the camera’s analog device ID.
- For example, Camera 10 on an Allegiant Matrix Switcher keyboard would be equal to 10 in the GUI.

IMPORTANT: Whenever you change the FastAddress you have to reboot the camera to activate the new FastAddress setting! Either power camera off/on, or use Reboot button in Installer Menu of web browser.

STEP 4: DEFINE THE USER PASSWORD IN THE CAMERA (OPTION 1 ONLY!)

The USER password must be defined. This is required for security purposes and to allow the decoder to Auto-connect to the camera after a power cycle. This password will then be saved in the VJD 3000 configuration in STEP 5.

STEP 5: VJD-3000 CONFIGURATION (OPTION 1 ONLY!)

Wiring Connections

Connect the RS422 connections between the devices per the table below.

Head End Control/Function	VJD-3000 Connection/Function
Data (+)/ Transmit Data	RxD/ Receive Data (+) in RS-422 mode
Data (-)/ Transmit Data	CTS/ Receive Data (-) in RS-422 mode

Configure the Interface -> COM1 settings:

Serial port function: Transparent
 Baud rate: 2400 (Default for Pelco D)
 Data bits: 8
 Stop bits: 1
 Parity: None (odd for FV protocol)
 Interface mode: RS-422

NOTE: The baud rate must be set to match the head end control system. Bosch recommends 9600 baud for a good response time and reliable control.

Configure the Auto Connect

This will force the decoder to reconnect to the camera every time that it is power cycled.

Destination IP address: IP of the camera.
 Destination password: **USER** level password of the camera.
 Auto-connect: On

OPTION 2: MIC 7000 RS485 2-WIRE SERIAL PORT SETUP INSTRUCTIONS (CPP4)

Wiring Connections

Connect the serial connections of the head end to the Alarm I/O box RS485 connections as in the following table.

Head End Control/Function	MIC IP Alarm I/O Connection/Function	MIC Cable Color
Data (+)/ Transmit Data	RS485 (+)/ Receive Data (+)	Purple
Data (-)/ Transmit Data	RS485 (-)/ Receive Data (-)	Yellow

Selecting RS485 Port Parameters

Use each of commands shown below in a web browser. Send these commands one at a time.

This example command sets the baud rate to 2400:

```
http://<IP.Address>/rcp.xml?command=0x09a5&type=P_OCTET&direction=WRITE&num=1&payload=0x80000201D102004
```

The last digit in above command changes the baud rate. Here are the available options:

- 0 = 9600
- 1 = 19200
- 2 = 38400
- 3 = 57600
- 4 = 2400
- 5 = 4800

NOTE: The camera must be rebooted after any baud rate change!

MIC 7000I RS485 2-WIRE SERIAL PORT SETUP INSTRUCTIONS (CPP7.3)

Selecting RS485 Port Parameters

The CPP7.3 uses different commands to configure the serial port. Use each of commands shown below in a web browser. Send these commands one at a time.

Baud rate:

Set baud rate to 9600 (Hex 0x2580)

```
http://ipaddress/rcp.xml?command=0x027e&type=T_DWORD&payload=0x2580&direction=WRITE&protocol=TCP&num=2
```

Serial port mode:

Set this mode to RS-485 (hex 0x02)

```
http://ipaddress/rcp.xml?command=0x0208&type=T_OCTET&payload=0x02&direction=WRITE&protocol=TCP&num=2
```

Serial port half duplex mode (only required for bi-directional commands):

Set this value to 0x02, by default it is 0

```
http://ipaddress/rcp.xml?command=0x020b&type=T_OCTET&payload=0x02&direction=WRITE&protocol=TCP&num=2
```

ADDITIONAL INFORMATION

A more detailed description of the IP integration details are described in an Application Note that is available for download from the on-line Product Pages. The Document Name is: MIC_IP_7000_HD_analo_Application_note_enUS_20462518667.

CONFIRMING THAT THERE WEREN'T ANY CGI ERRORS

Each of the above commands can be confirmed as being accepted by the camera by comparing the result of the reply. Example reply below:

If the command was accepted, the text between `<str>????</str>` will contain the first portion of the payload that was sent

```
<?xml version="1.0"?>
- <rcp>
  - <command>
    <hex>0x09a5</hex>
    <dec> 2469</dec>
  </command>
  <type>P_OCTET</type>
  <direction>WRITE</direction>
  <num>1</num>
  <idstring/>
  <payload/>
  <cltid>0x0121</cltid>
  <sessionid>0x00000000</sessionid>
  <auth>2</auth>
  <protocol>TCP</protocol>
  - <result>
    <len>6</len>
    <str>80 00 02 01 d5 02 </str>
  </result>
</rcp>
```

TROUBLESHOOT

Check the camera to confirm if the data is being received correctly. This example is for Pelco D.

Camera Troubleshooting

In the web GUI of the camera, browse to **CONFIGURATION/SERVICE/LOGGING/DEBUG LOGGING**. In the **ACTIVE LOGS** box, type "**syslog_dbg transparent_data**", and then click **SET**.

1. Send any brief PTZ command to the camera, then click **RELOAD** at the bottom of the debug page.
2. The correct Pelco D PTZ commands should be similar to this:

```
DEBUG 2019-09-27T20:33:33.592-05:00 rcp system@rcp 0x00000000: FF 01 00 00 00 00 01 .....  
DEBUG 2019-09-27T20:33:33.592-05:00 rcp system@rcp NtoC1 7 bytes:
```

- a. The portion highlighted in RED is a Pelco D command. Pelco D will always start with FF and the next two numbers will be the HEX value of the camera ID. The at the end will sometimes contain letters or symbols. These are ASCII characters that can be ignored.

Command Syntax

3. If some commands are received, but start with **00 7F**, then the polarity of the wiring on the RS422 decoder input are reversed. Correct the polarity and reboot the camera. The reboot is required to reset the serial buffer of the camera.
4. If some commands are received, but don't match either of the above, then follow the Decoder troubleshooting below.

Commands Present – Bytes lost

1. If the commands are present and the syntax is correct, then look for a message "Bytes Lost" as pasted here.
DEBUG 2019-09-30T14:54:50.420-05:00 virt-com-transp system@virt-com-transp Virt-Com-Transp: **lost 7 bytes!**
2. If this occurs, then the incorrect Protocol type has been set. Ensure that the correct protocol has been selected in Step 1 and the command succeeded.

Commands Missing – Authentication Error

3. If no data is received and the messages below are displayed instead, then the SERVICE PASSWORD UNLOCK command was missed or the CGI command failed.
DEBUG 2019-09-30T14:44:22.570-05:00 virt-com-transp system@virt-com-transp **Virt-Com-Transp: lost 7 bytes!**
DEBUG 2019-09-30T14:44:22.568-05:00 Config service@virt-com-transp **authentication level too low (myauth: 2, needed: 3)**
4. Repeat STEP 2 on the first page.

Commands Missing

5. None of the above commands appear when the debug page is reloaded.
 - a. This means that the commands are not being received from the decoder, so a connection error exists between the camera and the decoder.
 - b. It is important to note that the decoder can connect to the camera and display video, but something else is blocking the PTZ commands to be transmitted via RCP to the camera.

Decoder/Network Troubleshooting

Telnet is required to easily troubleshoot connectivity to the camera. This requires a FW version lower than 5.97.0005. Telnet access was removed in this version and higher for security reasons.

IMPORTANT: If the FW is downgraded to a lower version for troubleshooting purposes, it must be upgraded after the PTZ control issue is corrected.

1. In the Telnet session, issue the #print transparent_data command.
2. Issue any brief PTZ command to the decoder and observe the results. The correct Pelco D PTZ commands should be similar to this:

C2N:

0x00000000: **FF 01 00 02 3F 00 42** ..?.B

- a. The portion highlighted in RED is a Pelco D command. Pelco D will always start with FF and the next two numbers will be the HEX value of the camera ID. The at the end will sometimes contain letters or symbols. These are ASCII characters that can be ignored.

Command Syntax

3. If some commands are displayed, but start with 00 7F, then the polarity of the RS422 input to the encoder are reversed. Correct the polarity and reboot the camera. The reboot is required to reset the serial buffer of the camera.
4. If some commands are received, but don't match either of the above, then check for the correct Baud Rate, Data Bits, and Parity bit.
5. If the commands still aren't correct, then send some PTZ commands to the camera, download the MAINTENANCE LOG and provide this to Technical Support.

Commands Missing

6. If no commands are displayed, ensure that the #print transparent_data activated correctly, ensure that the decoder is set to TRANSPARENT mode, and check all of the wiring between the controller and the decoder input.
7. If the commands are still missing after all of the above, download the MAINTENANCE LOG and provide this to Technical Support.

Commands Correct – But LOGIN FAILED

If the commands are correct but still aren't getting transmitted to the camera, then look watch for the following messages in the Telnet session.

Remote login failed

Close connection from 10.226.139.24 cause: No response from remote

The PTZ commands will not be transmitted to the camera if the *Remote Login* fails. Here are some possible causes.

USER password mismatch

1. Enter the USER password in the camera again, and then enter the same USER password in the ALARM connection page of the Decoder.

Network Settings

2. If the devices are on different subnets and there isn't a router or some other default gateway present, then Config Manager will connect, the camera's video will connect in the VJD 3000 CONNECTION page, but the Remote Login can still fail. Check all network settings.
3. Test the camera, decoder, and a Workstation on a small network switch with the same subnet for all of the devices. Check the control and telnet session. If control works and the Remote Login no longer fails, then something in the network is blocking the PTZ commands.

SUPPORTED COMMANDS

OPTION 1: BOSCH OSRD

The Operation Manual for each IP camera lists the applicable commands that are supported.

OPTIONS 2 & 3 PELCO

Pelco Keyboard Command	User Action	Description
33 – Preset	Press	Pans the Camera 180°
34 – Preset	Press	Moves to the Factory Home position
81 – Preset	Press	Initiates the Camera’s standard Preposition tour (Tour 1)
82 – Preset	Press	Initiates the Camera’s custom Preposition tour (Tour 2)
96 – Preset	Press	Stops AutoPan
99 – Preset	Press	Initiates an AutoPan
1 – Pattern	Press and hold (2 secs.) Press	Start Recording Tour A. Press ACK to end recording. Activate continuous playback of Tour A
2 – Pattern	Press and hold (2 secs.) Press	Start Recording Tour B. Press ACK to end recording. Activate continuous playback of Tour B
3 – Pattern	Press	Initiate the Camera’s standard Preposition tour (Tour 1)
4 – Pattern	Press	Initiate the Camera’s custom Preposition tour (Tour 2)
1 – Aux On / Aux Off	Press	Activates Wash/Wipe for MIC 7000 (Preposition 62 must be saved first as the Wash Position)
2 – Aux On / Aux Off	Press	Activates/Deactivates One Shot Wiper for MIC 7000
3 – Aux On / Aux Off	Press	Activates/Deactivates Continuous Wiper for MIC 7000
4 – Aux On / Aux Off	Press	Activates/Deactivates BLC
5 – Aux On / Aux Off	Press	Not Configured; possible selections are listed as Note 1
6 – Aux On / Aux Off	Press	Not Configured; possible selections are listed as Note 1
7 – Aux On / Aux Off	Press	Not Configured; possible selections are listed as Note 1
8 – Aux On / Aux Off	Press	Not Configured; possible selections are listed as Note 1

► **NOTE 1:** Users can remap the 8 AUX commands to some common control commands in the Web GUI. These commands are:

- Wash/wipe
- Wiper one shot
- Wiper continuous
- Wiper intermittent
- IR mode
- BLC
- AGC
- Night mode
- Night mode auto
- Alarm output 1
- Alarm output 2
- Alarm output 3
- Alarm output 4
- White light
- Intelligent defog
- Intelligent tracking

OPTION 5: BOSCH BICOM

This is the default protocol. Many commands do exist, but these are listed in separate documentation. Please refer anyone using the default Bicom protocol to the IPP team.

OPTION 7: FV

FV Keyboard Command	User Action	Description
87 – Preset	Press	Activate continuous playback of Tour A
88 – Preset	Press	Stop Recording Tour A or Playback of Tour A
89 – Preset	Press	Start Recording Tour A
90 – Preset	Press	Activate continuous playback of Tour B
91 – Preset	Press	Stop Recording Tour B or Playback of Tour B
92 – Preset	Press	Start Recording Tour B
10 – Program	Press	Toggle OSD On/Off
17 – Program	Press	Slow Sequence Set (60 seconds)
18 – Program	Press	Fast Sequence Set (10 seconds)
19 – Pattern	Press	Start custom tour
Wipe On / Off	Press	Activates/Deactivates Continuous Wiper for MIC 7000
Wash On / Off	Press	Activates Wash/Wipe for MIC 7000 (Preposition 62 must be saved first as the Wash Position)
Lamp On / Off	Press	Activates/Deactivates IR lamps for MIC 7000 and Night Mode On/Off at the same time
Aux On	Press	Enables Digital Zoom

OPTION 8: COHU

Only the basic PTZ, Focus, and Iris commands are supported.