

MODEL QSZ515D



Outdoor Intelligent Pan-Tilt-Zoom Dome Camera with 3x Optical Zoom

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All of our products are backed by a conditional service warranty covering all hardware for 12 months from the date of purchase. Additionally, our products also come with a free exchange policy that covers all manufacturing defects for one month from the date of purchase. Permanent upgrading service is provided for the software and is available at www.Q-See.com.

Be certain to make the most of your warranty by completing the registration form online. In addition to warranty and technical support benefits, you'll receive notifications of product updates along with free downloadable firmware updates for your DVR. Register today at www.Q-See.com!

Please see the back of this manual for exclusions.



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Introduction

This manual is written for the QSZ515D high-speed PTZ camera and was accurate at the time it was completed. However, because of our ongoing effort to constantly improve our products, additional features and functions may have been added since that time and on-screen displays may change. We encourage you to visit our website at www.Q-See.com to check for the latest product announcements. You can also find technical details and an electronic version of this manual the QSZ515D's product page at our site.

Throughout the manual we have highlighted warnings and other important information that will assist you in operating your new system in a safe and trouble-free manner. Please take the time to read and follow all instructions and pay attention to alerts as shown below:



IMPORTANT! Red boxes with this icon indicate warnings. To prevent possible injury or damage to the product, read all warnings before use.



NOTE! Text in blue boxes with the Information icon offer additional guidance and explanations about how to make the most out of your system.

For your safety and to protect your camera

To prevent damage to your Q-See product or injury to yourself or to others, read and understand the following safety precautions in their entirety before installing or using this equipment.



WARNING! ELECTRIC SHOCK RISK!



- Care should be taken during transportation, storage and installation of this camera to avoid rough handling, dropping, or other abuse in order to prevent damage to the optics or components inside the camera.
- Camera should be installed in accordance with electrical standards including keeping the camera and cable away from high voltage, using a surge protector and using only the rated power supply.
- Do not use strong or abrasive cleaners on camera body or lens. Use a damp cloth for cleaning the housing and a lens cloth for the optics.
- Do not attempt to disassemble the camera. Only authorized, trained technicians should service this camera.
- The camera should not be immersed in water and should be mounted in a sheltered location. Do not point camera directly at the sun or other strong light source.

FEATURES & SPECIFICATIONS

Product Features

Your camera offers the following features:

- High definition video using 1/3" Sony CCD coupled with Sony digital signal processors to produce 540 TV lines of resolution.
- Variable voltage board allowing operation between 8 and 18 volts
- Weatherproof
- 0.01 Lux low light operation.
- Vandal-proof design.
- Optical-quality transparent dome.
- RS485 control.
- 128 preset points.
- 5-15mm zoom lens with F2.2 2.0MP auto focus.
- 360° continuous horizontal rotation with 90° vertical movement.
- Low-noise camera rotation motor.
- Memory function retains settings in case of power loss.

PTZ Module Features

- Horizontal scanning: 360° rotation
- Horizontal rotation speed: 0.5°-50°/second
- No vibrating images at lowest speed (0.5°/second)
- Vertical scanning: >90°
- Vertical scanning speed: 0.5°-30°/second
- 128 preset positions - 80 preset positions support auto-cruise function.
- Cruise route can save eight preset positions with each position pausing for six seconds.
- Preset positions speed: 50°/second
- PTZ scanning precision $\pm 0.5^\circ$
- 3x optical zoom
- Fully-functional built-in decoder - all data is saved inside of the module to retain settings in case of power loss.
- Decoder's all-in-one integrated design ensures high reliability.
- Camera can be controlled with an optional keyboard

QSZ515D 4.2" Vandalproof PTZ Dome Camera Specifications

Image Sensor	1/3" Sony CCD
Digital Signal Processor	Sony
Signal System	NTSC or PAL
Lens	1.3 Megapixel 5-15mm F2.2 2.0MP auto focus lens
Scanning	2:1 Interlace
Frequency(H)	NTSC:15.734KHZ PAL:15.625KHZ
Sync. System	Internal
Horizontal System	540TVL
Effective Pixels (HxV)	NTSC:811×508 PAL:795×596
Shutter Speed	NTSC=1/60 ~1/100,000 sec PAL=1/50 ~1/100,000 sec.
Minimum Illumination	0.01 Lux
S/N Ratio	> 48dB (Auto Gain Off)
Gamma	0.45

White Balance	Auto
BLC	Open
Video Output	1.0V P-P,75Ω BNC
AGC	Auto
Power Voltage	Super Wide Voltage (8V~18V)
Input Current	12V 800mA
Operating Temp	14°F to 122°F (-10°C to 50°) (relative humidity: up to 95%)
Storage Temp	-22°F to 158°F (-30°C to 70°C)
Color	White
Dimensions(LxD)	5x5 in (125x125mm)
Weight	2.2 lbs. /kg (without bracket and adapter)
Address Range	1-256
Control Protocol	Pelco-D
Baud Rate	1200b/2400b/4800b/9600b

SETTING BAUD RATE AND ADDRESS

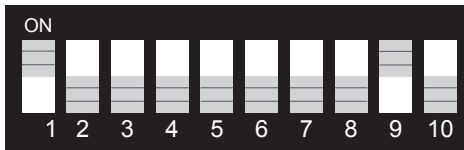
Unlike conventional security cameras, PTZ cameras require an address and a connection speed to be set in order for them to properly operate. **The default settings for this camera are an address of "1" and a baud rate of 2400.** If you are only using a single PTZ camera you generally do not have to make any changes and you may proceed to the next section. Please consult your DVR's manual for required settings.

If you need to change your camera's settings, both of are made using a DIP (dual in-line package) switch panel located within the camera itself. In general, it is easier to do this before connecting the camera, but in some cases, you may need to change settings while the camera is connected to the DVR. In this case, please make a temporary connection by following the procedures laid out in the next section, **Connecting the Camera.** Please be advised that adjusting these settings after the camera is mounted can be difficult due to the panel potentially being inaccessible because of location, position, etc.

To access the panel, one must unscrew the upper housing from the base. The circuit board on which the DIP switches are mounted is visible below the camera in the picture above, right and a close up of the circuit board showing the DIP switch panel in the photo on the center right.

DIP switches are binary - meaning that they are either On ("1") or Off ("0"). Different combinations of ones and zeroes on the board produce different settings. On the QSZ515D, there are a total of 10 DIP switches. The first eight are for setting the address of the camera while positions 9 and 10 control the baud rate - which is the speed in bits per second at which the DVR communicates with the camera for control.

The illustration at the lower right shows the default settings for your camera which are an address of "1" and a baud rate of 2400bps. This baud rate will allow you to effectively control the camera up to 3,000 feet away. Areas with electronic interference may require heavier or shielded cabling. The higher the setting (may be required by some DVRs), the shorter the control distance. The chart on the next page shows the switch positions needed to set the camera's address and baud rate.



SETTING BAUD RATE

Baud Rate	Switch Number (BIT)	
	9	10
1200bps	1	1
2400bps	1	0
4800bps	0	1
9600bps	0	0

NOTE! Some DVRs may require specific connection speeds. Check your system's manual for the proper settings.

SETTING CAMERA ADDRESS

Address	Address Switch (8 digits)
Code	1 2 3 4 5 6 7 8
1	1 0 0 0 0 0 0 0
2	0 1 0 0 0 0 0 0
3	1 1 0 0 0 0 0 0
4	0 0 1 0 0 0 0 0
5	1 0 1 0 0 0 0 0
6	0 1 1 0 0 0 0 0
7	1 1 1 0 0 0 0 0
8	0 0 0 1 0 0 0 0
9	1 0 0 1 0 0 0 0
10	0 1 0 1 0 0 0 0
11	1 1 0 1 0 0 0 0
12	0 0 1 1 0 0 0 0
13	1 0 1 1 0 0 0 0
14	0 1 1 1 0 0 0 0
15	1 1 1 1 0 0 0 0
16	0 0 0 0 1 0 0 0

Address	Address Switch (8 digits)
Code	1 2 3 4 5 6 7 8
17	1 0 0 0 1 0 0 0
18	0 1 0 0 1 0 0 0
19	1 1 0 0 1 0 0 0
20	0 0 1 0 1 0 0 0
21	1 0 1 0 1 0 0 0
22	0 1 1 0 1 0 0 0
23	1 1 1 0 1 0 0 0
24	0 0 0 1 1 0 0 0
25	1 0 0 1 1 0 0 0
26	0 1 0 1 1 0 0 0
27	1 1 0 1 1 0 0 0
28	0 0 1 1 1 0 0 0
29	1 0 1 1 1 0 0 0
30	0 1 1 1 1 0 0 0
31	1 1 1 1 1 0 0 0
32	0 0 0 0 0 1 0 0

Address	Address Switch (8 digits)
Code	1 2 3 4 5 6 7 8
33	1 0 0 0 0 1 0 0
34	0 1 0 0 0 1 0 0
35	1 1 0 0 0 1 0 0
36	0 0 1 0 0 1 0 0
37	1 0 1 0 0 1 0 0
38	0 1 1 0 0 1 0 0
39	1 1 1 0 0 1 0 0
40	0 0 0 1 0 1 0 0
41	1 0 0 1 0 1 0 0
42	0 1 0 1 0 1 0 0
43	1 1 0 1 0 1 0 0
44	0 0 1 1 0 1 0 0
45	1 0 1 1 0 1 0 0
46	0 1 1 1 0 1 0 0
47	1 1 1 1 0 1 0 0
48	0 0 0 0 0 1 0 0

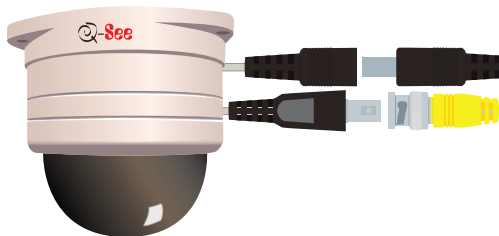
Address	Address Switch (8 digits)
Code	1 2 3 4 5 6 7 8
49	1 0 0 0 1 1 0 0
50	0 1 0 0 1 1 0 0
51	1 1 0 0 1 1 0 0
52	0 0 1 0 1 1 0 0
53	1 0 1 0 1 1 0 0
54	0 1 1 0 1 1 0 0
55	1 1 1 0 1 1 0 0
56	0 0 0 1 1 1 0 0
57	1 0 0 1 1 1 0 0
58	0 1 0 1 1 1 0 0
59	1 1 0 1 1 1 0 0
60	0 0 1 1 1 1 0 0
61	1 0 1 1 1 1 0 0
62	0 1 1 1 1 1 0 0
••	••••••••
255	1 1 1 1 1 1 1 1

CONNECTING THE CAMERA

Before you can operate the camera, you must connect it to a system which can support PTZ operations. There are three sets of connectors - power, video and the bare control wires. This latter connection is covered on the next page. We recommend connecting the camera (at least temporarily) to the DVR to test your settings and connections before mounting it in its final location.

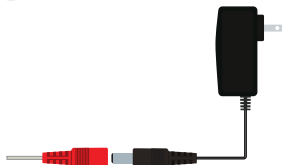
POWER AND VIDEO CONNECTION

STEP 1. Connect the BNC and power leads from the camera to the matching connectors on a video/power siamese cable (not included).

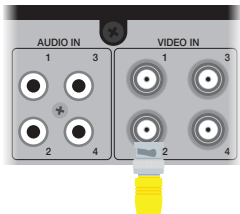


IMPORTANT! When connecting the power and video cable between the camera and the DVR, the "male" power end (red plug) connects to the matching power lead on the camera.

STEP 2. Connect the power lead on the other end of the video/power cable to a power adapter or power distribution panel. **Make certain that the power supply is rated for 12 volts and 800mA.**



STEP 3. Connect the BNC connector on that same end of the cable to a Video In port on the back of the DVR.



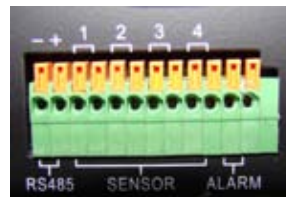
You can now plug the camera's power adapter into a surge protector and turn it on. To protect your investment, we **STRONGLY** recommend using a surge protector that is UL-1449 rated, for a clamping voltage of 330 or lower, a Joule rating of at least 400 and a response time of 10 nanoseconds or less.

PTZ CONTROL CONNECTION

In addition to connecting the power and video leads to the camera, you must also connect the two bare wire leads to the RS485 ports in the alarm block on the back of the DVR. These blocks can vary in layout as shown below, but the ports used by your camera are generally labelled "RS485", "RS422", "PTZ" or "P/Z".

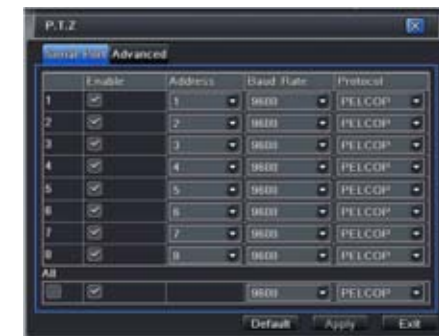
As seen in the picture on the right, the bare wire leads are two different colors and are labelled. In the case of the RS485 ports being marked as positive (+) and negative (-), the wire designated RS485A is the positive lead while the wire marked RS485B is to go into the negative port. Most blocks require a lock above the port to be depressed with an object like a small screw driver in order to fully insert the wire. When the lock is released, an internal clamp will keep the wire firmly secured in the port. If the wire can easily be removed from the port, then it isn't secure and you can experience control difficulties until it is properly attached. You may need to strip more insulation from the wire before reattaching.

Multiple PTZ cameras may be connected to the same ports. They will each require a different address which is set up using the DIP switches as covered in the previous section.



To connect your camera to the DVR over a distance, you will need to use both a video/power cable and a pair of 24-gauge wires to connect to the alarm block. Alternatively, with the proper RS485 to Ethernet converter you can use a standard CAT-5 cable for your control feed.

Once you have made your connections, you will need set the DVR in order to control it. You will need to consult your DVR's manual for this procedure, but a sample screen (from a Q-See QT-series DVR) is shown on the right.



INSTALLING THE CAMERA

When installing your camera, it is important to select a proper site not only for field of view, but for other considerations as well:

Distance from viewing/recording device. The further the camera is from the DVR or monitor, the higher the chances of signal degradation. Typical 75Ω Video Cable provides acceptable signal at distances up to 200' (30m). At greater distances, UL-Listed shielded RG59 should be used. The camera's power supply should be located as near to the camera as possible when the distance exceeds 200' as the power level will drop over extended distances resulting in a decrease in video quality.

Do not place near high voltage wires or other sources of electrical interference. Electrical interference will degrade the quality of the signal.

Place camera out of reach to avoid damage.

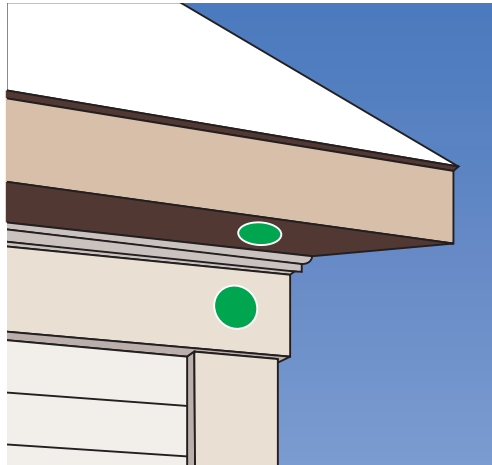
Avoid direct exposure to weather. Do not place the camera where rain or snow will hit the lens directly nor should the camera be placed so that the sun or bright light shines directly into the lens. Your camera is weatherproof, but it will not work when submerged. Ensure that all power and video connections are not directly exposed to water and are protected from the elements.

Do not place camera behind a window. If there is a light source behind the camera, it can cause a reflection in the window that will obscure events on the other side of the glass.

Light levels should be approximately the same between camera and target area. A camera in a brightly-lit area looking into a shaded area, or vice versa, will produce inadequate results.

The above are guidelines and the optimal location for your camera will depend on your unique circumstances. As a general rule, the locations highlighted in green in the picture to the right indicate the best locations to mount your camera. Both locations are sheltered from rain or snow and offer good sight lines to allow your camera to monitor a wide area. Because your camera is weatherproof, it requires less protection than weather-resistant cameras and it can be placed in more exposed locations if needed. Keep in mind that this camera is designed to operate between 14°F to 122°F (-10°C to 50°) with a relative humidity of up to 95% and consider wind chill and other environmental factors when selecting your location.

Your camera comes with an optional wall mount. You can choose to mount your camera to a horizontal surface using the three mounting holes built into the case. Or, you can use the wall mount and secure the camera case to the mount using those same three mounting holes.



WHICH CABLE TO USE?

Your cabling needs will depend on the distance between your camera and your DVR. Q-See offers several cables to fit specific needs. These may be purchased from the same location as where you bought your camera, or on our website: www.q-seestore.com

Q-See Model Number	QS50B (50') QS100B (100')	QSVRG60 (60') QSVRG100 (100') QSVRG200 (200')	QS59500 (500') QS591000 (1000')
Maximum Run Length	180'	800'	800'
Quality Output	Standard	High	High
Type	75Ω Video Cable	RG-59	RG-59
Shielded	No	Yes - UL Rated	Yes - UL Rated
Plenum Rated	No	No	No
Pre-Attached Connector	Video	BNC	BNC
	Audio	N/A	N/A
	Power	2.1mm	2.1mm
Usage	Indoor/Outdoor · Do not run inside walls or underground	Indoor/Outdoor · In-wall or along wall	

To maintain video quality:

- Video quality is always enhanced by using shielded cables.
- Always check state and local laws before installing cameras. (2011 NEC 820.44)
- To prevent video signal loss, run one continuous cable between the camera and DVR for best results. If more length is required, use the minimum number of inter-connection points possible.

Other notes:

- If a cable run exceeds 800ft, we recommend using RG-6 coaxial cable which is available at most retail building supply companies.
- If your home or business is pre-wired with CAT-5 cable, then you can run up to 1000ft. A powered video balun is required for easy installation.

OPERATION

The QSZ515D can be controlled manually through a PTZ keyboard, or by using the PTZ controls on the DVR to which it is connected. Depending on the software used, it is also possible to control the PTZ camera remotely when you are logged into the DVR via the Internet, a remote monitoring program or a smartphone app.

You can also program a cruise - also called “scan” or “tour” on some systems - so that the camera will perform a set search pattern of the surrounding area. Up to 128 preset points can be stored on the camera. As mentioned in the section on **Connecting the Camera**, you will need to consult your DVR’s manual for specifics on how to enable your system to control your camera. That manual should also contain instructions on how to program points and cruises for the camera to use.

GENERAL CRUISE SETUP PROCEDURE

While each DVR system is different in the specifics of how to set up a scan, there are general similarities. Most involve the process of pivoting the camera to the desired starting point and saving that point. Then, by selecting one or more points for the camera to move to in sequence, a scan path is built which is then saved. Often, multiple paths can be saved within the DVR, which can be selected for later use.

These points can be set using a special PTZ keyboard, or by using the PTZ controls on the DVR itself. Two such on-screen interfaces are shown at right; the QT-series (top) and QC-series (bottom). In both examples, directional control is achieved by using the DVR’s mouse to click on one of the directional arrows. As long as the arrow is held, the camera will move in that direction. There are no horizontal stops and the camera can rotate continuously if desired. The camera’s elevation is limited to just over 90°.

On both control panels there are controls for zoom, focus and iris (light level). The QSZ515D has a 3x optical zoom lens which will adjust between 5 and 15mm. The camera has an auto-focus feature and is not user adjustable. Objects closer than 20” (50cm) will be blurry due to the limits of the automatic focus. Likewise, the camera automatically adjusts the iris internally and that setting is not manually changeable by the user.



Of the 128 presets available on the camera, presets 1-80 may be used for defining camera positions. The remaining 48 are commands for the camera and of those, four can be utilized during operations and are shown in the table to the right.

Preset **99** will erase previously configured presets. Numbers **101** and **102** are used to begin the camera’s cruise following your preset locations while preset **125** will cause the camera to rotate in a full circle at a pre-configured speed.

On Q-See’s QT-series DVRs, the use of preset **101** or **102** replaces the use of the DVR’s **Cruise** command.

By default, the camera is configured to pause at each preset point for 6 seconds. The duration of the time delay can be changed using a PTZ keyboard.

Pre-Configured Command Presets	
99	Erase presets
101	Move camera from preset point to preset point
102	
125	Revolve camera 360°

Example - Setting a cruise:

This example is based on using a DVR without an attached PTZ keyboard. Your DVR’s specific commands may differ slightly. Please consult your system’s manual.

- STEP 1.** In your DVR’s PTZ settings window, select Preset 1.
- STEP 2.** Rotate the camera to the desired position using the arrow controls.
- STEP 3.** Click Save
- STEP 4.** Select Preset 2.
- STEP 5.** Rotate camera to desired second location.
- STEP 6.** Click Save

You may repeat Steps 4-6 for additional positions if desired.

- STEP 7.** Exit the PTZ settings window.
- STEP 8.** Open the PTZ control panel.
- STEP 9.** Select the PTZ camera from the available channels.
- STEP 10.** Select Preset 101 to begin the cruise.

TROUBLESHOOTING

No camera movement or image at power-up.

Possible cause: Power connection issue

Solutions: Check the connections between the power supply and the camera. Connections should be clean and dry.
Ensure that the power outlet is live.
Check the power supply to make sure that it is working properly.

Camera displays image, but does not respond to commands.

Causes/Solutions: DIP switch settings are incorrect. Please see pages 6 and 7.
RS485 connection is loose or not connected properly. Please see pages 8 and 9.
Break in the RS485 wires. Check the wires for damage.
Electrical interference. Use thicker or shielded wire.

Blurred Image

Possible cause: Transparent dome is dirty.

Solution: Use a damp, soft cloth to clean the dome. Do not use abrasive cleaners or solvents. Avoid harsh chemicals including acetone as they may permanently fog the plastic.

Q-SEE PRODUCT WARRANTY

Q-See is proud to back all of our products with a conditional service warranty covering all hardware for 12 months from the date of purchase. Additionally, our products also come with a free exchange policy that covers all manufacturing defects for one month from the date of purchase. Permanent upgrading service is provided for the software.

Liability Exclusions:

Any product malfunction or abnormalities in operation or damage caused by the following reasons are not within the free service scope of our company:

1. Equipment damage caused by improper operation.
2. Improper equipment operation environment and conditions (e.g., improper power, extreme environmental temperatures, humidity, lightning and sudden surges of electricity).
3. Damage caused by acts of nature (e.g., earthquake, fire, etc).
4. Equipment damage caused by the maintenance of personnel not authorized by Q-See.
5. Product sold over 12 months ago.

In order to fulfill the terms of your warranty, you must complete the registration process after purchasing our product. To do this, simply fill out the User's Information Card on our website at www.Q-See.com

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QUESTIONS OR COMMENTS? CONTACT US

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