# DS20HKVS-VX1 & DS40HKVS-VX1

## ▪ Key Features

- Supports up to 32 cameras high-definition streams
- 128 MB Cache buffer helps to smooth video recording and guard against frame drops
- Designed for 24x7 operation
- Annual workload rating of 180 TB/year[3]
- MTTF of 1M hours[4]
- Industry-standard 3.5-inch form-factor[5] and SATA interface
- Advanced Format 512e Sector Technology

## Specification

| Item | | DS40HKVS-VX1 | DS20HKVS-VX1 |
|---|---|---|---|
| Interface | | SATA | |
| Formatted Capacity | | 4 TB | 2TB |
| Performance | Interface Speed [6] | 6.0 Gb/s, 3.0 Gb/s, 1.5 Gb/s | |
| | Rotation Speed | 5400 rpm | |
| | Buffer Size | 128 MB | |
| | Maximum Data Transfer Speed (Sustained) (Typ.) | 176.4 MB/s | |
| Logical Data Block Length[9] | | HOST: 512 B, DISK: 4096 B | |
| Supply Voltage | Allowable Voltage | 12 V [10] ± 10 %  /  5 V [10] ± 5 % [11] | |
| Power Consumption | Operating (Typ.)[12] | 4.11 W | 4.01 W |
| | Active idle (Typ.) | 2.36 W | 2.08 W |
| | Standby (Typ.) | 0.20 W | 0.31 W |
| Acoustics (Sound Power) [13] | Low Power Idle (Typ.) | 22 dB | 21 dB |

## Environmental Limit

| Item | | Specification |
|---|---|---|
| Ambient temperature | Operating | 0 °C to 60 °C (No condensation) |
| | Non-Operating [14] [15] | - 40 °C to 70 °C (No condensation) |
| Enclosure surface temperature | Operating | 0 °C to 70 °C (No condensation) [16] |
| Relative Humidity | Operating | 5 % to 90 % R.H. (No condensation) |
| | Non-Operating | 5 % to 95 % R.H. (No condensation) |
| Altitude | Operating | - 305 m to 3048 m |
| | Non-Operating [14] | - 305 m to 12 192 m |
| Shock [14] | Operating | 686 m/s$^2$ { 70 G } ( 2 ms duration ) |
| | Non-Operating | 6TB: 2940 m/s$^2$ { 300 G } / 4TB, 2TB: 3430 m/s$^2$ { 350 G } ( 2 ms duration ) |
| Vibration [14] | Operating [15] | 4.90 m/s$^2$ { 0.50 G } ( 5 to 350 Hz )<br>2.45 m/s$^2$ { 0.25 G } ( 350 to 500 Hz ) |
| | Non-Operating [17] | 29.4 m/s$^2$ { 3.0 G } ( 5 to 500 Hz ) |

## Reliability

| Item | Specification |
|---|---|
| MTTF / AFR [4] | 1 000 000 hours / 0.88% |
| Non-recoverable Error Rate | 1 error per 10$^{14}$ bits read |
| Load / Unload | 600 000 times |
| Availability | 24 hours/day, 7 days/week |
| Rated Annual Workload (Total TB Transferred per Year, R/W) | 180 TB/year |

## Mechanical Specification

| Item | DS40HKVS-VX1 | DS20HKVS-VX1 |
|---|---|---|
| Width | 101.6 mm ± 0.25 mm | |
| Height (Max) | 26.1 mm | |
| Length (Max) | 147.0 mm | |
| Weight (Max) | 650 g | 440 g |

[1] Number of surveillance cameras support capability is defined by performance simulation with High Definition cameras at 4 Mb/s rate. Actual results may vary based on various factors, including the types of cameras installed, the system's hardware and software capabilities, and the video compression technology used, as well as system variables such as resolution, frames per second, and other settings.

[2] Definition of capacity: One terabyte (TB) = one trillion bytes, but storage capacity actually available may vary depending on operating environment and formatting. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system and/or pre-installed software applications, or media content. Actual formatted capacity may vary.

[3] Workload is defined as the amount of data written, read or verified by commands from host system.

[4] MTTF (Mean Time to Failure) of the HDDs during its life time is 1 000 000 hours and AFR (Annualized Failure Rate) is 0.88 %. (POH: 8760 hours per one year of 24 x 7 operational capabilities for normal surveillance usage and environments. Average HDA surface temperature:40°C or less., workloads: 180 TB/year, which is defined as the amount of data written, read or verified by commands from host system) Continual or sustained operation at case HDA surface temperature above 40°C may degrade product reliability

[5] "3.5-inch" means the form factor of HDDs. They do not indicate drive's physical size.

[6] Read and write speed may vary depending on the host device, read and write conditions, and file size.

[9] Read–modify-write is supported.

[10] Input voltages are specified at the HDD connector side, during HDD ready state.

[11] Make sure the value is not less than DC -0.3 V (less than -0.6 V, 0.1 ms) when turning on or off the power.

[12] Operating watt is measured using 80% random read/write and 20 % performance idle.

[13] The measuring method is based on ISO 7779.

[14] Vibration applied to the HDD is measured at near the mounting screw hole on the frame as much as possible.

[15] At random seek write/read and default on retry setting with log sweep vibration.

[16] Operation of high surface temperature will be shortened of the drives useful life. The recommendation operating condition of surface temperature is less than 60℃.

[17] At power-off state after installation.

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