Metrics		Dimensions (W x H x D)	136.2 x 97.2 x 131.5 mm (5.36 x 3.83 x 5.18 inch)
		Weight	Approx. 810 g with Battery and SD Memory Card (1.79 lb) Approx. 758 g without Battery and SD Memory Card (1.67 lb)
Optics	Pixels	Camera Effective Pixels	20.1 Megapixels
	Sensor	Sensor Size / Total Pixels / Filter	1-inch High Sensitivity MOS Sensor / 20.9 Total Megapixels / Primary Color Filter
	Lens	Aperture	F2.8 - 4.0 / Multistage Iris Diaphragm (F2.8 - 11 (W), F4.0 - 11 (T))
		Optical Zoom	16x
		Focal Length	f = 9.1 - 146mm (27 - 432mm in 35mm equiv. in 4:3) (25 - 400mm in 35mm equiv. in 3:2) (26 - 416mm in 35mm equiv. in 16:9) (32 - 512mm in 35mm equiv. in 1:1) (26 - 416mm in 35mm equiv. in 16:9 video recording / O.I.S. Off / Level Shot function Off) (28 - 448mm in 35mm equiv. in 16:9 video recording / O.I.S. On / Level Shot function Off) (31 - 496mm in 35mm equiv. in 16:9 video recording / O.I.S. On / Level Shot function On) (37 - 592mm in 35mm equiv. in 4K video / 4K PHOTO recording)
		Extra Optical Zoom (EZ)	22.4x (3:2 / 10M (M)), 32x (3:2 / 5M (S))
		Intelligent Zoom	32x
		Lens	LEICA DC VARIO-ELMARIT 15 elements in 11 groups (5 aspherical lenses / 8 aspherical surfaces / 4 ED lenses)
		Optical Image Stabilizer	5-Axis HYBRID O.I.S. +* *5-Axis compensation works in video recording except for 4K video or high-speed video recording.
		Digital Zoom	Max. 4x (When Digital Zoom is used simultaneously with Intelligent Zoom, you can only increase the z
	Focus	Focusing Area	Normal: Wide 30 cm - infinity / Tele 100 cm - infinity AF Macro / MF / Intelligent Auto / Motion Picture: Wide 3 cm - infinity / Tele 100 cm - infinity
		AF Assist Lamp	Yes (On / Off)
		Focus	AFS (Single) / AFF (Flexible) / AFC (Continuous) / MF AF Macro, Macro Zoom, Quick AF, Continuous AF (during motion picture recording), Touch AF/AE Fu AF, Touch Pad AF, MF Assist, Touch MF Assist, AF+MF, Focus Peaking, One Shot AF (Set the Fn bu Low Light AF, Starlight AF
		Post Focus	Yes
		Focus Stacking	Yes
		AF Metering	Face/Eye Detection / Tracking / 49-area / Custom Multi / 1-area / Pinpoint (Full area touch is available)

	Shutter	Shutter Speed [Still Image]	Still Image: Approx. 60 - 1/4,000 sec (Mechanical Shutter) Approx. 1 - 1/16,000 sec (Electronic Shutter) Bulb (Approx. 120 sec)
		Shutter Speed [Motion Picture]	Motion Picture: Approx. 1/25 - 1/16,000 sec Approx. 1/2 - 1/16,000 sec (Creative Video M Mode / MF Mode)
Recording	File	File Format	Still Image: JPEG (DCF/Exif2.31) / RAW 4K PHOTO: MP4 Motion Picture: AVCHD Progressive, AVCHD (Audio format: Dolby Audio 2ch), MP4 (Audio format: AAC 2ch)
	Recording Modes	Recording Mode	Intelligent Auto, P, A, S, M, Creative Video, C (Custom), Panorama Shot, Scene Guide, Creative Contr
		Filter	Expressive / Retro / Old Days / High Key / Low Key / Sepia / Monochrome / Dynamic Monochrome / R Monochrome* / Impressive Art / High Dynamic / Cross Process / Toy Effect / Toy Pop / Bleach Bypass Fantasy / Star Filter* / One Point Color / Sunshine* (22 filters) *For photos only.
		Scene Guide	Clear Portrait, Silky Skin, Backlit Softness, Clear in Backlight, Relaxing Tone, Sweet Child's Face, Dist Romantic Sunset Glow, Vivid Sunset Glow, Glistening Water*, Clear Nightscape, Cool Night Sky, Warr Nightscape, Glittering Illuminations*, Handheld Night Shot, Clear Night Portrait, Soft Image of a Flower Freeze Animal Motion, Clear Sports Shot, Monochrome *For photos only.
		Burst Shooting Mode (Approx.)	[AFS] H: 12 frames/sec, M: 7 frames/sec (with Live View), L: 2 frames/sec (with Live View)[AFF/AFC] M: 7 frames/sec (with Live View), L: 2 frames/sec (with Live View)
		4K Photo Mode (*2)	4K Burst: 30 frames/sec, max. 29 min 59 sec 4K Burst (S/S): 30 frames/sec, max. 29 min 59 sec 4K Pre-Burst: 30 frames/sec, approx. 2 sec Exif Information: Yes (Each JPEG image cropped out of the 4K burst file complies with EXIF.) Auto Marking Function: Auto / Face Priority / Motion Priority (in 4K Burst mode and 4K Burst (S/S) mod
	Motion Picture Recording (*2)	MP4	4K]3840x2160 4K/30p: 100Mbps [4K]3840x2160 4K/25p: 100Mbps [4K]3840x2160 4K/24p: 100Mbps [FHD]1920x1080 FHD/60p: 28Mbps [FHD]1920x1080 FHD/50p: 28Mbps [FHD]1920x1080 FHD/30p: 20Mbps [FHD]1920x1080 FHD/25p: 20Mbps [HD]1280x720 HD/30p: 10Mbps [HD]1280x720 HD/25p: 10Mbps
		AVCHD	FHD]1920x1080 FHD/50p: 28Mbps, 50p recording [FHD]1920x1080 FHD/50i: 17Mbps, 50i recording [FHD]1920x1080 FHD/25p: 24Mbps, 50i recording (sensor output is 25fps) [FHD]1920x1080 FHD/24p: 24Mbps, 24p recording
		High Speed Video(*2) MP4	[FHD]1920x1080 FHD/30p (Sensor Output is 120fps) [FHD]1920x1080 FHD/25p (Sensor Output is 100fps)

Continuous Recordable Time (Motion Pictures) (*2)	**MP4**	4K/30p, 4K/25p: Approx. 120 min FHD/60p, FHD/50p: Approx. 130 min
	AVCHD	FHD/50p, FHD/50i: Approx. 130 min
Actual recordable Time (Motion Pictures) (*2)	**MP4**	4K/30p, 4K/25p: Approx. 60 min FHD/60p, FHD/50p: Approx. 65 min
	AVCHD	FHD/50p, FHD/50i: Approx. 65 min
Exposure Parameters	**Exposure**	Program AE, Aperture Priority AE, Shutter Priority AE, Manual
	Exposure Compensation	1/3 EV step, +/-5 EV (+/-3 EV for motion picture / 4K PHOTO)
	Light Metering	Intelligent Multiple / Center Weighted / Spot
	ISO Sensitivity	Still Image: Auto / i.ISO / 80* / 100* / 125 / 200 / 400 / 800 / 1600 / 3200 / 6400 / 12800 / 25600* *Exte Motion Picture: Auto / 80* / 100* / 125 / 200 / 400 / 800 / 1600 / 3200 / 6400 *Extended ISO (Changeable to 1/3 EV step)
Picture Quality	**Still Picture Recording**	4:3 4864x3648 (17.5M) (L) / 3456x2592 (9M) (M) / 2432x1824 (4.5M) (S) 3:2 5472x3648 (20M) (L) / 3888x2592 (10M) (M) / 2736x1824 (5M) (S) 16:9 5472x3080 (17M) (L) / 3840x2160 (8M) (M) / 1920x1080 (2M) (S) 1:1 3648x3648 (13.5M) (L) / 2592x2592 (6.5M) (M) / 1824x1824 (3.5M) (S)
	Image Quality	RAW / RAW+Fine / RAW+Standard / Fine / Standard
	White Balance	AWB / AWBc / AWBw / Daylight / Cloudy / Shade / Incandescent / Flash / White Set 1, 2, 3, 4 / Color T (2-axis adjustable)
	Photo Style	Standard, Vivid, Natural, Monochrome, L. Monochrome, L. Monochrome D, Scenery, Portrait, Custom,
	Picture Adjustment	Contrast, Sharpness, Noise Reduction, Saturation*, Color Tone**, Filter Effect**, Grain Effect***Except Monochrome mode only.
Bracket	**AE Bracket**	3, 5, 7 images in 1/3, 2/3 or 1 EV step, Max. +/-3 EV
	Aperture Bracket	3, 5 or all positions in 1 EV step
	Focus Bracket	1 to 999 images, focus steps can be set in 10 levels
	White Balance Bracket	3 images in blue/amber axis or in magenta/green axis
Other	**Digital Red Eye Correction (Red-Eye Removal)**	Yes (On / Off)

		Wi-FI	IEEE 802.11b/g/n 2412 MHz - 2462 MHz (1-11 ch) WPA / WPA2 Infrastructure Mode / WPS
		Bluetooth	Bluetooth® v4.2 (Bluetooth Low Energy (BLE))
		Self Timer	2 sec / 10 sec / 10 sec (3 images)
Playback	**Display**	**Playback Mode**	All, Picture Only, Video Only, Slideshow (All / Picture Only / Video Only, duration & effect is selectable
		Thumbnails / Zoomed Playback	12,30-thumbnails / Yes
		Rating / Rotate Image / Protect	Yes / Yes / Yes
		Show Histogram/ Show Highlights	Yes / Yes
	Edit	**Retouch**	Clear Retouch
		Image Composition	Light Composition, Sequence Composition
		Creating a Motion Picture from Still Pictures	Time Lapse Video, Stop Motion Video
		RAW Processing	Yes
		Resize/ Cropping	Yes / Yes
		Title Edit / Text Stamp	Yes / Yes
		Video Divide	Yes
		Direct Print	PictBridge compatible
Setup		**OSD language**	English, Chinese (Traditional), Chinese (Simplified), Thai, Arabic, Persian, Vietnamese, Hindi
Others	**Finder**	**Viewfinder**	0.39" OLED LVF (Live View Finder) (2,360k dots), Field of View: Approx. 100% Magnification: Approx. 0.74x (35 mm camera), Eye point: Approx. 20mm from eyepiece lens
	Monitor	**LCD Monitor**	3.0" (7.5cm) Free-angle TFT Screen LCD Display (1240k dots) Static Touch Control Field of View: Approx. 100%
	Flash	**Built- in- Flash**	Auto*, Auto/Red-eye Reduction*, Forced On, Forced On/Red-eye Reduction, Slow Sync., Slow Sync./

			*For iA, iA+ mode only. Flash Synchro: 1st / 2nd Slow Sync. Synchronization for flash dimming and exposure compensation 0.3 - 13.5m (Wide / ISO Auto), 1.0 - 9.
Media	**Recording Media**		SD Memory Card, SDHC Memory Card, SDXC Memory Card (Compatible with UHS-I UHS Speed Class 3 standard SDHC / SDXC Memory Cards)
Audio	**Microphone / Speaker**		Stereo / Mono
Interface	**Interface**		microHDMI typeD (*3), USB2.0 Micro-B
	Remote Input		φ2.5mm
	External Microphone Input		φ3.5mm
Power	**Power**		Li-ion Battery Pack (7.2V, 1200mAh, 8.7 Wh) (Included) USB power charging
	Battery life (Approx.)		Approx. 440 images (rear monitor), 290 images (LVF), 430 images (LVF eco30fps setting) (*1)
Standard Package	**Included Software**		・ The software to edit and playback images on computer is not bundled with this camera. To do this, for download at Panasonic website using computer connected to the Internet. http://panasonic.jp/support/global/cs/soft/download/d_pfs10ae.html (For Windows) ・ The software to process RAW file on computer is not bundled with this camera. To do this, SILKYP for download at Ichikawa Soft Laboratory's website using computer connected to the Internet. http://www.isl.co.jp/SILKYPIX/english/p/ (For Windows / Mac)
	Standard Accessories		Battery Pack, AC Adaptor, USB Cable, Lens Hood, Lens Cap, Lens Cap String, Hot Shoe Cover, Shou ・ Operating Instructions for advanced features is available for downloaded at Panasonic LUMIX Cust smartphone or tablet connected to the Internet.
NOTE			*1Recording conditions by CIPA standard - Temperature: 23 oC (73.4 oF) / Humidity: 50%RH when monitor is on. - Using a Panasonic SDHC Memory Card - Using the supplied battery. - Starting recording 30 seconds after the camera is turned on. (When the optical image stabilizer functi - Recording once every 30 seconds with full flash every second recording. - Rotating the zoom lever from Tele to Wide or vice versa in every recording. - The number of recordable pictures varies depending on the recording interval time. - If the recording interval time becomes longer, the number of recordable pictures decreases. - CIPA is an abbreviation of [Camera & Imaging Products Association]. *2'- Use a card with SD Speed Class with "Class 4" or higher when recording motion pictures. - Use a card with SD Speed Class with "UHS-I Speed Class 3 (U3)" when recording motion pictures w Video] or [4K PHOTO]. (SD speed class is the speed standard regarding continuous writing.) - Recording stops when the continuous recording time exceeds 29 minutes and 59 seconds with [AVC - Recording stops when the continuous recording time exceeds 29 minutes and 59 seconds with [MP4 - When using an SDHC memory card: You can continue recording without interruption even if the file s

but the motion picture file will be divided and recorded/played back separately.
- When using an SDXC memory card: You can record a motion picture in a single file.
- Recording stops when the continuous recording time exceeds 29 minutes and 59 seconds with [MP4 Video].
You can continue recording without interruption even if the file size exceeds 4 GB,
but the motion picture file will be divided and recorded/played back separately.
- These are standard times taken at a temperature of 23 oC (73.4 oF) and a humidity of 50%RH.
- The time available for recording varies depending on the environment, the interval between recordin
- Actual recordable time is the time available for recording when repeating actions such as switching th starting/stopping recording, zoom operation etc.
*3 For [4K] video output, use an HDMI cable that has the HDMI logo on it, and that is described as"4K

Clifton Cameras Product Specification

Sigma 45mm F2.8 DG DN Contemporary Full Spec