

# Table of Contents

Acknowledgements .....	3
About this Book.....	5
Notes on the First Edition .....	7
Table of Contents .....	9
Conventions Used in this Book .....	22
Introduction .....	24
Z Series Background .....	28
The Z Series History .....	28
The Z-Mount .....	39
What's Different From a DSLR? .....	42
Z8 Design .....	47
Is it Better than Film? .....	56
Do You Need a Mirrorless Camera? .....	60
But What About File Size? .....	64
The Quick Summary .....	65
The Current Nikon Lineup .....	66
Do You Need New Lenses? .....	68
Debunking Some Myths .....	72
Z8 Basics and Setup .....	75
Camera Controls .....	76
Z8 Controls .....	76
Front View .....	76
Top View .....	77
Back View .....	78
Side View .....	79
Z8 Displays .....	80
Z8 Top Display .....	81
Z8 Rear (Color) LCD .....	82
Z8 Viewfinder .....	89
Display Options .....	94
Choosing the Display .....	98
Monitor Mode Button .....	99
How Menus Work .....	101
The Z8 Image Sensor .....	109
How Image Sensors Work .....	113
The Image Sensor Specifications .....	116
Sensor Specifications (Size) .....	116

Sensor Specifications (Pixels) .....	117
Sensor Filtration .....	118
Tonal Range .....	127
Dynamic Range — Dark v. Bright .....	132
Practical Dynamic Range Advice .....	137
Scene Versus Camera Range .....	138
Spectral Characteristics .....	142
Noise .....	143
Banding .....	151
Luminance Versus Color Noise .....	152
Hot, Stuck, and Dead Pixels .....	153
Fixing Hot Pixels .....	156
Sensor Longevity .....	157
EXPEED7 .....	158
Power .....	161
Changing Batteries .....	165
Charging Batteries .....	168
Battery Storage .....	169
Clock Battery .....	170
Alternate Power Sources .....	171
MB-N12 Battery Grip .....	172
USB Power Delivery .....	175
Battery Life .....	177
Low Power Mode .....	182
Battery Info .....	183
Final Battery Notes .....	184
Image Storage .....	186
The Memory Buffer .....	190
Storage Cards .....	194
CFexpress Cards .....	195
XQD Cards .....	199
Secure Digital Cards .....	202
Using Storage Cards .....	205
Formatting Cards .....	207
Removing Cards from the Camera .....	212
Nikon-Approved Cards .....	213
How Much Card? .....	214
Photographing Without a Card .....	215
Managing Multiple Card Slots .....	217
Card Troubleshooting .....	223
File Names and Folders .....	227
Folders .....	227
File Names .....	238



File Number Sequence .....	246
Metadata .....	248
EXIF .....	248
IPTC .....	251
IPTC Data Entry .....	252
Camera Setup .....	261
First Time Startup .....	261
The SETUP Menu .....	261
Date, Time, and Language .....	266
Setting Language .....	266
Setting Date and Time .....	268
Programming a Comment .....	273
Copyright Information .....	276
Setting the Rear LCD Options .....	281
Setting Rear LCD Brightness .....	281
Setting Rear LCD Color .....	283
Setting Rear LCD Touch Controls .....	285
Focus Using the Rear LCD .....	288
Setting the Viewfinder .....	290
Setting Viewfinder Brightness .....	290
Setting Viewfinder Color .....	292
Viewfinder Adjustment .....	294
Viewfinder Shows Exposure .....	295
Viewfinder Size and Auto Rotation .....	296
Which Display is Used? (Monitor Mode) .....	298
Setting the Sound Feedback Setting .....	300
Silent Mode .....	303
Setting up MY MENU .....	305
Using the Recent Settings Menu .....	312
Set Up Recommendations Summary .....	314
Nikon's Setting Guides .....	315
Saving and Loading Settings .....	316
Setting, Naming, & Resetting Shooting Menu Banks .....	319
Extended Shooting Banks .....	325
Resetting the Camera .....	327
Resetting Basic Settings .....	327
Resetting Custom Settings .....	331
Firmware Version .....	331
Update via SnapBridge .....	339
Taking Photos with the Z8 .....	341
Metering and Exposure .....	342
Metering Methods .....	343

Matrix .....	343
Center-weighted .....	354
Spot .....	355
Spot Meter Point .....	355
Highlight-Weighted .....	356
Setting the Metering Method .....	357
So Which Metering System Should You Use? .....	359
Metering with Digital Requires Care .....	361
Locking Exposure .....	365
Options for Evaluating Exposure .....	367
How to Interpret Histograms .....	372
Exposure Modes .....	380
Flexible Program .....	383
Program Exposure Table (at ISO 100) .....	383
ISO Sensitivity .....	384
Useful Noise Reduction Settings .....	394
Setting Noise Reduction .....	396
Automatic ISO Setting .....	398
ISO Operating Suggestions .....	407
Exposure Bracketing .....	412
Exposure Bracketing Values Table .....	414
Exposure Compensation .....	420
Active D-Lighting .....	425
High Dynamic Range .....	430
Image Quality .....	436
Pixels .....	438
JPEG .....	440
Setting JPEG .....	443
JPEG Rendering .....	452
JPEG Artifacts .....	453
JPEG Recommendation .....	459
HEIF .....	459
Setting HEIF .....	461
NEF Format .....	467
High Efficiency NEFs .....	472
Why NEF? .....	474
Setting NEF .....	475
NEF Recommendations .....	481
Which Image Format Should You Pick? .....	483
Picture Controls .....	484
Picture Control Background and History .....	484
Picture Control Basics .....	489
Choosing and Modifying Picture Controls .....	499

Picture Control Parameters .....	503
Contrast Parameter .....	504
Clarity Parameter .....	506
Hue Parameter .....	509
Saturation Parameter .....	512
Brightness Parameter .....	513
Highlight and Shadow Parameters .....	514
Monochrome Parameters .....	514
Managing Picture Controls .....	518
Skin Softening .....	526
Portrait Impression Balance .....	527
White Balance .....	530
Setting White Balance .....	536
White Balance Fine Tuning Adjustments .....	542
Preset White Balance .....	546
Bracketing White Balance .....	558
White Balance Bracketing Values Table .....	558
White Balance in Mixed Light .....	560
Color Profiles and Color Spaces .....	562
Setting Color Spaces in the Camera .....	567
Setting Color Spaces and Profiles in Your Software .....	568
Fine Tuning the Color .....	570
Special Lighting Issues .....	572
UV and Infrared .....	573
Ultraviolet .....	573
Infrared .....	574
Photographing Under Fluorescent Lighting .....	576
Still Photography and Flicker Reduction .....	579
Lenses and Focusing .....	583
Adapting F-Mount Lenses .....	588
Mounting Lenses .....	599
Non-CPU Lens Data .....	600
Protecting the Sensor During Lens Changes .....	603
All About Lenses .....	604
Lens Naming and Acronyms .....	604
Third Party Lens Compatibility .....	609
Lenses and Megapixels .....	609
DX Lenses .....	614
Lens Angle of View .....	615
Setting Image Area .....	616
Lens Corrections .....	618
Vignette Control .....	620
Auto Distortion Control .....	622

Diffraction .....	624
Diffraction Compensation .....	629
Turning Lens Corrections Off in Raw Converters .....	631
Depth of Field Preview .....	632
FX Depth of Field .....	633
20mm Lens (FX Format) .....	633
24mm Lens (FX Format) .....	634
28mm Lens (FX Format) .....	634
35mm Lens (FX Format) .....	635
50mm Lens (FX Format) .....	635
70mm Lens (FX Format) .....	636
85mm Lens (FX Format) .....	636
Other DOF Theories .....	637
Sharpening .....	638
Adjusting Your Lenses .....	649
Setting AF Fine-Tuning Options .....	655
Things to Note About AF Fine-Tuning Options .....	659
Vibration Reduction .....	660
The Autofocus System .....	667
Focus Mode (Single, Continuous, and Manual) .....	677
Single Servo versus Continuous Servo Autofocus .....	682
Autofocus Area Modes .....	685
DSLR versus Mirrorless .....	704
Subject Detection .....	708
Autofocus Practice .....	718
Autofocus Summary .....	719
Autofocus Settings Summary .....	720
Autofocus Assist .....	721
Lock-On (Focus Tracking) .....	722
The Pro Approach to Autofocus — Back Button Focus ..	724
Hybrid Button Focus .....	725
Trap Autofocus .....	728
Restoring Focus Position .....	729
I Can't Get Great Focus, What Do I Do? .....	730
The Seven Questions to Ask To Get Accurate Focus ..	735
Practice, Practice, Practice .....	736
Common Autofocus Questions .....	741
Manual Focus .....	743
Focus Peaking .....	746
Controls and Release Modes .....	751
Shutter Release .....	751
Shutter Lag .....	752
Release Mode (and Frame Rate) .....	755

Pre-Release Capture .....	759
Self Timer .....	762
Exposure Delay .....	764
Remote Control .....	764
The WR-R11a Remote Controller Set .....	766
Interval Shooting .....	771
Time-lapse Video .....	785
Multiple Exposures and Overlays .....	795
Creating Focus Stacks .....	803
60mm Micro-Nikkor at f/5.6 and 7.9" (20cm) .....	812
105mm Micro-Nikkor at f/8 and 7.9" (20cm) .....	812
Informational Controls .....	816
Using GPS .....	816
Virtual Horizon .....	819
No Info Display .....	821
Voice Annotation .....	823
The CUSTOM SETTING Menu .....	829
Custom Setting Banks .....	833
Autofocus .....	838
#A1 Continuous Servo Autofocus Priority .....	838
#A2 Single Servo Autofocus Priority .....	840
#A3 Set Focus Lock-On Parameters .....	841
#A4 Number of Autofocus Points .....	843
#A5 Remember Focus Points with Orientation .....	845
#A6 Shutter Release Controls Focus .....	846
#A7 Focus Point Handoff Between AF-Area Modes .....	847
#A8 Show Fewer AF-Area Modes .....	848
#A9 Focus Mode Locking .....	849
#A10 Focus Point Selection Wrap .....	850
#A11 Display of Focus Points .....	851
#A12 Autofocus Assist Lamp .....	854
#A13 Focus peaking settings .....	855
#A14 Speed Moving Focus Sensor .....	857
#A15 Manual Focus Ring Disable .....	857
Metering/Exposure .....	859
#B1 ISO Control Increment .....	859
#B2 Exposure Control Increment .....	860
#B3 Exposure Compensation Control .....	861
#B4 Face Detection Impacts Metering .....	863
#B5 Center-weight Metering Options .....	863
#B6 Meter Compensation .....	864
#B7 Aperture Persistence .....	866
Timers/AE Lock .....	868

#C1 Shutter Release Exposure Locking .....	868
#C2 Self Timer Delay Settings .....	869
#C3 Camera Active Times .....	871
Shooting/Display .....	874
#D1 Continuous Frame Rate Speeds .....	874
#D2 Maximum Continuous Images .....	876
#D3 Pre-Release Capture Options .....	877
#D4 Synchronize Additional Cameras .....	878
#D5 Allow Long Shutter Speeds .....	879
#D6 Available Image Area Selections .....	880
#D7 File Number Sequence .....	881
#D8 Show Final Image in Viewfinder .....	882
#D9 Night Mode .....	885
#D10 Preserve Night Vision .....	886
#D11 Backlight Top LCD and Buttons .....	887
#D12 Continuous Shooting Viewing Option .....	888
#D13 Silent Photography Release Indicator .....	889
#D14 Show Image Area Edge .....	890
#D15 Grid Display (Stills) .....	891
#D16 Virtual Horizon Indicator .....	892
#D17 Create Custom Rear LCD Displays (Stills) .....	893
#D18 Create Custom Viewfinder Display (Stills) .....	894
#D20 Fast Viewfinder Update .....	896
Bracketing/Flash .....	897
#E1 Flash Top Sync Speed .....	897
#E2 Flash Low Shutter Speed Barrier .....	899
#E3 Exposure Compensation Using Flash .....	900
#E4 Auto ISO Calculations for Flash .....	901
#E5 DOF Preview Triggers Modeling Flash .....	902
#E6 Manual Exposure Mode Bracketing .....	903
#E7 Bracketing Order .....	905
#E8 Prioritize Sequence over Flash Exposure .....	906
Controls .....	907
#F1 i Quick Menu Customization for Stills .....	907
#F2 Programming Buttons and Controls .....	912
Customizing Buttons for Still Photography .....	912
Customizing Dials for Still Photography .....	923
Programming Sequence .....	924
Recall Shooting Functions .....	926
How Do You Figure Out What to Assign to What? ....	928
#F3 Programming Playback Buttons and Controls .....	930
Customizing Playback Buttons .....	931
Customizing Playback Dials .....	934

#F4 Lock Aperture, Shutter Speed, or Focus Position .....	937
#F5 Reverse Command Dial Rotation .....	938
#F6 Pressing or Holding Buttons .....	939
#F7 Reverse the Manual Metering Bar .....	940
#F8 Reverse the Focusing Ring .....	941
#F9 Focus Ring Customization .....	941
#F10 Control Ring Response Sensitivity .....	942
#F11 Switch Ring Roles .....	943
#F12 Swiping on Screen During Playback .....	944
#F13 Thumb Stick Press Stickiness .....	946
Video .....	948
#G1 i Quick Menu Customization for Video .....	948
#G2 Programming Buttons and Controls .....	952
Button Customization for Video .....	954
Dial Customization for Video .....	961
Programming Sequence .....	962
#G3 Lock Aperture, Shutter Speed, or Focus Position ....	964
#G4 Show Fewer AF-Area Modes .....	965
#G5 Show Fewer Focus Modes .....	966
#G6 Video Focus Change Speed .....	966
#G7 Video Focus Change Speed .....	968
#G9 Video ISO Increment .....	969
#G10 Allow Slow Video Shutter Speeds .....	970
#G11 HLG and N-Log Preview .....	971
#G12 Display Zebra Bars for Exposure Evaluation .....	971
#G13 Available Pattern Tone Range for Buttons .....	974
#G14 Grid Display (Video) .....	975
#G15 Video Exposure Review Tools .....	976
#G16 Create Custom Rear LCD Displays (Video) .....	976
#G17 Create Custom Viewfinder Display (Video) .....	978
#G18 Display Tally Light .....	979
Using Flash .....	981
What Happens When Flash is Used .....	982
Flash Basics .....	983
Digital Flash Differences .....	985
Hidden Flash “Gotchas” .....	988
Allowable Apertures in Program Mode .....	988
Studio Flash .....	989
No Silent Flash .....	990
Which Speedlight? .....	990
Flash Control Modes .....	991
Setting Flash Control Modes .....	991
i-TTL Balanced Fill-Flash .....	994

Standard TTL .....	997
High-Speed TTL (TTL FP) .....	997
Summary of i-TTL Flash Control Modes .....	998
Non-TTL Flash Control Modes .....	1000
Auto Aperture .....	1000
Automatic .....	1000
Manual .....	1000
Setting Flash Options .....	1002
Flash Off .....	1002
Front Curtain Sync .....	1003
Slow Sync .....	1003
Rear Sync .....	1003
Redeye Reduction .....	1004
Flash Option Interactions .....	1004
FV Lock .....	1005
Flash Exposure Compensation .....	1006
Available Flash Features .....	1008
Controlled, Repeatable Flash Results .....	1009
White Balance and Flash .....	1012
Wireless Flash .....	1013
Optical AWL .....	1016
Radio AWL .....	1023
External Flash Models for the Z8 .....	1026
SB-500 .....	1027
Specifications .....	1027
To Set TTL Flash .....	1027
SB-500 Usable Apertures and Flash Range .....	1029
To Set Manual Flash .....	1029
SB-500 Flash Guide Numbers (Feet) .....	1029
SB-500 Flash Guide Numbers (Meters) .....	1029
SB-5000 .....	1030
Specifications .....	1030
To Set TTL Flash .....	1031
SB-5000 Usable Apertures and Flash Range .....	1032
To Set Manual Flash .....	1032
To Set Repeating Flash .....	1033
Maximum Number of Repeating Flashes .....	1034
To Manually Set the Zoom Head .....	1035
To Set the Distance Scale to Feet or Meters .....	1035
To Set Flash Exposure Compensation .....	1036
SB-5000 Notes .....	1036
Flash Troubleshooting .....	1037
Error Messages .....	1039



Subtle Error Messages .....	1040
Error Messages on Displays .....	1042
Iconic Error Messages .....	1044
The Novice Gotchas .....	1046
Recording Video with Your Z8 .....	1048
How Good is the Z8 Video? .....	1048
Video Image Formats .....	1049
Frame Rates .....	1051
Compression .....	1053
RAW Video .....	1058
Tonal Grading .....	1060
N-Log .....	1061
Setting Tonal Grading .....	1063
Container .....	1064
MPEG LA .....	1065
Video Issues to be Aware Of .....	1066
Heat .....	1066
Rolling Shutter .....	1068
Vibration Reduction .....	1069
Automatic ISO .....	1069
Shutter Speeds .....	1069
Video Flicker Reduction .....	1069
Audio .....	1073
Menu Options Impacting Video .....	1074
At Long Last: How to Record Video .....	1075
Video File Sizes .....	1083
Electronic Vibration Reduction .....	1083
Recording HDMI Video .....	1084
Steps for Recording on the Atomos Ninja .....	1085
HDMI Auto Detection Negotiations .....	1090
Hi-Res Zoom .....	1093
Timecodes .....	1095
Video Focus .....	1097
Subject Tracking Autofocus .....	1098
Using a Z8 as a Webcam .....	1099
After Taking Photos or Recording Videos with the Z8 .....	1100
Things You Do After the Image or Video is Taken .....	1100
Playing Back Images and Video in Camera .....	1101
Filtered Playback .....	1106
Playback of Continuous Sequences .....	1107
Playback Workflow Customization .....	1109
Other Image Review Options .....	1111

Video Review .....	1118
Rotating Images .....	1121
Deleting Images .....	1122
Recovering Deleted Images .....	1129
Protecting Images .....	1130
Rating Your Images .....	1131
Dealing with Bursts of Images .....	1132
Copying Images .....	1134
The Quick Retouch Menu .....	1139
RAW Processing .....	1141
Trim .....	1145
Resize .....	1147
D-Lighting .....	1150
Straighten .....	1152
Distortion Control .....	1153
Perspective Control .....	1155
Monochrome .....	1157
Image Overlay .....	1159
Motion Blend .....	1162
Trim Movie .....	1164
Transferring Your Images to Your Devices .....	1167
USB Connections .....	1170
Tethering to a Computer .....	1173
Connecting via iPad Pro .....	1176
Connecting via SnapBridge .....	1179
Connecting via Wi-Fi .....	1193
Transferring via FTP .....	1199
Printing Your Images .....	1199
Printing Resolution .....	1200
Output on Commercial Printers .....	1203
Viewing Your Images .....	1204
Television Playback .....	1205
Slide Shows .....	1207
Wrapping Up: a Z8 Quick Study Guide .....	1209
The “Routine” .....	1209
General Settings You Make Once .....	1209
Things To Do Before You Head Out .....	1211
Check Each Time You Turn the Camera On .....	1213
Settings You Change Rarely (and then only for a reason) ..	1213
Settings You Change Often .....	1215
Things To Do After Each Session .....	1216
Keeping Track of Batteries .....	1218

Maintaining Image Quality .....	1218
Which Type of Photographer are You? .....	1220
Dealing with JPEG .....	1223
Other Field Shooting Issues .....	1224
Keeping the Sensor Clean .....	1224
Sensor Facts .....	1232
Worst Case Scenario .....	1233
Temperature Considerations .....	1233
Humidity .....	1234
Additional byThom-supplied Files .....	1234
Z8 Packing List .....	1235
Z8 Settings Files .....	1236
Black 245 Picture Control .....	1239
UNI White Balance .....	1241
Suggested Settings .....	1246
PHOTO SHOOTING menu .....	1247
VIDEO RECORDING menu .....	1252
CUSTOM SETTINGS menu .....	1257
A —Autofocus .....	1257
B —Metering/exposure .....	1258
C —Timers/AE lock .....	1259
D —Shooting/display .....	1260
E —Bracketing/flash .....	1261
F — Controls .....	1263
G —Movie .....	1265
PLAYBACK menu .....	1267
SETUP menu .....	1268
Network menu .....	1270
MyMenu .....	1271
Z8 Accessories .....	1273
Power .....	1277
Protection .....	1278
Remotes .....	1280
Specifications .....	1282
Getting Service .....	1285
Questions and Answers .....	1289