



System Assessment and Validation for Emergency Responders (SAVER)

Magnifying Patrol Rifle Scopes Market Survey Report

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System Assessment and Validation for Emergency Responders

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FOREWORD

The U.S. Department of Homeland Security (DHS) established the System Assessment and Validation for Emergency Responders (SAVER) Program to assist emergency responders making procurement decisions. Located within the Science and Technology Directorate (S&T) of DHS, the SAVER Program conducts objective assessments and validations on commercial equipment and systems and provides those results along with other relevant equipment information to the emergency responder community in an operationally useful form. SAVER provides information on equipment that falls within the categories listed in the DHS Authorized Equipment List (AEL). The SAVER Program mission includes:

- Conducting impartial, practitioner-relevant, operationally oriented assessments and validations of emergency response equipment; and
- Providing information, in the form of knowledge products, that enables decision-makers and responders to better select, procure, use, and maintain emergency response equipment.

Information provided by the SAVER Program will be shared nationally with the responder community, providing a life- and cost-saving asset to DHS, as well as to Federal, state, and local responders.

The SAVER Program is supported by a network of Technical Agents who perform assessment and validation activities. Further, SAVER focuses primarily on two main questions for the emergency responder community: “What equipment is available?” and “How does it perform?”

As a SAVER Program Technical Agent, the Space and Naval Warfare Systems Center (SPAWARSYSCEN) Atlantic has been tasked to provide expertise and analysis on key subject areas, including communications, sensors, security, weapon detection, and surveillance, among others. In support of this tasking, SPAWARSYSCEN Atlantic conducted a market survey of commercially available magnifying patrol rifle scopes. Magnifying patrol rifle scopes fall under AEL reference number 03OE-02-BNOC titled Binoculars/Scopes.

Visit the SAVER section of the Responder Knowledge Base (RKB) website at <https://www.rkb.us/saver> for more information on the SAVER Program or to view additional reports on magnifying patrol rifle scopes or other technologies.

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1. INTRODUCTION

Magnifying patrol rifle scopes aid in aiming a patrol rifle by providing a magnified view of distant threats (e.g., armed gunman). To provide emergency responders with information on magnifying patrol rifle scopes, the System Assessment and Validation for Emergency Responders (SAVER) Program conducted a market survey.

This market survey report is based on information gathered from November 2012 to June 2013 from Internet searches, industry publications, an emergency responder focus group, and a government issued Request for Information (RFI) accessible from the Federal Business Opportunities website, as well as directly from vendors. For inclusion in this report, the magnifying patrol rifle scopes' maximum magnification could be no more than 6x.

Due diligence was performed to develop a report that is representative of products in the marketplace.

2. MAGNIFYING PATROL RIFLE SCOPES OVERVIEW

Magnifying patrol rifle scopes have either a fixed or variable magnification.

Fixed-magnification scopes have a set magnification that cannot be changed.

Variable-magnification scopes either permit the user to select any magnification within the magnification range of the scope or are dual magnification and allow the user to select between two magnification settings. The field of view for fixed-magnification scopes remains constant; whereas, the field of view decreases as the magnification increases in variable-magnification scopes.

2.1 Reticle Style

Magnifying patrol rifle scopes are available with a variety of reticles. Some reticles simply assist with aim (e.g., traditional crosshair reticle) while more complex reticles can aid the user with ranging distances to targets/objects and compensating for bullet drop or wind drifts. One common ranging reticle is the Mil-Dot reticle, shown in Figure 2-1. Not all reticles are of a common design and even common reticle designs can vary slightly across vendors. In addition, many scopes feature proprietary reticles that are only available on scopes from a given vendor. Reticle information and images can be found on vendor websites.

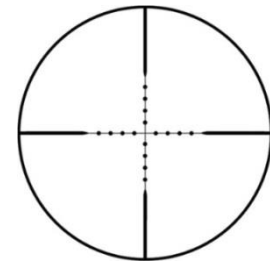


Figure 2-1. Example of a Mil-Dot Reticle

When the magnification of a variable-magnification scope is adjusted, a reticle located in the first focal plane (FFP) will change in size while a reticle located in the second focal plane (SFP) will stay the same size. Therefore, a ranging reticle in the FFP is accurate at any magnification setting, whereas a ranging reticle in the SFP is accurate only at a specific magnification, typically the highest magnification setting. The location of the reticle in fixed-magnification scopes makes no significant difference in ranging capabilities since the magnification is always constant.

2.2 Adjustments for Windage and Elevation

Most scopes feature controls that enable users to adjust the point of impact to accommodate for wind and elevation. Windage adjustments move the point of impact left and right, whereas elevation adjustments move the point of impact up and down. Increments by which adjustments can be made are referred to as the click value. Scopes may have click values in minute of angle (MOA) or milliradian (referred to as mil or mrad). One MOA is equivalent to approximately 1 inch at a distance of 100 yards. Therefore, on a scope that features a click value of ½ MOA, each click will move the point of impact ½ inch on a target 100 yards away. One mil at 100 yards equals approximately 3.6 inches and most scopes with a mil adjustment feature click values in tenths of a mil. For example, on a scope that features a click value of 0.1 mil, each click will move the point of impact 0.36 of an inch on a target 100 yards away.

3. PRODUCT DATA – VARIABLE-MAGNIFICATION SCOPES

This section identifies more than 55 variable-magnification patrol rifle scopes that range in price from \$160 to \$2,749. Products with the same name but different model numbers due to reticle shape and mounting options are grouped by series name. Most of the scopes feature standard-sized tube diameters (e.g., 30 mm, 34 mm, 1 inch); those that have a unique tube diameter typically include a mount with purchase. The information has not been independently verified by the SAVER Program. Features in this product comparison matrix are defined as follows, listed in column order:

MSRP refers to the manufacturer’s suggested retail price (MSRP) of the scope.

Warranty (years) refers to the duration of the warranty.

Magnification Range refers to the minimum and maximum magnification of the scope.

Length (inches) refers to the length of the scope.

Tube Diameter refers to the diameter of the scope’s tube.

Eye Relief (inches) refers to the distance the eyepiece can be held away from the viewer’s eyes and still provide a viewable image. A range is provided from minimum to maximum magnification if applicable and available.

Field of View refers to the scope’s field of view at minimum to maximum magnification.

Reticle Location refers to whether the reticle is located in the FFP and/or the SFP.

Illuminated Reticle indicates if the scope features an illuminated reticle.

Brightness Settings refers to the number of manual brightness settings.

NVD Compatible indicates if the illuminated reticle is compatible with external night vision devices (NVDs).

Click Value refers to the windage and elevation click adjustment.

Min/Max Temperatures (°F) refers to the minimum and maximum operating and storage temperatures of the scope. Only one range is provided when the operating and storage temperatures are the same.

Waterproof/Water Resistant refers to whether the scope is waterproof or water resistant.

Table 3-1. Product Comparison Matrix – Variable-Magnification Scopes

Vendor	Product	MSRP	Warranty (years)	Magnification Range	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Reticle Location	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Min/Max Temperatures (°F)	Waterproof/Water Resistant
AIM Sports Inc. ¹	Tactical Compact Scope w/QRM 1.5-5x32 Dual-Illuminated Scope series	\$175 to \$200	NP	1.5x to 5x	8.3	30 mm	4.5 to 3.4	71 to 21 feet at 100 yards	NP	✓	NP	NP	½ MOA	NP	R
	XPF Series 1-4x24 Tri-Illuminated First Focal Plane Scope (JFF1424G)	NP	NP	1x to 4x	10.2	30 mm	4.2	112 to 26 feet at 100 yards	FFP	✓	NP	NP	½ MOA	NP	R
Barska ¹	1-3x30 IR Multi Rail Electro Sight (AC11396)	\$347	1	1x to 3x	10.0	NP	4.1 to 3.2	77 to 26 feet at 100 yards	NP	✓	NP	NP	NP	NP	NP
	1-4x24 IR Multi Rail Electro Sight (AC11416)	\$347	1	1x to 4x	10.3	NP	2.9 to 2.5	108 to 29 feet at 100 yards	NP	✓	NP	NP	NP	NP	NP
	1-4x28 IR SWAT-AR Rifle Scope (AC11872)	NP	LL	1x to 4x	10.0	30 mm	4.5	90 to 23 feet at 100 yards	NP	✓	NP	NP	¼ MOA	NP	P
	1.5-4.5x20 Tactical Scope (AC10770)	NP	LL	1.5x to 4.5x	10.3	1 inch	3.3	76 to 25 feet at 100 yards	FFP		NA	NA	½ MOA	NP	P

See page 10 for notes and definitions of the abbreviations used throughout this matrix.

Magnifying Patrol Rifle Scopes Market Survey Report

Vendor	Product	MSRP	Warranty (years)	Magnification Range	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Reticle Location	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Min/Max Temperatures (°F)	Waterproof/Water Resistant
Burris Company ¹	Fullfield TAC30 Tactical Scope 1x-4x-24mm (200433)	\$299	LL	1x to 4x	11.3	30 mm	4.0 to 3.5	100 to 32 feet at 100 yards	NP	✓	NP	NP	½ MOA	NP	P
	MTAC Riflescope 1x-4x-24mm (200437)	\$399	LL	1x to 4x	11.3	30 mm	4.0 to 3.5	100 to 32 feet at 100 yards	SFP	✓	11		½ MOA	-4/149 (O) -40/158 (S)	P
	MTAC Riflescope 1.5x-6x-40mm (200429)	\$399	LL	1.5x to 6x	12.2	30 mm	3.8 to 3.1	33 to 13 feet at 100 yards	NP	✓	11		¼ MOA	NP	P
	Steiner-Optik Military 1-5x24mm series	\$2,599	30	1x to 5x	11.5	30 mm	3.5	118 to 24 feet at 109 yards	SFP	✓	11	✓	0.1 mil	-13/145 (O) -31/158 (S)	P
	Steiner-Optik Tactical 1-4x24mm (5142)	\$1,896	30	1x to 4x	11.4	30 mm	3.7 to 3.3	123 to 30 feet at 109 yards	SFP	✓	11	✓	0.1 mil	-13/145 (O) -31/158 (S)	P
	XTR Xtreme Tactical™ Scope 1.5x-6x-40mm (201908)	\$799	LL	1.5x to 6x	12.2	30 mm	4.0 to 3.5	60 to 20 feet at 100 yards	NP	✓	NP	NP	½ MOA	NP	P
	XTR Xtreme Tactical ScopeXTR-14 1x-4x-24mm (201904)	\$699	LL	1x to 4x	11.3	30 mm	4.0 to 3.5	100 to 32 feet at 100 yards	NP	✓	NP	NP	½ MOA	NP	P

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Vendor	Product	MSRP	Warranty (years)	Magnification Range	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Reticle Location	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Min/Max Temperatures (°F)	Waterproof/Water Resistant
Bushnell Corporation ¹	AR Optics 1-4x 24mm (AR91424)	\$281	LL	1x to 4x	9.5	30 mm	3.5	112 to 37 feet at 100 yards	SFP		NA	NA	½ MOA	NP	P
	AR Optics 1-4x 24mm Throw Down PCL (AR91424I)	\$419	LL	1x to 4x	3.6	30 mm	3.6	110 to 36 feet at 100 yards	FFP	✓	11	NP	NP	NP	P
	Elite [®] 1.25-4x 24mm (E1224)	\$759	LL	1.25x to 4x	10.4	30 mm	3.3	81 to 26 feet at 100 yards	NP	✓	NP	NP	¼ MOA	NP	P
	Legend [®] Ultra HD 1.75-5x 32mm – Multi-X (851532)	\$303	LL	1.75x to 5x	10.3	1 inch	4.5	49 to 17 feet at 100 yards	NP		NA	NA	¼ MOA	NP	P
	Trophy [®] XLT 1-4x 24mm (731424E)	\$408	LL	1x to 4x	12.7	30 mm	3.5	75 to 29 feet at 100 yards	NP	✓	NP	NP	¼ MOA	NP	P
Kruger Optical ¹	1-4x24 TacDriver™ T4i™ Riflescope (63341)	NP	NP	1x to 4x	NP	NP	3.7	83 to 22 feet at 100 yards	NP	✓	5	NP	⅛, ¼, and ½ MOA	NP	P
	1.5-5x32 TacDriver T4i Riflescope (63340)	NP	NP	1.5x to 5x	NP	NP	3.5	42 to 14 feet at 100 yards	NP	✓	5	NP	⅛, ¼, and ½ MOA	NP	P
Leatherwood/Hi-Lux Optics ²	CMR-AK762 Tactical Scope	\$459	LL	1x to 4x	10.2	30 mm	3.0	95 to 26 feet at 100 yards	SFP	✓	11	✓	½ MOA	NP	P
	CMR1-4x24mm Tactical Scope	\$399	LL	1x to 4x	10.2	30 mm	3.0	95 to 26 feet at 100 yards	SFP	✓	11	✓	½ MOA	NP	P

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Leatherwood/ Hi-Lux Optics ²	CMR4-AK762 Tactical Scope	\$559	LL	1x to 4x	10.2	30 mm	3.0	95 to 26 feet at 100 yards	SFP	✓	10	✓	0.1 mil	NP	P
	CMR4 Tactical Scope	\$525	LL	1x to 4x	10.2	30 mm	3.0	95 to 26 feet at 100 yards	SFP	✓	10	✓	0.1 mil	NP	P
Leupold & Stevens Inc. ²	Mark 4 [®] CQ/T [®] 1-3x14mm series	\$1,375 to \$1,500	5	1x to 3x	8.8	2.9 inches	2.8 to 2.0	112 to 41 feet at 100 yards	SFP	✓	11	✓	½ MOA	-40/120 (O) -40/160 (S)	P
	Mark 4 [®] MR/T [®] 1.5-5x20mm (59100)	\$815	5	1.5x to 4.7x	9.3	1 inch	4.4 to 3.6	66 to 24 feet at 100 yards	SFP		NA	NA	½ MOA	-40/120 (O) -40/160 (S)	P
	Mark 4 MR/T 1.5-5x20mm M2 series	\$1,125 to \$1,750	5	1.5x to 5x	9.8	30 mm	4.4 to 3.6	66 to 24 feet at 100 yards	SFP	✓	7	✓	½ MOA	-40/120 (O) -40/160 (S)	P
	Mark 6 [™] 1-6x20mm M6C1 series	\$2,440	5	1x to 6x	10.3	34 mm	4.4 to 3.6	106 to 19 feet at 100 yards	FFP	✓	7	✓	0.2 mil	-40/120 (O) -40/160 (S)	P
	Mark AR [™] MOD 1 1.5-4x20mm (115387)	\$500	5	1.5x to 4x	9.2	1 inch	4.3 to 3.8	75 to 29 feet at 100 yards	SFP	✓	7	✓	½ MOA	-40/120 (O) -40/160 (S)	P
	Mark AR MOD 1 1.5-4x20mm (115388)	\$375	5	1.5x to 4x	9.2	1 inch	4.3 to 3.8	75 to 29 feet at 100 yards	SFP		NA	NA	½ MOA	-40/120 (O) -40/160 (S)	P
	VX-R Patrol 1.25-4x20mm (113769)	\$725	5	1.3x to 4x	9.5	30 mm	4.1 to 3.7	76 to 29 feet at 100 yards	SFP	✓	8	✓	0.1 mil	-40/120 (O) -40/160 (S)	P

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Vendor	Product	MSRP	Warranty (years)	Magnification Range	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Reticle Location	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Min/Max Temperatures (°F)	Waterproof/Water Resistant
Millett Industries ¹	Designated Marksman Scope series	\$386 to \$430	NP	1x to 4x	NP	30 mm	3.5	90 to 23 feet at 100 yards	NP	✓	NP	NP	NP	NP	NP
New Century NcSTAR Inc. ¹	Vism [®] Evolution Series 1.1-4x24 series	\$160	LL	1.1x to 4x	NP	30 mm	NP	NP	NP	✓	NP	NP	NP	NP	P
Nightforce Optics Inc. ¹	1-4x24 NXS [™] Compact Riflescope series	\$1,370 to \$1,561	LL	1x to 4x	8.8	30 mm	3.5	100 to 25 feet at 100 yards	SFP	✓	8	✓	¼ MOA	-80/200	P
Nikon Sport Optics ¹	M-223 1-4x20 (8485)	\$300	LL	1x to 4x	10.4	1 inch	4.1 to 4.0	93 to 23 feet at 100 yards	NP		NA	NA	¼ MOA	NP	P
	MONARCH 3 1-4x20 series	\$280	LL	1x to 4x	10.4	1 inch	4.0	93 to 23 feet at 100 yards	NP		NA	NA	½ MOA	NP	P
Raytheon ELCAN Optical Technologies ²	SpecterDR 1-4x [™] (903410-001)	\$1,469	1	1x and 4x ³	6.0	42 mm	2.8	24° to 6°	SFP	✓	5	✓	½ MOA	-40/140 (O) -40/180 (S)	P
	SpecterDR 1-6x [™] (903545-001)	\$1,849	1	1x and 6x ³	8.0	41 mm	3.0	16° to 4°	SFP	✓	5	✓	½ MOA	-40/140 (O) -40/180 (S)	P
	SpecterDR 1.5-6x [™] series	\$1,599	1	1.5x and 6x ³	7.3	41 mm	2.8	16° to 4°	SFP	✓	5	✓	½ MOA	-40/140 (O) -40/180 (S)	P

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Vendor	Product	MSRP	Warranty (years)	Magnification Range	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Reticle Location	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Min/Max Temperatures (°F)	Waterproof/Water Resistant
S.W.F.A. Inc. ²	SS HD 1-4x24 Tactical 30mm Riflescope series	\$800	LL	1x to 4x	10.4	30 mm	3.8	95 to 24 feet at 100 yards	FFP	✓	11	NP	0.1 mil	1/160 (O) NP (S)	P
	SS HD 1-6x24 Tactical 30mm Riflescope (SSHD16X24D)	\$1,000	LL	1x to 6x	10.5	30 mm	3.8	95 to 16 feet at 100 yards	FFP	✓	11	NP	0.1 mil	1/160 (O) NP (S)	P
Schmidt & Bender USA Inc. ¹	1.1-4x20 PM ShortDot	\$2,749	2	1.1x to 4x	10.6	30 mm	3.5	105 to 33 feet at 109 yards	NP	✓	11	✓	½ MOA	NP	P
	1.5-6x20 PM ShortDot	NP	2	1.5x to 6x	12.4	30 mm	3.5	71 to 22 feet at 109 yards	NP	✓	11	✓	¼ MOA	NP	P
Sellmark Corporation ²	Sightmark® Triple Duty M4 1-6x24 CD/CDX/DX series	\$360	LL	1x to 6x	15.4	30 mm	4.3 to 3.5	100 to 17 feet at 100 yards	SFP	✓	11	NP	½ MOA	-4/140 (O) 41/95 (S)	P
Trijicon Inc. ¹	Trijicon AccuPoint® 1-4x24 30mm Riflescope series	\$1,050	NP	1x to 4x	10.3	30 mm	3.2	98 to 24 feet at 100 yards	SFP	✓	NP	NP	¼ MOA	NP	P

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U.S. Optics ²	SR-4 DFP 1-4x	\$1,600	LL	1x to 4x	9.5	30 mm	3.2	110 to 33 feet at 100 yards	FFP		12	NP	0.2 mil or ½ MOA ⁴	-30/130 (O) -30/110 (S)	P
									SFP	✓					
	SR-4c 1-4x	\$1,705	LL	1x to 4x	9.5	30 mm	3.2	110 to 33 feet at 100 yards	FFP		12	NP	0.2 mil or ½ MOA ⁴	-30/130 (O) -30/110 (S)	P
									SFP	✓					
	SR-4s 1-4x	\$1,400	LL	1x to 4x	9.5	30 mm	3.2	110 to 33 feet at 100 yards	FFP	✓	12	NP	0.2 mil or ½ MOA ⁴	-30/130 (O) -30/110 (S)	P
									SFP	✓					
SR-6 DFP 1.5-6x	\$1,705	LL	1.5x to 6x	10.5	30 mm	3.2	65 to 25 feet at 100 yards	FFP		12	NP	0.2 mil or ½ MOA ⁴	-30/130 (O) -30/110 (S)	P	
								SFP	✓						
SR-6c 1.5-6x	\$1,810	LL	1.5x to 6x	10.5	30 mm	3.2	65 to 25 feet at 100 yards	FFP		12	NP	0.2 mil or ½ MOA ⁴	-30/130 (O) -30/110 (S)	P	
								SFP	✓						
SR-6s 1.5-6x	\$1,505	LL	1.5x to 6x	10.5	30 mm	3.2	65 to 25 feet at 100 yards	FFP	✓	12	NP	0.2 mil or ½ MOA ⁴	-30/130 (O) -30/110 (S)	P	
								SFP	✓						
Valdada Optics ¹	1.1-4x26 30mm CRT Scope	\$1,095	NP	1.1x to 4x	11.8	30 mm	3.5	110 to 36 feet at 100 yards	NP	✓	7	NP	¼ MOA	NP	P
	1:4x32 QR-TS 35mm PITBULL Compact Scope	\$1,395	LL	1x and 4x ³	7.3	35 mm	3.5	144 to 38 feet at 100 yards	SFP	✓	11	✓	0.1 mil	-40/150 (O) NP (S)	P

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Vendor	Product	MSRP	Warranty (years)	Magnification Range	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Reticle Location	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Min/Max Temperatures (°F)	Waterproof/Water Resistant
Vortex Optics ²	Razor HD Gen II 1-6x24 Riflescope (RZR-16003)	\$1,899	LL	1x to 6x	10.1	30 mm	4.0	115 to 21 feet at 100 yards	SFP	✓	11		0.2 mil or ½ MOA ⁴	-20/120	P
	Viper PST 1-4x24 Riflescope series	\$579 to \$599	LL	1x to 4x	9.7	30 mm	4.0	98 to 28 feet at 100 yards	SFP	✓	10	✓	0.2 mil or ½ MOA ⁴	-20/120	P

Notes:

¹Vendor did not confirm information provided in this matrix. Information was collected from vendor websites.

²Vendor confirmed information provided in this matrix.

³Dual-magnification scope

⁴Must be specified at time of purchase

✓—scope is equipped with corresponding feature

Blank cell—scope is not equipped with corresponding feature

MSRP—manufacturer’s suggested retail price

NVD—night vision device

°F—degrees Fahrenheit

mm—millimeters

NP—information was not provided by the vendor or available on the vendor’s website

NA—not applicable

Warranty (years): Limited Lifetime (LL)

Reticle Location: First Focal Plane (FFP); Second Focal Plane (SFP)

Click Value: Milliradian (mil); Minute of Angle (MOA)

Min/Max Temperatures (°F): Operating Temperature Range (O); Storage Temperature Range (S)

Waterproof/Water Resistant: Waterproof (P); Water Resistant (R)

Information presented in this table is based on data gathered from November 2012 to June 2013.

4. PRODUCT DATA – FIXED-MAGNIFICATION SCOPES

This section identifies more than 35 fixed-magnification patrol rifle scopes that range in price from \$50 to \$1,854. Products with the same name but different model numbers due to reticle shape and mounting options are grouped by series name. Most of the scopes feature standard-sized tube diameters (e.g., 30 mm, 34 mm, 1 inch); those that have a unique tube diameter typically include a mount with purchase. There was very little data available on the temperature ranges for the fixed-magnification patrol rifle scopes; therefore, it is being presented here rather than in the product comparison matrix:

- All of the Leupold & Stevens Inc. scopes have an operating temperature range of -40° to 120°F and a storage temperature range of -40° to 160°F;
- The Raytheon ELCAN Optical Technologies SpecterOS 3.4x™ and SpecterOS 4x™ have an operating temperature range of -40° to 140°F. They have storage temperature ranges of -40° to 180°F and -40° to 160°F, respectively; and
- The Trijicon Inc. Trijicon ACOG 4x32 BAC series has an operating and storage temperature range of -51° to 185°F.

The information has not been independently verified by the SAVER Program. Features in this product comparison matrix are defined as follows, listed in column order:

MSRP refers to the MSRP of the scope.

Warranty (years) refers to the duration of the warranty.

Magnification refers to the magnification of the scope.

Length (inches) refers to the length of the scope.

Tube Diameter refers to the diameter of the scope's tube.

Eye Relief (inches) refers to the distance the eyepiece can be held away from the viewer's eyes and still provide a viewable image.

Field of View refers to the scope's field of view.

Illuminated Reticle indicates if the scope features an illuminated reticle.

Brightness Settings refers to the number of manual brightness settings or if brightness adjustment is automatic.

NVD Compatible indicates if the illuminated reticle is compatible with external NVDs.

Click Value refers to the windage and elevation click adjustment.

Waterproof/Water Resistant refers to whether the scope is waterproof or water resistant.

Table 4-1. Product Comparison Matrix – Fixed-Magnification Scopes

Vendor	Product	MSRP	Warranty (years)	Magnification	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Waterproof/Water Resistant
AIM Sports Inc. ¹	4x28 Tri-Illuminated Scope (JTDQ428B)	NP	LL	4x	8.5	1 inch	3.2	28 feet at 100 yards	✓	NP	NP	¼ MOA	R
	4x30 Dual-Illuminated Rubber Armored Scope (JTDX430G)	NP	LL	4x	7.5	30 mm	3.0	27 feet at 100 yards	✓	NP	NP	¼ MOA	R
	4x32 Compact Scope (JTM432B)	NP	LL	4x	7.8	1 inch	3.0	37 feet at 100 yards		NA	NA	¼ MOA	R
	Tactical Compact Scope w/QRM 4x32 Tri-Illuminated Scope series	NP	LL	4x	6.0	30 mm	3.5	37 feet at 100 yards	✓	NP	NP	¼ MOA	R
Barska ¹	4x20 IR M-14 Base, Electro Sight Scope (AC10834)	NP	1	4x	6.9	NP	2.7	22 feet at 100 yards	✓	NP	NP	NP	NP
	4x20 M-16 Carry Handle, Electro Sight Scope (AC11608)	\$129	1	4x	6.9	NP	2.7	22 feet at 100 yards		NA	NA	NP	NP
	4x28 IR Electro Sight Tactical Multi-Rail Mount (AC11322)	\$193	1	4x	8.0	NP	4.5	24 feet at 100 yards	✓	NP	NP	½ MOA	P
	4x30 IR Multi Rail Electro Sight (AC11544)	\$193	1	4x	7.0	NP	3.9	24 feet at 100 yards	✓	NP	NP	½ MOA	NP

See page 16 for notes and definitions of the abbreviations used throughout this matrix.

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Vendor	Product	MSRP	Warranty (years)	Magnification	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Waterproof/Water Resistant
BSA Optics Inc. ¹	Stealth Tactical™ Scope (STS4X32LE)	NP	LL	4x	8.7	1 inch	4.0	34 feet at 100 yards		NA	NA	¼ MOA	NP
	Tactical Weapon™ Scope (TW4X20)	\$50	LL	4x	6.4	NP	3.8	24 feet at 100 yards		NA	NA	¼ MOA	NP
	Tactical Weapon Scope (TW4X30)	\$70	LL	4x	8.1	1 inch	4.0	23 feet at 100 yards		NA	NA	¼ MOA	NP
Burriss Company ¹	AR-332™ (300208)	NP	1	3x	5.3	NP	3.5	32 feet at 100 yards	✓	NP	NP	⅓ MOA	P
Bushnell Corporation ¹	AR Optics 2x MP (AR730232)	\$341	LL	2x	6.8	NP	NP	44 feet at 100 yards	✓	5	NP	¼ MOA	P
Leupold & Stevens Inc. ²	Mark 4 High Accuracy Multi-Range Riflescope (HAMR) 4x24mm (110995)	\$1,625	5	4x	5.7	3 inches	2.8	32 feet at 100 yards	✓	NP	✓	⅓ MOA	P

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Vendor	Product	MSRP	Warranty (years)	Magnification	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Waterproof/Water Resistant
New Century NcSTAR Inc. ²	Mark III Tactical Series 4x32 (STP432G, STM432G, STM432GV2, and STP432GV2)	NP	LL	4x	6.6	NP	3.0	27 feet at 100 yards	✓	3	NP	½ MOA	NP
	Rubber Tactical – Double Illumination Series 4x30 (SEECR430R, SEECRAQ430R, SECRR430R, SECRRAQ430R, and SEECRMQ430R)	NP	LL	4x	7.5	30 mm	3.0	26 feet at 100 yards	✓	3	NP	¼ MOA	NP
	SRT Series 4x32 (SRTM432G, SRTP432G, and SRTR432G)	NP	LL	4x	6.6	NP	3.0	27 feet at 100 yards	✓	7	NP	½ MOA	NP
	Tactical 3-Rail Sighting System 4x32 (SC3RSM432B, SC3RSP432B, and SC3RSR432B)	NP	LL	4x	6.9	34 mm	3.1	25 feet at 100 yards		NA	NA	¼ MOA	NP
	Tactical Series 4x20 (SCA420B)	NP	LL	4x	7.9	0.75 inch	2.5	26 feet at 100 yards		NA	NA	NP	NP
	Tactical Series 4x22 (SCABQ422B, SCMBQ422B, and SCMSQ422B)	NP	LL	4x	6.9	34 mm	3.0	22 feet at 100 yards		NA	NA	¼ MOA	NP
	Tactical Series 4x30 (SC430B)	NP	LL	4x	8.7	1 inch	3.0	26 feet at 100 yards		NA	NA	¼ MOA	NP
	Tactical Series 4x30 (SEC430G and SECAQ430G)	NP	LL	4x	6.8 to 6.9 ³	1 inch	2.5 or 3.0 ³	26 feet at 100 yards	✓	NP	NP	¼ MOA	NP

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Vendor	Product	MSRP	Warranty (years)	Magnification	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Waterproof/Water Resistant
Nikon Sport Optics ¹	P-223 3x32 (8496)	\$150	LL	3x	8.1	1 inch	3.4	36 feet at 100 yards		NA	NA	½ MOA	P
Raytheon ELCAN Optical Technologies ²	SpecterOS 3.4x™	\$899	1	3.4x	7.0	42 mm	2.8	8°	✓	9	NP	1 MOA	P
	SpecterOS 4x™	\$999	1	4x	6.0	42 mm	2.8	6°	✓	10	✓	½ MOA	P
Sellmark Corporation ¹	Firefield® 3x Combat Sight (FF13023)	\$180	3	3x	5.8	NP	3.3	31 feet at 100 yards	✓	5	NP	¼ MOA	P
Trijicon Inc. ¹	Trijicon ACOG® 1.5x16S series	\$1,083	LL	1.5x	4.0	NP	2.4	39 feet at 100 yards	✓	A		½ MOA	P
	Trijicon ACOG 1.5x24 series	\$1,148	LL	1.5x	5.8	NP	3.6	26 feet at 100 yards	✓	A		⅓ MOA	P
	Trijicon ACOG 2x20 series	\$1,148	LL	2x	5.3	NP	2.1	30 feet at 100 yards	✓	A		½ MOA	P
	Trijicon ACOG 3x30 series	\$1,257	LL	3x	6.1	NP	1.9	19 feet at 100 yards	✓	A		¼ MOA	P
	Trijicon ACOG 3.5x35 series	\$1,476 to \$1,854	LL	3.5x	8.0	NP	2.4	29 feet at 100 yards	✓	A		⅓ MOA or ¼ MOA ³	P
	Trijicon ACOG 4x32 series	\$1,192 to \$1,285	LL	4x	5.8	NP	1.5	37 feet at 100 yards	✓ ⁴				½ MOA

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Vendor	Product	MSRP	Warranty (years)	Magnification	Length (inches)	Tube Diameter	Eye Relief (inches)	Field of View	Illuminated Reticle	Brightness Settings	NVD Compatible	Click Value	Waterproof/Water Resistant
Trijicon Inc. ¹	Trijicon ACOG 4x32 BAC series	\$1,380 to \$1,698	LL	4x	5.8	NP	1.5	37 feet at 100 yards	✓	A		½ MOA	P
	Trijicon ACOG 4x32 LED (TA02)	\$1,476	LL	4x	6.0	NP	1.5	37 feet at 100 yards	✓	NP	NP	½ MOA	P
Valdada Optics ¹	QR-TS 3x25 30mm Tactical BDC .223 Scope	\$895	LL	3x	5.7	30 mm	3.5	38 feet at 100 yards	✓	7	NP	¼ MOA	P

Notes:

¹Vendor did not confirm information provided in this matrix. Information was collected from vendor websites.

²Vendor confirmed information provided in this matrix.

³Varies by model.

⁴Tritium illumination; only visible in low light.

✓—scope is equipped with corresponding feature

Blank cell—scope is not equipped with corresponding feature

MSRP—manufacturer’s suggested retail price

NVD—night vision device

mm—millimeters

NP—information was not provided by the vendor or available on the vendor’s website

NA—not applicable

Warranty (years): Limited Lifetime (LL)

Brightness Settings: Automatic Brightness Adjustment (A)

Click Value: Minute of Angle (MOA)

Waterproof/Water Resistant: Waterproof (P); Water Resistant (R)

Information presented in this table is based on data gathered from November 2012 to June 2013.

5. VENDOR CONTACT INFORMATION

Additional information on the magnifying patrol rifle scopes included in this market survey report can be obtained from the vendors listed in Table 5-1.

Table 5-1. Vendor Contact Information

Vendor	Phone Number	Website/E-Mail Address
AIM Sports Inc.	(909) 923-2228 (855) 275-4246	http://aimsportsinc.com sales@aimsportsinc.com customerservice@aimsportsinc.com
Barska	(888) 666-6769 (909) 445-8168	http://www.barska.com sales@barska.com
BSA Optics Inc.	(954) 581-2144	http://www.bsaoptics.com info@bsaoptics.com
Burriss Company (Burriss Company and Steiner-Optik brands)	(970) 356-1670	http://www.burrisstactical.com customerservice@burrisoptics.com http://www.steiner-binoculars.com military@steiner.de
Bushnell Corporation	(800) 423-3537 (913) 752-3400	http://www.bushnell.com customerservice@bushnell.com
Kruger Optical	(888) 526-7779	http://www.krugeroptical.com info@krugeroptical.com
Leatherwood/Hi-Lux Optics	(310) 257-8142	http://www.leatherwoodoptics.com http://hi-luxoptics.com sales@hi-luxoptics.com
Leupold & Stevens Inc.	(800) 538-7653	http://www.leupold.com/tactical tacticaloptics@leupold.com
Millett Industries	(888) 276-5945	http://www.millettsights.com
New Century NcSTAR Inc.	(866) 627-8278	http://www.ncstar.com http://www.vism.com sales@ncstar.com
Nightforce Optics Inc.	(706) 508-4908	http://nightforceoptics.com info@nightforceoptics.com militaryinfo@nightforceoptics.com
Nikon Sport Optics	(800) 645-6687	http://www.nikonsportoptics.com
Raytheon ELCAN Optical Technologies	(705) 526-5401	http://elcansightingsystems.com daniel.pettry@raytheon.com

Vendor	Phone Number	Website/E-Mail Address
S.W.F.A. Inc.	(972) 726-7348	http://swfa.com swfa@riflescopes.com
Schmidt & Bender USA Inc.	(603) 287-4830	http://www.schmidtundbender.de info@schmidt-bender.com
Sellmark Corporation (Sightmark® and Firefield® brands)	(817) 225-0310	http://sellmark.net http://www.sightmark.com http://www.fire-field.com info@sellmark.net
Trijicon Inc.	(800) 338-0563 (540) 286-0521	http://www.trijicon.com info@trijicon.com
U.S. Optics	(714) 582-1956	http://www.usoptics.com info@usoptics.com
Valdada Optics	(303) 979-4578	http://www.valdada.com info@valdada.com
Vortex Optics	(800) 426-0048	http://www.vortexoptics.com info@vortexoptics.com

6. SUMMARY

This market survey report includes more than 90 variable- and fixed-magnification patrol rifle scopes. The products differ in reticle; cost; warranty; length and tube diameter; field of view; reticle location (variable-magnification scopes only); windage and elevation adjustment click value; operating and storage temperature ranges; and water resistance. Vendor websites should be consulted for the most current reticle design information and images. Most of the magnifying patrol rifle scopes feature illuminated reticles; some with user-adjustable brightness controls with various numbers of brightness settings and some that are compatible with external NVDs. Most of the scopes also feature standard-sized tube diameters (e.g., 30 mm, 34 mm, 1 inch); those that have a unique tube diameter typically include a mount with purchase.

Emergency responder agencies that consider purchasing magnifying patrol rifle scopes should carefully research each product's overall capabilities and limitations in relation to their agency's operational needs.