

# VICTORY OVER THE DARKNESS



## MEOPTA

### Armored Fighting Vehicles Optics

Meopta Product Catalog



# Superior Optics Since 1933

Meopta is a family-owned, multinational company with facilities in the Czech Republic and United States. Founded in 1933 in Czechoslovakia, Meopta is a leading partner and supplier to many of the world's finest optical brands.

In the Czech Republic, precision optical products are developed, manufactured and assembled to exacting standards in clean-room environments for semiconductor, medical, aerospace and military industries as well as for consumer markets.





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PERISCOPES 4



T55/72 UPGRADE 6



BMP/BMP II UPGRADE 10



OPTICAL DEVICES FOR AFV 12



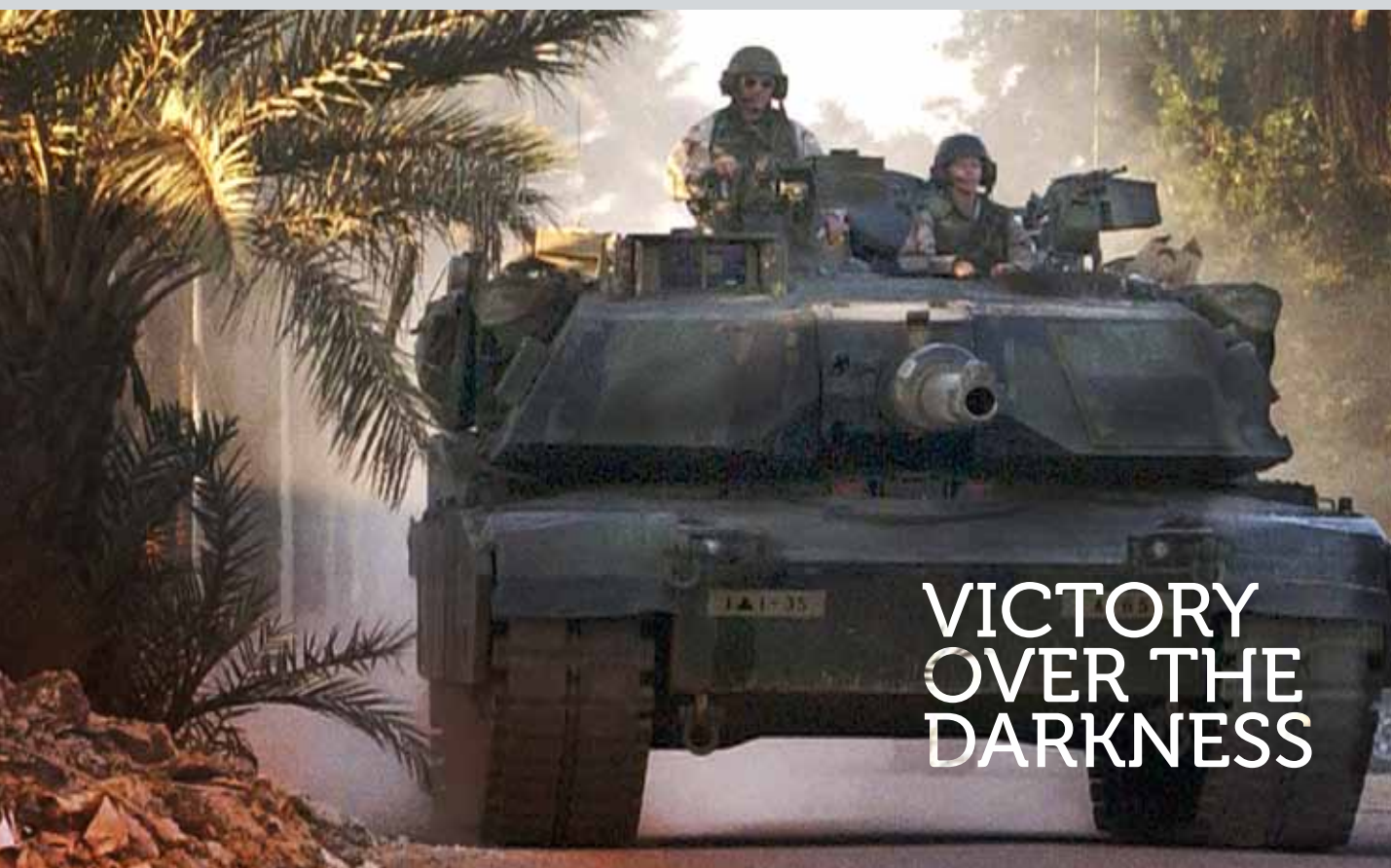


# Armored Fighting Vehicles Optics MeoAFV

SHOCK RESISTANT  
HIGH QUALITY OPTICAL GLASS  
EXCELLENT LIGHT TRANSMISSION  
LARGE FIELD OF VIEW  
STANDARD VEHICLE INTERFACE  
WATER-RESISTANT

A Meopta optical solution for Armored Fighting Vehicles (MeoAFV) shifts the combat readiness of your AFV to an effective victory. Our outstanding field of view, compatible integration into original housing of older model APCs or tanks will improve the crew's overview of a battlefield and will help your AFVs catch up with today's modern technologies.





VICTORY  
OVER THE  
DARKNESS

## Periscopes for your Ground AFV

Engineers from our R&D department are ready to design and develop the periscope tailored to your ground fighting vehicle with all features demanded in modern warfare.







# Optics for T-72 / T-55

- SHOCK RESISTANT
- HIGH QUALITY OPTICAL GLASS
- EXCELLENT LIGHT TRANSMISSION
- LARGE FIELD OF VIEW
- STANDARD VEHICLE INTERFACE
- WATER-RESISTANT



## TKN-3P – upgrade

Combined Day/Night Commander's System for T-72

- Fully passive – without using infra searchlights
- Night channel's effective range up to 800 m
- Interchangeable without unnecessary vehicle modification



## TPN-1P – upgrade

Night Gunner's System for T-72/T-55



## TKN-1P – upgrade

Night Commander's System for T-55



# VICTORY OVER THE DARKNESS



## NV-3P – upgrade

### Night Driver's System for T-72

- Night vision driver's scope for tanks and other armored vehicles
- Enables driving at night under residual natural illumination conditions as low as  $3 \times 10^{-3}$  lux without additional lighting
- Additional IR lighting option for full darkness conditions
- Periscopic dual optical system using 2 image intensifiers enabling stereoscopic view of the observed terrain and distance estimation
- Does not tire the eyes of the driver
- Interchangeable with the day-vision periscope without unnecessary vehicle modification
- Night Channel based on the XR5™ (eq. Gen. IV) or XD-4™ (eq. Gen. III) image intensifier tube equipped with Auto-gating feature
- Large field of view: 35° horizontal and 33° vertical
- All external glass surfaces effectively protected from fogging condensation and ice formation using electrically controlled surface heating
- 1x magnification
- Watertight construction





# VICTORY OVER THE DARKNESS









# Optics for BMP

- SHOCK RESISTANT
- HIGH QUALITY OPTICAL GLASS
- EXCELLENT LIGHT TRANSMISSION
- LARGE FIELD OF VIEW
- STANDARD VEHICLE INTERFACE
- WATER-RESISTANT
- COMBINED DAY AND NIGHT DEVICE
- ANTI-LASER FILTER



## BPK-3 / BPK-3R – upgrade

Combined Day /Night Gunner's System for BMP-2

- Reticles for various types of ammunitions
- Effective protection against a high level of illumination
- Night channel effective range up to 1000 m



## TKN-3BP – upgrade

Combined Day /Night Commander's System for BMP-2 (BMP-1)

- Fully passive – without using infra searchlights
- Night channel effective range up to 800 m
- Interchangeable without unnecessary vehicle modification







## DND-5F

### Combined Day /Night driver's System for BMP-2 (BMP-1)

A combined device suitable for any armored vehicle that can be used both as a day and a night driver scope

- High visibility and comfort during both day and night without having to change devices
- Interchangeable with the older BMP-1 or BMP-2 devices without vehicle modification
- Outside glass surface is electrically heated preventing misting and fogging under adverse conditions either inside or outside of the vehicle
- Electrical focusing functions
- 1x magnification
- Watertight construction

#### The Day Channel

- Comprised of two unique optical glass prisms
- Capable of 80° horizontal and 27° vertical field of view
- Features stereoscopic imaging and allows estimation of the object distance which increases driving comfort
- Optimized anti-laser protection using filtering 800, 900, 1064 and 1540 nm wavelengths

#### The Night Channel

- Without hindering the view of other displays in the vehicle
- Based on a micro channel image intensifier tube with integrated auto-gating function and gain control
- Can be used in low-illumination (as low as  $3 \times 10^{-3}$  lx) conditions
- Remarkable field of view: 45° horizontal and 28° vertical





# Optics for AFV/PANDUR

SHOCK RESISTANT  
HIGH QUALITY OPTICAL GLASS  
EXCELLENT LIGHT TRANSMISSION  
LARGE FIELD OF VIEW  
STANDARD VEHICLE INTERFACE  
WATER-RESISTANT  
COMBINED DAY AND NIGHT DEVICE  
ANTI-LASER FILTER



## CDND-1

### Combined Day /Night Driver's Scope

A combined device for PANDUR or any armoured fighting vehicle that can be used as both a day and night scope. High visibility and comfort during both day and night without having to change devices.

- Optimized anti-laser protection using filtering 800, 900, 1064 and 1540 nm wavelengths.
- All external glass surfaces are electrically heated preventing misting and fogging under adverse conditions either inside or outside the vehicle
- Electrical focusing function
- 1x magnification
- Watertight construction







# VICTORY OVER THE DARKNESS

## The Day Channel

- Comprised of two unique optical glass prisms
- Affords a remarkable 90 degrees horizontal and 45 degrees vertical field of view
- Features stereoscopic imaging and shows the distance to the object which increase driving comfort

## The Night Channel

- A bi-ocular system, which offers excellent viewing of the object without hindering the view of other displays in the vehicle
- Based on the XD-4™ image intensifier tube with integrated Auto-gating function and gain control
- Remarkable field of view: 45° degrees horizontal and 25° vertical
- Can be used in low-illumination (as low as  $3 \times 10^{-3}$  lx) conditions



Tanks

<b>TKN-3P – upgrade</b> Combined Day/Night Commander's System for T-72 (TKN-3 is used for the upgrade)	
Magnification – Day Channel	5x
Magnification – Night Channel	4,2x
Field of View – Day Channel (°)	10
Field of View – Day Channel (°)	11
Resolution – Day Channel (")	12
Resolution – Night Channel (MOA)	1
Dioptric Range (D)	-4 to +4
Objective Focus Range (m)	50 to ∞
Eye Relief – Day Channel (mm)	21,5
Eye Relief – Night Channel (mm)	21,5
Interpupillary Distance (mm)	54 to 74
Periscope Height (mm)	200
Image Intensifier Tube (type)	XD-4™ / equivalent Gen.III
Operational Temperature Range (°C)	-35 to +52
Storage Temperature Range (°C)	-50 to +65
Special Features	<ul style="list-style-type: none"> <li>– day channel with anti laser filter</li> <li>– integrated Automatic Gain Control (AGC) and Bright Source Protection (BSP)</li> <li>– optional IR illumination of observed object</li> <li>– device protection by the iris shade</li> <li>– internal protection ("sunroof") shade in NV</li> <li>– el. heating of the protection glass (SE-1S) and eyepiece heaters</li> <li>– built-in counter of the device operational time</li> </ul>
Power Source (V)	26 ± 4
Dimensions – L x H x W (mm)	205 x 370 x 422
Weight (kg)	12

BMP, PANDUR, other AFV

<b>BPK-3/BPK-3R – upgrade</b> Combined Day/Night Gunner's System for BMP-2 (BMP-1) (BPK-2-42 is used for the upgrade)	
Magnification – Day Channel	6x
Magnification – Night Channel	5,5x
Field Of View – Day Channel (°)	10
Field Of View – Day Channel (°)	6,5
Resolution – Day Channel (")	11
Resolution – Night Channel (MOA)	0,6
Dioptric Range (D)	-3 to +5 -5 to +5
Objective Focus Range (m)	100 to ∞
Eye Relief – Day Channel (mm)	30
Eye Relief – Night Channel (mm)	28
Periscope Height – Day Channel (mm)	221
Periscope Height – Night Channel (mm)	248
Image Intensifier Tube (type)	XD-4™ / Gen.III equivalent
Operational Temperature Range (°C)	-35 to +52
Storage Temperature Range (°C)	-50 to +65
Special Features	<ul style="list-style-type: none"> <li>– integrated Automatic Gain Control (AGC) and Bright Source Protection (BSP)</li> <li>– day channel is fitted with anti-laser filter</li> <li>– device protection by the iris shade</li> <li>– internal protection ("sunroof") shade in NV</li> <li>– rangefinder in the day channel</li> <li>– optional IR illumination of observed object</li> <li>– el. heating of the protection glass and the eyepiece</li> <li>– built-in counter of the device operational time</li> </ul>
Power Source (V)	26 ± 4
Dimensions – L x H x W (mm)	355 x 458 x 308
Weight (kg)	20

<b>TKN-1P – upgrade</b> Night Commander's System for T-55	<b>TPN-1P – upgrade</b> Night Gunner's System for T-72/T-55	<b>NV-3P – upgrade</b> Night Driver's System for T-72 (TVNE-4B is used for the upgrade)
– 5,6x	– 2,7x	– max. 1x
– 6	– 10	– horizontal 35/vertical 33
– 2	– 1,5	– 2,5
–4 to +4	–4 to +4	–0,5 to –1 (fixed value) value with exchangeable diopt. attachments: –3 to +3
–	–	15 to ∞
–	–	–
–	–	54 to 74
262	200	200
XD-4™ / equivalent Gen.III	XD-4™ / equivalent Gen.III	XD-4™ / equivalent Gen.III
–50 to +50	–50 to +50	–30 to +50
–50 to +50	–50 to +50	–50 to +65
– integrated Automatic Gain Control (AGC) and Bright Source Protection (BSP)	– integrated Automatic Gain Control (AGC) and Bright Source Protection (BSP)	– Device operates passively from $2 \times 10^{-3}$ lx of residual light – integrated Automatic Gain Control (AGC) and Bright Source Protection (BSP) – optional IR illumination of observed object – electrical heating of they epiece and upper prism external surfaces – built-in counter of the device operational time
26 ± 4	26 ± 4	15 to 30 V / 2,5 A max.
570 × 460 × 300	380 × 340 × 240	350 × 180 × 270
16	7	10,5

<b>TKN-3BP – upgrade</b> Combined Day/Night Comander's System for BMP-2 (BMP-1) (TKN-3B is used for the upgrade)	<b>DND-5F</b> Combined Day/Night Driver's System for BMP-2 (BMP-1)	<b>CDND-1</b> Combined Day/Night Driver's Scope for PANDUR and other AFV
5x 4,2x	1x 1x	1x 1x
10 11	horizontal 80/vertical 27 horizontal 45/vertical 28	horizontal 90/vertical 45 horizontal 45/vertical 25
12 1	40 4	40 4
–4 to +4 –4 to +4	–0,5 to –1	–0,6 to –1,1
50 to ∞	15 to ∞	15 to ∞
21,5 21,5	– 80	– 90
200 200	192 242	194 290
XD-4™/Gen.III equivalent	XD-4™/Gen.III equivalent	XD-4™/Gen.III equivalent
–35 to +52	–35 to +52	–35 to +52
–50 to +65	–50 to +65	–35 to +65
– day channel is fitted with anti-laser filter – integrated Automatic Gain Control (AGC) and Bright Source Protection (BSP) – optional IR illumination of observed object – device protection by the iris shade – el. heating of the protection glass (SE-1S) and eyepiece heaters – rangefinder in the day channel – built-in counter of the device operational time	– Day Channel is Fitted with Anti-laser Filter – Integrated Automatic Gain Control (AGC) and Bright Source Protection (BSP) – Optional IR Illumination of Observed Object – El. Heating of the Eyepiece and Upper External Prism – Built-in Counter of the Device Operational Time	– day channel is fitted with anti-laser filter – integrated Gain Control Protection (AGC) and Bright Source Protection (BSP) – optional IR illumination of observed object – electrical heating of all external optical surfaces – built-in counter of the device operational time
26 ± 4 V / 2,5 A	26 ± 4 V / 2,7 A	24 ± 4 V / 3,3 A
205 × 370 × 422	315 × 159 × 182	200 × 365 × 230
12	6,5	18



#### ATG

reduce the temporary blindness allowing to the user to continuously maintain "eyes on target"



#### APC

device is designated for wheeled/tracked armoured fighting vehicles



#### TANK

device is designated for tanks and tracked heavy combat vehicles



#### DRIVER

device designed for driver of the fighting vehicle



#### COMMANDER

device designed for vehicle commander



#### GUNNER

device for vehicle gunner position



#### ANTI-LASER

observers' eye protection by special antilaser filter or layer





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