**DIVISION 28 ELECTRONIC SAFETY AND SECURITY**

**SECTION 28 20 00 ELECTRONIC SURVEILLANCE**

**SECTION 28 23 00 VIDEO SURVEILLANCE**

**SECTION 28 23 29 VIDEO SURVEILLANCE REMOTE DEVICES AND SENSORS**

**1 General**

**1.1 General requirements**

A The components and materials used for the construction of the products are standard type, they are manufactured and available also as spare parts, as long as the products remain on the market.

B All products and versions will be severely tested and validated by the internal laboratories of the manufacturer before being released on the market.

C All products released on the market by the manufacturer are designed for 24x7x365 constant use.

D For all products a Technical Support service is available, for free, via phone, e-mail and ticketing system.

**1.2 Quality**

A The manufacturer has to repair or replace without charge any products in which construction and/or material defects are found for the stated warranty period, starting from the delivery date of the material.

B The specified devices must be manufactured in Italy following the standards of EN ISO 9001: 2008 and ISO/IEC 80079-34:2011certification.

**1.3 Environmental sustainability**

A All products must comply with RoHS-6/6 according to the specifications 2011/65/EU, 2005/717/EC, 2006/122/EC and REACH according to the specifications EC 1907/2006.

**1.4 Certifications**

A All products must have the following certifications:

01 ATEX (EN 60079-0: 2012, EN 60079-1: 2007, EN 60079-31: 2009):

a bEx II 2 G Ex d IIC T6 Gb Ta -40°C to +60°C

b bEx II 2 D Ex tb IIIC T85°C Db Ta -40°C to +60°C

c IP66

02 IECEx (IEC 60079-0: 2011, IEC 60079-1: 2007, IEC 60079-31: 2008):

a Ex d IIC T6 Gb Ta -40°C to +60°C

b Ex tb IIIC T85°C Db Ta -40°C to +60°C

c IP66

03 EAC EX:

a Ex d IIC T6 Gb X

b Ex tb IIIC T85 Db X

04 CNEx (The IP H.264/AVC versions are not CNEx certified):

a Ex d IIC T6 Gb Tamb-40~60°C

b DIP A21 TA T6 Tamb-40~60°C

05 INMETRO:

a Ex d IIC T6 Gb -40 °C ≤ Ta ≤ +60 °C

b Ex tb IIIC T85°C Db -40 °C ≤ Ta ≤ +60 °C

c IP66

06 cULus Listed, TYPE 4X (only for 24Vac version)

07 UL listed for USA (only for 24Vac version):

a Class I, Zone 1, AEx d IIC T6

b Zone 21, AEx tb IIIC T85°C

c Class I, Division 2, Groups A, B, C, and D

d Class II, Division 2, Groups F and G

08 UL listed for Canada (only for 24Vac version):

a Class I, Zone 1, Ex d IIC T6 Gb

b Class II, Groups E, F and G

c Class I, Division 2, Groups A, B, C, and D

d Class II, Division 2, Groups F and G

**2 Products**

**2.1 Technical data**

**A  General**

01 AISI 316L stainless steel construction

02 Passivated and electropolished external surfaces

03 Dynamic positioning control system

**B  Mechanical**

01 1 3/4" NPT hole for cable glands

02 Zero backlash

03 Horizontal rotation: 360° continuous

04 Vertical rotation: -90° to +90°

05 Horizontal speed (variable): from 0.1° to 100°/s

06 Tilt speed (variable): from 0.1° to 100°/s

07 Accuracy of preset positions: 0.02°

08 12mm thick tempered glass window

09 8mm thick germanium window

10 Integrated wiper

11 Unit weight: 31kg (68lb)

**C  Electrical**

01 Supply voltage/Current consumption:

a  230Vac, 0.5A, 50/60Hz

b  24Vac, 5A, 50/60Hz

c  120Vac, 1A, 50/60Hz

02 Power consumption:

a  120W max

**D  Video**

01 2 video outputs 75 Ohm 1Vpp (PAL/NTSC)

02 Functions: Autopan, Preset, Patrol, Tour (maximum 3), Autoflip

03 Maximum number of presets for protocol

a  VIDEOTEC MACRO: 250

b  ERNITEC: 250

c  PANASONIC: 250

d  PELCO D: 99

e  AMERICAN DYNAMICS: 95

04 16-character string for zone and preset titling

05 I/O alarm card:

a  5 alarm inputs

b  2 relay outputs (1A 30Vac/60Vdc max)

**E  Communications**

01 Configuration through OSD

02 2 half-duplex serial RS-485 interfaces or full-duplex RS-422

03 Firmware updating from console in remote mode (only VIDEOTEC MACRO and PELCO D protocols)

04 Up to 999 units, addressable by means of dip-switches

05 MPXT, IP based control mode:

a  Connection Ethernet port LAN 10/100T

06 Optical connector: ST (standard)

07 IP based control mode, H.264/AVC:

a  Compression H.264/AVC and JPEG

b  Image resolution: from Full D1 (720x576 for PAL, 720x480 for NTSC) to 352x240 in 18 steps

c  Up to 2 simultaneous video streams for each camera

d  Web Server

e  Compatible with ONVIF protocol, Profile S

**F  Protocols**

01 Serial communication protocol: AMERICAN DYNAMICS, ERNITEC, PANASONIC, PELCO D, VIDEOTEC MACRO

**G  Environment**

01 Indoor/Outdoor

02 Operating temperature: -40°C (-40°F)/+60°C (140°F)

03 Relative Humidity 10-95% (no condensation)

04 Surge immunity: up to 2kV line to line, up to 4kV line to earth (Class 4)

**H Analog cameras (Day/Night)**

01 Optical zoom: 36x (Day/Night 36x), 28x (Day/Night 28x High sensitivity)

02 Wide Dynamic Range (Fix/Auto): Yes (Day/Night 36x), No (Day/Night 28x High sensitivity)

03 True progressive SCAN: Yes (Day/Night 36x), No (Day/Night 28x High sensitivity)

04 Digital image stabilisation: Yes

05 White balance: Auto, ATW, Indoor, Outdoor (Fix/Auto), Sodium Vapor Lamp (Fix/Auto)

06 High horizontal resolution: Up to 550 TV Lines

07 Day/Night (Auto ICR): Yes

08 Image Sensor: 1/4" EXView HAD CCD (Day/Night 36x), 1/4" Super HAD CCD II (Day/Night 28x)

09 Number of effective Pixels: ~ 440 000 pixel (PAL), ~ 380 000 pixel (NTSC)

10 Min. Color illumination (IR-Cut Filter = OFF): 1.4Lux / 1/50s, 0.1Lux / 1/3s (PAL, Day/Night 36x), 1.4Lux / 1/60s, 0.1Lux / 1/4s (NTSC, Day/Night 36x), 0.25Lux / 1/50s, 0.16Lux / 1/3s (PAL, Day/Night 28x High sensitivity), 0.25Lux / 1/60s, 0.16Lux / 1/4s (NTSC, Day/Night 28x High sensitivity)

11 Min. B/W illumination: 0.01Lux / 1/3s (PAL, Day/Night 36x), 0.01Lux / 1/4s (NTSC, Day/Night 36x), 0.0015Lux / 1/3s (PAL, Day/Night 28x High sensitivity), 0.0015Lux / 1/4s (NTSC, Day/Night 28x High sensitivity)

12 High Zoom and Wide Horizontal Field of View Capability:Yes

13 Optical zoom:36x, f=3.4 (wide) to 122.4mm (tele) / F1.6 to F4.5 (Day/Night 36x), 28x, f=3.5 (wide) to 98mm (tele) / F1.35 to F3.7 (Day/Night 28x High sensitivity)

14 Digital Zoom:12x (432x with optical zoom) (Day/Night 36x), 12x (336x with optical zoom) (Day/Night 28x High sensitivity)

15 Angle of view (A):57.8 degrees (wide) to 1.7 degrees (tele) (Day/Night 36x), 55.8 degrees (wide) to 2.1 degrees (tele) (Day/Night 28x High sensitivity)

16 Min. Object Distance:320mm (12.6in) (wide) to 1500mm (59.1in) (tele) (Day/Night 36x), 10mm (0.4in) (wide) to 1500mm (59.1in) (tele) (Day/Night 28x High sensitivity)

17 Electronic Iris Speed: 1/1 ÷ 1/10000s

18 “Shutter Time” automatic increase to improve the night surveillance: Yes

19 S/N ratio: More than 50dB

20 AE control: Automatic, Shutter priority, Diaphragm priority, Brightness priority and Manual

21 Back light compensation: On/Off

22 Spherical masking (3D) of Privacy zones with automatic upgrade: Yes

23 Privacy Zone Masking: On/Off (24 positions)

24 Maximum number of masking blocks to be displayed: 8

25 Resolution of masking blocks: 160x120 HxV

26 Masking: Up to 15 different masking types (14 colour types or mosaic)

27 Focusing system: Auto (Sensitivity: Normal, Low), Trigger PTZ, Manual

28 "Smart" Lens Control: Automatic Lens Reset

**I Thermal cameras available (resolution 336x256)**

01 Image sensor: Uncooled VOx microbolometer

02 Resolution: 320x256 (PAL), 320x240 (NTSC)

03 Pixel dimensions: 17μm

04 Spectral response - long wave infrared (LWIR): from 7.5μm a 13.5μm

05 Internal shutter (only for sensor compensation): Video stop < 1sec.

06 Digital Detail Enhancement (DDE): Yes

07 Digital Zoom: 2x, 4x

08 Image updating frequency: 8.3fps (PAL), 7.5fps (NTSC)

09 Image updating high frequency: 25fps (PAL),30fps (NTSC)

10 Scene range (High Gain): -40°C ÷ +160°C (-40°F ÷ +320°F)

11 Scene range (Low Gain): -40°C ÷ +550°C (-40°F ÷ +1022°F)

12 Thermal sensitivity (NEdT): < 50mK to f/1.0

13 Horizontal field of view: 9.3° (lens 35mm), 13° (lens 25mm), 17° (lens 19mm)

14 Vertical field of view: 7.1° (lens 35mm), 10° (lens 25mm), 13° (lens 19mm)

15 F-number: F/1.25 (lens 19mm), F/1.1 (lens 25mm), F/1.2 (lens 35mm)

16 Person (detection / recognition / identification): 640m / 160m / 80m (2099ft / 524ft / 262ft) (lens 19mm), 930m / 230m / 116m (3051ft / 754ft / 380ft) (lens 25mm), 1280m / 320m / 160m (4199ft / 1049ft / 525ft) (lens 35mm)

17 Auto (detection / recognition / identification): 1950m / 500m / 250m (6397ft / 1640ft 820/ ft) (lens 19mm), 2800m / 710m / 360m (9186ft / 2329ft / 1181ft) (lens 25mm), 3850m / 950m / 295m (12631ft / 3116ft / 967ft) (lens 35mm)

**J Thermal cameras available (resolution 640x512)**

01 Image sensor: Uncooled VOx microbolometer

02 Resolution: 640x512 (PAL), 640x480 (NTSC)

03 Pixel dimensions: 17μm

04 Spectral response - long wave infrared (LWIR): from 7.5μm a 13.5μm

05 Internal shutter (only for sensor compensation): Video stop < 1sec.

06 Digital Detail Enhancement (DDE): Yes

07 Digital Zoom: 2x, 4x, 8x

08 Image updating frequency: 8.3fps (PAL), 7.5fps (NTSC)

09 Image updating high frequency: 25fps (PAL),30fps (NTSC)

10 Scene range (High Gain): -40°C ÷ +160°C (-40°F ÷ +320°F)

11 Scene range (Low Gain): -40°C ÷ +550°C (-40°F ÷ +1022°F)

12 Thermal sensitivity (NEdT): < 50mK to f/1.0

13 Horizontal field of view: 18° (lens 35mm), 25° (lens 25mm)

14 Vertical field of view: 14° (lens 35mm), 20° (lens 25mm)

15 F-number: F/1.1 (lens 25mm), F/1.2 (lens 35mm)

16 Person (detection / recognition / identification): 820m / 210m / 104m (2690ft / 689ft / 341ft) (lens 25mm), 1140m / 280m / 142m (3740ft / 919ft / 466ft) (lens 35mm)

17 Auto (detection / recognition / identification): 2200m / 580m / 290m (7218ft / 1903ft / 951ft) (lens 25mm), 3000m / 800m / 200m (9843ft / 2625ft / 656ft) (lens 35mm)

**2.2 Brackets and adaptors**

**A** MPXCW AISI 316L stainless steel corner adapter module

**B** MPXWBA AISI 316L stainless steel wall bracket

**C** MPXCOL AISI 316L stainless steel pole adapter module

**D** MPXWBTA AISI 316L stainless steel parapet or ceiling mounting bracket

**2.3 Accessories**

**A** WASEX2T4AT Tank 10l with integrated manual pump controlled by ATEX certified solenoid valve, delivery head up to 20m (66ft) max, IN 24Vac/Vdc

**B** WASEX2T4GOR Tank 10l with integrated manual pump controlled by EAC EX certified solenoid valve, delivery head up to 20m (66ft) max, IN 24Vac/Vdc

**C** WASEX2T4IN Tank 10l with integrated manual pump controlled by INMETRO certified solenoid valve, delivery head up to 20m (66ft) max, IN 24Vac/Vdc

**D** OCTEX3/4C Cable gland with gasket EX 3/4" NPT, unarmoured cable IECEX-ATEX-EAC Ex

**E** OCTEXA3/4C Cable gland with gasket EX 3/4" NPT, armoured cable IECEX-ATEX-EAC Ex

**F** OCTEXB3/4C Barrier cable gland 3/4" NPT, unarmoured cable IECEX-ATEX-EAC Ex

**G** OCTEXBA3/4C Barrier cable gland 3/4" NPT, armoured cable IECEX-ATEX-EAC Ex

**H** OCTEX3/4 Cable gland with gasket EX 3/4" NPT, unarmoured cable ATEX

**I** OCTEXA3/4 Cable gland with gasket EX 3/4" NPT, armoured cable ATEX

**J** OCTEXA3/4 Cable gland with gasket EX 3/4" NPT, armoured cable ATEX

**K** OCTEXB1/2C Barrier cable gland EX 1/2” NPT unarmoured cable ATEX-IECEx-EAC Ex

**L** OCTEX1/2C Cable gland in nickel-plated brass EX 1/2" NPT, unarmoured cable IECEX-ATEX-EAC Ex, with gasket from 3 to 8mm (0.12 to 0.31in)

**M** OCTEXS1/2C Cable gland in nickel-plated brass EX 1/2" NPT, unarmoured cable IECEX-ATEX-EAC Ex, with gasket from 7.5 to 11.9mm (3 to 4.7in)

**N** OCTEX1/2-3/4C Cable glands reduction in nickel-plated brass 3/4" - 1/2" NPT IECEX-ATEX-EAC Ex

**O** OEXPLUG3/4 Plug EX 3/4" NPT IECEX-ATEX-EAC Ex

**P** OCTEXP3/4C Conduit cable gland nickel-plated brass 3/4" NPT IECEX-ATEX-EAC EX

**Q** MPXCABL4 Cabling for MPX/MPXT, 4m (13ft) (unarmoured cable and barrier cable gland): 2 Ethernet cables, 3 power supply wires, 2 coaxial video cables, 15 wires for alarms, relays and telemetry

**R** MPXCABL10 Cabling for MPX/MPXT, 10m (394in) (unarmoured cable and barrier cable gland): 2 Ethernet cables, 3 power supply wires, 2 coaxial video cables, 15 wires for alarms, relay and telemetry

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| MAXIMUS MPXT - Configuration options |
|   | **Voltage** | **Day/Night camera** | **Thermal Camera** |   |   | **Video Output** |   | **Frequency** |
| **MPXT** | **1** 230Vac | **P** Day/Night camera 36x optical zoom lens, PAL | **A** Thermal camera 35mm, 336x256 | **W** With wiper | **0** | **0** Analog control | **00A** | **-** 7.5-8.3Hz |
|  | **2** 24Vac | **Q** Day/Night camera 28x optical zoom lens, PAL | **B** Thermal camera 25mm, 336x256 |  |  | **Z** IP H.264/AVC, Protocol ONVIF Profile S 1 |  | **H** 25-30Hz |
|  | **3** 120Vac | **N** Day/Night camera 36x optical zoom lens, NTSC | **D** Thermal camera 35mm, 640x512 |  |  |  |  |  |
|  |  | **M** Day/Night camera 28x optical zoom lens, NTSC | **E** Thermal camera 25mm, 640x512 |  |  |  |  |  |
|  |  |  | **V** Thermal camera 19mm, 336x256 |  |  |  |  |  |

 1 The IP H.264/AVC versions are not CNEx certified