

# Compatibility of IP cameras and switches

## Abstract

---

This document describes basic rules for using IP cameras with compatible switches. Document also describes meaning of pins of cabling.

Author: Roman Hajda  
Document: an0004\_an\_en\_102.pdf

## Appendix

---

File: –

–	–

---

**Table of contents**

---

	Table of contents .....	2
	Revision history .....	3
	Related documentation .....	3
<b>1</b>	<b>Introduction .....</b>	<b>5</b>
1.1	How to read this document .....	5
<b>2</b>	<b>Terminology .....</b>	<b>6</b>
2.1	Common abbreviations .....	6
<b>3</b>	<b>Connection of Ethernet connectors of IP cameras .....</b>	<b>7</b>
3.1	IP cameras AXIS connections RJ45 .....	7
3.2	IP cameras AXIS type of connectors RJ45 .....	7
3.3	IP cameras AXIS connections M12 .....	7
3.4	IP cameras AXIS type of connectors M12 .....	8
3.4.1	IP cameras MOXA (VPORT06xx), VIVOTEK (MD8562) connections RJ45 .....	8
3.4.2	IP cameras MOXA (VPORT06xx), VIVOTEK (MD8562) type of connectors RJ45 .....	8
3.5	IP cameras MOXA (VPORT06xx) connection M12 .....	8
3.6	IP cameras MOXA (VPORT06xx) type of connector M12 .....	8
<b>4</b>	<b>Compatibility of PoE switch and IP cameras .....</b>	<b>9</b>
4.1	IP cameras AXIS .....	9
4.2	IP cameras MOXA (VPORT06xx), VIVOTEK (MD8562) .....	9
<b>5</b>	<b>Compatibility of camera covers and IP cameras .....</b>	<b>10</b>
<b>6</b>	<b>Substitution of IP cameras AXIS .....</b>	<b>11</b>
<b>7</b>	<b>Warning .....</b>	<b>12</b>
<b>8</b>	<b>Appendix A – IP cameras lenses overall and field of view .....</b>	<b>13</b>
8.1	IP cameras lenses and fields of view .....	13
8.1.1	Appendix B – The difference in the types of Axis camera connectors .....	14

**Revision history**

Version	Date	Author of change	Changes
100	13. 9. 2017	Roman Hajda	New document
101	14. 11. 2017	Roman Hajda	IP camera pin assignment according to 802.3af Standards A and B. Split tables for better clarity.
102	25. 6. 2018	Roman Hajda	Tables were split for better clarity. Added A209FD/A209FD-R and A209FD-R M12 cameras. Added difference between types of connectors AM3114-Rxx/A and AP3905-Rxx/A. Added new camera AP3905-Rxx/x MKII.

**Related documentation**

1. **AP3905-R/B** – IP camera AXIS, M12 – datasheet  
file: ap3905-rxxb\_d\_en\_102.pdf
2. **AP3905-R/B MKII** - IP camera AXIS, M12 – datasheet  
file: ap3905-rxxbmkii\_d\_en\_100.pdf
3. **AP3905-R/A MKII** - IP camera AXIS, RJ45 – datasheet  
file: ap3905-rxxamkii\_d\_en\_100.pdf
4. **AP209FD** – IP camera AXIS, RJ45 –datasheet  
link: [https://www.axis.com/files/datasheet/ds\\_209fd\\_mfd\\_37723\\_en\\_0912\\_lo.pdf](https://www.axis.com/files/datasheet/ds_209fd_mfd_37723_en_0912_lo.pdf)
5. **AP209FDR** – IP camera AXIS, RJ45, M12 –datasheet  
link: [https://www.axis.com/files/datasheet/ds\\_209fdr\\_mfdr\\_37731\\_en\\_0912\\_lo.pdf](https://www.axis.com/files/datasheet/ds_209fdr_mfdr_37731_en_0912_lo.pdf)
6. **KKR-AL01/xx** – External camera cover – guide  
file: kkr-al01\_g\_en\_100.pdf
7. **KKR-AL01H/xx** – External camera cover - guide  
file: kkr-al01hc1\_g\_en\_100.pdf
8. **KKR-AL02/E** – External camera cover – guide  
file: kkr-al02\_g\_en\_100.pdf
9. **KKR-MD85/x** – External camera cover – guide  
file: kkr-md85b\_g\_en\_100.pdf
10. **KKR-S60/x** – External camera cover – guide  
file: kkr-s60c\_g\_en\_100.pdf
11. **KKR-VP06/xx** – External camera cover – guide  
file: kkr-vp06d1\_g\_en\_100.pdf
12. **KKR-13T/x** – External camera cover – guide  
file: kkr-13t\_g\_cz\_100.pdf
13. **KKR-15T/x** – External camera cover – datasheet  
file: kkr-15t\_d\_en\_100.pdf
14. **KKR-19T/x** – External camera cover – datasheet  
file: kkr-19t\_d\_en\_100.pdf
15. **ESW06A** – Industrial Ethernet switch with PoE – guide  
file: esw06a\_g\_en\_104.pdf

16. **ESW06P** – Industrial Ethernet switch with PoE – guide  
file: esw06p\_g\_cz\_104.pdf
17. **RB-SW006/AR1** – Industrial Ethernet switch with PoE – guide  
file: rd-sw006ar1\_g\_en\_100.pdf
18. **RB-SW006/AM1** – Industrial Ethernet switch with PoE – guide  
file: rd-sw006am1\_g\_en\_102.pdf
19. **VPORT06xx** – IP camera MOXA – User’s manual  
link: [https://www.moxa.com/doc/man/VPort\\_P06-1MP-M12\\_UM\\_2e.pdf](https://www.moxa.com/doc/man/VPort_P06-1MP-M12_UM_2e.pdf)
20. **MD8562** – IP camera VIVOTEK – User’s manual  
link: <https://www.manualslib.com/manual/533637/Vivotek-Md8562.html>

# **1 Introduction**

---

This document provides a compatibility overview of IP cameras and switches or camera covers offered by the AMiT Company.

Additionally, some more technical aspects of the system are discussed and basic guide how to choose an appropriate solution is provided.

## **1.1 How to read this document**

---

The document should allow you to safely jump to any chapter you need to consult.

## **2 Terminology**

---

### **2.1 Common abbreviations**

---

**PoE**

Power over Ethernet

### 3 Connection of Ethernet connectors of IP cameras

This chapter provides description of each pin of every IP camera offered by AMIT Company.

#### 3.1 IP cameras AXIS connections RJ45

PIN	RJ45			
	AP3905-Rxx/A MKII	AP3905-Rxx/A	AM3114-Rxx/A	A209FD/A209FD-R
1	Tx+ / DC+	Tx+ / DC+	Tx+ / DC+	Tx+ / DC+
2	Tx- / DC+	Tx- / DC+	Tx- / DC+	Tx- / DC+
3	Rx+ / DC-	Rx+ / DC-	Rx+ / DC-	Rx+ / DC-
4	DC+	DC+	DC+	DC+
5	DC+	DC+	DC+	DC+
6	Rx- / DC-	Rx- / DC-	Rx- / DC-	Rx- / DC-
7	DC-	DC-	DC-	DC-
8	DC-	DC-	DC-	DC-

#### 3.2 IP cameras AXIS type of connectors RJ45

Type	RJ45			
	AP3905-Rxx/A MKII	AP3905-Rxx/A	AM3114-Rxx/A	A209FD/A209FD-R
	Male RJ45	Male RJ45	Female RJ45	Female RJ45

#### 3.3 IP cameras AXIS connections M12

PIN	M12			
	AP3905-Rxx/B MKII	AP3905-Rxx/B	AM3114-Rxx/B	A209FD-R M12
1	Tx+ / DC+	Tx+ / DC+	Tx+ / DC+	Tx+ / DC+
2	Rx+ / DC-	Rx+ / DC-	Rx+ / DC-	Rx+ / DC-
3	Tx- / DC+	Tx- / DC+	Tx- / DC+	Tx- / DC+
4	Rx- / DC-	Rx- / DC-	Rx- / DC-	Rx- / DC-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-

### 3.4 IP cameras AXIS type of connectors M12

M12				
	<b>AP3905-Rxx/B MKII</b>	<b>AP3905-Rxx/B</b>	<b>AM3114-Rxx/B</b>	<b>A209FD-R M12</b>
<b>Type</b>	Female M12	Female M12	Female M12	Male M12

### IP cameras MOXA (VPOR06xx), VIVOTEK (MD8562) connections RJ45

RJ45		
PIN	VPOR06Rx	MD8562
1	Tx+ / DC+	Tx+ / DC+
2	Tx- / DC+	Tx- / DC+
3	Rx+ / DC-	Rx+ / DC-
4	-	DC+
5	-	DC+
6	Rx- / DC-	Rx- / DC-
7	-	DC-
8	-	DC-

### IP cameras MOXA (VPOR06xx), VIVOTEK (MD8562) type of connectors RJ45

RJ45		
	<b>VPOR06Rx</b>	<b>MD8562</b>
<b>Type</b>	Male RJ45	Male RJ45

### 3.5 IP cameras MOXA (VPOR06xx) connection M12

M12	
PIN	VPOR06Mx
1	Tx+ / DC+
2	Rx+ / DC-
3	Tx- / DC+
4	Rx- / DC-
5	-
6	-
7	-
8	-

### 3.6 IP cameras MOXA (VPOR06xx) type of connector M12

M12	
	<b>VPOR06Mx</b>
<b>Type</b>	Female M12



## 4 Compatibility of PoE switch and IP cameras

This chapter describes which cameras can be used with full functionality with following PoE switches.

### 4.1 IP cameras AXIS

#### RJ45

Switch	AP3905-Rxx/A MKII	AP3905-Rxx/A	AM3114-Rxx/A
ESW06A	NO	NO	YES
ESW06P	YES	YES	YES
RB-SW006/AR1	YES	YES	YES
RD-SW006/AR1	YES	YES	YES

#### M12

Switch	AP3905-Rxx/B MKII	AP3905-Rxx/B	AM3114-Rxx/B
RB-SW006/AM1	YES	YES	YES

### 4.2 IP cameras MOXA (VPORT06xx), VIVOTEK (MD8562)

#### RJ45

Switch	VPORT06Rx	MD8562
ESW06A	NO	YES
ESW06P	NO	YES
RB-SW006/AR1	YES	YES
RD-SW006/AR1	YES	YES

#### M12

Switch	VPORT06Mx
RB-SW006/AM1	YES

## 5 Compatibility of camera covers and IP cameras

This chapter describes which camera cover is suitable, provides clear view and corresponding dimensions for following IP cameras.

Camera cover	AP3905-Rxx/x MKII	AP3905-Rxx/x	AM3114-Rxx/x	A209FD/A209FD-R
KKR-AL01/xx	YES	YES	YES	NO
KKR-AL01H/xx	YES	YES	YES	NO
KKR-AL02/E *	NO	NO	NO	NO
KKR-MD85/x	NO	NO	NO	NO
KKR-M31/x	YES	YES	YES	NO
KKR-S60/x **	NO	NO	NO	NO
KKR-VP06/xx	YES	NO	NO	NO
KKR-13T/x	NO	YES	NO	NO
KKR-15T/x	NO	NO	YES	YES
KKR-19T/x	NO	NO	YES	NO

Camera cover	VPORT06xx	MD8562
KKR-AL01/xx	YES	NO
KKR-AL01H/xx	YES	NO
KKR-AL02/E *	NO	NO
KKR-MD85/x	NO	YES
KKR-M31/x	NO	NO
KKR-S60/x **	NO	NO
KKR-VP06/xx	YES	NO
KKR-13T/x	NO	NO
KKR-15T/x	NO	NO
KKR-19T/x	NO	NO

\* - KKR-AL02/E is compatible with IP cameras Nexcom NCm-301-V, Nexcom NCm-301-2V (these cameras are not offered by AMiT Company).

\*\* - KKR-S60/x is compatible with IP camera SAMSUNG SNV-6012M

Field of view for available lenses is described in chapter 8 Appendix A – IP cameras lenses overall and field of view.

## 6 Substitution of IP cameras AXIS

This chapter describes possible substitution of original IP cameras by newer type of IP cameras AXIS.

### RJ45

Original camera	Possible substitution of camera	
Camera	Camera	Note
AP209FD	AP3905-R36/A MKII	Mechanically different
AP209FDR	AP3905-R36/A MKII	Application Software updates needed Type of connector different

### M12

Original camera	Possible substitution of camera	
Camera	Camera	Note
AP209FDR M12	AP3905-R36/B MKII	Mechanically different Application Software updates needed Type of connector different

### RJ45

Original camera	Possible substitution of camera	
Camera	Camera	Note
AM3114-R28/A	AP3905-R36/A MKII	Mechanically compatible
AM3114-R36/A	AP3905-R36/A MKII	Application Software updates needed
AM3114-R60/A	AP3905-R60/A MKII	Type of connector different (see Appendix B)
AM3114-R80/A	AP3905-R80/A MKII	

### M12

Original camera	Possible substitution of camera	
Camera	Camera	Note
AM3114-R28/B	AP3905-R36/B MKII	Mechanically compatible
AM3114-R36/B	AP3905-R36/B MKII	Application Software updates needed
AM3114-R60/B	AP3905-R60/B MKII	Type of connector identical
AM3114-R80/B	AP3905-R80/B MKII	

### RJ45

Original camera	Possible substitution of camera	
Camera	Camera	Note
AP3905-R21/A	AP3905-R21/A MKII	Mechanically identical
AP3905-R28/A	AP3905-R28/A MKII	Application Software updates needed
AP3905-R36/A	AP3905-R36/A MKII	Type of connector identical
AP3905-R60/A	AP3905-R60/A MKII	
AP3905-R80/A	AP3905-R80/A MKII	

### M12

Original camera	Possible substitution of camera	
Camera	Camera	Note
AP3905-R21/B	AP3905-R21/B MKII	Mechanically identical
AP3905-R28/B	AP3905-R28/B MKII	Application Software updates needed
AP3905-R36/B	AP3905-R36/B MKII	Type of connector identical
AP3905-R60/B	AP3905-R60/B MKII	
AP3905-R80/B	AP3905-R80/B MKII	

If the cameras are replaced in the camera cover, it is necessary to check observing angles.

## **7 Warning**

---

AMiT, spol. s r. o. does not provide any warranty concerning the contents of this publication and reserves the right to change the documentation without obligation to inform anyone or any authority about it.

This document can be copied and redistributed under following conditions:

1. The whole text (all pages) must be copied without any changes.
2. All redistributed copies must retain the AMiT, spol. s r. o. copyright notice and any other notices contained in the documentation.
3. This document must not be distributed for purpose of making profit.

The names of products and companies used herein can be trademarks or registered trademarks of their respective owners.

## 8 Appendix A – IP cameras lenses overall and field of view

This chapter describes available lenses with horizontal and vertical viewing angles for following IP cameras.

### 8.1 IP cameras lenses and fields of view

IP Camera	Lens [mm]	H [°]	V [°]
AM3114-R28/x	2.8	77	50
AM3114-R36/x	3.6	60	38
AM3114-R60/x	6.0	37	22
AM3114-R80/x	8.0	28	15.5

IP Camera	Lens [mm]	H [°]	V [°]
AP3905-R21/x	2.1	148	86
AP3905-R28/x	2.8	115	63
AP3905-R36/x	3.6	87	47
AP3905-R60/x	6.0	52	33
AP3905-R80/x	8.0	40	22.5

IP Camera	Lens [mm]	H [°]	V [°]
AP3905-R21/x MKII	2.1	147	86
AP3905-R28/x MKII	2.8	115	63
AP3905-R36/x MKII	3.6	87	47
AP3905-R60/x MKII	6.0	52	33
AP3905-R80/x MKII	8.0	40	22.5

IP Camera	Lens [mm]	H [°]	V [°]
VPORT06M25	2.5	130	98
VPORT06M25T			
VPORT06M36	3.6	96	56
VPORT06M36T			
VPORT06M42	4.2	81	47
VPORT06M42T			
VPORT06M60	6.0	51	38
VPORT06M60T			
VPORT06M80	8.0	38	24
VPORT06M80T			

IP Camera	Lens [mm]	H [°]	V [°]
MD8562	2.8	110	81

H – Horizontal angle of view

V – Vertical angle of view

## Appendix B – The difference in the types of Axis camera connectors

This chapter describes connector type difference between AM3114-Rxx/A and AP3905-Rxx/A.

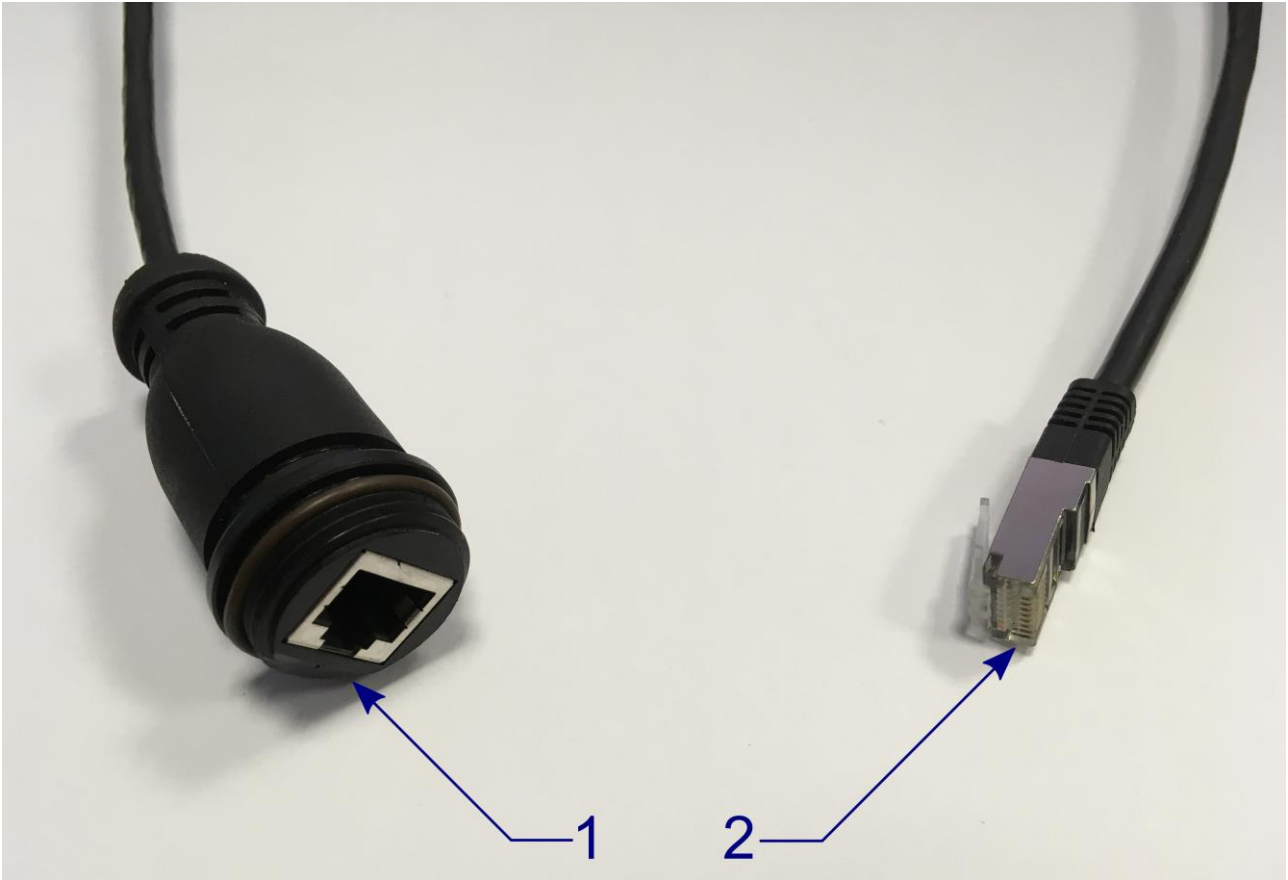


Fig. 1 – Connector type

### Connector type overview

Position	Camera	Connector type
1	Axis 209FD-R	RJ45 female
1	AM3114-Rxx/A	RJ45 female
2	AP3905-Rxx/A MKII	RJ45 male