

네트워크 카메라

제품 사용 설명서

TNB-9000

A급 기기(업무용 방송통신기자재)

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네트워크 카메라

제품 사용 설명서

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- 시간 경과에 따른 제품의 변화 또는 사용 중 자연적 마모에 의한 이상

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안전하게 개인정보를 보호하고, 개인정보도용 피해를 예방하기 위해 3개월 마다 주기적으로 비밀번호를 변경하세요. 부주의한 비밀번호 관리로 인한 보안 및 기타 문제의 책임은 사용자에게 있으므로 각별히 주의하세요.

안전을 위한 주의사항

제품을 올바르게 사용하여 위험이나 재산상의 피해를 미리 막기 위한 내용입니다 반드시 지켜 주시기 바랍니다.

 경고 지키지 않았을 경우 사용자가 사망하거나 중상을 입을 수 있습니다.	 주의 지키지 않았을 경우 사용자가 부상을 당하거나 재산상의 손해를 입을 수 있습니다.
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전원 관련		
 경고		
전원 및 신호선 연결 시 외부 연결 단자를 확인하고 연결하세요. 알람 단자에는 알람 신호선을 연결하고, DC 전원 입력 단자는 극성을 확인하여 DC 어댑터를 올바르게 연결하세요. 전원을 잘못 연결하면 화재, 감전, 고장의 원인이 됩니다.	연기가 나거나 이상한 냄새가 날 때는 사용을 중단하세요. 이때는 곧바로 전원을 분리 후 서비스 센터에 연락 해주세요. 그대로 계속 사용하면 화재, 감전의 원인이 됩니다.	PoE 연결 단자를 확인하고 연결하세요. PoE를 잘못 연결하면 화재, 감전, 고장의 원인이 됩니다.
 주의		
전원 연결단자에 전원선을 확실히 고정 후 사용하세요. 접속이 불완전한 경우는 화재의 원인이 됩니다.	어댑터 출력 케이블을 연장하여 사용하지 마세요. 전원 케이블 연장 설치가 필요한 경우 서비스 센터에 문의하세요.	PoE 연결 외부 전원은 절연전원을 사용하세요.
설치 관련		
 경고		
반드시 본 제품에 적합한 어댑터를 사용하세요. 화재, 감전, 고장의 원인이 됩니다.	천동, 번개가 치면 카메라에 문제가 생길 수 있습니다. 설치 시 접지 등 낙뢰에 의한 파손이 최소화될 수 있도록 주의하세요.	
 주의		
카메라를 벽이나 천장 등에 설치 시 안전하고 확실하게 고정하세요. 낙하로 인한 부상의 원인이 됩니다.	카메라 위에 전도성 물질(드라이버, 동전, 쇠붙이 등) 및 물이 차있는 용기 등을 놓지 마세요. 화재, 감전, 낙하로 인한 상해의 원인이 됩니다.	하나의 어댑터에 여러대의 카메라를 연결해서 사용하지 마세요. 용량 초과 시 이상 발열 및 화재의 원인이 됩니다.
카메라 설치/분리시 보호용 장갑을 착용하세요. 제품 표면의 고온에 의한 화상의 원인이 됩니다.	무리한 힘을 가하여 억지로 제품을 설치할 경우 오동작으로 인해 카메라에 손상을 줄 수 있습니다. 규격에 맞지 않는 도구를 사용하여 강제로 조립할 경우 제품이 파손될 수 있습니다.	제품이 설치되는 장소에 화학 물질 또는 유증기가 있거나 발생될 수 있을 경우 제품을 설치하지 마세요. 풍기름과 같은 식용 기름 성분도 제품의 파손 및 변형을 유발할 수 있으므로, 주방 또는 조리대 근처에는 설치하지 마세요. 제품 손상의 원인이 될 수 있습니다.

제품 설치시 화학 물질이 제품 표면에 묻지 않도록 주의하세요. 일부 세척제나 전착 성분과 같은 화학 용제는 제품 표면에 치명적인 손상을 줄 수 있습니다.	당사에서 권장하지 않는 방법으로 제품을 설치/분해하는 경우 제품의 기능/성능을 보장할 수 없습니다. 제품 사용 설명서의 “설치 및 연결”을 참조하여 설치하세요.	제품을 물 속에서 설치 또는 사용할 경우 제품의 심각한 고장을 일으킬 수 있습니다.
참고		
습기 먼지나 그을음 등이 많은 장소에 설치하지 마세요. 화재, 감전의 원인이 됩니다.	제품에 물건을 떨어뜨리거나 충격을 주지 마세요. 진동이 심한 곳이나 자석종류가 있는 곳으로부터 멀리해 주세요.	온도가 너무 높은 곳이나 낮은 곳, 습도가 높은 곳에 설치하지 마세요. 화재, 감전의 원인이 됩니다.
직사광선이 들어오는 곳이나 난방기구 등 열이 나는 곳을 피해주세요. 화재, 감전의 원인이 됩니다.	설치된 제품을 이동하고자 할 때에는 반드시 전원을 끄고 옮기거나 재설치 하세요. 화재, 감전의 원인이 됩니다.	바람이 잘 통하는 곳에 설치하세요. 화재 및 고장의 원인이 될 수 있습니다.
청소 관련		
참고		
청소 시 제품의 각 부분에 직접 물을 뿌리지 마세요. 화재, 감전의 원인이 됩니다.	제품 표면은 깨끗하고 부드러운 마른 헝겊으로 오염 부위를 닦거나 부드러운 마른 헝겊에 물을 적서 물이 흐르지 않도록 꼭 뒀 후에 오염 부분을 닦으세요. 알코올, 솔벤트가 함유되거나, 계면활성제가 함유된 세제, 화장품류, 기름 성분등은 제품의 파손 및 변형을 유발할 수 있으니 사용하지 마세요.	

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설치 및 사용상의 주의

- 배터리는 교체가 불가능합니다.
- 어댑터 출력 케이블을 연장하여 사용하지 마세요.
전원 케이블 연장 설치가 필요한 경우 서비스 센터에 문의하세요.
- 사용자 임의로 카메라를 분해하지 마세요.
- 카메라 취급 시 항상 주의하세요.
- 카메라를 주먹으로 치거나 흔들지 않도록 하고 부주의한 보관이나 오동작으로 카메라에 손상을 입히지 않도록 주의하세요.
- 카메라를 비가 오는 장소나 습기가 많은 장소에 설치하지 않도록 주의하고 젖은 장소에 두고 동작하지 마세요. (실내용)
- 제품 표면은 깨끗하고 부드러운 마른 헝겊으로 오염 부위를 닦거나 부드러운 마른 헝겊에 물을 적셔 물이 흐르지 않도록 꼭 짰 후에 오염 부분을 닦으세요.
(알코올, 솔벤트가 함유되거나, 계면활성제가 함유된 세제, 화장품류, 기름 성분등은 제품의 파손 및 변형을 유발할 수 있으니 사용하지 마세요.)
- 카메라를 직사광선이 비치지 않는 서늘한 곳에 설치하세요. 직사광선이 비치는 곳에 두면 제품에 좋지 않은 영향을 줄 수 있습니다.
- Micro SD 메모리 카드를 구부리거나 던지지 마세요.
- 급격한 온도 변화 발생 시 제품 내부에 성애가 발생할 수 있으나 영상에는 문제가 없습니다.
- 온도가 높은 곳, 습기가 많은 곳, 먼지가 많은 곳에 Micro SD 메모리 카드를 보관하거나 사용하지 마세요.
- Micro SD 메모리 카드 단자에 이물질이 묻지 않도록 주의하세요.
이물질이 묻은 경우에는 부드러운 헝겊으로 닦아주세요.
- Micro SD 메모리 카드를 빼기 전 <저장>에서 장치를 <사용 안함>으로 설정하고 [적용] 버튼을 누른 후 카메라 전원을 끄세요.
- Micro SD 메모리 카드의 수명이 다하면 데이터가 저장되지 않습니다.
이러한 경우에는 Micro SD 메모리 카드를 새로 구입하세요.
- 본 제품을 설치하기 전 또는 사용 중에 한화비전 웹 사이트 <https://www.HanwhaVision.com> 을 방문하셔서 최신 S/W 버전을 확인하시고 다운로드하여 업데이트하세요.
- 제품 CVBS 출력단자는 카메라 설치 편의성을 위한 단자이며 감시용으로 부적합합니다.
- 제품 Micro USB 출력단자는 카메라 설치 편의성을 위한 단자이며 감시용으로 부적합합니다.
- 보안강화를 위하여 특수문자, 숫자, 영문 대문자, 소문자 중 다양한 조합으로 비밀번호를 설정하여 사용하시기를 권장합니다.
- 당사는 별도 구매하신 타사 제품(렌즈, 액세서리)에 대한 품질을 보증하지 않습니다.
- 특정한 설치 환경에서 무선 통신에 간섭이 발생할 수 있습니다. 제품과 주변 무선통신 장비 간 전자파 간섭이 발생하는 경우, 무선통신 장비와 거리를 넓히거나 통신용 안테나 방향을 조정하는 것을 권장합니다.

PC 시스템 권장 사양

- CPU : Intel(R) Core(TM) i9-7920X 2.9GHz 이상
 - RAM : 64G 이상
 - 지원 OS : MS Windows 8.1, 10, Mac OS X 10.12, 10.13, 10.14
 - 권장 브라우저 : Google Chrome
 - 지원 브라우저 : MS Explore11, MS Edge, Mozilla Firefox(Window 64bit only), Apple Safari(Mac OS X only)
 - VGA : GTX 1080, 11GB 그래픽 카드 이상
- ※ 검증된 OS 및 브라우저 상세 버전 정보는 부록을 참고하세요.

Micro SD/SDHC/SDXC 메모리 카드 권장 사양

- 권장 용량 : 16GB ~ 256GB (MLC타입 필수)
- 본 카메라는 다음과 같은 제조사 제품군의 메모리 카드 사용을 권장합니다.
- 권장 제조사 : SanDisk, Transcend
- 제품군 : High endurance
- 카드 제조사별/종류별 호환성은 차이가 날 수 있습니다.
- MJPEG SD 녹화의 경우, MJPEG 녹화 해상도를 4K 이하로 설정하여 사용을 권장합니다.
- TNB-9000에서 지원하는 멀티 프로파일 사양은 총 3개입니다.
1번 채널은 2개, 2번 DPTZ 채널은 1개까지 프로파일을 지원합니다. 따라서, 3개의 프로파일을 모두 사용시에는 SD카드 등 녹화 프로파일을 추가로 설정하여 사용할 수 없습니다. 이 경우, 녹화 프로파일을 기존 서비스중인 프로파일중 한 개와 동일하게 설정하면 녹화를 사용할 수 있습니다.

NAS 권장 사양

- 권장 용량 : 200GB 이상을 권장합니다.
- 본 카메라는 다음과 같은 제조사의 NAS 사용을 권장합니다.
권장 제품: QNAP NAS, Synology NAS



- NAS 자동 녹화 사용중, 카메라 리부팅시 네트워크 스위치 등 외부 네트워크 장비 특성에 따라 네트워크 연결이 지연되면 NAS 자동 녹화 동작이 실패할 수 있습니다.



한화비전은 지구환경보전을 위하여 제품과 관련된 전 과정에서 환경을 고려하고 있으며, 고객에게 보다 친환경적인 제품을 제공하기 위하여 다양한 활동을 추진하고 있습니다.
에코(Eco)마크는 친 환경제품을 만들기 위한 한화비전의 의지이며, 유럽의 환경규제(RoHS)에 만족하는 제품임을 의미합니다.

구성품 확인하기

다음의 구성품이 모두 포함되어 있는지 확인하세요.
(부속 액세스러리는 판매국에 따라 다를 수 있습니다.)

외관	품명	수량	용도
	카메라	1	
	퀵가이드	1	
	HPoE 인젝터	1	전원 및 네트워크 연결시 사용
	전원코드	1	HPoE 인젝터에 연결
	6단 터미널 블록	1	알람 입출력 단자에 꽂아 사용
	전원 터미널 블록	1	전원 단자에 꽂아 사용

마운트 렌즈 - 별매품

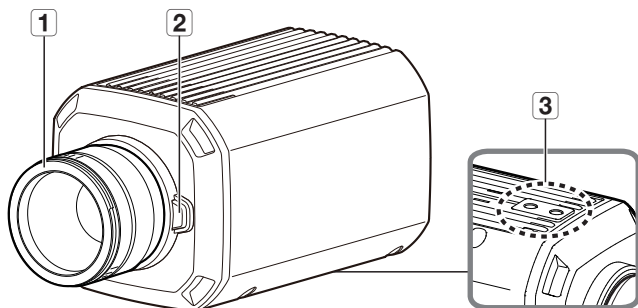
외관	품명	용도	모델명
	마운트 렌즈	카메라에 장착하기 위한 별도 구매용 렌즈	Canon 24mm f1.4L, Auto-Iris (EF 24mm f/1.4L II USM) Canon 35mm f1.4L, Auto-Iris (EF 35mm f/1.4L II USM) Canon 50mm f1.4, Auto-Iris (EF 50mm f/1.4 USM) Canon 85mm f1.2L, Auto-Iris (EF 85mm f/1.2L II USM) Canon 100mm f2.0, Auto-Iris (EF 100mm f/2 USM) Canon 70-200mm f2.8L, Auto-Iris, Vari Focal (EF 70-200mm f/2.8L USM)

-  렌즈 모델에 따라 제품 이미지가 다릅니다.
-  Canon 70-200mm f2.8L, Auto-Iris, Vari Focal (EF 70-200mm f/2.8L USM) 마운트 렌즈를 사용시 하우징 액세스러리 구성품을 꼭 사용하세요.

-  SFP 모듈, 광컨버터는 별도 구매품입니다. 100/1000 Base-FX의 SFP와 광컨버터를 선택 구매하세요.

각 부분의 명칭 및 기능

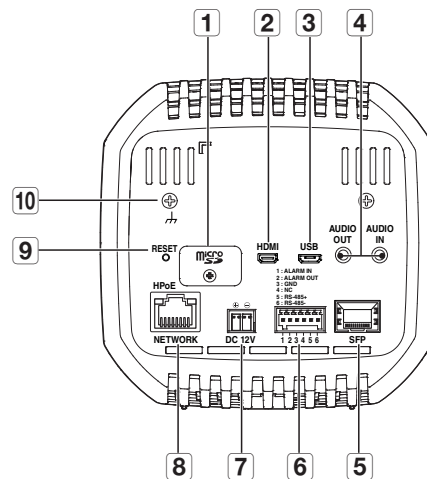
앞면



명칭	기능설명
1 마운트 렌즈	카메라에 장착하는 별도 구매용 렌즈입니다.
2 렌즈 분리 버튼	마운트한 렌즈를 분리 할때 사용합니다.
3 설치용 스크류 홀	카메라를 하우징에 설치할 경우에 사용합니다. ■ 지지대 규격나사 : 카메라를 지지대에 고정시 사용하는 나사 규격입니다. 1/4" -20 UNC L: 4.5mm±0.2mm (ISO 표준), 또는 0.197" (ASA 표준) 

■ 하우징은 별도 구매품입니다.
하우징에 설치시 하우징의 설치설명서를 확인하세요.

뒷면



명칭	기능설명
1 Micro SD 카드 삽입구	Micro SD 카드를 삽입하는 단자입니다.
2 micro HDMI 단자	HDMI 젠더 케이블을 연결하여 모니터를 통해 설치 영상을 확인할 수 있습니다.
3 MICRO USB 단자	WiFi 동글을 연결하는 단자입니다. 스마트폰에 설치한 어플리케이션을 통해 설치 영상을 확인할 수 있습니다. 11쪽의 "WiFi 연결하기"를 참고하세요. ■ WiFi 동글과 OTG 어댑터는 별매입니다.
4 오디오 단자	AUDIO OUT : 스피커와 연결하는 단자입니다. AUDIO IN : 마이크와 연결하는 단자입니다.
5 SFP 모듈 슬롯	SFP 모듈(LC Type)을 통하여 광통신 연결하는 단자입니다. (100/1000Base-FX)
6 알람 입출력 단자	ALARM IN : 알람 입력 센서 혹은 외부 주야간 센서를 연결하는 단자입니다. ALARM OUT : 알람 출력신호를 연결하는 단자입니다. GND : 접지용 단자입니다. RS-485+ : RS-485 Data line RS-485- : RS-485 Data line

명칭	기능설명
7 전원 연결 단자	전원 케이블과 연결하는 단자입니다.
8 HPoE 연결 단자	HPoE 인젝터를 통해 전원과 네트워크를 연결하는 단자입니다.
9 초기화 버튼	카메라의 설정을 공장 값으로 초기화하는 버튼입니다. 약 5초간 누르면 재부팅됩니다. ■ 카메라를 초기화하면 네트워크 설정은 DHCP를 사용하도록 변경됩니다. 네트워크 내에 DHCP 서버가 없는 경우는, 디바이스 매니저 프로그램을 이용해 기본적인 네트워크 설정(IP Address, Subnet Mask, Gateway 등)을 다시 해야 접속이 가능합니다.
10 낙뢰 보호용 접지 단자	낙뢰 전류를 안전하게 외부로 방류시켜 카메라를 보호하는 단자입니다.



■ 제품의 RS-485 단자는 팬/틸트 드라이버와 직접 연결만 지원되며 외부의 RS-485 컨트롤러와 연결은 지원되지 않습니다.

렌즈 장착하기

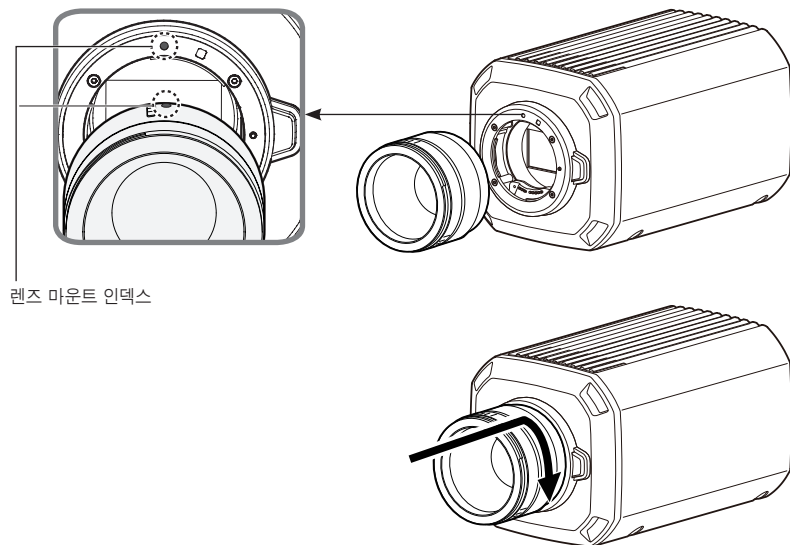
설치 및 장착 전에 전원을 분리해 주세요.



- 마운트 렌즈는 별도 구매품입니다. 호환되는 렌즈는 6쪽을 참고하세요.
- 렌즈를 장착 또는 분리시 카메라 전원이 꺼진 상태에서 해주세요.

카메라에 렌즈 장착하기

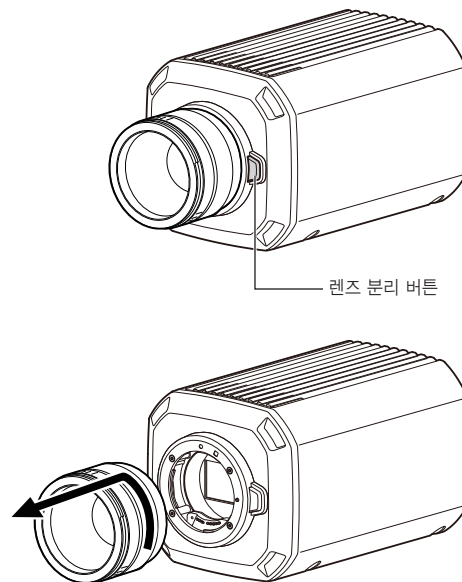
아래 그림과 같이 렌즈 마운트 인덱스를 정렬하여 끼운후 시계방향으로 돌려 장착하세요.



- 마운트 렌즈 모델에 따라 렌즈 마운트 인덱스 컬러가 다를수 있습니다.
- 장착하는 렌즈의 자세한 설명은 해당 렌즈의 사용설명서를 참고하세요.

렌즈 분리하기

아래 그림과 같이 카메라의 렌즈 분리 버튼을 누른 상태에서 렌즈를 반시계 방향으로 돌려 카메라에서 렌즈를 분리하세요.

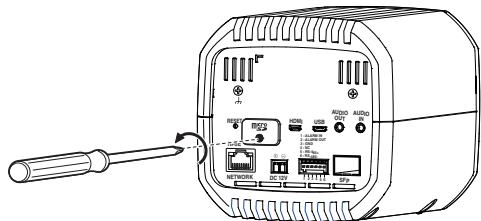


Micro SD 카드 넣기/빼기

- ! ■ 카메라를 설치하기 전에 전원과 본체를 분리한 상태에서 Micro SD 메모리 카드를 넣으세요.
- 역방향으로 무리하게 삽입하지 마세요. Micro SD 메모리 카드가 파손될 수 있습니다.

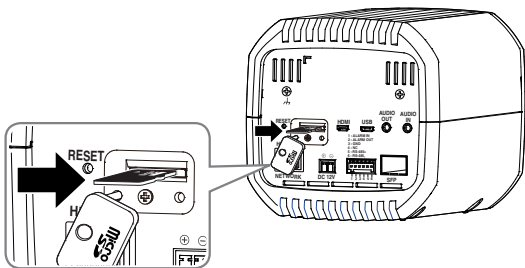
메모리 슬롯 덮개 제거

드라이버를 이용하여 메모리 슬롯의 방진덮개 체결 나사를 풀어 덮개를 제거한후 메모리 카드를 삽입하세요.



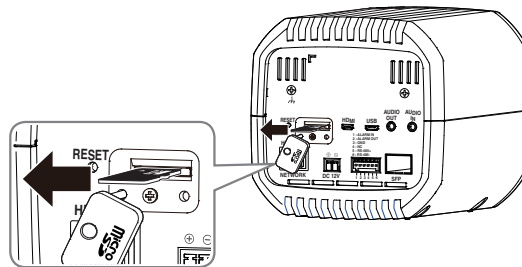
Micro SD 카드를 넣으려면

그림과 같이 Micro SD 카드를 화살표 방향으로 밀어 넣으세요.



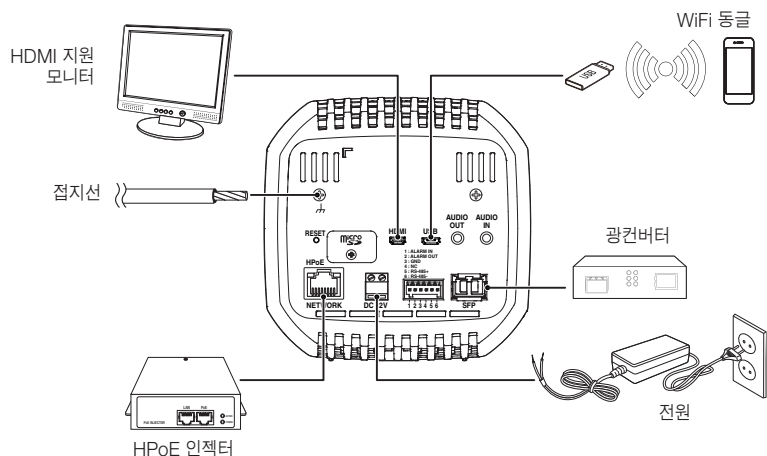
Micro SD 카드를 빼려면

그림과 같이 화살표 방향으로 끼워진 Micro SD 카드의 끝을 살짝 누르면 자동으로 나옵니다.



- ! ■ Micro SD 카드를 뺄 때 세게 눌렀다가 놓을 경우 Micro SD 카드가 튀어 나올 수 있으므로 주의하세요.
- Micro SD 메모리 카드를 빼기 전 설정 메뉴의 <설정 (⚙)> - <이벤트> - <저장>에서 장치를 <사용 안함>으로 설정하고 [적용] 버튼을 누른 후 카메라 전원을 끄세요.
- Micro SD 카드에 데이터를 저장하고 있을 때 Micro SD 카드를 빼거나, 전원을 끄면 Micro SD 카드에 저장된 데이터가 손상될 수 있습니다.

다른 기기와 연결하기



- HPoE 기능이 가능한 라우터를 연결하여 사용하세요.
- 제품 Micro USB 출력단자는 카메라 설치 편의성을 위한 단자이며 감시용으로 부적합합니다.

WiFi 연결하기

카메라 설정

1. Micro USB 단자에 OTG 어댑터(5핀)와 WiFi 동글을 연결하세요.

스마트폰 설정

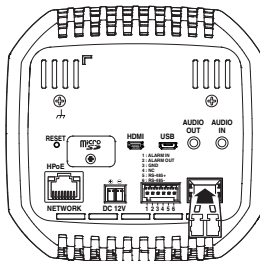
1. Wisenet Installation 어플리케이션을 설치하세요.
2. WiFi를 켜 후 카메라의 SSID를 선택하세요.
3. Wisenet Installation 어플리케이션을 실행하세요.
4. 카메라에 로그인 하면 영상이 연결됩니다.
 - 최초 접속시 로그인 없이 영상이 실행됩니다.
5. 스마트폰으로 영상을 보며 카메라의 화각을 조정할 수 있습니다.

WiFi 동글 추천업체

Manufacturer	Model
NETIS	WF2123 n300
EDIMAX	EW-7811Un
IP Time	N100mini
TP-LINK	TL-WN823N V1
ASUS	USB-N13
NETGEAR	WNA3100M

SFP 모듈 연결하기

1. SFP 모듈을 삽입하세요.

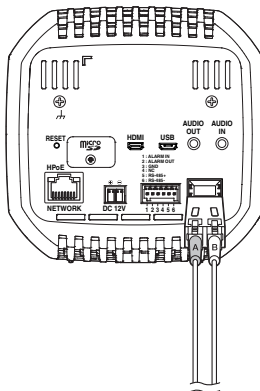


2. SFP 모듈에 LC 타입의 광케이블(AB)을 연결하세요.

3. SFP 모듈과 pair를 이루는 광컨버터에 광케이블의 반대쪽(BA)을 연결하세요.

- SFP 모듈, 광케이블, 광컨버터는 별도 구매품입니다.
- 다음과 같은 제조사의 SFP 모듈 사용을 권장합니다.
 - Comnet, IFS, Skylane, AVAGO, CISCO
- SFP 모듈과 광컨버터는 광케이블을 교차(AB/BA)하여 연결하세요.

- ! ■ SFP 모듈 탈착은 반드시 연결되는 카메라의 전원을 끈 상태에서 연결하세요.
- 카메라 작동 중 SFP 모듈을 장착/분리하지 마세요.
- 광케이블이 꺾어져 있으면 통신 연결이 되지 않을 수 있습니다.
- 광케이블을 직접 쳐다보지 마세요. 시력이 손상될 수 있습니다.



이더넷 연결하기

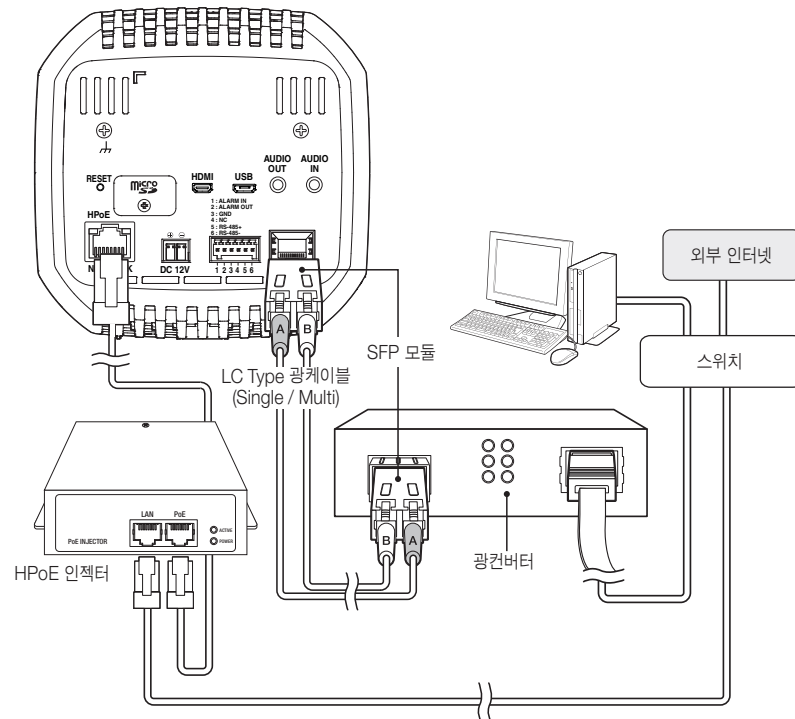
이더넷 케이블 혹은 SFP Optic Link를 연결하여 로컬 네트워크나 인터넷에 연결하세요.

본 제품의 이더넷 링크는 RJ-45와 SFP 링크 간의 이중화를 지원하며 SFP에 우선 동작 합니다.

동작 예)

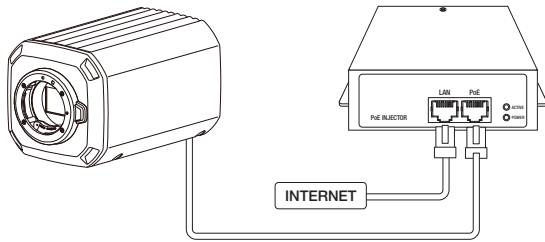
- RJ-45로 동작 중 SFP 포트가 연결(link-up) 되면 이더넷 링크는 SFP로 활성화되고, RJ-45는 비활성화 됩니다.

- SFP로 통신 중 SFP 링크가 갑작스럽게 다운 되면 자동으로 RJ-45 링크가 활성화 됩니다.



전원과 네트워크 연결하기

HPoE 장비와 카메라의 HPoE 단자를 연결하세요.



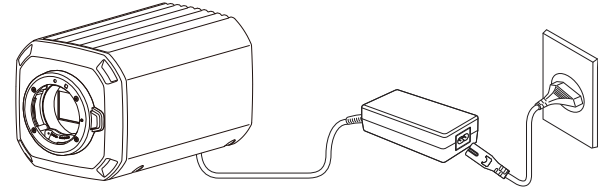
- HPoE 기능이 가능한 라우터를 연결하여 사용하세요.
- HPoE는 IEEE802.3bt(PSE TYPE 3 또는 4) 규격이 지원되는 장비를 사용하세요.
- HPoE 기능이 가능한 라우터를 사용하여 연결하면, 별도의 전원을 연결하지 않아도 사용 가능합니다.

네트워크 케이블 규격

항목	내용	비고
Connector	RJ-45(10/100/1000BASE-T)	
Ethernet	10/100/1000BASE-T	1000BASE-T로 동작하려면 기가용 허브에 SSTP-Category 7 이상인 케이블을 사용해야 합니다.
Cable	SSTP-Category 7	
Max Distance	100M	DC Resistance ≤ 0.188 Ω/m
HPoE	HPoE	

전원 연결하기

전원 어댑터의 +, - 선을 드라이버를 사용하여 카메라의 전원 입력 단자에 연결하세요.



- PoE, DC 12V 전원을 동시 투입 시 기기 전원은 PoE, DC 12V 동시 동작합니다.
- 기기의 전원은 PoE, DC 12V 중 단일 전원 사용을 권장합니다.
- DC 12V 3 A 이상의 어댑터 사용을 권장합니다.
- 기기의 전원은 HPoE 인젝터 사용을 권장합니다.
- DC 12V는 극성이 있으므로 주의하여 연결하세요.
- 외부기기 연결시에는 반드시 연결되는 장치의 전원을 끈 상태에서 연결하세요.
- 제품은 올바르게 접지된 STP 케이블을 사용하여 연결해야 합니다.

전원 케이블 규격

DC 12V 입력일 때 :

Wire 종류 (AWG)	#14	#16
케이블 길이 (Max.)	24m	15m

광통신 이더넷 규격

항목	내용
이더넷 : 광통신	SFP (LC Type)
광통신 : 이더넷 물리 계층	10/100/1000BASE-T
광통신 : 디플트 속도	100/1000Mbps
광통신 : 이더넷 규격	IEEE 802.3ab, IEEE 802.3z

접지선 연결하기

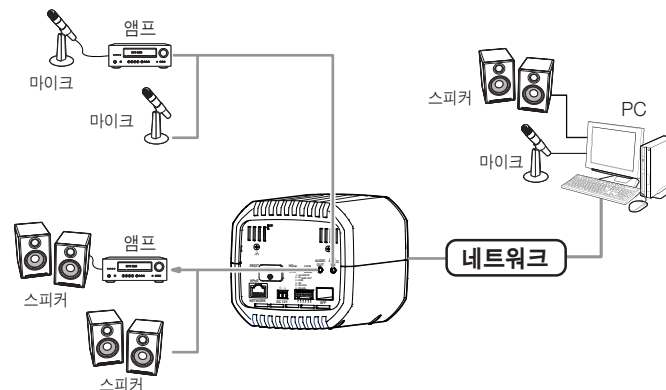
전원 입력 단자 위쪽에 있는 접지 단자에 드라이버를 사용하여 접지선을 연결하세요.

- ! ■ 접지는 낙뢰로부터 제품을 보호하는 역할을 합니다.
- 연결 시에는 반드시 장치의 전원을 끈 상태에서 연결하세요.

접지선 권장사양

- 길이 : 3M 이내
- 굵기 : 18AWG 이상
예) UL1007 AWG18/16, UL1015 AWG18/16/14/12, UL2468 AWG18/16/14

오디오 입력/출력 연결하기



1. 카메라의 AUDIO IN 단자에 마이크가 연결된 앰프의 LINE OUT 단자 또는 마이크를 연결하세요.
2. 카메라의 AUDIO OUT 단자에 스피커가 연결된 앰프의 LINE IN 단자 또는 스피커를 연결하세요.
3. 오디오 입력 사양을 확인하세요.

• 오디오 코덱

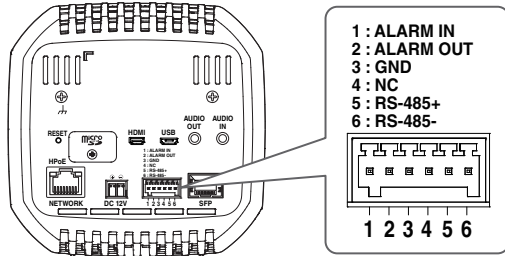
- 오디오 입력 : G.711 PCM (Bit Rate: 64kbps / Sampling Frequency: 8kHz), G.726 ADPCM (Bit Rate: 16Kbps, 24Kbps, 32Kbps, 40Kbps / Sampling Frequency: 8kHz), AAC (Bit Rate: 48Kbps / Sampling Frequency: 16kHz)
- 오디오 출력 : G.711 PCM (Bit Rate: 64kbps / Sampling Frequency: 8kHz)

• Full duplex 오디오

- 오디오 입력 : 모노신호 입력 (최대 2.4Vpp)
- 오디오 출력 : 모노신호 출력 (최대 2.4Vpp)
- 임피던스 : 600Ω

알람 입출력 단자 연결하기

뒷면의 입출력 단자를 통해 알람 입출력을 연결하세요.



- ALARM IN : 알람 입력 센서 혹은 외부 주야간 센서를 연결하는 단자입니다.
- ALARM OUT : 알람 출력신호를 연결하는 단자입니다.
- GND : 접지용 단자입니다.
- RS-485+ : RS-485 리시버(+)에 연결하는 단자입니다.
- RS-485- : RS-485 리시버(-)에 연결하는 단자입니다.

RS-485 장치 연결하기

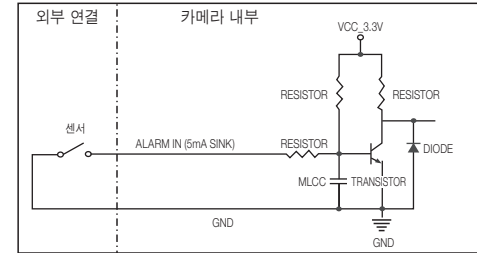
[RS-485 +, -] 단자와 외부기기를 연결하세요.
RS-485 통신으로 카메라의 팬/틸트를 제어할 수 있습니다.

- RS-485 연결시 GND 연결은 권장사항입니다. 통신이 잘 되지 않는 경우는 GND 핀을 연결하여 외부기와 카메라 간의 GND 레벨을 맞춰 주세요.

외부 센서와 연결하기

각종 센서의 신호선(2선) 중 한 선은 [ALARM IN] 단자에 연결하고, 다른 한 선은 [GND] 단자에 연결하세요.

알람 입력 연결도

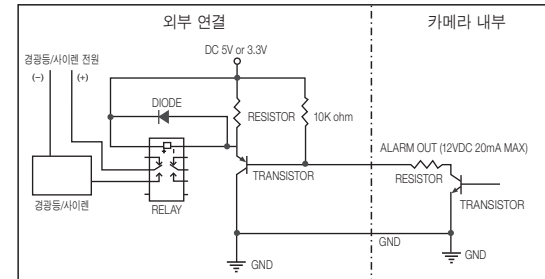


알람 출력 연결하기

Open Collector 방식으로 전압 및 전류 사양을 초과하는 장치(경광등, 사이렌 등)를 연결할 경우 제품이 고장날 수 있습니다.

전압 및 전류 사양 초과하는 장치를 연결할 경우 다음의 알람 출력 연결도를 참고하세요.

알람 출력 연결도



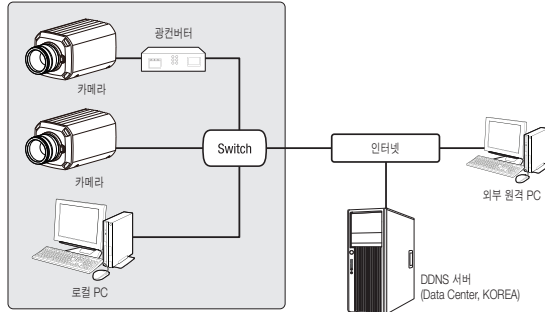
네트워크 연결 및 설정

사용자의 네트워크 연결 구성에 따라 카메라의 네트워크 환경을 설정할 수 있습니다.

LAN 환경에서 직접 카메라 설치하기

LAN 환경에 있는 로컬 PC에서 카메라 접속하기

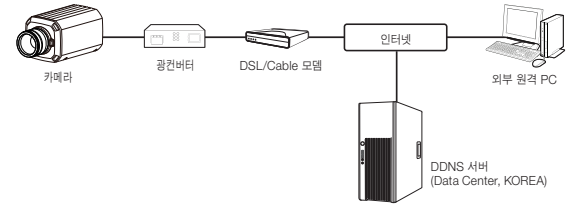
1. 로컬 PC의 인터넷 브라우저를 실행하세요.
2. 브라우저의 주소창에 접속하려는 카메라의 IP 주소를 입력하세요.



<로컬 네트워크>

- LAN 환경의 외부 인터넷에 있는 원격 PC에서 LAN 환경 안에 설치되어 있는 카메라에 접속할 경우 포트 포워딩이 되어 있지 않거나 방화벽이 설치되어 있으면 접속이 되지 않을 수 있습니다. 이때는 네트워크 관리자에게 문의하세요.
- 제품 출하 시 IP 주소는 DHCP 서버로부터 자동으로 할당받도록 설정되어 있습니다. DHCP 서버가 없는 경우 IP 주소는 192.168.1.100으로 설정됩니다. IP 주소를 변경하려면 디바이스 매니저를 이용하세요. 디바이스 매니저 사용방법은 "디바이스 매니저 사용하기"를 참고하세요. (17쪽)

DHCP 방식의 DSL/Cable 모뎀에 직접 카메라 설치하기



1. 사용자 컴퓨터와 네트워크 카메라를 직접 연결하세요.
2. 디바이스 매니저를 사용하여 해당 카메라의 IP 주소를 사용자 컴퓨터에서 인터넷 브라우저를 통하여 접속할 수 있는 IP 주소로 변경하세요.
3. 인터넷 브라우저를 이용하여 웹뷰어에 접속하세요.
4. [설정] 페이지로 이동하세요.
5. [네트워크] - [DDNS] 설정 페이지로 이동하여 DDNS를 설정하세요.
6. [Basic] - [IP 및 포트] 설정 페이지로 이동하여 IP 형식을 [DHCP]로 설정하세요.
7. 카메라를 사용자 컴퓨터에서 분리하여 모뎀에 직접 연결하세요.
8. 카메라를 재부팅하세요.

- DDNS 설정 방법은 웹뷰어의 온라인 도움말을 참고하세요.
- IP 형식의 설정 방법은 웹뷰어의 온라인 도움말을 참고하세요.

디바이스 매니저 사용하기

- 디바이스 매니저 프로그램은 한화비전 웹 사이트(<https://www.HanwhaVision.com>)로 접속하여 <지원> - <Online Tool>에서 다운로드 받을 수 있습니다.
- 디바이스 매니저의 자세한 사용 방법은 메인화면의 <도움말> 메뉴에서 확인할 수 있습니다.

자동으로 카메라 검색하기

디바이스 매니저가 설치된 PC와 동일한 네트워크에 카메라가 연결된 경우 검색 기능을 이용해 네트워크 카메라를 찾을 수 있습니다.

1. 디바이스 매니저의 메인화면에서 <검색>을 클릭하세요.
2. 검색목록에서 원하는 카메라가 검색되었는지 확인하세요.
 - 카메라에 부착된 스티커에서 MAC 주소를 확인하세요.

IP주소 설정하기

카메라의 네트워크 설정을 변경하려면 <상태> 항목에 <Login OK>로 표시되어 있어야 합니다. 디바이스 매니저의 메인화면에서 <인증>을 클릭하면 로그인 할 수 있습니다.

Static IP 설정하기

IP 주소 및 포트정보를 수동으로 입력하여 설정합니다.

1. 검색목록에서 IP 설정을 변경하려는 카메라를 클릭하세요.
2. 디바이스 매니저의 메인화면에서 <IP 할당>을 클릭하세요.
3. <해당 IP 주소 적용>을 선택하세요.
 - 카메라의 IP 정보가 기존에 설정되어 있는 값으로 표시됩니다.
4. IP 관련 항목 및 Port 관련 항목을 입력하세요.

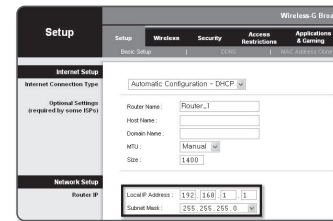
IP 공유기를 사용하지 않는 경우

네트워크 관리자에게 <IP주소>, <서브넷 마스크>, <게이트웨이> 설정값을 문의하세요.

- HTTP Port : 인터넷 브라우저를 사용하여 카메라에 접속할 때 사용되는 HTTP 포트이며, 초기값은 80입니다.
- RTSP Port : 실시간 스트리밍을 제어하는 포트이며, 초기값은 554입니다.

IP 공유기를 사용하는 경우

- IP Address : IP 공유기가 제공하는 사설 IP 범위에 맞게 설정하세요.
예) 192.168.1.2~254, 192.168.0.2~254, 192.168.XXX.2~254
- Subnet Mask : IP 공유기의 <Subnet Mask>가 카메라의 <서브넷 마스크> 값이 됩니다.
- Gateway : IP 공유기의 <Local IP Address>가 카메라의 <게이트웨이> 값이 됩니다.



- 연결된 IP 공유기 모델에 따라 설정 방법이 다를 수 있습니다.
해당 공유기의 사용설명서를 참고하세요.
- IP 공유기의 포트 포워딩 설정 방법은 “포트 포워딩 (포트 맵핑) 설정하기”를 참고하세요. (19쪽)

IP 공유기에 카메라가 2대 이상 연결되어 있는 경우

카메라의 IP 관련 항목, Port 관련 항목을 각각 다르게 설정해 주세요.

예)

구분		1번 카메라	2번 카메라
IP 관련 항목	IP 주소	192.168.1.100	192.168.1.101
	서브넷 마스크	255.255.255.0	255.255.255.0
	게이트웨이	192.168.1.1	192.168.1.1
Port 관련 항목	HTTP 포트	8080	8081
	RTSP 포트	554	555

- <HTTP 포트>가 80 이외의 번호로 설정되어 있는 경우 인터넷 브라우저의 주소 입력란에 <Port> 번호도 함께 입력을 해야 카메라에 접속이 가능합니다.
예) http://IP주소 : HTTP Port
http://192.168.1.100:8080

5. [적용] 버튼을 클릭하세요.
6. 성공 확인 메시지가 표시되면 [확인] 버튼을 클릭하세요.

네트워크 연결 및 설정

Dynamic IP 설정하기

IP 주소를 DHCP를 통해 자동으로 할당받습니다

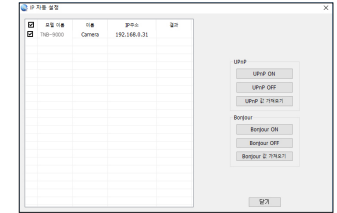
- Dynamic IP 사용 환경 예
 - IP 공유기에 카메라를 설치한 경우, DHCP를 이용하여 IP를 할당 받는 경우
 - DHCP 방식을 사용하는 모뎀에 카메라를 직접 설치한 경우
 - LAN 환경에서 내부 DHCP 서버로부터 IP를 할당 받는 경우

- 검색목록에서 IP 설정을 변경하려는 카메라를 클릭하세요.
- 디바이스 매니저의 메인화면에서 <IP 할당>을 클릭하세요.
- <IP주소 자동할당 (DHCP)>를 선택하세요.
- [적용] 버튼을 클릭하세요.
- 성공 확인 메시지가 표시되면 [확인] 버튼을 클릭하세요.



자동으로 IP 설정하기

- 검색목록에서 IP를 자동으로 설정하려는 카메라를 클릭하세요.
- 디바이스 매니저의 메인화면에서 <+>를 클릭하세요.
 - 장비 설정 메뉴가 나타납니다.
- 장비 설정 메뉴에서 <IP 자동 설정>을 클릭하세요.
- [닫기] 버튼을 클릭하세요.



수동으로 카메라 등록하기

검색 기능으로 카메라를 찾지 못하거나, 외부 네트워크에 카메라가 연결된 경우 IP 정보를 수동으로 입력하여 원격으로 카메라를 찾아 등록할 수 있습니다.

- 디바이스 매니저의 메인화면에서 <장비 추가> - <장비 수동 등록>을 클릭하세요.
- 검색할 IP 주소의 범위를 입력하세요.
- 등록할 카메라의 <모델 이름>을 선택하고 HTTP 포트, 아이디, 비밀번호를 입력하세요.
- [등록] 버튼을 클릭하세요.
- 목록에서 원하는 카메라가 등록되었는지 확인하세요.
 - 카메라에 부착된 스티커에서 MAC 주소를 확인하세요.

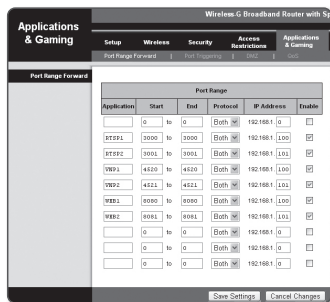


포트 포워딩 (포트 맵핑) 설정하기

IP 공유기에 카메라가 설치된 경우, IP 공유기 외부 원격 PC에서 IP 공유기 내부의 카메라에 접속하기 위해서는 IP 공유기에 포트 포워딩을 설정해 주어야 합니다.

수동으로 포트 포워딩 설정하기

1. IP 공유기의 설정 메뉴에서 <Applications & Gaming> - <Port Range Forward>를 클릭하세요.
타사 IP 공유기의 포트 포워딩 메뉴 위치 및 설정 방법은 각 IP 공유기의 사용설명서를 참고하세요.
2. IP 공유기에 연결되어 있는 각 카메라에 대해 <TCP>와 <UDP Port>를 선택하세요.
IP 공유기에 설정할 각 포트 번호는 카메라 웹뷰어의 <설정> - <Basic> - <IP 및 포트>에서 지정한 포트 번호에 맞게 설정해야 합니다.
3. 설정이 완료되면 [Save Settings] 버튼을 클릭하세요.
설정이 저장됩니다.

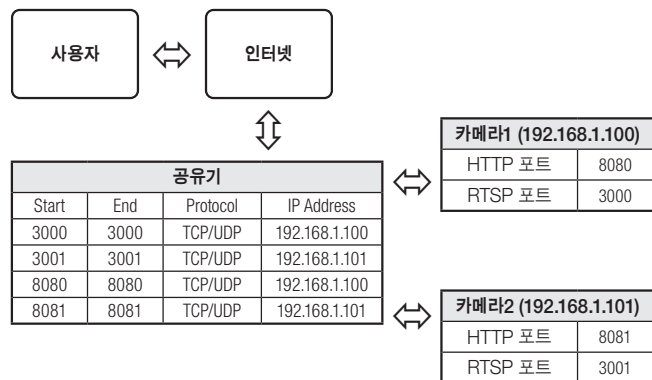


- 포트 포워딩 설정하기 설명은 CISCO IP 공유기로 설정한 예시입니다.
- 연결된 IP 공유기 모델에 따라 설정 방법이 다를 수 있습니다.
해당 공유기의 사용설명서를 참고하세요.

여러대의 카메라를 포트 포워딩 설정하기

- 공유기의 포트 포워딩 설정은 공유기의 설정 페이지를 통해서 변경할 수 있습니다.
- 각 포트는 사용자가 카메라의 설정 페이지에서 변경할 수 있습니다.

예) 공유기에 카메라1과 카메라2가 연결되어 있는 경우 :



- UPnP(Universal Plug and Play) 기능을 지원하는 공유기를 사용하면 공유기 설정 없이 포트 포워딩을 할 수 있습니다.
네트워크 카메라 접속 후 "설정 → 네트워크 → DDNS" 메뉴에서 <DDNS>의 <클릭 커넥트>의 체크박스를 선택하세요.

네트워크 연결 및 설정

공유된 로컬 PC에서 카메라 접속하기

1. 디바이스 매니저를 실행하세요.
연결된 카메라를 검색하여 리스트에 표시합니다.
2. 연결할 카메라를 더블 클릭하세요.
인터넷 브라우저가 시작되면서 카메라에 접속합니다.



■ 사용자가 직접 인터넷 브라우저를 실행시켜, 주소 창에 검색된 카메라의 IP 주소를 입력하여 접속할 수도 있습니다.

외부의 원격 PC에서 인터넷으로 카메라에 접속하기

IP 공유기 외부의 원격 PC에서 사용자는 카메라의 DDNS URL을 이용하여 IP 공유기 내부의 카메라에 접속할 수 있습니다.

1. IP 공유기 내부에 설치되어 있는 카메라를 외부에서 접속하기 위해서는 반드시 IP 공유기에 포트 포워딩 설정을 하세요.
2. 외부 원격 PC에서 인터넷 브라우저를 실행하여 주소창에 카메라에 접속하기 위한 DDNS URL 주소, 또는 IP 공유기의 인터넷 IP 주소를 입력하세요.
예) <http://ddns.hanwha-security.com/ID>

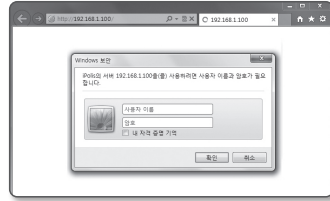


■ DDNS를 사용하려면 DDNS 홈페이지(<http://ddns.hanwha-security.com>)에서 회원가입을 한 후, **[My DDNS]>**
[제품등록]에서 제품을 먼저 등록해야 합니다.

카메라에 접속하기

일반적인 방법인 경우

1. 인터넷 브라우저를 실행하세요.
2. 주소 입력란에 카메라의 IP주소를 입력 하세요.
예) • IP주소 (IPv4) : 192.168.1.100인 경우 → http://192.168.1.100
- 로그인 창이 나타납니다.
• IP주소 (IPv6) : 2001:230:abcd:ffff:0000:0000:ffff:1111인 경우
→ http://[2001:230:abcd:ffff:0000:0000:ffff:1111]
- 로그인 창이 나타납니다.



HTTP Port가 80이 아닌 경우

1. 인터넷 브라우저를 실행하세요.
2. 주소 입력란에 카메라의 IP주소와 HTTP 포트번호를 입력하세요.
예) IP 주소 : 192.168.1.100:HTTP 포트번호(8080)인 경우
→ http://192.168.1.100:8080 - 로그인 창이 나타납니다.

URL로 접속하기

1. 인터넷 브라우저를 실행하세요.
2. 주소 입력란에 카메라의 DDNS URL을 입력하세요.
예) URL 주소 : http://ddns.hanwha-security.com/ID
- 로그인 창이 나타납니다.

 Local 망으로만 구성된 환경에서는 접속할 수 없습니다.

UPnP를 이용하여 접속하기

1. UPnP 프로토콜을 지원하는 클라이언트나 운영체제를 실행하세요.
2. 검색되는 카메라의 이름을 클릭하세요.
Windows 운영체제 컴퓨터에서는 네트워크 메뉴에 검색되는 카메라 이름을 클릭하세요.
- 로그인 창이 나타납니다.

Bonjour를 이용하여 접속하기

1. Bonjour 프로토콜을 지원하는 클라이언트나 운영체제를 실행하세요.
2. 검색되는 카메라의 이름을 클릭하세요.
Mac 운영체제 컴퓨터에서는 Safari의 Bonjour 탭에 검색되는 카메라의 이름을 클릭하세요.
- 로그인 창이 나타납니다

DDNS 주소를 확인하려면

카메라가 DHCP 방식의 케이블 모뎀이나 DSL 모뎀에 직접 연결되어 있는 경우 ISP(사용자가 가입한 통신회사 서버)에 연결을 시도할 때마다 IP 주소가 변경됩니다.
이 경우 사용자는 변경된 IP 주소를 알 수 없습니다.

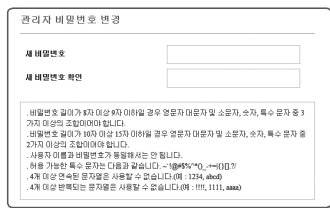
유동 IP를 사용하는 제품을 DDNS 서버에 등록해 놓으면 제품에 접속하고자 할 때 변경된 IP 주소를 쉽게 알 수 있습니다.

IP 주소를 <DDNS> 서버에 등록하기 위해서는 먼저 http://ddns.hanwha-security.com 페이지에서 제품을 등록한 후 카메라 웹뷰어의 <네트워크> - <DDNS> 항목을 <DDNS>로 설정하고 <제품 ID>에 DDNS 서버에서 등록한 제품 아이디를 입력하세요.

비밀번호 설정하기

최초 제품 접속 시 반드시 로그인 비밀번호를 등록해야합니다.

- 새로운 비밀번호는 8자 이상 9자리 이하는 영 대/소문자, 숫자 특수 문자 중 3종류 이상을 사용해야 하며 10자 이상 15자리 이하는 2종류 이상을 사용해야 합니다.
 - 사용 가능한 특수문자 : ~!@#\$%^&*()_+=|{}[]?/
- 보안강화를 위하여 동일한 문자 반복 사용이나 연속된 키보드 배열을 비밀번호로 사용하지 않는 것을 권장합니다.
- 비밀번호 분실 시 카메라에 있는 **[RESET]** 버튼을 눌러 제품 초기화를 해야 하므로 반드시 메모 또는 기억하시길 바랍니다.



관리자 비밀번호 변경

새 비밀번호

새 비밀번호 확인

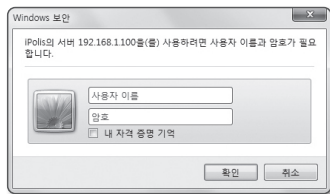
비밀번호 길이가 8자 이상 9자 이하일 경우 영문자 대문자 및 소문자, 숫자, 특수 문자 중 3가지 이상의 조합이어야 합니다.
비밀번호 길이가 10자 이상 15자 이하일 경우 영문자 대문자 및 소문자, 숫자, 특수 문자 중 2가지 이상의 조합이어야 합니다.
사용자 이름과 비밀번호가 동일해서는 안 됩니다.
허용 가능한 특수 문자는 다음과 같습니다. ~!@#\$%^&*()_+=|{}[]?/ 4개 이상 연속된 문자열은 사용하지 않습니다.(예 : 1111, 1111, aaaa)
4개 이상 반복되는 문자열은 사용하지 않습니다.(예 : 1111, 1111, aaaa)

로그인하기

카메라에 접속할때마다 로그인 창이 뜹니다.
설정된 사용자 이름과 암호를 입력해야 카메라에 접속할 수 있습니다.

1. <사용자 이름> 입력란에 “admin”을 입력하세요.
관리자의 아이디 “admin”은 고정이며 변경할 수 없습니다.
2. <암호> 입력란에 설정한 암호를 입력하세요.
3. **[확인]** 버튼을 클릭하세요.
로그인이 완료되면 카메라 라이브 뷰어 화면이 나타납니다.

- 카메라 웹뷰어 접속시 영상정보가 암호화 되어있지 않으니 보안에 각별히 주의하시길 바랍니다.



Windows 보안

iPolis의 서버 192.168.1.100(웹) 사용하려면 사용자 이름과 암호가 필요합니다.

사용자 이름

암호

☐ 내 자격 증명 기억

확인 취소

- 사용자 이름과 암호를 입력한 후 “내 자격 증명 기억”에 체크표시를 할 경우 다음 접속 시 사용자 이름과 암호가 자동으로 설정됩니다.
- 화면비율이 100% 일 때 가장 좋은 화면을 볼 수 있습니다. 화면비율을 줄일 경우 화면이 잘려져서 보일 수 있습니다.

카메라 웹뷰어 설정하기

1. **[설정 (⚙️)]** 아이콘을 클릭하세요.
2. 설정 화면이 나타납니다.
3. 네트워크 상에서 카메라의 기본 정보, 비디오 및 오디오, 네트워크, 이벤트, 분석, 시스템 설정을 실행할 수 있습니다.
4. <도움말 (📖)>을 클릭하면 각 기능에 대한 상세한 설명을 확인할 수 있습니다.

- PC 성능 문제로 고해상도(4K 이상)의 영상은 웹뷰어에서는 Plug-in free 프로파일로 전환됩니다.
원활한 라이브 모니터링을 위해서는 SSM 등 고성능 모니터링 서비스를 이용하여 주시기 바랍니다.

문제 해결하기

문제	해결
Windows 10 사용자가 Chrome, Firefox에서 웹뷰어 접속 시 마이크의 볼륨 크기가 주기적으로 변동됩니다.	마이크 드라이버가 Realtek 드라이버로 설정된 경우에 나타나는 현상입니다. 마이크 드라이버를 High Definition Audio 장치(Windows Default 드라이버) 또는 타사의 드라이버로 변경 설치하세요.
Safari에서 https로 플러그인 프리 웹뷰어 접속 시 영상이 나오지 않아요.	- https 처음 접속 시 발생하는 웹사이트 신원 팝업에서 "인증서 보기" 클릭 후 "웹뷰어 설정 IP에 연결할 때 항상 신뢰" 항목의 체크박스를 선택하세요. - 만일 아래 메시지에서 "계속" 선택 후 로그인하여 영상이 나오지 않는 경우, command+Q 를 눌러 Safari 브라우저 종료 후 재접속하여 위의 절차를 따르세요.
브라우저로 카메라에 접속되지 않아요.	- 카메라의 네트워크 설정값들이 올바르게 되어 있는지 확인하세요. - 네트워크 케이블은 연결이 올바르게 되어 있는지 확인하세요. - DHCP로 연결하는 경우 카메라가 정상적으로 유동 IP를 획득했는지 확인하세요. - 카메라가 공유기에 설치되어 있는 경우, 포트 포워딩 설정이 올바르게 되어 있는지 확인하세요.
영상을 모니터링 하고 있던 웹뷰어의 접속이 끊어졌어요.	- 다른 접속자가 카메라 설정값을 변경하거나, 네트워크 설정을 바꾸거나 하게 되면 접속되어 있던 웹뷰어는 접속이 끊어집니다. - 네트워크 연결이 잘 되어있는지 확인하세요.
디바이스 매니저 프로그램에서 네트워크에 연결된 카메라가 검색되지 않아요.	PC의 방화벽 설정을 해제하신 후 다시 검색하시기 바랍니다.
영상이 겹쳐져 보여요.	- 두 대 이상의 카메라가 동일한 멀티캐스트 주소를 사용하지 않고 서로 다른 주소로 설정되어 있는지 확인하시기 바랍니다. - 동일한 주소를 사용하면 영상이 겹쳐져 보일 수 있습니다.
영상이 보이지 않아요.	영상 전송방식이 멀티캐스트로 설정되어 있는 경우, 카메라가 접속한 로컬망에 멀티캐스트를 지원하는 라우터가 존재하는지 확인하세요.
오디오 입력 설정이 되어 있는데 음성 녹음이 되지 않아요.	<Basic>-<비디오 프로파일>에서 <오디오 입력>을 사용한다고 체크해야 합니다.

문제	해결
<분석>에서 <움직임 감지>를 <사용>으로 설정한 후, 카메라에서 영상 분석 이벤트가 발생해도 이메일로 파일이 전달되지 않아요.	다음과 같은 순서로 설정값을 확인하세요. 가. <날짜 및 시간> 설정을 확인하세요. 나. <움직임 감지>를 <사용>으로 설정해야 합니다. 다. <이벤트 설정>에서 <이메일>을 사용한다고 체크해야 합니다.
영상 분석 이벤트가 발생했는데 알람 출력으로 출력이 발생하지 않아요.	알람 출력 포트를 올바르게 설정했는지 확인하세요.
Micro SD 메모리카드에 녹화가 되지 않아요.	메모리 카드가 불량인지 확인하세요.
Micro SD 메모리카드를 삽입하였으나 메모리 카드를 인식하지 못해요.	- 메모리 카드가 올바른 방향으로 정확히 삽입되어 있는지 확인하세요. 다른 기기에서 포맷한 메모리 카드는 본 카메라에서의 사용을 보증할 수 없습니다. <설정> → <이벤트> → <저장>에서 메모리카드를 다시 포맷하세요.
NAS에 녹화되지 않아요.	NAS에 등록된 정보가 올바른지 확인하세요.
NAS 설정이 실패라고 뜹니다.	- NAS IP주소가 유효한지 확인하세요. - NAS의 ID/비밀번호가 유효한지 확인하세요. - NAS의 ID에서 기본 폴더로 설정한 폴더에 접속할 수 있는지 확인하세요. - NAS에서 SMB/CIFS항목의 체크가 해제되었는지 확인하세요. - NAS IP 주소와 카메라 IP주소의 형식이 동일한지 확인하세요. 예) NAS 및 카메라 서브넷마스크 초기값은 255.255.255.0 입니다. IP 주소가 192.168.20.32라면 NAS IP 주소는 192.168.20.1~192.168.20.255사이여야 합니다. - 이미 저장 중이거나 사용했던 기본 폴더를 포맷하지 않고 다른 사용자로 접속하려고 하는지 확인하세요. - 권장하는 NAS 장비인지 확인하세요.

Open Source Announcement

GPL/LGPL software license

The software included in this product contains copyrighted software that is licensed under the GPL/LGPL. You may obtain the complete Corresponding Source code from us for a period of three years after our last shipment of this product by sending email to help.cctv@hanwha.com

If you want to obtain the complete Corresponding Source code in the physical medium such as CD-ROM, the cost of physically performing source distribution might be charged.

GPL SW

Component Name	License	URL
Base Kernel	GPL 2.0	
Busybox	GPL 2.0	http://www.busybox.net/downloads/snapshots
iproute2-4.3.0	GPL 2.0	
iptables-1.4.21	GPL 2.0	http://ftp.netfilter.org/pub/iptables
ethtool-4.2	GPL 2.0	
mtdd-1.5.2	GPL 2.0	ftp://ftp.infradead.org/pub/mtdd-utils
mi-diag-2.11	GPL 2.0	
rp-pppoe-3.11	GPL 2.0	http://www.roaringpenguin.com/pppoe/
wpa_supplicant-2.5	GPL 2.0	
bash-4.3.30	GPL 3.0	
zeroconf	GPL 2.0	

LGPL SW

Component Name	License	URL
glibc	LGPL 2.0	
inetutils	LGPL 3.0	
neon-0.29.6	LGPL 2.0	http://www.webdav.org/neon/

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

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 2. The member shall provide T-Engine Forum with a complete set of operational environment for the object hardware and T-Kernel free of charge when requesting the distribution.
 3. The member shall submit test results of the Ported Source Code to T-Engine Forum when requesting the distribution.
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5. The provision set forth in Article 3 shall apply to the Ported Source Code registered in accordance with this Article.

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The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files http://www.ietf.org/rfc/rfc1950.txt (zlib format), rfc1951.txt (deflate format) and rfc1952.txt (gzip format).

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