

XPass 2

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버전 1.07

한국어

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안전을 위한 주의사항

사용자의 위험이나 재산상의 손해를 막기 위해 제품을 사용하기 전에 이 설명서를 반드시 읽고 제품을 안전하고 올바르게 사용하세요. 이 설명서에서 말하는 제품이란 본체와 함께 제공되는 모든 구성품을 포함합니다.

기호



경고: 제품을 사용할 때 위반할 경우 심각한 상해나 사망에 이를 수 있는 경고 사항을 표기할 때 사용합니다.



주의: 제품을 사용할 때 위반할 경우 경미한 상해나 제품 손상이 발생할 수 있는 주의 사항을 표기할 때 사용합니다.



알아두기: 제품을 사용할 때 참고 사항이나 추가 정보를 제공할 때 사용합니다.



경고

설치

고용량의 전원 공급 장치 사용 시 오배선에 각별히 주의하세요.

- 오배선 시 심각한 화재, 감전, 제품 손상이 발생할 수 있습니다.

사용자가 임의로 제품을 설치하거나 수리하지 마세요.

- 화재, 감전, 부상의 원인이 됩니다.
- 사용자의 임의 설치나 수리로 인해 제품이 손상된 경우 무상 수리 서비스가 제공되지 않습니다.

제품을 직사광선에 노출된 장소, 습기, 먼지나 그을음이 많은 장소, 가스가 켜 가능성이 있는 장소에 설치하지 마세요.

- 화재 또는 감전의 원인이 됩니다.

제품을 옥외에 설치할 경우 차양 및 통풍이 원활한 장소에 설치하세요.

제품을 옥외에 설치할 경우 밀폐된 외함을 사용하지 마세요.

- 직사광선에 의해 외함 내부 온도가 상승하여 과열로 인한 화재, 감전, 제품 손상의 원인이 됩니다.

제품을 전열기 등으로 인해 열이 발생하는 장소에 설치하지 마세요.

- 과열로 인한 화재 또는 감전의 원인이 됩니다.

물기가 있는 곳에 설치하지 마세요.

- 습기로 인한 감전 또는 제품 손상의 원인이 됩니다.

전자파 장애가 있는 곳에 설치하지 마세요.

- 감전 또는 제품 손상의 원인이 됩니다.

사용

제품 내부에 물, 음료수, 약품 등의 액체가 들어가지 않도록 주의하세요.

- 화재, 감전, 제품 손상의 원인이 됩니다.

손상된 전원 어댑터나 플러그, 헐거운 콘센트는 사용하지 마세요.

- 접촉이 불안정할 경우 화재 또는 감전의 원인이 됩니다.

전원 코드를無理하게 구부리거나 망가뜨리지 마세요.

- 화재 또는 감전의 원인이 됩니다.



주의

설치

제품을 설치하기 전에 이 설명서를 반드시 읽고 제품을 안전하고 올바르게 설치하세요.

전원 케이블과 케이블을 배선할 때에는 반드시 연결하려는 모든 장치의 전원을 끈 상태에서 배선 및 연결하세요.

- 장치가 오작동할 수 있습니다.

제품에 전원을 연결하기 전에 다시 한번 설명서를 확인하여 배선이 올바르게 되었는지 확인한 후 전원을 연결하세요.

제품을 직사광선이나 자외선에 직접 노출된 장소에 설치하지 마세요.

- 제품 손상, 오작동 및 변색, 변형의 원인이 됩니다.

전원 케이블 등을 통행 장소에 방치하지 마세요.

- 신체 상해 또는 제품 손상의 원인이 됩니다.

자석, TV, (CRT) 모니터, 스피커 등 자성이 강한 물체 주변에 설치하지 마세요.

- 고장의 원인이 됩니다.

제품을 벽면에 설치할 경우 실리콘 등으로 제품 주위를 밀봉하지 마세요.

- 고장의 원인이 됩니다.

여러 대의 장치를 설치할 경우 최소 이격 거리를 확인하세요.

- 다른 장치의 RF 및 BLE 성능에 영향을 주어 장치가 오작동할 수 있습니다.

전원 어댑터는 IEC/EN 62368-1 승인을 받은 제품으로 단말기의 소모 전력 이상의 제품을 사용하세요. 슈프리마에서 판매하는 전원 어댑터를 사용할 것을 권장합니다.

- 적합한 전원을 사용하지 않을 경우 장치가 오작동할 수 있습니다.
- 최대 소모전류 규격은 제품 사양의 **전원**을 참고하세요.

제품과 Secure I/O 2, 전기정(전기식 잠금 장치)은 반드시 개별 전원을 사용하세요.

- 장치가 오작동할 수 있습니다.

전원 장치와 PoE 전원을 함께 연결하지 마세요.

- 장치가 오작동할 수 있습니다.

완전히 노출된 옥외에 설치할 경우 외함을 사용할 것을 권장합니다.

- 방수·방진 성능이 저하될 경우 고장의 원인이 됩니다.



주의

사용

제품을 떨어뜨리거나 충격을 주지 마세요.

- 고장의 원인이 됩니다.

제품의 펌웨어 업그레이드 진행 중 전원 공급이 중단되지 않도록 주의하세요.

- 불법 침입의 원인이 됩니다.

암호를 타인이 알지 못하도록 관리하고, 주기적으로 변경하세요.

- 고장의 원인이 됩니다.

제품을 -35 °C ~ 65 °C 이내에서 사용하고 너무 낮거나 높은 온도에서 보관하지 마세요.

- 고장의 원인이 됩니다.

제품을 청소할 때 주의하세요.

- 제품을 표면을 깨끗한 마른 천으로 부드럽게 닦으세요.
- 제품을 소독해야 할 경우 마른 천에 소독용 알코올을 적당량 묻힌 뒤 제품 표면을 부드럽게 닦으세요. 이소프로필 알코올이 70~75% 함유된 소독용 알코올과 깨끗하고 보풀이 없는 부드러운 천을 사용하세요.
- 소독제를 제품에 직접 분사하지 마세요.

제품을 원래 용도 이외 다른 용도로 사용하지 마세요.


- 고장의 원인이 됩니다.

RTC 배터리

승인되지 않거나 잘못된 종류의 배터리로 교체하면 폭발의 위험이 있습니다. 배터리는 거주 지역 또는 국제 폐기물 규정에 따라 폐기하세요.

시작하기

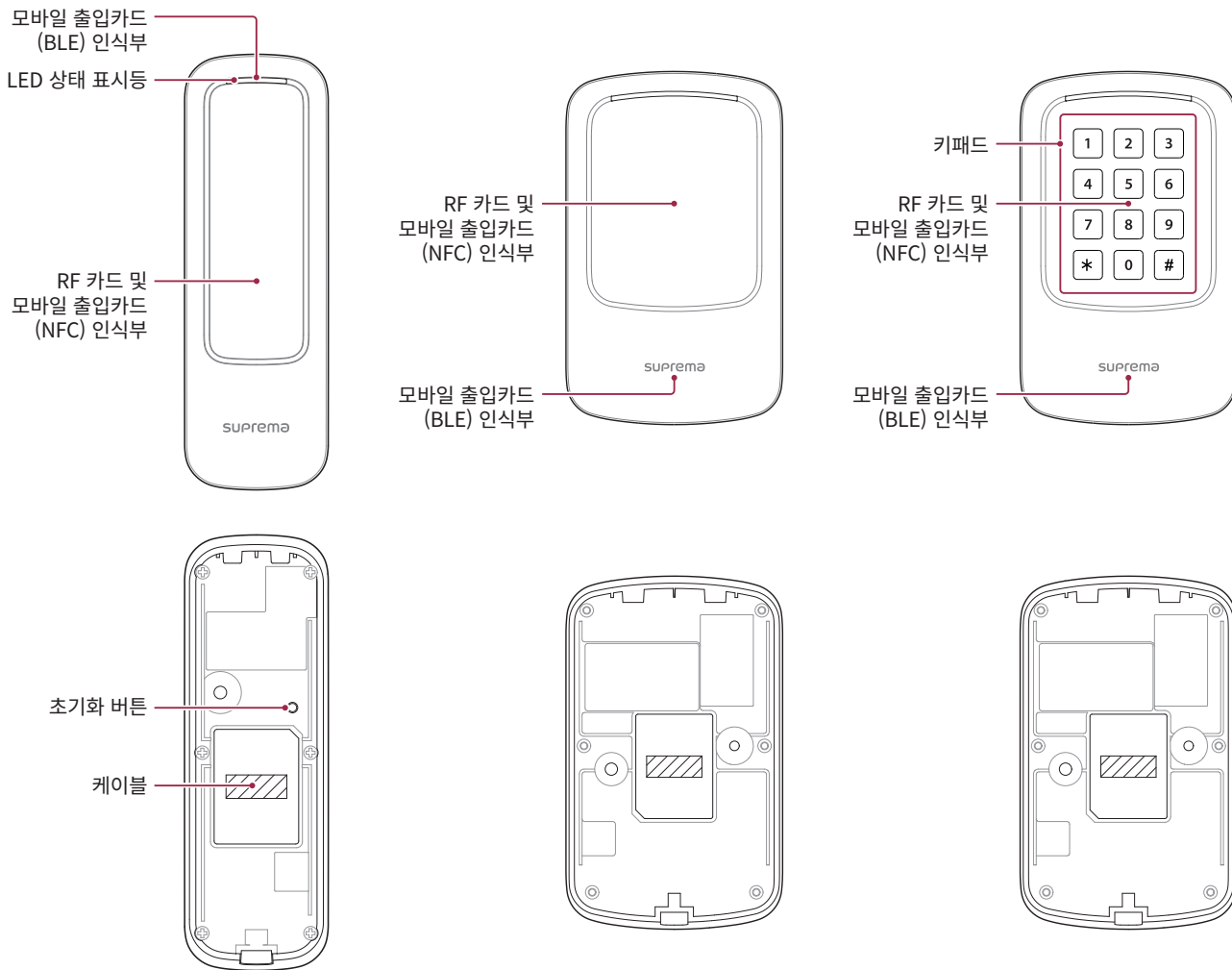
구성품

		
<p>장치 및 브래킷 (XP2-MDPB, XP2-MAPB)</p>	<p>장치 및 브래킷 (XP2-GDPB)</p>	<p>장치 및 브래킷 (XP2-GKDPB)</p>
		
<p>드릴링 템플릿</p>	<p>PVC 앵커 x2</p>	<p>고정용 나사 x2</p>
		
<p>브래킷 고정용 나사 (별 모양)</p>	<p>다이오드</p>	<p>120 Ω 저항</p>
		
<p>수축 튜브</p>	<p>퀵 가이드</p>	<p>오픈소스라이선스 가이드</p>



- 구성품은 설치 환경에 따라 달라질 수 있습니다.
- 브래킷과 제품을 조립할 때 향상된 보안을 위해 제품 고정용 나사 대신 동봉된 브래킷 고정용 나사(별 모양)를 이용할 수 있습니다.

각 부분의 명칭 및 기능



명칭	기능 설명
LED 상태 표시등	<p>LED 상태 표시등의 색상으로 제품 작동 상태가 표시됩니다.</p> <ul style="list-style-type: none"> 초록색: 인증 성공 빨간색: 인증 실패 파란색/하늘색 점멸: 정상 동작 상태 파란색/초록색 점멸: 네트워크 설정 초기화 시 초록색 점멸: 입력 대기 상태 초록색/흰색 점멸: 슈프리마 AirFob Pass (BLE) 애플리케이션과 연결 중인 상태 흰색 점멸: Device Manager 애플리케이션과 연결 중인 상태
RF 카드 및 모바일 출입카드(NFC) 인식부	출입을 위해 RF 카드 또는 모바일 출입카드(NFC)를 인식시키는 부분입니다.
모바일 출입카드(BLE) 인식부	출입을 위해 모바일 출입카드(BLE)를 인식시키는 부분입니다.
초기화 버튼	제품을 초기화할 때 사용합니다.
케이블 커넥터	<ul style="list-style-type: none"> 전원 케이블 RS-485 케이블 이더넷 케이블 Wiegand 입출력 케이블 TTL 입력 케이블 릴레이 케이블

명칭	기능 설명
키패드	<p>카드 ID를 직접 입력하여 인증할 때 사용합니다. 직접 입력 방식으로 인증하려면 BioStar 2에서 인증 방법 설정을 변경하세요.</p> <ul style="list-style-type: none"> • 0 ~ 9: 숫자를 입력할 때 사용합니다. • * : Wiegand 카드 ID를 입력할 때 FC 코드와 ID를 구분하기 위해 사용합니다. • # : 입력을 종료할 때 사용합니다.

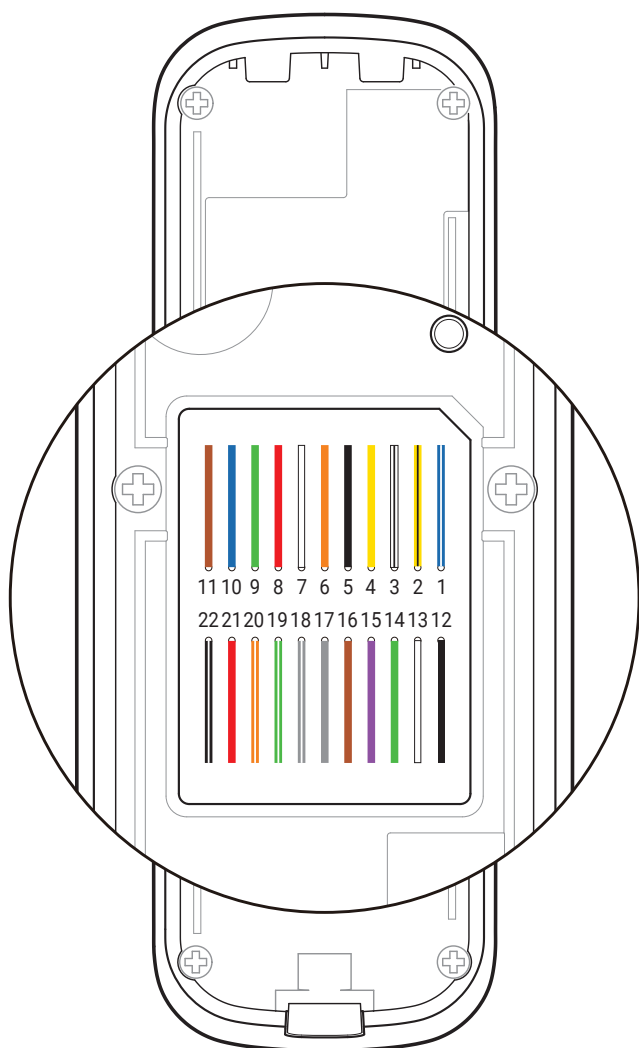


키패드는 XP2-GKDPB만 지원합니다.

케이블



이 문서에서는 XP2-MDPB, XP2-MAPB 모델의 형상을 기준으로 케이블 정보를 설명합니다. XP2-GDPB, XP2-GKDPB 모델의 경우에도 동일한 케이블 구성을 사용합니다.



핀	명칭	색상
1	485 TRXP	파란색 (흰띠)
2	485 TRXN	노란색 (검은띠)
3	485 GND	흰색 (검은띠)
4	ENET RXN	노란색
5	ENET RXP	검은색
6	ENET TXN	주황색
7	ENET TXP	흰색
8	ENET VB1	빨간색
9	ENET VB1	초록색
10	ENET VB2	파란색
11	ENET VB2	갈색
12	WG GND	검은색
13	WG D1	흰색
14	WG D0	초록색
15	TTL IN0	보라색
16	TTL IN1	갈색
17	TTL GND	회색
18	RLY NO	회색 (흰띠)
19	RLY COM	녹색 (흰띠)
20	RLY NC	주황색 (흰띠)
21	PWR +VDC	빨간색
22	PWR GND	검은색 (흰띠)

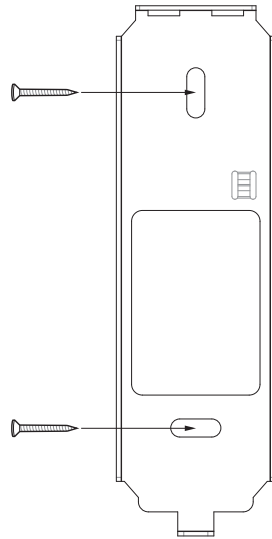
설치

브래킷 및 제품 고정



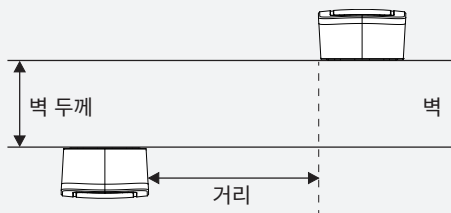
이 문서에서는 XP2-MDPB, XP2-MAPB 모델의 형상을 기준으로 설치 방법을 설명합니다. XP2-GDPB, XP2-GKDPB 모델의 경우에도 동일한 방법으로 설치하세요.

- 1 제공된 드릴링 템플릿을 이용하여 브래킷을 장착할 위치를 정하세요. XPass 2를 장착할 위치에 브래킷 고정용 나사를 이용하여 브래킷을 단단히 고정하세요.

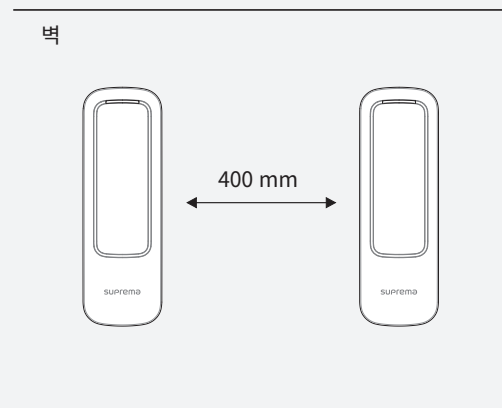


- XPass 2를 콘크리트 벽에 설치할 경우 드릴로 구멍을 뚫어 PVC 앵커를 끼운 뒤 고정용 나사로 고정하세요.
- RF 신호 간섭을 피하기 위해 최소 이격 거리를 확인하여 설치하세요.

- XP2-MDPB, XP2-MAPB

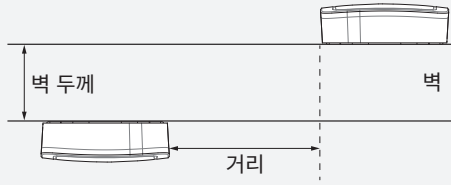


벽 두께	거리
100 mm	360 mm
120 mm	360 mm
150 mm	300 mm

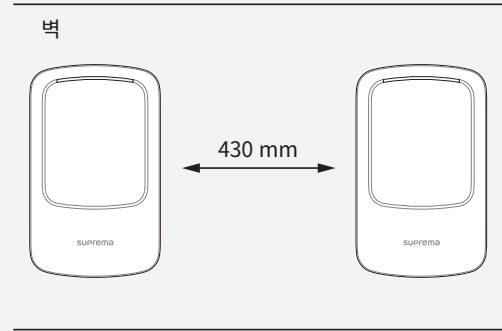




- XP2-GDPB, XP2-GKDPB

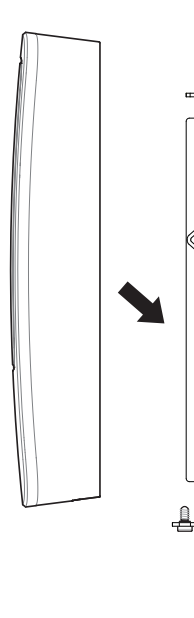


벽 두께	거리
100 mm	400 mm
120 mm	380 mm
150 mm	380 mm

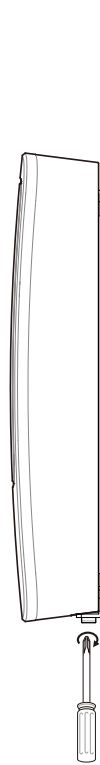


- 모바일 출입카드를 사용할 경우 BLE 신호 간섭을 피하기 위해 장치 사이에 최소 1 m 이상의 거리를 두고 설치하세요.

2 케이블 커버를 조립한 뒤 고정된 브래킷 위에 XPass 2를 장착하세요.

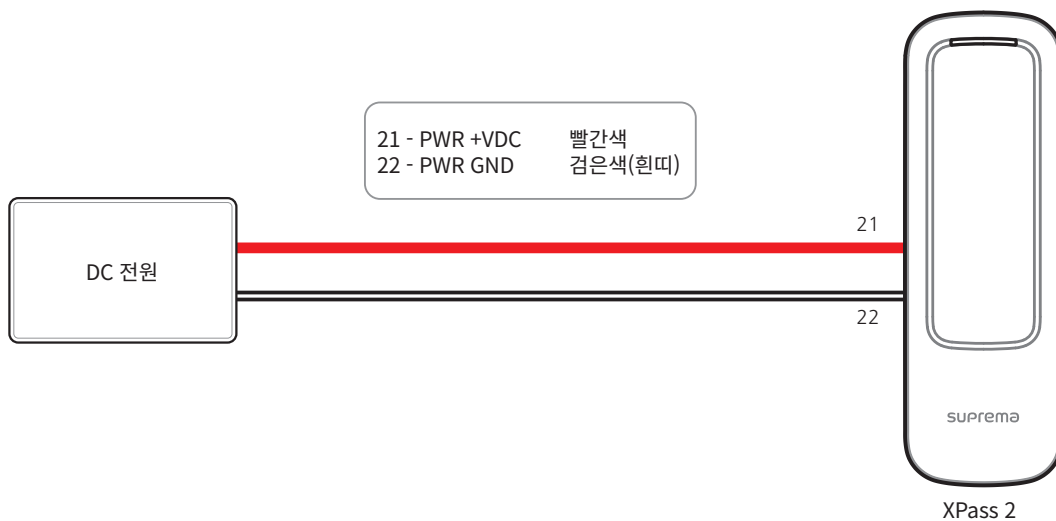


3 XPass 2의 제품 고정용 나사를 돌려 XPass 2와 브래킷을 조립하세요.



- 브래킷과 제품을 조립할 때 향상된 보안을 위해 제품 고정용 나사 대신 동봉된 브래킷 고정용 나사(별 모양)를 이용할 수 있습니다.

전원 연결



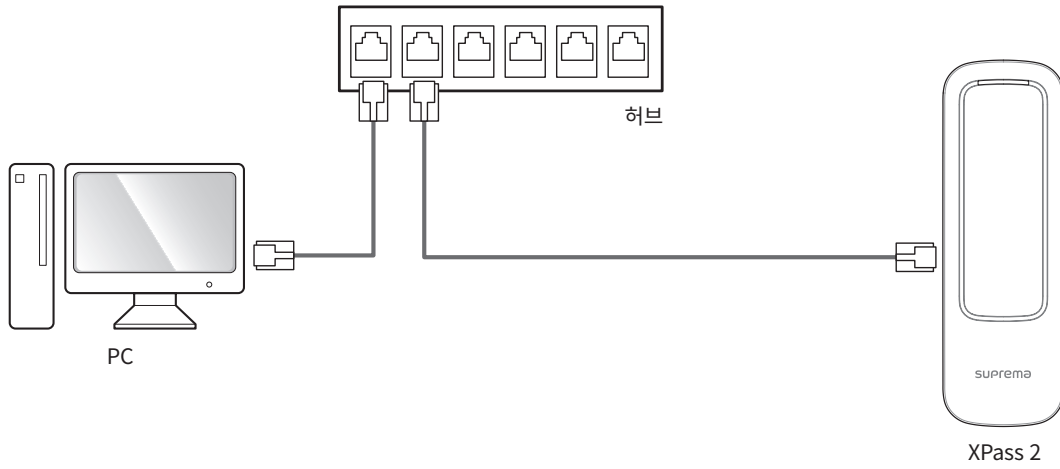
- 전원 어댑터는 IEC/EN 62368-1 승인을 받은 제품으로 단말기의 소모 전력 이상의 제품을 사용하세요. 전원 어댑터에 다른 기기를 연결하여 사용하려면 단말기의 소모 전력과 다른 기기에 필요한 소모 전력을 합한 전류 용량 이상의 어댑터를 사용해야 합니다.
 - 최대 소모전류 규격은 제품 사양의 **전원**을 참고하세요.
- 전원 어댑터를 사용할 경우 전원 케이블의 길이를 임의로 연장하지 마세요.
- Secure I/O 2, 전기정(전기식 잠금장치), 제품은 반드시 개별 전원을 사용하세요. 전원을 함께 연결하여 사용하면 장치가 오작동할 수 있습니다.

네트워크 연결

TCP/IP

LAN 연결(허브와 연결)

일반 타입의 CAT-5e 케이블을 사용하여 허브와 연결할 수 있습니다.

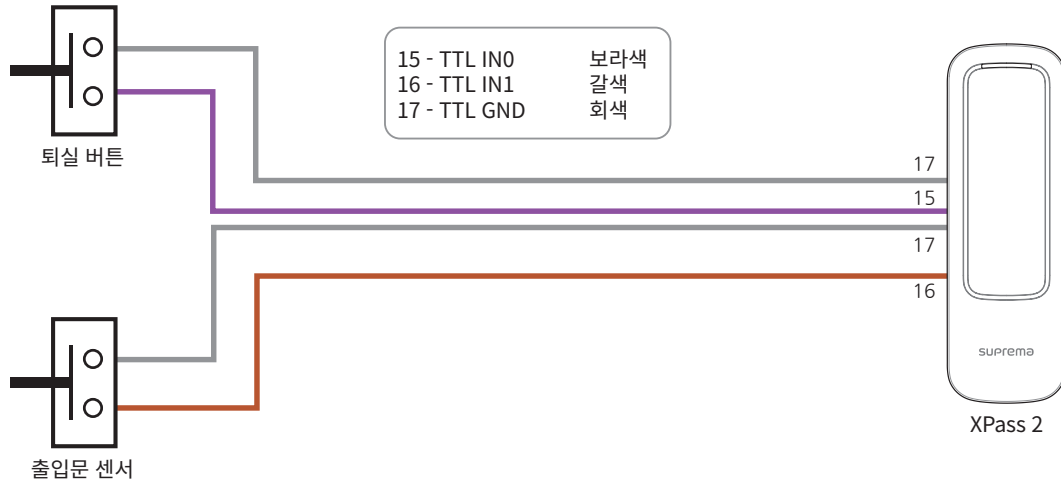


LAN 연결(PC와 직접 연결)

XPass 2는 자동 MDI/MDIX 기능을 가지고 있으므로 크로스 케이블이 아닌 일반 타입의 CAT-5e 케이블로 PC와 직접 연결할 수 있습니다.



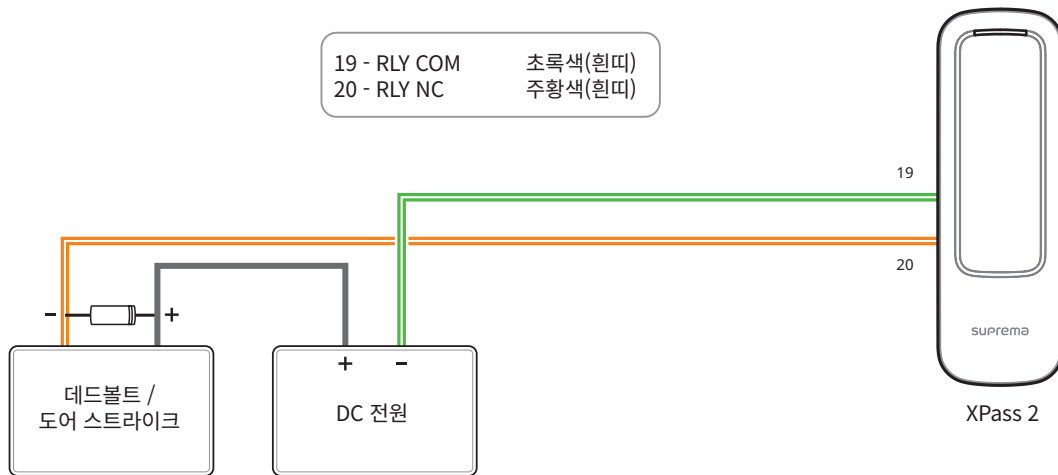
TTL 입력 연결



릴레이 연결

Fail Safe Lock

Fail Safe Lock을 사용하려면 아래 그림과 같이 N/C 릴레이를 연결하세요. Fail Safe Lock은 평상시 릴레이 회로에 전류가 흐르며, 릴레이가 동작하여 전류를 일시적으로 차단하면 출입문이 열립니다. 정전이 되거나 외부 요인으로 장치의 전원이 끊길 경우 출입문이 열립니다.



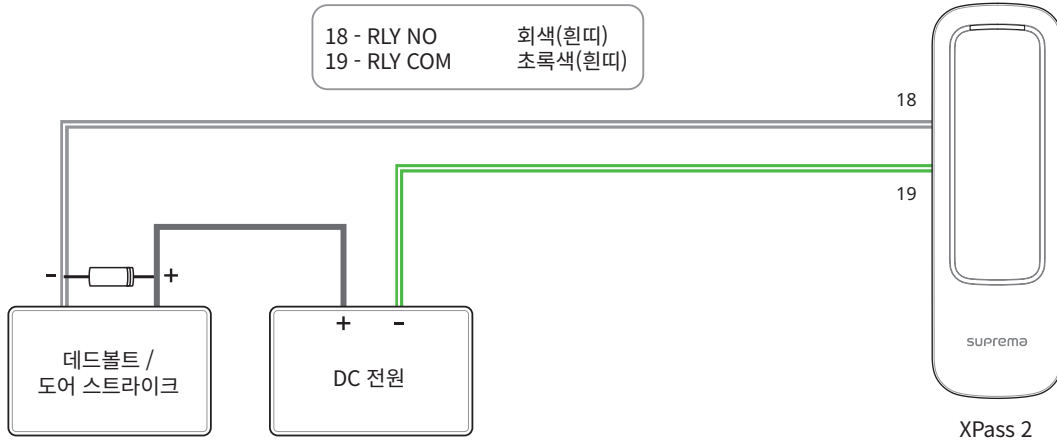
- 출입문 잠금 장치가 작동할 때 발생하는 역전류로부터 릴레이를 보호하기 위해 그림과 같이 출입문 잠금 장치 배선 양쪽에 다이오드를 설치하세요.
- XPass 2와 출입문 잠금 장치는 별도의 전원을 사용하세요.
- 슈프리마의 지능형 장치에는 편의를 제공하기 위해 별도의 컨트롤러 없이 독립형으로 연결하여 출입문을 직접 열거나 잠글 수 있도록 하는 릴레이가 내장되어 있습니다. 그러나 향상된 보안이 요구되는 출입통제 애플리케이션의 경우 잠재적으로 출입문 잠금 해제를 유발할 수 있는 변조 공격을 방지하기 위해 장치에 내장된 릴레이를 사용하지 않는 것이 좋습니다. 이러한 애플리케이션의 경우 잠금 제어를 위해 출입문 내부의 안전한 위치에 설치된 슈프리마의 Secure I/O 2, DM-20, CoreStation 과 같은 별도의 릴레이 장치를 사용할 것을 권장합니다.



- 다이오드의 설치 방향에 주의하세요. 다이오드는 출입문 잠금 장치와 가깝게 설치하세요.

Fail Secure Lock

Fail Secure Lock을 사용하려면 아래 그림과 같이 N/O 릴레이를 연결하세요. Fail Secure Lock은 평상시 릴레이 회로에 전류가 흐르지 않으며, 릴레이가 동작하여 전류가 흐르면 출입문이 열립니다. 정전이 되거나 외부 요인으로 장치의 전원이 끊길 경우 출입문이 잠깁니다.

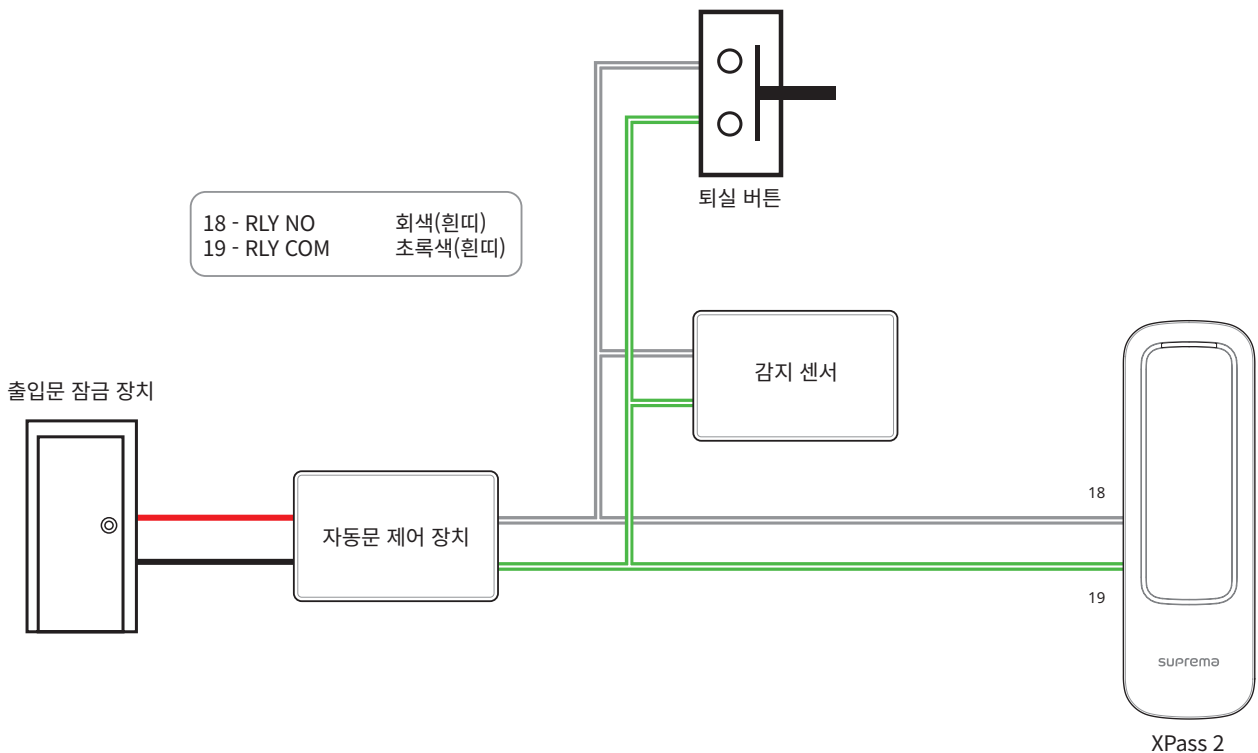


- 출입문 잠금 장치가 작동할 때 발생하는 역전류로부터 릴레이를 보호하기 위해 그림과 같이 출입문 잠금 장치 배선 양쪽에 다이오드를 설치하세요.
- XPass 2와 출입문 잠금 장치는 별도의 전원을 사용하세요.
- 슈프리마의 지능형 장치에는 편의를 제공하기 위해 별도의 컨트롤러 없이 독립형으로 연결하여 출입문을 직접 열거나 잠글 수 있도록 하는 릴레이가 내장되어 있습니다. 그러나 향상된 보안이 요구되는 출입통제 애플리케이션의 경우 잠재적으로 출입문 잠금 해제를 유발할 수 있는 변조 공격을 방지하기 위해 장치에 내장된 릴레이를 사용하지 않는 것이 좋습니다. 이러한 애플리케이션의 경우 잠금 제어를 위해 출입문 내부의 안전한 위치에 설치된 슈프리마의 Secure I/O 2, DM-20, CoreStation 과 같은 별도의 릴레이 장치를 사용할 것을 권장합니다.



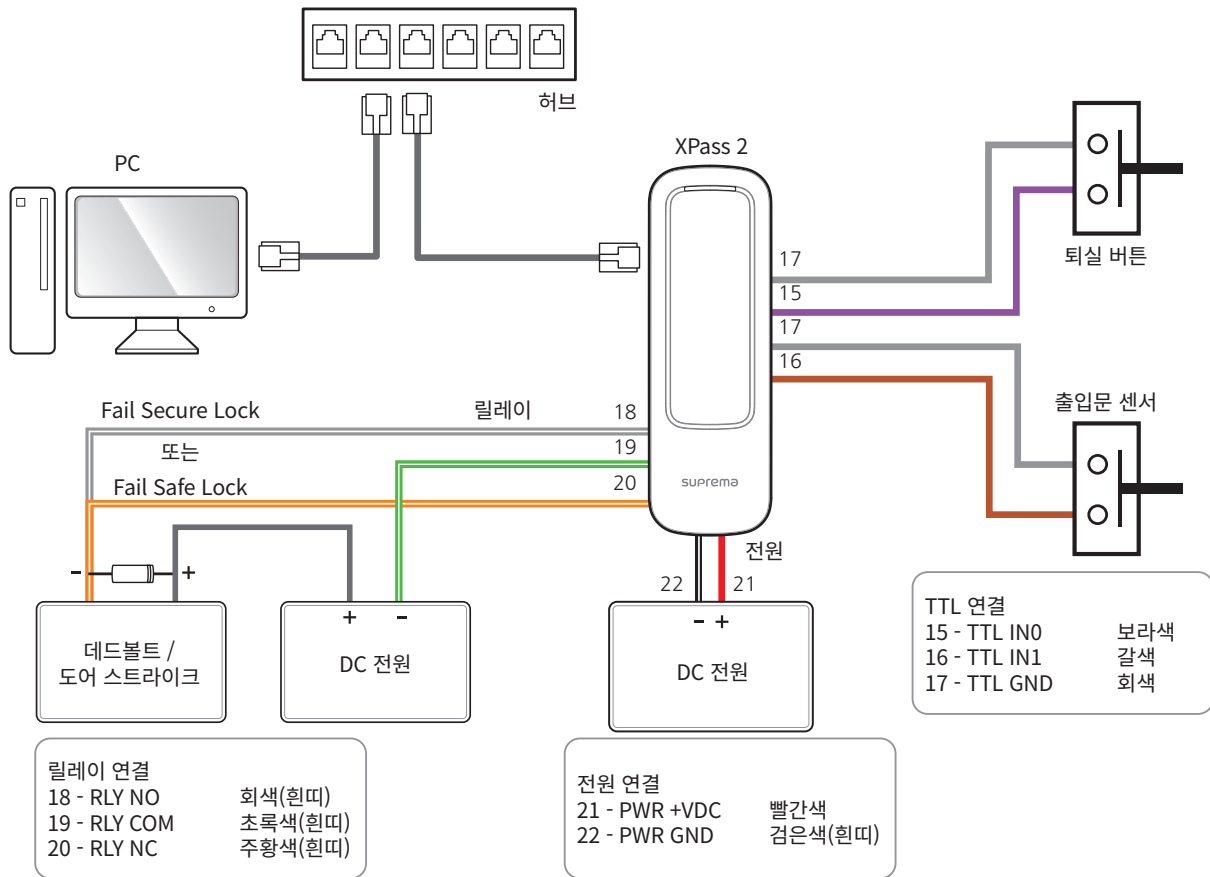
- 다이오드의 설치 방향에 주의하세요. 다이오드는 출입문 잠금 장치와 가깝게 설치하세요.

자동문 연결



독립형 연결

별도의 I/O 장치를 연결하지 않고 XPass 2를 직접 출입문 잠금 장치, 출입문 스위치, 출입문 센서 등에 연결할 수 있습니다.



슈프리마의 지능형 장치에는 편의를 제공하기 위해 별도의 컨트롤러 없이 독립형으로 연결하여 출입문을 직접 열거나 잠글 수 있도록 하는 릴레이가 내장되어 있습니다. 그러나 항상된 보안이 요구되는 출입통제 애플리케이션의 경우 잠재적으로 출입문 잠금 해제를 유발할 수 있는 변조 공격을 방지하기 위해 장치에 내장된 릴레이를 사용하지 않는 것이 좋습니다. 이러한 애플리케이션의 경우 잠금 제어를 위해 출입문 내부의 안전한 위치에 설치된 슈프리마의 Secure I/O 2, DM-20, CoreStation과 같은 별도의 릴레이 장치를 사용할 것을 권장합니다.

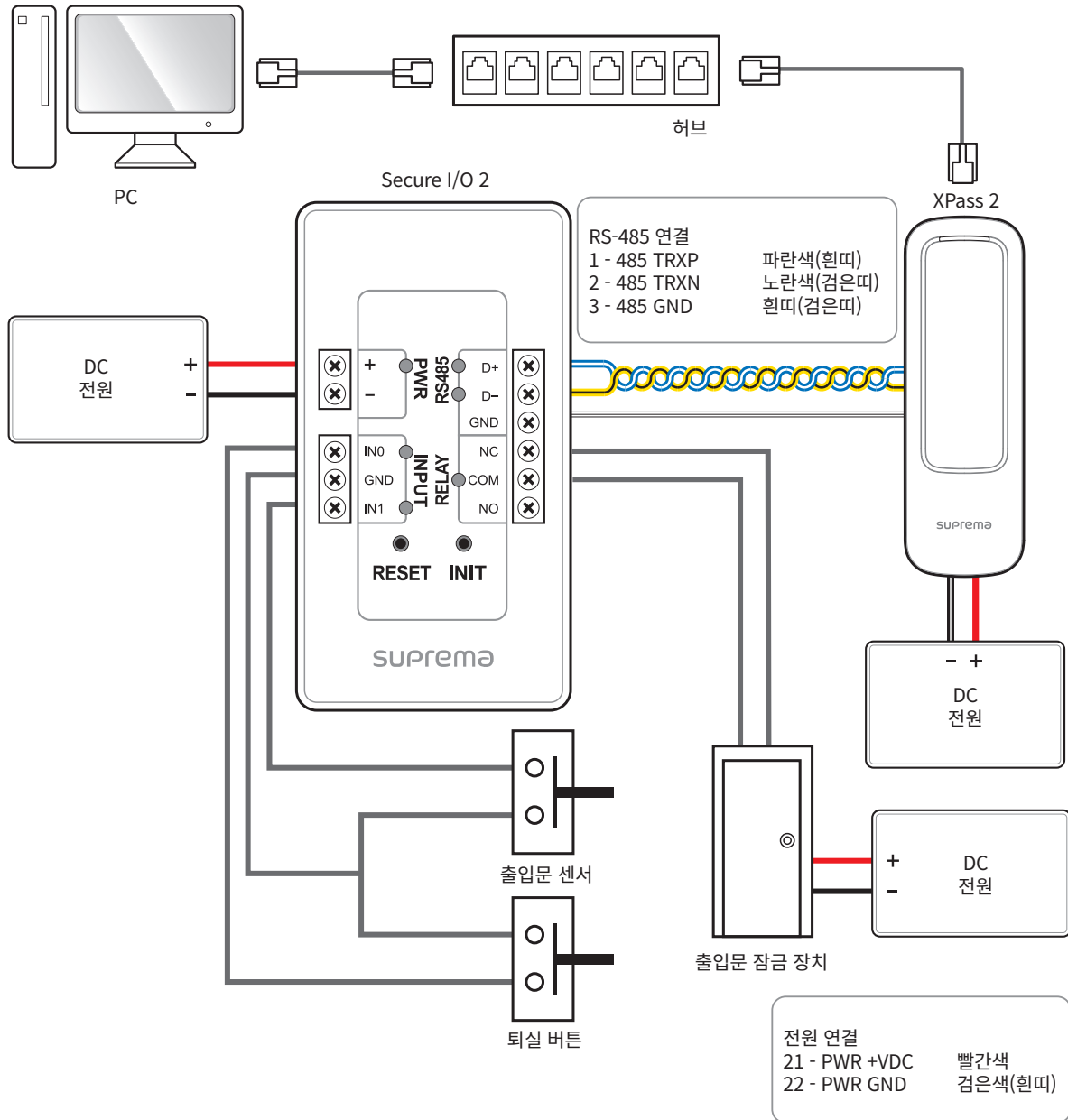


- RS-485 케이블로 슬레이브 장치를 연결하여 XPass 2를 다중 출입문 제어 장치로 사용할 수 있습니다. 슬레이브 장치는 더미 리더로 사용되며 인증은 마스터 장치에서 수행합니다.
- XPass 2를 마스터 장치로 사용할 경우 슬레이브 장치에서 카드 인증만 사용할 수 있습니다.
- 최대 31대의 슬레이브 장치를 연결할 수 있습니다.
- 더 자세한 내용은 슈프리마 기술 지원팀(CS@suprema.co.kr)에 문의하세요.

Secure I/O 2 연결

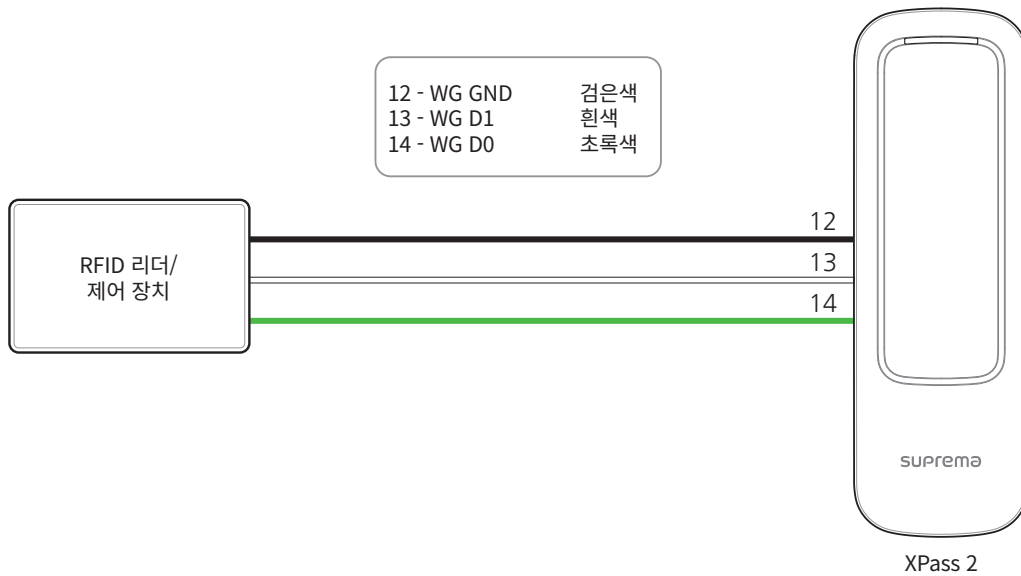
XPass 2에 I/O 장치인 Secure I/O 2를 RS-485로 연결할 수 있습니다. XPass 2와 Secure I/O 2의 연결이 끊기거나 외부 요인에 의해 XPass 2의 전원이 차단되더라도 보안을 유지할 수 있습니다.

- RS-485 케이블은 AWG24, 꼬임선(Twisted Pair), 길이 1.2 km 이하로 사용하세요.
- RS-485 데이터 체인으로 연결할 경우 종단 저항(120Ω)을 데이터 체인 연결의 양 끝에 연결하세요. 중간 선로에 연결할 경우 신호 레벨이 작아져 통신 성능이 떨어지므로 반드시 데이터 체인 연결의 양 끝에 연결하세요.



Wiegand 연결

Wiegand 입력/출력 장치로 사용



네트워크 설정 초기화

장치의 네트워크 설정을 초기화합니다.

- 1 전원을 켜세요.
- 2 장치가 자동으로 재부팅될 때까지 초기화 버튼을 누르세요.
- 3 초기화된 네트워크 정보를 이용해 장치를 연결하세요.
 - TCP/IP 주소: DHCP 주소 할당 (DHCP 주소 할당을 실패하면 169.254.x.x로 설정됩니다.)
 - 서버 모드: 사용 해제
 - RS-485: 기본값, 115200 bps
- 4 TCP/IP나 RS-485 정보를 변경하세요.
- 5 전원을 끄고 켜 뒤 네트워크 정보가 올바르게 설정되었는지 확인하세요.

공장 초기화

장치에 저장된 모든 설정을 초기화합니다.

- 1 전원을 켜세요.
- 2 초기화 버튼을 빠르게 세 번 누르세요.
- 3 장치의 LED가 초록색으로 깜빡일 때 초기화 버튼을 한 번 더 누르세요.



- 장치에 저장된 루트 인증서가 존재하지 않을 경우 공장 초기화를 진행할 수 없습니다.

제품 사양

구분	항목	규격
크리덴셜	RF 카드	<ul style="list-style-type: none"> • XP2-MDPB, XP2-GDPB, XP2-GKDPB: 125kHz EM & 13.56MHz MIFARE, MIFARE Plus, DESFire, DESFire EV1/EV2/EV3¹⁾, FeliCa • XP2-MAPB: 125kHz EM, HID Prox & 13.56MHz MIFARE, MIFARE Plus, DESFire, DESFire EV1/EV2/EV3¹⁾, FeliCa, iCLASS SE/SR/Seos
	RF 인식 거리 ²⁾	<ul style="list-style-type: none"> • XP2-MDPB, XP2-GDPB, XP2-GKDPB: MIFARE/DESFire/EM: 50 mm, FeliCa: 30 mm • XP2-MAPB: MIFARE/DESFire/iCLASS/EM: 50 mm, HID Prox/FeliCa: 30 mm
	모바일	NFC, BLE
일반	CPU	1 GHz
	메모리	4 GB Flash + 64 MB RAM
	크립토 칩	지원
	LED	다중 색상
	소리	멀티톤 버저
	동작 온도	-35 °C ~ 65 °C
	보관 온도	-40 °C ~ 70 °C
	동작 습도	0 % ~ 95 %, 비응축
	보관 습도	0 % ~ 95 %, 비응축
	치수 (W x H x D)	<ul style="list-style-type: none"> • XP2-MDPB, XP2-MAPB: 48 x 144.7 x 27 (mm) • XP2-GDPB: 80 x 130 x 25 (mm) • XP2-GKDPB: 80 x 130 x 25 (mm)
	무게	<ul style="list-style-type: none"> • 장치 <ul style="list-style-type: none"> - XP2-MDPB, XP2-MAPB: 144 g - XP2-GDPB: 220 g - XP2-GKDPB: 235 g • 브래킷 <ul style="list-style-type: none"> - XP2-MDPB, XP2-MAPB: 30 g (와셔 및 볼트 포함) - XP2-GDPB: 52 g (와셔 및 볼트 포함) - XP2-GKDPB: 52 g (와셔 및 볼트 포함)
	IP 등급	IP65, IP67
	IK 등급	IK08
인증	<ul style="list-style-type: none"> • XP2-MDPB, XP2-GDPB: CE, UKCA, KC, FCC, IC, RCM, BIS, SIG, RoHS, REACH, WEEE • XP2-GKDPB: CE, UKCA, KC, FCC, IC, RCM, BIS, SIG, TELEC, RoHS, REACH, WEEE • XP2-MAPB: CE, UKCA, KC, FCC, RCM, SIG, RoHS, REACH, WEEE 	
저장 용량	최대 사용자 수	200,000
	최대 카드 수	200,000
	최대 로그 수	1,000,000

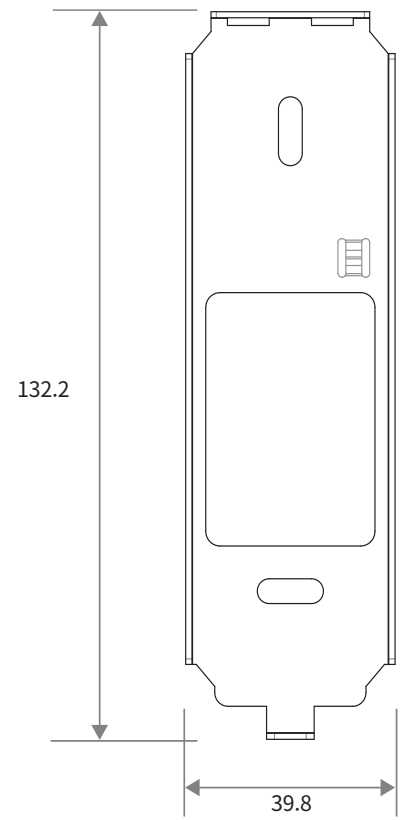
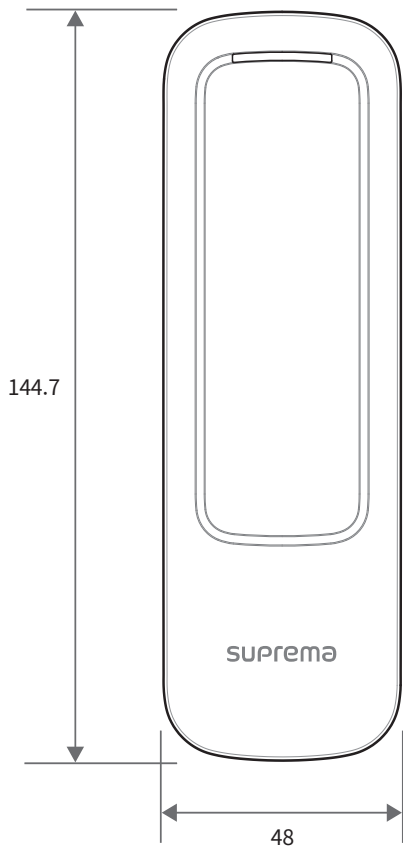
구분	항목	규격
인터페이스	이더넷	지원 (10/100 Mbps, auto MDI/MDI-X)
	RS-485	1채널 마스터/슬레이브 (선택 가능)
	RS-485 통신 프로토콜	OSDP V2 호환
	Wiegand	1채널 입력/출력 (선택 가능)
	TTL 입력	2채널 입력
	릴레이	1릴레이
	PoE	지원 (IEEE 802.3af 호환)
	탐퍼	지원
전기 규격	전원	<ul style="list-style-type: none"> 전압: 12 Vdc 전류: 최대 0.5 A
		<ul style="list-style-type: none"> 전압: 24 Vdc 전류: 최대 0.3 A
	스위치 입력 VIH	<ul style="list-style-type: none"> 최소 3 V 최대 5 V
	스위치 입력 VIL	최대: 1V
	스위치 풀업 저항	4.7 kΩ (입력 단자는 4.7 kΩ으로 풀업 되어 있습니다.)
	Wiegand 출력 VOH	4.8 V 이상
	Wiegand 출력 VOL	0.2 V 이하
	Wiegand 출력 풀업 저항	1 kΩ으로 내부 풀업
	릴레이	2 A @ 30 VDC Resistive load 1 A @ 30 VDC Inductive load

- 1) DESFire EV2/EV3 카드는 DESFire EV1 카드와 하위 호환되므로, DESFire EV1 카드의 기능을 포함하여 CSN 및 스마트 카드 기능이 지원됩니다.
- 2) RF 인식 거리는 설치 환경에 따라 다를 수 있습니다.

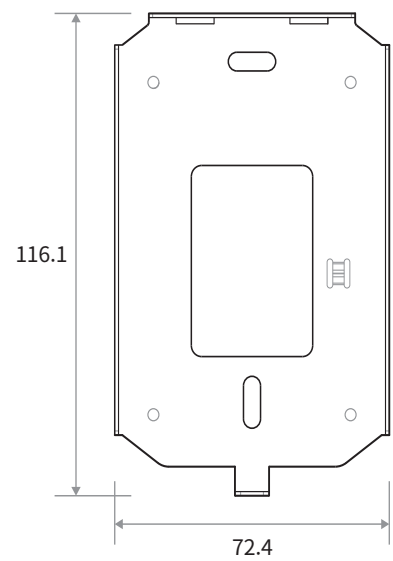
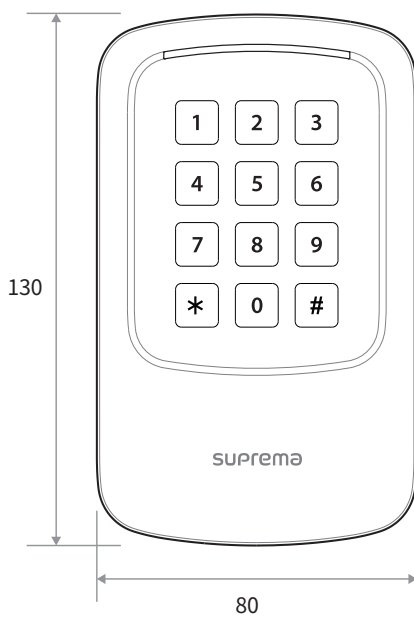
제품 치수

(단위: mm)

XP2-MDPB, XP2-MAPB



XP2-GDPB, XP2-GKDPB



FCC 준수 정보

이 기기는 FCC 규제의 Part 15를 준수합니다.
 작동은 다음의 두 조건을 따릅니다.

- (1) 이 기기는 유해한 간섭을 발생시키지 않습니다.
- (2) 이 기기는 원치 않는 작동을 일으키는 간섭을 포함한 어떠한 간섭도 수용합니다.



이 기기는 Class A 디지털 기기에 대한 제한 사항을 준수하여 테스트를 거쳤고 FCC규제의 Part 15에 적합하다는 것을 검증받았습니다. 이러한 제한은 장비가 상업적 환경에서 작동될 때 유해한 간섭으로부터 합리적인 보호를 제공하기 위해 설계되었습니다. 이 장비는 무선 주파수 에너지를 생성, 사용 및 방사하므로 지침에 따라 설치하여 사용하지 않을 경우 무선 통신에서 유해한 간섭을 일으킬 수 있습니다. 주거 지역에서 이 장비를 작동하면 유해한 간섭이 발생할 수 있으며 이 경우 사용자는 자신의 비용으로 간섭을 수정해야 합니다.

규정 준수 책임이 있는 당사자가 명시적으로 승인하지 않은 제품 변경 또는 수정은 이 제품을 작동할 수 있는 사용자의 권한을 무효화할 수 있습니다.

이 송신기는 다른 안테나 또는 송신기와 함께 배치하거나 작동해서는 안 됩니다.

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