

# BioStation L2

## 설치 가이드

버전 1.16

한국어

KO 101.00.BSL2 V1.16A

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# 안전을 위한 주의사항

사용자의 위험이나 재산상의 손해를 막기 위해 제품을 사용하기 전에 이 설명서를 반드시 읽고 제품을 안전하고 올바르게 사용하십시오. 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

**사용자가 임의로 제품을 설치하거나 수리하지 마십시오.**

- 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 쉐 가능성이 있는 장소에 설치하지 마십시오.**

- 화재 또는 감전의 원인이 됩니다.

**제품을 전열기 등으로 인해 열이 발생하는 장소에 설치하지 마십시오.**

- 과열로 인한 화재 또는 감전의 원인이 됩니다.

**물기가 있는 곳에 설치하지 마십시오.**

- 습기로 인한 감전 또는 제품 손상의 원인이 됩니다.

**전자파 장애가 있는 곳에 설치하지 마십시오.**

- 감전 또는 제품 손상의 원인이 됩니다.

### 사용

**제품 내부에 물, 음료수, 약품 등의 액체가 들어가지 않도록 주의하십시오.**

- 화재, 감전, 제품 손상의 원인이 됩니다.

**손상된 전원 어댑터나 플러그, 헐거운 콘센트는 사용하지 마십시오.**

- 접촉이 불안정할 경우 화재 또는 감전의 원인이 됩니다.

**전원 코드를無理하게 구부리거나 망가뜨리지 마십시오.**

- 화재 또는 감전의 원인이 됩니다.



## 주의

### 설치

**제품을 직사광선이나 자외선에 직접 노출된 장소에 설치하지 마십시오.**

- 제품 손상, 오작동 및 변색, 변형의 원인이 됩니다.

**전원 케이블 등을 통행 장소에 방치하지 마십시오.**

- 신체 상해 또는 제품 손상의 원인이 됩니다.

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

- 고장의 원인이 됩니다.

**여러 대의 장치를 설치할 경우 최소 이격 거리를 확인하십시오.**

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

**직류 12 V (500 mA 이상) 전원 어댑터만 사용하십시오.**

- 적합한 전원을 사용하지 않을 경우 장치가 오작동할 수 있습니다.

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

- 장치가 오작동할 수 있습니다.

### 사용

**제품을 떨어뜨리거나 충격을 주지 마십시오.**

- 고장의 원인이 됩니다.

**제품의 펌웨어 업그레이드 진행 중 전원 공급이 중단되지 않도록 주의하십시오.**

- 고장의 원인이 됩니다.

**암호를 타인이 알지 못하도록 관리하고, 주기적으로 변경하십시오.**

- 불법 침입의 원인이 됩니다.

**제품의 버튼(터치패드)을 무리하게 누르거나 날카로운 도구를 사용해 누르지 마십시오.**

- 고장의 원인이 됩니다.

**제품을 -20°C ~50°C 이내에서 사용하고 너무 낮거나 높은 온도에서 보관하지 마십시오.**

- 고장의 원인이 됩니다.

**제품을 청소할 때 주의하십시오.**

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

**제품을 원래 용도 이외 다른 용도로 사용하지 마십시오.**

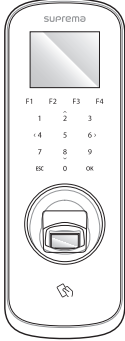
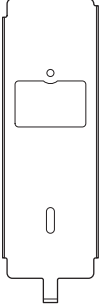
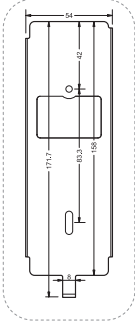
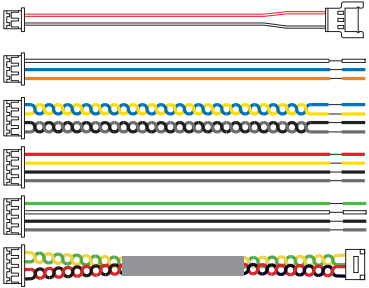





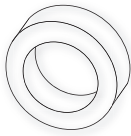
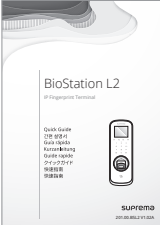

- 고장의 원인이 됩니다.

### RTC 배터리

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

# 시작하기

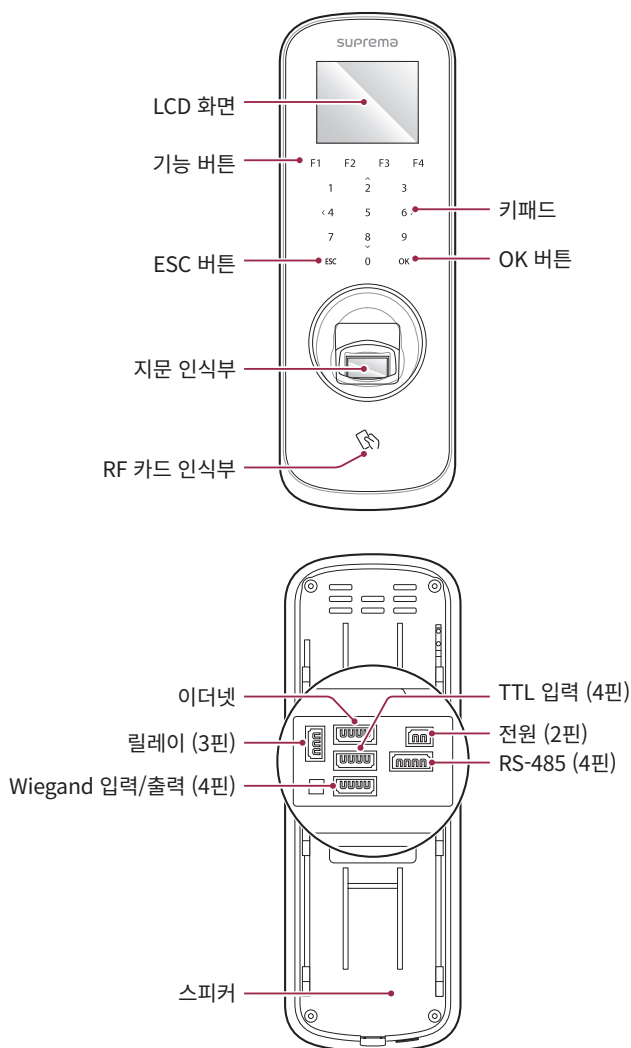
## 구성품

		
<p><b>BioStation L2</b></p>	<p><b>브래킷</b></p>	<p><b>드릴링 템플릿</b></p>
		
<p><b>연결 케이블</b></p>	<p><b>다이오드</b></p>	<p><b>120 Ω 저항</b></p>
		
<p><b>PVC 앵커 x2</b></p>	<p><b>고정용 나사 x2</b></p>	<p><b>브래킷 고정용 나사 (별 모양)</b></p>
		
<p><b>페라이트 코어</b></p>	<p><b>퀵 가이드</b></p>	<p><b>오픈소스라이선스 가이드</b></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.
- 제품 사용에 대한 내용은 슈프리마 웹 사이트(<https://www.supremainc.com>)에 접속하여 사용자 가이드를 확인하십시오.

## 각 부분의 명칭 및 기능



명칭	기능 설명
LCD 화면	동작을 위한 UI를 제공합니다.
기능 버튼	근태 키, 문자 변경, 빈 칸 입력 등에 사용합니다.
키패드	<ul style="list-style-type: none"> <li>0~9: 숫자 또는 문자를 입력할 때 사용합니다.</li> <li>2, 4, 6, 8: 화살표의 방향에 따라 원하는 항목으로 이동할 때 사용합니다.</li> </ul>
ESC 버튼	메뉴 열기, 이전 화면으로 이동, 입력을 취소할 때 사용합니다.
OK 버튼	근태 모드 선택 및 설정을 저장할 때 사용합니다. 작업 코드가 설정되어 있다면 길게 눌러서 사용자의 작업 코드를 변경할 수 있습니다.
지문 인식부	출입을 위해 지문을 인식시키는 부분입니다.
RF 카드 인식부	출입을 위해 RF 카드를 인식시키는 부분입니다.
케이블 커넥터	케이블을 연결합니다. <ul style="list-style-type: none"> <li>전원</li> <li>이더넷</li> <li>RS-485</li> <li>Wiegand 입력/출력</li> <li>TTL 입력</li> <li>릴레이</li> </ul>
스피커	소리를 들을 수 있습니다.

## 케이블 및 커넥터

### 전원



핀	명칭	색상
1	PWR +VDC	빨간색(흰띠)
2	PWR GND	검은색(흰띠)

### 릴레이



핀	명칭	색상
1	RLY NO	흰색
2	RLY COM	파란색
3	RLY NC	주황색

### RS-485



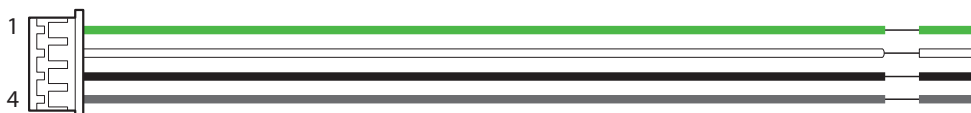
핀	명칭	색상
1	485 TRXP	파란색
2	485 TRXN	노란색
3	485 GND	검은색
4	SH GND	회색

## TTL 입력



핀	명칭	색상
1	TTL IN0	빨간색
2	TTL IN1	노란색
3	TTL GND	검은색
4	SH GND	회색

## Wiegand 입력/출력



핀	명칭	색상
1	WG D0	초록색
2	WG D1	흰색
3	WG GND	검은색
4	SH GND	회색

## 이더넷



핀	명칭	색상
1	ENET RXN	노란색
2	ENET RXP	초록색
3	ENET TXN	빨간색
4	ENET TXP	검은색

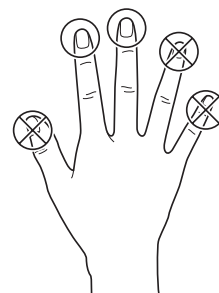


## 올바른 지문 입력 방법

지문 인식률을 높이기 위해 올바르게 지문을 등록하십시오. BioStation L2는 사용자의 지문 입력 각도 및 위치가 바뀌더라도 지문을 인식할 수 있습니다. 지문을 등록할 때 다음 사항에 유의하여 등록하면 인식률을 높일 수 있습니다.

### 지문 입력을 위한 손가락 선택

- 한 손에 짐을 들거나 손가락에 상처가 나는 경우와 같이 특정 손가락의 지문을 사용하기 어려운 경우를 대비하여, 한 명의 사용자 당 최대 10 개의 지문을 등록할 수 있습니다.
- 지문이 잘 인식되지 않는 사용자의 경우 동일 손가락을 두 번 중복으로 등록하여 인식률을 높일 수 있습니다.
- 손가락에 상처가 있거나 지문이 흐릴 경우 다른 손가락의 지문을 입력하십시오.
- 지문 입력 시 검지 또는 중지를 사용할 것을 권장합니다. 다른 손가락은 지문 센서 중앙에 정확히 위치하기 어려워서 인식률이 떨어질 수 있습니다.



### 지문 등록 방법

- 1 지문을 등록할 때 LCD 화면에 “센서에 손가락을 대십시오.”라고 표시되면 등록할 손가락을 지문 인식부에 올리고, 살며시 눌러 지문이 잘 인식되도록 하십시오.



- 2 “뵁” 소리가 난 뒤 재입력 화면이 나타나면, 등록된 손가락의 지문을 다시 스캔하십시오. (등록할 손가락의 지문은 2번 입력합니다.)



#### 지문 등록 시 주의사항

지문 인식할 때 처음에 등록된 지문과 비교하기 때문에 지문 등록이 가장 중요합니다. 지문을 등록할 때 다음 사항에 유의하십시오.

- 손가락이 센서에 완전히 접촉되도록 깊이 위치시키십시오.
- 지문의 중심점 부분이 센서의 중심에 오도록 위치시키십시오.
- 손가락에 상처가 있거나 지문이 흐릴 경우 다른 손가락의 지문을 입력하십시오.
- 지문 인식 시 화면 안내에 따라 움직이지 말고 정확하게 입력하십시오.
- 손가락을 세워 센서와의 접촉 면적이 작아지거나 손가락 각도가 틀어진 경우에는 지문 인식이 되지 않을 수 있습니다.



#### 지문 인식이 잘 되지 않는 경우

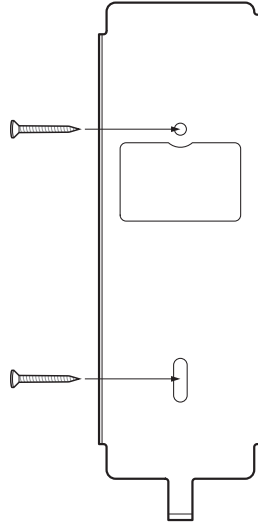
BioStation L2는 계절의 변화나 손가락의 상태 변화에 관계없이 지문을 인식할 수 있습니다. 하지만, 외부 환경이나 지문 입력 방법에 따라 인식률의 차이가 있을 수 있습니다. 지문이 잘 인식되지 않는 경우 다음의 조치를 취할 것을 권장합니다.

- 손가락에 물이나 땀이 있을 경우 물기를 닦은 뒤 입력하십시오.
- 손가락이 너무 건조한 경우 손 끝에 입김을 가볍게 분 뒤 입력하십시오.
- 손가락에 상처가 생긴 경우 다른 손가락의 지문을 다시 등록하십시오.
- 처음 등록된 지문은 올바르게 입력되지 않은 경우가 많으므로 ‘지문 등록 시 주의사항’에 따라 지문을 다시 등록하십시오.

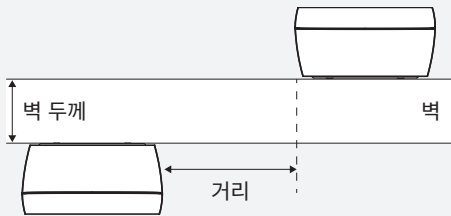
# 설치

## 브래킷 및 제품 고정

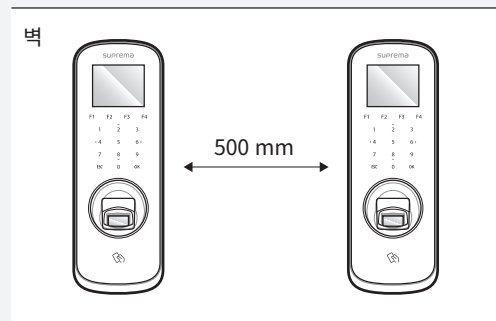
- 1 제공된 드릴링 템플릿을 이용하여 브래킷을 장착할 위치를 정하십시오. BioStation L2를 장착할 위치에 브래킷 고정용 나사를 이용하여 브래킷을 단단히 고정하십시오.



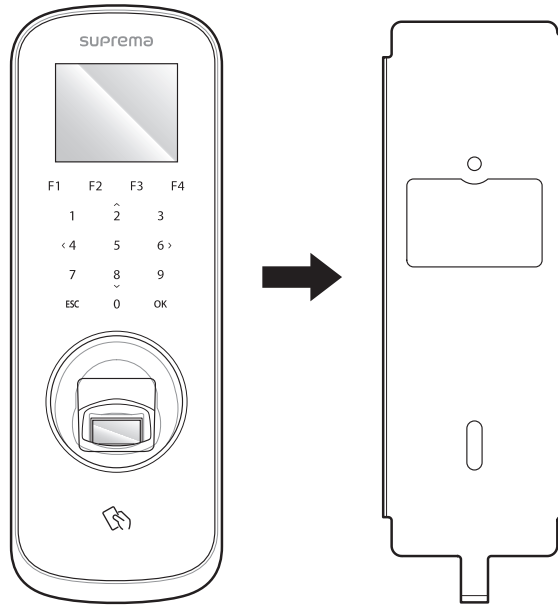
- BioStation L2를 콘크리트 벽에 설치할 경우 드릴로 구멍을 뚫어 PVC 앵커를 끼운 뒤 고정용 나사로 고정하십시오.
- RF 신호 간섭을 피하기 위해 최소 이격 거리를 확인하여 설치하십시오.



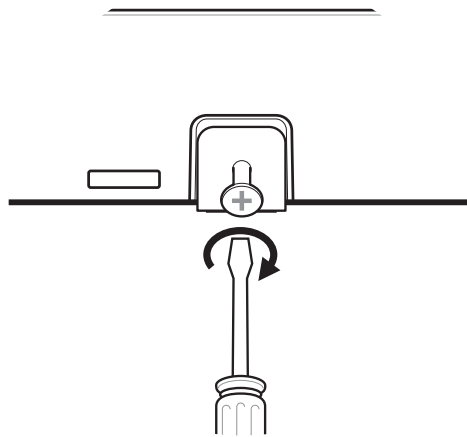
벽 두께	거리
100 mm	470 mm
120 mm	400 mm
150 mm	300 mm



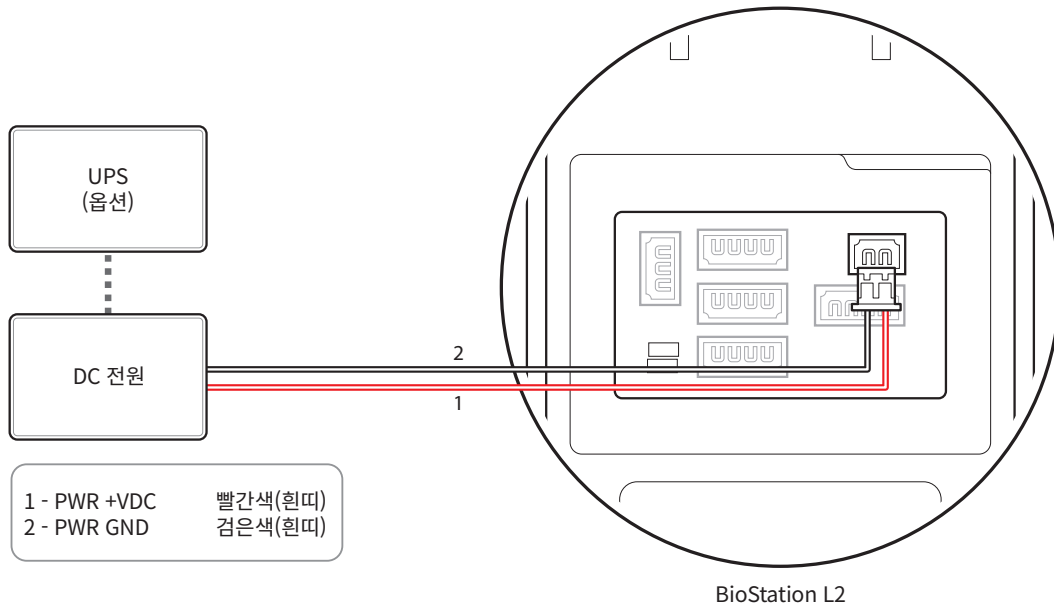
2 케이블 커버를 조립한 뒤 고정된 브래킷 위에 BioStation L2를 장착하십시오.



3 BioStation L2의 제품 고정용 나사를 돌려 BioStation L2와 브래킷을 조립하십시오.



## 전원 연결



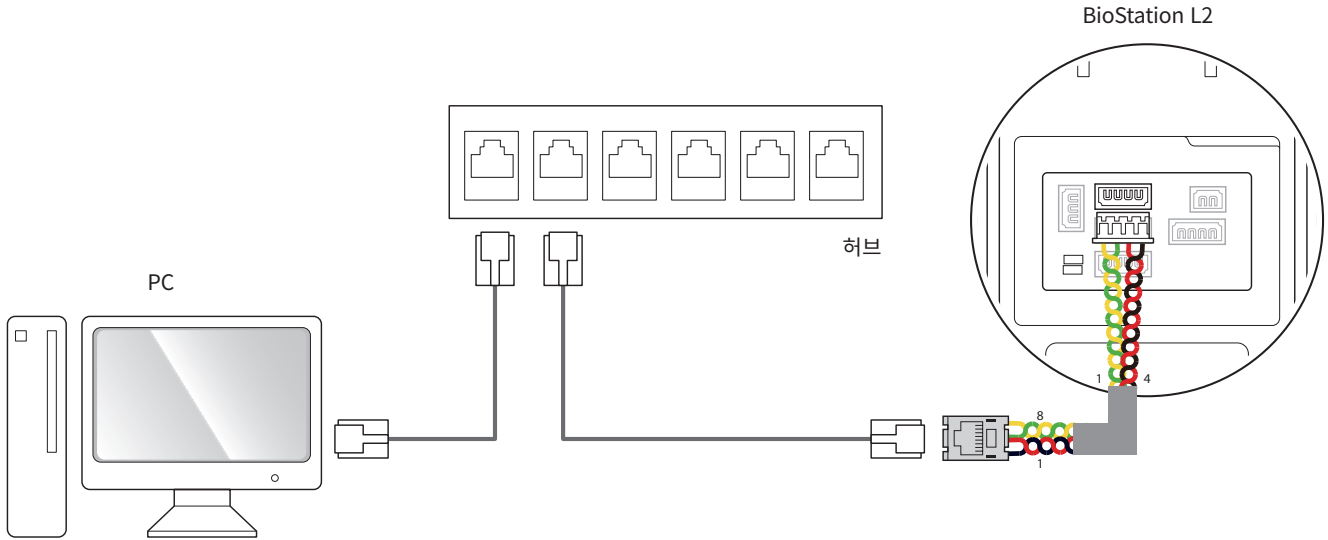
- 전원 어댑터는 DC 12V(± 10%), 최소 1,500mA 이상으로 IEC/EN 60950-1 승인을 받은 제품을 사용하십시오. 전원 어댑터에 다른 기기를 연결하여 사용하려면 단말기의 소모 전력과 다른 기기에 필요한 소모 전력을 합한 전류 용량 이상의 어댑터를 사용해야 합니다.
- Secure I/O 2, 전기정(전기식 잠금장치), 제품은 반드시 개별 전원을 사용하십시오. 전원을 함께 연결하여 사용하면 장치가 오작동할 수 있습니다.

## 네트워크 연결

### TCP/IP

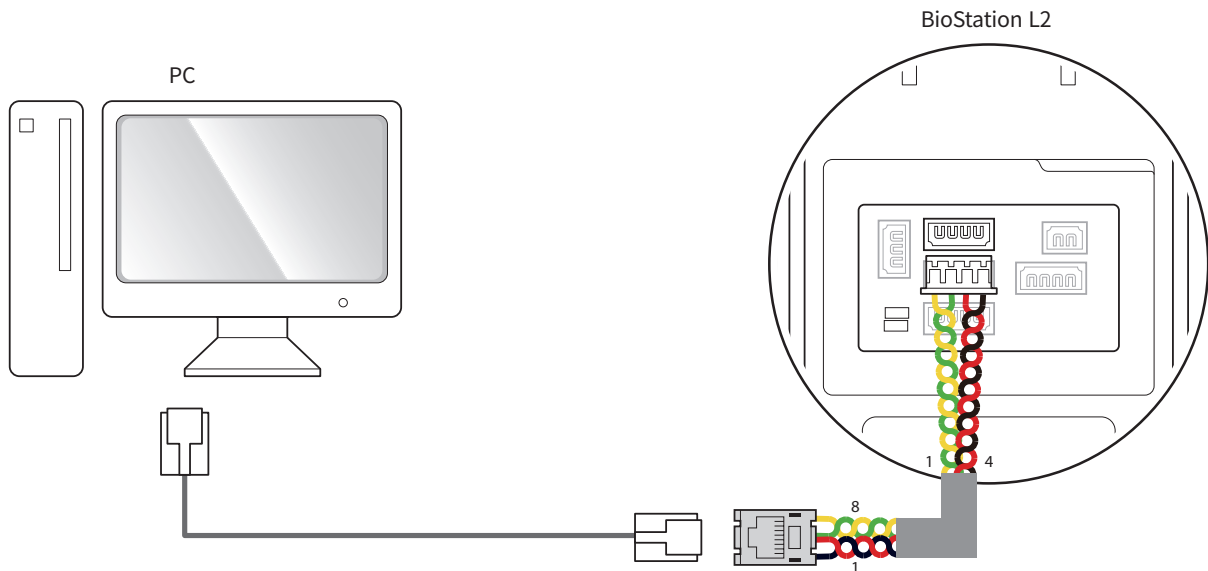
#### LAN 연결 (허브와 연결)

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

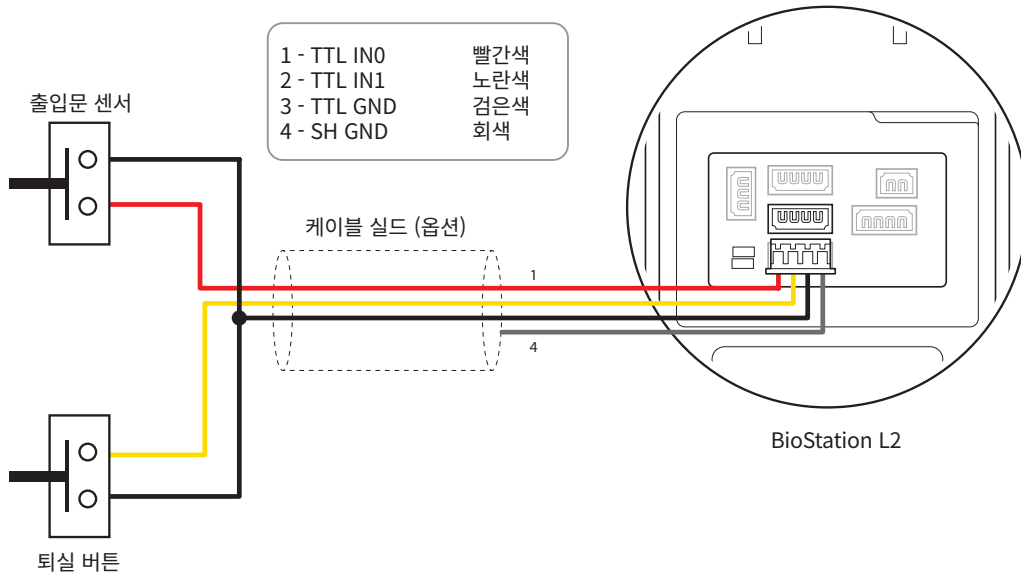


#### LAN 연결 (PC와 직접 연결)

BioStation L2는 자동 MDI/MDIX 기능을 가지고 있으므로 크로스 케이블이나 일반 스트레이트 타입의 CAT-5 케이블로 PC와 직접 연결할 수 있습니다.



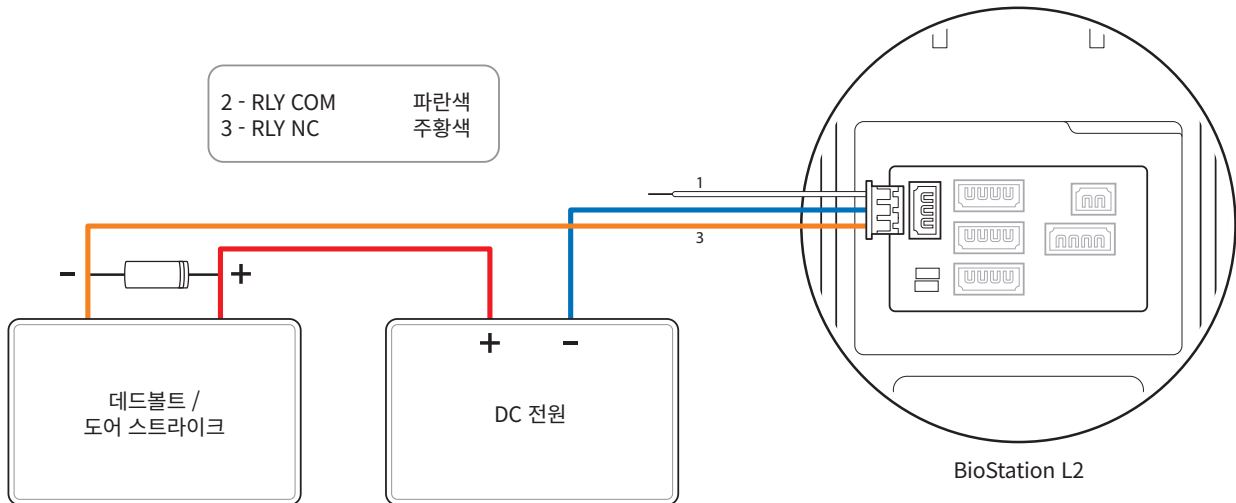
## TTL 입력 연결



## 릴레이 연결

### Fail Safe Lock

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



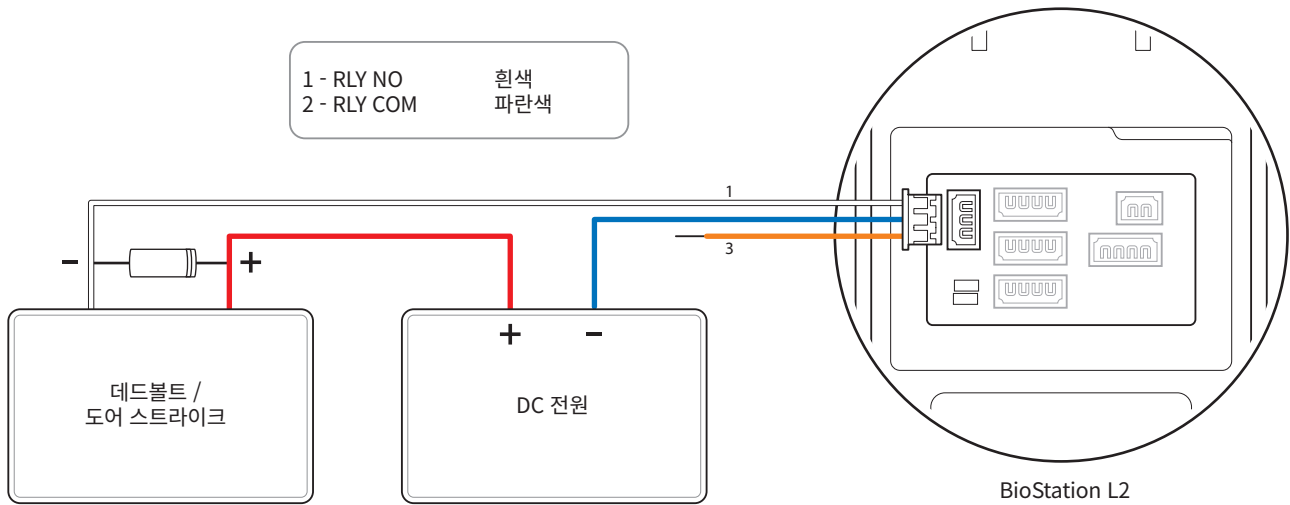
- 출입문 잠금 장치가 작동할 때 발생하는 역전류로부터 릴레이를 보호하기 위해 그림과 같이 출입문 잠금 장치 배선 양쪽에 다이오드를 설치하십시오.
- BioStation L2와 출입문 잠금 장치는 별도의 전원을 사용하십시오.
- 슈프리마의 지능형 장치에는 편의를 제공하기 위해 별도의 컨트롤러 없이 독립형으로 연결하여 출입문을 직접 열거나 잠글 수 있도록 하는 릴레이가 내장되어 있습니다. 그러나 향상된 보안이 요구되는 출입통제 애플리케이션의 경우 잠재적으로 출입문 잠금 해제를 유발할 수 있는 변조 공격을 방지하기 위해 장치에 내장된 릴레이를 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 주의하십시오. 다이오드는 출입문 잠금 장치와 가깝게 설치하십시오.

## Fail Secure Lock

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



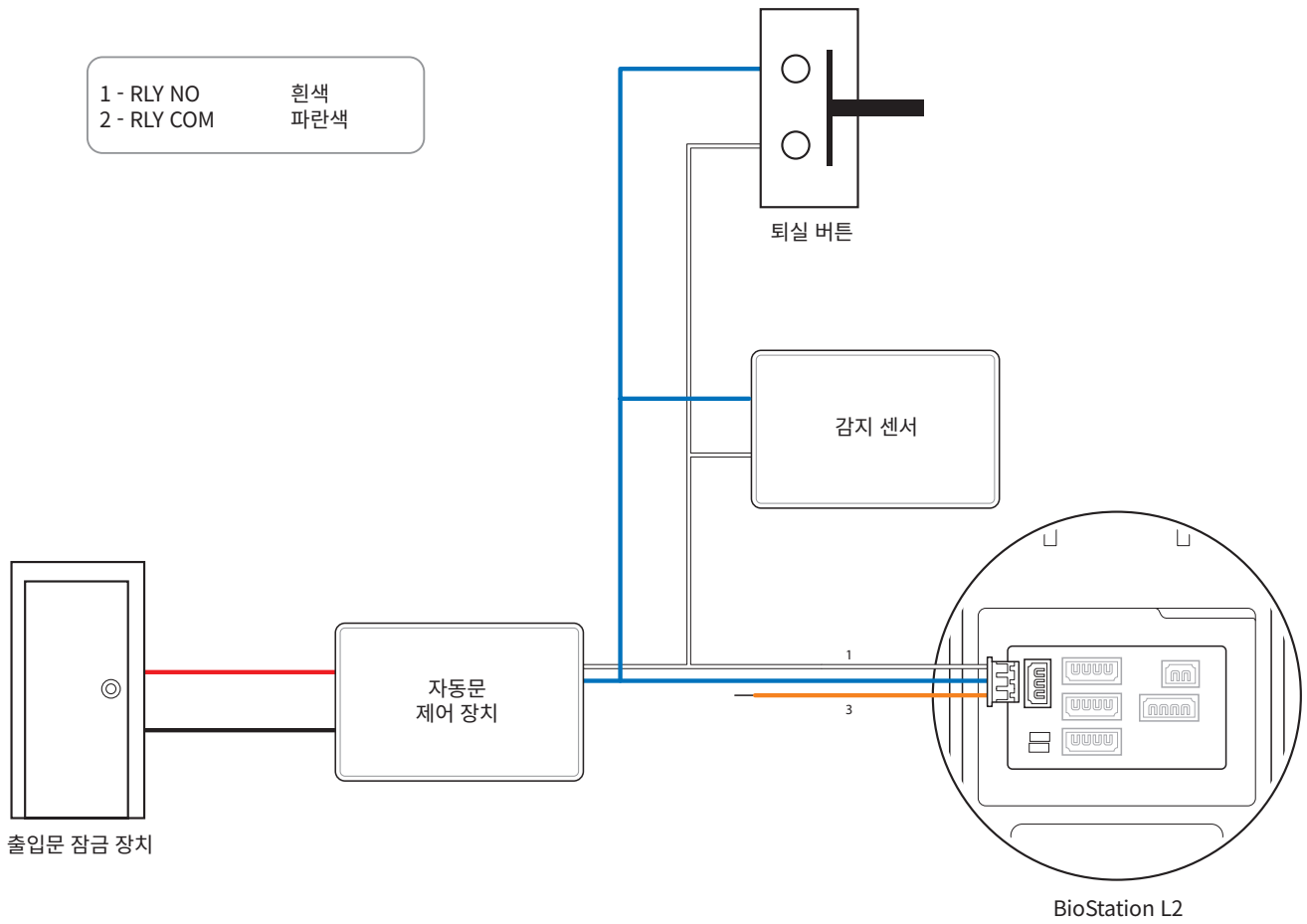
- 출입문 잠금 장치가 작동할 때 발생하는 역전류로부터 릴레이를 보호하기 위해 그림과 같이 출입문 잠금 장치 배선 양쪽에 다이오드를 설치하십시오.
- BioStation L2와 출입문 잠금 장치는 별도의 전원을 사용하십시오.
- 슈프리마의 지능형 장치에는 편의를 제공하기 위해 별도의 컨트롤러 없이 독립형으로 연결하여 출입문을 직접 열거나 잠글 수 있도록 하는 릴레이가 내장되어 있습니다. 그러나 향상된 보안이 요구되는 출입통제 애플리케이션의 경우 잠재적으로 출입문 잠금 해제를 유발할 수 있는 변조 공격을 방지하기 위해 장치에 내장된 릴레이를 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 주의하십시오. 다이오드는 출입문 잠금 장치와 가깝게 설치하십시오.

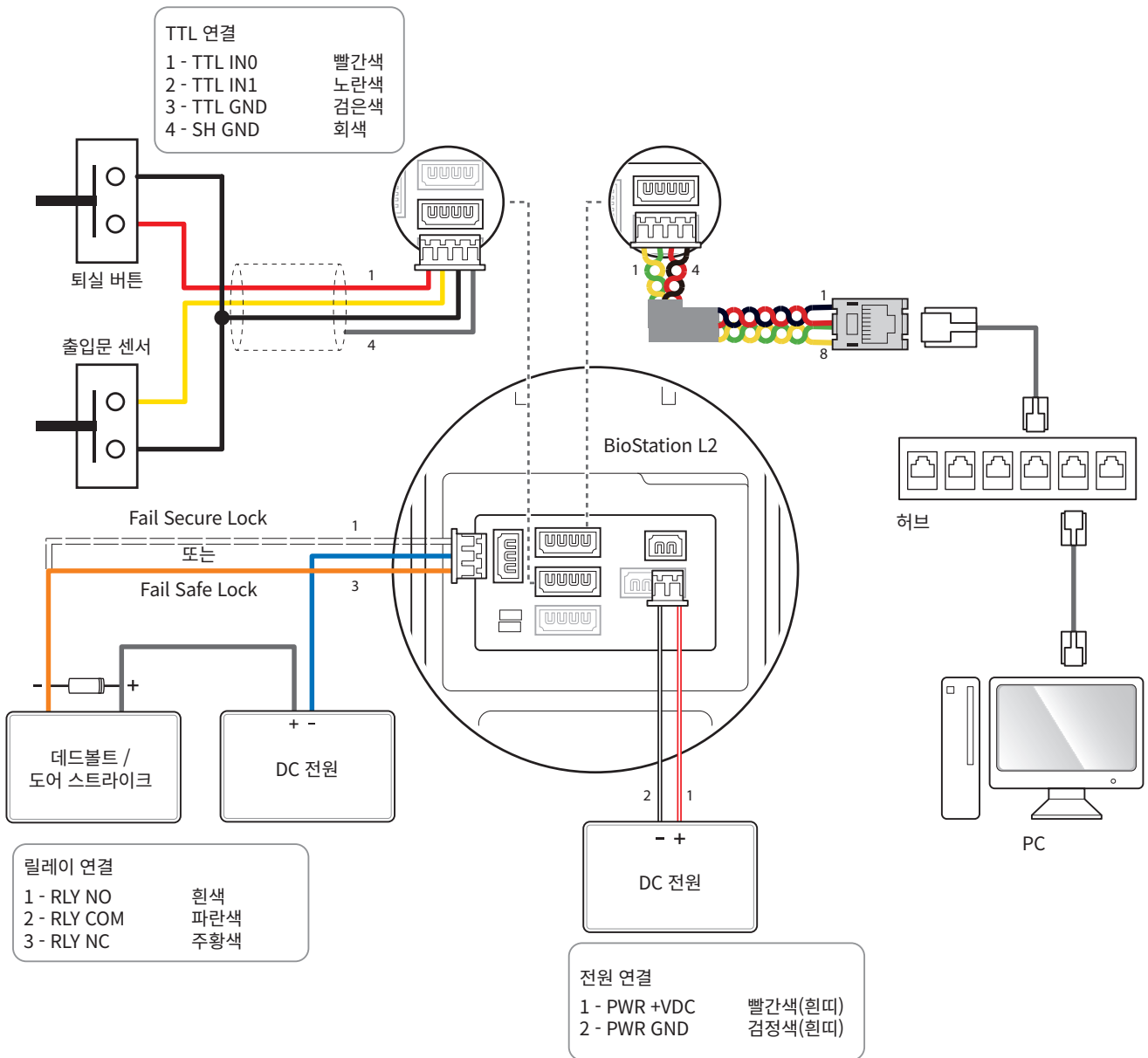


## 자동문 연결



## 독립형 연결

별도의 I/O 장치를 연결하지 않고 BioStation L2를 직접 출입문 잠금 장치, 퇴실 버튼, 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 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, CoreStation과 같은 별도의 릴레이 장치를 사용할 것을 권장합니다.

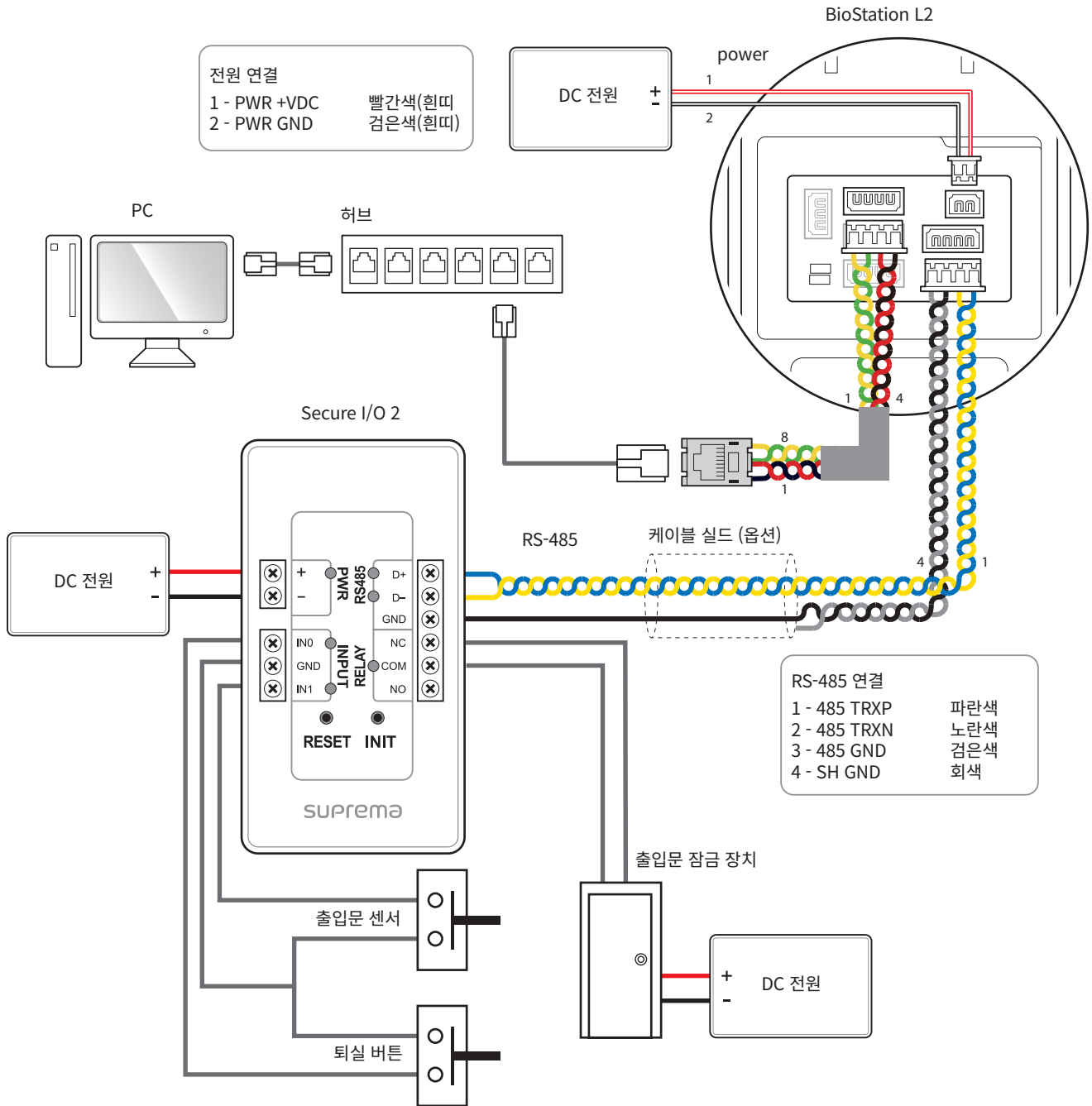


- RS485 케이블로 슬레이브 장치를 연결하여 BioStation L2를 다중 출입문 제어 장치로 사용할 수 있습니다. 슬레이브 장치는 더미 리더로 사용되며 인증은 마스터 장치에서 수행합니다.
- 카드 리더가 마스터 장치로 연결된 경우 카드 인증만 사용할 수 있습니다
- 연결할 수 있는 최대 슬레이브 장치 수는 인증 방법, 사용자 수, 장치 수에 따라 달라지며 슬레이브 장치 수는 지문 인증 속도에 영향을 줍니다.
- 마스터 장치는 31개의 슬레이브 장치를 제어할 수 있습니다. RS-485 대역폭으로 인해 최대 7대의 지문 인식 장치를 연결할 수 있습니다.
- 더 자세한 내용은 슈프리마 기술 지원팀([CS@suprema.co.kr](mailto:CS@suprema.co.kr))에 문의하십시오.

## Secure I/O 2 연결

BioStation L2에 I/O 장치인 Secure I/O 2를 RS-485로 연결할 수 있습니다. BioStation L2와 Secure I/O 2의 연결이 끊기거나 외부 요인에 의해 BioStation L2의 전원이 차단되더라도 보안을 유지할 수 있습니다.

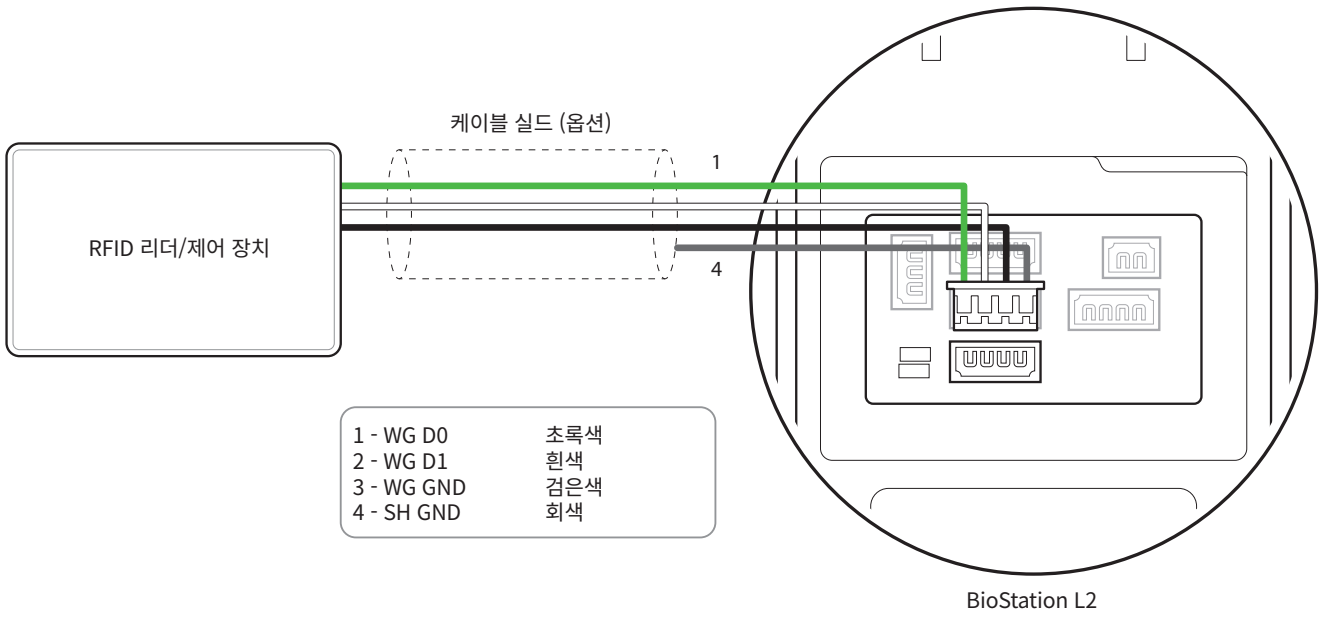
- RS-485 케이블은 AWG24, 꼬임선(Twisted Pair), 길이 1.2 km 이하로 사용하십시오.
- RS-485 데이터 체인으로 연결할 경우 종단 저항(120Ω)을 데이터 체인 연결의 양 끝에 연결하십시오. 중간 선로에 연결할 경우 신호 레벨이 작아져 통신 성능이 떨어지므로 반드시 데이터 체인 연결의 양 끝에 연결하십시오.



- RS485 케이블로 슬레이브 장치를 연결하여 BioStation L2를 다중 출입문 제어 장치로 사용할 수 있습니다. 슬레이브 장치는 더미 리더로 사용되며 인증은 마스터 장치에서 수행합니다.
- 카드 리더가 마스터 장치로 연결된 경우 카드 인증만 사용할 수 있습니다
- 연결할 수 있는 최대 슬레이브 장치 수는 인증 방법, 사용자 수, 장치 수에 따라 달라지며 슬레이브 장치 수는 지문 인증 속도에 영향을 줍니다.
- 마스터 장치는 31개의 슬레이브 장치를 제어할 수 있습니다. RS-485 대역폭으로 인해 최대 7대의 지문 인식 장치를 연결할 수 있습니다.
- 더 자세한 내용은 슈프리마 기술 지원팀(CS@suprema.co.kr)에 문의하십시오.

## Wiegand 연결

Wiegand 입력 또는 출력 장치로 사용



# 제품 사양

구분	항목	규격
크리덴셜	바이오 인식	지문
	RF 카드	<ul style="list-style-type: none"> <li>• <b>BSL2-OE</b>: 125kHz EM</li> <li>• <b>BSL2-OM</b>: 13.56MHz MIFARE, MIFARE Plus, DESFire EV1/EV2*, FeliCa</li> </ul>
	RF 인식 거리**	MIFARE, DESFire: 50mm / FeliCa: 30 mm
	모바일	NFC (BSL2-OM)
일반	CPU	1.2 GHz Quad Core
	메모리	2GB Flash + 256 MB RAM
	크립토 칩	지원
	LCD 종류	2" color TFT LCD
	LCD 해상도	220 x 176 픽셀
	소리	16-bit Hi-Fi
	동작 온도	-20°C ~ 50°C
	보관 온도	-40°C ~ 70°C
	동작 습도	0% ~ 80%, 비응축
	보관 습도	0% ~ 90%, 비응축
	치수 (W x H x D)	71 mm x 201 mm x 44 mm (하단) / 34 mm (상단)
	무게	<ul style="list-style-type: none"> <li>• 장치: 280 g</li> <li>• 브래킷: 61 g (와셔 및 볼트 포함)</li> </ul>
	인증	CE, FCC, KC, RoHS, REACH, WEEE
지문	이미지 크기	272 x 320 픽셀
	해상도	500 dpi
	템플릿	SUPREMA / ISO19794-2, ANSI-378
	추출 / 매치	MINEX 인증 및 호환
	위조 지문 검출	지원
저장 용량	최대 사용자 수	500,000***
	최대 크리덴셜 수(1:N)	지문: 100,000
	최대 크리덴셜 수(1:1)	<ul style="list-style-type: none"> <li>• 지문: 500,000</li> <li>• 카드: 500,000</li> <li>• PIN: 500,000</li> </ul>
	최대 텍스트 로그 수	1,000,000
인터페이스	이더넷	지원 (10/100 Mbps, 자동 MDI/MDI-X)
	RS-485	1채널 마스터/슬레이브 (선택 가능)
	Wiegand	1채널 입력/출력 (선택 가능)
	TTL 입력	입력 2채널
	릴레이	1개
	탐퍼	지원
전기 규격	전원	전압: 12VDC 전류: 최대 600 mA
	스위치 입력 VIH	최소: 3V 최대: 5V
	스위치 입력 VIL	최대: 1 V
	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	

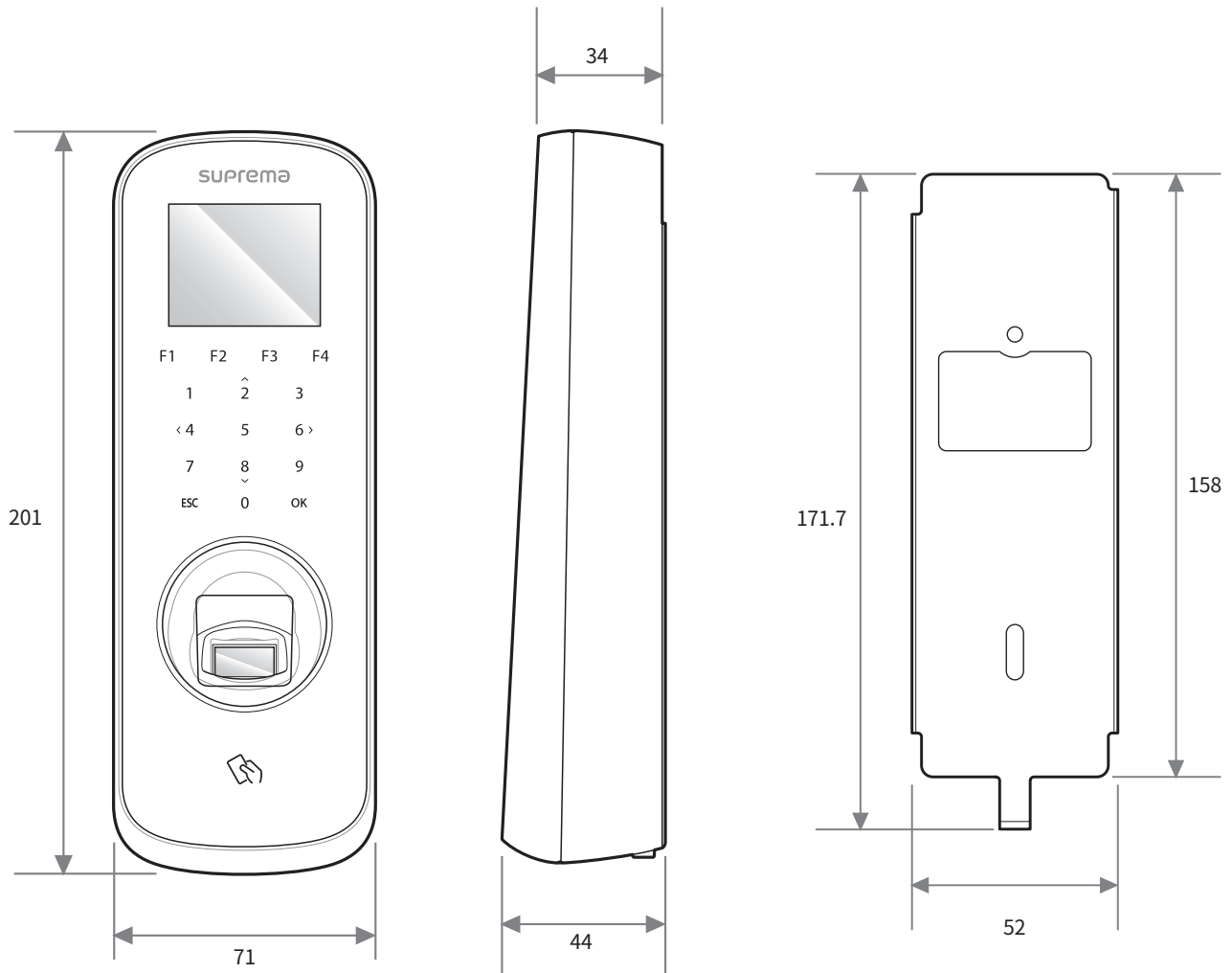
\* DESFire EV2 카드는 DESFire EV1 카드와 하위 호환되므로, DESFire EV1 카드의 기능을 포함하여 CSN 및 스마트 카드 기능이 지원됩니다.

\*\* RF 인식 거리는 설치 환경에 따라 다를 수 있습니다.

\*\*\* 크리덴셜 없이 등록된 사용자 기준입니다.

# 제품 치수

(단위: mm)



## FCC 준수 정보

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

- (1) 이 기기는 해로운 전파 방해를 발생시키지 않습니다.
- (2) 이 기기는 원치 않는 작동을 일으키는 전파 방해를 포함한 어떠한 전파 방해도 수용합니다.



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Version 3, 29 June 2007

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