

FaceStation F2

設置ガイド

バージョン 1.01

日本語

JA 101.00.FSF2-DB, FSF2-AB V1.01A

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安全にお使いいただくために

本製品を使用する前に、ご自身や他人への怪我を未然に防ぎ、物的損害を防止するために、この「安全にお使いいただくために」をお読みください。本マニュアルの「製品」という用語は、製品および製品に付属するすべての品目を指します。

指示アイコン



警告:この記号は、死亡または重傷につながるおそれのある状況を示しています。



注意:この記号は、中度の傷害や物的損害をもたらすおそれのある状況を示しています。



注意:この記号は、注記または追加情報を示します。



警告

設置場所

本製品を無断で設置したり修理したりしないでください。

- 感電、火災、または製品の損傷につながるおそれがあります。
- あらゆる改造により、または取り付け手順に従わなかったために損傷が生じた場合は、製造元の保証が無効になることがあります。

本製品を、直射日光の当たる場所、湿気の多い場所、埃やすずの多い場所、ガス漏れがありそうな場所には置かないでください。

- 感電または火災につながるおそれがあります。

本製品を屋外に設置する場合は、過熱を防ぐために、直射日光の当たらない、風通しが良い涼しい場所に設置してください。

本製品を屋外に設置する際、密閉されたエンクロージャの中には入れないでください。

エンクロージャの内部温度が上昇すると、感電、火災、または故障につながるおそれがあります。

本製品を、熱器具の近くなど高温になる場所に置かないでください。

- 過熱により火災につながるおそれがあります。

本製品を、乾燥した場所に設置してください。

- 湿気や液体は感電や製品の損傷につながるおそれがあります。

本製品を、無線周波数の影響を受ける場所に設置しないでください。

- 火災や製品の損傷につながるおそれがあります。

お取り扱い

本製品は乾燥した状態にしておいてください。

- 湿気や液体は感電、火災、または製品の損傷につながるおそれがあります。

損傷した電源アダプタ、プラグ、緩んだコンセントは使用しないでください。

- 接続部がしっかりと固定されていないと、感電や火災の原因になるおそれがあります。

電源コードを折り曲げたり損傷させたりしないでください。

- 感電または火災につながるおそれがあります。



注意

設置場所

本製品を、直射日光や紫外線が当たる場所に設置しないでください。

- 製品の損傷、故障、変色、変形につながるおそれがあります。

電源ケーブルを人が通る場所に取り付けしないでください。

- 負傷や製品の損傷につながるおそれがあります。

本製品を、磁石、テレビ、モニター（特に CRT モニター）、スピーカーなど磁気を発する物の近くに設置しないでください。

- 本製品が故障するおそれがあります。

複数の製品を設置する場合は、製品の間最低限の間隔を空けてください。

- 本製品が他の製品から放射される無線周波数の影響を受けて、故障するおそれがあります。

DC 24 V および 12 V、2.5 A 以上の電源アダプタのみを使用してください。

- 適切な電源を使用しないと、本製品が正しく動作しないおそれがあります。

Secure I/O 2、電子ロック、および本製品に対して、独立した電源を使用してください。

- 同じ電源を接続して使用すると、本製品が誤動作するおそれがあります。

IP65を保つためにはケーブル接続した後は必ずケーブルカバーを使用してください。組み立ての際にはケーブルとケーブルカバーの間にシリコンを塗布してください。完全露出した屋外に設置する場合は、外箱の使用を推奨します。

- 防水・防塵性能が低下すると故障の原因となります。

お取り扱い

本製品を落下させたり、衝撃を与えたりしないでください。

- 本製品が故障するおそれがあります。

製品のファームウェアのアップグレードが進行中の電源供給が中断されないように注意してください。

- 本製品が故障するおそれがあります。

パスワードを他人に開示しないでください。また、定期的に変更してください。

- そうしないと、不正な侵入が発生するおそれがあります。

本製品のボタンを無理に押ししたり、鋭利な工具で押ししたりしないでください。

- 本製品が故障するおそれがあります。

本製品を非常に高温または低温になる場所に保管しないでください。本製品は -20 °C ~ 50 °C の温度で使用することをお勧めします。

- 本製品が故障するおそれがあります。

本製品を清掃する際は、次の点に注意してください。

- 清潔で乾燥したタオルで本製品を拭きます。
- 本製品を消毒する必要がある場合は、布またはティッシュを適量の消毒用アルコールで湿らせ、指紋センサーなどの露出した表面をすべて丁寧に清掃します。消毒用アルコール（イソプロピルアルコール含有率 70 %）と、清潔で研磨性のない布（レンズ用ティッシュなど）を使用します。
- 本製品の表面に液体を直接塗布しないでください。

本製品を本来の用途以外に使用しないでください。

- 本製品が故障するおそれがあります。


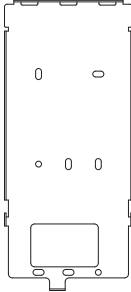
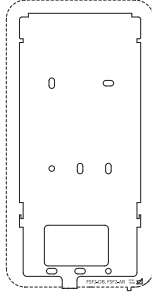
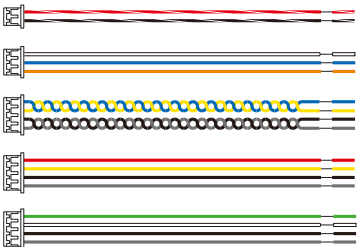


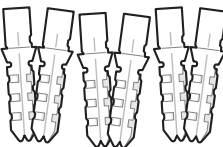
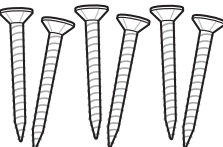

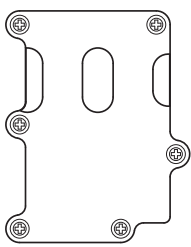


RTC バッテリー

正しくないタイプのバッテリーに交換すると、バッテリーが爆発する恐れがあります。

バッテリーの廃棄は、地域または国際的な該当する廃棄物規制に従ってください。

はじめに

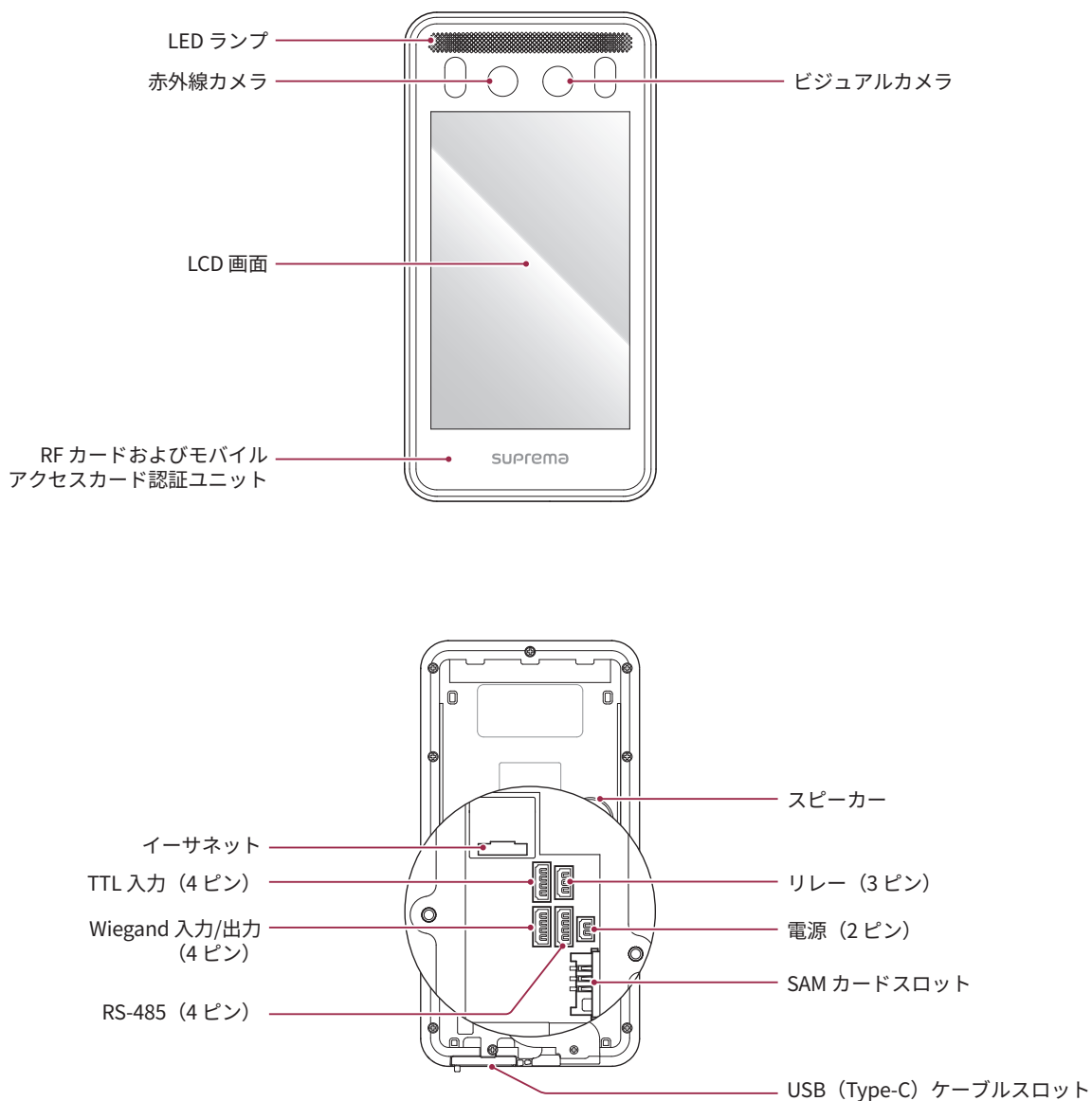
部品

		
FaceStation F2	壁用ブラケット	穴あけ用テンプレート
		
接続ケーブル	ダイオード	120 Ω 抵抗器
		
PVC アンカー × 6	固定ねじ × 6	ブラケット固定ねじ (星形)
		
ケーブルカバー	クイックガイド	オープンソースの ソフトウェアガイド



- 部品は設置環境によって異なる場合があります。
- 製品をブラケットに組み付ける際、セキュリティを強化するために、製品固定ねじの代わりに付属のブラケット固定ねじ（星形）を使用できます。
- 製品の詳細については、Suprema のウェブサイト(<https://www.supremainc.com>) にアクセスして、ユーザーガイドを参照してください。

各部品の名前と機能



名前	説明
LED ランプ	暗い場所でユーザーが検出されるとオンになります。
赤外線カメラ	赤外線の顔画像をキャプチャーします。
ビジュアルカメラ	実際の顔画像をキャプチャーします。
LCD 画面	操作用の UI があります。
RF カードおよびモバイル アクセスカード認証ユニット	入室用にカードをスキャンする部品。
スピーカー	音を鳴らします。
イーサネット	イーサネットケーブルを接続します。
TTL 入力 (4 ピン)	TTL 入力ケーブルを接続します。
リレー (3 ピン)	リレーケーブルを接続します。
Wiegand 入力/出力 (4 ピン)	Wiegand 入出力ケーブルを接続します。
電源 (2 ピン)	電源ケーブルを接続します。

RS-485 (4 ピン)	RS-485 ケーブルを接続します。
SAM カードスロット	SAM カードを挿入します。
USB (Type-C) ケーブルスロット	USB ケーブルを接続します。

ケーブルとコネクタ

電源装置



ピン	名前	色
1	PWR +VDC	赤 (白のストライプ)
2	PWR GND	黒 (白のストライプ)

リレー



ピン	名前	色
1	RLY NO	白
2	RLY COM	青
3	RLY NC	オレンジ

RS-485



ピン	名前	色
1	485 TRXP	青
2	485 TRXN	黄
3	485 GND	黒
4	SH GND	グレー

TTL 入力



ピン	名前	色
1	TTL IN0	赤
2	TTL IN1	黄
3	TTL GND	黒
4	SH GND	グレー

Wiegand 入力および出力



ピン	名前	色
1	WG D0	緑
2	WG D1	白
3	WG GND	黒
4	SH GND	グレー

正しい顔の登録と認証方法

顔の登録時の注意点

- 顔を登録する際は、デバイスと顔の距離を 60 cm から 100 cm の間で維持します。
- 顔の表情を変えないように注意してください。
- マスク、帽子、眼帯を着用しないでください。
- マスクを着用した顔を登録しないでください。マスクを着用した顔と着用していない顔の両方を登録すると、他人受入率(FAR)が高まる場合があります。
- 頭を上げたり下げたりしないでください。
- 目をつぶらないでください。
- 濃い化粧はしないでください。
- 装置画面の両肩を表示してください
- 動かないで正面に立って顔を登録してください。
- 画面に二人の顔が映らないように注意してください。一度に一人の顔を登録してください。
- 画面の指示に従わない場合、顔の登録に時間がかかったり、失敗したりする可能性があります。

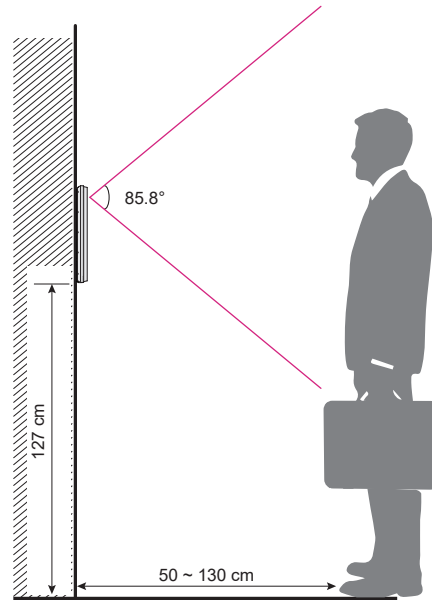
顔認証時の注意点

- デバイスの画面の中央に顔が表示されていることを確認します。ガイドラインが表示されたら、画面に表示される指示に従って顔認証を行います。
- 顔の一部がマスクやサングラスで隠れている場合は、認証が失敗することがあります。顔を覆わないでください。デバイスが眉と顔の両方を認識できるようにしてください。
- 装置との距離が90~100cm離れた場所で認証してください。
- 装置画面の両肩を表示してください。左右肩の対称が合わない場合、認証に失敗する可能性があります。動かないで正面に立って顔を認証してください。

設置場所

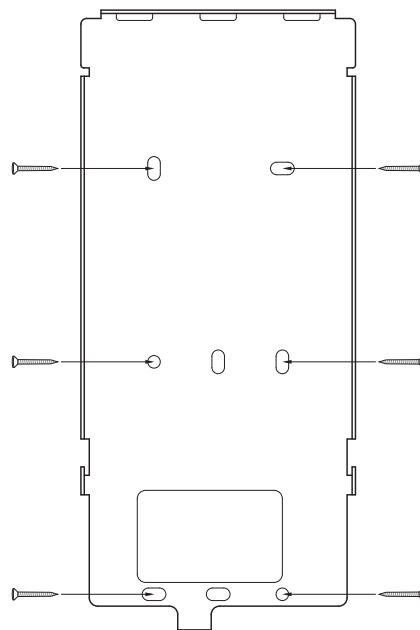
ブラケットと製品の固定

1 付属のドリル用テンプレートを使用して、製品を取り付ける正しい位置を決定します。



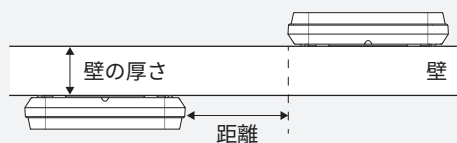
- デバイスを設置する際の最適な高さは 127 cm です。
- デバイスは直射日光や紫外線が当たらない場所に設置してください。
- ユーザーが認証しようとしたときに顔が直射日光にさらされないように、設置位置を調整します。

2 固定ねじをブラケットに通して、FaceStation F2 の取り付け位置にブラケットをしっかり固定します。

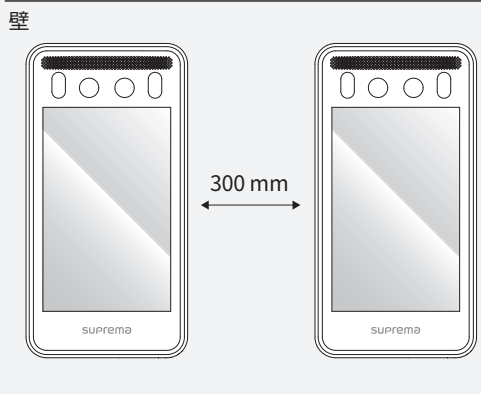




- コンクリート壁に FaceStation F2 を設置する場合は、ドリルで穴を開け、PVC アンカーを挿入して、固定ねじで固定します。
- RF 干渉を回避するには、最小分離距離を維持する必要があります。

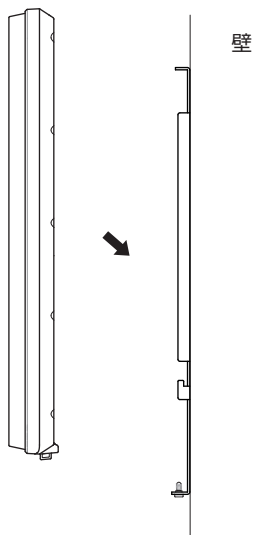


壁の厚さ	距離
100 mm	200 mm
120 mm	180 mm
150 mm	150 mm

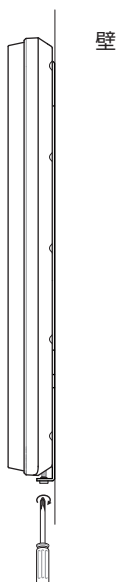


- Suprema Mobile Access を使用するときは、BLE 干渉を回避するために、デバイス間の距離を 1 m 以上に保ちます。

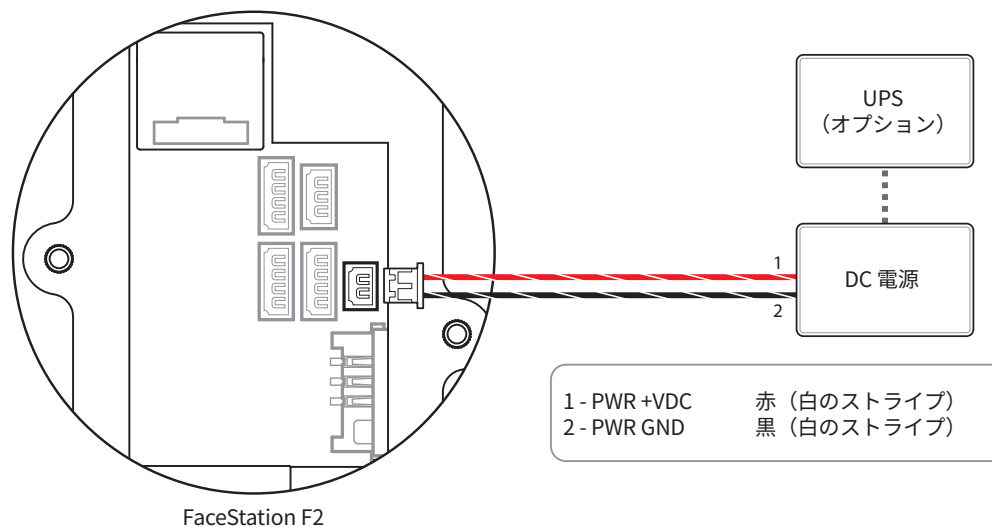
3 FaceStation F2 を固定ブラケットに取り付けます。



4 FaceStation F2 の製品固定ねじを回転させて、FaceStation F2 をブラケットに組み付けます。



電源装置の接続



- IEC/EN 60950-1 の認可を受けた 2,500 mA 以上の DC 24 V または DC 12 V (± 10 %) の電源アダプタを使用します。別のデバイスを電源アダプタに接続して使用する場合は、端末と別のデバイスに必要な合計の電力消費量以上の電流容量を備えたアダプタを使用してください。
- Secure I/O 2、電子ロック、および製品ごとに独立した電源を使用してください。これらのデバイスを同じ電源に接続して使用すると、デバイスが正常に機能しない場合があります。
- 電源装置を接続するときは、FaceStation F2 と電源装置の距離に注意してください。FaceStation F2 は、接続ケーブルの長さを最短に保つために、電源装置にできるだけ近い位置で接続する必要があります。ケーブルが正しく接続されていないと、デバイスが誤動作を起こす恐れがあります。FaceStation F2 が電源から離れている場合は、16 AWG または 18 AWG ケーブルを使用することをお勧めします。接続距離は、使用するケーブルの規格と設置環境によって異なる場合があります。FaceStation F2 は DC 24 V と DC 12 V の両方の電源をサポートしているため、ケーブルの仕様に従って最大長を確認し、ユニットに適切に電力が供給されるようにします。

ケーブル規格	Max. extended length	
	DC 24 V	DC 12 V
16 AWG	150 mm	50 mm
18 AWG	136 mm	30 mm
20 AWG	90 mm	20 mm

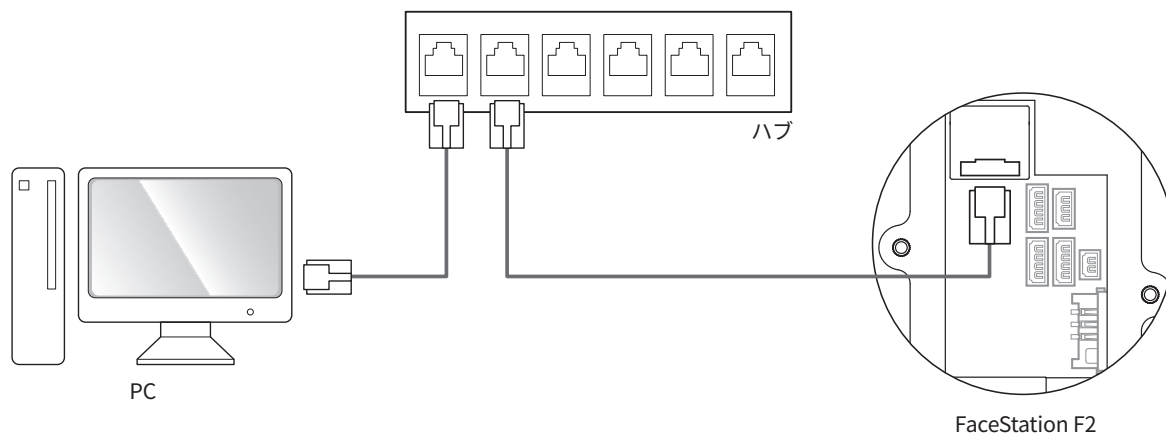
- 電源アダプタ (DC 24 V (± 10 %)、2.5 A) を使用する場合は、電源ケーブルの長さを延長しないでください。
- 電源装置用に CAT5 UTP 2 線を使用しないでください。

ネットワーク接続

TCP/IP

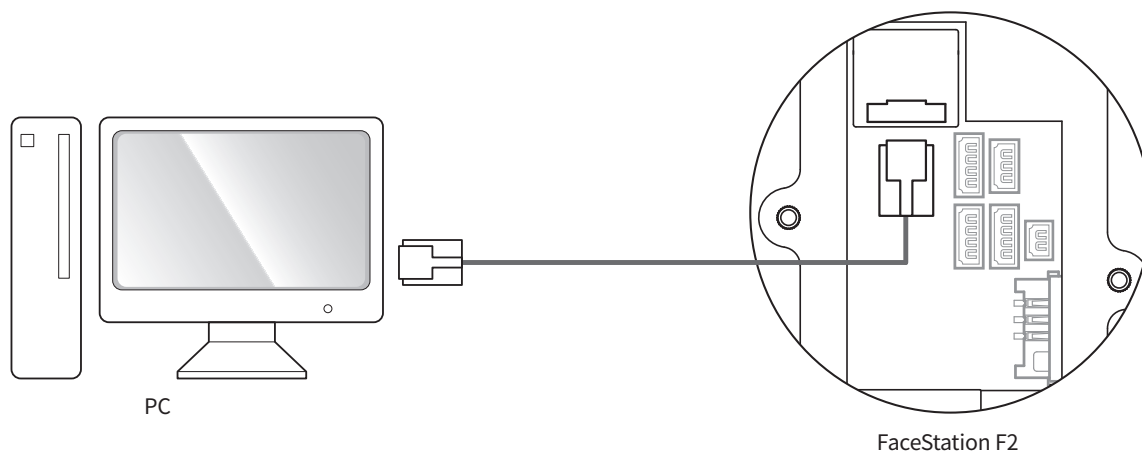
LAN 接続(ハブに接続)

一般的なタイプの CAT-5e ケーブルを使用して、製品をハブに接続できます。



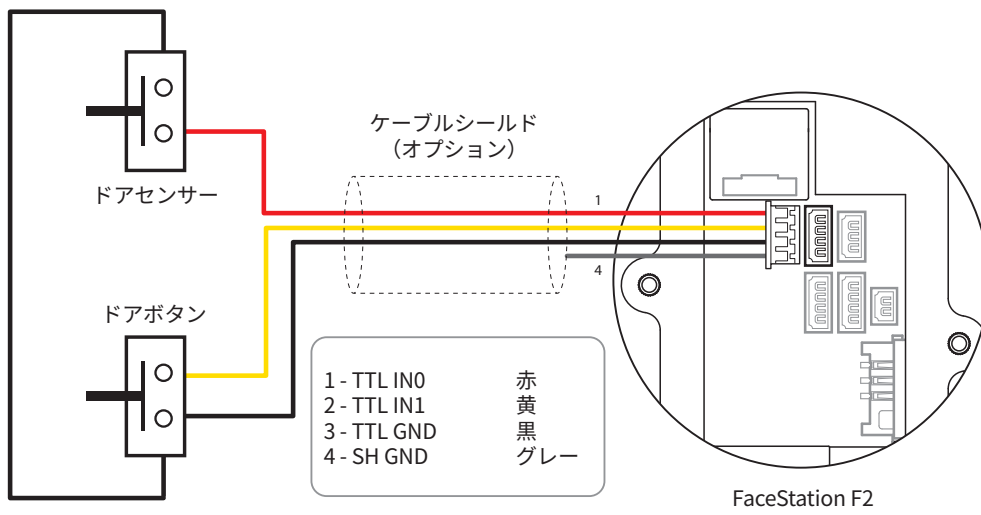
LAN 接続(PC への直接接続)

FaceStation F2 には、通常のストレートタイプの CAT-5e ケーブルまたはクロスケーブルを使用して直接 PC に接続できるように、自動 MDI/MDIX 機能が搭載されています。



- ギガビットネットワークスイッチを使用する場合は、以下の情報を参照してください。
 - Cat5e UTP (シールドなしツイストペア) ケーブルを使用します。
 - ネットワーク接続には、ケーブルの 4 ペア (8 線) すべてを使用します。
 - 他の目的にケーブルのペアを使用しないでください。

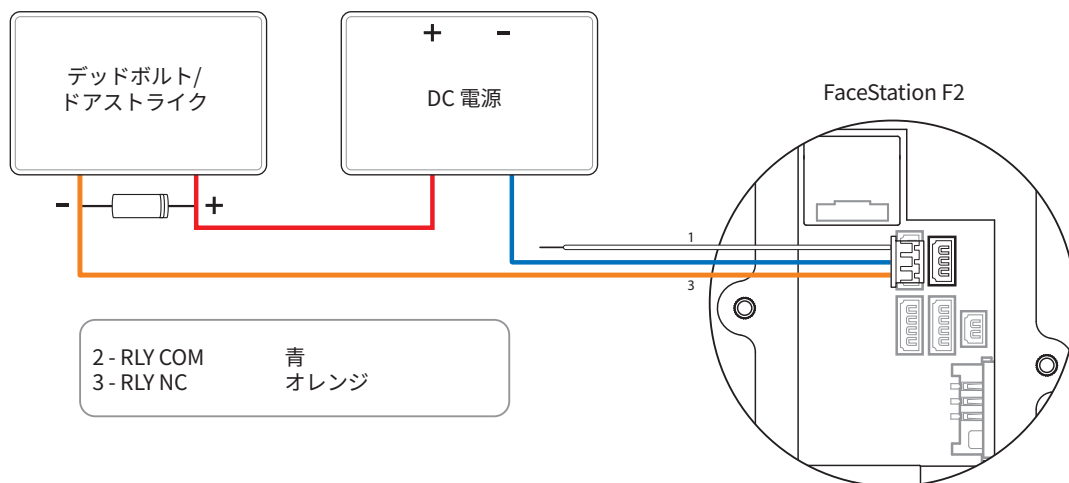
TTL 入力接続



リレー接続

フェールセーフロック

フェールセーフロックを使用するために、下の図のように N/C リレーを接続します。通常、フェールセーフロック用のリレーには電流が流れています。リレーが作動して電流が遮断されると、ドアが開きます。停電や外部の要因のために製品に接続した電源が切断された場合は、ドアが開きます。



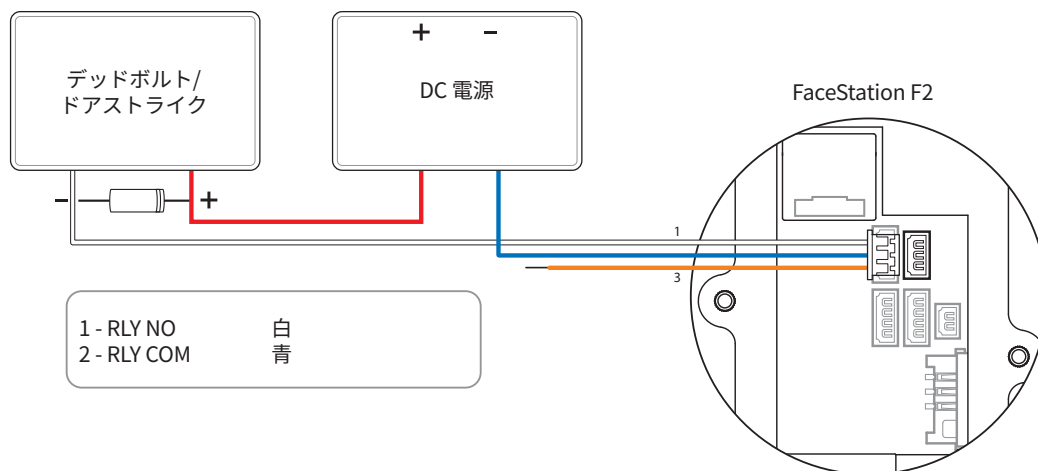
- 図のようにドアロックワイヤーの両側にダイオードを取り付けて、ドアロックの作動時に発生する逆電流からリレーを保護します。
- FaceStation F2 とドアロックには別々の電源を使用してください。
- Suprema のスタンドアロン型インテリジェントリーダーには、外部コントローラなしでドアを直接ロック/アンロックできる内部リレーが内蔵されており、利便性が向上しています。ただし、セキュリティを必要とする入退管理の用途では、ドアのロック解除を引き起こす可能性のある改ざん攻撃を防止するため、リーダーの内部リレーの使用はお勧めしません。このような用途では、ドアの安全な側に設置された Suprema の Secure I/O 2、DM-20、CoreStation などのロックコントロールには個別のリレーユニットを使用することを強くお勧めします。



ダイオードの設置方向に注意してください。ダイオードはドアロックの近くに取り付けます。

フェールセキュアロック

フェールセキュアロックを使用するには、下の図のように N/O リレーを接続します。通常、フェールセキュアロック用のリレーに電流は流れていません。電流がリレーによって作動すると、ドアが開きます。停電や外部の要因のために、製品に接続した電源が切断された場合は、ドアがロックします。

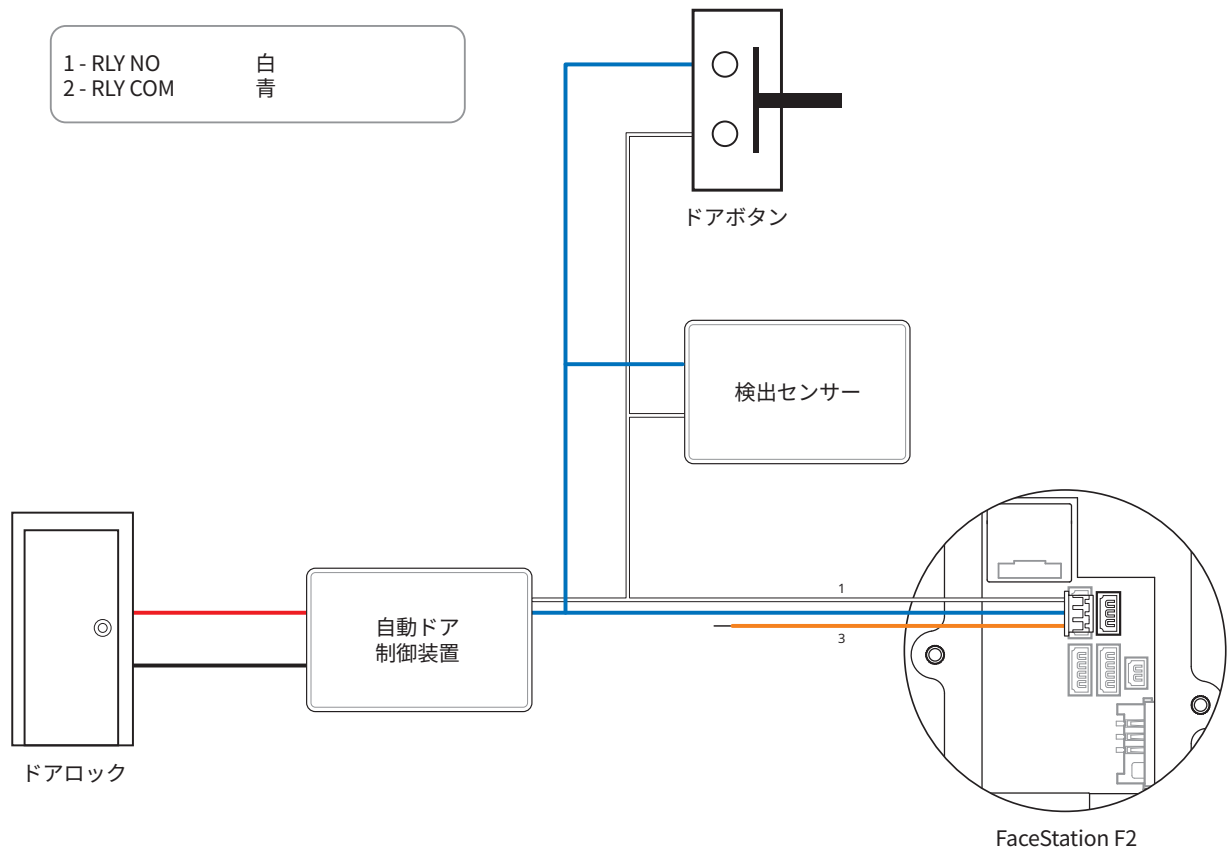


- 図のようにドアロックワイヤーの両側にダイオードを取り付けて、ドアロックの作動時に発生する逆電流からリレーを保護します。
- FaceStation F2 とドアロックには別々の電源を使用してください。
- Suprema のスタンドアロン型インテリジェントリーダーには、外部コントローラなしでドアを直接ロック/アンロックできる内部リレーが内蔵されており、利便性が向上しています。ただし、セキュリティを必要とする入退管理の用途では、ドアのロック解除を引き起こす可能性のある改ざん攻撃を防止するため、リーダーの内部リレーの使用はお勧めしません。このような用途では、ドアの安全な側に設置された Suprema の Secure I/O 2、DM-20、CoreStation などのロックコントロールには個別のリレーユニットを使用することを強くお勧めします。



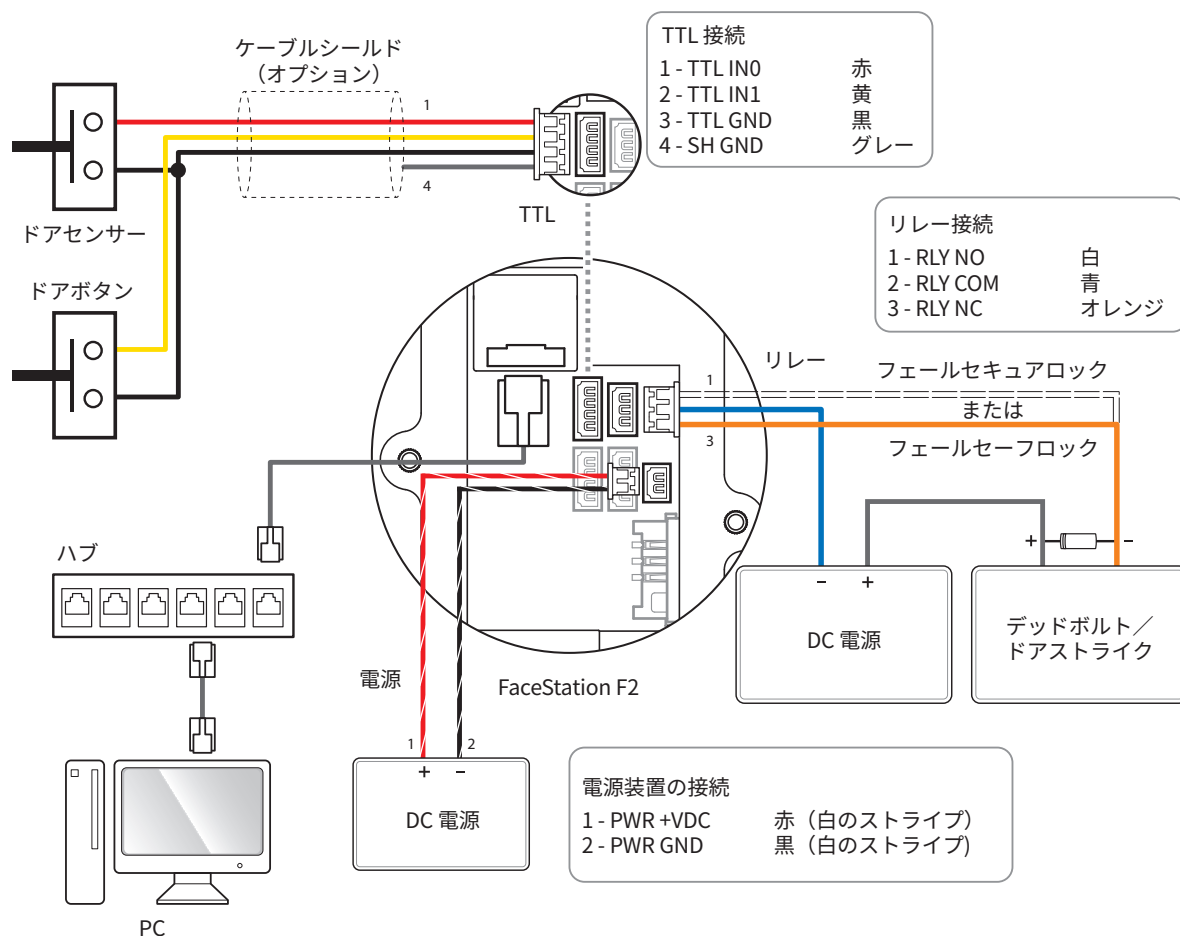
ダイオードの設置方向に注意してください。ダイオードはドアロックの近くに取り付けます。

自動ドア接続



スタンドアロンでの接続

FaceStation F2 は、個別の I/O デバイスを接続せずにドアロック、ドアボタン、およびドアセンサーに直接接続できます。



Suprema のスタンドアロン型インテリジェントリーダーには、外部コントローラなしでドアを直接ロック/アンロックできる内部リレーが内蔵されており、利便性が向上しています。ただし、セキュリティを必要とする入退管理の用途では、ドアのロック解除を引き起こす可能性のある改ざん攻撃を防止するため、リーダーの内部リレーの使用はお勧めしません。このような用途では、ドアの安全な側に設置された Suprema の Secure I/O 2、DM-20、CoreStation などのロックコントロールには個別のリレーユニットを使用することを強くお勧めします。

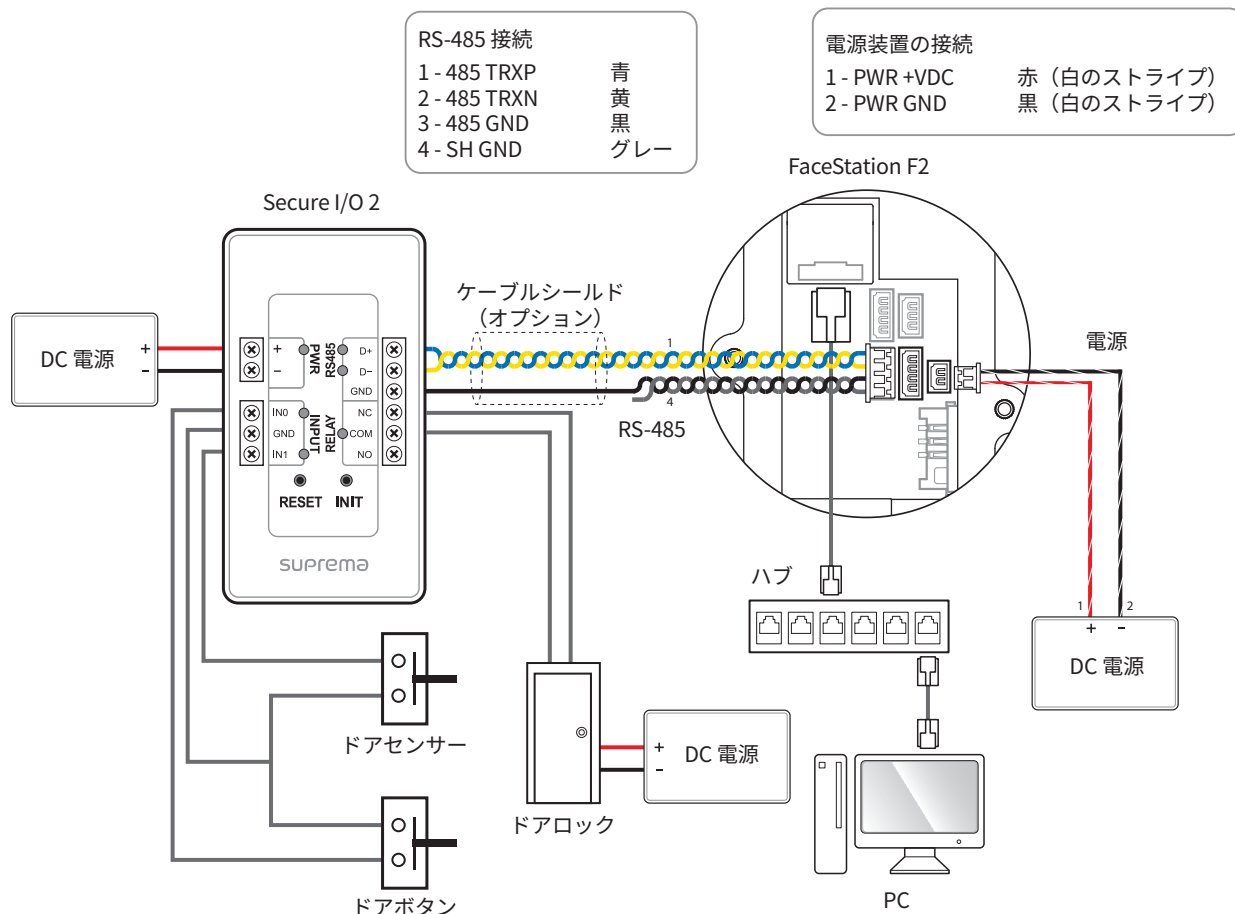


- FaceStation F2 は、RS-485 ケーブルでスレーブデバイスと接続したマルチドアコントローラとして使用できます。スレーブデバイスはダミーリーダーとして使用され、認証はマスターデバイスで実行されます。
- 指紋認証デバイスが FaceStation F2 でスレーブデバイスとして設定されている場合、別の FaceStation F2 をスレーブデバイスとして追加することはできません。
- 指紋認証デバイスがマスターデバイスの場合、FaceStation F2 をスレーブデバイスとして追加することはできません。
- FaceStation F2 がマスターデバイスであるときに FaceStation F2 をスレーブデバイスとして接続すると、1 台の FaceStation F2 だけをスレーブデバイスとして追加できます。
- FaceStation F2 が顔認証端末のスレーブデバイスとして設定されている場合、Secure I/O 1 および DM-20 を 1 台ずつ接続できます。
- FaceStation F2 が顔認証端末のスレーブデバイスとして設定されている場合、追加の OM-120 を接続できます。
- 接続できるスレーブデバイスの最大数は、認証方式、ユーザー数、およびデバイス数によって異なります。また、スレーブデバイスの数が認証の速度に影響します。
- 1 台のマスターデバイスで 31 台のスレーブデバイスを制御できます。RS-485 の帯域幅では、最高 7 台の指紋認証デバイスを接続できます
- 詳細については、Suprema 技術サポートチーム (support.supremainc.com) にお問い合わせください。

Secure I/O 2 への接続

Secure I/O 2 は、RS-485 ケーブルで FaceStation F2 に接続できる I/O デバイスです。FaceStation F2 と Secure I/O 2 の間の接続が失われたり、外部要因により FaceStation F2 への電源が切断されたりしても、セキュリティを維持できます。

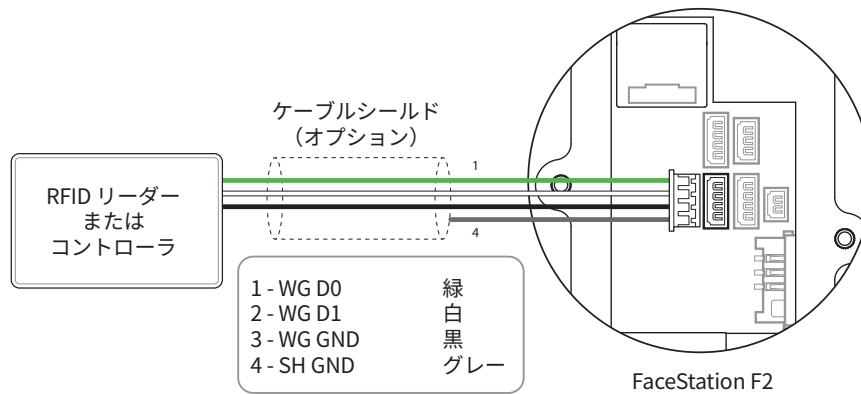
- RS-485 ケーブルには、最大長が 1.2 km の AWG 24 ツイストペアを使用します。
- RS-485 のデジターチェーンで接続する場合は、デジターチェーン接続の両端に終端抵抗 (120 Ω) を接続してください。中央の線に接続すると、信号レベルが小さくなり、通信性能が低下します。必ずデジターチェーン接続の両端に接続してください。



- FaceStation F2 は、RS-485 ケーブルでスレーブデバイスと接続したマルチドアコントローラとして使用できます。スレーブデバイスはダミーリーダーとして使用され、認証はマスターデバイスで実行されます。
- 指紋認証デバイスが FaceStation F2 でスレーブデバイスとして設定されている場合、別の FaceStation F2 をスレーブデバイスとして追加することはできません。
- 指紋認証デバイスがマスターデバイスの場合、FaceStation F2 をスレーブデバイスとして追加することはできません。
- FaceStation F2 がマスターデバイスであるときに FaceStation F2 をスレーブデバイスとして接続すると、1 台の FaceStation F2 だけをスレーブデバイスとして追加できます。
- FaceStation F2 が顔認証端末のスレーブデバイスとして設定されている場合、Secure I/O 1 および DM-20 を 1 台ずつ接続できます。
- FaceStation F2 が顔認証端末のスレーブデバイスとして設定されている場合、追加の OM-120 を接続できます。
- 接続できるスレーブデバイスの最大数は、認証方式、ユーザー数、およびデバイス数によって異なります。また、スレーブデバイスの数が認証の速度に影響します。
- 1 台のマスターデバイスで 31 台のスレーブデバイスを制御できます。RS-485 の帯域幅では、最高 7 台の指紋認証デバイスを接続できます。
- 詳細については、Suprema 技術サポートチーム (support.supremainc.com) にお問い合わせください。

Wiegand 接続

Wiegand 入力または出力デバイスとして使用



製品仕様

カテゴリ	機能	仕様
認証情報	生体認証	顔
	RF オプション	<ul style="list-style-type: none"> FSF2-DB: 125 kHz EM および 13.56 MHz MIFARE、MIFARE Plus、DESFire EV1/EV2*、FeliCa FSF2-AB: 125 kHz EM、HID Prox および 13.56 MHz MIFARE、MIFARE Plus、DESFire EV1/EV2*、FeliCa、iCLASS SE/SR/Seos
	RF 読み取り範囲**	EM/MIFARE/DESFire: 50 mm、FeliCa: 30 mm
	モバイル	NFC、BLE
全般	CPU	1.8 GHz デュアルコア + 1.4 GHz クアッドコア
	メモリ	16 GB Flash + 2 GB RAM
	クリプトチップ	サポート対象
	LCD タイプ	7 インチ IPS カラー LCD
	LCD 解像度	800 x 1280 pixels
	サウンド	16 bit
	動作温度	-20°C - 50°C
	保管温度	-40°C - 70°C
	動作湿度	0%~80% (結露なきこと)
	保管湿度	0%~90% (結露なきこと)
	カメラ	2MP 2EA
	寸法 (W x H x D)	119.8 x 223 x 23.5 (mm)
	重量	<ul style="list-style-type: none"> Dデバイス: 585 g ブラケット (ワッシャーとボルトを含む): 181 g
	IP 等級	IP65
証明書	CE、FCC、KC、RoHS、REACH、WEEE	
顔	認識対象との距離	0.5-1.3 m
	認識対象の高さ	1.4-1.9 m
	照合速度	0.5 秒未満
	Live Face Detection (生体と偽物の識別が可能な顔検出技術)	サポート対象
容量	最大ユーザー数	100,000***
	最大クレデンシャル (1:N)	顔: 50,000
	最大クレデンシャル (1:1)	<ul style="list-style-type: none"> 顔: 100,000 カード: 100,000 PIN: 100,000
	テキストログの最大数	5,000,000
	画像ログの最大数	50,000
インターフェイス	イーサネット	10/100 Mbps、Auto MDI/MDI-X
	RS-485	1 チャンネルホストまたはスレーブ (選択可能)
	Wiegand	1 チャンネル入力または 1 チャンネル出力 (選択可能)
	TTL 入力	2 チャンネル入力
	リレー	リレー 1
	USB	USB 2.0 (ホスト)
	タンパー	サポート対象
電気関連	電源	電圧: DC 12V~DC 24 V 電流: 最大 2.5 A
	スイッチ入力 VIH	最小: 3 V 最大: 5 V
	スイッチ入力 VIL	最大: 1 V
	スイッチプルアップ抵抗	4.7 kΩ (入力ポートは 4.7 kΩ でプルアップする)
	Wiegand 出力 VOH	4.8 V 以上
	Wiegand 出力 VOL	0.2 V 未満
	Wiegand 出力プルアップ抵抗	1 kΩ の内部プルアップ
リレー	2 A @ 30 VDC Resistive load 1 A @ 30 VDC Inductive load	

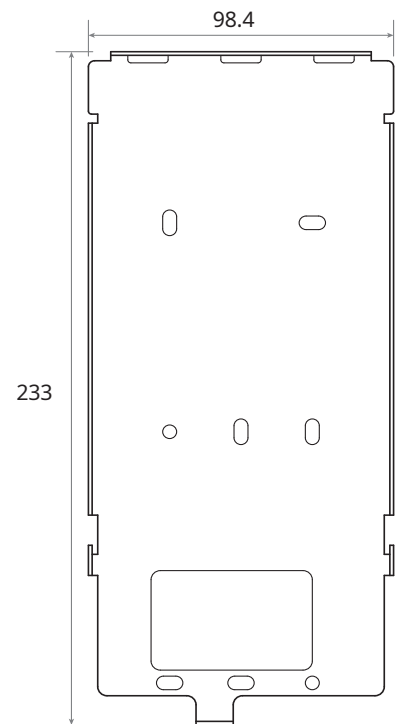
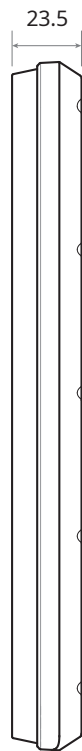
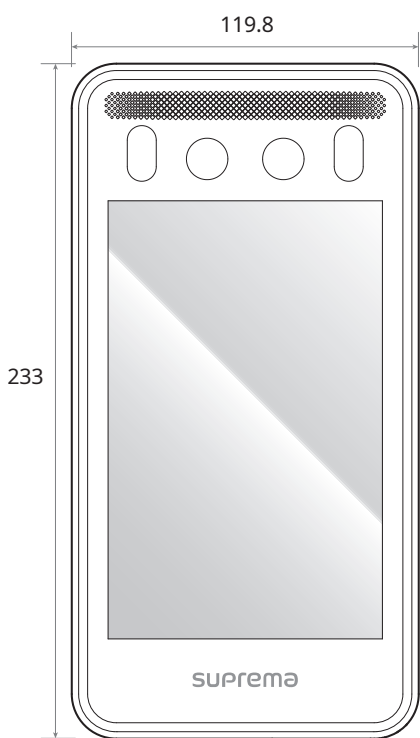
* DESFire EV2 カードは、DESFire EV1 カードとの下位互換性によりサポートされています。CSN およびスマートカード機能は、FaceStation F2 と互換性があります。

** RF 読み取り範囲は、インストール環境によって異なります。

*** クレデンシャルなく登録されたユーザーの目安です。

寸法

(単位:mm)



FCC 準拠情報

このデバイスは、FCC 規則第 15 部に準拠しています。

動作は、次の 2 つの条件に従います。

- (1) このデバイスは、有害な電波干渉を引き起こしてはなりません。また、
- (2) このデバイスは、望ましくない動作を引き起こす可能性のある電波干渉を含め、受信したあらゆる電波干渉を許容する必要があります。



この装置は、FCC 規則の第 15 部に従って、クラス A デジタルデバイスの制限に準拠していることがテストおよび確認されています。これらの制限は、居住地域での設置において有害な電波干渉から適切に保護するためのものです。この装置は、無線周波エネルギーを生成、使用、および放射する可能性があり、指示に従って設置および使用しないと、無線通信に有害な電波干渉が発生することがあります。ただし、特定の設置で電波干渉が発生しないことを保証するものではありません。この装置のオフとオンを切り替えてみて、この装置によってラジオやテレビなどの受信に有害な電波干渉が発生することが判明した場合は、次の方法で電波干渉を解消してみてください。

- 受信アンテナの方向や場所を変更する。
- 装置と受信機の位置を離す。
- 受信機が接続されている回路とは別の回路のコンセントに機器を接続する。
- 販売店や、ラジオまたはテレビの経験豊富な技術者に相談する。

製造元によって明示的に承認されていない変更を行った場合、FCC 規則に基づき、ユーザーの装置を操作する権限が無効になる場合があります。

- この機器とそのアンテナを、他のアンテナや送信機と一緒に設置または操作しないでください。
- RF 被曝の要件を満たすため、アンテナとこの機器の使用者の間隔を 20 cm 以上空ける必要があります。

EU 適合宣言 (CE)

本製品は、RED (Radio Equipment Directive) 2014/53/EU の規定に従って CE マークが添付されています。Suprema Inc. はこれによって、本製品が RED (Radio Equipment Directive) 2014/53/EU の必須要件およびその他の関連規定に準拠していることを宣言します。

- Bluetooth 出力: -0.1 dBm
- Bluetooth 周波数: 2402~2480 MHz
- NFC 周波数: 13.56 MHz
- RFID 周波数: 13.56 MHz + 125 kHz

詳細については、次の連絡先にお問い合わせください。

Suprema Inc.

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付録

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GNU General Public License

Version 3, 29 June 2007

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