

画像処理コントローラー
FV1400-Cシリーズ

FV1400-C

取扱説明書

☆第1版☆

ご注意

- (1) 本書の内容の一部または全部を転載することは固くお断りします。
- (2) 本書の内容については将来予告なしに変更することがあります。
- (3) 本書の内容については万全を期して作成いたしましたですが、万一ご不審な点や誤り、記載もれなどお気づきの点がありましたらご連絡ください。
- (4) 運用した結果の影響については、(2) (3) 項にかかわらず責任を負いかねますのでご了承ください。
- (5) 本製品がお客さまにより不適當に使用されたり、本書の内容に従わずに取り扱われたりしたこと等に起因して生じた損害等については責任を負いかねますのでご了承ください。

Before using the FV1400-C, please read this page carefully.



Warning

Power Source

Make sure that the source voltage matches the power supply voltage of the system before turning on power.

Be sure to observe the following to prevent damage to the machine, electrical shock or fire.

- Be sure to disconnect the power cable and connection cables before connecting or disconnecting the earth conductor.
- Observe the following when handling the power cable.
 - (1) Do not use a damaged power cable.
 - (2) Do not modify the power cable or the connector.
 - (3) Do not place a heavy object on the power cable.
 - (4) Do not bend, twist or pull the cable by force.
 - (5) Do not place the cable near a heating apparatus.
 - (6) Do not connect the cable to an outlet extension to which other heat producing devices are connected.
- When the camera connected to the system is to be mounted on a robot arm, be careful with the earth connection so that there is no potential difference of the GND level.



Caution

- If there is an abnormal sound, smell, heat or any other sign of danger, turn off the power immediately and disconnect the power plug from the outlet. Otherwise, electrical shock or fire may result. If a problem is determined, please contact our sales office or agent.
- There must be a space of at least 50mm for front panel. There must be a space of at least 50mm for back of the FV1400-C.
Do not block the inlet. If the air inlet is blocked, the internal temperature will rise excessively, resulting in thermal runaway damage, or fire. Also, do not put metallic, flammable or any other foreign material through the inlet.

English manuals are available for download from this page.
<http://www.fast-corp.co.jp/eng/>

本機器を安全にご使用いただくために

本機器を正しく安全に使用していただくため、本機器の操作にあたっては下記の安全注意事項を必ずお守りください。この取扱説明書で指定していない方法で使用すると、本機器の保護機能が損なわれることがあります。なお、これらの注意に反したご使用により生じた損害については、(株)ファーストは責任と保証を負いかねます。

本機器には、次の様なシンボルマークを使用しています。



装置を安全にお使いいただくための“取扱注意”



ON(電源)



OFF(電源)

輸出管理規制について

本製品を輸出される場合は、外国為替および外国貿易管理法の規制をご確認の上、必要な手続きをお取りください。なお、ご不明な点は、弊社担当営業にお問い合わせください。

この説明書で使われるマークについて



警告

取り扱いを誤った場合に、使用者が死亡または重傷を負う危険があるときに、その危険を避けるための注意事項が記載されています。



注意

取り扱いを誤った場合に、使用者が軽傷を負うか、または物的損害のみが発生する危険があるときに、それを避けるための注意事項が記載されています。



装置が故障しないようにするための注意、正しく動作させるための注意等を記載しました。

Note

本機器を取り扱ううえで重要な情報が記載されています。

はじめに

このたびは弊社の画像処理用コントローラー『FV1400-C』シリーズをお買い上げいただき、誠にありがとうございます。

『FV1400-C』シリーズは、PC 技術を画像処理用ベースマシンとしてカスタマイズしたハードウェアプラットフォームをもつ汎用コントローラーです。画像処理にはもちろん、制御用 PC などとして多目的利用ができる装置です。

以下の製品をご用意しております。

FV1400-C7e64 : Windows Embedded Standard 7 64bit を搭載した装置

FV1400-C10e64 : Windows 10 IoT Enterprise 64bit を搭載した装置

本説明書には、上記製品の基本ユニットの説明が書かれています。製品固有の機能等につきましては、該当するページにその旨記述されています。特に記述のない箇所については FV1400-C 共通の記述です。

製品名(型番)は下記で表現し、装置銘板及び銘板補助ラベルが装置前面に貼られます。

FV1400-Env

- Env(ironment) : ソフトウェア動作環境
FV1400-C7e64 をご購入の場合、表記は、“C7e64”となります。
FV1400-C10e64 をご購入の場合、表記は、“C10e64”となります。

——商標について——

「Microsoft」「Windows」「Windows Embedded Standard 7」「Windows 10 IoT Enterprise」は Microsoft Corporation の登録商標です。

「Core i5」は Intel Corporation の登録商標です。

その他、各会社名、各製品名は各社の商標または登録商標です。

ご使用になる前にご確認ください

(1) 本装置に付随するソフトウェア商品の使用許諾について

【 FV1400-C7e64 】

1. 「Microsoft Software License Terms」をお読みください。

-重要-



FV1400-C7e64 システム SSDには、Microsoft Corporationの基本ソフト(OS) Windows Embedded Standard 7 が組込まれています。本説明書の最後に「Microsoft Software License Terms」原文が添付されています。装置を使用する前に契約内容をよく読み、同意される場合のみ本製品をお使いになることができます。装置を使用した場合、契約内容に承諾されたものといたします。

なお、FV1400-C7e64 の再販や装置に組み込んでの販売により使用ユーザが変わる場合、この「Microsoft Software License Terms」を必ず添付し、契約内容の同意時にのみ本製品の販売及び使用が可能である事を明記してください。

【 FV1400-C10e64 】

1. 「Microsoft Software License Terms」をお読みください。

-重要-



FV1400-C10e64 システム SSDには、Microsoft Corporationの基本ソフト(OS) Windows 10 IoT Enterprise が組込まれています。本説明書の最後に「Microsoft Software License Terms」原文が添付されています。装置を使用する前に契約内容をよく読み、同意される場合のみ本製品をお使いになることができます。装置を使用した場合、契約内容に承諾されたものといたします。

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(2) ユーザ登録をお願いします

弊社の製品を始めてご購入になったお客様、またはまだユーザ登録を済まされていないお客様は、製品に添付されているユーザ登録用紙に必要事項をご記入になり、弊社に返送してください。ユーザ・サポート、今後のバージョンアップ情報の提供が可能になります。

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1. 商品の確認

商品がお手元に届きましたら、下記のとおり揃っているかどうかご確認願います。
万一足りない場合や破損していた場合は、ただちに弊社営業までお申し出下さい。

1.1 FV1400-C

FV1400-C 本体(1台)



固定金具セット



- ・固定金具 2 個
- ・M3x8 組みネジ 12 個

電源コネクタ

コネクタ型名 : MSTB2.5/2-STF-5.08 メーカー : PHOENIX CONTACT (相当品)



1.2 オプション品および別売品、購入品等のご案内

標準別売品

システム SSD ・ ・ ・ ・ (必須)

システム SSD は、システム領域の C : ドライブとデータ領域の D : ドライブに分けられています。

【 FV1400-C7e64 】

C : ドライブには「Windows Embedded Standard 7」がインストールされています。

【 FV1400-C10e64 】

C : ドライブには「Windows 10 IoT Enterprise」がインストールされています。



システム用 SSD の容量は、市場動向で容量が大きなものへ変更されることがあります。詳しくは、弊社営業担当にお問い合わせ下さい。

不測の事態によりシステム SSD が破損しても、予備の SSD があれば迅速に復旧することができます。バックアップ目的でシステム SSD を販売しております。弊社営業にお問い合わせ下さい。

準標準別売品

お客様が選定して購入する事が可能です。
選定の手間を省くため弊社でも商品として準備しております。

USB トラックボール

USB トラックボール
ケーブル長：約 1,500mm(予告なく仕様が変更される場合があります)

**USB キーボード**

日本語キーボード

シリアルケーブル

シリアルケーブルは豊富に市販されておりますが、弊社でも従来通りシリアルケーブルの販売をしております。
(本説明書『5.3.1 シリアルケーブル(オプション)』)弊社営業にご相談ください。

モニタ変換コネクタ

FV1400-Cのモニタ接続はDVI-Iコネクタのみとなっております。
アナログモニタ等お使いのお客様用に、変換コネクタを販売しております。

コネクタ形状：ミニD-sub(HD D-Sub) 15pin メス - DVI-I 29pin オス



DIN レール取り付けプレート

FV1400-C は DIN レールへの取り付けをサポートしております。

DIN レールへの取り付けを行う際は、以下の DIN レール取り付けプレートを 2 個使用する必要があります。

メーカー：鍋屋バイテック株式会社

型番：DIN-P70

株式会社ミスミで購入が可能となっており、弊社でも販売をしております。



AC アダプタ

FV1400-C 用電源として、AC アダプタの販売をしております。

AC100~240V 50/60Hz 入力

DC24V 160W 出力



スイッチング電源

FV1400-C 用電源として、スイッチング電源の販売をしております。

メーカー：デンセイラムダ

型番：HWS100A-24/A

AC85~265V 50/60Hz 入力

DC24V 100W 出力

こちらの電源は DIN レール取り付けオプションが選択可能となっております。



DIN レール取り付けオプション時の画像

2. 仕様

2.1 一般仕様

	仕 様
外形寸法 [注 1]	297(横幅)×210(奥行き)×45(高さ) mm
重量	約 2.5Kg
電源	DC24V±10%
消費電力	100W 以下
動作周囲温度	0～40℃
動作周囲湿度	30～85%RH(結露の無いこと)
保存周囲温度	-20～85℃
保存周囲湿度	95%RH 以下
適合規格 [注 2]	CE マーキング EMI:EN55022, EN55024 EMS:EN61000-3-2, EN61000-3-3 FCC Part 15, Subpart B
環境規制	RoHS 指令

[注1] 取り付け部分やコネクタ等の突起部は含んでおりません。ゴム足を付けた場合 +6.4(H)mm になります。

[注2] 本装置単体で適合できるよう設計されております。お客様が製作される、機械、装置、設置に関しては、設置した状態での適合確認が必要となりますのでご注意ください。

本装置は、カレンダー情報を保持するためにリチウム1次電池を使用しています。お客様による電池の交換は出来ません。電池の交換は有償にて承りますので弊社営業にご用命下さい。

2.2 機能仕様

標準 I/F	モニタ表示 I/F	1ポート(DVI-I シングルリンク) 最大 2048x1152 32ビット 60Hz 工場出荷時 1024x768 32ビット 60Hz デジタル/アナログ両対応(変換コネクタでアナログモニタ使用可)
	ネットワーク I/F (ETHERNET)	1ポート RJ45 1000BASE-T/100Base-TX/10Base-T
	シリアル I/F	2ポート RS-232(EIA-232) COM1, COM2
	USB 2.0 I/F	筐体外部 2ポート(USBトラックボール & USBキーボード用) 筐体内部 1ポート(USBライセンスキー用)
	DIDO I/F	入力 DI : 32点、出力 DO : 32点 ・アンフェノールハーフピッチ 50ピンコネクタを2個実装(DID01/DID02) ・入力デジタルノイズフィルタ(最大約267ms) ・パルスジェネレータ出力機能(最大8パターン) ※パルスジェネレータ出力機能を使用するには、FV1400-C専用SDKが必要です。
	外部 I/O	TTL 入力:4点(外部トリガ入力用) オープンコレクタ出力: 4点(カメラトリガ出力用)
カメラ I/F	PoE	4ch 入力 ・IEEE802.3af Class2に対応(最大出力電力 7W) ・PoE カメラを自動認識して電源供給(Smart PoE) ・ジャンボパケット(9KByte)対応 ・突入電流、過電流、短絡保護回路実装 ・PSE Alternative A 対応
	USB3.0	4ch 入力 ・各ポート毎に1個のコントローラーを実装 ・USB3 Visionに対応
一般 仕様	CPU	Intel Core i5-4400E 2.7GHz(3.3GHz Turbo)
	メモリ	標準 : DDR3L-1333/1600MHz 8GB(4GB×2枚搭載) 増設オプション : DDR3L-1333/1600MHz 16GB(8GB×2枚搭載)
	チップセット	Intel QM87
	ファイル装置	2.5インチ SSD(容量は市場動向により変化します) SATAⅢ(6Gbps)対応
	バッテリー	コイン型 リチウム電池(CR2450)
	冷却ファン	排気用(PWM コントロール機能付)

2.3 電源の切り方について

1. 電源の切り方

Windows のシャットダウン機能を使用することで、安全に電源を切る事が出来ます。

方法 1 :

1. キーボードの [Ctrl]+[Alt]+[Delete] キーを同時に押します。
2. 表示された画面右下に表示されるシャットダウンを選択してください。シャットダウンが完了すると自動的に電源が OFF になります。

方法 2 : 装置前面のプッシュ式電源スイッチを押すことで、シャットダウンが実行され、自動的に電源が OFF になります。



- ・シャットダウンを正常に完了させる為に、装置前面のプッシュ式電源スイッチは長押し(約 3 秒以上)しないで下さい。

2. 電源の再投入

方法 1 : 装置背面の電源スイッチを一旦 OFF にし、再度 ON にすることで電源の再投入ができます。

方法 2 : 装置背面の電源スイッチが ON の場合、装置前面のプッシュ式電源スイッチを押すことで電源の再投入ができます。

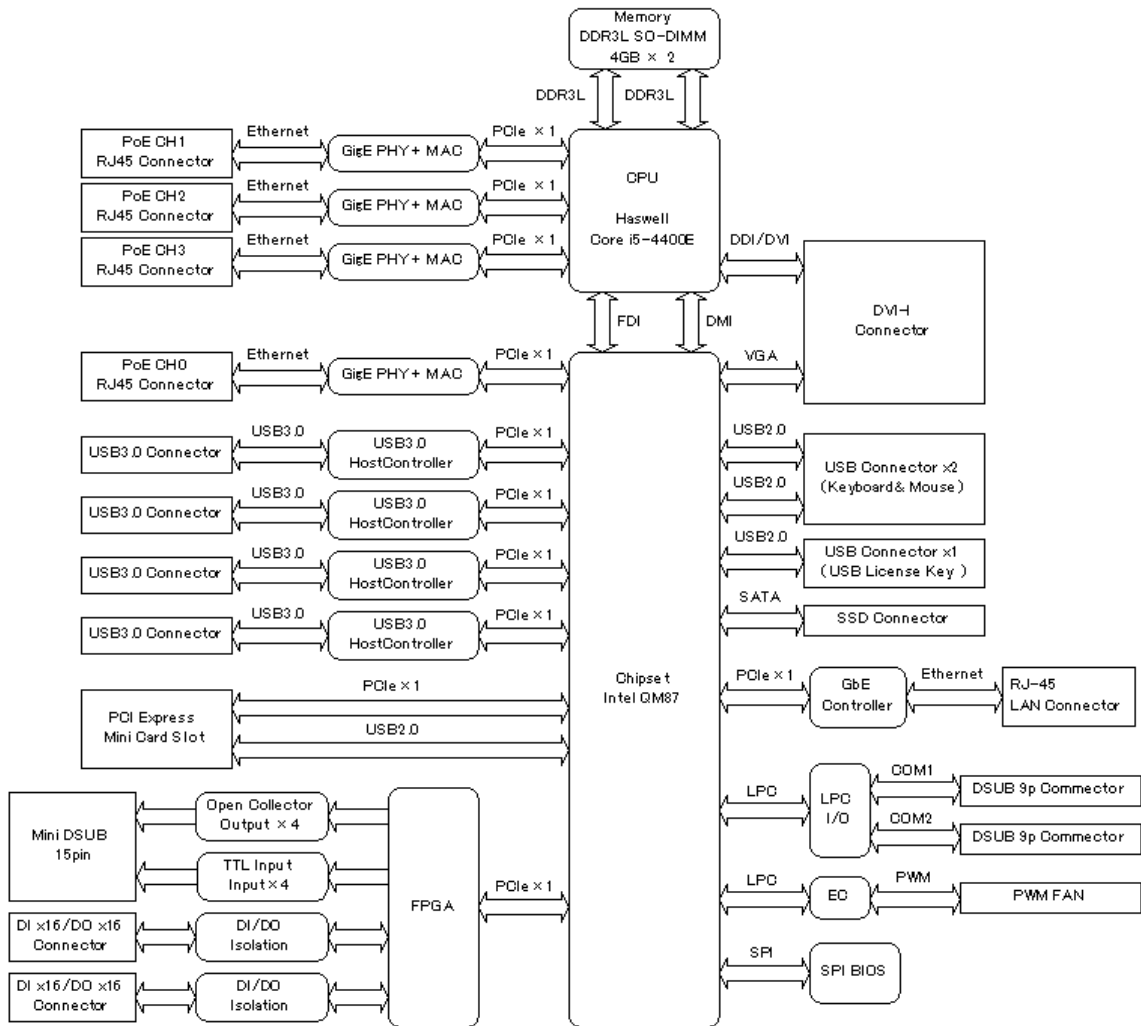


- ・電源スイッチ OFF 後に再投入する場合は、5 秒以上の時間をおいてから行ってください。
- ・シャットダウンプロセスを実行後、電源スイッチを OFF にしてください。
ファイル装置にアクセスしている状態(装置全面の HDD ランプ点灯中)や、Windows が起動しアプリケーションが実行できる状態になる前に電源を切るとファイル装置の内容に致命的な損傷を与える恐れがあります。

Note ファイルのバックアップ

万が一、SSD の内容が破壊された場合の復旧が出来るよう、お客様が担当されたファイルをバックアップしておくことをお勧めいたします。SSD のシステム領域を破壊した場合は、弊社工場での再書込みが必要になります。

2.4 ブロック図



3. 設置と点検



注意

この章では装置を設置するにあたり、安全上の非常に重要な内容が書かれています。
また、システムの信頼性を高め、その機能を十分発揮させるために以下の内容を考慮して設置してください。

3.1 安全にご使用いただくために

- 不安定な場所(ぐらついた台の上や傾いた所など)に置かないでください。落ちたり、倒れたりして、装置を破壊または人が怪我をする恐れがあります。本体は水平に設置してください。又、付属の取り付け金具により床面、壁面での固定が可能です(『3.2 付属の金具の付け方』および『3.3 設置方法』を参照してください)。



注意

次のような場所は避けて設置してください。

- 周囲温度が0~40℃の範囲を超える場所
- 温度変化が急激で結露するような場所(結露した場合は乾燥させてから電源を投入してください)
- 相対湿度が30~85%の範囲を超える場所
- 強力な電界、磁界の発生している場所
- 発熱源に近い場所
- 本体に直接振動や衝撃がかかる場所
- 直射日光の当たる場所
- 塵、埃の多い場所
- 水、油、薬品等の飛沫のある場所

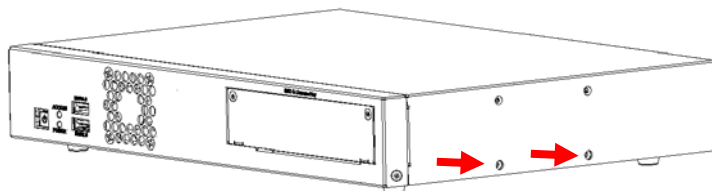
3.2 付属の金具の付け方

3.2.1 取り付け金具(設置)

付属の取り付け金具を使用することによって、本体を固定して設置することが出来ます。

- (1) OS をシャットダウンし、本体背面の電源スイッチを OFF にします。
- (2) 本体に接続されているケーブル類はすべて外します。
- (3) 本体横面にある下図矢印のネジ穴に取り付け金具を添付ネジでしっかりと固定します。

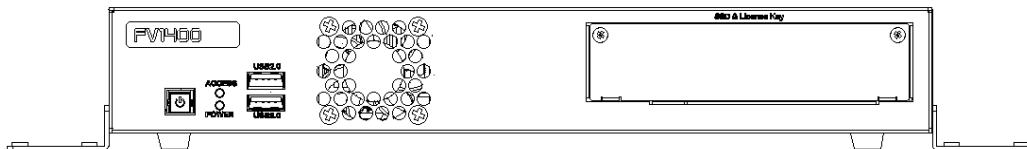
<取り付け金具固定用ネジ穴位置(左右)>



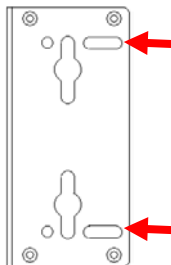
<取り付け横面>



<取り付け正面>



- (4) 取り付け金具の下図矢印の設置用穴を利用して本体を固定します。



注意

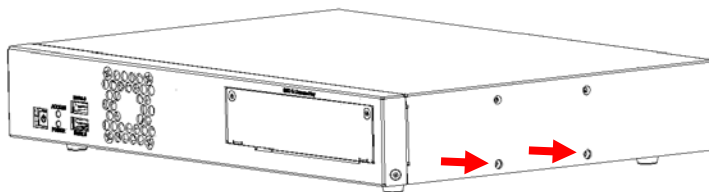
本体を固定しないと、誤って落下して装置を壊す事があります。取り付け金具を利用して設置してください。取り付け金具を本体に取り付ける際に添付ネジ以外のネジを使用される場合は、添付ネジと同じ M3×8mm 組みネジを使用してください。長すぎるネジは装置内部を破壊するおそれがあります。

3.2.2 取り付け金具(連結)

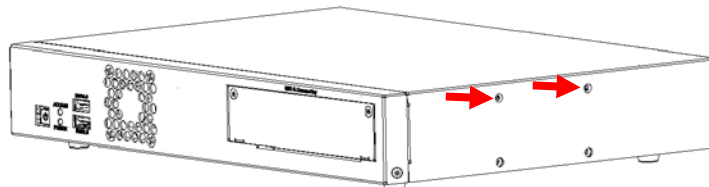
付属の取り付け金具を使用することによって、複数台の本体を連結して固定することが出来ます。

- (1) OS をシャットダウンし、本体の主電源スイッチを OFF にします。
- (2) 本体に接続されているケーブル類はすべて外します。
- (3) 連結する本体を上下段に並べます。
- (4) 本体横面にある下図矢印のネジ穴に取り付け金具を添付ネジでしっかりと固定します。

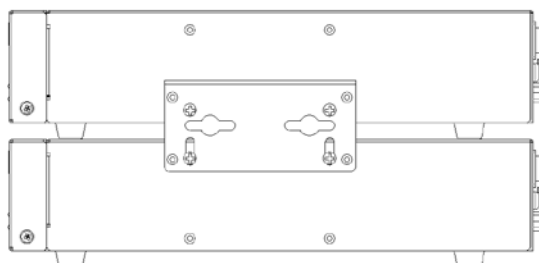
<上段本体のネジ穴位置>



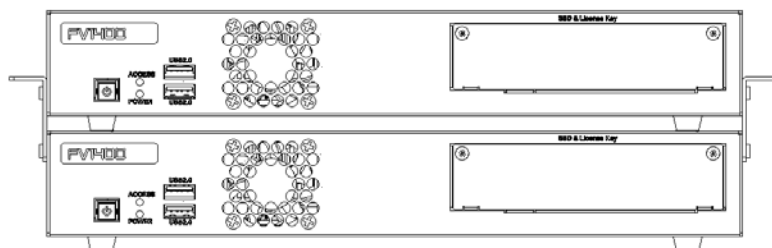
<下段本体のネジ穴位置>



<連結横面>



<連結正面>



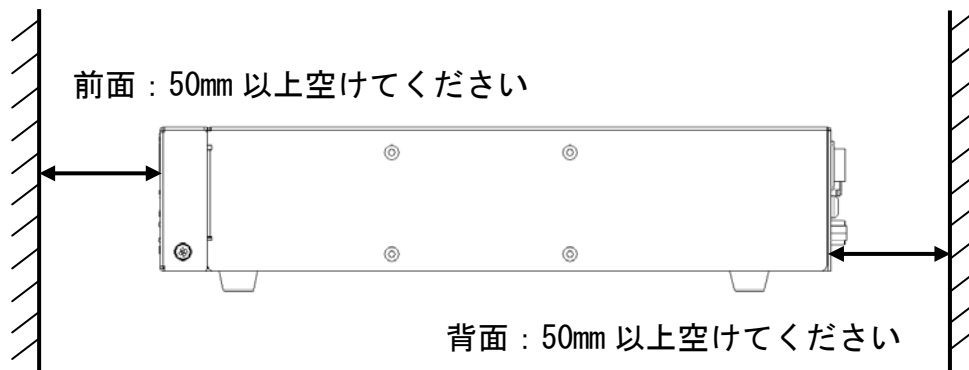
連結をする場合は重量が増え、落下や怪我の恐れがあるため、水平設置時のみとし、下段は取り付け金具にて床面へしっかり固定してください。

水平設置時の最大連結数は5台までとなります。

水平設置時以外は、連結して使用することは出来ません。

3.3 設置方法

- 本体を固定せずに使用すると、移動や落下によって、本体が破損したり、人が怪我をする恐れがあります。本体を設置する場合は、添付の取り付け金具等を使用して固定してください。
- 装置の設置に当たっては前面と背面に空間を設けてください。特に前面の排気ファン、背面の吸気口を塞がないようにしてください。



3.4 電源の配線



警告

電源

- ・機器の電源電圧が供給電源の電圧 (DC24V±10%) に合っているか必ず確認したうえで、本体の電源を入れて下さい。
- ・供給電源は装置の定格消費電力 (100W 以下) より、大きい電源容量のものを選定して下さい。



警告

装置の破壊や感電、火災の事故を防ぐために次のことを必ず守ってください。

アース線の接続、取り外しは電源ケーブルや接続ケーブルを抜いてから行って下さい。

電源ケーブルを取り扱う際は次の点を守って下さい。

- ・破損した電源ケーブルを使用しない。
- ・電源ケーブル、電源コネクタを加工しない。
- ・電源ケーブルの上に重いものを載せない。
- ・無理に曲げたり、ねじったり、引っ張ったりしない。
- ・熱器具の近くに配線しない。

装置に接続されたカメラをロボット・アーム等に取り付ける際には、GND レベルの電位差がないように接地線の接続に注意して下さい。

3.5 日常点検

熱、湿気、ホコリなどの影響や使用の度合いにより、部品が劣化し、時には安全性を損なって事故につながる場合があります。下記の項目は日常点検で確認してください。



異常な音や臭気、異常に熱くなる等の現象を発見したら、すぐに電源を切り、電源コネクタを抜いてください。

3.6 データの保存

フラッシュファイル装置 (SSD) は、ハードディスク (HDD) と比べて機構部がなく、非常に信頼性の高いデバイスですが、アクセス中の電源 OFF や故障により大切なプログラム、データファイルなどを失う恐れがあります。

SSD は SATA 接続となっており、SATA to USB 変換ケーブル等を使い、パソコンからファイルアクセスすることができます。また、LAN によるネットワーク共有機能を利用してファイルアクセスすることも可能です。

Note 保守用の SSD ご購入を推奨します

何らかの原因で SSD 内部のファイルが壊れた場合、アプリケーションプログラム等は復旧可能ですが、システム領域等に問題があった場合は、弊社工場での再書込みや SSD の交換が必要です。復旧時間を短縮する為に、保守用として予備のシステム用 SSD のご購入をお勧めします。



システム用 SSD をフォーマットしたり、ファイルおよびフォルダを削除したり、変更しないでください。装置が起動しなくなる恐れがあります。

3.7 Windows のライセンス認証の方法

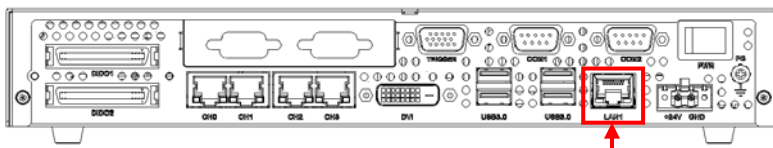
【 FV1400-C7e64 】

Windows のライセンス認証(アクティベーション)は必要ありません。

【 FV1400-C10e64 】

万が一、システム用の SSD が破損して装置が起動しなくなった時、予備のシステム SSD で復旧させることができます。FV1400-C10e64 用の予備のシステム SSD をご使用される際には、Windows のライセンス認証(アクティベーション)をして下さい。

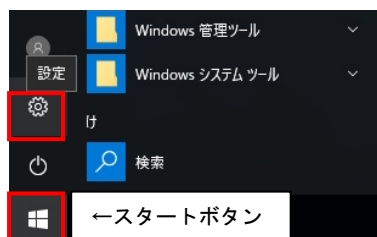
インターネットを使用したライセンス認証の方法



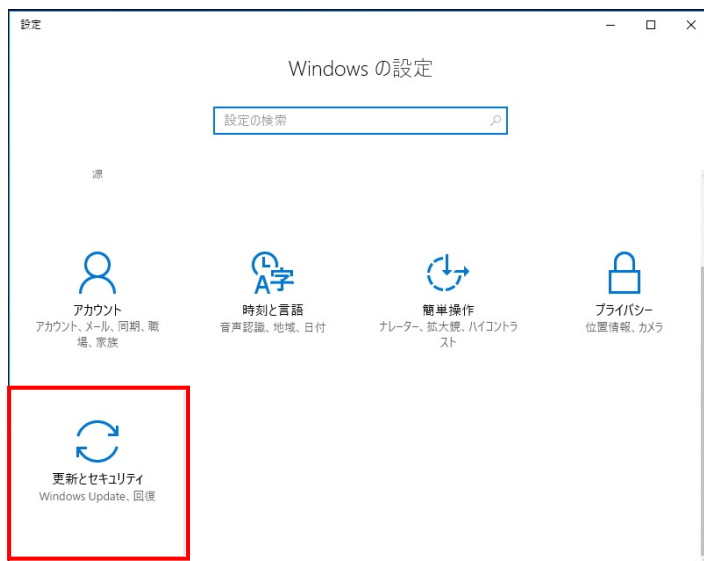
ライセンス認証は装置をインターネットに接続すると自動的に行われます。装置の Ethernet コネクタに LAN ケーブルを接続してインターネット接続して下さい。

ライセンス認証されていることの確認方法

- ① 「スタート」ボタンを左クリックして「設定」を選択します。



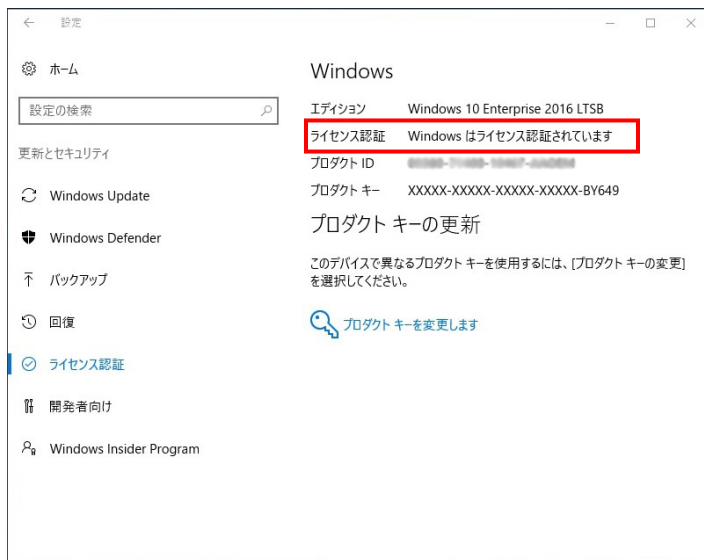
- ② Windows の設定画面の「更新とセキュリティ」をクリックします。



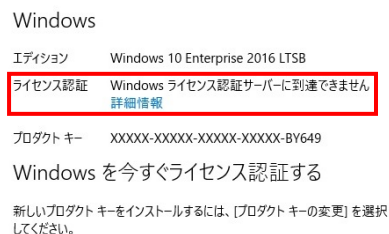
- ③ 更新とセキュリティ画面の「ライセンス認証」をクリックします。



- ④ ライセンス認証画面に「Windows はライセンス認証されています」と表示されていることをご確認ください。



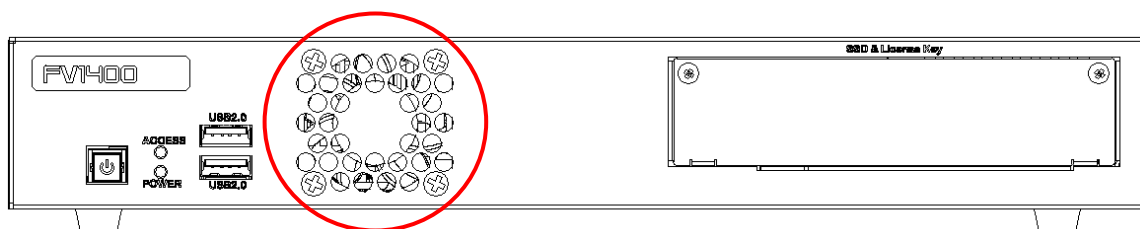
- ※ インターネットに接続されていない等の理由でライセンス認証されていない場合は、「Windows ライセンス認証サーバーに到達できません」等のメッセージが表示されます。



4. 本体各部の名称と取り扱い

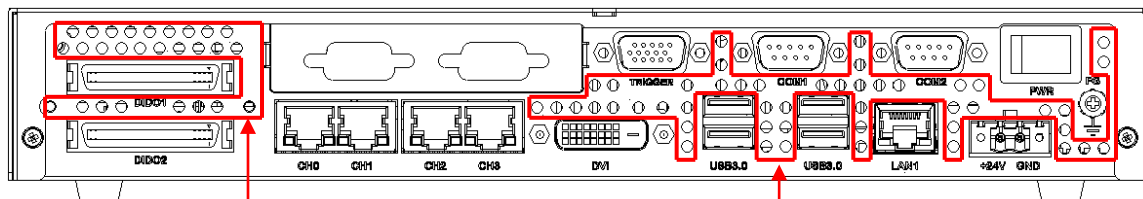
4.1 本体外観

前面



排気口 (排気ファン)

背面



吸気口

吸気口

4.1.1 吸気口・排気口

内部の発熱部品を空冷するための通気口です。

特にCPU、電源回路、DIDO回路の発熱量は大きいので、ファンが止まっていないことを確認してください。



注意

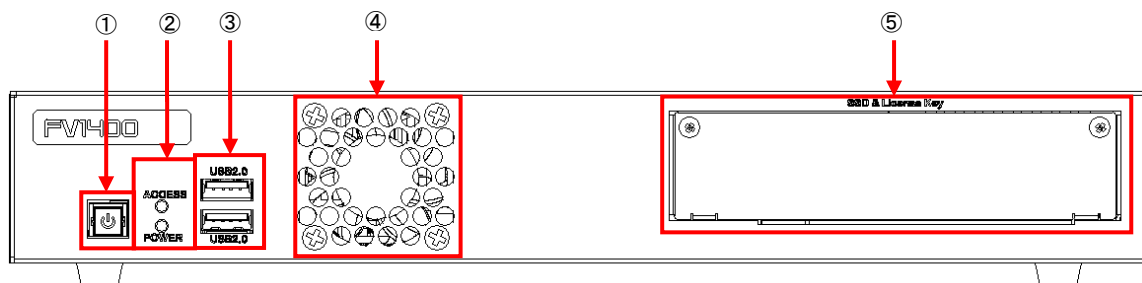
吸気口、排気口は周囲と50mm以上離し、絶対にふさがらないでください。

吸気口、排気口をふさいでしまうと内部温度が異常上昇し、装置の暴走、破壊、火災の危険があります。

また、吸気口、排気口に金属類や燃えやすいものなど異物を入れないでください。

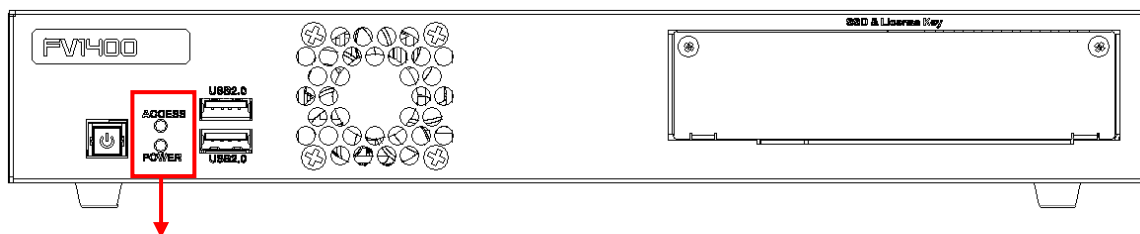
4.2 前面各部

4.2.1 前面各部名称



- ① プッシュ式電源スイッチ
- ② LED
ACCESS 表示/POWER 表示
- ③ USB2.0×2
USB トラックボール/USB キーボード用
- ④ 排気ファン
- ⑤ SSD&License Key
カバーを外した内部に SSD 及び USB ライセンスキー(オプション)が実装されています。

4. 2. 2 POWER 表示／ACCESS 表示



ACCESS



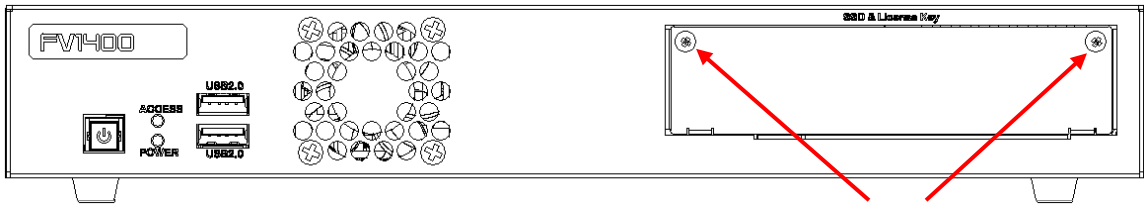
POWER

- ACCESS 表示 (黄色)
フラッシュファイル装置 (SSD) のアクセス中に点灯します。
- POWER 表示 (緑色)
電源スイッチを ON にすると点灯し、装置が通電状態であることを示します。
シャットダウン時、スリープ時等には消灯します。



システムの起動中や ACCESS 表示が点灯中は絶対に電源を切らないでください。ファイル内容を破壊する場合があります。

4.2.3 ファイル装置挿入口 (SSD)、Lisence Key 挿入口 (USB)



ネジ 2 個を取り外し

- システム用 SSD 挿入口
システム用 SSD が搭載されています。誤操作防止のため、蓋がされています。蓋の着脱は矢印で示すネジ 2 個を外して下さい。

- SSD の取り外し
 - ① 蓋を外します。
 - ② SSD 取り出し用レバーを手前側（右写真矢印方向）に引きます。



レバーを手前に引く

- ③ SSD が出てきますので、ガイドレールに沿って指でつまんで引き出します。



SSD が取り出せます。

- SSD の取り付け
 - ① SSD に貼付されている搭載システムが記載されたシステムラベル面を上にし、SSD の端子を奥に入れる方向でガイドレールに沿って奥にあたるまで SSD を押し込みます。



奥まで SSD を押し込みます。

- ② 蓋を取り付けます。



SSD を着脱する場合は、下記の注意事項を守ってください。

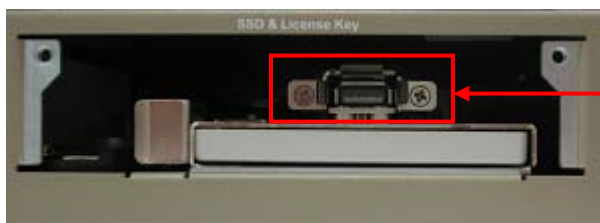
- ・ 必ずシステムラベルが貼られた表面を上にして SSD を取り付けて下さい。
表裏が逆の状態では押し込むと、SSD 又は本体を破損する恐れがあります。
- ・ SSD の挿入時は、挿入口のガイドレールに水平に奥まで挿入してください。
- ・ 電源スイッチが ON 状態 (通電中) に SSD の挿抜は、絶対に行わないでください。
SSD 又は本体を破損する恐れがあります。
- ・ SSD が確実に挿入されていることを確認してから、電源を入れてください。
不完全な状態で通電すると、SSD 又は本体を破損する恐れがあります。



ラベルの貼られて無い裏面を上にして SSD を取付けしないで下さい。

● Lisencc Key 挿入口

USB ライセンスキー (オプション) 搭載用の内蔵 USB コネクタです。標準の FV1400-C には USB ライセンスキーは搭載されません。

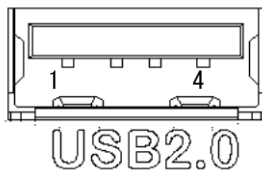
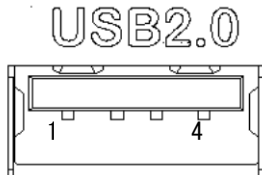
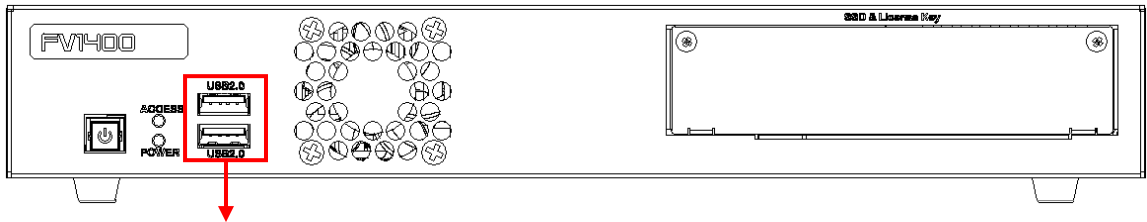


USB ライセンスキー用コネクタ



USB ライセンスキー用コネクタは、弊社がオプション製品として搭載するライセンスキー専用となります。故障の原因となりますので、他の USB 機器を接続しないで下さい。

4.2.4 ユニバーサル・シリアル・バスコネクタ (USB2.0)



- USB
USB 2.0 規格のコネクタです。USB トラックボールまたは USB マウスや USB キーボードを接続します。

USB コネクタ

ピン番号	方向	信号説明
1	N/A	+5V (Power 500mA MAX)
2	I/O	D- (USB 2.0 differential pair)
3	I/O	D+ (USB 2.0 differential pair)
4	N/A	GND (Ground for power return)

[注1] 方向の“1”は入力、“0”は出力、“I/O”は入出力、“N/A”は電源または、予約を示す。

[注2] 使用コネクタは USB2.0 Standard-A レセプタクルです。

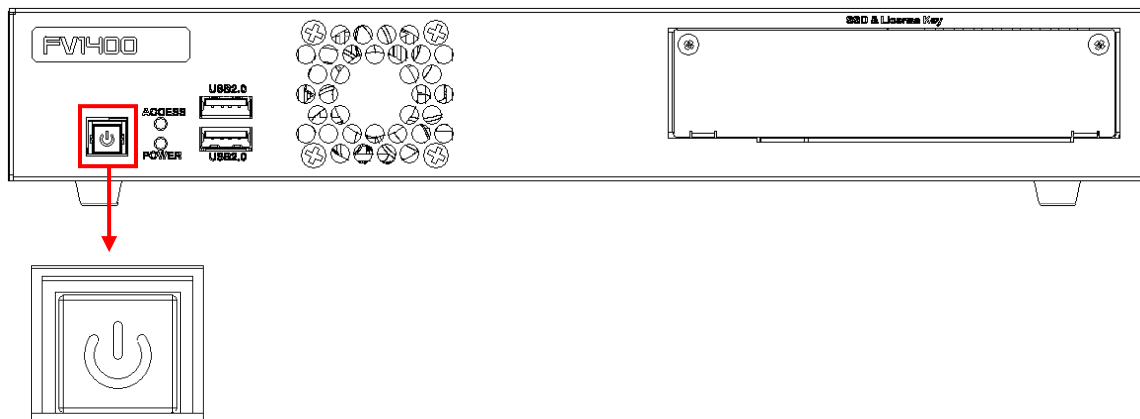
Note

USB は弊社指定の機器以外サポートしていません。



USB2.0 の規格で規定されている最大供給電力 2.5W (5V 500mA) を超える消費電力の機器を接続しないで下さい。装置の故障の原因となります。

4.2.5 プッシュ式電源スイッチ

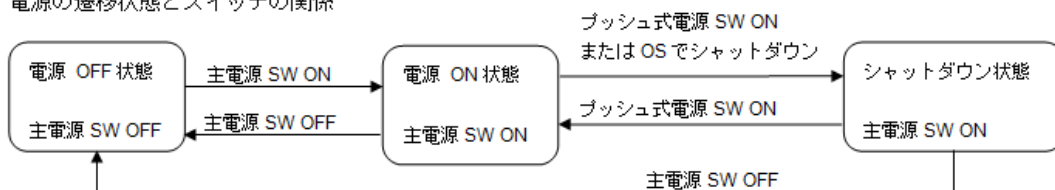


- プッシュ式電源スイッチ

一般的なコンピュータの電源スイッチに相当します。稼働中に本スイッチを押すとシャットダウンします。シャットダウン後は、本スイッチを押すと本体が起動します。

本体背面の主電源スイッチを ON にしても起動しない場合やシャットダウン後、本体背面の主電源スイッチを ON にしたまま再び起動する場合に使用します。

電源の遷移状態とスイッチの関係



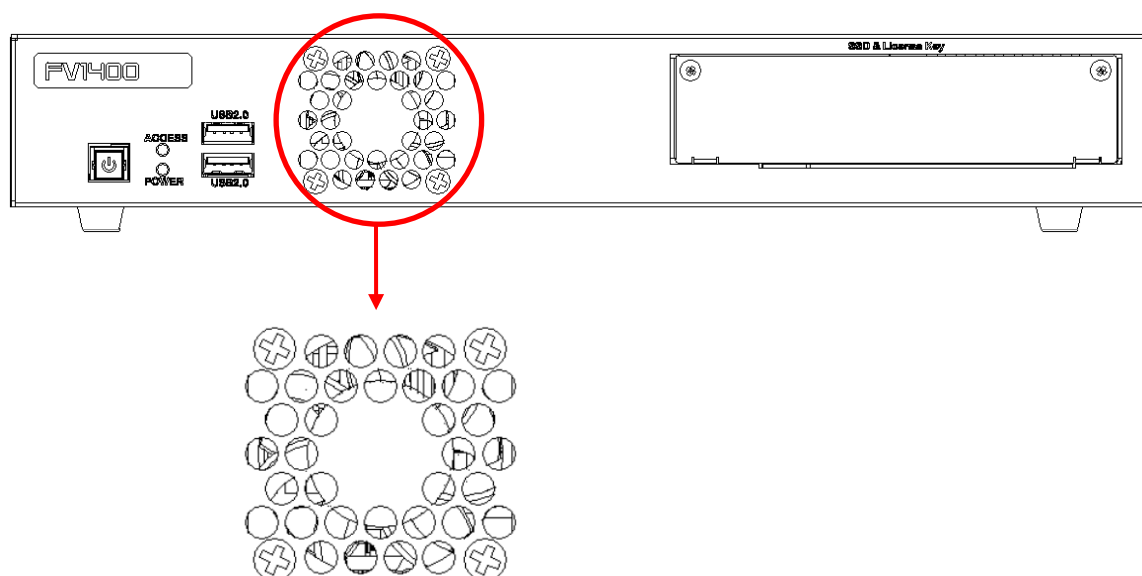
電源スイッチを ON にすることにより、ファイル装置挿入口に実装された SSD より OS がロードされ、起動アプリケーションで指定したプログラムが起動します。

電源スイッチの OFF は『2.3 電源の切り方について』を参照ください。



- ・ システム OS の起動中やファイル装置アクセス中 (ACCESS 表示点灯中) は、絶対に電源スイッチをいじらないでください。ファイルの内容を破壊する場合があります。
- ・ 電源スイッチの長押し (約 3 秒以上) により電源を切らないで下さい。ファイルの内容を破壊する場合があります。

4.2.6 排気ファン



● 排気ファン

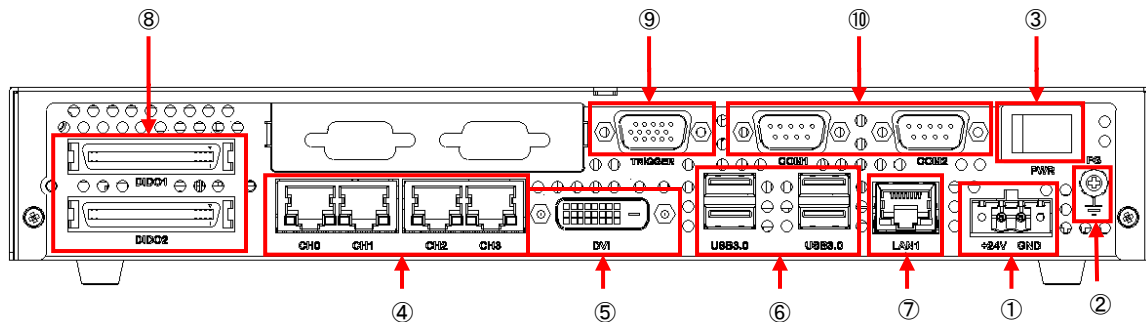
本体内部の熱を排気します。



- ・前面パネルは周囲と 50mm 以上の空間を設けてください。
- ・排気ファン PWM 制御に対応しており、筐体内部の温度上昇に従ってファンの回転数が変化します。

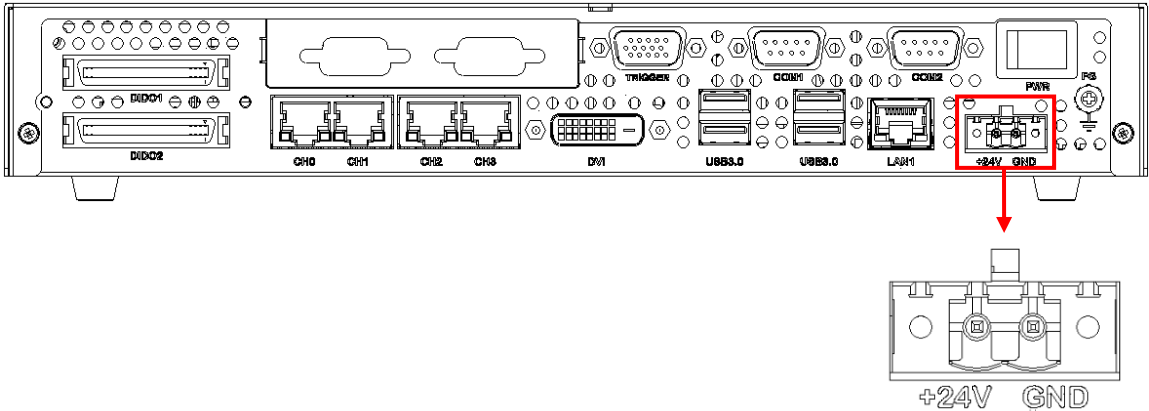
4.3 背面各部

4.3.1 背面各部名称



- ① 電源コネクタ
DC24V 電源入力用
- ② FG 端子
機能接地端子
- ③ 電源スイッチ
主電源の ON/OFF 用
- ④ PoE コネクタ
GigE カメラ用
- ⑤ DVI-I コネクタ
モニタ接続用
- ⑥ USB3.0 コネクタ
USB3.0 カメラ用
- ⑦ Ethernet コネクタ
ネットワーク接続用
- ⑧ DIDO コネクタ (DID01/DID02)
フォトカプラ絶縁 I/O 用
- ⑨ 制御コネクタ (TRIGGER)
外部トリガ入力、カメラトリガ出力用
- ⑩ シリアルコネクタ (COM1/COM2)
シリアル通信用

4.3.2 電源コネクタ



- 電源コネクタ (+24V GND)
DC 電源入力コネクタです。
添付の端子台タイプのコネクタに配線して接続して下さい。

信号名	方向	信号説明
+24V	N/A	電源 (DC+24V±10% 100W以下)
GND	N/A	グラウンド (GND)

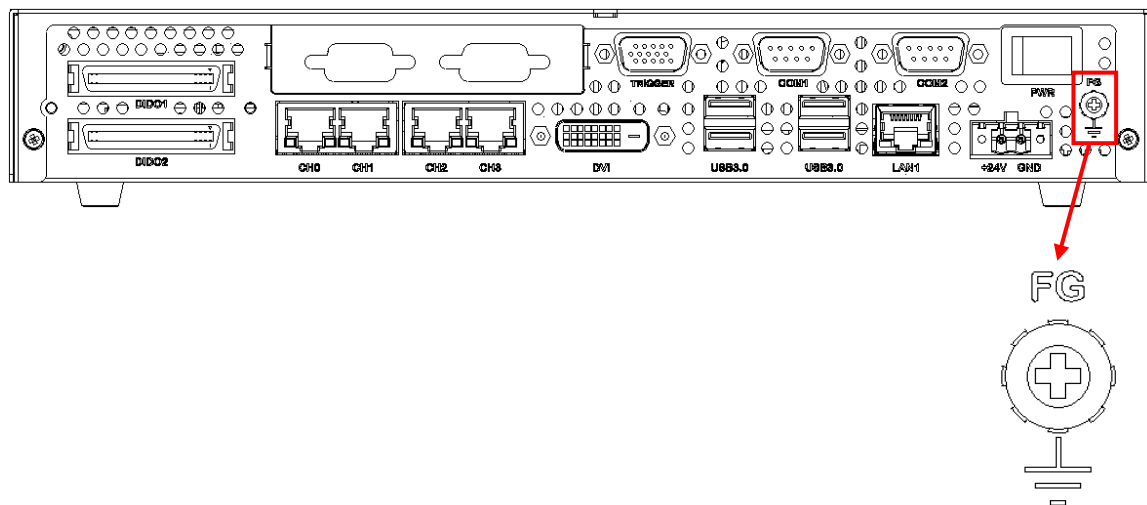
[注1] 使用されているコネクタは DeviceNet 用コネクタ 2Pin オス 型名 : MSTB2.5/2-GF-5.08 (PHOENIX CONTACT 製 相当品) です。ターミナル側の MSTB2.5/2-STF-5.08 (PHOENIX CONTACT 製 相当品) は製品に付属しています。

電線は AWG22～AWG12 の範囲でご使用下さい。
電線長は 30m 未満でご使用下さい。



- ・電源の配線は線長が長くなるにつれ、配線抵抗により電圧値が低下しますので、本体に正常な電圧が供給できるようご注意ください。
- ・電源の極性に注意して配線して下さい。極性を逆に接続した場合、装置の故障の原因となります。

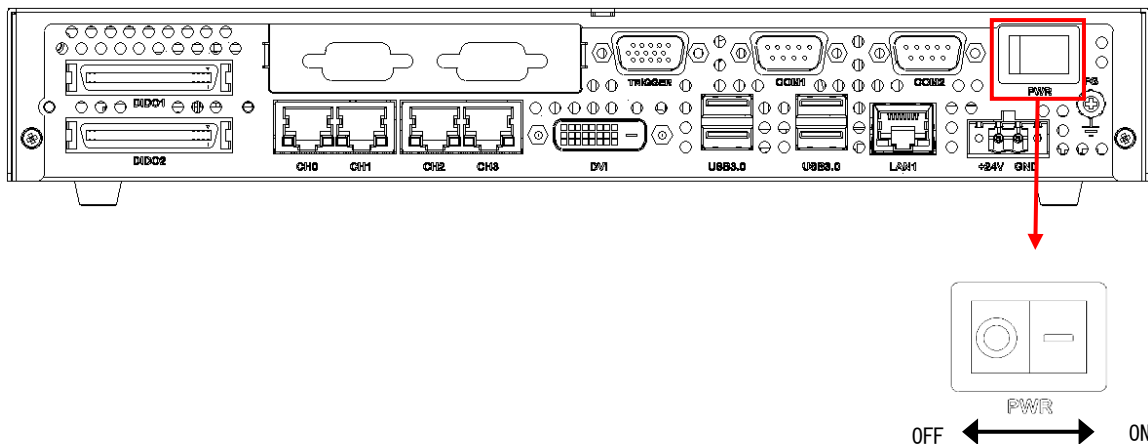
4.3.3 機能接地端子 (FG)



- 機能設置端子 (FG)

本装置と床面やラック等とのグランドレベルを合わせるときに使用します。本装置筐体の SG(シグナル・グランド)と FG(フレーム・グランド)、機能接地端子は接続されています。一般にビデオ機器(カメラ等)の SG とフレームは接続されています。

4.3.4 主電源スイッチ (PWR)



- 主電源スイッチ (PWR)

“—” 側に倒すと ON になります。“○” 側に倒すと OFF になります。各種ケーブル等の接続完了後に主電源スイッチを ON にして装置を使用してください。

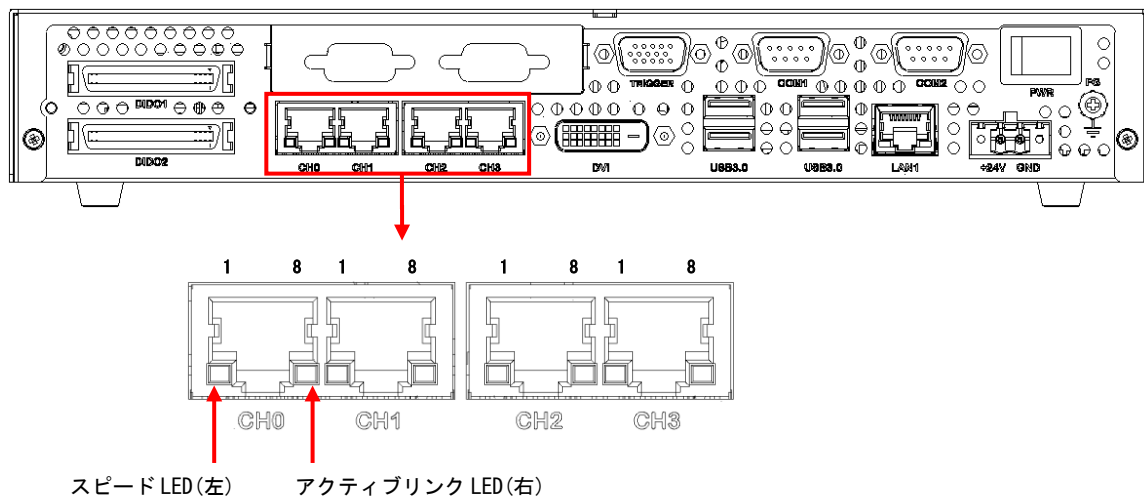
電源スイッチを ON にすることにより、ファイル装置挿入口に実装された SSD より OS がロードされ、起動アプリケーションで指定したプログラムが起動します。

電源スイッチの OFF は『2.3 電源の切り方について』を参照ください。



システム OS の起動中やファイル装置アクセス中 (ACCESS 表示点灯中) は、絶対に電源を切らないでください。ファイルの内容を破壊する場合があります。電源スイッチ OFF 後に再投入 (ON) にする場合は、5 秒以上の時間をおいてから行ってください。

4. 3. 5 PoE コネクタ (CH0/CH1/CH2/CH3)



● PoE コネクタ (CH0/CH1/CH2/CH3)

GigE カメラを接続する為のコネクタです。IEEE 802.3af 規格の電カクラス 2 に対応しており、1 ポートあたり最大 7W までのカメラ電源供給が可能です。

スピード LED (左) の表示

状態	説明
消灯	10Mbps
点灯 (緑)	100Mbps
点灯 (オレンジ)	1000Mbps

アクティブリンク LED (右) の表示

状態	説明
消灯	リンク未確立
点灯 (緑)	リンク確立済み
点滅 (緑)	データ送受信中

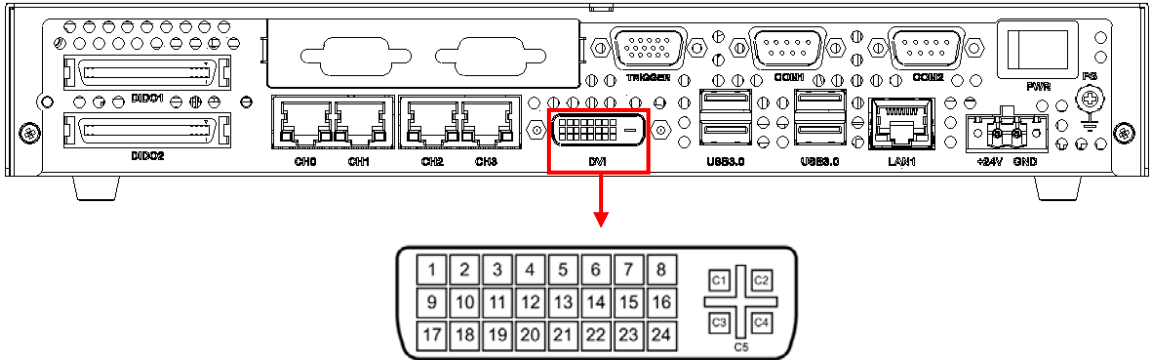
PoE コネクタピン配列

ピン番号	信号名	方向	信号説明
1	TP0+	I/O	データ 0 を送信および受信 (+), Positive V_{port}
2	TP0-	I/O	データ 0 を送信および受信 (-), Positive V_{port}
3	TP1+	I/O	データ 1 を送信および受信 (+), Negative V_{port}
4	TP2+	I/O	データ 2 を送信および受信 (+)
5	TP2-	I/O	データ 2 を送信および受信 (-)
6	TP1-	I/O	データ 1 を送信および受信 (-), Negative V_{port}
7	TP3+	I/O	データ 3 を送信および受信 (+)
8	TP3-	I/O	データ 3 を送信および受信 (-)

[注 1] 方向の“1”は入力、“0”は出力、“I/O”は入出力、“N/A”は電源または、予約を示す。

[注 2] 使用コネクタは RJ45 コネクタです。

4.3.6 表示モニタ接続コネクタ (DVI-I)



- モニタ接続コネクタ (DVI-I)
DVI、DVI-I 規格 LCD モニタ、DVI 変換コネクタを使用したアナログモニタ等を接続します。

DVI-I コネクタピン配列

ピン番号	信号名	方向	ピン番号	信号名	方向
1	DVI Data 2-	0	16	Hot Plug Detect	1
2	DVI Data 2+	0	17	DVI data 0-	0
3	GND	N/A	18	DVI data 0+	0
4	NC	N/A	19	GND	N/A
5	NC	N/A	20	NC	N/A
6	DVI DDC clock	I/O	21	NC	N/A
7	DVI DDC data	I/O	22	GND	N/A
8	Analog Vertical Sync	0	23	DVI clock+	0
9	DVI Data 1-	0	24	DVI clock-	0
10	DVI Data 1+	0			
11	GND	N/A	C1	Analog Red	0
12	NC	N/A	C2	Analog Green	0
13	NC	N/A	C3	Analog Blue	0
14	+5V	0	C4	Analog Horizontal Sync	0
15	GND	N/A	C5	Analog GND	N/A

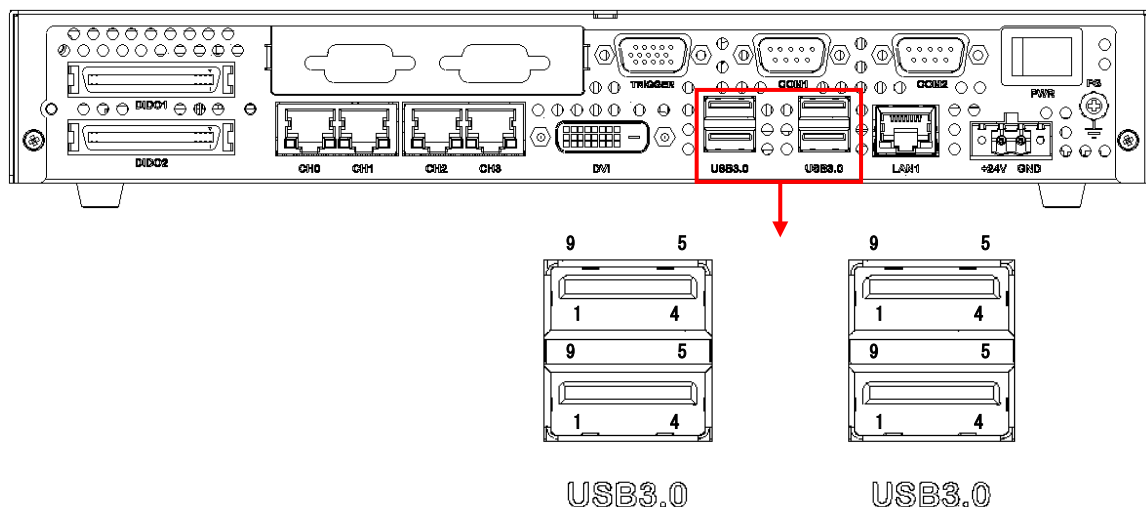
[注1] 適合ネジはインチネジです。

[注2] 方向の“1”は入力、“0”は出力、“I/O”は入出力、“N/A”は電源または、予約を示す。



通電中にコネクタの抜き差しをしないで下さい。画面が正常に表示されない場合があります。

4.3.7 ユニバーサル・シリアル・バスコネクタ (USB3.0)



- USB3.0 コネクタ

USB3.0 カメラ接続用のコネクタです。各ポート毎に USB ホストコントローラ (Renesas 製 μ PD720202) が実装されています。カメラを接続しない場合は、通常の USB3.0 ポートとして使用可能です。

USB コネクタコネクタピン配列

ピン番号	方向	信号説明
1	N/A	+5V (Power 900mA MAX)
2	I/O	D- (USB 2.0 differential pair)
3	I/O	D+ (USB 2.0 differential pair)
4	N/A	GND (Ground for power return)
5	I	StdA_SSRX- (SuperSpeed receiver differential pair)
6	I	StdA_SSRX+ (SuperSpeed receiver differential pair)
7	N/A	GND_DRAIN (Ground for signal return)
8	O	StdA_SSTX- (SuperSpeed transmitter differential pair)
9	O	StdA_SSTX+ (SuperSpeed transmitter differential pair)

[注 1] 方向の“1”は入力、“0”は出力、“I/O”は入出力、“N/A”は電源または、予約を示す。

[注 2] 使用コネクタは USB3.0 Standard-A レセプタクルです。

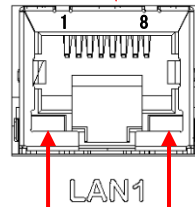
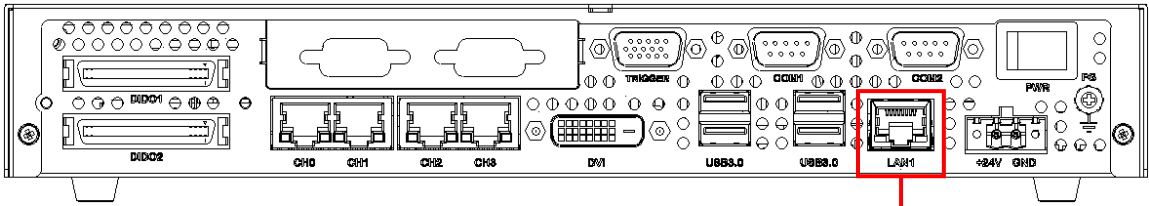
Note

USB は弊社指定の機器以外サポートしていません。



USB3.0 の規格で規定されている最大供給電力 4.5W (5V 900mA) を超える消費電力の機器を接続しないで下さい。装置の故障の原因となります。

4.3.8 Ethernet コネクタ (LAN)



スピード LED(左) アクティブリンク LED(右)

● Ethernet コネクタ

LAN ケーブルを接続します。10BASE-T/100BASE-TX/1000BASE-T の UTP ケーブルを接続するためのコネクタです。このポートは、オートネゴシエーションによって通信速度(1000Mbps/100Mbps/10Mbps)と通信モード(Full Duplex / HalfDuplex)を自動検出し、最適な状態で接続します。

スピード LED(左)の表示

状態	説明
消灯	10Mbps
点灯(オレンジ)	100Mbps
点灯(緑)	1000Mbps

アクティブリンク LED(右)の表示

状態	説明
消灯	リンク未確立
点灯(緑)	リンク確立済み
点滅(緑)	データ送受信中

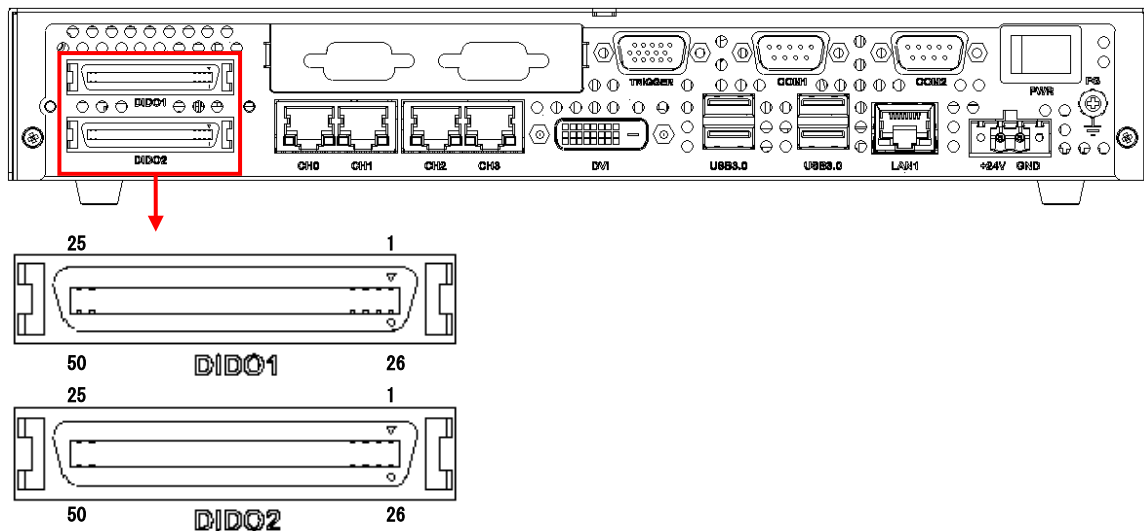
Ethernet コネクタピン配列(1000BASE-T 使用時)

ピン番号	信号名	方向	信号説明
1	TP0+	I/O	データ 0 を送信および受信 (+)
2	TP0-	I/O	データ 0 を送信および受信 (-)
3	TP1+	I/O	データ 1 を送信および受信 (+)
4	TP2+	I/O	データ 2 を送信および受信 (+)
5	TP2-	I/O	データ 2 を送信および受信 (-)
6	TP1-	I/O	データ 1 を送信および受信 (-)
7	TP3+	I/O	データ 3 を送信および受信 (+)
8	TP3-	I/O	データ 3 を送信および受信 (-)

[注1] 方向の“1”は入力、“0”は出力、“I/O”は入出力、“N/A”は電源または、予約を示す。

[注2] 使用コネクタはRJ45 コネクタです。

4.3.9 絶縁型 DIDO コネクタ (DID01/DID02)

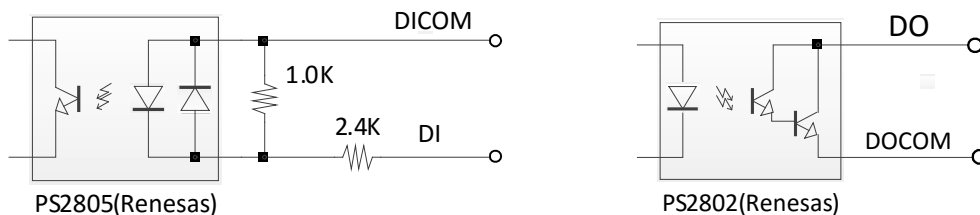


仕様

	パラメータ	値
絶縁耐圧	フォトカプラ入出力間	2.5kVRMS (Min)
入力 I/F	入力点数	32
	入力電圧範囲	DC12V~24V (±10%)
	入力電流範囲	5~15mA/bit (Max)
	フォトカプラ・スイッチング速度	発光側を OFF→ON 時 : 3.5μs (Typ.) 発光側を ON→OFF 時 : 50μs (Typ.)
出力 I/F	出力点数	32
	コモン接続点間電圧	DC30V (Max.)
	出力端子シンク電流	80mA (Max.)
	電圧降下 (Vsat)	1.0V (Max.)
	フォトカプラ・スイッチング速度	発光側を OFF→ON 時 : 2.8μs (Typ.) 発光側を ON→OFF 時 : 400μs (Typ.)

● 絶縁型 DIDO コネクタ (DID01/DID02)

フォトカプラ絶縁型 DIDO コネクタです。各入出力信号は下図に示すフォトカプラ IC で構成されており、入力は「PS2805 (NEC)」、出力は「PS2802 (NEC)」となっております。接続方法は『5.1 フォトカプラ絶縁 I/O 接続参考例』を参照して下さい。





フォトカプラ IC のスイッチング速度の参考値が記載されている箇所がありますが、記載されている値は弊社測定環境における測定結果の代表値です。実際には、フォトカプラ IC の製造ロットによるスイッチング速度のバラツキ、接続されるケーブルの材質や長さ、配線方法、接続先外部回路等の影響により、全体でのスイッチング速度が大幅に遅くなることがあります。従いまして、スイッチング速度の保証は致しかねますことをご承願います。



お客様方で配線の手間を削減するために複数のコモン信号線を 1 本にまとめて配線されるようなことは避けて下さい。複数の入出力信号が同時に ON 状態や OFF 状態になる場合、コモン信号の配線に電流が集中してコモン信号の電位が変動し、正常に機能できなくなることがあります。それぞれにコモン信号線を配線して下さいようお願い致します。

以下の説明で、フォトカプラの発光素子に対して駆動電流が流れている状態を ON 状態、駆動電流が流れていない状態を OFF 状態として説明します。

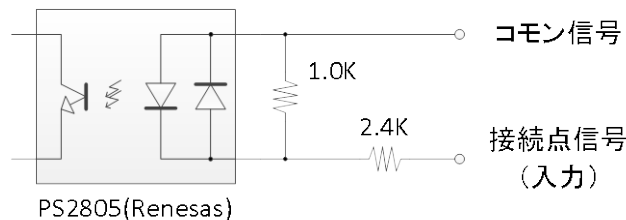
(1) 入インターフェイス

接続点数 …………… 32 点

接続点信号名(コネクタ名)	対応コモン信号名(コネクタ名)
DI 0~DI 7 (DIDO1)	DICOM0 (DIDO1)
DI 8~DI15 (DIDO1)	DICOM1 (DIDO1)
DI16~DI23 (DIDO2)	DICOM2 (DIDO2)
DI24~DI31 (DIDO2)	DICOM3 (DIDO2)



各コモン信号は分離されています。また、コモン信号の極性は+/-いずれでもかまいません。



- 入力電圧範囲 …………… DC 12V~24V(±10%)
- 入力電流範囲 …………… 5mA~15mA / bit
- フォトカプラ IC のスイッチング速度の参考値(入力電圧 24V、入力電流 12mA にて測定)
 - …………… 発光側を OFF⇒ON (t_{on}) …… 約 3.5 μ S(標準)
 - …………… 発光側を ON⇒OFF (t_{off}) …… 約 50 μ S(標準)
- 割り込み
 - 割り込みに関する設定はソフトウェアで行います。

[注 1] 割り込み入力信号ピン(DIDO1/DIDO2 コネクタ 26 番ピン)は使用出来ません。
割り込み入力はソフトウェアから DI に割り当ててご使用下さい。

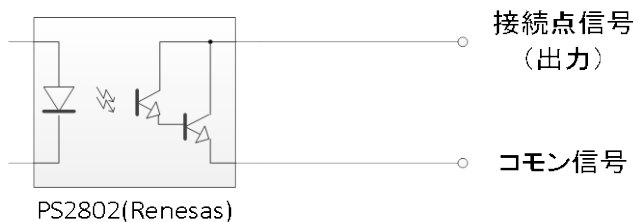
(2) 出力インターフェイス

- 接続点数 …………… 32点 オープンコレクタ出力

接続点信号名(コネクタ名)	対応コモン信号名(コネクタ名)
D0 0~D0 7 (DID01)	DOCOM0 (DID01)
D0 8~D015 (DID01)	DOCOM1 (DID01)
D016~D023 (DID02)	DOCOM2 (DID02)
D024~D031 (DID02)	DOCOM3 (DID02)



- ・ コモン信号は 一極性です。極性を誤って接続し電源を供給すると、出力回路が破損します。
- ・ 各コモン信号は分離されています。
- ・ 装置の電源スイッチの ON/OFF 時には、一時的に各フォトカプラが導通状態になる場合があります。



- コモン接続点間電圧 …………… DC30V (max)
- 出力端子シンク電流 …………… 80mA (max)
- 電圧降下 …………… V_{sat} =約 1V
- フォトカプラ IC のスイッチング速度の参考値
 (コモン接続点間電圧 24V、出力端子シンク電流 12mA にて測定)
 …………… 発光側を OFF⇒ON (t_{on}) …………… 約 2.8 μ S(標準)
 …………… 発光側を ON⇒OFF (t_{off}) …………… 約 400 μ S(標準)

Note

D00~D031 はパルスジェネレータ出力としても使用可能です。パルスジェネレータを使用する為には、FV1400-C 専用の SDK を使用する必要があります。SDK の使用方法等については、弊社ユーザ・サポート窓口にお問い合わせください。

DID01 コネクタ

端子 番号	信号名	説明	端子 番号	信号名	説明
1	INTCOMO	INT0 のコモン (使用不可)	26	INT0	割込み入力信号 0 (使用不可)
2	DI0	入力 I/F 信号 0	27	DICOMO	DI0~DI7 のコモン
3	DI1	入力 I/F 信号 1	28	DI2	入力 I/F 信号 2
4	DICOMO	DI0~DI7 のコモン	29	DI3	入力 I/F 信号 3
5	DI4	入力 I/F 信号 4	30	DICOMO	DI0~DI7 のコモン
6	DI5	入力 I/F 信号 5	31	DI6	入力 I/F 信号 6
7	DICOMO	DI0~DI7 のコモン	32	DI7	入力 I/F 信号 7
8	DI8	入力 I/F 信号 8	33	DICOM1	DI8~DI15 のコモン
9	DI9	入力 I/F 信号 9	34	DI10	入力 I/F 信号 10
10	DICOM1	DI8~DI15 のコモン	35	DI11	入力 I/F 信号 11
11	DI12	入力 I/F 信号 12	36	DICOM1	DI8~DI15 のコモン
12	DI13	入力 I/F 信号 13	37	DI14	入力 I/F 信号 14
13	DICOM1	DI8~DI15 のコモン	38	DI15	入力 I/F 信号 15
14	D00	出力 I/F 信号 0	39	DOCOMO	D00~D07 のコモン
15	D01	出力 I/F 信号 1	40	D02	出力 I/F 信号 2
16	DOCOMO	D00~D07 のコモン	41	D03	出力 I/F 信号 3
17	D04	出力 I/F 信号 4	42	DOCOMO	D00~D07 のコモン
18	D05	出力 I/F 信号 5	43	D06	出力 I/F 信号 6
19	DOCOMO	D00~D07 のコモン	44	D07	出力 I/F 信号 7
20	D08	出力 I/F 信号 8	45	DOCOM1	D08~D015 のコモン
21	D09	出力 I/F 信号 9	46	D010	出力 I/F 信号 10
22	DOCOM1	D08~D015 のコモン	47	D011	出力 I/F 信号 11
23	D012	出力 I/F 信号 12	48	DOCOM1	D08~D015 のコモン
24	D013	出力 I/F 信号 13	49	D014	出力 I/F 信号 14
25	DOCOM1	D08~D015 のコモン	50	D015	出力 I/F 信号 15

DID02 コネクタ

端子番号	信号名	説明	端子番号	信号名	説明
1	INTCOM1	INT1 のコモン(使用不可)	26	INT1	割込み入力信号 1(使用不可)
2	DI16	入力 I/F 信号 16	27	DICOM2	DI16~DI23 のコモン
3	DI17	入力 I/F 信号 17	28	DI18	入力 I/F 信号 18
4	DICOM2	DI16~D23 のコモン	29	DI19	入力 I/F 信号 19
5	DI20	入力 I/F 信号 20	30	DICOM2	DI16~DI23 のコモン
6	DI21	入力 I/F 信号 21	31	DI22	入力 I/F 信号 22
7	DICOM2	DI16~DI23 のコモン	32	DI23	入力 I/F 信号 23
8	DI24	入力 I/F 信号 24	33	DICOM3	DI24~DI31 のコモン
9	DI25	入力 I/F 信号 25	34	DI26	入力 I/F 信号 26
10	DICOM3	DI24~DI31 のコモン	35	DI27	入力 I/F 信号 27
11	DI28	入力 I/F 信号 28	36	DICOM3	DI24~DI31 のコモン
12	DI29	入力 I/F 信号 29	37	DI30	入力 I/F 信号 30
13	DICOM3	DI24~DI31 のコモン	38	DI31	入力 I/F 信号 31
14	DO16	出力 I/F 信号 16	39	DOCOM2	DO16~DO23 のコモン
15	DO17	出力 I/F 信号 17	40	DO18	出力 I/F 信号 18
16	DOCOM2	DO16~DO23 のコモン	41	DO19	出力 I/F 信号 19
17	DO20	出力 I/F 信号 20	42	DOCOM2	DO16~DO23 のコモン
18	DO21	出力 I/F 信号 21	43	DO22	出力 I/F 信号 22
19	DOCOM2	DO16~DO23 のコモン	44	DO23	出力 I/F 信号 23
20	DO24	出力 I/F 信号 24	45	DOCOM3	DO24~DO31 のコモン
21	DO25	出力 I/F 信号 25	46	DO26	出力 I/F 信号 26
22	DOCOM3	DO24~DO31 のコモン	47	DO27	出力 I/F 信号 27
23	DO28	出力 I/F 信号 28	48	DOCOM3	DO24~DO31 のコモン
24	DO29	出力 I/F 信号 29	49	DO30	出力 I/F 信号 30
25	DOCOM3	DO24~DO31 のコモン	50	DO31	出力 I/F 信号 31

[注1] 使用コネクタ : 50 ピン ハーフピッチ・アンフェノール・メスコネクタ (HIROSE DX10M-50SE 相当品)



装置へ接続するコネクタやハーネスは、弊社標準品をご用意しておりません。市販の 50 ピン ハーフピッチ・アンフェノール・オスコネクタをご使用ください。「株式会社ミスミ」などでは 1 本からでもフリースタイルケーブルを製作できます。市販品では 50 ピン ハーフピッチ・アンフェノール・メスコネクタからフルピッチ・アンフェノールコネクタに変換するアダプタ (SCSI 用) なども販売されています。

適合するコネクタは、ミスミでは「IEEE1284 ハーフピッチコネクタ」と呼ばれています。「IEEE1284 ハーフピッチコネクタ」のオスコネクタでハーネスをご検討ください。また、株式会社ミスミには、IEEE1284 ハーフピッチコネクタ端子台も用意されていますので、合わせてご検討ください。

株式会社ミスミ ワイヤリングコンポーネンツチーム

TEL 03-3647-7715 (ダイヤルイン)

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〒135 東京都江東区東陽 2-4-46 ASK ビル 4 階

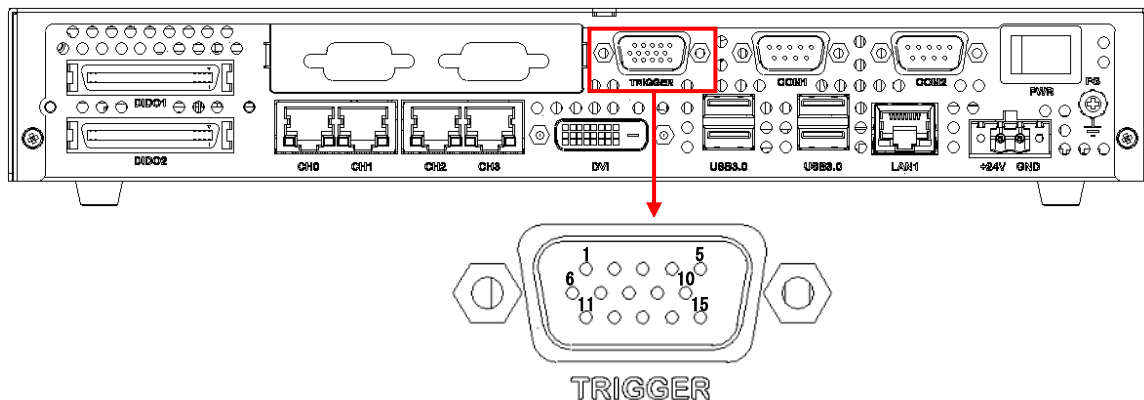


注意

フォトカブラ絶縁 I/O は結線間違い、使用電圧、極性間違いなどにより正常動作しないだけでなく、本装置またはお客様側装置を破壊してしまう場合があります。使用するに当たっては十分な検討、確認を行ってください。

また、周辺に強力なモータや電磁ソレノイドや電力線等が存在する場合、電磁場の影響によって誤動作する可能性があります。電磁誘導等を回避するよう配線方法や配線経路に十分に注意してください。

4.3.10 制御コネクタ (TRIGGER)



- 制御コネクタ (TRIGGER)
外部からのランダムトリガ要求信号の入力や、カメラに対するハードウェアトリガ出力に使用します。

Note

制御コネクタ (TRIGGER) を使用するには、FV1400-C 専用の SDK を使用する必要があります。
SDK の使用方法等については、弊社ユーザ・サポート窓口にお問い合わせください。

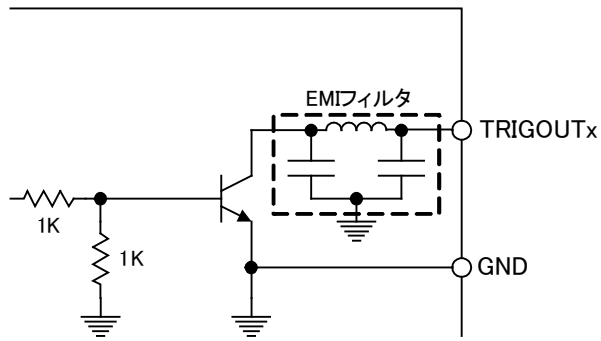
制御コネクタ (TRIGGER) ピン配列

ピン番号	信号名	方向	信号説明
1	EXTRIG0	I	ランダムトリガ要求入力 (TTLレベル)
2	EXTRIG1	I	ランダムトリガ要求入力 (TTLレベル)
3	EXTRIG2	I	ランダムトリガ要求入力 (TTLレベル)
4	EXTRIG3	I	ランダムトリガ要求入力 (TTLレベル)
5	TRIGOUT0	O	カメラトリガ出力 (オープンコレクタ)
6	TRIGOUT1	O	カメラトリガ出力 (オープンコレクタ)
7	TRIGOUT2	O	カメラトリガ出力 (オープンコレクタ)
8	TRIGOUT3	O	カメラトリガ出力 (オープンコレクタ)
9	GND	N/A	
10	GND	N/A	
11	GND	N/A	
12	+5V	O	テスト用 MAX. 300mA
13	GND	N/A	
14	GND	N/A	
15	GND	N/A	

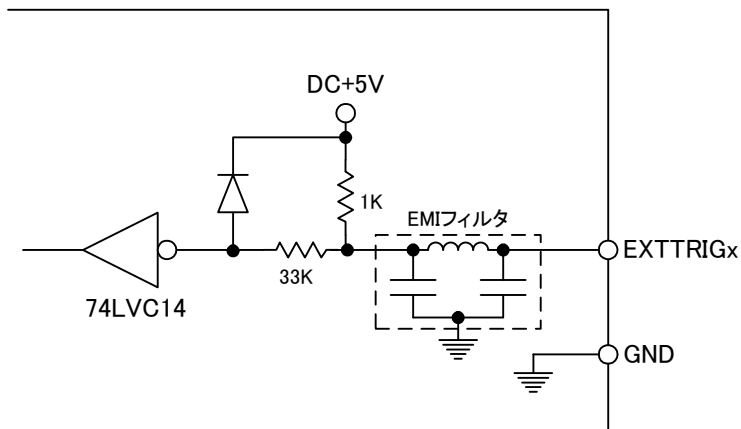
- ※ EXTRIG0/1/2/3 の入力部は 1K Ω の抵抗器にて DC+5V 電源にプルアップされています。
- ※ TRIGOUT0/1/2/3 の出力部はオープンコレクタ形式ですので、シンク電流 50mA 未満で使用してください。
- ※ TRIGOUT0/1/2/3 の出力は汎用 I/O 出力またはパルスジェネレータ出力として使用可能です。

- [注1] 方向の“1”は入力、“0”は出力、“1/0”は入出力、“N/A”は電源または、予約を示す。
- [注2] 使用コネクタは 15 ピンミニ DSUB (HD-DSUB) オスコネクタ (HD-15SP ミスミ 相当品) です。
- [注3] 勘合コネクタは 15 ピンミニ DSUB (HD-DSUB) メスコネクタ (HD-15SS ミスミ 相当品) です。
- [注4] 勘合ネジはインチネジです。
- [注5] +5V の出力電流は最大 300mA となります。最大出力電流を超える消費電力の機器を接続しないで下さい。装置の故障の原因となります。

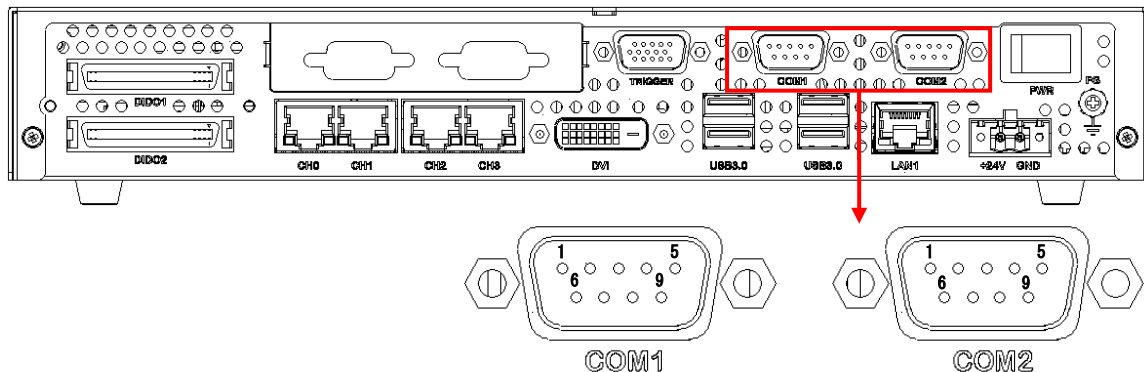
TRIGOUTx 端子の出力回路(オープンコレクタ出力)



EXTTRIGx 端子の入力回路(TTL 入力)



4. 3. 11 シリアルコネクタ (COM1/COM2)



● シリアルコネクタ (COM1/COM2)

EIA232 (RS-232) 規格・調歩同期式のシリアル通信を提供します。

シリアルコネクタピン配列

ピン番号	方向	信号説明
1	I	DCD (Data Carrier Detect)
2	I	RxD (Receive Data)
3	O	TxD (Transmit Data)
4	O	DTR (Data Terminal Ready)
5	N/A	GND (Signal Ground)
6	I	DSR (Data Set Ready)
7	O	RTS (Request To Send)
8	I	CTS (Clear To Send)
9	I	RI (Ring Indicator)

[注 1] 方向の“I”は入力、“O”は出力、“I/O”は入出力、“N/A”は電源または、予約を示す。

[注 2] 使用コネクタは、9ピンDSUBオスコネクタ (RDED-9PE ヒロセ 相当品) です。

[注 3] 勘合コネクタは、9ピンDSUBメスコネクタ (HDEB-9S ヒロセ 相当品) です。

[注 4] 勘合ネジはインチネジです。

5. 補足説明

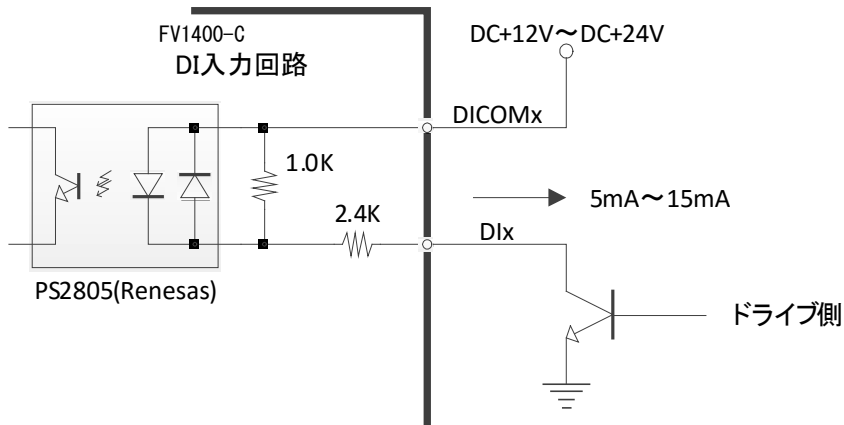
5.1 フォトカプラ絶縁 I/O 接続参考例

5.1.1 入力信号の接続例

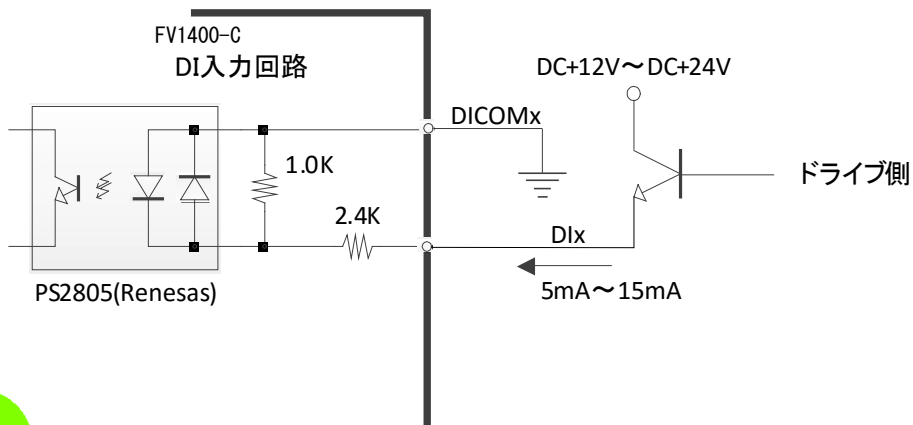
入力電圧範囲 : DC12V~24V (±10%)
 入力電流範囲 : 5mA~15mA

入力機器の選定及び接続には、以下を参考にしてください。

シンクタイプ接続



ソースタイプ接続



ドライブ側は、オープンコレクタ形又は電流駆動形を使用します。

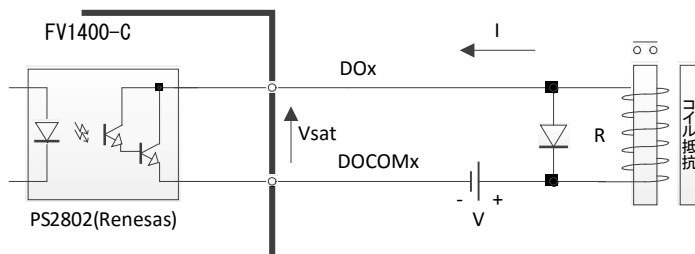
5.1.2 出力信号の接続例

出カ-コモン端子間耐圧 : 30V
 出力端子シンク電流 : 80mA (max)
 電圧降下 (V_{sat}) : 約 1.0V

リレーを駆動する場合

ドライブ電流 I は次式で概算します。

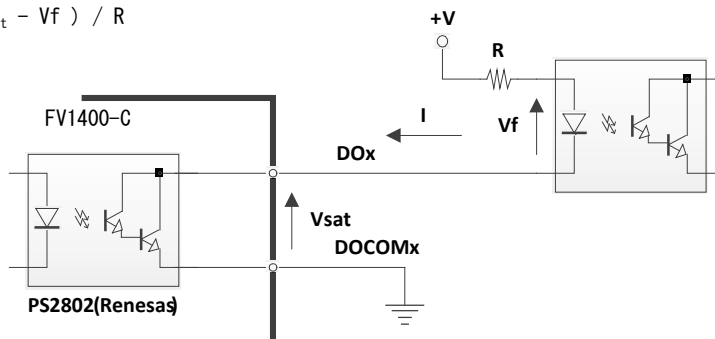
$$I = (V - V_{sat}) / R$$



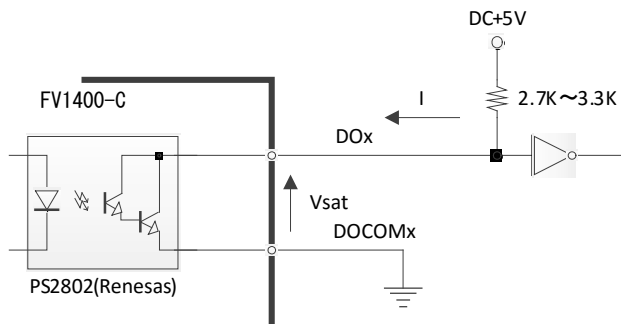
フォトプラを駆動する場合

ドライブ電流 I は次式で概算します。

$$I = (V - V_{sat} - V_f) / R$$



C-MOS を駆動する場合



V_{sat} が約 1V ありますので、TTL レベルの駆動は避けてください。

5.1.3 電源投入時のフォトカプラ絶縁 I/O 等の出力について

フォトカプラ絶縁 I/O の出力は装置本体の電源が投入されて、装置本体のリセットが完了するまで、特定できません。

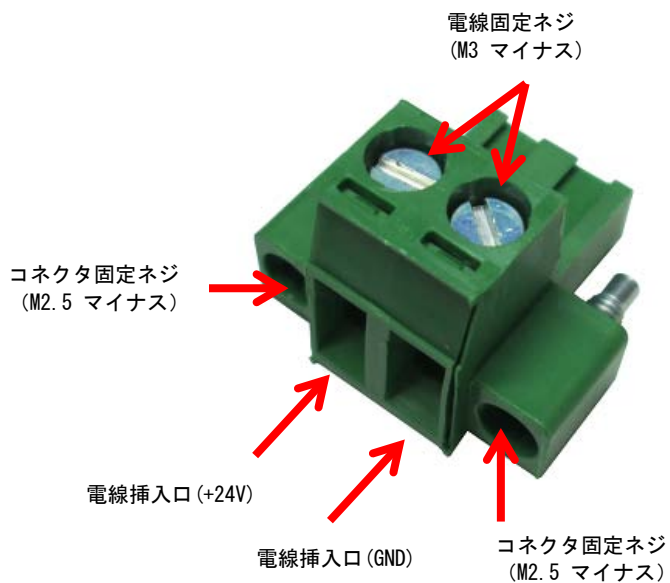


下記のような考慮が必要です。

- ◆ 装置本体の電源が入っていない場合、フォトカプラ絶縁 I/O の出力状態を無視する。
- ◆ 装置本体が立ち上がるまでは、フォトカプラ絶縁 I/O の出力を無視する。

特に、外部機器が接続されていて、その外部機器からの電流回り込み等で想定していない状態になることがあります。

5.2 付属電源コネクタの取り扱い



電線挿入口に被覆をむいた電線を入れ、電線固定ネジをマイナスドライバーで締め付けをします。

電線接続仕様：

接続可能な電線の太さ	AWG22～AWG12
電線の被覆むき長さ	7mm

コネクタ型名：MSTB2.5/2-STF-5.08 メーカー：PHOENIX CONTACT (相当品)

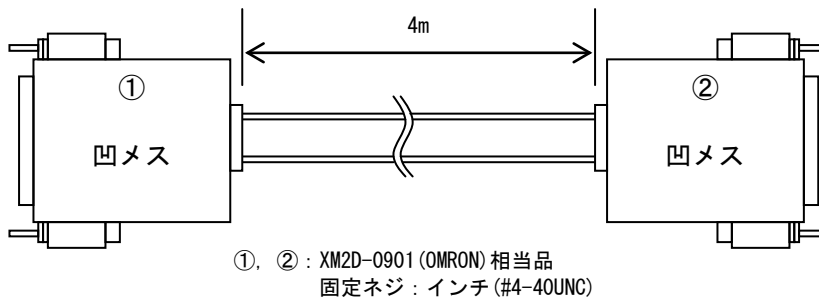


被覆をむいた電線に予備半田はしないで下さい。正常に接続できなくなります。

5.3 オプション品の取り扱い

5.3.1 シリアルケーブル(オプション)

シリアルシリアルケーブル (9 ピンメス-9 ピンメス)



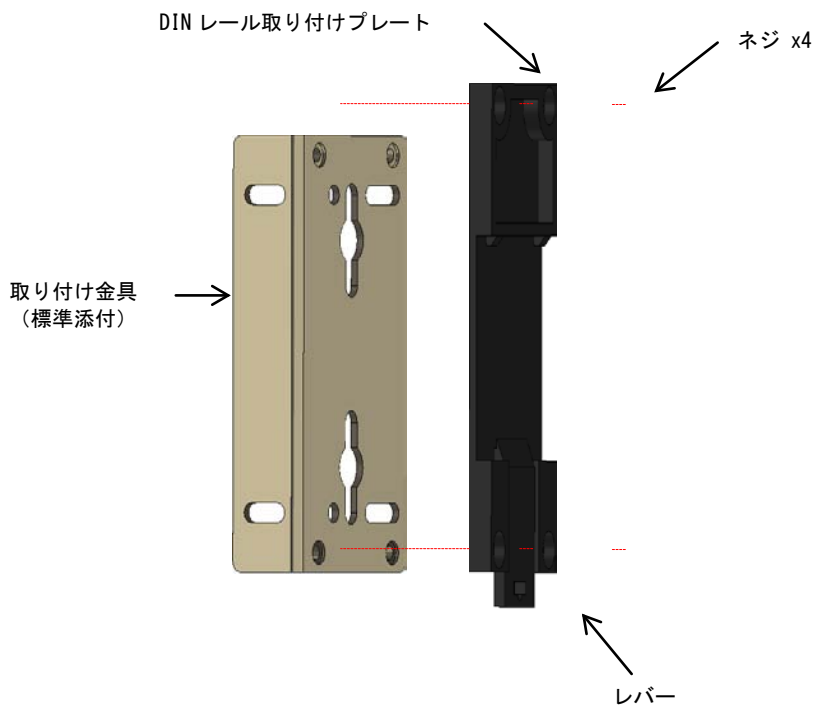
シリアルシリアルケーブル

①FV1400-C		②相手機器		
信号名	ピン番号		ピン番号	信号名
	1		1	
RxD	2	↗	2	RxD
TxD	3	↘	3	TxD
DTR	4	↗	4	DTR
SG	5	↘	5	SG
DSR	6	↗	6	DSR
RTS	7	↘	7	RTS
CTS	8	↗	8	CTS
	9		9	

5.3.2 DIN レール取り付けプレート (オプション)

以下の図のように取り付け金具に添付のネジ(M3組ネジ)にてDIN レール取り付けプレートを固定して下さい。

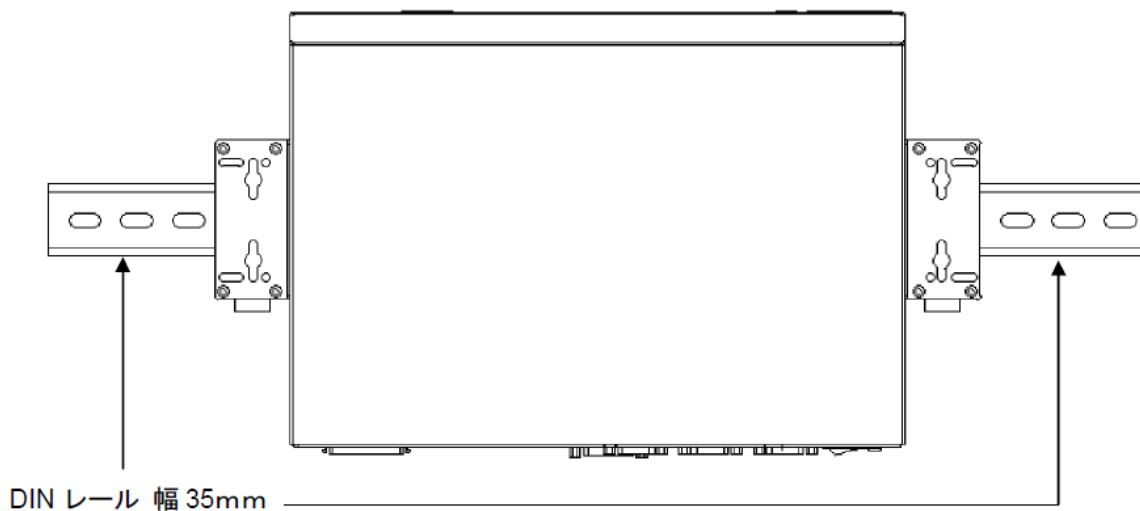
DIN レール取り付けプレート 型番 : DIN-P70 メーカー : 鍋屋パイテック株式会社



着脱方法 :

DIN レール前面から押すだけで装着できます。

取り外しは、レバーを引いて手前に持ち上げるか、レール上をスライドさせてください。



6. 付 録

6.1 BIOS (CMOS) 設定の修復

何らかの原因で BIOS (CMOS) 設定が変わってしまった場合の修正方法について説明します。

- 装置の電源投入直後から「DEL」キーを押し続けます。
- しばらくすると、「Aptio Setup Utility」の画面になります。
- 「Save & Exit」内のメニューの「Restore FAST Defaults」をカーソルキーで選択し「Enter」キーを押します。
- 「Load FAST Defaults?」と表示されるので、「Yes」にカーソルを合わせ、「Enter」キーを押します。
- その後、「Save Changes and Exit」を選択し「Enter」キーを押します。
- 「Save configuration and exit?」と表示されるので、「Yes」にカーソルを合わせ、「Enter」キーを押します。

これで、BIOS (CMOS) 設定は出荷時と同じになり修復されます。

尚、「Main」内の「System Time」で時計の設定を行えます。

出荷時以外の設定に変更された場合、動作保証は致しかねます。

7. 有寿命部品

装置に取り付けられている下記の部品は、使用により劣化、摩耗しますので、一定周期で交換する必要があります。これらのユニットは有償にて交換致します。

寿命については、周囲温度 40℃で筐体の前面を周囲から 50mm 以上、背面を 50mm 以上離して設置した状態の場合を想定しています。

排気ファン	1日24時間通電使用を想定した時の寿命は、約5年半です。 期待寿命：50,000時間
アルミ電解コンデンサ	1日24時間通電使用を想定した時の寿命は、約25.5年です。
リチウム電池	1日24時間通電使用、または全く通電されない場合を想定した時の寿命は、約15年です。



アルミ電解コンデンサについて

寿命になると電解液の枯渇や漏れが生じます。特に、電源回路での電解液の漏れは、発煙・感電の原因になることがあります。

8. 保証について

本製品は、一般的な商業・工業用途で使用されていることを意図して設計されております。従いまして、極めて高い信頼性が要求される下記のような特定用途へのご使用は避けて下さい。

自動車電装、列車制御、交通信号制御、燃焼制御、防火・防犯装置、航空宇宙機器、海底中継機器、原子力制御システム、生命維持のための医療機器等

商品は、厳格な検査を経て出荷されておりますが、万一製造上の不備による故障または輸送中の事故等による故障が発生した場合には、弊社営業までご連絡ください。

- (1) 製品の保証期間は出荷日から1年です。
取扱説明書・仕様書に従った正常な使用状態で製品が故障した場合には、保証保守条件に従い無償修理させていただきます。
- (2) 修理は、装置またはボード交換で対応させていただきます。
装置またはボードは製造中止等により、同じ物での交換ができない場合があります。
その場合は、同等以上の物と交換させていただきます。
- (3) 保証期間後は有償修理となります。
修理費は、基本修理費3万円及び交換部品費です。
- (4) 保証期間内でも次の場合は有償修理となります。
 - 火災、地震、水害、落雷、その他の天変地異、公害や異常電圧、異常周波数による故障または損害
 - お買い上げ後の輸送、移動時の落下等のお取扱いが不適切な為に生じた故障または損害
 - 取扱説明書、仕様書に記載された使用方法や注意に反するお取扱いによって生じた故障または損害
 - お客様ご自身の修理、改造による故障または損害
 - 接続している他の機器に起因する故障または損害
 - 車両や船舶等に搭載された場合による故障または損害
- (5) 修理は弊社工場のみで行い、出張修理は行いません。
- (6) 修理対応期間は、製造終了より6年間です。修理に要する期間は4週間程度です。
修理期間中の代替機貸出は行っておりません。
- (7) 修理部品の変更等により、修理後性能が向上する場合があります。
- (8) 弊社から提出する修理報告書は、交換した部品名を通知する程度の情報となります。
故障原因等の調査を必要とされる場合は、別途調査費用を請求させていただきます。
- (9) 弊社の指定する以外のボードや部品等を搭載されている場合や弊社の指定する以外のボードや部品等を搭載することによって起こった不具合修理、サポートは行いません。
- (10) 本保証は日本国内においてのみ有効です。This warranty is valid only in Japan.

8.1 サポートが必要な場合

本製品について疑問や問題が生じた場合、ユーザ・サポートでは技術的なお問い合わせに関して E-Mail、FAX、電話にて対応させていただいております。

なお、お問い合わせの際は、

- ユーザ登録番号(「ユーザ登録完了のお知らせ」に記載とれているユーザ登録 No「U-XXXX」)
- 本装置の型番(装置前面に装置銘板、及び補助シールが貼られています)
- 本装置のシリアル番号(装置の背面に貼られています)

を必ずお知らせ下さい。これらはサポート上、製品の構成や世代などを知るうえで大変重要な情報となります。また、より正確な情報を確認し、迅速なサポートをするためになるべくお問い合わせは、E-Mail、FAXにてお問い合わせ下さい。

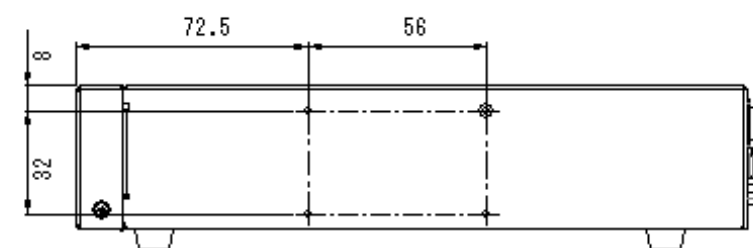
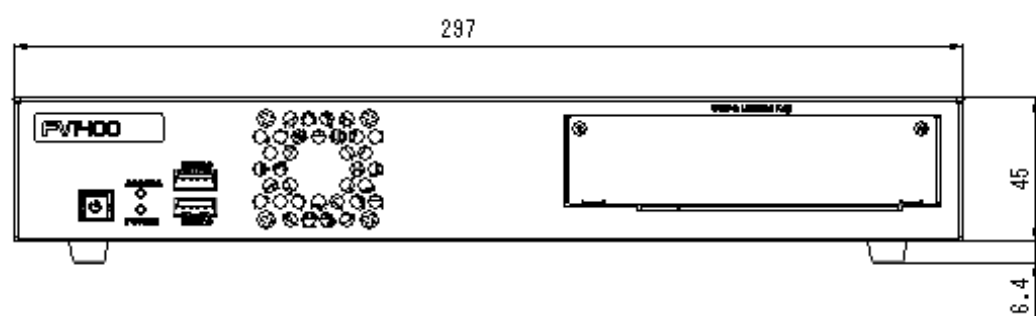
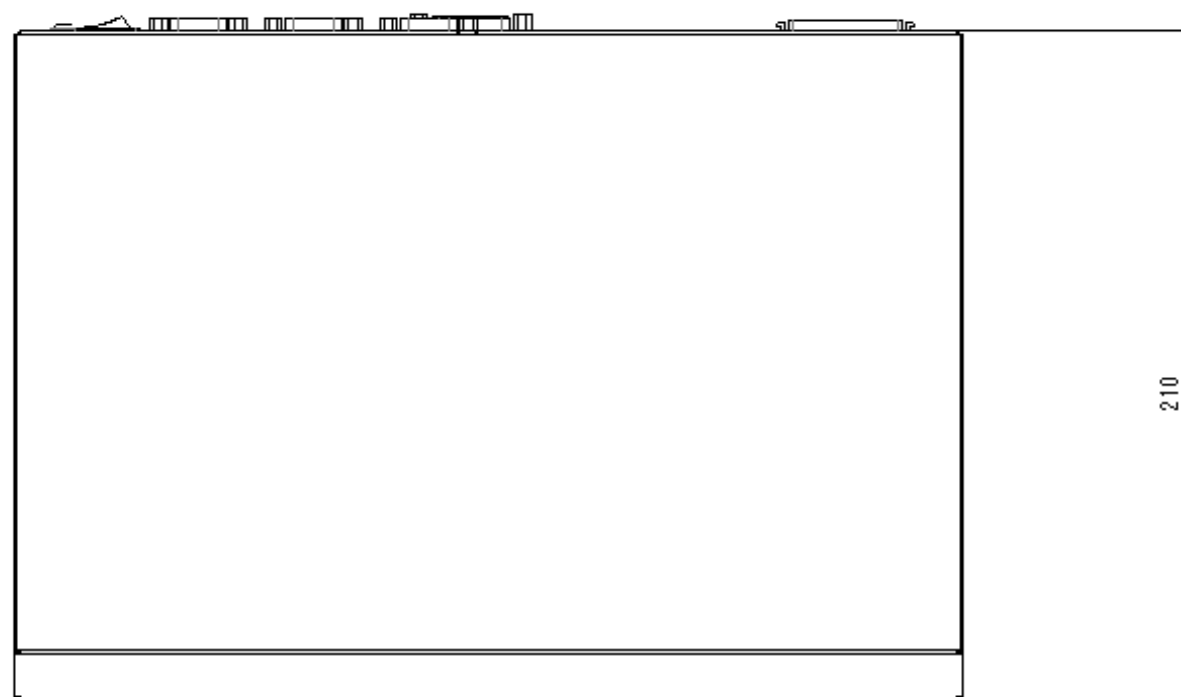


専門のエンジニアが折返し、電話、E-Mail、または FAX でお答えいたします。
ご協力をお願いいたします。

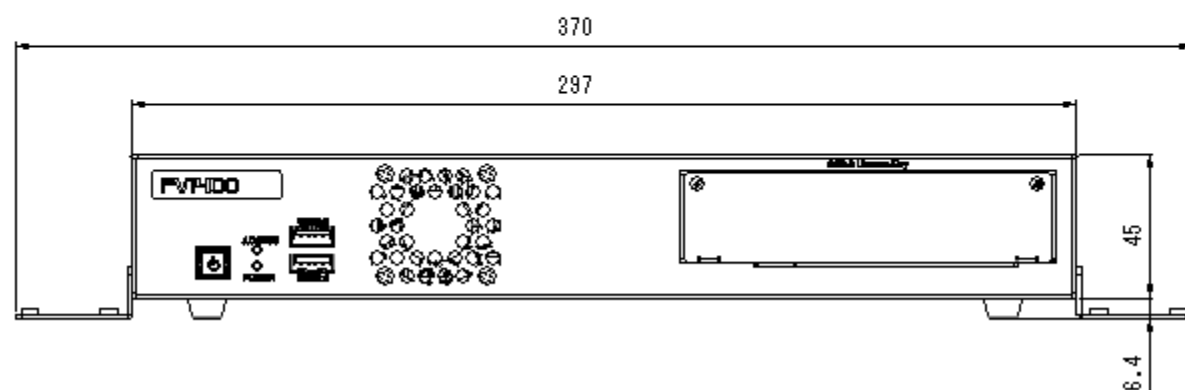
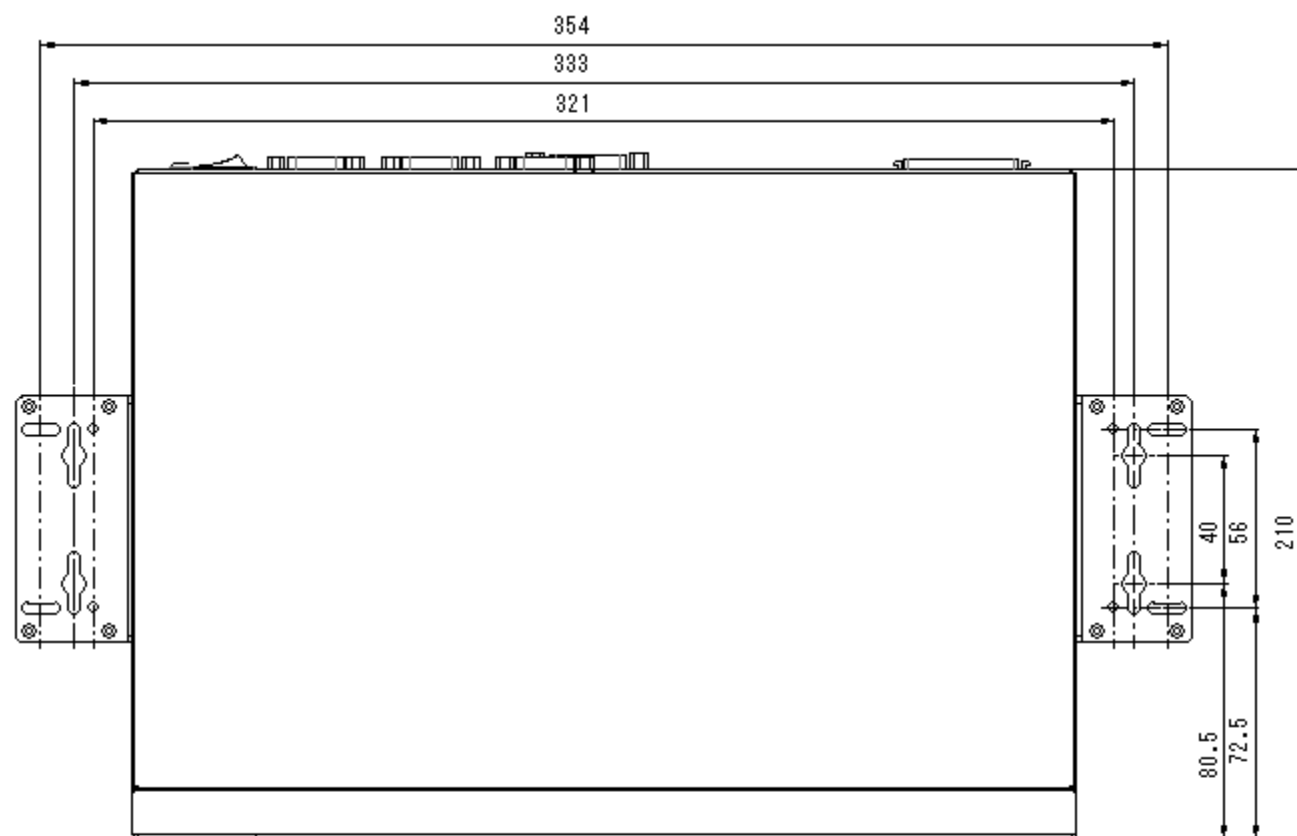
ユーザ・サポート FAX 046-272-8692 TEL 046-272-8691
E-mail : support@fast-corp.co.jp

ユーザ・サポートの受付は月曜～金曜(除く祝祭日)の午前 9:00～12:00、午後 1:00～5:00 となっております。
なお、弊社ホームページ(<https://www.fast-corp.co.jp/>)でも様々な情報を提供しておりますので、併せてご利用ください。

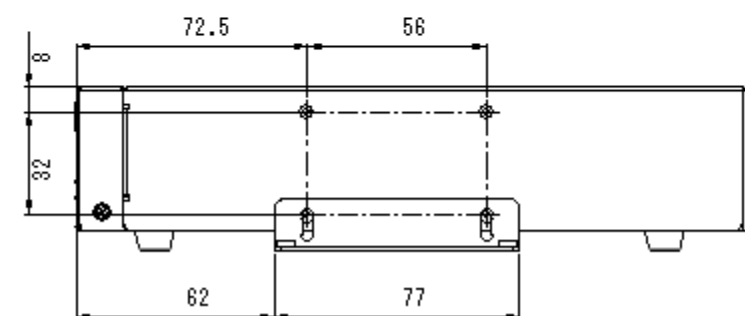
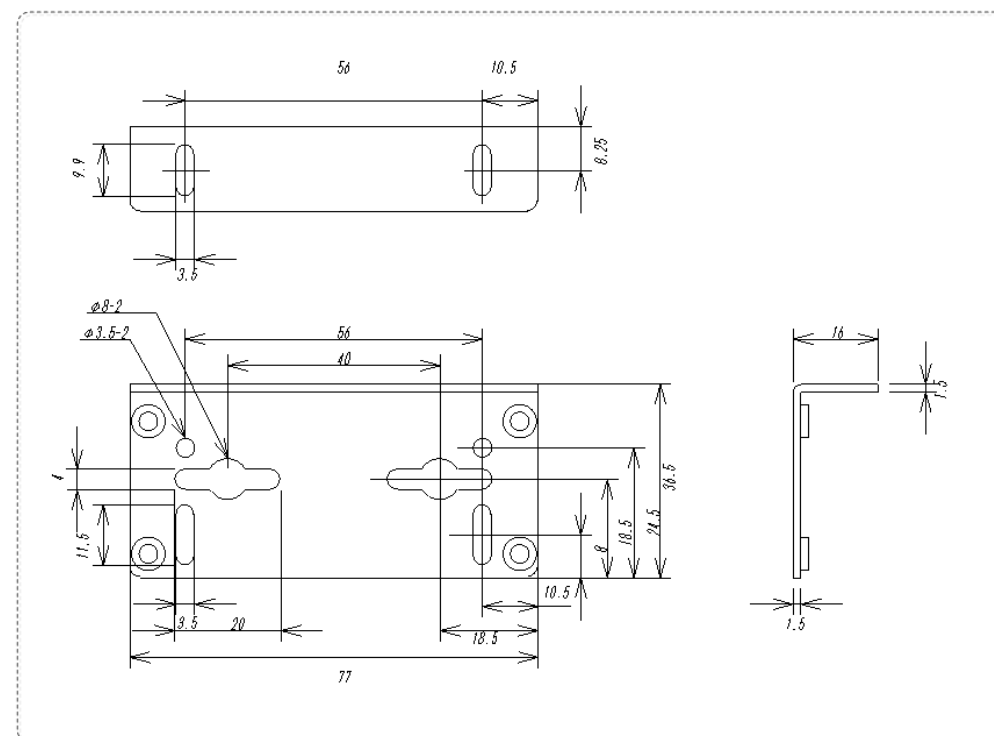
FV1400-C 寸法图



FV1400-C 取付け金具寸法図



取り付け金具寸法



MICROSOFT SOFTWARE LICENSE TERMS WINDOWS EMBEDDED STANDARD 7

These license terms are an agreement between you and *FAST Corporation*. Please read them. They apply to the software included on this device. The software also includes any separate media on which you received the software.

The software on this device includes software licensed from Microsoft Corporation or its affiliate.

The terms also apply to any Microsoft

- updates,
- supplements,
- Internet-based services, and
- support services

for this software, unless other terms accompany those items. If so, those terms apply.

If you obtain updates or supplements directly from Microsoft, then Microsoft, and not *FAST Corporation*, licenses those to you.

As described below, using the software also operates as your consent to the transmission of certain computer information for Internet-based services.

By using the software, you accept these terms. If you do not accept them, do not use the software. Instead, contact *FAST Corporation* to determine its return policy for a refund or credit.

If you comply with these license terms, you have the rights below.

1. USE RIGHTS

Use. The software license is permanently assigned to the device with which you acquired the software. You may use the software on the device.

2. ADDITIONAL LICENSING REQUIREMENTS AND/OR USE RIGHTS

- Specific Use.** *FAST Corporation* designed the device for a specific use. You may only use the software for that use.
- Other Software.** You may use other programs with the software as long as the other programs
 - directly supports the manufacturer's specific use for the device, or
 - provide system utilities, resource management, or anti-virus or similar protection.

- Software that provides consumer or business tasks or processes may not be run on the device. This includes email, word processing, spreadsheet, database, scheduling and personal finance software. The device may use terminal services protocols to access such software running on a server.

c. **Device Connections.** You may not use the software as server software. In other words, more than one device may not access, display, run, share or use the software at the same time.

You may use terminal services protocols to connect the device to a server running business task or processes software such as email, word processing, scheduling or spreadsheets.

You may allow up to ten other devices to access the software to use

- File Services,
- Print Services,
- Internet Information Services, and
- Internet Connection Sharing and Telephony Services.

The ten connection limit applies to devices that access the software indirectly through “multiplexing” or other software or hardware that pools connections. You may use unlimited inbound connections at any time via TCP/IP.

d. **Remote Access Technologies.** You may access and use the software remotely from another device using remote access technologies as follows.

Remote Desktop. The single primary user of the device may access a session from any other device using Remote Desktop or similar technologies. A “session” means the experience of interacting with the software, directly or indirectly, through any combination of input, output and display peripherals. Other users may access a session from any device using these technologies, if the remote device is separately licensed to run the software.

Other Access Technologies. You may use Remote Assistance or similar technologies to share an active session.

Other Remote Uses. You may allow any number of devices to access the software for purposes other than those described in the Device Connections and Remote Access Technologies sections above, such as to synchronize data between devices.

e. **Font Components.** While the software is running, you may use its fonts to display and print content. You may only

- embed fonts in content as permitted by the embedding restrictions in the fonts; and
- temporarily download them to a printer or other output device to print content.

f. Icons, images and sounds. While the software is running, you may use but not share its icons, images, sounds, and media.

- 3. VHD BOOT.** Additional copies of the software created using the software’s Virtual Hard Disk functionality (“VHD Image”) may be pre-installed on the physical hard disk of the device. These VHD Images may only be used for maintaining or updating the software installed on the physical hard disk or drive. If the VHD Image is the only software on your device, it may be used as the primary operating system but all other copies of the VHD Image may only be used for maintenance and updating.
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 - new versions of the player; and
 - codecs if your device does not have the correct ones for playing content.

You can switch off this feature. For more information, go to: go.microsoft.com/fwlink/?LinkId=51331.

- Malicious Software Removal/Clean On Upgrade. Before installation of the software, the software will check and remove certain malicious software listed at www.support.microsoft.com/?kbid=890830 ("Malware") from your device. When the software checks your device for Malware, a report will be sent to Microsoft about any Malware detected or errors that occurred while the software was checking for Malware. No information that can be used to identify you is included in the report. You may disable the software's Malware reporting functionality by following the instructions found at www.support.microsoft.com/?kbid=890830.
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- Windows Time Service. This service synchronizes with www.time.windows.com once a week to provide your device with the correct time. The connection uses standard NTP protocol.
- Search Suggestions Service. In Internet Explorer, when you type a search query in the Instant Search box or type a question mark (?) before your search term in the Address bar, you will see search suggestions as you type (if supported by your search provider). Everything you type in the Instant Search box or in the Address bar when preceded by a question mark (?) is sent to your search provider as you type. Also, when you press Enter or click the Search button, the text in the Instant Search box or Address bar is sent to the search provider. If you use a Microsoft search provider, use of the information sent is subject to the Microsoft Online Privacy Statement. This statement is available at go.microsoft.com/fwlink/?linkid=31493. If you use a third-party search provider, use of the information sent will be subject to the third party's privacy practices. You can turn search suggestions off at any time. To do so, use Manage Add-ons under the Tools button in Internet Explorer. For more information about the search suggestions service, see go.microsoft.com/fwlink/?linkid=128106.
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WINDOWS 10 IOT ENTERPRISE & MOBILE (ALL EDITIONS)

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- c. Restrictions.** The manufacturer or installer and Microsoft reserve all rights (such as rights under intellectual property laws) not expressly granted in this agreement. For example, this license does not give you any right to, and you may not:
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- (vii) when using Internet-based features you may not use those features in any way that could interfere with anyone else's use of them, or to try to gain access to or use any service, data, account, or network, in an unauthorized manner.

d. Multi use scenarios.

- (i) **Multiple versions.** If when acquiring the software, you were provided with multiple versions (such as 32-bit and 64-bit versions), you may install and activate only one of those versions at a time.
- (ii) **Multiple or pooled connections.** Hardware or software you use to multiplex or pool connections, or reduce the number of devices or users that access or use the software, does not reduce the number of licenses you need. You may only use such hardware or software if you have a license for each instance of the software you are using.
- (iii) **Device connections.** You may allow up to 20 other devices to access the software installed on the licensed device for the purpose of using the following software features: file services, print services, Internet information services, and Internet connection sharing and telephony services on the licensed device. The 20 connection limit applies to devices that access the software indirectly through "multiplexing" or other software or hardware that pools connections. You may allow any number of devices to access the

software on the licensed device to synchronize data between devices. This section does not mean, however, that you have the right to install the software, or use the primary function of the software (other than the features listed in this section), on any of these other devices.

- (iv) **Remote access.** Users may access the licensed device from another device using remote access technologies, but only on devices separately licensed to run the same or higher edition of this software.
 - (v) **Remote assistance.** You may use remote assistance technologies to share an active session without obtaining any additional licenses for the software. Remote assistance allows one user to connect directly to another user's computer, usually to correct problems.
 - (vi) **POS application.** If the software is installed on a retail point of service device, you may use the software with a point of service application ("POS Application"). A POS Application is a software application which provides only the following functions: (i) process sales and service transactions, scan and track inventory, record and/or transmit customer information, and perform related management functions, and/or (ii) provide information directly and indirectly to customers about available products and services. You may use other programs with the software as long as the other programs: (i) directly support the manufacturer's specific use for the device, or (ii) provide system utilities, resource management, or anti-virus or similar protection. For clarification purposes, an automated teller machine ("ATM") is not a retail point of service device.
 - (vii) **Cloud Computing Devices.** If your device uses Internet browsing functionality to connect to and access cloud hosted applications: (i) no desktop functions may run locally on the device, and (ii) any files that result from the use of the desktop functions may not be permanently stored on the system. "Desktop functions," as used in this agreement, means a consumer or business task or process performed by a computer or computing device. This includes but is not limited to email, word processing, spreadsheets, database, scheduling, network or internet browsing and personal finance.
 - (viii) **Desktop Functions.** If your system performs desktop functions, then you must ensure that they: (i) are only used to support the application, and (ii) operate only when used with the application.
- e. **Specific Use.** The manufacturer designed the licensed device for a specific use. You may only use the software for that use.

f. **Backup copy.** You may make a single copy of the software for backup purposes, and may also use that backup copy to transfer the software if it was acquired as stand-alone software, as described below.

3. **Privacy; Consent to Use of Data.** Your privacy is important to us. Some of the software features send or receive information when using those features. Many of these features can be switched off in the user interface, or you can choose not to use them. By accepting this agreement and using the software you agree that Microsoft may collect, use, and disclose the information as described in the Microsoft Privacy Statement available at (aka.ms/privacy), and as may be described in the user interface associated with the software features.

4. **Transfer**

- a. **Software preinstalled on device.** If you acquired the software preinstalled on a device, you may transfer the license to use the software directly to another user, only with the licensed device. The transfer must include the software and, if provided with the device, an authentic Windows label including the product key. Before any permitted transfer, the other party must agree that this agreement applies to the transfer and use of the software.
- b. **Stand-alone software.** If you acquired the software as stand-alone software, you may transfer the software to another device that belongs to you. You may also transfer the software to a device owned by someone else if (i) you are the first licensed user of the software and (ii) the new user agrees to the terms of this agreement. You may use the backup copy we allow you to make or the media that the software came on to transfer the software. Every time you transfer the software to a new device, you must remove the software from the prior device. You may not transfer the software to share licenses between devices.

5. **Authorized Software and Activation.** You are authorized to use this software only if you are properly licensed and the software has been properly activated with a genuine product key or by other authorized method. When you connect to the Internet while using the software, the software will automatically contact Microsoft or its affiliate to confirm the software is genuine and the license is associated with the licensed device. You can also activate the software manually by Internet or telephone. In either case, transmission of certain information will occur, and Internet, telephone and SMS service charges may apply. During activation (or reactivation that may be triggered by changes to your device's components), the software may determine that the installed instance of the software is counterfeit, improperly licensed or includes unauthorized changes. If activation fails the software will attempt to repair itself by replacing any tampered Microsoft software with genuine Microsoft software. You may also receive reminders to

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7. **Geographic and Export Restrictions.** If your software is restricted for use in a particular geographic region, then you may activate the software only in that region. You must also comply with all domestic and international export laws and regulations that apply to the software, which include restrictions on destinations, end users, and end use. For further information on geographic and export restrictions, visit (aka.ms/georestrict) and (aka.ms/exporting).
8. **Support and Refund Procedures.** For the software generally, contact the device manufacturer or installer for support options. Refer to the support number provided with the software. For updates and supplements obtained directly from Microsoft, Microsoft may provide limited support services for properly licensed software as described at (aka.ms/mssupport). If you are seeking a refund, contact the manufacturer or installer to determine its refund policies. You must comply with those policies, which might require you to return the software with the entire device on which the software is installed for a refund.
9. **Binding Arbitration and Class Action Waiver if You Live in (or if a Business Your Principal Place of Business is in) the United States.**

We hope we never have a dispute, but if we do, you and we agree to try for 60 days to resolve it informally. If we can't, you and we agree to **binding individual arbitration before the American Arbitration Association ("AAA") under the Federal Arbitration Act ("FAA"), and not to sue in court in front of a judge or jury.** Instead, a neutral arbitrator will decide and the arbitrator's decision will be final except for a limited right of appeal under the FAA. **Class action lawsuits, class-wide arbitrations, private attorney-general actions, and any other proceeding where someone acts in a representative capacity aren't allowed. Nor is combining individual proceedings without the consent of all parties.** "We," "our," and "us" includes Microsoft, the device manufacturer, and software

installer.

- a. Disputes covered—everything except IP.** The term “dispute” is as broad as it can be. It includes any claim or controversy between you and the manufacturer or installer, or you and Microsoft, concerning the software, its price, or this agreement, under any legal theory including contract, warranty, tort, statute, or regulation, **except disputes relating to the enforcement or validity of your, your licensors’, our, or our licensors’ intellectual property rights.**
- b. Mail a Notice of Dispute first.** If you have a dispute and our customer service representatives can’t resolve it, send a Notice of Dispute by U.S. Mail to the manufacturer or installer, ATTN: LEGAL DEPARTMENT. If your dispute is with Microsoft, mail it to Microsoft Corporation, ATTN: LCA ARBITRATION, One Microsoft Way, Redmond, WA 98052-6399. Tell us your name, address, how to contact you, what the problem is, and what you want. A form is available at (aka.ms/disputeform). We’ll do the same if we have a dispute with you. After 60 days, you or we may start an arbitration if the dispute is unresolved.
- c. Small claims court option.** Instead of mailing a Notice of Dispute, and if you meet the court’s requirements, you may sue us in small claims court in your county of residence (or if a business your principal place of business) or our principal place of business—King County, Washington USA if your dispute is with Microsoft. We hope you’ll mail a Notice of Dispute and give us 60 days to try to work it out, but you don’t have to before going to small claims court.
- d. Arbitration procedure.** The AAA will conduct any arbitration under its Commercial Arbitration Rules (or if you are an individual and use the software for personal or household use, or if the value of the dispute is \$75,000 USD or less whether or not you are an individual or how you use the software, its Consumer Arbitration Rules). For more information, see (aka.ms/adr) or call 1-800-778-7879. To start an arbitration, submit the form available at (aka.ms/arbitration) to the AAA; mail a copy to the manufacturer or installer (or to Microsoft if your dispute is with Microsoft). In a dispute involving \$25,000 USD or less, any hearing will be telephonic unless the arbitrator finds good cause to hold an in-person hearing instead. Any in-person hearing will take place in your county of residence (of if a business your principal place of business) or our principal place of business—King County, Washington if your dispute is with Microsoft. You choose. The arbitrator may award the same damages to you individually as a court could. The arbitrator may award declaratory or injunctive relief only to you individually to satisfy your individual claim.

e. Arbitration fees and payments.

- (i) **Disputes involving \$75,000 USD or less.** The manufacturer or installer (or Microsoft if your dispute is with Microsoft) will promptly reimburse your filing fees and pay the AAA's and arbitrator's fees and expenses. If you reject our last written settlement offer made before the arbitrator was appointed, your dispute goes all the way to an arbitrator's decision (called an "award"), and the arbitrator awards you more than this last written offer, the manufacturer or installer (or Microsoft if your dispute is with Microsoft) will: (1) pay the greater of the award or \$1,000 USD; (2) pay your reasonable attorney's fees, if any; and (3) reimburse any expenses (including expert witness fees and costs) that your attorney reasonably accrues for investigating, preparing, and pursuing your claim in arbitration. The arbitrator will determine the amounts unless you and we agree on them.
- (ii) **Disputes involving more than \$75,000 USD.** The AAA rules will govern payment of filing fees and the AAA's and arbitrator's fees and expenses.
- (iii) **Disputes involving any amount.** If you start an arbitration we won't seek our AAA or arbitrator's fees and expenses, or your filing fees we reimbursed, unless the arbitrator finds the arbitration frivolous or brought for an improper purpose. If we start an arbitration we will pay all filing, AAA, and arbitrator's fees and expenses. We won't seek our attorney's fees or expenses from you in any arbitration. Fees and expenses are not counted in determining how much a dispute involves.

f. Must file within one year. You and we must file in small claims court or arbitration any claim or dispute (except intellectual property disputes — see Section 9.a.) within one year from when it first could be filed. Otherwise, it's permanently barred.

g. Severability. If the class action waiver is found to be illegal or unenforceable as to all or some parts of a dispute, those parts won't be arbitrated but will proceed in court, with the rest proceeding in arbitration. If any other provision of Section 9 is found to be illegal or unenforceable, that provision will be severed but the rest of Section 9 still applies.

h. Conflict with AAA rules. This agreement governs if it conflicts with the AAA's Commercial Arbitration Rules or Consumer Arbitration Rules.

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 - c. European Union.** The academic use restriction in Section 12.d(i) below does not apply in the jurisdictions listed on this site: (aka.ms/academicuse).
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- e. **Other regions.** See (aka.ms/variations) for a current list of regional variations

12. Additional Notices.

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- b. **H.264/AVC and MPEG-4 visual standards and VC-1 video standards.** The software may include H.264/MPEG-4 AVC and/or VC-1 decoding technology. MPEG LA, L.L.C. requires this notice:

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Check with your device manufacturer to determine if your device is covered by a warranty.

修理依頼フォーム

必要事項をご記入の上、
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FV1400-C シリーズ

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