



ASEM On-Machine 6300MA Monitors and On-Machine 6300PA Panel PCs

Catalog Numbers 6300MA and 6300PA



Allen-Bradley

by ROCKWELL AUTOMATION

User Manual

Original Instructions

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.



WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT Identifies information that is critical for successful application and understanding of the product.

These labels may also be on or inside the equipment to provide specific precautions.



SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.



BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.



ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

The following icon may appear in the text of this document.



Identifies information that is useful and can help to make a process easier to do or easier to understand.

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Notes:

About This Publication

This publication provides instructions on how to set up, configure, and maintain ASEM™ On-Machine® 6300MA monitors and On-Machine 6300PA panel PCs.

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Addition of On-Machine 6300MA monitor information	throughout
Addition of FactoryTalk® Remote Access™ Basic runtime license feature for On-Machine 6300PA panel PCs	11
Addition of replacement requirements within Replace or Install an Emergency Stop Button section for pre-installed E-stop button kits	39
Addition of Enable ThinManager instruction for 6300PA On-Machine panel PCs	89
Relocation of accessories from the Technical Specifications appendix to new Accessories appendix	123
Addition of replacement requirements within Emergency Stop Buttons of Accessories appendix	126
Addition of PCB Connector Replacement Part accessory	129

Terminology

Throughout this user manual, the term “On-Machine product” is used to refer to all ASEM On-Machine 6300MA and On-Machine 6300PA catalog number variations; “On-Machine monitor” is used to refer to all 6300MA catalog number variations; “On-Machine panel PC” is used to refer to all 6300PA catalog number variations.

Download Firmware, AOP, EDS, and Other Files

Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes from the Product Compatibility and Download Center at rok.auto/pcdc.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
ASEM On-Machine Installation Instructions, publication 6300-IN001	Provides installation steps to connect peripheral cables and mount an On-Machine product.
ASEM 6300 Product Line Technical Data, publication 6300-TD001	Provides an overview of the ASEM 6300 product line overview, catalog number explanations, and technical specifications.
ASEM 6300V On-Machine Accessories, publication 6300V-PC005	Provides a list of available accessories for ASEM 6300 On-Machine monitors and panel PCs.
ASEM 6300V Remote Video Link (RVL) Receiver Installation Instructions, publication 6300V-IN004	Provides installation steps to connect a RVL receiver to other ASEM components.
ASEM 6300V RVL Transmitter Installation Instructions, publication 6300V-IN005	Provides installation steps to connect a RVL transmitter to other ASEM components.
ASEM 6300V CFast Solid-state Storage Drive (SSD) Installation Instructions, publication 6300V-IN006	Provides installation instructions, removal of, and technical data for a 6300V C-Fast SSD cards.
EtherNet/IP Network Devices User Manual, ENET-UM006	Describes how to configure and use EtherNet/IP devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
System Security Design Guidelines Reference Manual, SECURE-RM001	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Visualization Solutions Selection Guide, publication VIEW-SG002	Provides information to make initial decisions about the visualization products that are best suited for your system requirements.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

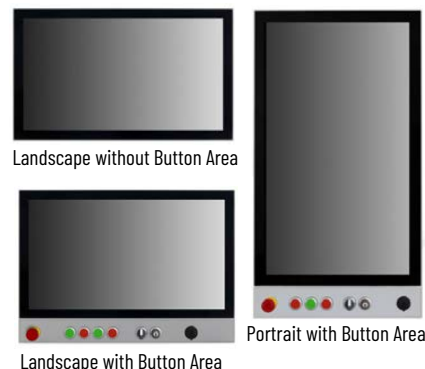
Notes:

Overview

On-Machine products are the evolution of arm mount, fanless industrial monitors and panel PCs.

With full IP65 environmental protection, On-Machine products are an excellent match for washdown applications, such as food processing and life sciences.

Made of a full IP65 cast aluminum chassis and powder coated with anti-scratch treatment, these ASEM On-Machine products are compatible with the most-used installation standards and are available with an optional remote video link (RVL) port. 120V AC models are suitable for non hazardous industrial environments whereas 240V DC models are suitable for hazardous industrial environment.



Features

All On-Machine devices features include:

- Widescreen formats in various display sizes and aspect ratios
- Aluminum or aluminum and glass TrueFlat bezel types
- Multi-touch or single touch (standard) sensor options
- Bottom arm mount, top arm mount, or VESA mount options

Features of On-Machine 6300PA panel PCs include:

- An optional configurable button area to accommodate Ø22 mm (0.87 in.) hard-wired elements such as light emitting diode (LED) status indicators, lever switches, key lock switches, encoders, and an emergency stop (E-stop) button to suit your industrial application needs.
- An all-in-one motherboard based on the seventh generation Intel® Core™ i3, i5, i7 and Celeron® of the Intel Kaby Lake™ U platform that provides three Ethernet 10/100/1000 Mbps ports that support Jumbo Frame and Wake on LAN functionalities, two USB 3.0 ports, a SATA III CFast slot, M.2 connector for NVMe/SATA III SSD and up to 16 GB RAM with one DDR4 SODIMM module.
- Support for Microsoft Windows 10 Internet of Things (IoT) Enterprise 2019 64 bit OS ^(a)
- ThinManager software ready which allows unprecedented control and security in a sustainable and scalable platform regardless of the size of your industrial environment or the number of facilities.
- FactoryTalk® Remote Access™ Basic runtime license which delivers secure communications over the internet to enable performance and security for on-demand remote assistance, software installation, programming, troubleshooting, and maintenance of your ASEM 6300 industrial PC. When upgraded to FactoryTalk Remote Access Pro it can be used to support any remote automation system and application.

Features of On-Machine 6300MA monitors include:

- Standard DisplayPort + DVI monitor or as Long Distance (RVL) monitors, its hardware provides a USB HUB with three USB 2.0 ports.

(a) Other operating systems (OSs) (such as Linux, VxWorks, QNX) have not been certified. Other OSs reasonably supported by the Intel platform can be used after verification of compatibility.

Approximate Dimensions

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



If you will be adding an accessory (such as side handles, perimeter handle, or keyboard tray), plan for a wider width and height at your installation site. See [Accessory Installation on page 21](#) for approximate dimensions of the chosen accessory.

Table 1 - Approximate Dimensions [mm (in.)] – Landscape Versions

Without Button Area

With Button Area

Dimension	15.6 in.	18.5 in.	21.5 in.	24 in.
A	396.30 (15.60)	461.80 (18.18)	528.80 (20.82)	584.00 (23.00)
B	245.80 (9.68)	282.60 (11.13)	320.20 (12.61)	352.00 (13.86)
C	25.40 (1.00)	25.40 (1.00)	25.50 (1.00)	45.00 (1.77)
D	25.50 (1.00)	25.50 (1.00)	25.40 (1.00)	
E	304.30 (11.98)	341.10 (13.43)	378.70 (14.91)	
F	58.50 (2.30)	58.50 (2.30)	58.50 (2.30)	

Table 2 - Approximate Dimensions [mm (in.)] – Portrait Versions

With Button Area

Dimension	21.5 in.	24 in.
A	320.20 (12.61)	352.80 (13.89)
B	528.80 (20.82)	585.20 (23.04)
C	25.40 (1.00)	25.70 (1.01)
D	25.50 (1.00)	25.70 (1.01)
E	587.30 (23.12)	643.90 (25.35)
F	58.50 (2.30)	58.70 (2.31)

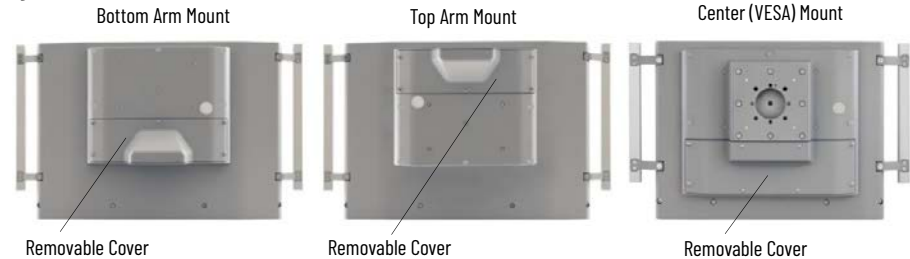
Back Panel Features

All On-Machine products feature an integrated flange on the back panel to accommodate a swing arm system (not supplied). Depending upon your installation preference, this integrated flange can be ordered to accept three types of arm mounting: bottom mount, top mount, or center (VESA) mount.

Other features of the back panel include:

- a removable cover which protects the I/O ports, slots, and button cabling area from the elements in your industrial environment.
- four fixing points to attach accessories such as side handles (shown in [Figure 1](#)), perimeter handle, or keyboard support tray.

Figure 1 - Back Panel Features



Peripheral Connections

[Table 3](#) shows the I/O ports for peripheral connections to your On-Machine product, accessible when the removal cover is detached.

IMPORTANT To comply with EN 61326-1, the following cable types must be shielded: Digital I/O, DisplayPort, DVI-D, Ethernet LAN, RS-232 DB9M, remote video link (RVL), and USB 3.0. All I/O cables must be used only indoors, and USB cables must be less than 3 m (9.84 ft) in length.

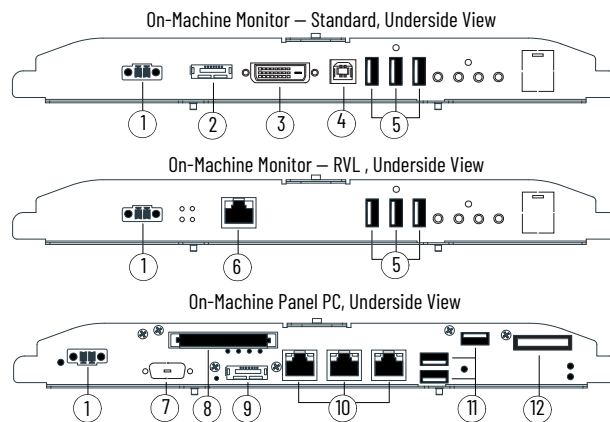


To order cables which are EN61326-1 compliant, see ASEM 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).



The optional RVL interface (Note No. 6 in [Table 3](#)) allows for the transmission of DVI-D and USB 2.0 signals at distances up to 100 m (328 ft). Your On-Machine product integrates the receiving section RVL and must be connected via a Cat5e SF/UTP or Cat6A S/FTP Ethernet cable to a RVL transmission system.

Table 3 - Location of I/O Ports



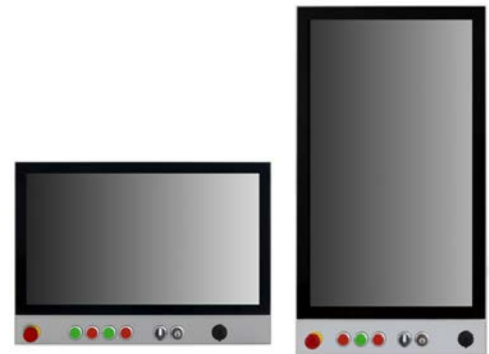
Note No.	Description	Attribute
1	Power Input	Unshielded
2	DisplayPort	Shielded
3	DVI-D Dual Link	
4	USB Type B	
5	USB 2.0 Type A	
6	Remote Video Link (RVL) In	

Note No.	Description	Attribute
7	COM Port <i>optional</i>	
8	CFast SSD Slot	—
9	DisplayPort or RVL Out <i>optional</i>	Shielded
10	Ethernet — quantity of 3	
11	USB 3.0	
12	Battery Slot	—

Button Area

Select On-Machine products feature a configurable front button area which allows for the installation of Ø22 mm (0.87 in.) hard-wired elements such as:

- light emitting diode (LED) status indicators,
- lever switches,
- key lock switches,
- encoders, and
- an emergency stop (E-stop) button.



When the cover is removed, the connection area is accessible.

Table 4 - Terminal Block Connections

Shown with LCD Facing Down

A technical diagram showing the underside of a rectangular control panel. The panel has a central horizontal slot and several mounting holes. On the left and right sides, there are terminal blocks. On the left side, a terminal block is labeled with a circled '1'. Below it, a screw is labeled with a circled '3'. On the right side, a terminal block is labeled with a circled '2'. Another terminal block on the far right is labeled with a circled '1'. The diagram is a line drawing with no shading.

Note No.	Description
1	Terminal Block for Elements
2	Terminal Block for E-stop Button
3	Earth Screw



ATTENTION: If a SIL-3 E-stop button is used, familiarize yourself with the content within [Safety – Emergency Stop Button SIL-3 \[Rel. A\] on page 99](#).

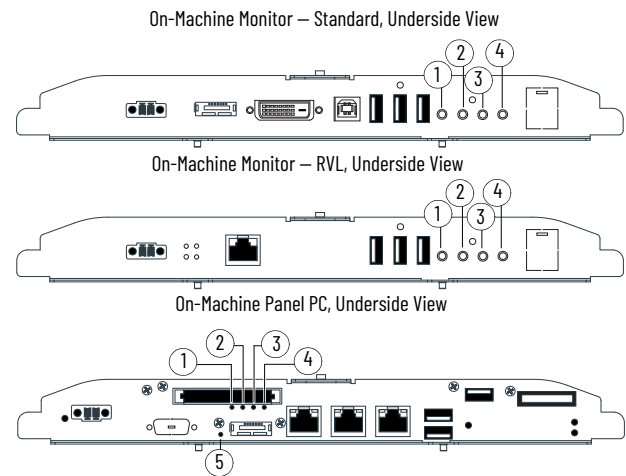


ATTENTION: Si un bouton d'arrêt d'urgence SIL-3 est utilisé, familiarisez-vous avec le contenu de ce [Safety – Emergency Stop Button SIL-3 \[Rel. A\] on page 99](#)

LED Status Indicators

[Table 5](#) provides the location and function of various light emitting diode (LED) status indicators located on the underside of your On-Machine product with its rear cover removed.

Table 5 - LED Status Indicators



Note No.	LED Status Indicator
1	Watchdog
2	Over Temperature/Battery
3	On/Off/Standby
4	Hard Disk Drive/Solid State Drive (HDD/SSD)
5	Remote Video Link (RVL)

Installation

Environment Requirements

Follow these environment requirements to make sure that your On-Machine product provides service with excellent reliability.

IMPORTANT This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC 60664-1), at altitudes up to 2000 m (6561 ft) without derating. This equipment is considered Group 1, Class A industrial equipment according to IEC/EN 61326-1. Without appropriate precautions, there can be potential difficulties with electromagnetic compatibility in other environments due to conducted as well as radiated disturbance

- Your installation site:
 - must have sufficient power,
 - must be indoors and non-hazardous,
 - must not expose your On-Machine product to direct sunlight, and
 - must be placed in an industrial or control room environment that uses some form of power isolation from the public, low voltage mains.
- The surrounding air temperature must not exceed the maximum temperature for your On-Machine product.
- The ambient air temperature range is:
0...50 °C (32...122 °F) for all processors.
- The surrounding air temperature range for storage is:
-10...+60 °C (14...140 °F).
- The relative humidity of the ambient air must be:
20...90% noncondensing at 0...40 °C (32...104 °F) and
20...80% noncondensing at 41...50 °C (105...122 °F).

Power Requirements

The power requirements for your On-Machine product are listed below.

- The output voltage rise time has to be less than 100 ms.
- Consider the working temperature and the thermal derating of the power supply.
- The inrush current cannot exceed a peak current of 10 A and a pulse width time of 400 µs.
- The On-Machine product must:
 - be connected to a 24V DC (18...32V) power supply that satisfies the requirements of safe extra low voltage (SELV) in accordance with IEC/EN/DIN EN/UL60950-1 and as defined in IEC-61010-2-201, power supply per UL.
 - use an isolated power supply with galvanic isolation to help prevent common mode noise at low/medium frequencies on the power supply line, ground loop noise, and overvoltage caused by lightning.

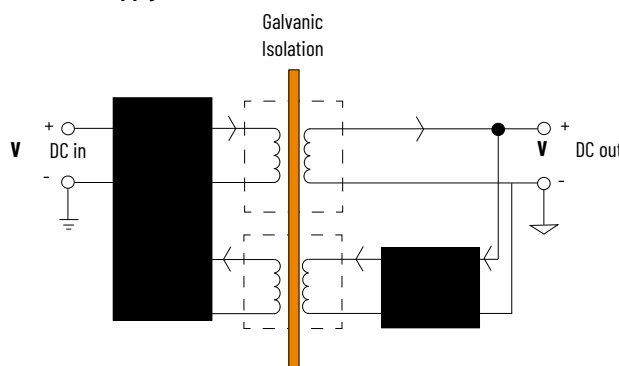
Isolated Power Supply

IMPORTANT The system has to be connected to a 24V DC (18-32V) power supply which satisfies the requirements of safe extra low voltage (SELV) in accordance with IEC/EN/DIN EN/UL60950-1.

An isolated power supply with galvanic isolation is required to prevent:

- Common mode noise at low/medium frequencies on the power supply line
- Ground loop noise
- Extra-voltage caused by lightning

Figure 2 - Isolated Power Supply with Galvanic Isolation



Mounting Requirements

Choose a suitable, ergonomic mounting height. See the approximate dimensions listed in [Approximate Dimensions on page 12](#) to plan the mounting height.

Unpack the Product

Before you unpack your On-Machine product, inspect the shipping carton for damage. If damage is visible, immediately contact the shipper and request assistance. Otherwise, proceed with unpacking.



Keep the original packing material in case your panel PC must be you must returned for repair or transported to another location.

Required Tools

You need the following tools to install and connect your On-Machine product.

- DC power supply (see [Power Requirements on page 15](#))
- Torque limiting screwdriver with 2.5 mm hex key bit
- I/O cables, which are shielded and rated for indoor use
- Wire stripper, cutter, and crimper tool
- Clean microfiber cloth
- For bottom arm, top arm, or VESA mounting:
 - Adapter plate
 - Monitor arm or VESA bracket
- Optional accessories:
 - CFast card (for panel PC only)
 - Connection terminal buttons and E-stop button for select models with button area
 - Side handles or perimeter handle, and keyboard tray



For proper selection of an adapter plate, bracket, and other optional accessories, see ASEM 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).

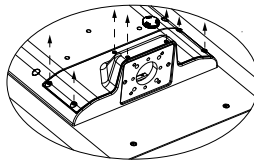
Prepare for Installation



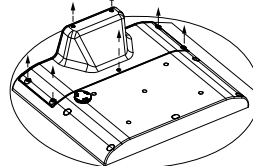
To help protect the LCD from inadvertent damage, set your On-Machine product on a clean microfiber towel with the LCD facing downward throughout the installation process.

1. Set your On-Machine product with the LCD facing down onto a clean surface.
2. Use a 2.5 mm torque-limiting screwdriver to remove the M3 screws from the cover.

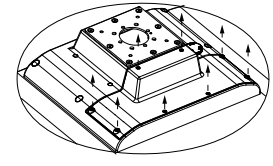
Bottom Arm Mount



Top Arm Mount



VESA Mount



3. Set the screws and cover aside. The ground screw, terminal ports, I/O ports, and slots are now accessible.

Installation

Follow these steps to install your On-Machine product.

Attach Accessories (optional)

1. Attach the handles and keyboard tray (optional, not supplied).
See [Handles and Keyboard Support Tray on page 22](#).
2. Attach the adapter plate (not supplied). See [Adapter Plates on page 26](#).
3. Connect elements (for select catalog numbers).
See [Replace or Install an Element on page 29](#).
4. Connect an emergency stop (E-stop) Push Button (for select catalog numbers).
See [Replace or Install an Emergency Stop Button on page 39](#).

Connect DC Power

Install the Ground Wire



Use a ground wire with: an insulation color that is approved by your local inspection authority and a cross-section of 2.5 mm² (AWG 14) with copper conductor, that is certified for operation up to 75 °C (167 °F).

Table 6 - Ground Wire Assembly



Sequence No.	Description
1	Toothed Washer
2	Eyelet Terminal
3	Washer
4	Lock Washer
5	Ground (Earth) Screw

1. Turn off the main power switch or breaker.
2. Remove the supplied nut, eyelet terminal, and washers from the ground screw located on the underside of your On-Machine product (see Sequence No. 3 in [Table 6](#)).
3. Insert the stripped end of the grounding wire into the open end of the lug and crimp it securely to the wire.
4. Install the ground wire to the ground screw according to the sequence shown at right.
5. Tighten the nut to the ground screw.

Attach the DC Power Connector Assembly

The factory-supplied DC power connector assembly provides strain relief for the DC power wires by reducing their movement. To assemble and attach the connector assembly, perform the following steps using [Figure 3](#) and [Table 7](#) to guide you.

Figure 3 - DC Terminal Power Connector Assembly

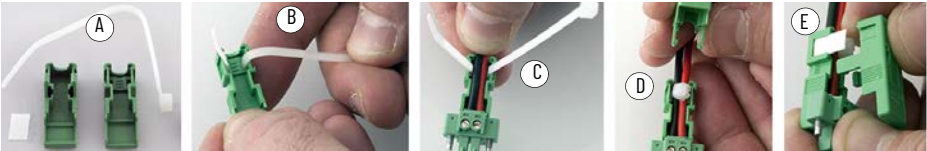
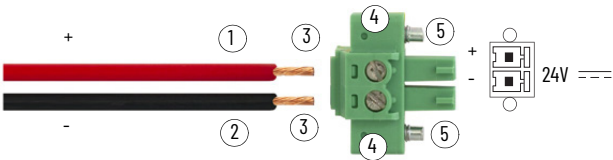




Table 7 - DC Terminal Block Connection Specifications



Note No.	Description	Values
1	DC+ (24V DC nominal) recommended power wire size	1.5 mm ² (16 AWG)
2	DC- (0V DC) recommended power wire size	1.5 mm ² (16 AWG)
3	Stripped wire length	7 mm (0.275 in.)
4	Torque range to secure DC power wires	0.22...0.25 N•m (1.95...2.21 lb•in.)
5	Torque value to reinstall DC terminal block to chassis	0.3 N•m (2.66 lb•in.)

- Remove the DC terminal block from your product.
 - Open the power connector assembly kit (supplied)(see A of [Figure 3](#)).
 - Insert the cable tie through the slots of the appropriate connector clamp (see B of [Figure 3](#)).
 - Strip the end of each DC power wire to the length specified (see Note No. 3, [Table 7](#)).
- IMPORTANT** DC power wires must be of stranded copper and sized according to Note No. 1 and Note No. 2 in [Table 7](#).
- Insert each stripped end into the DC terminal block (see [Table 7](#)).
 - Tighten the screws on top of the terminal block to secure the DC power wires to 0.22...0.25 N•m (1.95...2.21 lb•in.)(see Note No. 4, [Table 7](#)).
 - Slide the connector half with the attached cable tie onto the end of the DC terminal block (see C of [Figure 3](#)).
 - Tighten the cable tie so it is snug against the terminal wires.
 - Use a wire cutter to remove the excess end of the cable tie (see D on [Figure 3](#)).
 - Install the white label supplied with the kit (see E of [Figure 3](#)).
-  You can use the white label for identification or other information.
- Align and install the other connector clamp half to complete the assembly.
-  When installed correctly, both tabs of the clamp half lock into place.
- Reconnect the DC terminal block with the connector assembly to the chassis.
 - Use the plastic screwdriver (supplied) to torque the DC terminal block flange screws to 0.3 N•m (2.66 lb•in.)(see Note No. 5, [Table 7](#)).
 - Insert the DC power wires through the mounting area of your On-Machine product cover.

Attach Peripheral Cables

-
- IMPORTANT** Whenever two connected pieces of equipment are far apart, it is possible that their ground connections could be at another potential level. To overcome these possible grounding problems, the following bonding methods are recommended:
- Method 1:** Connect the data cable shields to the equipotential bonding rail on both sides before connecting the cable to the interfaces.
- Method 2:** Use an equipotential bonding cable (16 mm² or #6 AWG) to connect the grounds between your On-Machine product and component(s).
-

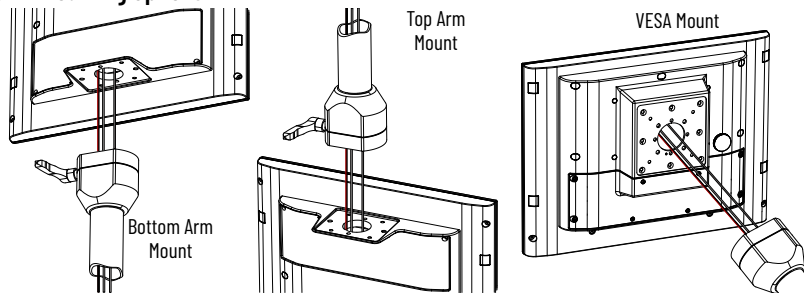
-
- IMPORTANT** To comply with EN 61326-1, be sure that the selected cables comply with the attribute listed in [Table 3 on page 13](#). All I/O cables must be used only indoors, and USB cables must be less than 3 m (9.84 ft) in length.
-

1. Connect cables to the appropriate I/O ports on your On-Machine product. See [Table 3 on page 13](#) for I/O port locations.
 2. *Optional:* Insert a CFast card into the CFast card slot. See the CFast Card Installation Instructions, publication [6300V-IN006](#).
-

- IMPORTANT** Do not power on your On-Machine product or connect the installed peripheral cables to another component until instructed to do so.
-

Mount the On-Machine Product

Figure 4 - Mounting Options



1. For bottom arm or top arm mount: Insert the DC power cable and connected peripheral cables through the arm (not supplied).
For VESA mount: Route the DC power cable and connected peripheral cables through the VESA mounting plate and VESA bracket (not supplied).
 2. Attach the bottom arm, top arm, or VESA mount kit to your On-Machine product according to the manufacturer's installation instruction.
-

- IMPORTANT** Be sure that all cables are not pinched or kinked when tightening the screws of the mounting plate.
-

3. Attach the bottom arm, top arm, or VESA mount to the mounting surface according to the manufacturer's installation instruction.

Reattach the Cover

1. Route the connected DC power cables and peripheral cables through the mounting hole of the cover.

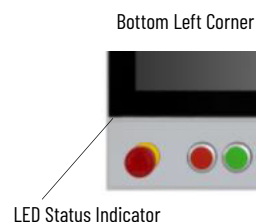
IMPORTANT Be sure that all cables are not pinched or kinked when tightening the screws to the cover.

2. Using a 2.5 mm torque limiting screwdriver, secure the cover with the eight M3 screws.
3. Torque the screws to a value of 1...1.2 N•m (8.85...10.62 lb•in.).

IMPORTANT Do not overtighten the screws. Overtightening can cause damage to the gasket attached to the cover.

Complete the Installation

1. Connect the free end of the peripheral cables to another component (such as a remote video link (RVL) receiver, RVL transmitter, or industrial PC. See the installation instructions shipped with these components for proper power-on sequence.
2. Connect the free ends of the installed element(s) (such as an E-stop or push button) cables to Control Logix® I/O points or other selected endpoints.
3. Connect a required SELV DC power supply (not provided) to your On-Machine product and to the power outlet.



IMPORTANT To minimize ground loop currents and noise, we recommend DC powered models use only one grounded connection (see [Install the Ground Wire on page 17](#)). Follow all guidelines listed in [Power Requirements on page 15](#).

A light emitting diode (LED) status indicator illuminates on the lower left front bezel of your On-Machine product. For the location of other LED status indicators, see [LED Status Indicators on page 14](#).

Accessory Installation

To enhance your On-Machine product experience, an array of accessories are available:

- Handles (either side handles or a perimeter handle) and keyboard support tray allow the end user to maneuver the product to adapt to their working environment.
- Mounting plate accommodate various models of monitor arms (not supplied) - bottom arm mount, top arm mount, or center (VESA) mount - to best suit your installation site and schema.
- CFast SSD card specifically designed for industrial use are available in various storage capacities (60 GB, 120 GB, or 240 GB) to allow for quick data transfer.



For a complete list of accessories and specific catalog numbers, see 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).

Prepare for Accessory Installation

Shut Down

Before installing any accessory to your On-Machine product, you must properly shut down the system to be sure all data is retained.

IMPORTANT Depending upon your schema, other connected components may need to be shut down before performing the On-Machine product shut down.

To properly shut down your On-Machine product, perform these steps.

1. For systems using Microsoft Windows™ Operating System (OS):
 - a. Press the Windows icon at the bottom right of the LCD screen.
 - b. Select Power.
 - c. Select Shut Down.

For systems using another OS:

- a. See the software manufacturer's instructions to properly shut down the OS.



The system will be put in a soft-off state where the light emitting diode (LED) status indicator on the front side led will illuminate to a solid yellow.

2. Disconnect the DC power supply connected to your On-Machine monitor from the outlet.



An ON/OFF switch is not available on your On-Machine monitor.

The LED status indicator on the front side of your On-Machine product will not emit a color, indicating power is no longer being supplied.



For most maintenance procedures, you must set your On-Machine product with the LCD facing down on the clean, soft microfiber cloth. Often, the peripheral cables do not have the required length do so. For this reason, you must (a.) shut down any other connected components according to their manufacturer's instructions, then (b.) disconnect the peripheral cables.

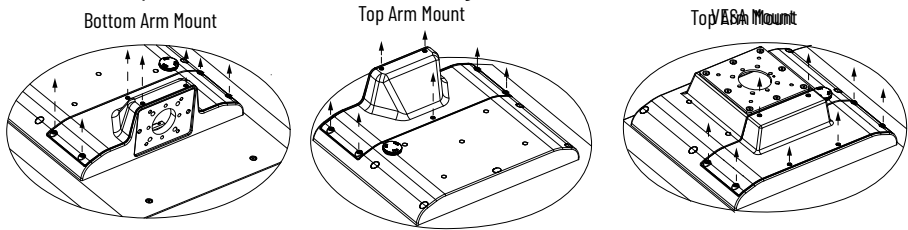
3. If required, shut down any other connected component.

Remove the Cover



This procedure is required for mounting plate and CFast SSD card accessory installation only. For handle accessories, proceed to [Handles and Keyboard Support Tray on page 22](#).

- 1. Place a clean, soft microfiber cloth down on a flat surface.
- 2. Place your On-Machine product with the LCD facing down on the clean, microfiber cloth.
- 3. Disconnect cables from other components (such as a RVL transmitter or RVL receiver) to accommodate setting your On-Machine product with the LCD facing down.
- 4. Release the arm from your On-Machine product.
- 5. Use a torque screwdriver to remove the eight screws from the cover.



- 6. Set the eight screws aside.
- 7. Gently lift the cover from your On-Machine product and set it aside.
- 8. Proceed with the applicable accessory installation within this chapter.
- 9. Proceed to [Reinstall Cover](#) once the accessory has been installed.

Reinstall Cover

- 1. Align the cover with holes.

IMPORTANT Be sure that all cables are not pinched or kinked during the process if inserting and tightening the eight screws.

- 2. Insert the eight screws in the holes.
- 3. Torque the eight screws to 1...1.2 N•m (8.85...10.62 lb•in.).

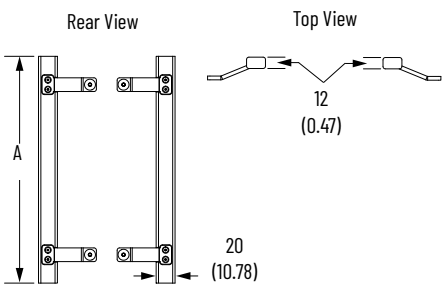
IMPORTANT Do not overtighten the screws. Overtightening can cause damage to the gasket attached to the cover.

Handles and Keyboard Support Tray

Approximate Dimensions

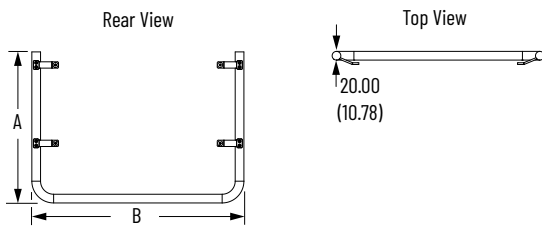
Dimensions that are shown in [Table 8...Table 10](#) are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Table 8 - Approximate Dimensions [mm (in.)]: Side Handles



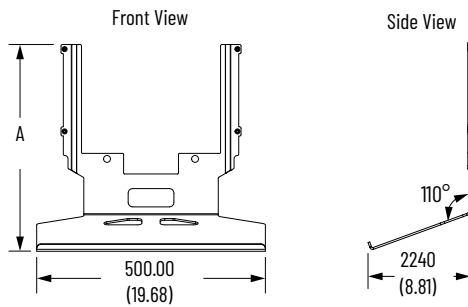
Dimension	Button Panel Area	Landscape Models				Portrait Models	
		15.6 in.	18.5 in.	21.5 in. LCD	24 in. LCD	21.5 in. LCD	24 in. LCD
A	with	240.0 (9.45)	276.0 (10.87)	314.0 (12.36)	347.0 (13.66)	427.0 (16.81)	427.0 (16.81)
	without						

Table 9 - Approximate Dimensions [mm (in.)]: Perimeter Handle



Dimension	Button Panel Area	Landscape Models				Portrait Models	
		15.6 in.	18.5 in.	21.5 in.	24 in.	21.5 in.	24 in.
A	with	346.9 (13.65)	324.5 (12.77)	362.5 (14.27)	453.2 (17.84)	218.2 (8.59)	246.5 (9.70)
	without	288.4 (11.35)			394.7 (15.53)		
B	with	487.0 (19.17)	552.5 (21.75)	619.5 (24.38)	675.9 (26.61)	410.3 (16.15)	442.9 (17.43)
	without						

Table 10 - Approximate Dimensions [mm (in.)]: Keyboard Support Tray



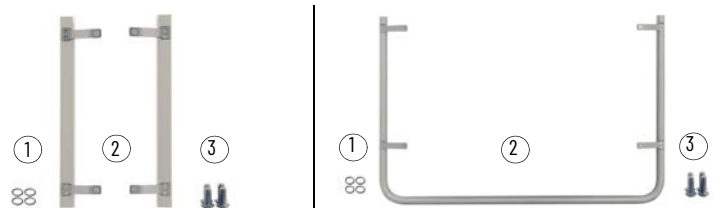
Dimension	Button Panel Area	For Landscape Models				For Portrait Models	
		15.6 in.	18.5 in.	21.5 in.	24 in.	21.5 in.	24 in.
A	with	452.00 (17.79)	431.00 (16.96)	527.00 (20.74)	559.00 (22.00)	305.00 (12.00)	333.00 (13.11)
	without	394.00 (15.51)		469.00 (18.46)	501.00 (19.72)		

Unpack the Accessory

Before you unpack your accessory, inspect the shipping carton for damage. If damage is visible, immediately contact the shipper and request assistance. Otherwise, proceed with unpacking.

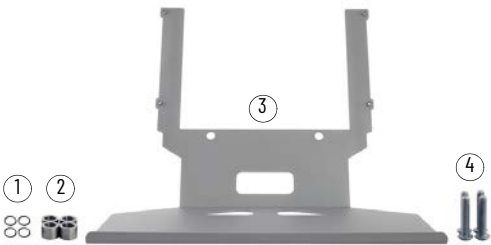
Your On-Machine accessory ships with the parts shown in [Table 11](#) and [Table 12](#).

Table 11 - Accessory Parts and Installation Sequence: Side Handles and Perimeter Handle



Sequence No.	Side Handles	Perimeter Handle
1	O-rings (4 quantity)	O-rings (4 quantity)
2	Side Handles (2 quantity)	Perimeter Handle (1 quantity)
3	Landscape: M5 x 16 mm Screws (4 quantity)	Landscape: M5 x 16 mm Screws (4 quantity)
	Portrait: M5 x 30 mm Screws (4 quantity)	Portrait: M5 x 16 mm Screws (2 quantity) and M5 x 30 mm Screws (2 quantity)

Table 12 - Accessory Parts and Installation Sequence: Keyboard Support Tray




Sequence No.	Keyboard Support Tray
1	O-rings (4 quantity)
2	Spacers (4 quantity)
3	Keyboard Support Tray (1 quantity)
4	Landscape: M5 x 25 mm Screws (4 quantity)
	Portrait: M5 x 16 mm (2 quantity) and M4 x 16 mm (2 quantity)

Required Tools

- Hexagonal 2.5 mm screwdriver
- Torque limiting screwdriver with 2.5 mm hex key bit

Remove the Existing Hardware

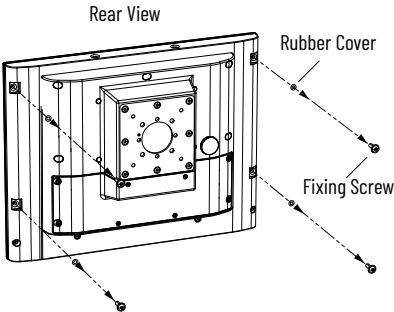
Follow the instructions below to remove the existing hardware from the fixing points on your On-Machine product.

 Though a VESA mount, landscape style On-Machine product is illustrated, the instructions still apply to all On-Machine product mounting types and portrait styles.

1. Properly shut down your On-Machine product. See [Shut Down on page 93](#).

IMPORTANT Be sure the DC supply is disconnected.

2. Remove and discard the four rubber covers from the four fixing points on the backside of your On-Machine product.
3. Use a hexagonal 2.5 mm screwdriver to remove the four fixing screws from the four fixing points on your On-Machine product.
Discard the four fixing screws.
4. Remove and discard the four o-rings from the four fixing points.



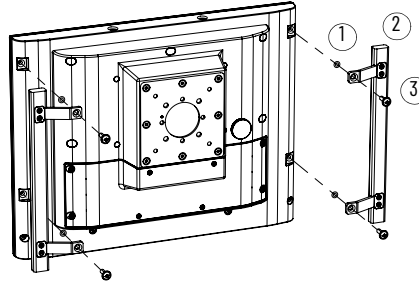
Install the Accessory



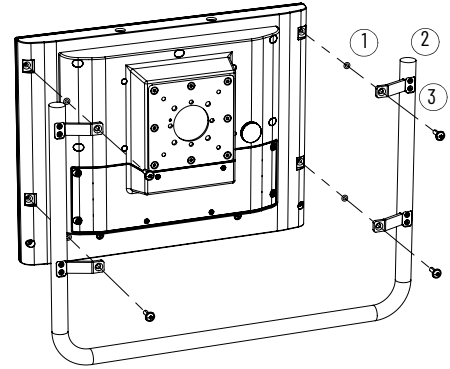
Although a VESA mount, landscape style On-Machine product is shown, the instructions still apply to all mounting types and portrait styles of On-Machine products.

For Side Handles or Perimeter Handle Installation

Side Handles Installation



Perimeter Handle Installation

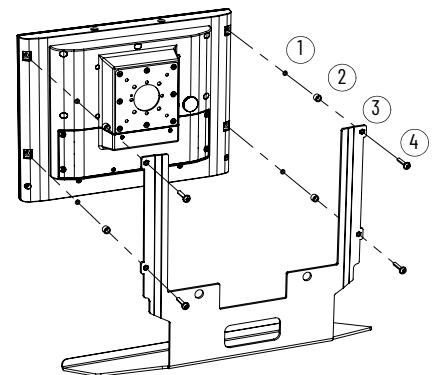


1. Insert a new o-ring (Sequence No. 1 of [Table 11 on page 23](#)) into each of the four fixing points.
2. Align the mounting holes of your side handles or perimeter handle (Sequence No. 2 of [Table 11 on page 23](#)) over the four fixing points on your On-Machine product.
3. Insert a new M5 x 16 mm screw (Sequence No. 3 of [Table 11 on page 23](#)) into each of the four fixing points.
4. Use a 2.5 mm torque limiting screwdriver to tighten the four fixing screws to a torque of 1.9 N•m (16.8 lb•in.).

For Keyboard Support Tray Installation

1. Insert a new o-ring (Sequence No. 1 of [Table 12 on page 24](#)) into each of the four fixing points.
2. Insert a spacer (Sequence No. 2 of [Table 12 on page 24](#)) into each of the four fixing points.
3. Align the mounting holes on the keyboard support tray (Sequence No. 3 of [Table 12 on page 24](#)) with the four fixing points on back side of your On-Machine product.
4. Insert a new M5 x 30 mm screw (Sequence No. 4 of [Table 12 on page 24](#)) into each of the four fixing points.
5. Use a 2.5 mm torque limiting screwdriver to tighten each of the M5 x 30 mm screws to a torque of 1.9 N•m (16.8 lb•in.).

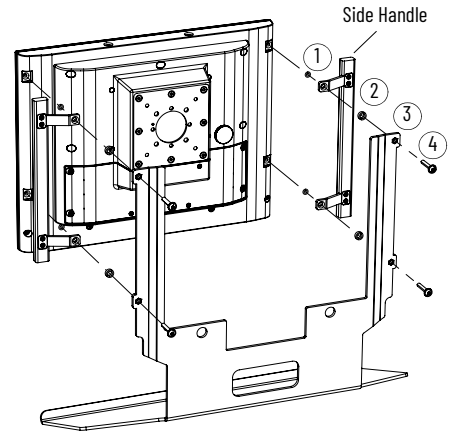
Keyboard Support Tray Installation



Side Handles with Keyboard Support Tray Installation

IMPORTANT Do not use the hardware packed with the side handles for this installation type. Only use the hardware packed with the keyboard support tray. See [Table 12 on page 24](#) for the list of supplied hardware provided with the keyboard support tray.

1. Insert a new o-ring (Sequence No. 1 of [Table 12 on page 24](#)) into each of the four fixing points.
2. Align the mounting holes of both side handles (shown at right) with the four fixing points on back side of your On-Machine product.
3. Insert a spacer (Sequence No. 2 of [Table 12 on page 24](#)) into each of the four fixing points.
4. Align the mounting holes on the keyboard support tray (Sequence No. 3 of [Table 12 on page 24](#)) with the aligned side handles.
5. Insert a new M5 x 30 mm screw (Sequence No. 4 of [Table 12 on page 24](#)) into each of the four fixing points.
6. Use a 2.5 mm torque limiting screwdriver to tighten each of the M5 x 30 mm screws to a torque of 1.9 N•m (16.8 lb•in.).



Adapter Plates

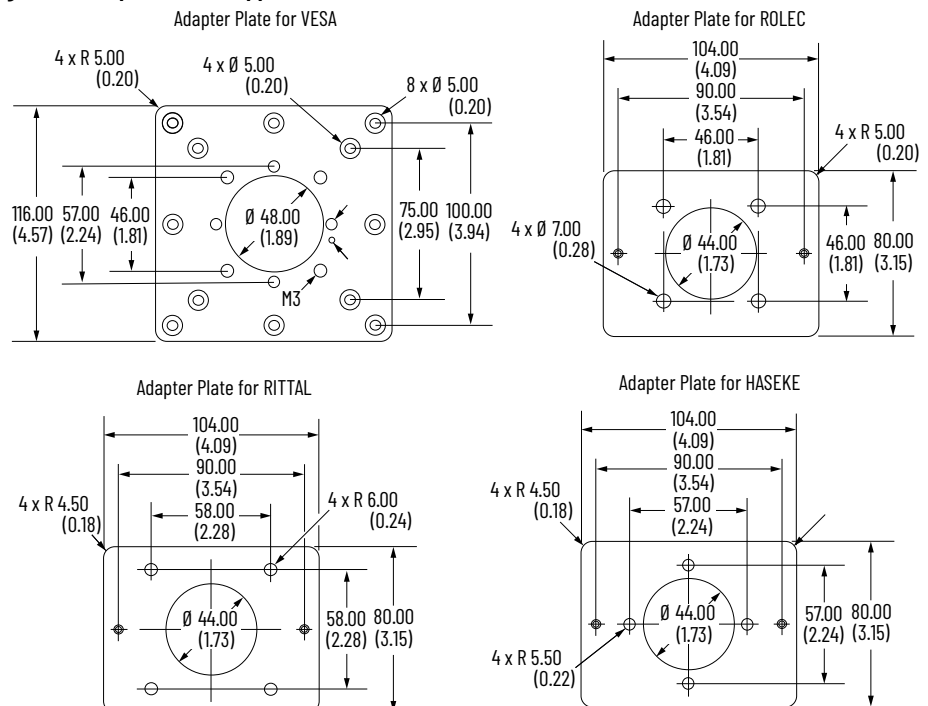


To identify which adapter plate you need to order and the proper orientation of the adapter plate to be attached your On-Machine product, see the documents supplied by the mounting kit manufacturer and ASEM 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).

Approximate Dimensions

Dimensions that are shown in [Figure 5 on page 26](#) are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Figure 5 - Adapter Plates: Approximate Dimensions [mm (in.)]

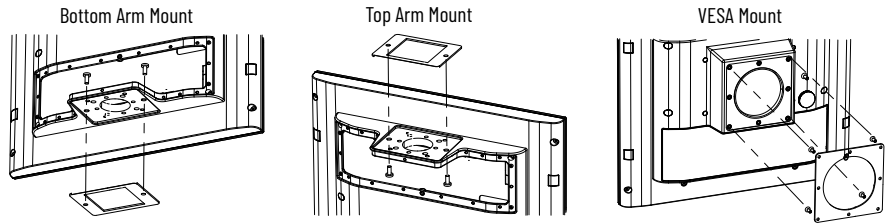


Required Tools

- Torque limiting screwdriver with 2.5 mm hex key bit

Install the Adapter Plate

1. Perform all steps in [Prepare for Accessory Installation on page 21](#).
2. Use a torque limiting screwdriver with 2.5 mm hex key bit to remove the two screws from the existing mounting plate from your On-Machine product.



3. Set the existing mounting plate aside.
4. Secure your selected adapter plate with the screws shipped with the adapter plate. Torque the screws to a value of 1...1.2 N•m (8.85...10.62 lb•in.).

IMPORTANT Do not overtighten the screws. Overtightening can cause damage to the gasket attached to the cover.

CFast SSD Card

Your On-Machine 6300PA panel PC features a CFast slot to accept CFast SSD cards to store your manufacturing data in your industrial environment. The operating system (OS) of your On-Machine panel PC recognizes the installed CFast SSD card as a hard disk.

Remove the Existing CFast SSD Card

If the CFast SSD card needs to be removed, follow the steps below.

IMPORTANT Risk of potential data loss.

- To avoid data corruption, do not remove the CFast SSD card while data is being stored or accessed by your system.
 - To avoid inadvertent damage the CFast SSD card, do not bend, drop, or expose it to heat, water, direct sunlight, electrostatic sources, or magnetic fields.
-

1. Carefully push and release the CFast SSD card.
The CFast SSD card will eject from the CFast slot.
2. Extract the CFast SSD card from the slot.
3. Proceed to [Install the Existing CFast SSD Card](#).

Install the Existing CFast SSD Card

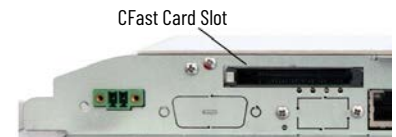
IMPORTANT Only install a CFast SSD card approved for industrial applications. A CFast SSD card intended for consumer products (such as digital cameras) does not have the endurance, performance, reliability, or data protection required for industrial applications (such as sudden power off). The CFast SSD card must comply with CE, FCC, RoHS, MIL-STD-810G certifications and technical specifications stated in [CFast SSD Card on page 124](#). For a list of approved CFast SSD cards by storage capacity for industrial applications, see [CFast SSD Card on page 124](#) or ASEM 6300V Accessories Product Information, publication [6300V-PC005](#).



Your On-Machine panel PC features a hot-swap CFast slot. A shut-down of your On-Machine panel PC is not required.

1. Carefully insert a CFast SSD card approved for industrial applications into the CFast slot.

The label on the CFast SSD card will be visible once it is properly inserted.



The CFast slot is designed to prevent the CFast SSD card from being inserted incorrectly. If there is resistance when inserting the CFast SSD card, check for proper orientation.

Replace or Install an Element

IMPORTANT This section is not applicable to SIL3 emergency stop (E-stop) button replacement or installation. For SIL3 emergency stop (E-stop) button replacement or installation, proceed to the [Replace or Install an Emergency Stop Button on page 39](#).



Select models of On-Machine products feature a button area for elements (such as a selector switch, buzzer, selector switch, or push button) which allows for hard-wired integration – the commands are connected to rear terminal blocks and the interfaces are directly connected to the system.

The quantity of elements that can be attached is dependent upon the size of your On-Machine product and these select models can be ordered in one of two ways:

- without elements to allow for future element installation or
- factory installed element(s) with internally configured connection.

IMPORTANT If an element was pre-installed/assembled and configured/internally cabled at the factory you cannot modify the configuration.

Hard-wired Versions

The front commands are connected by cables to internal terminal blocks under the rear cover. The interfaces are directly connected to your On-Machine product. The maximum number of installed commands excluding interfaces is eight elements (limited by the number of terminals) connected to the internal terminal blocks.

Depending on the configuration ordered, your On-Machine product can support the following elements:

- | | |
|-------------------------------|--|
| • Signal indicators | • Buzzer (quantity 1) |
| • Push buttons | • USB 2.0 (quantity 1) |
| • Customizable push buttons | • Ethernet/IP (quantity 1) |
| • Illuminated selector switch | • Cable pre-disposition |
| • Keylock switch | • Remote frequency identification (RFID)(quantity 1) |



By design, ATX push buttons, USB 2.0, Ethernet/IP, and RFID elements do not connect to the terminal blocks.



For a complete list of available kits, see ASEM 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).

Element Positions

Depending on the size of the system, the button area can support nine to thirteen different positions. All the elements installed in the button area are connected to two terminal blocks (-X1 and -X2).

Figure 6 - Element Positions: On-Machine Landscape Versions

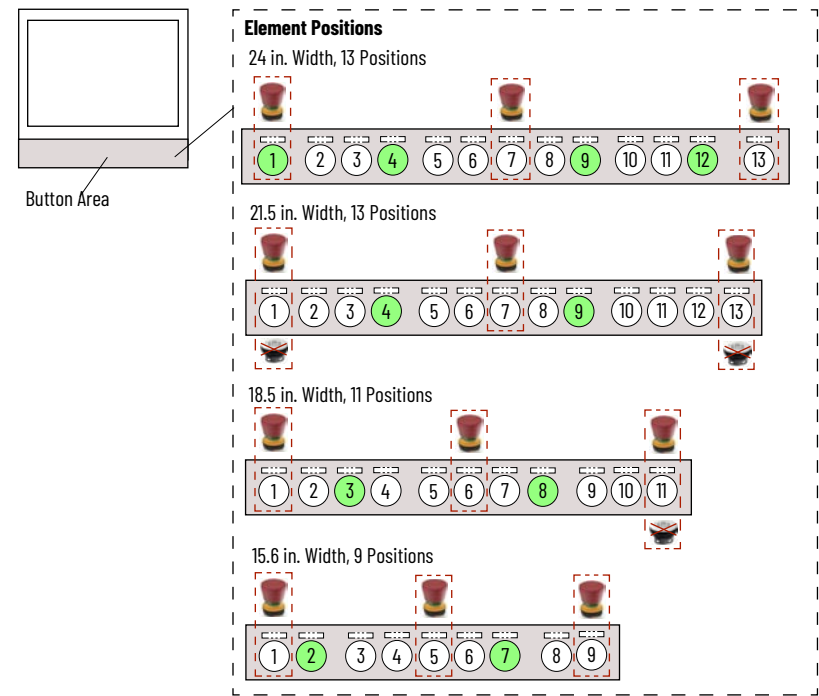
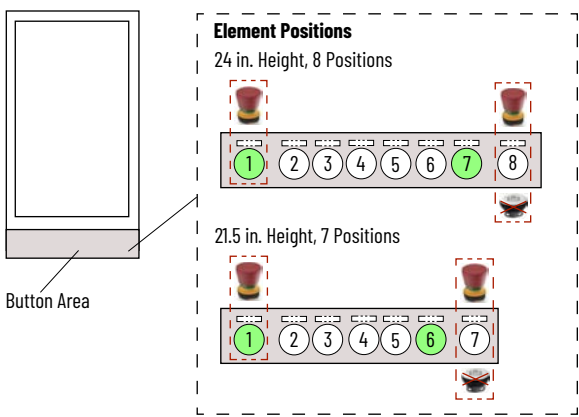


Figure 7 - Element Positions: On-Machine Portrait Versions

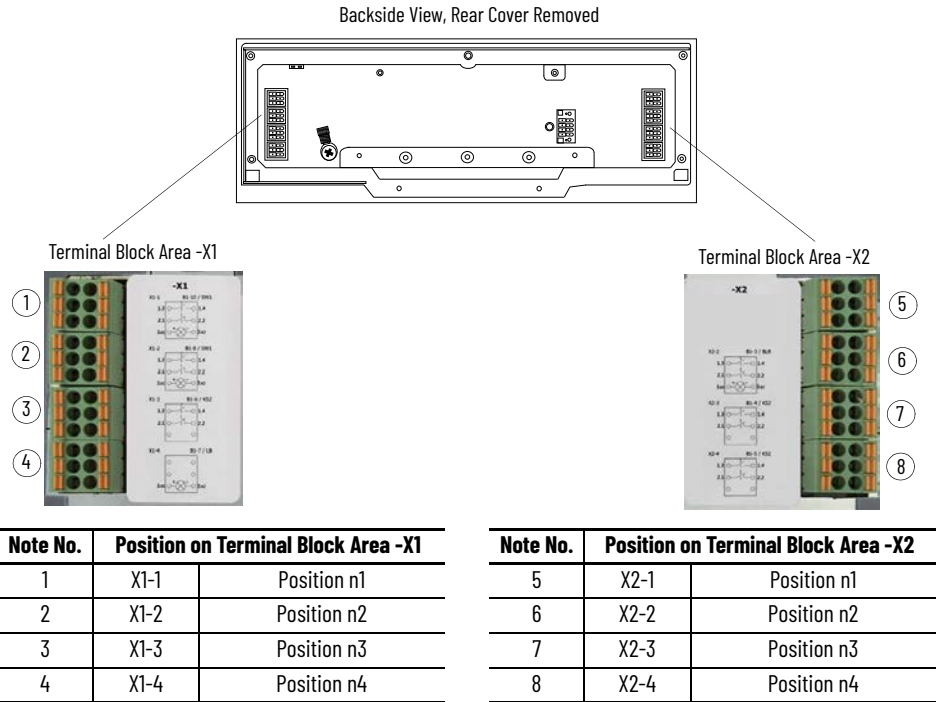


Terminal Blocks

Location

All the elements installed in the button area are connected to two terminal blocks (-X1 and -X2), accessible by removing the rear cover.

Table 13 - Terminal Block Area Detail



Terminal Block Labels

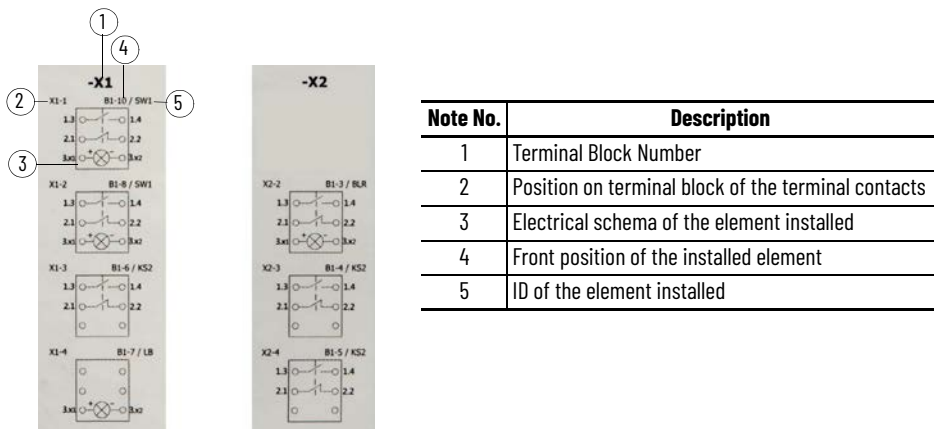
Each terminal block area features a terminal block label, indicating the elements (such as buttons, indicators, selectors and interfaces) installed on the system.



If an element was factory-installed, the element is hard-wired and the electrical schema on the label will appear as:



Table 14 - Terminal Block Labels



Required Tools

The following tools are required to properly remove and install an element.

- Torque screwdriver
- Element kit
- Phillips screwdriver to accommodate N2 screws
- Spanner tool (provided with your On-Machine product)
- For [Add an Element on page 35](#) only:
 - Cutting tool suitable for polycarbonate material
 - 5 mm socket

Prepare for Removal/Installation



WARNING: All voltage connected to your On-Machine product must be powered down before proceeding. This includes elements installed in the button area of your On-Machine product.

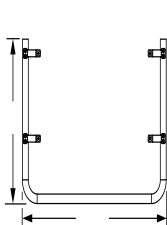


AVERTISSEMENT: Toute tension connectée à votre produit On-Machine doit être coupée avant de continuer. Cela inclut les éléments installés dans la zone des boutons de votre produit On-Machine.

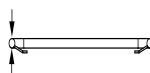


The On-Machine product shown may not be identical to your actual On-Machine product. The instructions still apply.

1. Power down your On-Machine product.
2. Remove the button area cover:
 - a. Remove the four screws from the back of your On-Machine product.



Remove Screws



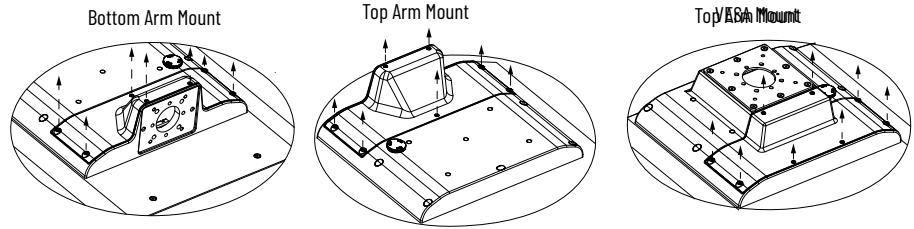
Remove Screws

- b. Gently pull down the button area panel from the front of your On-Machine product.



3. Remove the rear cover.
 - a. Place a clean, soft microfiber cloth down on a flat surface.
 - b. Place your On-Machine product with the LCD facing down on the clean, soft microfiber cloth.
 - c. Disconnect cables from other components (such as a RVL transmitter or RVL receiver) to accommodate setting your On-Machine product with the LCD facing down.

- d. Release the arm from your On-Machine product.
- e. Use a torque screwdriver to remove the eight screws from the cover.



- f. Set the eight screws aside.
- g. Gently lift the cover from your On-Machine product and set it aside.
The button connectors are now accessible.

Replace an Element

Remove the Existing Element

With the button area and rear cover removed, perform the following steps.

1. From the rear of your On-Machine product:
 - a. Remove the terminal block with cable.



Terminal Block with Cable



- b. Use a small, flat-blade screwdriver to slightly press into the square opening above the connection cable.



- c. Gently remove the cable from the terminal block.

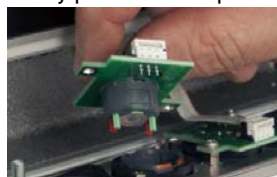
Terminal Block, Cable Disconnected



2. From the button area on the front of your On-Machine product:
 - a. Use a slotted screwdriver to remove the screws from the card of the element.



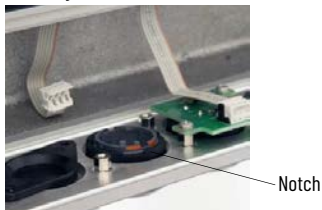
- b. Gently pull the card up off of the button area.



- c. Disconnect the flat from the card.



- d. Identify the notch on the nut.



- e. Align the spanner with the notch, then turn the spanner counter-clockwise to loosen and remove the nut from the element.



- f. Remove the loosened nut and element.



Install the Replacement Element

1. For custom push button installation: Install the custom label (optional) and translucent lens at this time. See [Add a Custom Label to a Custom Push Button on page 38](#) for installation instructions.
2. Align the tab of the element with the slot on the cavity in the button area.



3. Insert the element into the cavity from the front side of the button area.



4. Hand-tighten the nut evenly onto the element from the back side of the button area.

5. Use the spanner (provided) to fully tighten the nut.



6. Connect the flat of the cable to the card.



7. Use a slotted screwdriver to tighten the screws on the card.



8. Proceed to [Complete the Replacement/Installation on page 37](#).

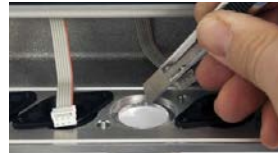
Add an Element

If the button area of your On-Machine product was factory configured for future element expansion, follow the procedure below to add an element.

1. Remove the cap from the desired location for the new element on the button area.



2. Use a cutting tool suitable for polycarbonate material, cut the polycarbonate covering the element cavity on the button area.



3. Use a 5 mm socket spanner to tighten the two spacers onto the cavity area.



4. For custom push button installation: Install the custom label (optional) and translucent lens at this time. See [Add a Custom Label to a Custom Push Button on page 38](#) for installation instructions.

5. Align the tab on the element with the slot of the cavity on the button area.



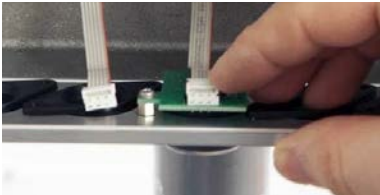
6. Insert the element in the cavity.
7. Hand-tighten the nut evenly onto the element from the back side of the button area.



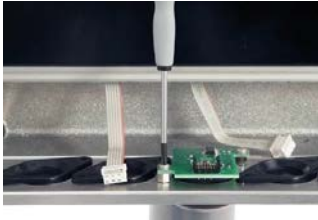
8. Use the spanner (provided) to fully tighten the nut.



9. Connect the flat of the cable to the card.



10. Use a slotted screwdriver to tighten the screws on the card.



11. Proceed to [Complete the Replacement/Installation on page 37](#).

Complete the Replacement/Installation

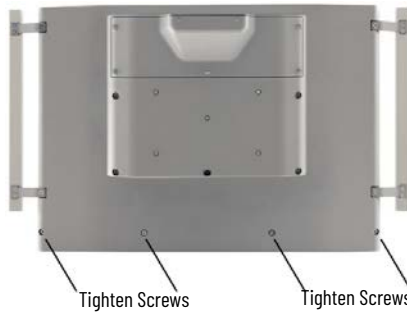
Follow these steps to reattach the panel and cover.

1. Reinstall the button area cover:
 - a. From the front of your On-Machine product, gently push the button area panel up to properly seat it flush against its frame.

IMPORTANT Be sure that all cables are not pinched or kinked during the process if inserting and tightening the eight screws.



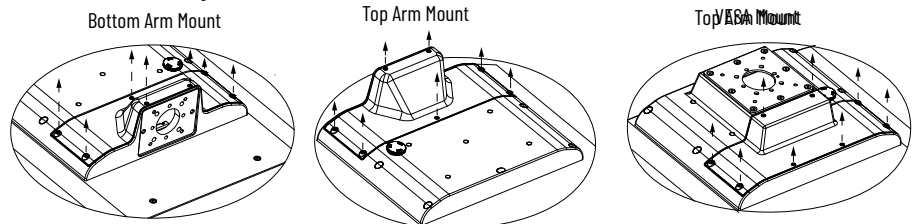
- b. From the back of your On-Machine product, use a slotted screwdriver to tighten the four screws.



2. Reinstall the rear cover:
 - a. Align the cover with holes.

IMPORTANT Be sure that all cables are not pinched or kinked during the process if inserting and tightening the eight screws.

- b. Insert the eight screws in the holes.



- c. Torque the eight screws to 1...1.2 N•m (8.85...10.62 lb•in.).

IMPORTANT Do not overtighten the screws. Overtightening can cause damage to the gasket attached to the cover.

Add a Label

Add a Label to the Label Holder

If your button area of your On-Machine product was factory configured with a label holder, follow the procedure below to add a label.

1. Use a fine-tip, permanent marker to write the element function on the label.

2. Insert the label into the label holder.



3. Insert the transparent protector over the label.



Add a Custom Label to a Custom Push Button

If a custom push button is installed on your On-Machine product, you can add a custom label (such as an icon or written description to indicate the function) to your custom push button.



A Microsoft Word template is available for download from the [Rockwell Automation Product Compatibility and Download Center \(PCDC\)](#). Follow the instructions provided to print your custom push button label.



A translucent lens is required to install the label into your custom push button. See [Table 135 on page 134](#) for a list of available colors.



WARNING: Power off your On-Machine product before assembling the custom label. During the custom label assembly, the custom push button can have an inadvertent effect on your system if the custom push button is pushed.

With your On-Machine product powered off:

1. Print the custom label using the template or write on the custom label.
2. Gently remove the custom label from the perforated label sheet.



3. Seat the custom label into the back side of the translucent lens.



4. Press the translucent lens with custom label into the cap of the custom push button.



The translucent lens is properly seated when you hear an audible click.



Replace or Install an Emergency Stop Button

On-Machine products with a button area are available with or without a pre-installed SIL-3 emergency stop (E-stop) button kit.

- For a pre-installed SIL-3 E-stop button kit: No further installation is required. However, it is important to understand the information provided within [Appendix B on page 99](#).
- For replacement of a pre-installed SIL-3 E-stop button kit: You must (a) select an identical SIL-3 E-stop button kit and (b) install the replacement SIL-3 E-stop button kit in the same location on the button area to ensure certification compliance.

IMPORTANT If another type of SIL-3 E-stop button kit is used, such as a light emitting diode (LED) style, all certifications listed will be void.



For a list of authorized E-stop push button kits, see [Appendix D on page 126](#) and the 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).

- For initial installation of a SIL-3 E-stop button kit: Follow the instructions within this section.

Unpack the E-stop Kit

Before you unpack your E-stop kit, inspect the shipping carton for damage. If damage is visible, immediately contact the shipper and request assistance. Otherwise, proceed with unpacking.

Verify all parts are present. See [Appendix D on page 126](#) to identify your E-stop kit and its parts.

Required Tools

The following tools are required to properly remove and install your E-stop button kit.

- Torque screwdriver
- Phillips screwdriver to accommodate N2 screws
- E-stop button kit
- Spanner tool (provided with your On-Machine product)

Prepare for Removal/Installation

Disconnect DC Power

1. Disconnect the DC power supply connected to your On-Machine monitor from the outlet.



An ON/OFF switch is not available on your On-Machine monitor.

The LED status indicator on the front side led will not emit a color, indicating power is no longer being supplied to your On-Machine product.



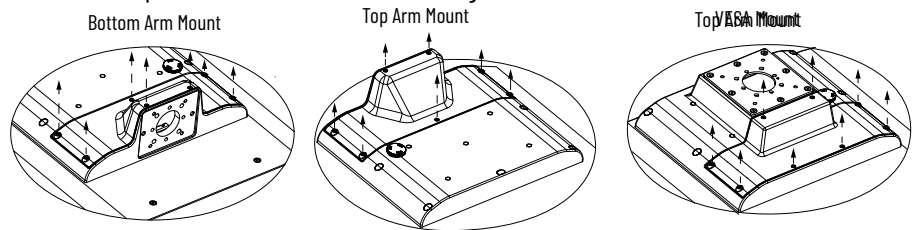
For most maintenance procedures, you must set your On-Machine product with the LCD facing down on the clean, soft microfiber cloth. Often, the peripheral cables do not have the required length do so. For this reason, you must:

- a. shut down any other connected components according to their manufacturer's instructions, then
 - b. disconnect the peripheral cables.
2. If required, shut down any other connected component(s).

Remove the Rear Cover

To access the connector area:

1. Place a clean, soft microfiber cloth down on a flat surface.
2. Place your On-Machine product with the LCD facing down on the clean, soft microfiber cloth.
3. Disconnect cables from other components (such as a RVL transmitter or RVL receiver) to accommodate setting your On-Machine product with the LCD facing down.
4. Release the arm from your On-Machine product.
5. Use a torque screwdriver to remove the eight screws from the cover.



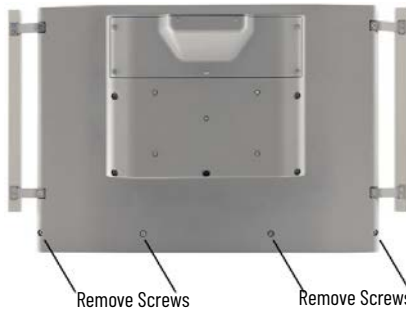
6. Set the eight screws aside.
7. Gently lift the cover from your On-Machine product and set it aside.

Remove the Button Area Cover



The On-Machine product shown may not be identical to your actual On-Machine product. The instructions still apply.

1. Remove the four screws from the back of your On-Machine product.



2. Gently pull down the button area panel from the front of your On-Machine product.



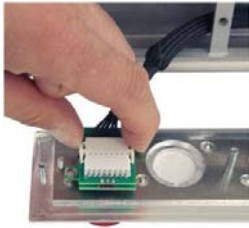
Remove the SIL-3 E-stop Kit

If your pre-installed SIL-3 E-stop button kit must be replaced, perform the steps below to remove the pre-installed SIL-3 E-stop button kit from your On-Machine product.

IMPORTANT

Before you remove the exiting SIL-3 E-stop button kit, be sure your replacement SIL-3 E-stop button kit is identical to the existing SIL-3 E-stop kit you are removing in the steps below.

1. Press the side levers of the connector with cable, then pull the connector with cable from the printed circuit board (PCB) connector on the panel button area.



2. Use a Phillips screwdriver (not included) to remove the screws on the PCB card.



3. Lift the PCB card from the button panel area.



4. Use the spanner (provided) to remove the nut from the E-stop button.



5. Remove the E-stop button from the button area panel.



Install the E-Stop Kit

Perform the steps below to attach your SIL-3 E-stop button kit to the button area of your On-Machine product.



WARNING: Risk of injury. The E-stop button must always be accessible. Never block the path to the E-stop button.



AVERTISSEMENT: Risqué de blessure. Le bouton E-stop doit toujours être accessible. Ne bloquez jamais le chemin vers le bouton d'arrêt d'urgence.

IMPORTANT

For replacement installation of an SIL-3 E-stop, be sure the replacement SIL-3 E-stop kit:

- is identical to the factory-installed SIL-3 E-stop kit and
- is installed in the same location of the factory-installed SIL-3 E-stop kit to ensure certification compliance.

If another type of E-stop button kit is used, all certifications listed will be void.

For a list of authorized E-stop button kits, see [Appendix D on page 126](#) and the 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).

1. Align the tab on the side of the E-stop button with the slot of the E-stop button cavity (visible from the backside of the panel area).



2. Insert the aligned E-stop button through the E-stop hole.
3. Seat the nut (provided) over the E-stop button.



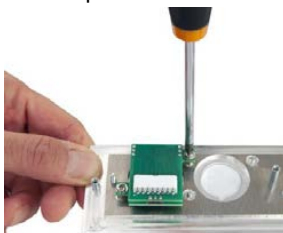
4. Use the spanner provided with your On-Machine product to secure the nut to the surface of the panel area.



5. Align the mounting holes of the PCB card (provided) with the mounting holes in the E-stop button itself, then set the PCB card into the E-stop button.



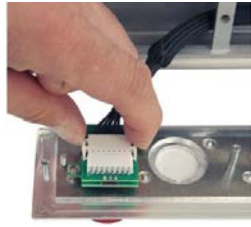
6. Use a Phillips screwdriver to secure the PCB card to the E-stop button.



7. Attach the connector on the flat cable to the PCB card.



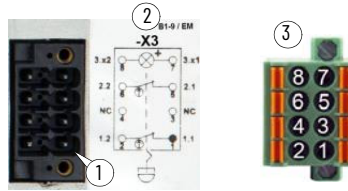
8. Use the side fastening tabs to secure the connectors to each other.



Connect the Terminal Block

The -X3 terminal block, located on the underside of your On-Machine product, is dedicated to receive an E-stop button kit.

Table 15 - -X3 Terminal Block Detail



Note No.	Description
1	PIN 1 Terminal Block
2	Wiring Diagram Label
3	Terminal Block Connector

Perform the following steps to connect the terminal block of the E-stop button.

1. Review the wiring diagram label affixed to the connection area of your On-Machine product. See [Figure on page 43](#) for the wiring diagram label location.
2. To insert wires: Insert the wires according to the wiring diagram label.
 - CROSS SECTION AVG 24 ~ 16 max. 1.5 mm² / stripping length 10 mm (.04 in.)

Insert Wire into Terminal Block



Wire Inserted into Terminal Block



- If a wire needs to be removed:
Use the tip of the screwdriver to gently press on the spring retainer.



Screwdriver

3. Seat the terminal block onto the E-stop connector.
4. Insert the screws into the connector.
5. Use a torque limiting screwdriver to torque the screws to 0.2 N•m (1.77 lb•in.).
6. Reattach the panel and cover as described in [Complete the Replacement/Installation](#).

Complete the Replacement/Installation

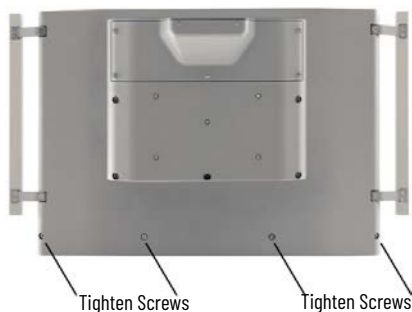
Follow these steps to reattach the panel and cover.

1. Reinstall the button area cover:
 - a. From the front of your On-Machine product, gently push the button area panel up to properly seat it flush against its frame.

IMPORTANT Be sure that all cables are not pinched or kinked during the process if inserting and tightening the eight screws.



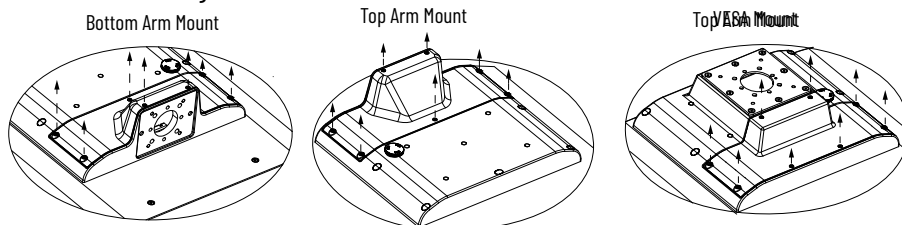
- b. From the back of your On-Machine product, use a slotted screwdriver to tighten the four screws.



2. Reinstall the rear cover:
a. Align the cover with holes.

IMPORTANT Be sure that all cables are not pinched or kinked during the process if inserting and tightening the eight screws.

- b. Insert the eight screws in the holes.



- c. Torque the eight screws to 1...1.2 N•m (8.85...10.62 lb•in.).

IMPORTANT Do not overtighten the screws. Overtightening can cause damage to the gasket attached to the cover.

3. Proceed to the mandatory steps in [Verify Functionality](#).

IMPORTANT **Verification of functionality is mandatory.** After the E-stop button and the emergency line to the PLC/relay is connected, you must press the E-stop button at least once to verify functionality.

Verify Functionality

This mandatory verification test depends on the specific emergency chain number. The following steps provide instruction to perform the tests after the E-stop button is initially installed.

Required Tools



- **Required:** General purpose multimeter
 - Purpose:
To verify the resistance between contacts (primary the emergency contacts).
- **Optional:** 24V DC power supply
 - Purpose:
To check the E-stop LED. This is optional as the LED functionality is not a part of the emergency chain.

Test According to Configuration

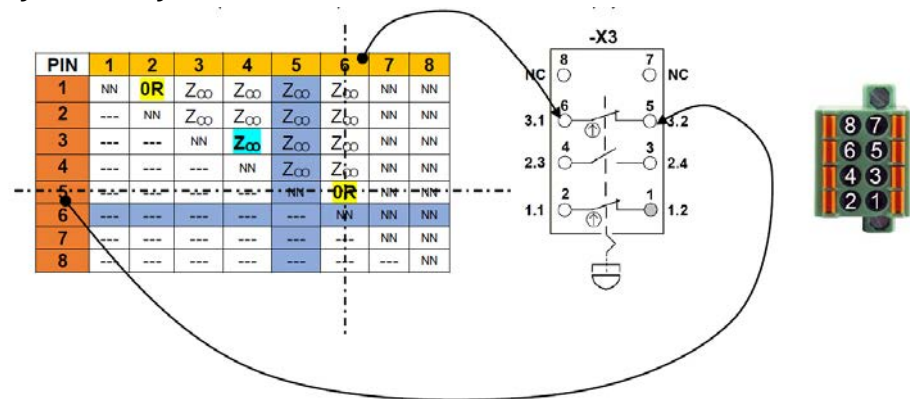
The illustration within [Figure 8](#) shows the resistance between a “pair of contact”; the table within [Figure 8](#) shows the impedance that is expected to be read on the multimeter display. To properly read the table:

- Select two pins from the table.
For example: 5 and 6 (pin 5: table row, pin 6: table column).
- If the intersection cell between the row and the column shows a voltage instead of a resistance, the “pins pair” is connected to the E-stop button LED.
 - To test: Apply 24V DC being careful to connect the polarity properly.



IMPORTANT To guarantee that the device is working properly all the table combinations should be tested.

Figure 8 - Testing Procedure



Use [Table 16](#) to help interpret the content within [Figure 8](#) and the various test cases.

Table 16 - Testing Procedure Legend

Symbol	Definition	IMPORTANT: Check these contacts carefully.
Z _∞	High Impedance	
Z _∞	High Impedance	
OR	Short circuit	
NN	Not tested by multimeter	
+24V DC	Apply 24VDC power supply	
0V	Apply power supply ground	
---	Already tested in another configuration	

6300V-ESTOP-ES and 6300V-ESTOP-E1

Figure 9 - E-stop Button Released Position

PIN	1	2	3	4	5	6	7	8
1	NN	0R	Z _∞	Z _∞	Z _∞	Z _∞	NN	NN
2	---	NN	Z _∞	Z _∞	Z _∞	Z _∞	NN	NN
3	---	---	NN	Z _∞	Z _∞	Z _∞	NN	NN
4	---	---	---	NN	Z _∞	Z _∞	NN	NN
5	---	---	---	---	NN	0R	NN	NN
6	---	---	---	---	---	NN	NN	NN
7	---	---	---	---	---	---	NN	NN
8	---	---	---	---	---	---	---	NN

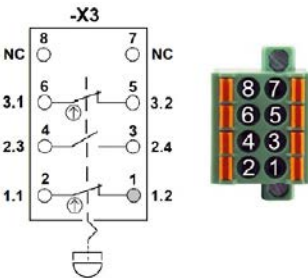
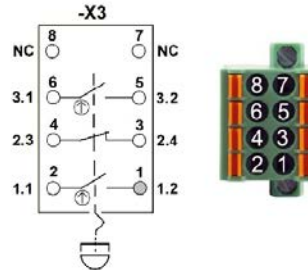


Figure 10 - E-stop Button Pressed Position

PIN	1	2	3	4	5	6	7	8
1	NN	Z _∞	Z _∞	Z _∞	Z _∞	Z _∞	NN	NN
2	---	NN	Z _∞	Z _∞	Z _∞	Z _∞	NN	NN
3	---	---	NN	0R	Z _∞	Z _∞	NN	NN
4	---	---	---	NN	Z _∞	Z _∞	NN	NN
5	---	---	---	---	NN	Z _∞	NN	NN
6	---	---	---	---	---	NN	NN	NN
7	---	---	---	---	---	---	NN	NN
8	---	---	---	---	---	---	---	NN



6300V-ESTOP-E2...E5

Figure 11 - E-stop Button Released Position

PIN	1	2	3	4	5	6	7	8
1	NN	0R	NN	NN	Z _∞	Z _∞	Z _∞	Z _∞
2	---	NN	NN	NN	Z _∞	Z _∞	Z _∞	Z _∞
3	---	---	NN	NN	Z _∞	Z _∞	Z _∞	Z _∞
4	---	---	---	NN	Z _∞	Z _∞	Z _∞	Z _∞
5	---	---	---	---	NN	0R	Z _∞	Z _∞
6	---	---	---	---	---	NN	Z _∞	Z _∞
7	---	---	---	---	---	---	NN	+24V _{dc} pin 7 0V pin 8
8	---	---	---	---	---	---	---	NN

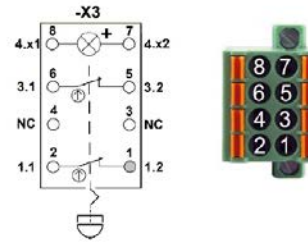
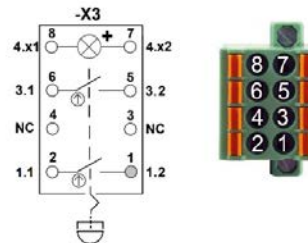


Figure 12 - E-stop Button Pushed Position

PIN	1	2	3	4	5	6	7	8
1	NN	Z _∞	NN	NN	Z _∞	Z _∞	Z _∞	Z _∞
2	---	NN	NN	NN	Z _∞	Z _∞	Z _∞	Z _∞
3	---	---	NN	NN	Z _∞	Z _∞	Z _∞	Z _∞
4	---	---	---	NN	Z _∞	Z _∞	Z _∞	Z _∞
5	---	---	---	---	NN	Z _∞	Z _∞	Z _∞
6	---	---	---	---	---	NN	Z _∞	Z _∞
7	---	---	---	---	---	---	NN	+24V _{dc} pin 7 0V pin 8
8	---	---	---	---	---	---	---	NN

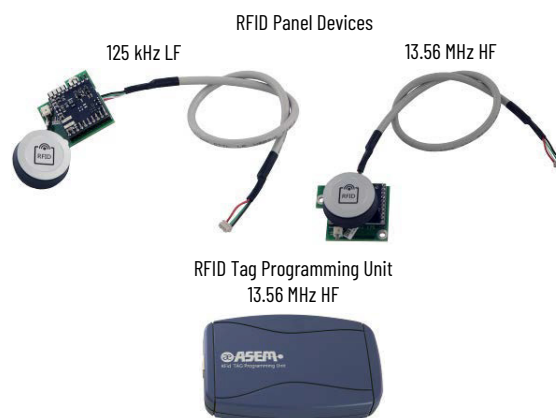


Install the Radio Frequency Identification Device

Introduction

The radio frequency identification (RFID) panel device and RFID TAG table programming unit are tag reading/writing devices with an integrated antenna.

The RFID panel device is ideal for use on your On-Machine product in the industrial environment. Directly installed on the On-Machine product, the device communicates with a host system, typically a PC, via the USB port. The RFID panel device is available in either 125 kHz low frequency (LF) or 13.56 MHz high frequency (HF).



Though rated for an industrial environment, the RFID tag programming unit is designed for use on a PC in an office environment where the information technology (IT) manager can program the various tags without needing to use the On-Machine product. The RFID tag programming unit is available in 13.56 MHz HF only.



For a complete list of RFID accessories and their specific catalog numbers, see 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).

Application software and libraries to program both RFID module types are available for download from the [Rockwell Automation Product Compatibility and Download Center \(PCDC\)](#).



See [Appendix D on page 135](#) for technical data related to RFID products.

Unpack the Product

Before you unpack your RFID tag unit, inspect the shipping carton for damage. If damage is visible, immediately contact the shipper and request assistance. Otherwise, proceed with unpacking.

Your RFID tag programming unit ships with the following parts:

- RFID tag programming unit and
- USB cable

Attach the RFID Tag Programming Unit

Connect the RFID Tag Programming Unit

1. Insert the USB cable (provided) to the USB connection on your PC.
2. Insert the free end of the USB cable into the RFID tag programming unit.

Set Up the Software Application

The software application can be downloaded from the [Rockwell Automation Product Compatibility and Download Center \(PCDC\)](#).



A log in must be created on the Rockwell Automation PCDC site prior to downloading the software application.

The software application includes the following software components:

- ASEM RFID Configuration Application
 - for configuring the various tags (reading, writing, spontaneous message detection) and RFID device diagnostics.
- DLL Function Library
 - required in Microsoft environment with Framework.NET (managed DLL) for the development of proprietary applications for configuring the various tags.
- USB Drivers
 - for correct use of the RFID devices.
 - the RFID panel-mounted device driver maps the USB port on a Virtual COM device which is seen by the OS as a COM serial port.
- Microsoft Framework.NET
 - required to use the application software and the library. The installation is an essential requirement for operation.

IMPORTANT The USB drivers and Microsoft Framework.NET components are required to use the libraries. The software application must be installed before any other operation.

Dynamic Link Library Function Library

C# and C++ dynamic link libraries (DLLs) are available for developing proprietary applications. See the SDK Manual for guidance on using the DLLs. The DLLs and the SDK manual can be downloaded the [Rockwell Automation Product Compatibility and Download Center \(PCDC\)](#).

Driver for RFID Device

The RFID panel device is pre-installed to the USB port on your On-Machine product, but is mapped internally as Virtual COM. This means that it is possible to dialogue with the device as if it were connected to a standard serial port.

The drivers are distributed in two different forms with automatic installer or manual installation. The automatic installer is sufficient to start the application setup.

If a manual installation procedure is necessary, follow the steps below.

Manual Installation of Driver Files

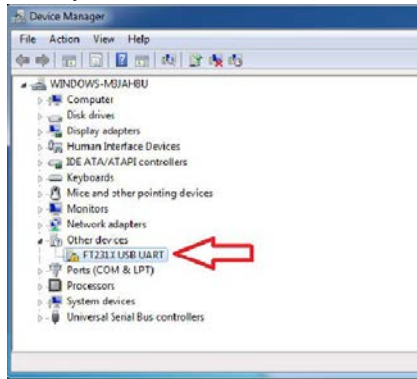
The driver files are stored in a local system folder named “FDTI VCP Drivers”. The content of this folder is shown in [Figure 13](#).

Figure 13 - FDTI VCP Driver Folder

Nome	Ultima modifica	Tipo	Dimensione
amd64	28/04/2016 14:39	Cartella di file	
i386	28/04/2016 14:39	Cartella di file	
Static	28/04/2016 14:39	Cartella di file	
CDM v2.12.16 WHQL Certified.zip	28/04/2016 14:39	WinZipper	1.322 KB
ftd2xx.h	16/03/2016 09:07	C/C++ Header	40 KB
ftdibus.cat	16/03/2016 09:07	Catalogo sicurezza	15 KB
ftdibus.inf	16/03/2016 09:07	Informazioni di in...	18 KB
ftdiport.cat	16/03/2016 09:07	Catalogo sicurezza	14 KB
ftdiport.inf	16/03/2016 09:07	Informazioni di in...	15 KB

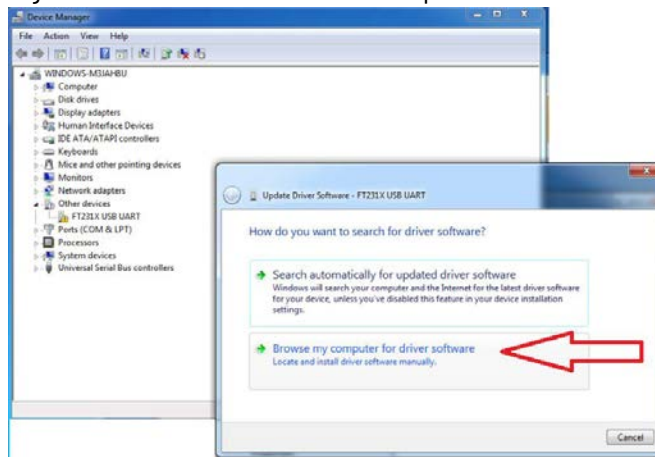
Within the Microsoft Windows OS:

1. Navigate to Windows > Settings > Devices.
2. Identify the drivers of the COM that need to be updated from the Other Devices panel.

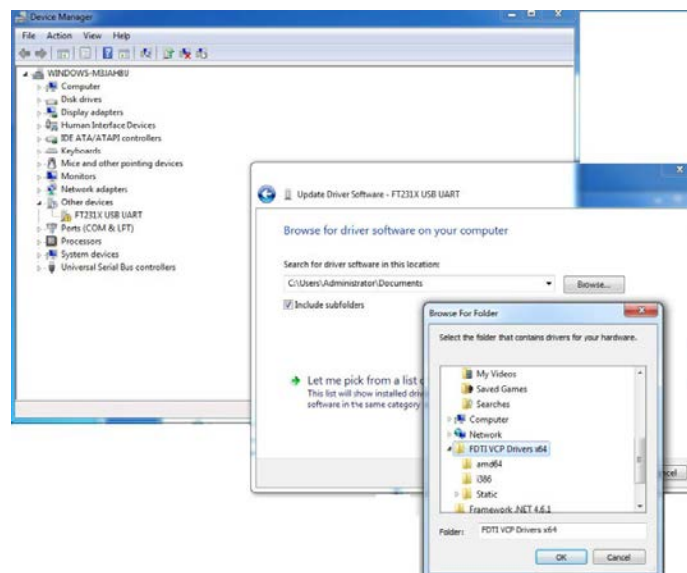


The operations described below must be performed twice to allow the virtual COM communication channel to recognize the USB port.

3. Right-click to select the driver software update function.



4. Select the "Browse my computer for driver software" option.
5. Select the folder which contains the drivers.



6. Wait for the OS to recognize the peripheral device.

Driver for RFID TAG Programming Unit (13.56 MHz HF)

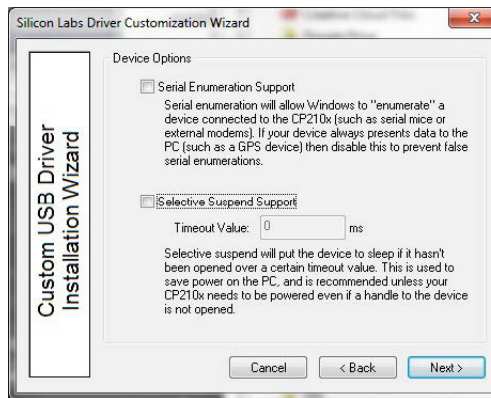
To install the Silicon Labs® drivers for the CP210x chip set:

1. Download the AN220SW USB Driver Customization file, AN220SW.zip, from either of following links:
 - [Silcon Labs](#) or
 - [Rockwell Automation Product Compatibility and Download Center \(PCDC\)](#).

The downloaded file is saved in archive format.

2. Unzip the downloaded file, then launch the executable (.exe) file.
3. Confirm all options until you reach the 'Device Options' window
4. Uncheck the boxes to both options in the 'Device Options' window.

IMPORTANT Do **not** select the 'Selective Suspend Support'.



5. Click the 'Next' button.
6. Continue customization within the 'Customization USB Driver Installation Wizard'.

Framework .NET 4.6.1 Installation

The ASEM RFID Configuration software, used to manage the RFID device, requires the installation of Microsoft Framework .NET version 4.6.1 or later to be installed on your On-Machine product. Perform the steps below for proper installation.

1. Download the Microsoft Framework .NET version 4.6.1 from the [Microsoft website](#).
2. Follow the on-screen installation instructions.
3. Reboot your system when the installation is complete.

Use the ASEM RFID Configurator

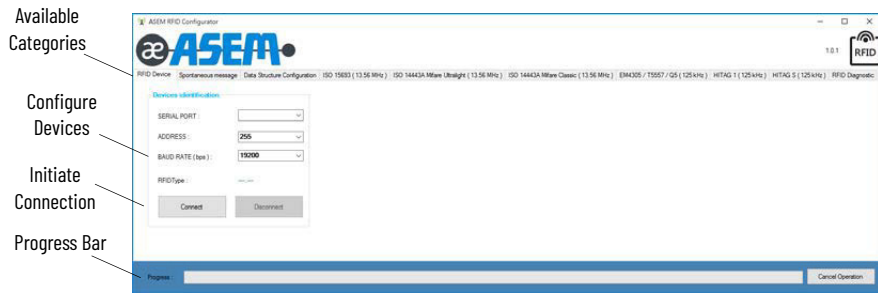
The ASEM RFID Configurator software is provided for managing (reading/writing) various tags and for RFID device diagnostics.

The ASEM RFID Configurator software can be downloaded from the included with the RFID devices or can be downloaded from the [Rockwell Automation Product Compatibility and Download Center \(PCDC\)](#).

IMPORTANT Complete the installation steps listed in [Driver for RFID Device on page 48](#) and [Framework .NET 4.6.1 Installation](#) sections before launching the ASEM RFID Configurator.

When the executable file (.exe) is launched, the initial screen of the ASEM RFID configurator appears. Available categories appear as tabs horizontally across the screen.

Figure 14 – ASEM RFID Configurator – Initial Screen Layout



Configuration

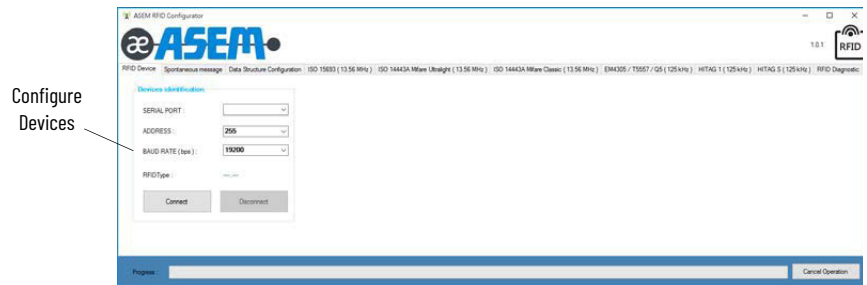
When the .exe file is launched, the initial application window appears with RFID Device as the active tab.

Configure the RFID Device:

1. Launch the .exe file.
The initial application window appears with RFID Device as the active tab.
2. Within the active 'RFID Device' tab, select an option from each pull-down field to configure the RFID device.



The Configure Devices pull-down fields manage the communication with the RFID device connected to your PC where the ASEM RFID Configurator software has been executed.

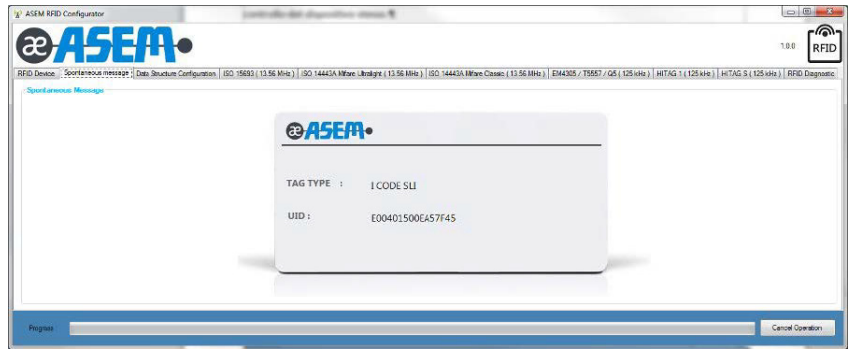


Field Name	Description
SERIAL PORT	Serial port the USB device is connected to. The communication channel is a Virtual COM. The COM assigned to the device is shown in Windows Control Panel > Device Manager.
ADDRESS	Address of the peripheral. Default Value = 255.
BAUD RATE (bps)	Transmission rate of the peripheral. Default Value = 19200 bps
RFID TYPE	When the 'Connect' button is clicked, the application connects to the RFID device, this field populates with the identified device type (HF or LF).

3. Click the 'Connect' button. The progress bar initiates the operation.

Spontaneous Message

1. Click the 'Spontaneous Message' tab. The content of the spontaneous message appears.



The fields shown are:

Field Name	Description
TAG TYPE	Identified tag type.
ADDRESS	Unique Identifier (UID) stored on the tag by the manufacturer.



For RFID LF (125 kHz): The spontaneous message may be sent by the RFID reader only and exclusively in “Tag emulation UNIQUE” mode because LF tags do not transfer the UID stored by the tag manufacturer.

For RFID HF (13.56 MHz): The UID sent by the device is the UID stored in the tag by the tag manufacturer.

The spontaneous message is generated by the RFID device when a tag is approached to the RFID device and recognized.

The UID stored on the tag by the manufacturer is a unique identifier which can be associated to the user.

Emulate a UNIQUE Tag and Generate a Spontaneous Message

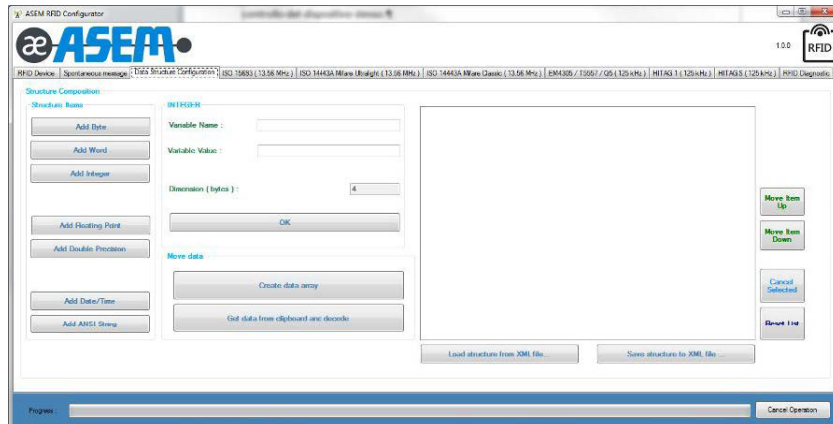
The emulation tag, UNIQUE A LF, can be programmed to emulate a UNIQUE tag and generate a spontaneous message. In this case, the sent UID is not stored by the manufacturer in a tag, but rather is a UID defined by the end user.

The method for writing the UID and emulating a UNIQUE tag using a LF tag is explained in 4.7.2. The UID stored by the manufacturer may be requested by querying the tag with specific messages.

Data Structure Configuration

The Data Structure Configuration is used to manage the data structures which can be defined and configured on the tag.

Figure 15 - Data Structure Configuration Tab: Custom Tags Formatting Form



General Considerations on Tags

Tags perform a number of basic operations sufficient in most industrial applications. A basic operation includes reading and writing a data block and communicating the characteristic parameters of the tag itself. For example, the number of available data blocks and the UID.

When more complex operations are required, some challenges may occur during implementation. An example of a more complex operation would be the requirement to write only one byte in the tag's memory using only the basic function:

- Read the entire data block containing the *byte* to be edited, then
- edit only the *byte* you want to be change, then
- write the complete data block on the *tag*.

This operation is more complex as the data block can only be written as a whole. For example, if the data block consists of 4 *bytes*, only 4 *bytes* can be read and written at a time (not any number, but only those of a specific block).

Some additional functions are available in the ASEM library to perform these more complex operations in simple manner.

- Read all the data of the tag.
- Integrally format the tag.
- Read an byte array of the tag starting from any position.
- Write an byte array on the tag starting from any position.

[Figure 16 on page 54](#) shows an example of reading 3 bytes starting from byte 2. This operation is performed by means of the function:

ReadByteArray (Start Byte, Data Size)

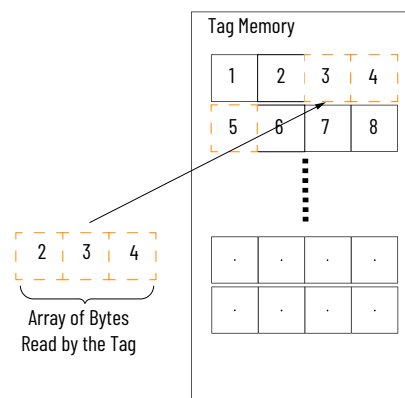
The data blocks of the tag consist of 4 bytes, therefore bytes [0 1 2 3] represent the first block and bytes [4 5 6 7] represent the second block.

The function requires two parameters:

- Start Byte: Bytes from where to start reading.
- Data Size: Number of bytes to be read starting from the Start Byte position.

IMPORTANT The number of bytes starts from 0.

Figure 16 - Read Byte Array Example



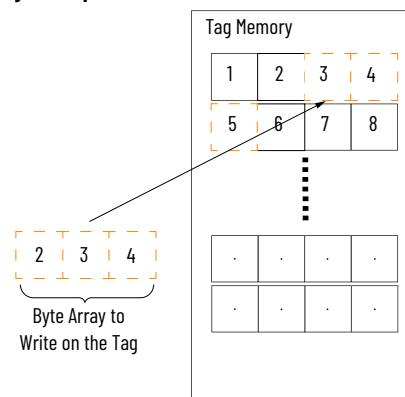
Similarly, the same memory area may be written using the function:

`WriteByteArray(Start Byte, Data)`

The function requires two parameters:

- Start Byte: Bytes from where to start writing.
- Data: Bytes to write starting from the Start Byte position (hexadecimal).

Figure 17 - Write Byte Array Example



Structure Generation

The `ReadByteArray(.)` and `WriteByteArray(.)` functions can be used to simplify the reading and writing operations of tags which would only support complete fixed size data block reading and writing (for example, 16 bytes for MIFARE CLASSIC).

Reading/writing a byte array of any length starting from any position is not an effective technique for managing the data typically stored on a tag. It would be beneficial to have the ability to declare a dynamic structure capable of containing an indefinite number of different types of fields so as to satisfy the most needs.

Fundamentally, a data structure is defined, transformed into an array byte, then written it on the tag.

An example structure with four different fields are listed below.

- Name: Name of the person [fixed length string equal to 30 characters]
- Surname: Surname of the person [fixed length string equal to 30 characters]
- Birthday: Date of birth of the person [type DateTime]
- AreaAccess: Hexadecimal value which defines access to the various system areas [type WORD]

Any structure can be created starting from the basic types made available by the application.

Tipo	Size in bytes
Byte	1 (predetermined)
Word	2 (predetermined)
Integer	4 (predetermined)
Floating point	4 (predetermined)
Double precision	8 (predetermined)
DateTime	8 (predetermined)
String	To be defined during the declaration



The string length should be defined during the declaration.

IMPORTANT

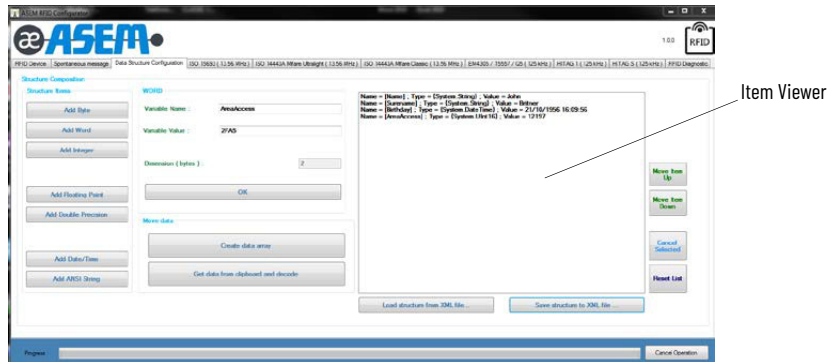
The Byte and Word data types must be hexadecimal (such as 1FB4), while the Integer data types are expressed on decimal base (such as 13412).

For the DateTime time, respect the syntax suggested in the “Variable value” field.

The string is the only field requiring the string length to be explicitly declared. We strongly advise to fix a single size which makes it possible to store all the possible data related to the variable.

Within the ‘Structure Items’ area:

1. Select the various fields to add the various *record* and complete the structure. The final result is shown below:



2. If the position of an item or items need to be modified (such as be deleted): Click one of the buttons to the right of the window to modify it.



The entire structure of a byte array must be written in the tag data.

Button	Function
Save Structure to XML File	Structure is exported to an XML file format. Both data and structure are saved.
Create Data Array	A byte array is generated starting from the records contained in the structure, then creates a copy to the clipboard.

3. Paste the clipboard contents into a text editor.

In order to transform the byte array into a defined data structure, the source XML file must be loaded in the tool. Perform the following steps to transform the byte array:

1. Click the 'Data Structure Configuration' tab.
2. Click the 'Load Structure from XML File ...' button.
A list of fields previously declared in the structure will appear and the last data saved to the disk will load.



The last data saved to the disk will be deleted during the next step.

3. Click the 'Get Data from Clipboard and Decode' button.
The data within the clipboard will be associated with the newly loaded structure.

Structures

The ASEM RFID Configurator can be used to program the tags in complex manner by means of "structures" with no need for the user to write additional software.

To use "structures", perform the following steps within the ASEM RFID Configurator.

1. Define the structure.
2. Save the structure in XML format.
3. Convert structure data into a byte array.
4. Copy the result to the clipboard.
5. Write the data on a tag.
6. Read the data from the tag.
7. Copy the result to the clipboard.
8. Save the structure in XML format from disk.
9. Match binary data from clipboard and data structure.
10. Retrieve original data.

In making the proprietary application, the programmer must be able to retrieve the tag data and reformat the data in the same manner as originally declared by the user. Consequently, the user must provide the XML file to the programmer who will read the tag data and decode them using specific library functions.

Table 17 - Structure Item Values

Structure Item	Variable Name	Variable Value	Dimension (Bytes)
Add Byte	User Defined	User Defined	1
Add Word	User Defined	User Defined	2
Add Integer	User Defined	User Defined	4
Add Floating Point			4
Add Double Precision	User Defined	User Defined	8
Add Date/Time			8
Add ANSI String	User Defined	User Defined	User Defined ⁽¹⁾

(1) The Dimension (Bytes) field is the only instance where the user must define the size.

Table 18 - Other Structure Commands

Structure Command	Description
Create data array	Create a byte array starting from the declared data structure. The array is stored on the clipboard. At the end of the conversion, a pop-up window appears indicating the size of the newly generated array.
Get data from clipboard and decode	Transform the data array stored on the clipboard to a data structure declared in a XML file. This must be preloaded before performing this operation. Loading is performed by means of the 'Load structure from XML file...' function. Typically, this function is used after having read the tag data using the ReadByteArray() function.
Load structure from XML file...	Load the previously declared XML structure to format the binary data read from a tag.

Table 18 - Other Structure Commands

Save structure to XML file...	Save the XML structure currently created in the editor.
Move Item Up	Move the selected item in the editor up.
Move Item Down	Move the selected item in the item viewer down.
Cancel Selection	Delete the selected item in the item viewer.
Reset List	Delete all selected items in the item viewer.

ISO 15693 (13.56 MHz)

The ISO 15693 (13.56 MHz) tab is used to open an ISO15693 tag.

Figure 18 - ISO 15693 (13.56 MHz) Tab

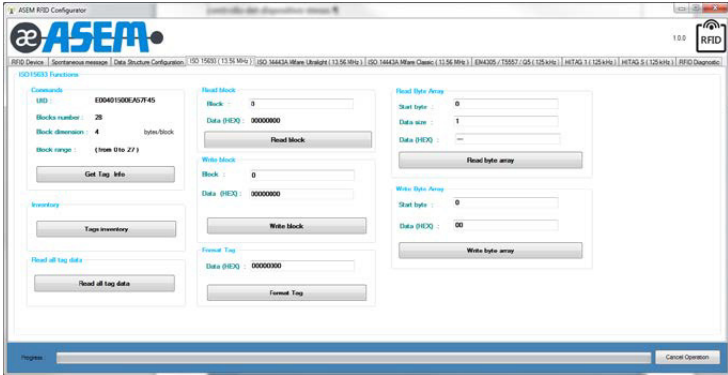


Table 19 - Commands for ISO 15693 (13.56 MHz)

Command	Description
UID	Unique Identifier of the tag identified in the reading range of the RFID device.
Blocks number	Number of memory blocks present on the tag.
Block dimension	Data block size in bytes.
Block range	Range of the tag indexes (the first index is always zero).

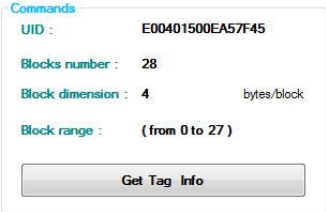
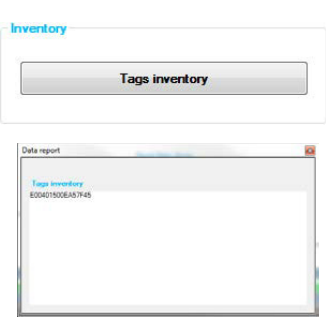


Table 20 - Inventory

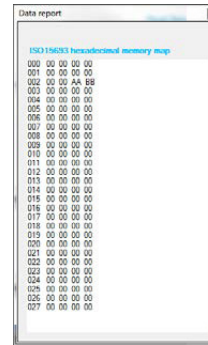


Command	Description
Inventory	<p>This function used to detect all ISO15693 tags present in the range of action of the antenna of the RFID device. The UIDs of the detected tags are entered in the 'Data report' pop-up window</p> <p>IMPORTANT: This function is critical if the size of the antenna is small. For this reason, it is advised to run preliminary tests before using it.</p>

Table 21 - Read All Tag Data

Read all tag data

Read all tag data



Command	Description
Read All Tag Data	Read all the data contained on the ISO15693 tag.

Table 22 - Read Block

Read block

Block : 2

Data (HEX) : 0000AABB

Read block

Command	Description	
Read Block	Block	Block number to read.
	Data (Hex)	Read data (hexadecimal)

Table 23 - Write Block

Write block

Block : 0

Data (HEX) : 00000000

Write block

Command	Description	
Write Block	Block	Block number to write.
	Data (Hex)	Write data (hexadecimal).

Table 24 - Format Tag

Format Tag

Data (HEX) : 00000000

Format Tag

Command	Description	
Format Tag	Completely format the ISO15693 tag using the data block declared in the Data field.	
	Data (Hex)	Data block which will be used to format the tag (hexadecimal).

Table 25 - Read Byte Array

Read Byte Array

Start byte : 0

Data size : 1

Data (HEX) : —

Read byte array

Command	Description	
Read Byte Array	Read a <i>byte array</i> from the <i>tag</i> starting from the point indicated by <i>Start byte</i> .	
	Start Byte	Index from where to start reading.
	Data Size	Number of bytes to read.
	Data (Hex)	Data block which will be used to format the tag (hexadecimal).

Table 26 - Write Byte Array

Write Byte Array

Start byte : 0

Data (HEX) : 00

Write byte array

Command	Description	
Write Byte Array	Write a <i>byte array</i> on the <i>tag</i> starting from the point indicated by <i>Start byte</i> .	
	Start Byte	Index from where to start writing.
	Data (Hex)	Byte array to write from the tag (hexadecimal). IMPORTANT: The size of the data array written starting from Start Byte must not exceed the size of the tag.

ISO 14443A Mifare Ultralight (13.56 MHz)

This window can be used to handle a ISO 14443A Mifare Ultralight tag.

Figure 19 - ISO14443A Mifare Ultralight Tab

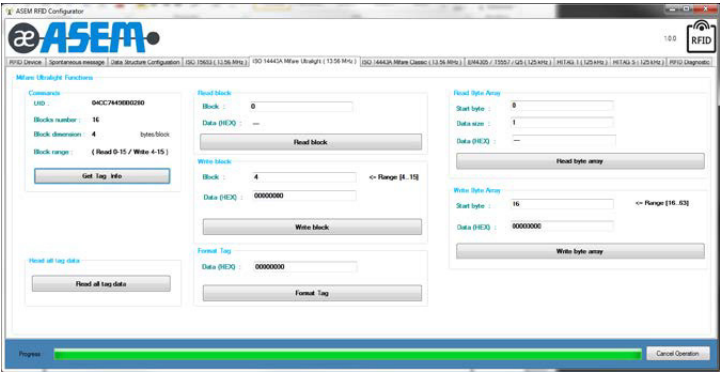


Table 27 - Commands for ISO 14443A Mifare Ultralight (13.56 MHz)

Commands

UID : 04CC7449B80280

Blocks number : 16

Block dimension : 4 bytes/block

Block range : (Read 0-15 / Write 4-15)

Get Tag Info

Command	Description
UID	Unique Identifier of the tag identified in the reading range of the RFID device
Blocks number	Number of memory blocks present on the tag
Block dimension	Data block size in bytes
Block range	Range of the tag indexes (the first index is always zero)

Table 28 - Read All Tag Data

Read all tag data

Read all tag data

Command	Description
Read All Tag Data	Read all the data contained in the Mifare Ultralight tag

Table 29 - Read Block

Read block

Block : 0

Data (HEX) : —

Read block

Command	Description	
Read Block	Read a byte array from the tag starting from the point indicated by Start byte.	
	Block	Block number to read.
	Data (Hex)	Read data (hexadecimal)

Table 30 - Write Block

Write block

Block : 4

Data (HEX) : 00000000

Write block

Byte Number	0x00	0x01	0x02	0x03	Page
Serial Number	SN0	SN1	SN2	BCC0	0x00
Serial Number	SN3	SN4	SN5	SN6	0x01
Internal / Lock	BCC1	Internal	Lock0	Lock1	0x02
OTP	OTP0	OTP1	OTP2	OTP3	0x03
Data Read/Write	Data0	Data1	Data2	Data3	0x04
Data Read/Write	Data4	Data5	Data6	Data7	0x05
Data Read/Write	Data8	Data9	Data10	Data11	0x06
Data Read/Write	Data12	Data13	Data14	Data15	0x07
Data Read/Write	Data16	Data17	Data18	Data19	0x08
Data Read/Write	Data20	Data21	Data22	Data23	0x09
Data Read/Write	Data24	Data25	Data26	Data27	0x0A
Data Read/Write	Data28	Data29	Data30	Data31	0x0B
Data Read/Write	Data32	Data33	Data34	Data35	0x0C
Data Read/Write	Data36	Data37	Data38	Data39	0x0D
Data Read/Write	Data40	Data41	Data42	Data43	0x0E
Data Read/Write	Data44	Data45	Data46	Data47	0x0F

Remark: Bold frame indicates user area

Fig 4. Memory organization

MIFARE U1 memory map

Command	Description
---------	-------------

Table 30 - Write Block

Write Block	Write a data block from the Mifare Ultralight tag. IMPORTANT: The first 4 blocks cannot be written to avoid compromising the blocks shown. Fundamentally, the Lock and the OTP are protected because incorrect writing of these fields may cause irreversible tag corruption.	
	Block	Block number to write.
	Data (Hex)	Write data (hexadecimal).

Table 31 - Format Tag

Command	Description	
Format Tag	Completely format the Mifare Ultralight tag using the data block declared in the Data field.	
	Data (Hex)	Data block which will be used to format the tag (hexadecimal).

Table 32 - Read Byte Array

Command	Description	
Read Byte Array	Read a <i>byte array</i> from the <i>tag</i> starting from the point indicated by <i>Start byte</i> .	
	Start Byte	Index from where to start reading.
	Data Size	Number of bytes to read.
	Data (Hex)	Byte array read from the tag (hexadecimal)

Table 33 - Write Byte Array

Command	Description	
Write Byte Array	Write a <i>byte array</i> on the <i>tag</i> starting from the point indicated by <i>Start byte</i> .	
	Start Byte	Index from where to start writing.
	Data (Hex)	Byte array to write from the tag (hexadecimal). IMPORTANT: The size of the data array written starting from Start Byte must not exceed the size of the tag.

ISO 14443A Mifare Classic (13.56 MHz)

This tab can be used to open an ISO 14443A Mifare Classic tag.

IMPORTANT Carefully review the content within Appendix A containing the technical and structural details of the ISO 14443A Mifare Classic before changing the commands within the ISO 14443A Mifare Classic (13.56 MHz) tab.

Figure 20 - ISO 14443A Mifare Classic Tab

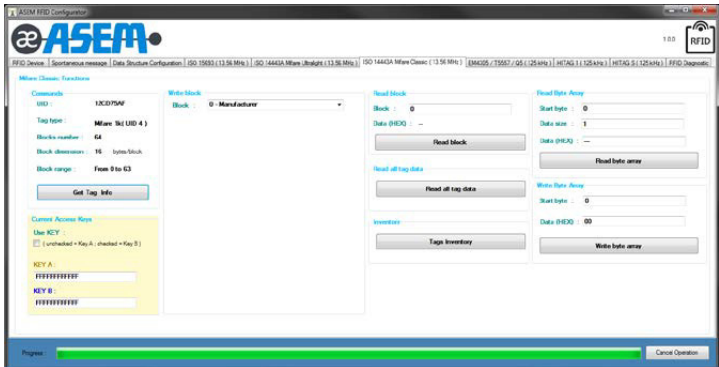


Table 34 - Commands for ISO 14443A Mifare Classic

Commands	
UID :	12CD75AF
Tag type :	Mifare 1k(UID 4)
Blocks number :	64
Block dimension :	16 bytes/block
Block range :	From 0 to 63

Command	Description
UID	Unique Identifier of the manufacturer.
Blocks number	Number of memory blocks present on the tag.
Block dimension	Size of a block expressed in bytes.
Block range	Index range for accessing the data block.

Table 35 - Current Access Keys

Current Access Keys	
Use KEY :	<input type="checkbox"/> (unchecked = Key A ; checked = Key B)
KEY A :	FFFFFFFF
KEY B :	FFFFFFFF

Command	Description
Use Key	This is used to set the use of the A or B key to access the SECTOR TRAILER or a data block
Key A	Protection key A
Key B	Protection key B

Table 36 - Write Block

Write block	
Block :	0 - Manufacturer
	1 - Data
	2 - Data
	3 - Trailer
	4 - Data
	5 - Data
	6 - Data
	7 - Trailer
	8 - Data
	9 - Data
	10 - Data
	11 - Trailer
	12 - Data
	13 - Data
	14 - Data
	15 - Trailer
	16 - Data
	17 - Data
	18 - Data
	19 - Trailer
	20 - Data
	21 - Data
	22 - Data
	23 - Trailer
	24 - Data
	25 - Data
	26 - Data
	27 - Trailer
	28 - Data
	29 - Data

Description
If the <i>tag</i> is detected by the RFID reader of this pull-down menu shows the inner structure of the <i>tag</i> itself. The data blocks are indicated in <i>blue</i> while the <i>trailer</i> data are red. The <i>Manufacturer</i> is black and is read-only.

Table 37 - Write Block Data

Command	Description	
Write Block	Write in the selected block or in all data blocks depending on which option is selected, either 'Write Selected Block' or 'WRITE ALL DATA BLOCKS'. To form the tag, 'Reset' the Data field and execute the "WRITE ALL DATA BLOCKS" command.	
	Block	Block in which to write.
	Data (Hex)	Array of 16 bytes.

Table 38 - Write Block Trailer

Command	Description	
Write Block Trailer	Key A (New Key)	New access key A
	Key B (New Key)	New access key B
	Trailer Access Bits	Access bits for SECTOR TRAILER
	Data Access Bits	Access bits for the data blocks

Table 39 - Security Configuration Help

Access conditions for the sector trailer

Access bits			Access condition for KEYA				Access bits KEYB				Remark
C1	C2	C3	read	write	read	write	read	write	read	write	
0	0	0	never	key A	key A	never	key A	key A	key A	key A	Key B may be read
0	1	0	never	never	key A	never	key A	never	key A	never	Key B may be read
1	0	0	never	key B	key A	never	never	never	key B	never	
1	1	0	never	never	key A	never	never	never	never	never	
0	0	1	never	key A	key A	key A	key A	key A	key A	key A	Key B may be read, transport configuration
0	1	1	never	key B	key A	key B	never	never	key B	never	
1	0	1	never	never	key A	key B	never	never	never	never	
1	1	1	never	never	key A	never	never	never	never	never	

Remark: the grey marked lines are access conditions where key B is readable and may be used for data.

ACCESS BITS
FOR
SECTOR
TRAILER

Access conditions for data blocks

Access bits			Access condition for				Application	
C1	C2	C3	read	write	increment	decrement, transfer, restore		
0	0	0	key A B ^[1]	key A B ^[1]	key A B ^[1]	key A B ^[1]	transport configuration	
0	1	0	key A B ^[1]	never	never	never	read/write block	
1	0	0	key A B ^[1]	key B ^[1]	never	never	read/write block	
1	1	0	key A B ^[1]	key B ^[1]	key B ^[1]	key A B ^[1]	value block	
0	0	1	key A B ^[1]	never	never	key A B ^[1]	value block	
0	1	1	key B ^[1]	key B ^[1]	never	never	read/write block	
1	0	1	key B ^[1]	never	never	never	read/write block	
1	1	1	never	never	never	never	read/write block	

DEFAULT : Read and modify both sector trailers and data blocks using key A

SUGGESTED : Read data block using key A and read or modify sector trailer using key B

^[1] If key B may be read in the corresponding Sector Trailer it cannot serve for authentication (all grey marked lines in previous table). Consequences: If the reader tries to authenticate any block of a sector with key B using grey marked access conditions, the card will refuse any subsequent memory access after authentication.

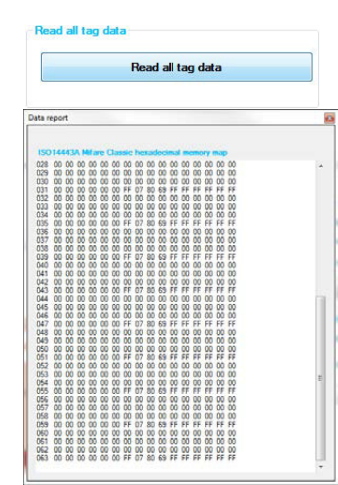
ACCESS BITS
FOR
DATA
BLOCKS

Set the access bits by clicking the 'Security Configuration Help' button

Table 40 - Read Block

Command	Description	
Read Block	Block	Block number to read.
	Data (Hex)	Data read in hexadecimal format (16 bytes).

Table 41 - Read All Tag Data



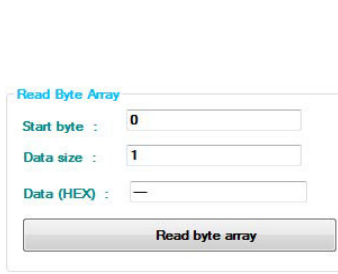
Command	Description
Read All Tag Data	Read all tag data contained in the tag. IMPORTANT: The operation is only possible if all SECTOR TRAILERS have the same safety attributes.

Table 42 - Inventory



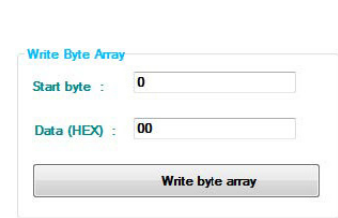
Command	Description
Inventory	Read all the MIFARE CLASSIC tags in the operating range of the antenna. This feature greatly depends on the size of the antenna.

Table 43 - Read Byte Array



Command	Description	
Write Byte Array	Read a <i>byte array</i> of arbitrary length starting from any position of a <i>tag</i> .	
	Start Byte	Bytes from where to start reading
	Data Size	Number of bytes to read
	Data (Hex)	Byte array read from the tag (hexadecimal format)

Table 44 - Write Byte Array



Command	Description	
Write Byte Array	Write a <i>byte array</i> of arbitrary length starting from any position of a <i>tag</i> .	
	Start Byte	Index from where to start reading.
	Data (Hex)	Byte array read from the tag (hexadecimal)

RFID LF 125 kHz Reader

The LF reader supports various types of tags:

- M4305

- T5557
- Q5
- Hitag1
- HitagS

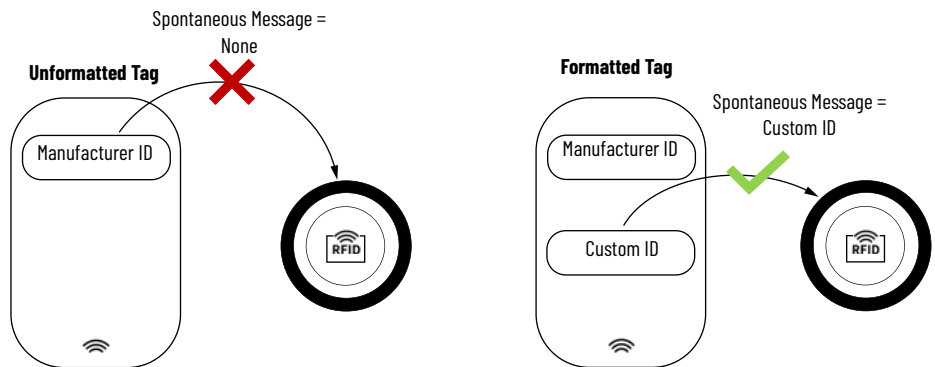
These tags types contain an identification wired by the manufacturer, Manufacturer ID, which in all cases is not sent automatically as a spontaneous message.

There are specific functions which require the Manufacturer ID to imply a continuous request to the RFID device (polling).

To avoid this type of anachronistic and unnecessarily costly type of operation, some alternative functions are made available to allow the tag to emit the spontaneous message when it is placed near the RFID device.

The tag must be programmed and formatted as a Custom ID to send spontaneous message. This Custom ID is not the Manufacturer ID, but rather is specifically created and stored on the tag by means of particular writing functions made available through the library.

Figure 21 - Manufacturer ID versus Custom ID



Not all tags support the various types of Custom ID. See the tag manufacturer's technical specifications to verify the spontaneous message formats in UNIQUE emulation mode is supported.

The three types of Custom ID that can be used to format the tag are listed in [Table 45](#).

Table 45 - Custom ID Formats

Command	Description	
Custom ID	SHORT_ID	5 bytes
	MEDIUM_ID	10 bytes
	LONG_ID	20 bytes

EM3405/T5557/Q5 (125 kHz)

Figure 22 - EM3405/T5557/Q5 (125 kHz) Tab

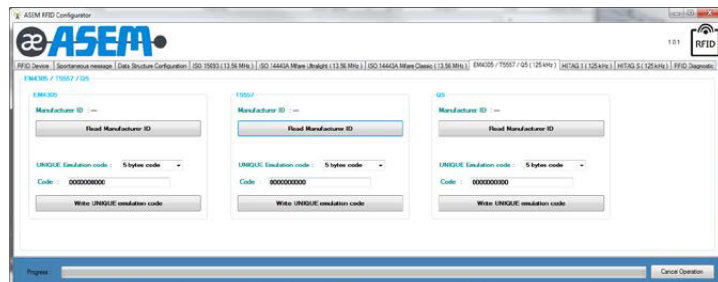


Table 46 - EM3405

EM4305

Manufacturer ID : —

Read Manufacturer ID

UNIQUE Emulation code : 5 bytes code

Code : 000000000

Write UNIQUE emulation code

Description	
Manufacturer ID	UID of the tag manufacturer
Read Manufacturer ID	Read the Manufacturer ID on the tag
UNIQUE Emulation Code	Number of bytes for the emulated UID
Code	UID (hexadecimal) of length equal to that declared in the previous field.

Table 47 - T5557

T5557

Manufacturer ID : —

Read Manufacturer ID

UNIQUE Emulation code : 5 bytes code

Code : 000000000

Write UNIQUE emulation code

Description	
Manufacturer ID	UID of the tag manufacturer
Read Manufacturer ID	Read the Manufacturer ID on the tag
UNIQUE Emulation Code	Number of bytes for the emulated UID
Code	UID (hexadecimal) of length equal to that declared in the previous field.

Table 48 - Q5

Q5

Manufacturer ID : —

Read Manufacturer ID

UNIQUE Emulation code : 5 bytes code

Code : 000000000

Write UNIQUE emulation code

Description	
Manufacturer ID	UID of the tag manufacturer
Read Manufacturer ID	Read the Manufacturer ID on the tag
UNIQUE Emulation Code	Number of bytes for the emulated UID
Code	UID (hexadecimal) of length equal to that declared in the previous field.

HITAG1 (125 kHz)

Figure 23 - HITAG1 (125 kHz) Tab



Table 49 - Manufacturer ID

Manufacturer ID

Manufacturer ID : —

Read Manufacturer ID

Description	
Manufacturer ID	UID of the tag manufacturer
Read Manufacturer ID	Read the manufacturer ID on the tag

Table 50 - Read Page

Read page

Page : 16

Data (HEX) : —

Read Page

Description	
Read a data page of the tag	
Page	Page on which to read the content.
Data (HEX)	Data read in hexadecimal format.
Read page	Show the page data declared on the Page field in the Data field.

Table 51 - Write Page

Write block

Page : 16

Data (HEX) : 00000000

Write Page

Description	
Write a data page on the tag	
Page	Page on which to write the content.
Data (HEX)	Data to write in hexadecimal format.
Write page	Write the data declared in the Data field on the page indicated in the Page field.

HITAG S256 / HITAG S2048 (125 kHz)

Figure 24 - HITAG S (125 kHz) Tab

Table 52 - HITAG S Setup

HITAG S

Manufacturer ID : —

Tag Type : —

Read Manufacturer ID

UNIQUE Emulation code : 5 bytes code

Code : 0000000000

Write UNIQUE emulation code

Description	
Read the UID of the manufacturer of the tag and set a UID in UNIQUE emulation	
Manufacturer ID	UID of the tag manufacturer
Read Manufacturer ID	Read the Manufacturer ID on the tag Tag Type
Tag type	(Hitag S 256 or Hitag S 2048)
Unique Emulation Code	Number of bytes for the emulated UID
Code	UID (hexadecimal) of length equal to that declared in the previous field.

Table 53 - Read Page

Read page

Page : 0

Data (HEX) : —

Read Page

Description	
Read a data page of the tag	
Page	Page on which to read the content
Data (HEX)	Data read in hexadecimal format
Read page	Show the page data declared on the Page field in the Data field

Table 54 - Write Page

Description	
Write a data page on the tag	
Page	Page on which to write the content
Data (HEX)	Data to write in hexadecimal format
Write page	Write the data declared in the Data field on the page indicated in the Page field

Write page

Page : 4

Data (HEX) : 00000000

Write Page

RFID Diagnostic

To obtain the RFID diagnostics, press the “Diagnostic Test” button. If the result of the diagnostics is positive, the green light underneath will light up.

Figure 25 - RFID Diagnostic Tab

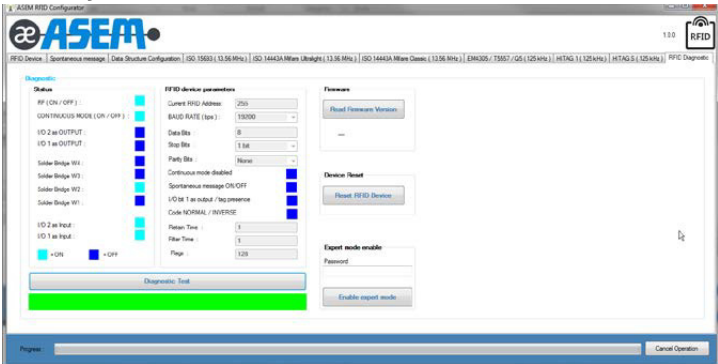


Table 55 - RFID Diagnostics: Status

Field Name	Description
RF (ON / OFF)	Indicates whether the RF signal is active.
Continuous Mode (ON /OFF)	Indicates whether the continuous tag detection is active.
I/O 2 as OUTPUT	Parameter defined by the manufacturer
I/O 1 as OUTPUT	
Solder Bridge W4	
Solder Bridge W3	
Solder Bridge W2	
Solder Bridge W1	
I/O 2 as Input	
I/O 1 as Input	

Status

RF (ON / OFF) :

CONTINUOUS MODE (ON / OFF) :

I/O 2 as OUTPUT :

I/O 1 as OUTPUT :

Solder Bridge W4 :

Solder Bridge W3 :

Solder Bridge W2 :

Solder Bridge W1 :

I/O 2 as Input :

I/O 1 as Input :

= ON = OFF

Table 56 - RFID Diagnostics: RFID Device Parameters

Field Name	Description
------------	-------------

Table 56 - RFID Diagnostics: RFID Device Parameters

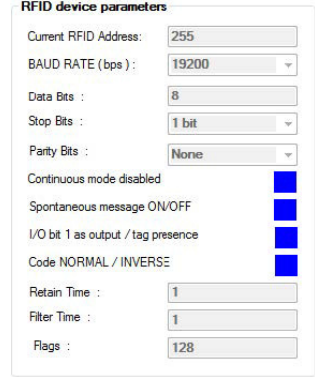
	Current RFID Address	Address of the RFID peripheral (0-255)
Baud Rate (bps)	Speed set on the serial line	
Data Bits	Data bit on serial interface	
Stop Bits	Stop bit on serial interface	
Parity Bits	Parity on serial interface	
Continuous mode disabled	Deactivate continuous tag detection	
Spontaneous message ON/OFF	This indicates whether the spontaneous message is enabled	
I/O bit 1 as output / tag presence	Parameter defined by the manufacturer	
Code NORMAL / INVERSE		
Retain Time:		
Filter Time:		
Flags		

Table 57 - Firmware

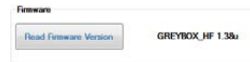


Table 58 - Device Reset



Description
Click the "Read Firmware Version" button to check the firmware release of the RFID device. IMPORTANT: The serial communication must be reopened after this operation.

Description
Click the "Reset RFID Device" button to run a hot reset of the device. IMPORTANT: The serial communication must be reopened after this operation.

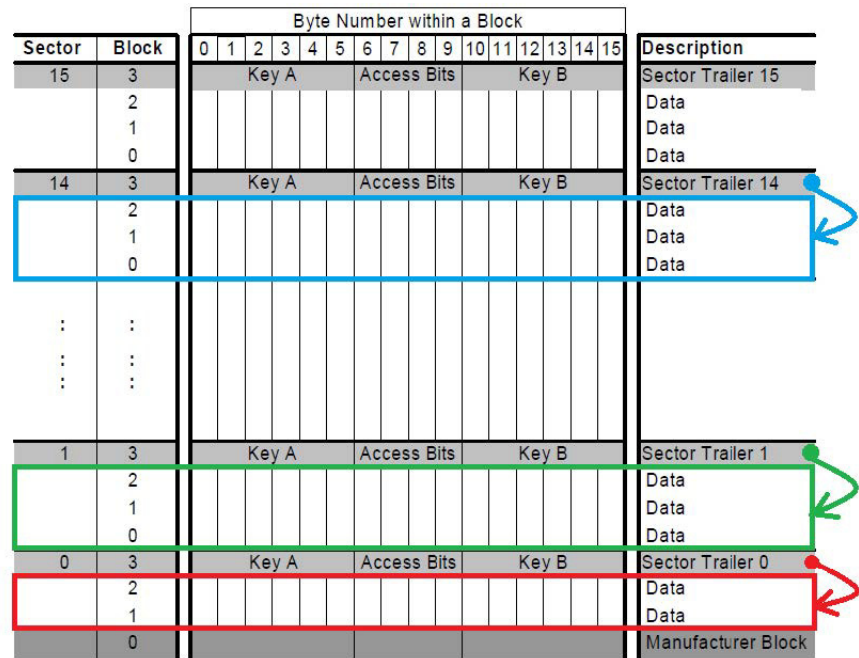
Additional Information

Mifare Classic Tag Management

The MIFARE CLASSIC tag management is used to set the safety attribute and then access the various data blocks via access key constituting of an array of 6 bytes.

There are two different keys, A and B. The keys can be used in different ways by setting the safety attributes.

Figure 26 - Mifare Classic Memory Map Organization



The tag memory consists of DATA blocks and SECTOR TRAILER, in addition to a first sector reserved for the manufacturer (MANUFACTURER BLOCK).

The MANUFACTURER BLOCK is read-only.

The DATA blocks can be read and written according to the permissions set in the SECTOR TRAILER.

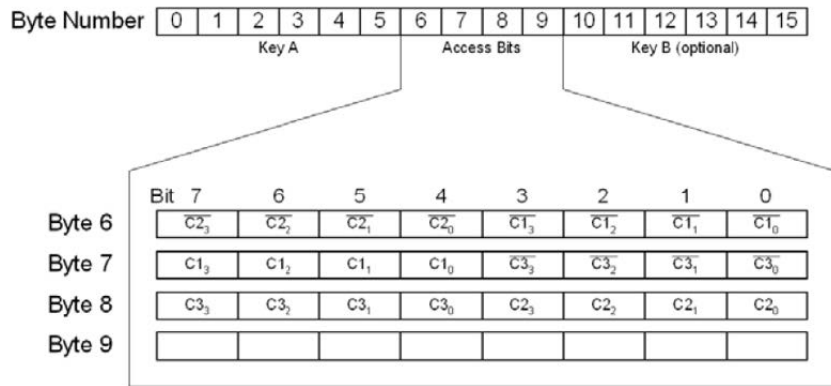
A SECTOR TRAILER contains the attributes which describe how to protect the DATA blocks and the SECTOR TRAILER itself. Key A and Key B are stored in the SECTOR TRAILER.

Each SECTOR TRAILER determines the policies for accessing the previous DATA blocks (to the previous SECTOR TRAILER or to the MANUFACTURER BLOCK). The figure shows some sectors in which the relationship between some SECTOR TRAILER and the respective DATA blocks are highlighted.

In particular, SECTOR TRAILER 0 contains its own policy and that of the blocks highlighted in the red rectangle.

Similarly, SECTOR TRAILER 1 contains its own policy and that of the blocks high-lighted in the green rectangle.

Initially, when the tag is clear, it is set so that both the DATA blocks and the SECTOR TRAILERS can be read and written with Key A which with Key B is set to the fixed value FFFFFFFF.

Figure 27 - SECTOR TRAILOR Structure

[Figure 27](#) shows the structure of a SECTOR TRAILER for setting the permissions.

In addition to Key A and Key B, four central bytes are present for setting the access policies (only bytes 6, 7 and 8) are used for defining the policies.

Three bits are used to set the policy of the SECTOR TRAILER itself ($\overline{C13}$, $\overline{C23}$, $\overline{C33}$ – BLOCK 3), while the other 3 bits ($\overline{C10,1,2}$, $\overline{C20,1,2}$, $\overline{C30,1,2}$ BLOCK 0-1-2) are used to set the policies of the DATA blocks referred to the SECTOR TRAILER.

As shown in [Figure 27](#), besides the first sector in which a SECTOR TRAILER sets the policies for the two DATA blocks (the MANUFACTURER BLOCK cannot be written), a SECTOR TRAILER sets the policies for three DATA blocks in the successive sectors.



In the MIFARE CLASSIC 4k tags there is a first part of the tag with the configuration shown above, while in a second part of the tag the SECTOR TRAILERS define the policies for the respective 15 DATA blocks. See the tag manual for further technical information.

All blocks consist of a sequence of 16 bytes regardless of type.

SECTOR TRAILER Policy Bits and DATA Block

The three bits – $\overline{C1}$, $\overline{C2}$, $\overline{C3}$ – are used again in SECTOR TRAILER policy bits and DATA block. However, the meaning of the combinations is different according to the block type. The meaning here is **TRAILER** instead of **DATA**.

[Figure 28 on page 72](#) and [Figure 29 on page 72](#) illustrate how to configure the various *bits*.



The policies are expressed differently according to whether they are SECTOR TRAILER or DATA blocks.

Figure 28 – Combinations of C1, C2 and C3 to Set the SECTOR TRAILER Policies

Access conditions for the sector trailer

Access bits			Access condition for						Remark
			KEYA		Access bits		KEYB		
C1	C2	C3	read	write	read	write	read	write	
0	0	0	never	key A	key A	never	key A	key A	Key B may be read
0	1	0	never	never	key A	never	key A	never	Key B may be read
1	0	0	never	key B	key A B	never	never	key B	
1	1	0	never	never	key A B	never	never	never	
0	0	1	never	key A	key A	key A	key A	key A	Key B may be read, transport configuration
0	1	1	never	key B	key A B	key B	never	key B	
1	0	1	never	never	key A B	key B	never	never	
1	1	1	never	never	key A B	never	never	never	

<DEFAULT

<SUGGESTED

<DEFAULT

<SUGGESTED

Figure 29 – Combinations of C1, C2 and C3 to Set the DATA Block Policies

Access conditions for data blocks

Access bits			Access condition for				Application	
C1	C2	C3	read	write	increment	decrement, transfer, restore		
0	0	0	key A B ^[1]	key A B ^[1]	key A B ^[1]	key A B ^[1]	transport configuration	<DEFAULT
0	1	0	key A B ^[1]	never	never	never	read/write block	
1	0	0	key A B ^[1]	key B ^[1]	never	never	read/write block	<SUGGESTED
1	1	0	key A B ^[1]	key B ^[1]	key B ^[1]	key A B ^[1]	value block	
0	0	1	key A B ^[1]	never	never	key A B ^[1]	value block	
0	1	1	key B ^[1]	key B ^[1]	never	never	read/write block	
1	0	1	key B ^[1]	never	never	never	read/write block	
1	1	1	never	never	never	never	read/write block	

- **Default:** Read and edit both the SECTOR TRAILERS and the DATA blocks using key A.
- **Suggested:** Read the DATA blocks using key A and read or edit the SECTOR TRAILERS using the key B.

In theory, each SECTOR TRAILER could have different policies and keys. However, from a practical point of view, one can ensure security by formatting the entire tag with the same permissions. Similarly, the same criterion may be used for the DATA block policies.



If you choose to use the criteria described above, some ASEM library functions, constrained to that criterion, created specifically to facilitate program-ming can be used.

Example of criteria:

- SECTOR TRAILERS set with the same safety attributes – C1, C2, C3 – related to the SECTOR TRAILER and
- C1, C2, C3 – related to the DATA blocks and the same Key_A and Key_B.

When the tag is clear, the SECTOR TRAILER, has the DEFAULT configuration:

- In practice, it can be read and written with Key A (remember that the key is initially set to FFFFFFFF).
- Key B is set to FFFFFFFF but in the default configuration it is not used.

When the tag is clear, the DATA block has the DEFAULT configuration:

- In practice, it can be read and written with Key A (remember that the key is initially set to FFFFFFFF).

This situation must be modified for two reasons:

- Keys A and B are identical and known, and therefore protection is in-validated.

- It is not a good idea to use the same key for reading and writing both block types.

To avoid this situation, it is recommended to use the policy configuration indicated in the figures as SUGGESTED:

- Key A is used to read the DATA blocks
- Key B is used to write the DATA blocks and write the SECTOR TRAILER (which obviously must not be readable)

The SUGGESTED arrow indicates the bit combination needed to obtain this policy type. The main advantage is that Key B is handed over to the IT Manager who programs the tag (private key), while Key A is distributed to the field for reading only (public key). In this manner, since only the system administrator has Key B, the writing of the tag by unauthorized personnel is prevented even if Key A is disclosed.

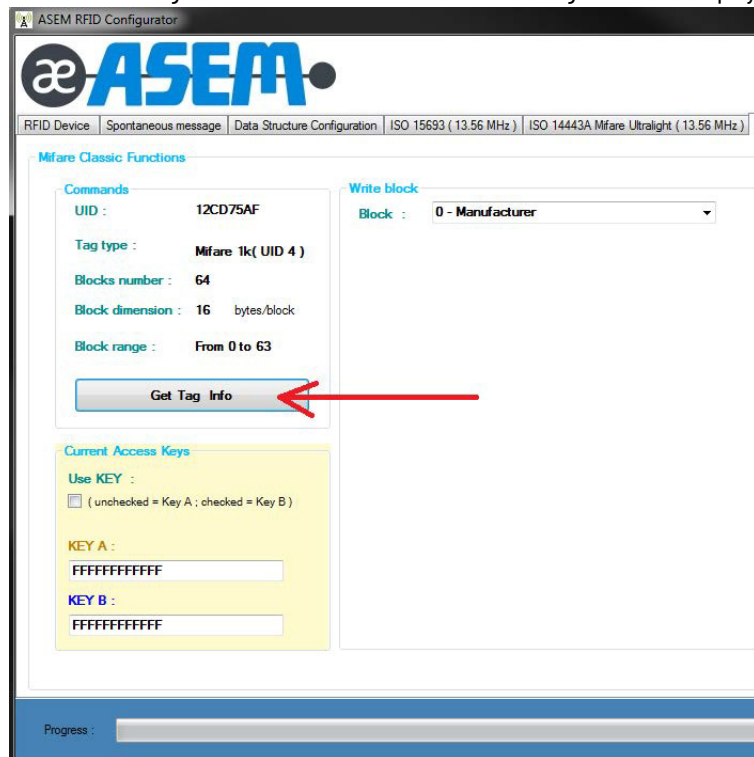
Safety Attribute Setting for Reading and Writing Mifare Classic Tag

This section of the manual is fundamental for managing MIFARE CLASSIC tags using safety attributes. Read all instructions carefully before proceeding.

IMPORTANT A programming procedure error can cause permanent damage to the tag. Make sure the tag is always in range of the action of the RFID antenna while programming the policy. Click the 'Get Tag Info' button to obtain information on the tag content.

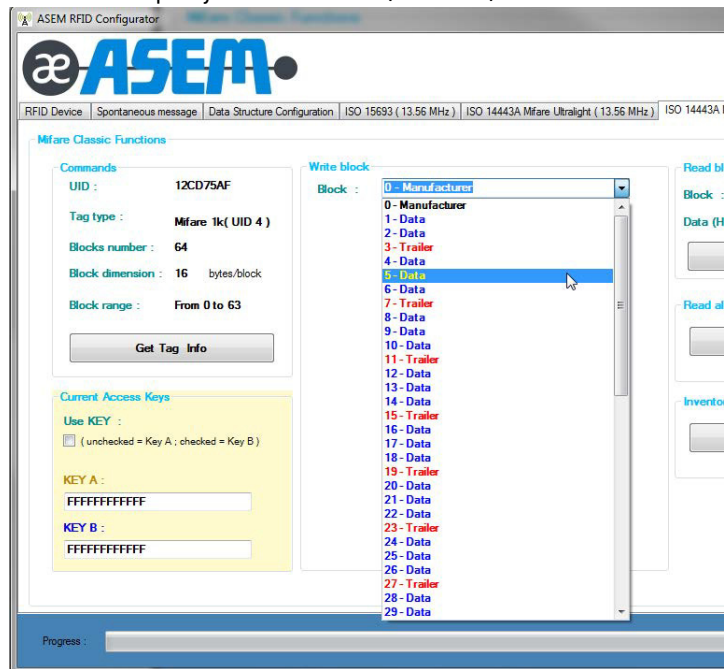
To obtain information on the tag content:

1. Click the 'Get Tag Info' button. The information on the tag content is displayed.



2. Select an item from the 'Block' pull-down menu within 'Write Block' section to view all the blocks related to the detected tag. Items include:
 - Manufacturer Block: always in position 0 (color: black)
 - Data Block: data block (color: blue)

- Sector Trailer: policy definition trailer (color: red)



3. View the 'Current access key' section. The following fields are declared:
 - Which key to use for the following operation.
The meaning of the keys depends on the *policies* previously set in the *tag*.
 - Protection Key_A and Key_B.

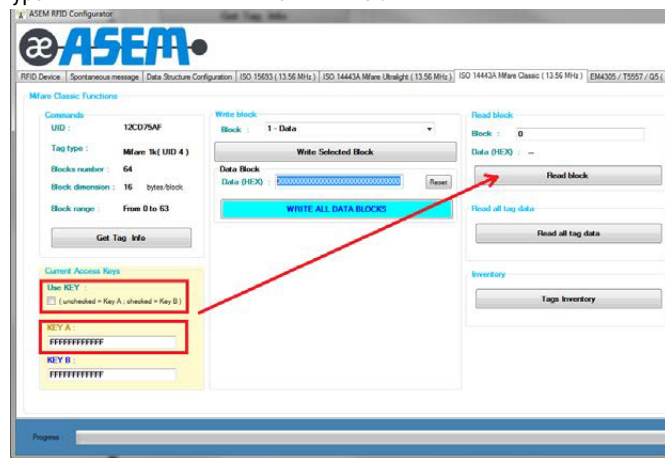
IMPORTANT In order to use the *tag*, it is necessary to know how:

- the tag was configured (*policy*) and
- the access keys for reading and writing.

Reading a DATA Block

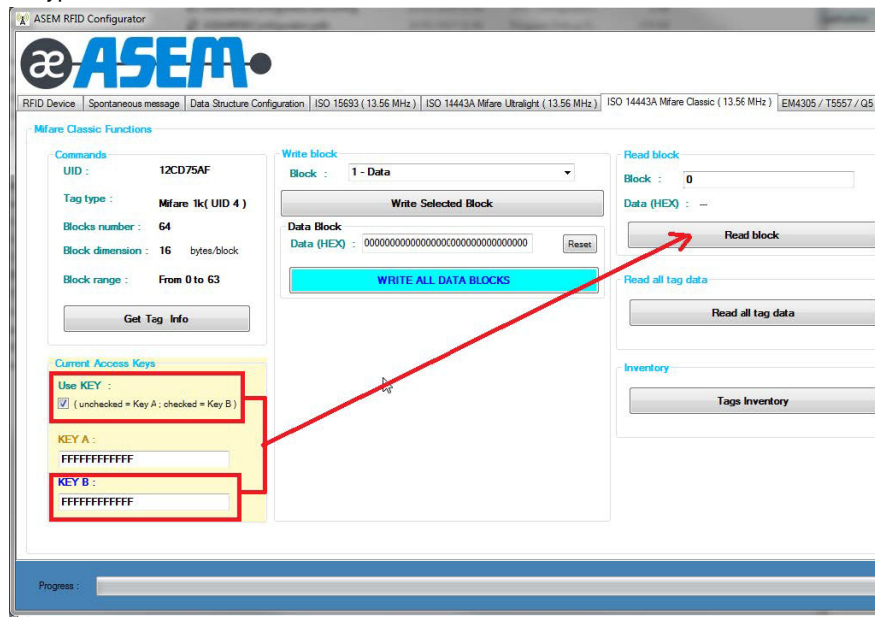
To read block 0 using Key_A equal to FFFFFFFF:

1. In the 'Current Access Keys' section:
 - a. Uncheck the 'Use KEY'.
 - b. Type "FFFFFFFF" within the KEY A field.



2. Click the 'Read Block' button. The newly declared policies can be read.
3. If the tag has the policy set for reading with Key_B, populate the 'Current Access Keys' section with these values:
 - a. Check the 'Use KEY'.

b. Type "FFFFFFFFFFFF" within the KEY B field.:



4. Click the 'Read Block' button. The newly declared policies can be read.

Writing a Data Block

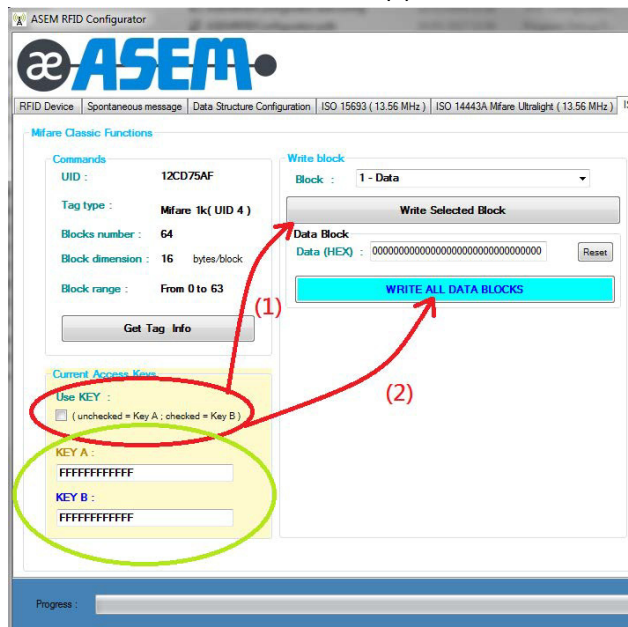
Writing occurs in the similar manner to reading a data block.



The 'Write all data blocks' command will fail if the blocks do not have the same policies set in the respective SECTOR TRAILERS.

To write a data block:

1. Select the block to be written in the pull-down menu.
2. Set the writing policies in the 'Current Access Keys' section..
3. Set the 16 bytes to write (Data field in hexadecimal).
4. Click the 'Write Selected Block' button (1) to write only the selected data block.
5. Click the 'Write All Data Blocks' button (2) to write all data of the tag.



Formatting a Tag

To format a tag:

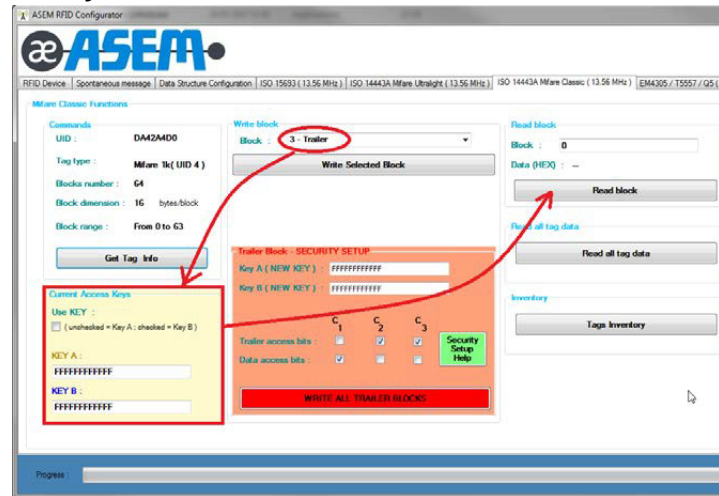
1. Set the Data field to:
00000000000000000000000000000000 (16 empty bytes)
2. Write all the data blocks.
3. To reset the data field to an empty value:
Click the 'Reset' button (located near the data field).

Reading a Sector Trailer

The reading a SECTOR TRAILER method is identical to the steps described in [Reading a DATA Block on page 74](#).

IMPORTANT Policies set in the 'Current Access Keys' section now refer to **reading** a SECTOR TRAILER.

Figure 30 - Reading a Sector Trailer



Writing Tag Safety Policies

IMPORTANT A programming procedure error can cause permanent damage to the tag. Make sure the tag is always in range of the action of the RFID antenna while programming the policy.

Writing tag safety policies are performed in the 'Trailer Block – SECURITY SETUP' section. The data required for writing tag safety policies are:

- Key_A (16 bytes hex)
- Key_B (16 bytes hex)
- Trailer access bits C1 C2 C3: These define how to access the TRAILER SECTOR for reading and writing
- Data access bits C1 C2 C3: These define how to access DATA blocks in reading and writing.

IMPORTANT In order to successfully write the new policies, you must:

- know the former policies and
 - set the 'Current Access Keys' section providing the data needed for writing the sector trailer.
- If the writing control is successfully executed, the:
- former policies will no longer apply and
 - new policies entered in the 'Current Access Keys' section must be used.

To write a tag safety policy:

1. Click the 'Security Setup Help' button.

A pop-up window appears with the access conditions to the blocks according to the setting of the three bits.

2. *To write the policies on a specific trailer sector:* Click the 'Write Selected Block' button.



Only what is written in the pull-down menu will be selected.

To write the policies on all trailer sectors of the tag (recommended): Click the 'Write all trailer blocks' button.

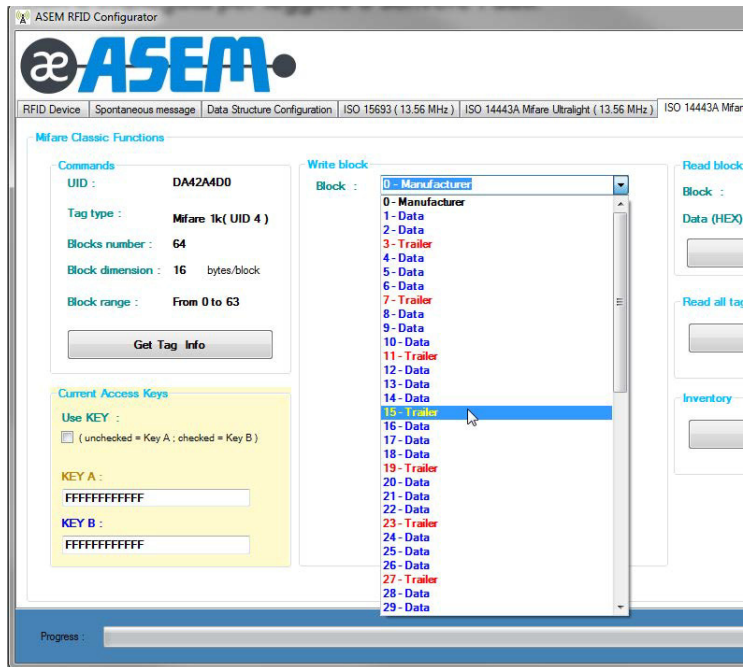
Example: Render a Tag Unusable through Change Policies

IMPORTANT **Do not actually perform these Example steps.** Doing so will result in an unusable tag. Only read the content of this section for basic knowledge.
We strongly advise to operate using the same policies on all sector trailers in order to use the advanced functions provided in the library (such as reading an array of consecutive bytes starting from any index).

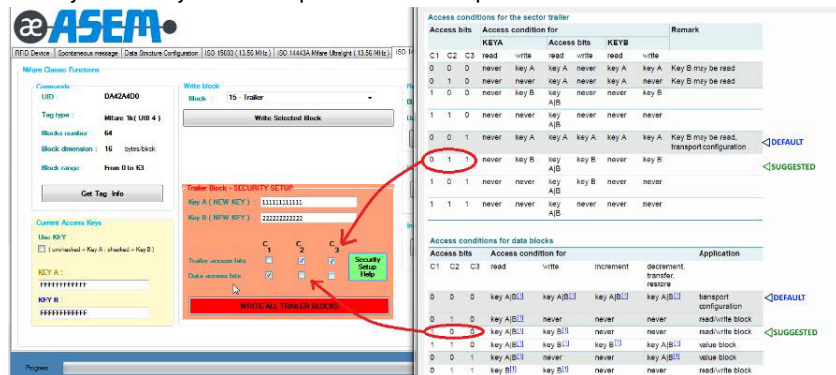
The following example explains how to change the policies of a tag. In this example, the objective is to edit only one sector trailer, leaving the others unchanged.

Assumption	<p>The tag is initially clear and therefore policies are the default policies. It can be read and written with:</p> <ol style="list-style-type: none"> a. Key A (remember that the key is initially set to FFFFFFFFFF) b. Key B is set to FFFFFFFFFF, but in the default configuration it is not used for reading or writing data.
Objective	<p>Edit the policies of the sector trailer in position 15 so that the:</p> <ol style="list-style-type: none"> a. data blocks can be read with Key_A set to value: 11111111111111111111111111111111h b. data blocks can be written only with Key_B set to value: 22222222222222222222222222222222h c. sector trailer can be written only with Key_B.

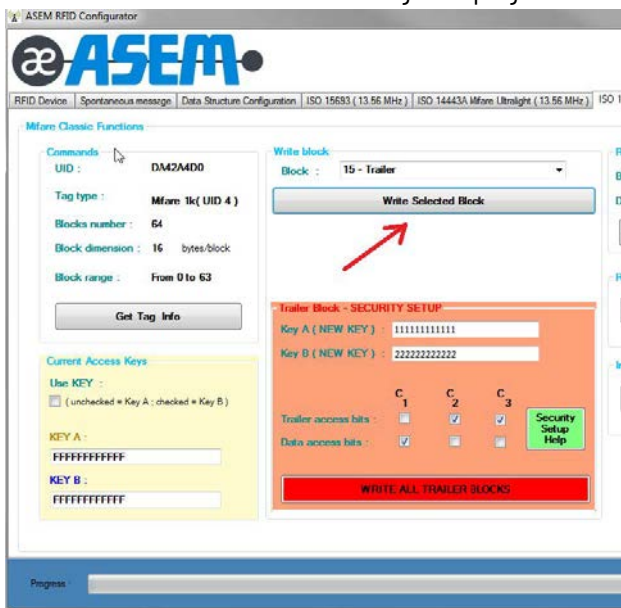
1. Within the 'Write block' section, Select '15 – Trailer' from the 'Block' drop-down list.
Since the tag is clear, the Sector Trailer can be written with Key_A set to the default value of "FFFFFFFFFh" with the 'Use KEY' unchecked within the 'Current Access Keys' section.



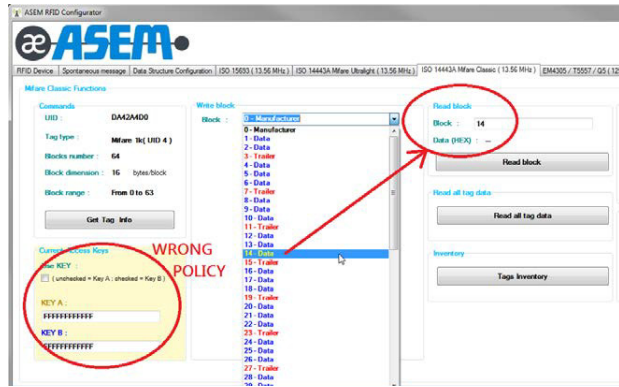
2. Set Key_A and Key_B and the policies in the Help section.



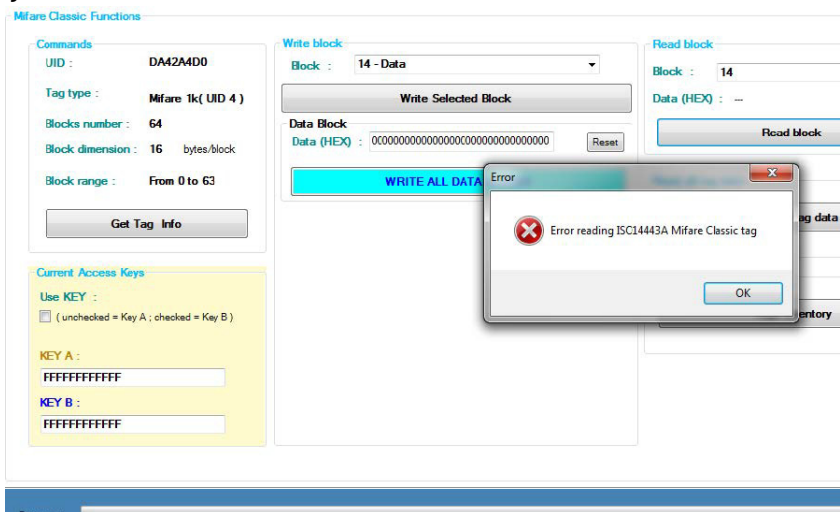
3. Click the 'Write Selected Block' button again to program the tag with new policies.



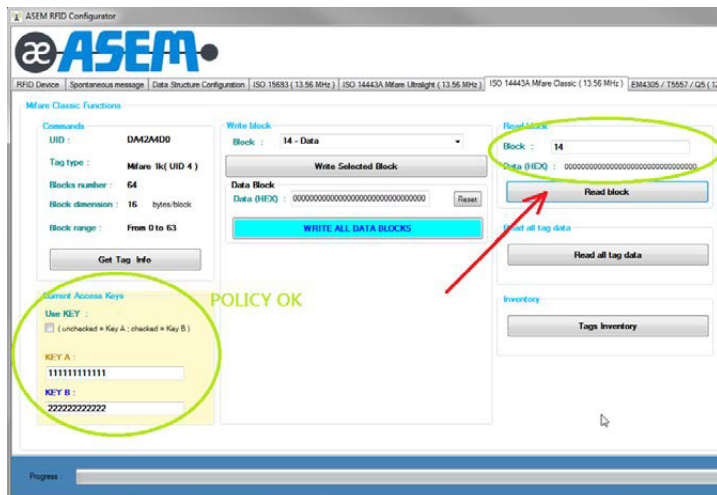
4. To verify the policies were applied: Select '14 – Data' from the 'Block' drop-down field. '14 – Data' is where the policies are stored in newly programmed sector trailer 15.



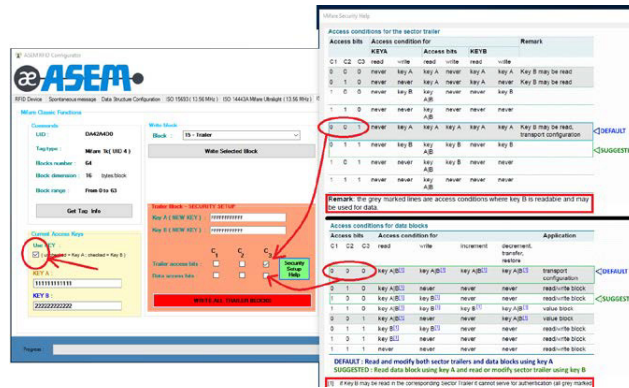
If the policies are unchanged in the "Current Access Keys" section, an error will generate.



If the policies are edited to the correct value in the "Current Access Keys" section, a string of 16 empty bytes will be read. This value is correct because the tag is still clear so that data blocks are set with value 0.

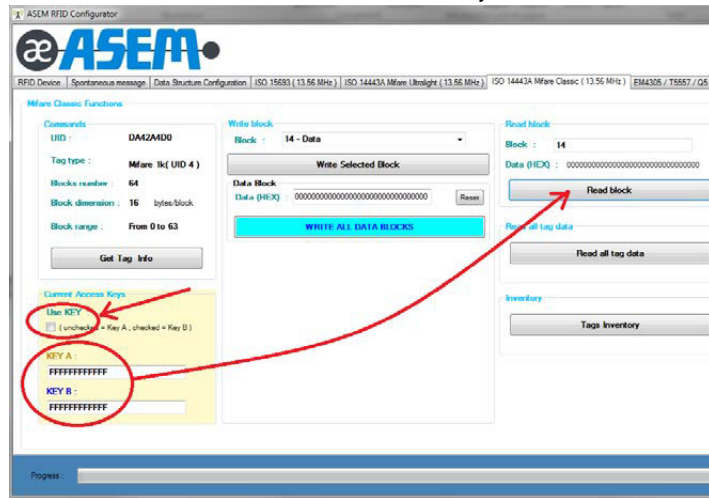


5. To restore the original policies:
 - a. Check 'Use Key' from the Current Access Keys section.
 - b. Check the 'Trailer Access Bits' and 'Data Access Bits' as shown below.



To write the sector trailer: Select the use of Key_B within the 'Current Access Keys' section, as it was previously set that the sector trailer can only be written with Key_B.
Bits C1 C2 C3 are reset to the default condition as the value of Key_A and Key_B.

6. Click the 'Write Selected Block' button to change the policies.
7. Verify the original policies have been accepted.
 - a. Set Key_A and Key_B to the default value again.
 - b. Set Key_A for reading the tag (uncheck the 'Use key' field).
 - c. Select '14 – Data' from the Block drop-down field.
 - d. Review the values within the 'Current Access Keys' section.



The result is correct because:

The string formed in both 'KEY A' and 'KEY B' fields have values of 16 identical empty bytes in hexadecimal format and the 'Use KEY' is unchecked.

Operate an On-Machine Panel PC

Your On-Machine panel PC supports Microsoft® Windows® 10 Internet of Things (IoT) Enterprise 2016/2019 64 bit. This chapter provides guidance on this.

Operating System Updates

IMPORTANT Microsoft Windows updates are disabled by default.

For Windows 10 IoT Enterprise LTSC 2019 (also known as 1809), automatic Windows updates are disabled by default. If automatic Windows updates are required to assure security to the system, change the setting to “enable”.

By design, Microsoft Windows 10 IoT Enterprise LTSC (Long Term Support Branch) and LTSC (Long Term Support Channel) provides security and quality updates with no new features over a 10-year period.

Rather than receiving several updates each month which can be cumbersome – trying to figure out which the organization needs, which ultimately causes platform fragmentation – administrators will see one cumulative monthly update that supersedes the previous month’s update. This approach makes patching simpler and ensures the devices are more closely aligned with the testing done at Microsoft. This reduces unexpected issues when a software patch is installed.

Patches can either be:

- selectively downloaded, tested, and deployed as cumulative updates (preferred method) or
- automatically downloaded from the Internet and installed by Windows Update.



‘Windows Update’ is not compatible with most industrial applications. Therefore, cumulative updates are the preferred method to apply patches.

Servicing Stack Updates and Latest Cumulative Updates



Microsoft strongly recommends that you install the latest servicing stack updates (SSU) to the operating system (OS) before you install the latest cumulative updates (LCUs).

Servicing Stack Updates

Service stack updates (SSUs) improve the reliability of the update process to mitigate potential issues that might occur while installing the latest cumulative updates (LCUs) and applying Microsoft security fixes. The latest versions for 1607 and 1809 can be found at: <https://portal.msrc.microsoft.com/enus/security-guidance/advisory/ADV990001>

Latest Cumulative Updates

Latest cumulative updates (LCUs) can be installed as MSU files, an update package used by Windows Update, once downloaded from the Microsoft Update Catalog site: <https://www.catalog.update.microsoft.com/Home.aspx>



When searching for MSU files in the Microsoft Update Catalog site, use “cumulative update” as keywords. For example, if you want to update the LTSC 2019 (also known as 1809) type the following in the Search field:

- cumulative update 64 1607
- cumulative update 64 1809



Configure for Automatic Windows Updates

Modify by Registry

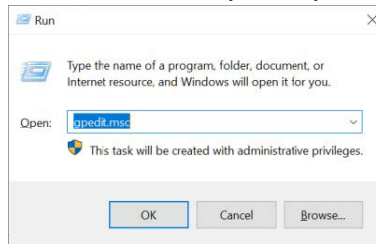
‘Automatic Windows Updates’ can be enabled and disabled by editing the following registry entry:

[HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate\AU]		
NoAutoUpdate	dword:00000000	Enables Windows updates
	dword:00000001	Disables Windows updates

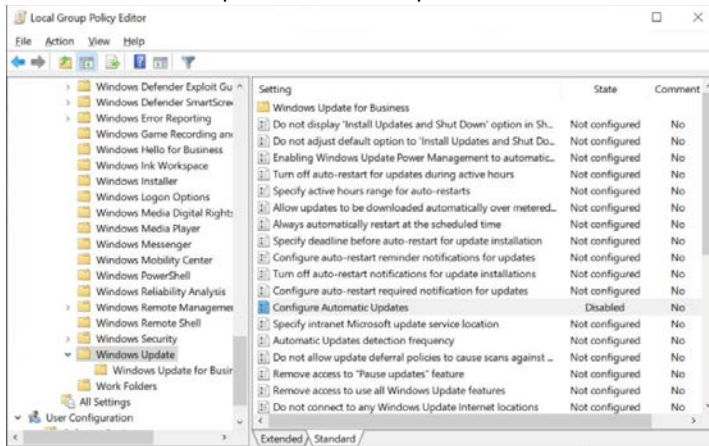
Modify by Group Policy

Perform the following steps to modify the group policy.

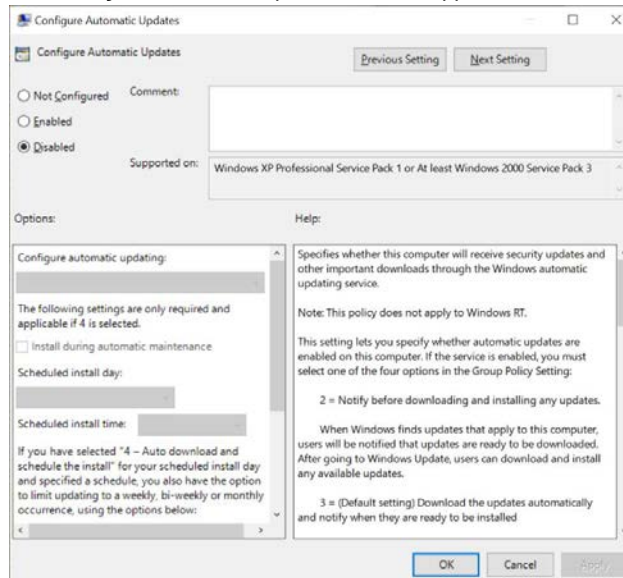
1. Press the ‘Windows’ key + ‘R’ key. The Run dialog box appears.



2. Type “gpedit.msc” in the Open field.
3. Press the ‘OK’ button. The Local Group Policy Editor window appears.
4. Navigate to Computer Configuration > Administrative Templates > Windows Components > Windows Update
5. Select the ‘Windows Update’ folder in left pane.



- Double-click the 'Configure Automatic Updates' setting. The Configure Automatic Updates window appears.



- Select one of the three radio buttons options.



See the 'Help' window at the bottom right panel for an explanation of each option.

- Click the 'Apply' button.
- Click the 'OK' button.

Free Up Disk Space

When a Windows Update is performed, previous versions of component files (Service Packs) are stored in the WinSxS directory. This allows you to rollback to the previous version.

The size of these previous component files (Service Packs) can increase by several gigabytes, which decreases free space on your storage device. If your storage device has limited free space and a rollback is not required, a system administrator can run the Microsoft Windows Deployment Image Servicing and Management (DISM) to delete the previous components.

As a system administrator:

- Open a CMD shell.
- Type one of the following commands:
 - `dism /online /Cleanup-Image /StartComponentCleanup`
 - `dism /online /Cleanup-Image /StartComponentCleanup /ResetBase`



The `"/ResetBase"` switch option also deletes all superseded versions of every component in the component store.

Use Windows Defender

Windows Defender is an anti-malware component of Microsoft Windows which prevents, removes, and quarantines malware (malicious software) and spyware.

On ASEM Windows 10 IOT Enterprise LTSC 2019 (also known as 1809), Windows Defender is disabled by default. If Windows Defender is required for security to the system, it must be enabled.

Modify by Registry

Windows Defender can be enabled and disabled by editing the registry entry:

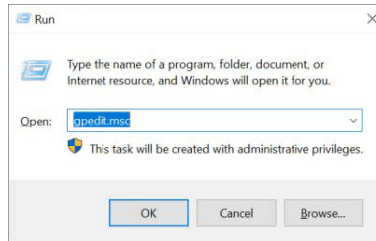
IMPORTANT Third-party anti-virus software and third-party anti-virus applications may not function correctly when Windows Defender is set to 'Disabled'.

[HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\WindowsDefender]		
DisableAntiSpyware	dword:00000000	Enables Windows Defender
	dword:00000001	Disables Windows Defender

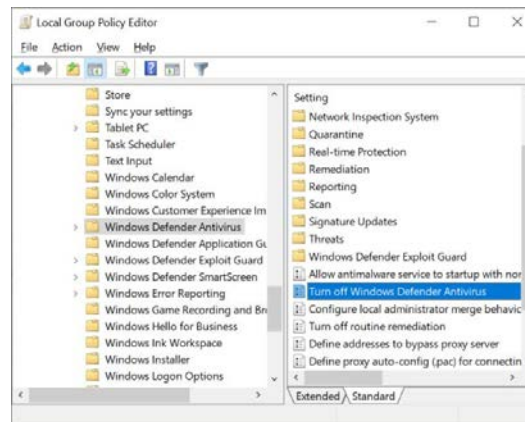
Modify by Group Policy

Perform the following steps to modify the group policy.

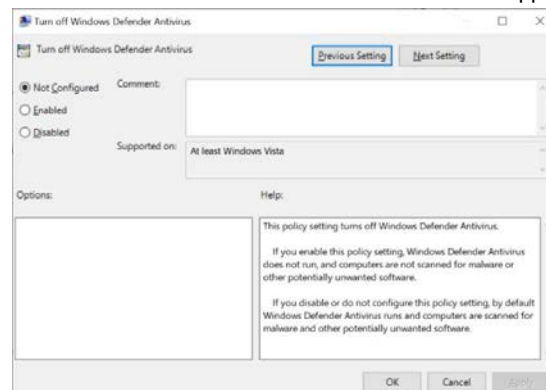
1. Press the 'Windows' key + 'R' key. The Run dialog box appears.



2. Type "gpedit.msc" in the Open field.
3. Press the 'OK' button. The Local Group Policy Editor window appears.
4. Navigate to Computer Configuration > Administrative Templates > Windows Components > Windows Defender Antivirus
5. Select the 'Windows Defender Antivirus' folder in left pane.



6. Double-click 'Turn off Windows Defender Antivirus' in the right panel. The 'Turn off Windows Defender Antivirus' window appears.



7. Select one of the three radio buttons options.



See the 'Help' window at the bottom right panel for an explanation of each option.

8. Click the 'Apply' button.
9. Click the 'OK' button.

Unified Extensible Firmware Interface Boot

Microsoft Windows 10 IOT Enterprise 2019 (1809) images, created by ASEM, are now booting with the Unified Extensible Firmware Interface (UEFI) boot mechanism. This UEFI boot mechanism is based on a Globally Unique Identification (GUID) Partition Table (GPT) storage device formatting scheme instead of the previous legacy boot mechanism based on a Master Boot Record (MBR) scheme.

UEFI boot supports additional security features as Secure Boot. It can be used for booting from a partition bigger than 2 TB.

IMPORTANT UEFI Boot must be enabled in the BIOS setup.

On a Phoenix BIOS: Navigate to Main > Boot Features > UEFI Boot, then set to 'Enabled'.

On an AMI BIOS: Navigate to Advanced > CSM > Configuration > Boot Operation Filter, then set to 'UEFI Boot' or 'UEFI and Legacy Boot'.

IMPORTANT

The UEFI/GPT format scheme may not allow some legacy disk cloning utilities (such as Norton™ Ghost®) to save and restore the storage device content. You must use a disk cloning utility that is compatible with UEFI boot format scheme.

Unified Write Filter

The Unified Write Filter (UWF) is an optional feature in Microsoft Windows 10 IOT Enterprise 2019 (1809) that helps to protect your drives by intercepting and redirecting any writes to the drive (application installations, settings changes, saved data) to a temporary location that is cleared during a reboot, called overlay.



To extend the system uptime, reduce the overlay uses by applying several Microsoft hot fixes. Install the latest cumulative updates available from the Catalog Site.

IMPORTANT

The random access memory (RAM) overlay, defaulted at 1 GB, will effectively decrease the main memory of the OS and the applications.

Your On-Machine product must be configured with additional memory, especially in case the overlay has to be bigger than its default value. UWF supports paging to increase virtual memory if the page file exists on an unprotected volume. When paging is used together with a RAM-based overlay, the uptime of the system can be significantly increased.

Every write to the protected partition is redirected to the RAM overlay, therefore reducing its free space. When the RAM overlay is full, the system will initially become unstable, then will either (a) become inoperable (not able to run) or (b) will restart.

Due to the internal filter implementation, files excluded from the write filter will also take up RAM overlay space. All unnecessary services and scheduled tasks (such as Windows Defender and Windows Updates) must be stopped/disabled to minimize unneeded writes to the RAM overlay.

IMPORTANT **Frequent RAM overlay usage must be monitored.** RAM overlay usage must be monitored on a regular basis (daily or weekly). The RAM overlay size must be set depending upon the application and maximum uptime needed.

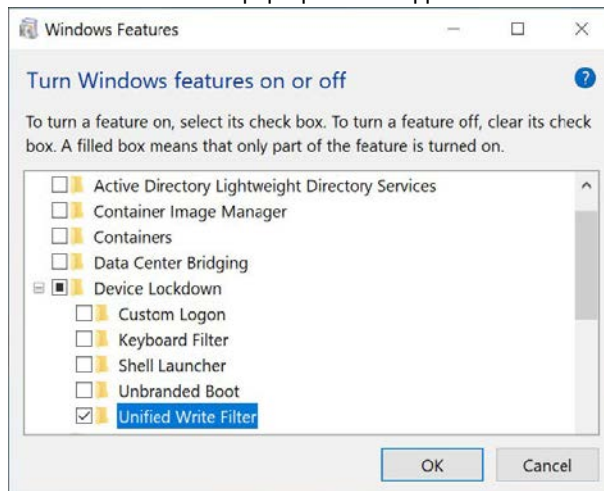
The RAM overlay will restore itself to the initial state after the next boot. Therefore, it is best practice to implement a maintenance schedule to perform a system shutdown or reboot on a daily or weekly basis.

Enable the UWF Feature

To enable the UWF feature, perform the following steps.

1. Right-click the Windows icon at the bottom left of the screen.
2. Select 'Apps and Features'.
3. Navigate to 'Programs and Features' > 'Turn Windows Features On or Off'.

The 'Windows Features' pop-up window appears.



4. Expand the 'Device Lock Down' folder.
5. Select/check 'Unified Write Filter'
6. Press the 'OK' button.
7. Reboot the system. Once rebooted, configure the filter.

Use the UWF Manager

The UWF Manager (uwfmgr.exe) must be used from a Powershell or a command prompt (CMD) with system administrator rights.



Depending on the command used, a system restart could be required.

The table below lists some available commands.



For a complete list of the commands, see the [Microsoft UWF reference site](#).

Command	Description
uwfmgr ?	Shows the general uwfmgr usage
uwfmgr <command> ?	Shows a specific command usage, where <command> is the required command
uwfmgr filter enable	Enable UWF
uwfmgr filter disable	Disable UWF
uwfmgr filter reset-settings	Reset UWF settings
uwfmgr volume protect C:	Enable protection of volume C:
uwfmgr volume unprotect C:	Disable protection of volume C:
uwfmgr file add-exclusion file	Add a file or a directory to the list of excluded files from a protected volume
uwfmgr file remove-exclusion file	Remove a file or a directory to the list of excluded files from a protected volume
uwfmgr registry add-exclusion reg	Add a registry key to the list of excluded files from a protected volume
uwfmgr registry remove-exclusion reg	Remove a registry key to the list of excluded files from a protected volume

Initial UWF Enable Behavior

The first time UWF is enabled on your system, the following changes are made to improve the performance of the UWF:

- Paging files are disabled.
- System restore is disabled.
- SuperFetch is disabled.
- File indexing service is turned off.
- Fast boot is disabled.
- Defragmentation service is turned off.
- BCD setting boot status policy is set to ignore all failures.

Next Step

After the UWF is enabled:

1. Select a drive to protect, then start using UWF.

UWF Memory Usage

- The overlay takes 1 GB of system RAM by default.
 - It is recommended to extend it to 2GB with the command uwfmgr overlay Set-Size 2048.
 - Due to this buffer allocation, System RAM must be 4 GB or more.
- The default warning notification threshold is set for 512 MB when 50% of the default overlay is in use. It can be modified with the command:
 - uwfmgr overlay Set-WarningThreshold <size>

- The default critical notification threshold is set for 1024MB, when all the default overlay is in use. It can be modified with the command:
 - `uwfmgr overlay Set-CriticalThreshold <size>`
- The following commands can be used to get information about the overlay configuration, the remaining overlay space, and the overlay consumption:

Command	Information	
uwfmgr overlay Get-Config	Current Session Overlay Settings	Type: RAM Maximum size: 1024 MB Warning Threshold: 512 MB Critical Threshold: 1024 MB Freespace Passthrough: OFF Persistent: OFF Reset Mode: N/A
	Next Session Overlay Settings	Type: RAM Maximum size: 1024 MB Warning Threshold: 512 MB Critical Threshold: 1024 MB Freespace Passthrough: OFF Persistent: OFF Reset Mode: N/A
uwfmgr overlay Get-AvailableSpace	The overlay has 980 MB available space.	
uwfmgr overlay Get-Consumption	The overlay consumption is 44 MB.	



If possible, redirect the .log files to a non-protected partition. Redirecting the .log files will become persistent (content will survive to new boot) and will not take up space in the overlay.



A GUI UWF utility, UWFUtility by Annabooks®, is available to assist in identifying files written to the overlay and optimize overlay use:
http://annabooks.com/SW_UWFUtility.html
When executing this UWF utility, choose Overlay files and GetOverlayFiles. These selections will list all of the files present in the overlay. This list can be sorted by size and can be exported into a text editor (by pressing Ctrl-A, then Ctrl-C, then Ctrl+P).

Write Filter

Correct Long Sequence Writes



A long sequence of writes on the file system can occur. Some OS operations can cause a long sequence of writes on the file system in the background. If this occurs, a command (see below) must be enabled after this activity is complete.

Microsoft Windows 10 IOT Enterprise 2019 (1809) updates and operations may cause a lengthy write activity on the WinSxS directory in the background, filling the overlay storage space in a matter of a few hours. To run this process in the foreground, perform the following steps as a system administrator:

1. Open the CMD shell.
2. Execute the command, “Dism.exe /online /Cleanup-Image /StartComponentCleanup”.

The filter is now enables without risk.

Define Exclusions

IMPORTANT Exclusions can only be made for FAT and NTFS file systems. All other file systems cannot create file exclusions.

It is possible to define exclusions if specific areas of a protected volume are to be excluded from the write protection.



For a detailed explanation of registry and file exclusions to help enable some common services and features to perform correctly when write filters are enabled, see the [Microsoft UWF Exclusions Resource](#).

1. Use one of the following commands to activate an exclusion for a file or a folder:
 - Exclusion for a file or folder:

Action	Command	Information
Add	uwfmgr file add-exclusion C:\FilesToSave	The file/folder "C:\FilesToSave" will be excluded from protection after system restart.
Remove	uwfmgr file remove-exclusion C:\FilesToSave	The file/folder "C:\FilesToSave" will not be excluded from protection after system restart.

- Exclusion to a registry key:

Action	Command	Information
Add	uwfmgr registry add-exclusion <Registry key to be excluded>	The registry key "Registry key excluded" will be excluded after system restart.
Remove	uwfmgr registry remove-exclusion <Registry key excluded>	The registry key "Registry key excluded" will not be excluded after system restart.

2. Perform a system restart to make the change effective.

Partition Shrinking

If an attempt is made to shrink a partition, the following error can occur:

Virtual Disk Manager: The service cannot be started either because it is disabled or because it has no enabled devices associated with it.

For Microsoft Windows 10 IOT Enterprise 2019 (1809), this can be solved by enabling the "Optimize Drives" service from services.msc.

Microsoft OneDrive

In most scenarios, Microsoft OneDrive is not needed in industrial applications. Therefore, it has been turned off by default. If it is required, it has to be downloaded and installed from Microsoft directly at [Onedrive.live.com](https://onedrive.live.com).

Enable ThinManager



The minimum versions of ThinManager® software required are:

- ThinManager v11.0.0
- TermCap 9.13.1.0 or TermCap2 13.1.0
- Firmware 13.0.x

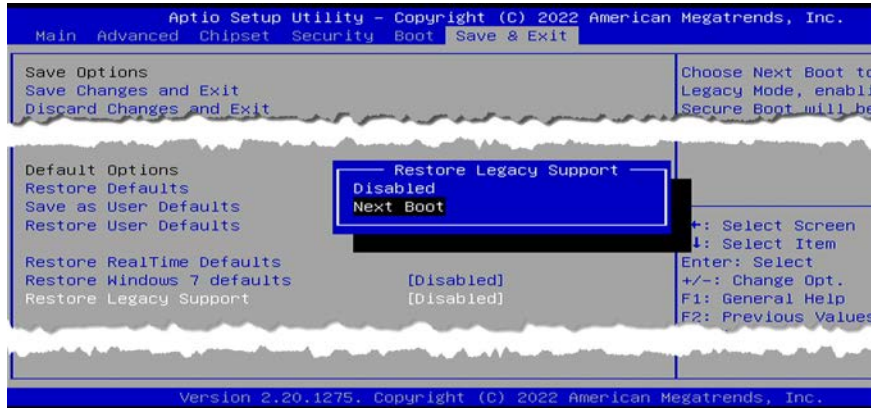
To enable ThinManager in your BIOS, follow the instructions for your BIOS version.



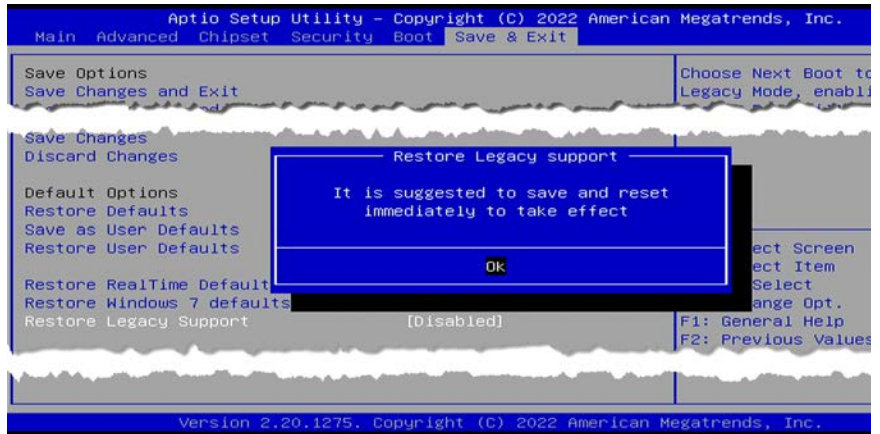
See the navigation key at far right of the setup screen to properly navigate with your keyboard.

1. Restart your machine mount box PC using one of the following methods:
 - a. from the Start menu, select 'Restart' **or**
 - b. press Ctrl+Alt+Delete on an attached keyboard and select 'Restart.'

2. Press the 'F2' key. The initial setup screen appears.
3. Navigate over to the 'Boot' menu.
4. Select 'ThinManager' as 'Boot Option #1' for the boot option priority.
5. Navigate over to the 'Advanced' menu.
6. Navigate down to 'Network Stack Configuration'.
7. Select 'Network Stack'.
8. Navigate over to the 'Save and Exit' menu.
9. Navigate down to 'Restore Legacy Support'. A 'Restore Legacy Support' popup menu appears.



10. Select 'Next Boot'. A warning appears within the 'Restore Legacy Support' popup menu.



11. Select 'OK', then press the 'F10' key to save and exit the BIOS.

Notes:



Maintenance

Shut Down


Before performing any maintenance to your On-Machine product, you must properly shut down the system to be sure all data is retained.

IMPORTANT Depending upon your schema, other connected components may need to be shut down before performing the On-Machine product shut down.

To properly shut down your On-Machine product, perform these steps.

1. For systems using Microsoft Windows Operating System (OS):
 - a. Press the Windows icon at the bottom left of the LCD screen.
 - b. Select Power.
 - c. Select Shut Down.For systems using another OS:
 - a. See the software manufacturer's instructions to properly shut down the OS. The system will be put in a soft-off state where the light emitting diode (LED) status indicator on the front side led will illuminate to a solid yellow.
2. Disconnect the DC power supply connected to your On-Machine monitor from the outlet. An ON/OFF switch is not available on your On-Machine monitor.

The LED status indicator on the front side led will not emit a color, indicating power is no longer being supplied to your On-Machine monitor.

 For most maintenance procedures, you must set your On-Machine product with the LCD facing down on the clean, soft microfiber cloth. Often, the peripheral cables do not have the required length to do so. For this reason, you must perform these steps:
 - a. Shut down any other connected components according to their manufacturer's instructions.
 - b. Disconnect the peripheral cables.
3. If required, shut down any other connected component.

Care and Cleaning

LCD Display

1. Gently wipe the dust from the surface of the display using a dry, lint-free cloth, like a microfiber cloth.
2. If additional cleaning is needed:
 - a. Lightly dampen a microfiber cloth with water or a cleaner made specifically for cleaning LCD display surfaces.
 - b. Gently wipe the LCD display with as little pressure as possible.

Exterior Surfaces

1. Dampen a clean, cloth with water.
2. Gently wipe the exterior surfaces of your OnMachine monitor.
3. If additional cleaning is needed for exterior surfaces:
 - a. Apply a non-abrasive cleaner, such as a mild soap, to a clean, damp cloth.
 - b. Gently wipe the exterior surfaces.

Prepare for Maintenance

The cover located on the back side of your On-Machine product provides protection from its surrounding environment. You will need to remove this cover to perform maintenance. Removal of this cover allows access to:

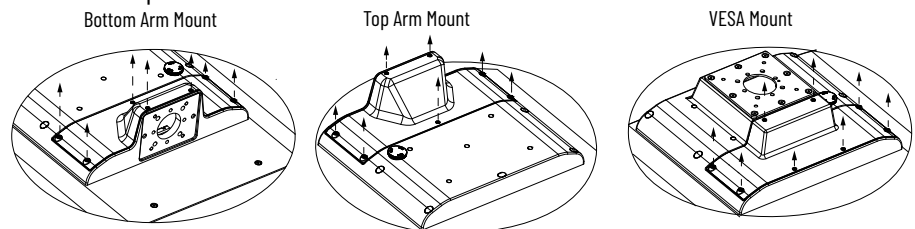
- product labels,
- cable connections for replacement or rerouting,
- battery extraction tools,
- peripheral slots (such as the RTC battery slot and CFast slot),
- peripheral add-ons, and
- light emitting diode (LED) status indicators.

Release the Arm

1. Release the arm from the mounting area of your On-Machine product. See the arm manufacturer's installation instructions for proper release.

Remove the Cover

1. Properly shut down your On-Machine product.
See [Shut Down on page 93](#) for the proper shut down procedure.
2. Place a clean, soft microfiber cloth down on a flat surface.
3. Place your On-Machine product with the LCD facing down on the clean, soft microfiber cloth.
4. Disconnect cables from other components (such as a RVL transmitter or RVL receiver) to accommodate setting your On-Machine product with the LCD facing down.
5. Release the arm from your On-Machine product.
6. Use a torque screwdriver to remove the screws from the cover.



7. Set the screws aside.
8. Gently lift the cover from your On-Machine product and set it aside.
The peripheral cable connections, slots, screwdriver, and battery extraction tool are now accessible.
9. Proceed with the applicable maintenance procedure.

CFast SSD Card

For CFast SSD card removal and installation, see [CFast SSD Card on page 27](#).

Emergency Stop Button

A scheduled test activation of an emergency stop (E-stop) button is required on a regular basis to comply with safety codes implemented by your administrator. See [Verify Functionality on page 44](#) for tests.

Clean the surface of the E-stop on a regular basis to remove dust and debris from the surrounding environment. See [Care and Cleaning on page 93](#).

Replace the Battery

If the battery light emitting diode (LED) status indicator is flashing red, the real time clock (RTC) battery must be replaced before its voltage drops below 2.5V (as stated in [Troubleshooting on page 97](#)).

Perform the following steps to replace the CR2032 3V coin battery.



Before performing the following steps, be sure you have a new CR2032 3V coin battery to replace the expired battery. See [Liquid Crystal Display on page 109](#) for technical data.

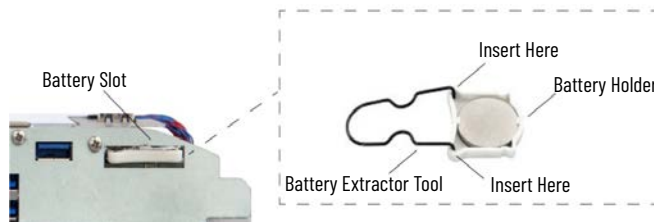
1. Properly shut down your On-Machine product. See [Shut Down on page 93](#).

IMPORTANT Be sure the DC supply is disconnected.

2. Remove the cover from your On-Machine product. See [Prepare for Maintenance on page 94](#) for removal steps.
3. Remove the battery extractor tool attached to the cover.



4. Insert the arms of the battery extractor tool into the battery holder as shown.



5. Pull the battery holder with existing CR2032 3V coin battery from the chassis.
6. Remove and properly dispose of the existing CR2032 3V coin battery. See the directions supplied with the battery for proper disposal.
7. Seat the new CR2032 3V coin battery into the battery holder with the positive (+) polarity facing up.



8. Use the battery extractor tool to insert the battery holder with battery into the battery slot of the chassis.
9. Reattach the battery extractor tool and screwdriver to the cover.
10. Proceed to [Complete Maintenance on page 96](#).

Replace an Encoder Knob

1. Use a flat-bladed screwdriver to remove the screw from the side of the existing encoder knob.



2. Lift the existing encoder knob off of the shaft of the encoder assembly.
3. Discard the existing encoder knob and screw.
4. Use a flat-bladed screwdriver to partially tighten the replacement screw (provided) into the replacement knob.



5. Align the flat part of the replacement knob insert (on the backside of the replacement knob - not shown) with the flat part of the encoder assembly shaft.



6. Slide the replacement knob onto the encoder assembly shaft.
7. Use a flat-bladed screwdriver to tighten the inserted screw.



8. Proceed to [Complete Maintenance on page 96](#).

Complete Maintenance

Reinstall Peripheral Cables and DC Power

1. Reconnect any peripheral cables which may have been disconnected during maintenance.
2. Route the peripheral cables through the mounting hole of your On-Machine product.

Reattach the Arm

1. Route the peripheral cables through the arm.
2. Reattach the arm to your On-Machine product.

IMPORTANT Be sure that all cables are not pinched or kinked when reattaching the arm to your On-Machine product.

3. Reattach the arm to the mounting surface.

Reinstall Cover

1. Align the cover with holes.

IMPORTANT Be sure that all cables are not pinched or kinked during the process if inserting and tightening the eight screws.

2. Insert the eight screws in the holes.
3. Torque the eight screws to 1...1.2 N•m (8.85...10.62 lb•in.).

IMPORTANT Do not overtighten the screws. Overtightening can cause damage to the gasket attached to the cover.

Troubleshooting

Light Emitting Diode Status Indicators

Your On-Machine product features several light emitting diode (LED) status indicators to easily recognize its current state.



See [LED Status Indicators on page 14](#) for LED status indicator locations on your On-Machine product.

Table 59 - LED Status Indicators

Note No.	LED Status Indicator	Color	Description
1	Watchdog	Red	Watchdog timer has expired. If the SW4-4 dip switch is set to 'on', a system reset may occur. Shut down your On-Machine product, then restart to reset this LED to OFF state.
2	Over Temperature/ Battery	Red	Thermal limit has been exceeded on the CPU [maximum 100° C (212° F) or motherboard (80° C (176° F)). Check cooling and power consumption.
		Flashing Red	The real time clock (RTC) battery is lower than 2.5V. To avoid date and time loss, replace the RTC battery before the RTC battery is lower than 2V. See CFast SSD Card on page 95 for replacement.
3	On/Off/Standby	No Illumination	The system is not powered on. Verify the DC power supply is connected.
		Yellow	Suspend to disk. It is safe to turn off your On-Machine product.
		Green	System core is full-on or in a low power state storing current session information into RAM.
4	Hard Disk Drive (HDD)/ Solid State Drive (SSD)	Green	Access to mass storage devices (HDD, SSD, and/or CFast) is occurring through integrated drive electronics (IDE) channels.
5	Remote Video Link (RVL)	Green	RVL transmitter is linked to the RVL receiver.

E-stop Button

Your On-Machine product can be equipped with an E-stop button. See the table below to assist in troubleshooting the E-stop functionality.

Table 60 - E-stop Button: Troubleshooting

Issue	Possible Resolution
E-stop button pressed, but contacts do not open properly	Perform these steps: 1. Open the rear panel to access the connector terminal. 2. Use a multimeter according to the electrical schema, verify the status of the contacts by activating and deactivating the E-stop. 3. Check that the E-stop counter spring recoils when pushed. 4. Check if the actuator is damaged. 5. Check that the E-stop actuator is functioning properly by pushing the actuator. 6. Inspect the contact pins are intact (not bent or broken and making contact with the connector terminal). 7. Check that the cable is intact. 8. Check the connector is properly plugged in. 9. Leave the cable plugged into the printed circuit board (PCB) connector, then push the contacts manually. Be sure that the behavior of the contact is the expected one.
E-stop is not activated, but one or more contacts are opened	Perform the procedure specified in Verify Functionality on page 44 .
The LED status indicator on the E-stop button is not illuminating/functioning	Perform these steps: 1. Check if the applied voltage polarity is correct according to the electrical schema. 2. Check that the applied voltage is 24V DC. 3. Release the front panel, then see if the connector is properly plugged in and the contact block is intact. 4. Apply 24V DC directly to the connector on the rear panel. 5. If the LED status indicator is still not illuminating, replace the E-stop button with the same model E-stop when it is safe to do so ⁽¹⁾ . For detailed instructions, see Replace or Install an Emergency Stop Button on page 39 .

(1) You must replace the pre-installed E-stop push button with the same E-stop push button in the same location to ensure certification compliance. If another type of E-stop push button is used, all certifications listed will be void. For a list of authorized E-stop push buttons, see [Appendix D on page 126](#) and the 6300V On-Machine Accessories Product Information, publication [6300V-PC005](#).

Thin Film Transistor Display



Pixel errors in the Thin Film Transistor (TFT) display are production-caused and represent no complaint-reason (according to ISO 13406-2, class II).

Safety – Emergency Stop Button SIL-3 [Rel. A]

The purpose of the safety manual for emergency stop (E-stop) button safety integrity level 3 (SIL-3) is to provide information relating to compliance of the standard IEC 61508:2010.

The current release and previous releases of this section is shown in [Table 61](#).

Table 61 - Safety - Emergency Stop SIL3 Summary of Changes

Release	Date	Changes
A	June 2023	First release

IMPORTANT For a pre-installed SIL-3 E-stop button kit, it is important to understand the information provided within this appendix.

Acronyms and Symbols

Table 62 - Acronyms and Symbols

Acronym or Symbol	Definition
λ	Failure rate (per hour) of an equipment or a sub-system
$\lambda.d$	Dangerous failure rate (per hour) of an equipment or a sub-system
$\lambda.dd$	Dangerous detected failure rate (per hour) of an equipment or a sub-system
$\lambda.du$	Dangerous undetected failure rate (per hour) of an equipment or a sub-system
$\lambda.s$	Safety failure rate (per hour) of an equipment or a sub-system
DC	Diagnostic Coverage
EOL	End of Line (Resistor)
FMEDA	Failure Modes, Effects, and Diagnostic Analysis
FS	Functional Safety
HFT	Hardware Fault Tolerance
HMI	Human Machine Interface
HW	Hardware
LED	Light Emitting Diode
NAMUR	Normenarbeitsgemeinschaft für Mess- und Regeltechnik in der chemischen Industrie (also known as the User Association of Automation Technology in Process Industries)
PFDAvg	Average probability of dangerous failure on demand
PTC	Proof Test Coverage
PTI	Proof Test Interval
SFF	Safety Failure Fraction
SIF	Safety Instrumented Function
SIS	Safety Instrumented System
TYPE A (as Architectural Type)	Type A equipment or (sub)system: "Non -complex" (sub)system or equipment according 7.4.3.1.2 of IEC 61508-2.
TYPE B (as Architectural Type)	Type B equipment or (sub)system: "Complex" (sub)system or equipment according 7.4.3.1.3 of IEC 61508-2.

Terms and Definitions

Table 63 - Terms and Definitions

Term	Definition
Architecture (Hardware)	Arrangement of hardware in a system.
Example(s)	<ul style="list-style-type: none"> Arrangement of SIS subsystems. Internal structure of an SIS subsystem
Architectural Constraint	This reports the maximum SIL achievable based on the SIF's subsystems architecture alone. This is calculated solely on the basis of Type A or Type B device selection, redundancy (hardware fault tolerance), and the safe failure fraction (calculated or conservatively assumed if no data is provided). It does not pertain to Systematic Capability or certification. This is calculated as indicated, using respective IEC 61508 or IEC 61511 tables.
Architecture Type	Type A equipment or (sub)system: "Non -complex" (sub)system or equipment according 7.4.3.1.2 of IEC 61508-2; Type B equipment or (sub)system: "Complex" (sub)system or equipment according 7.4.3.1.3 of IEC 61508-2.
Dangerous Failure	Failure of an element and/or subsystem and/or system that plays a part in implementing the safety function that prevents a safety function from operating when required (demand mode) or causes a safety function to fail (continuous mode) such that the EUC is put into a hazardous or potentially hazardous state; or decreases the probability that the safety function operates correctly when required.
Diagnostic Coverage (DC)	Fraction of dangerous failures detected by automatic on-line diagnostic tests. The fraction of dangerous failures is computed by using the dangerous failure rates associated with the detected dangerous failures divided by total rate of dangerous failures.
Failure	Termination of the ability of a functional unit to provide a required function or operation of a functional unit in any way other than as required
Failure Rate	Reliability parameter ($\lambda.t$) of an entity (single components or systems) such that $(\lambda.t).dt$ is the probability of failure of this entity within $[t, t+dt]$ provided that it has not failed during $[0, t]$.
Fault	Abnormal condition that may cause a reduction in, or loss of, the capability of a functional unit to perform a required function.
Fault Tolerance	Ability of a functional unit to continue to perform a required function in the presence of faults or errors.
Functional Safety Assessment	Investigation, based on evidence, to judge the functional safety achieved by one or more E/E/PE safety-related systems and/or other risk reduction measures.
Proof Test	Periodic test performed to detect dangerous hidden failures in a safety-related system so that, if necessary, a repair can restore the system to an "as new" condition or as close as practical to this condition.
Random Hardware Failure	Failure, occurring at a random time, which results from one or more of the possible degradation mechanisms in the hardware.
Redundancy	The existence of more than one means for performing a required function or for representing information.
Safe Failure	Failure of an element and/or subsystem and/or system that plays a part in implementing the safety function that results in the spurious operation of the safety function to put the EUC (or part thereof) into a safe state or maintain a safe state; increases the probability of the spurious operation of the safety function to put the EUC (or part thereof) into a safe state or maintain a safe state.
Safe Failure Fraction (SFF)	Property of a safety related element that is defined by the ratio of the average failure rates of safe plus dangerous detected failures and safe plus dangerous failures.
Safe State	State of the EUC when safety is achieved.
Safety Function	Function to be implemented by an E/E/PE safety-related system or other risk reduction measures, that is intended to achieve or maintain a safe state for the EUC, in respect of a specific hazardous event.
Safety Instrumented Function (SIF)	Safety function with a specified safety integrity level which is necessary to achieve functional safety and which can be either a safety instrumented protection function or a safety instrumented control function.
Safety Instrumented System (SIS)	Instrumented system used to implement one or more safety instrumented functions. An SIS is composed of any combination of sensor (s), logic solver (s), and final elements (s).
Safety Integrity	Probability of a SIS or its subsystem satisfactorily performing the required safety-related control functions under all stated conditions.
Safety Integrity Level (SIL)	Discrete level (one out of a possible four) for specifying the safety integrity requirements of the safety-related control functions to be allocated to the SIF, where safety integrity level four has the highest level of safety integrity and safety integrity level one has the lowest.

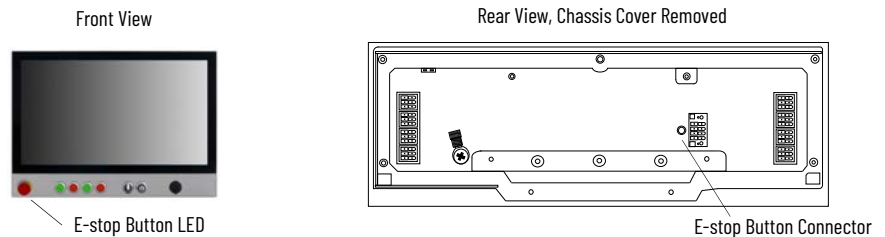
Table 63 - Terms and Definitions (Continued)

Term	Definition
Safety Manual	Document that provides all the information relating to the functional safety of an element, in respect of specified element safety functions, that is required to ensure that the system meets the requirements of IEC 61508 series.
Systematic Capability	Measure (expressed on a scale of SC 1 to SC 4) of the confidence that the systematic safety integrity of an element meets the requirements of the specified SIL, in respect of the specified element safety function, when the element is applied in accordance with the instructions specified in the compliant item safety manual for the element.
Systematic Failure	Failure, related in a deterministic way to a certain cause, which can only be eliminated by a modification of the design or of the manufacturing process, operational procedures, documentation or other relevant factors.

Safety Related Equipment Definition

E-stop buttons mounted on On-Machine products have a similar design regardless of the machine the E-stop button is installed on/connected to.

Figure 31 - Example Installations



SIL3 Certified Configurations

The configurations listed in [Table 64](#), which lists its own electrical schema and description, have been SIL3 Certified. All components and the assembly/testing instructions are directly related to the Emergency Chain Code.

Table 64 - SIL3 Certified Configurations

Configuration	Emergency Chain Code	Electrical Schema	Actuator	Description
1	26149501			SIL3 RAFI E-stop button reset by pulling, 2NC emergency dry contacts for Safety PLC + 1NO dry contact
5	26149505			SIL3 RAFI E-stop button reset by pulling, integrated red LED, 2NC emergency dry contacts for Safety Relay
6	26149506			SIL3 RAFI E-stop button reset by pulling, integrated white LED, 2NC emergency dry contacts for Safety Relay

Table 64 - SIL3 Certified Configurations (Continued)

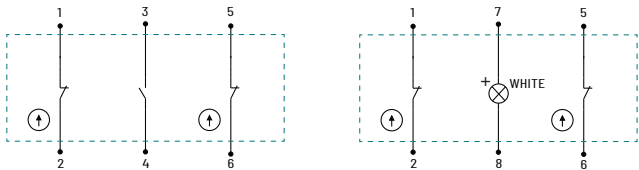
Configuration	Emergency Chain Code	Electrical Schema	Actuator	Description
12	26149512			SIL3 SCHLEGEL E-stop button reset by rotating, 2NC emergency dry contacts for Safety PLC or Safety Relay + 1NO dry contact
17	26149517			SIL3 RAFI E-stop button reset by pulling, integrated red LED, 2NC emergency dry contacts for Safety PLC
18	26149518			SIL3 RAFI E-stop button reset by pulling, integrated white LED, 2NC emergency dry contacts for Safety PLC

Emergency Function

The emergency function is activated by pushing the actuator. Depending on the configuration (see [Table 64](#)), two or three contacts are opened simultaneously. The emergency condition is restored by either *pulling* or *rotating* the actuator depending on the design.

Examples of 2-safety contacts configurations are shown in [Figure 32](#).

Figure 32 - Configuration Examples: 2-Safety Contacts Configurations



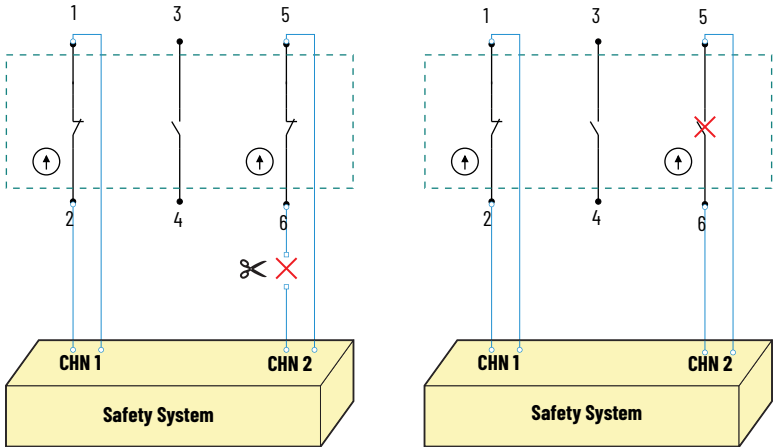
Fault Diagnosis

Fault Diagnosis with Dry Contacts

The *two faults* shown in [Figure 33](#) are detected by the safety hardware.

The two faults are indistinguishable because the effect on the **CHN2** channel is the interruption of the flowing current.

Figure 33 - E-stop Button Fault Diagnosis with Dry Contacts



Failure Modes, Effects, and Diagnostic Analysis

The Failure Modes, Effects, and Diagnostic Analysis (FMEDA) of E-stop push buttons has produced the overall results listed in [Table 65](#). This table summarizes the results of the Functional Safety Assessment (FSA) conducted on the E-stop buttons by a Third-Party FSA.

Table 65 - Random Hardware Failure ⁽¹⁾

Configuration	Code	λ_S	λ_{DU}	λ_{DD}	SFF	DC	Type
1	26149501	42	4	0	91,2%	0,0%	A
5	26149505	42	4	0	91,2%	0,0%	A
6	26149506	42	4	0	91,2%	0,0%	A
12	26149512	42	4	0	91,5%	0,0%	A
17	26149517	42	4	0	91,5%	0,0%	A
18	26149518	42	4	0	91,5%	0,0%	A

- (1)
- All failure rates are in FIT (Failure in Time) where 1 FIT = 1 failure/10⁹ hours.
 - The failure rates are valid for use of the button mounted on Allen Bradley® devices.
 - Failure rates are not valid for use in other applications.
 - There are no on-board diagnostics.
 - The open circuit is considered a safe failure.
 - The above failure rates are guaranteed:
 - For environmental conditions indicated in the user manual publication.
 - For the useful lifetime of mechanical operations: 6 operations per day for 20 years.
 - Considering all prescription indicated in this section, [Appendix B](#), and in this user manual publication.



ATTENTION: The double or triple contacts available in the various configurations listed in [Table 65](#) were considered in redundancy during the FMEDA analysis. When two contacts are available, the 1oo2 configuration between contacts was considered; when three contacts are available, the 2oo3 configuration was considered since it is more conservative than 1oo3 or 1oo2 (in this last case, one of the three contacts is not used).

Systematic Capability

The systematic capability was assessed in order to evaluate the techniques and measures implemented to control and avoid systematic failures during the different phases of the safety lifecycle in accordance with the **IEC 61508-2, Route 1s**.

E-stop buttons were subject to a third-party FSA that resulted in a systematic capability of **SIL3**. The systematic capability provides a quantitative estimation of the robustness of the system against systematic failures (resulting from project management, documentation quality and control requirements, structured design, etc.) managed through all lifecycle phases to prevent the system to fail in a systematic manner.



ATTENTION: The declared systematic capability level is guaranteed only with the respect of requirements and limitations reported in this Safety Section, [Safety – Emergency Stop Button SIL-3 \[Rel. A\]](#), in case of violation of the same the declared systematic capability can be totally or partially invalid. The use of the system by the end-user in operating conditions or architectures others than those admissible as per this Safety Section, [Safety – Emergency Stop Button SIL-3 \[Rel. A\]](#), could impair the systematic capability and lead the system to fail dangerously and systematically.

Architectural Constraints

The architectural constraints on hardware safety integrity have been verified in order to achieve a sufficiently robust design considering the level of complexity and following the compliance Route 1H. The architectural constraints for the Route 1H and Type A device is based on hardware fault tolerance (HFT) and safe failure fraction (SFF) concepts.

Table 66 - Type A Architectural Constraints

SFF	Minimum HFT		
	0	1	2
< 60%	SIL1	SIL2	SIL3
≥ 60%, < 90%	SIL2	SIL3	SIL4
≥ 60%, < 99%	SIL3	SIL4	SIL4
≥ 99%	SIL3	SIL4	SIL4

According to [Table 66](#), the SFF is between 90% and 99% for each configuration. Therefore, for the architectural constraints the E-stop push button can be used for SIL3 application.

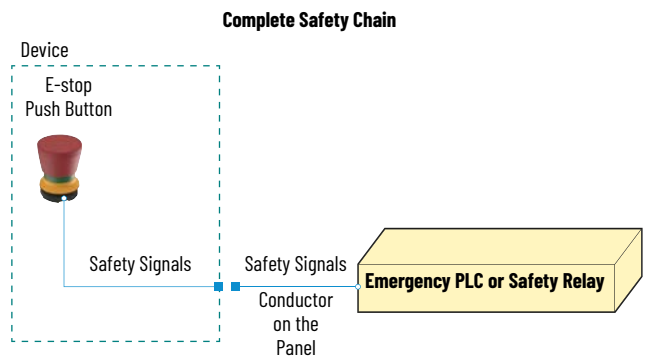
Failure Detecting and Speed

The **E-stop push button** is, by definition, an element part of the *safety chain*.

In general, it is connected to a *safety programmable logic controller (PLC)* or a *safety relay*.

For instance, the complexity of the safety **PLC software** has an impact on the failure detecting speed.

Furthermore, the capability to detect a failure is strictly related to the whole chain composition and “emergency PLC/safety relay” capabilities.



Mechanical Constraints







ATTENTION: Risk of Product Damage. To avoid damage to the actuator, do not apply orthogonal forces to it. Be careful while fixing or substituting the actuator. The tightening torque should be limited as stated in [Table 67](#).

Figure 34 - Proper Use and Mechanical Limits of Actuator



Table 67 - E-stop Buttons Constraints

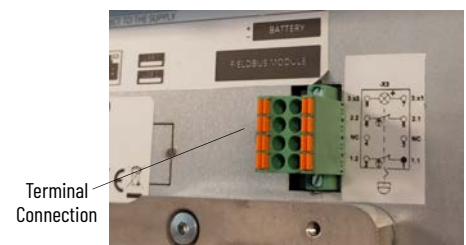
Code	Actuator	Manufacturer Code	Note 1	Note 2	Note 3	Note 4
26149501		RAFI: 1.30.273.602/0300	Operating Force Max 100 N	Threaded Ring Torque Max 1.2 N•m (10.62 lb•in.)	Do not rotate the actuator	Do not apply forces orthogonal to the actuator axis
26149506 26149518		RAFI: 1.30.273.101/2200				
26149505 26149517		RAFI: 1.30.273.101/2300				
26149512		SCHLEGEL: FRVK	—	Tightening Torque (mounting nut) 1.3...1.9 N•m (11.51...16.82 lb•in.)	Do not pull the actuator	Do not apply forces orthogonal to the actuator axis

Rear Panel Connector

The rear panel connector must be affixed to the chassis with two screws (provided).

1. Plug the connector of the E-stop button into the terminal connection on the rear panel.
2. Use a VDE insulated, 0.4 x 2.5 x 80 mm flat-head screwdriver with 2-component, non-slip grip (not supplied) to hand tighten the two screws on the terminal connection.

Rear View, Chassis Cover Removed



Important Notes



ATTENTION: Functional safety and security training is required. The entrusted operator who will:

- (1) connect the emergency chain or
- (2) substitute the front panel E-stop button kit

must be trained in the area of functional safety and security and must follow the steps illustrated in this user manual, publication 6300-UM002.

Overall SIL Result

E-stop buttons, according to the third-party FSA, can be used in a **SIL3 application**.

The integration in the SIS, the whole SIS validation, the architectural constraints evaluation, and the probability of failure calculation of the whole safety loop implementing the SIF is under the responsibility of the end user together with the verification of the compliance with the allocated target SIL.

Proof Test

The **E-stop button should be pushed at least once per year** to be sure the emergency chain functionality verifies that the signals are correctly generated. The proof test interval can be reduced or increased under SIS integrator responsibility based on the target SIL allocated to the SIF and the results of reliability calculations.

IMPORTANT **An annual proof test required.** To adhere to functional safety specifications, a proof test is mandatory every year to be sure the emergency chain is fully functional (signals are correctly generated).

To perform a proof test:

1. Push the E-stop button.
2. Verify that the PLC/Safety Relay detects:
 - a. the emergency signals (emergency condition) properly and
 - b. if it is latched.
3. Release the E-stop button.
4. Verify that the PLC/Safety Relay can reset the alarm condition, restoring the normal operative condition.

The **proof test coverage** is estimated as follows:

- 99% if it is possible to verify the correct functioning of each contact of the E-stop button, otherwise.
- 60% if the correct functioning of each channel cannot be distinguished (for instance, because the channel series is acquired).

Maintenance, Repair, Decommissioning, and Disposal

Maintenance and Repair

The maintenance and repair of the E-stop button must be carried out following the instructions reported in this user manual, publication 6300-UM002.

Item Modification and Retrofit Management

Any modification request on E-stop buttons by the end user shall be subject to Rockwell Automation approval.

Any field returns (such as safety performance below target, deviations in the expected safety function, etc.) shall be communicated to Rockwell Automation in order to conduct a root cause analysis.

Decommissioning and Disposal

Customers and end users are solely responsible for the decommissioning and disposal of the product at the end of its useful life. All applicable federal, state, local and international laws shall be observed. Rockwell Automation has no responsibility connected with the disposal of the product at the end of its useful life.

Technical Specifications

On-Machine Products

Certifications

Certifications, shown on the model specific label (see [Labels on page 110](#)), are detailed in the table below.

Table 68 - CE Certification



Category	Conforms To
Emission/ Immunity	<ul style="list-style-type: none"> EN 61326-1 Electrical Equipment for measurement, control, and laboratory use. EMC Requirements General Requirements EMC Directive 2014/30/EU
 Safety	<ul style="list-style-type: none"> EN 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part I: General requirements EN 61010-2-201 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment
RoHS	<ul style="list-style-type: none"> Directive 2011/65/EU

Table 69 - UL Listing

Standard	Description
 ANSI/UL 61010-1	<ul style="list-style-type: none"> Electrical Equipment for Measurement, Control, and Laboratory Use - Part I: General Requirements
UL 61010-2-201	<ul style="list-style-type: none"> Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-201: Particular Requirements for Control Equipment



For more information on certifications, visit our Product Certifications website, rok.auto/certifications, and use '6300-CT' as your search term.

Components

Table 70 - Screen Components by Catalog Number: Technical Data

Description	Catalog Number 6300MA- or 6300PA-				
	AA**F	***AC**F***	***BA**F***	***BC**F***	***BA**P***
Backlight Thin Film Transistor (TFT) LCD: Display Size (in.), Resolution (pixel x pixel)	15.6 in., 1920x1080				—
	18.5 in., 1920x1080				—
	21.5 in., 1920x1080				21.5 in., 1920x1080
	24 in., 1920x1080				24 in., 1920x1080
Orientation	Landscape				Portrait
Touchscreen	Resistive 5 wires	P-CAP Multi-touch	Resistive 5 wires	P-CAP Multi-touch	P-CAP Multi-touch
Front Panel	Aluminum	TrueFlat Aluminum	Aluminum	TrueFlat Aluminum	TrueFlat Aluminum
Protection Grade	Full IP65				

Table 71 - Environment Specifications by Catalog Number: Technical Data

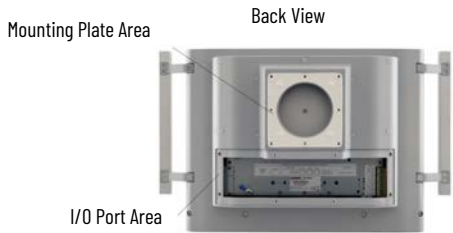
Description		Catalog Number 6300MA- and 6300PA-				
		AA**F	***AC**F***	***BA**F***	***BC**F***	***BA**P***
Storage Temperature		-10° C ÷ 60° C (14° F ÷ 140° F)				
Operating/Storage Relative Humidity		20% ÷ 90% RH (non-condensing)				
Operating Temperature		0° C ÷ 50° C (32° F ÷ 122° F)				
Shock	Operating	—	10 g (1/2 sine, 11 ms)	—	10 g (1/2 sine, 11 ms)	—
	Non-operating	—	15 g (1.2 sine, 11 ms)	—	15 g (1/2 sine, 11 ms)	—
Vibration	Operating	—	0.0015 in. p-p, 10...57 Hz	—	0.0015 in. p-p, 10...57 Hz	—
	Non-operating	—	0.25 g peak, (57...640 Hz)	—	0.25 g peak, (57...640 Hz)	—

Table 72 - Components for Catalog No. 6300PA: Technical Data

Component		Description
Case	Installation	VESA 75/100 or pole/suspension arm mount system compatible with RITTA CP40/ROLEC TARAPLUS/HASEKE ULT KUPPLUNG 48
	Material	Aluminum Alloy AN AB46400
	Color	Anti-scratch painted — RAL 9006
	Accessories	Side Handles, Perimeter Handle, Keyboard Tray
Processor, Soldered On-board		Intel Celeron 3965U 2.2GHz 64 bit 2 cores/2 threads 2MB Smart cache 14nm
		Intel Core i3-7100U 2.4GHz 64 bit 2 cores/4 threads 3MB Smart cache 14nm
		Intel Core i5-7300U 2.6GHz (3.50GHz Turbo) 64 bit 2 cores / 4 threads 3MB Smart cache 14nm
		Intel Core i7-7600U 2.8GHz (3.90GHz Turbo) 64 bit 2 cores / 4 threads 4MB Smart cache 14nm
Intel Chipset		Kaby Lake Platform Controller Hub - Low Power, included into processor chip (SoC)
Video Controller	Intel HD Graphics	610 integrated in Celeron 3965U 300MHz/900MHz
		620 integrated in Core i3 processors 300MHz/1.00GHz
		620 integrated in Core i5 processors 300MHz/1.10GHz
		620 integrated in Core i7 processor 300MHz/1.15GHz
	Other	DirectX 12 and OpenGL 4.5 support
Watchdog		Programmable Time Period
System Memory RAM		4GB or 8GB or 16GB (1 x SODIMM DDR4 module)
Mass Storage	CFast	1 x bootable CFast SATA III slot onboard with external access up to 240GB
	M.2 SSD	1 x onboard connector for direct insertion of M.2 2280 NVMe PCIe x 2 SSD or M.2 2280 NVMe PCIe x4 SSD (up to 1TB)
Interfaces	LAN	3 x Gigabit Ethernet (RJ45)
	USB	3 x USB 3.0 (Type-A), 1 x USB 3.0 (Type-A) rear with protection cap
	Video	1 x DisplayPort++ V1.2 or 1 x RJ45 connector for remote video link (RVL)
Add-on Interfaces		1 x RS232/422/485 (DB15M)
		1 x RS232/422/485 (DB15M) isolated
		1 x Gigabit Ethernet (RJ45)
Power Supply Input		24 DC (18 ÷ 32V) DC Isolated
Power Supply (optional)		Kit for ATX Power Supply (internal cable and push button on button area)
Battery		CR2032 Removable, 1 quantity
Operating System Certified		Microsoft Windows OS 10 IoT Enterprise 2019 64 bit
Approvals		CE, RoHS, UKCA, cULus Listed

Gasket

Table 73 - Gasket: Technical Data



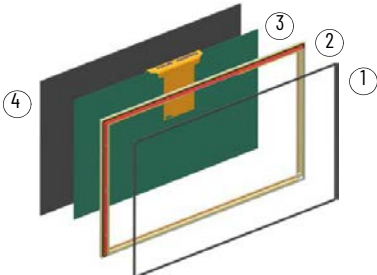
Description		Value
Gasket	Composition	Silicone foam
	Cell Structure	Closed (15% open)
	Color	White, red
	Density	250 kg/m ³ ± 40 kg/m ³ (typical value 256)
	Thermal Conductivity	6.4 x 10 ⁻² Wm ⁻¹ K ⁻¹
	Temperature Range	long term: -70°...200° C (-94...392° F)
		short term: 260° C (500° F)
	Ultimate Elongation	Minimum 150% (typical 200%)
	Tensile Strength	Minimum 0.75 N/mm ² (typical value 1, 2)
	Radiation Resistance	>105 grays (107 rads)
	Compression Stress 40% Strain	90 ± 40 kPa (typical value 90)
	Compression Set 25%, 22 Hours, 70° C (258° F)	Maximum 15% (typical value 10%)
	Shore Hardness 00 (ISO 2240)	55 ± 5 (typical value 45)
	Shore Hardness A	5±2
	Fire Resistant FMVSS 302, HBF /(UL 94)	Pass
	UNI 8457- UNI 9174	Class FA
	AFNOR NF 16 101	Class F1
	UL 94	V0
	Shore hardness 00 (ISO 2240)	45
Adhesive	Silicone Paper	120 gr/m ² , thickness 0.10 mm
	Adhesive	50 gr/m ² , thickness 0.05 mm
	Temperature Range	Continuous 130° C (266° F)
		Intermittent 180° C (356° F)

Liquid Crystal Display

Table 74 - Liquid Crystal Display (LCD): Technical Data

Description	Display Size (in.)			
	15.6	18.5	21.5	24
Type	Color Thin-Film-Transistor (TFT) LCD			
Resolution Type	Full High Definition (FHD)			
Resolution (pixel x pixel)	1920 x 1080			
Colors	16.2 M			
Pixel Pitch (mm)	0.180 x 0.180	0.213 x 0.213	0.248 x 0.248	0.276 x 0.276
Backlight	Light Emitting Diodes (LED)			
Luminance (cd/m ²)	450	500	300	300
Contrast	800:1	1000:1	5000:1	5000:1
Viewing Angle	85°:85°(L/R)	89°:89°(L/R)	89°:89°(L/R)	89°:89°(L/R)
	85°:85°(U/L)	89°:89°(U/L)	89°:89°(U/L)	89°:89°(U/L)
Lifetime (minimum)	50.000h			


Table 75 - LCD: Technical Data – Touch Screen



Note No.	Description	Value
1	Seal	Double sided adhesive mounting tape with high loading capacity and a closed-cell Ethylene Propylene Diene Monomer (EPDM) foam
2	Front Panel (Metal Housing)	Aluminum alloy 5754 EN AW-5754, H22 EN 485-1
3	Touchscreen	Projective Captive (PCAP)
4	Cover Glass	Laminate

Labels

Several labels are affixed to your On-Machine product to easily identify model specific information.



Though a 6300PA panel PC label is shown, the location of the information is applicable to a 6300MA monitor. To view these labels, you must remove the cover. See [Remove the Cover on page 94](#).

Figure 35 - Product Labels

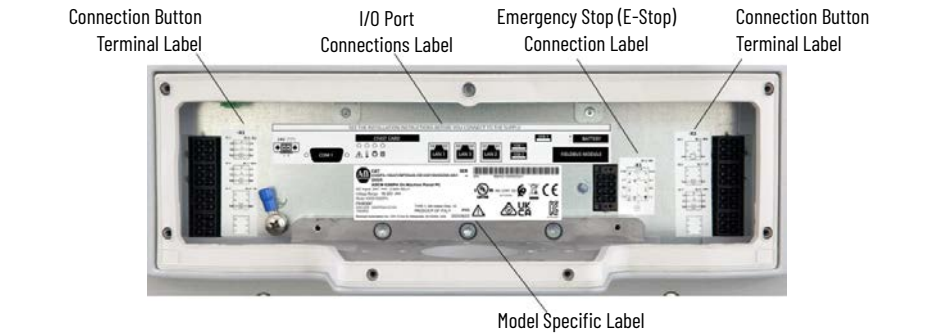



Table 76 - Model Specific Label



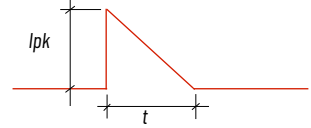
Note No.	Description
1	Electric Information Model
2	Model
3	Bar Code
4	Serial Number

Note No.	Description
5	CE Symbol
6	Disposal
7	UL Symbol
8	Caution

Power Supply

The power supply technical specifications for your On-Machine product are listed below.

Table 77 - Power Supply: Technical Data

Description	Value	
Type	Isolated DC-DC	
Isolation Voltage	500V AC	
Input Voltage	18 ÷ 32V DC	
Input Protection	Reverse Polarity Circuitry	
	Overvoltage	
	8 A Soldered Fuse	
Power Consumption	70W @ 24V (30W Type.)	
Power Supply Board	Provided with a FAST FUSE 8A SMD (surface mount device) The fuse can be replaced only in factory	
Inrush Current Impulse	$I_{pk} < 13A$ $t = 2.0 \text{ ms}$	

6300MA On-Machine Monitors

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks™ software to configure the PC. ProposalWorks software is available from rok.auto/systemtools.

6300MA - 185 A A V S F D V - N 1 S N A - E3 BG BR NN CB CG
 a b c d e f g h i j k l m n o

a		b		c		d		e	
Display Size (in)		Button Area, Video Input		Bezel Type		Mount Type		Touchscreen Type	
Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
150	15	A	No button area, standard video input	A	Aluminum	B	Bottom Mount	M	Multi-touch
185	18.5	B	Button area, standard video input	C	Aluminum and Glass, TrueFlat	T	Top Mount	S	Single touch (standard)
215	21.5	C	No button area, long distance video input			V	VESA Mount		
240	24	D	Button area, long distance video input						

f		h		j		m		o	
Aspect Ratio, Resolution		Mechanical Adapter		Warranty (years)		Handles		Hard-wired Element(s)	
Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
F	16:9; 1920 x 1080	C	Custom System (Common)	1	One (standard)	N	None		Options Summary continued on page 114
P	9:16; 1080 x 1920	H	HASEKE			P	Perimeter		
		L	ROLEC			S	Side Handles		

g		i		k		n	
Input Power		Long Distance Connection		Branding		Button Area	
Code	Description	Code	Description	Code	Description	Code	Description
D	24V DC isolated ⁽¹⁾	N	None	B	No brand	A	Button Area, 1 TB Left
		L	1 RVL video output	S	Allen-Bradley (standard)	B	Button Area, 1 TB Right
						C	Button Area, 2 TB
						N	No Button Area

l	
Conformal Coating	
Code	Description
Blank	No conformal coating

(1) Only DC-powered monitors can be used in hazardous locations.

0			0		
Hard-wired Element(s) Add alpha/alpha-numeric code for up to 15 hard-wired elements			Hard-wired Element(s) Add alpha/alpha-numeric code for up to 15 hard-wired elements		
Code	Description		Code	Description	
NN	Empty space — no element		LW	Signal Indicator	White, translucent
BB	Push Button	Blue, illuminated; 2 N.O.	LY		Yellow, translucent
BG		Green, illuminated; 2 N.O.	PA	Push Button	Black, opaque; 1 N.C. + 1 N.O.
BK		Black, opaque; 2 N.C.	PB		Blue, illuminated; 1 N.C. + 1 N.O.
BR		Red, illuminated; 2 N.O.	PC	Predisposition Cable	Connection to internal terminal block for future installation of signal indicators and commands with terminals
BW		White, illuminated; 2 N.O.	PE	Push Button	Grey, opaque; 1 N.C. + 1 N.O.
BY		Yellow, illuminated; 2 N.O.	PG		Green, illuminated; 1 N.C. + 1 N.O.
E1	Emergency Stop (E-stop)	Traction unlock, 2 N.C. for safety PLC + 1 N.O.	PK		Black, opaque protrudent; 1 N.C. + 1 N.O.
E2		Traction unlock, 2 N.C. for safety relay + 1 red LED	PM		Mushroom shape, black head, rotating unlock; 2 N.C.
E3		Traction unlock, 2 N.C. for safety PLC + 1 red LED	PR		Red, illuminated; 1 N.C. + 1 N.O.
E4		Traction unlock, 2 N.C. for safety relay + 1 white LED	PU	Predisposition Cable	Connection of USB cable for future installation of commands with USB interface — USB, Ethernet, RFID
E5		Traction unlock, 2 N.C. for safety PLC + 1 white LED	PW	Push Button	White, illuminated; 1 N.C. + 1 N.O.
ES		Rotating unlock, 2 N.C. for safety PLC or safety relay + 1 N.O.	PY		Yellow, illuminated; 1 N.C. + 1 N.O.
CB	Custom	Push button, blue, translucent	R1	RFID	Transponder, read/write low frequency (LF), 125 kHz, Q5 with USB interface, serial protocol
CG		Push button, green, translucent	R2		Read/write high frequency (HF), 13.56 MHz, ISO 14443A and ISO 15693 with USB interface, serial protocol
CL		Push button label, without lens; 1 N.C. + 1 N.O.	R3		Read/write low frequency (LF), 125 kHz, Q5 with USB interface, with keyboard emulation
CN		Push button label, without lens; 2 N.O.	R4		Read/write high frequency (HF), 13.56 MHz, ISO 14443A and ISO 15693 with keyboard emulation, serial protocol
CR		Push button, red, translucent	S1	Selector Switch	Latching, 1x90 degrees right rotating; 1 N.C. + 1 N.O.
CW		Push button label, white, translucent	S2		Latching, 2x60 degrees rotating; 2 N.O.
CY		Push button, yellow, translucent	S3		Momentary, 2x40 degrees rotating; 2 N.O.
EN	Encoder	Incremental, 30 detent positions, unconstrained rotation, tactile pushbutton switch, A/B coding, 24V DC	S4		Momentary, 1x40 degrees right rotating; 1 N.C. + 1 N.O.
ET	Ethernet Interface	With protection cap, serigraph printed	S5		Latching, 1x90 degree rotating angle V-shape; 1 N.C. + 1 N.O.
K1	Key Switch	Momentary, 2x40 degrees, key removal in 0; 2 N.C.	US	USB 2.0	With protection cap
K2		Latching, 1x90 degrees, key removal in 0 and 1; 1 N.C. + 1 N.O.	X1	ATX Mode Power Supply	Non-illuminated, black protrudent button, wired
K3		Momentary, 1x40 degree right, key removal in 0; 1 N.C. + 1 N.O.	X2		Keylock momentary, 1x40 degree right, key removal in 0, wired
K4		Latching, 1x90 degrees, key removal in 0; 2 N.O.	X3		Non-illuminated, gray button, wired
K5		Latching, 2x90 degrees, key removal in 0; 2 N.O.	ZZ	Buzzer	
K6		Latching, 2x90 degrees, key removal in 0, 1, and 2; 2 N.O.			
K7		Latching, 2x90 degrees, key removal in 0, 1, and 2; 2 N.C.			
LB	Signal Indicator	Blue, translucent			
LG		Green, translucent			
LR		Red, translucent			

6300PA On-Machine Panel PCs

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks™ software to configure the PC. ProposalWorks software is available from rok.auto/systemtools.

6300PA - 185 B C B M F D N A C - C D 2 A W19 F J D 4 N D -
a b c d e f g h i j k l m n o p q r p q r

4 N A L N I B K N C - E3 BG BR NN CB CG
s t u v w x y z aa ab ac

a	
Display Size (in)	
Code	Description
156	15.6
185	18.5
215	21.5
240	24

b	
Button Area	
Code	Description
A	No button area
B	Button area

c	
Bezel Type	
Code	Description
A	Aluminum
C	Aluminum and Glass, TrueFlat

d	
Mount Type	
Code	Description
B	Bottom Mount
T	Top Mount
V	VESA Mount

e	
Touch Type	
Code	Description
M	Multi-touch
S	Single Touch (Standard)

f	
Resolution	
Code	Description
F	16:9 1920 x 1080
H	16:9 1366 x 768 HD JLR
P	9:16 1080 x 1920 Portrait

g	
Power	
Code	Description
D	24V DC Isolated, no UPS

h	
Fan	
Code	Description
N	Fanless

i	
System Configuration	
Code	Description
A	No Expansion

j	
Mechanical Adapter	
Code	Description
C	Custom System (Common)
H	HASEKE
L	ROLEC
N	None (VESA)
R	Rittal
T	Tilting Rittal

k	
Processor Class	
Code	Description
C	Celeron
3	i3
5	i5
7	i7

m	
OS Location	
Code	Description
N	None
1	Storage 1
2	Storage 2
3	Storage 3

o	
OS	
Code	Description
W19	Windows IoT 19 LTSC (2019)
NNN	None
2	Storage 2
3	Storage 3

q	
COM1 Ports	
Code	Description
J	1xRS232 (DB15M)
K	1xRS232 Isolated (DB15M)
N	None

s	
Storage 1	
Code	Description
2	256 GB
3	513 GB
4	1 TB
N	None

u	
SATA III MLC CFast	
Code	Description
A	30 GB
B	60 GB
C	120 GB
D	240 GB
N	No Storage

l	
RAM	
Code	Description
B	4 GB
C	8 GB
D	16 GB

n	
PCI Expansion	
Code	Description
A	None
1	Storage 1
2	Storage 2
3	Storage 3

p	
TPM	
Code	Description
F	FTPM BIOS
N	None

r	
COM2 Ports	
Code	Description
D	DisplayPort ++ v1.2
E	1 Ethernet Port
N	None

t	
Storage 2	
Code	Description
N	No Storage
N	None

v	
Long Distance	
Code	Description
L	1 Remote Video Link
N	None

w	
Software	
Code	Description
N	No Software
C	120 GB
D	240 GB
N	No Storage

x	
Warranty	
Code	Description
1	Standard

z	
Conformal Coat	
Code	Description
K	Conformal Coat

ab	
Button Area	
Code	Description
C	Button Area
N	No Button Area

y	
Branding	
Code	Description
S	Standard AB
B	Brandless

aa	
Handles	
Code	Description
N	None
P	Perimeter
S	Side Handles

ac	
Hard Wired Element(s)	
Code	Description
Options Summary continued on page 114	

ac					
Hard-wired Element(s) Add alpha/alpha-numeric code for up to 15 hard-wired elements					
Code	Description		Code	Description	
NN	Empty space — no element		LW	Signal Indicator	White, translucent
BB	Push Button	Blue, illuminated; 2 N.O.	LY		Yellow, translucent
BG		Green, illuminated; 2 N.O.	PA	Black, opaque; 1 N.C. + 1 N.O.	
BK		Black, opaque; 2 N.C.	PB	Blue, illuminated; 1 N.C. + 1 N.O.	
BR		Red, illuminated; 2 N.O.	PC	Predisposition Cable	Connection to internal terminal block for future installation of signal indicators and commands with terminals
BW		White, illuminated; 2 N.O.	PE	Push Button	Grey, opaque; 1 N.C. + 1 N.O.
BY		Yellow, illuminated; 2 N.O.	PG		Green, illuminated; 1 N.C. + 1 N.O.
E1		Emergency Stop (E-stop)	Traction unlock, 2 N.C. for safety PLC + 1 N.O.		PK
E2	Traction unlock, 2 N.C. for safety relay + 1 red LED		PM		Mushroom shape, black head, rotating unlock; 2 N.C.
E3	Traction unlock, 2 N.C. for safety PLC + 1 red LED		PR		Red, illuminated; 1 N.C. + 1 N.O.
E4	Traction unlock, 2 N.C. for safety relay + 1 white LED		PU	Predisposition Cable	Connection of USB cable for future installation of commands with USB interface — USB, Ethernet, RFID
E5	Traction unlock, 2 N.C. for safety PLC + 1 white LED		PW	Push Button	White, illuminated; 1 N.C. + 1 N.O.
ES	Rotating unlock, 2 N.C. for safety PLC or safety relay + 1 N.O.		PY		Yellow, illuminated; 1 N.C. + 1 N.O.
CB	Custom	Push button, blue, translucent	R1	RFID	Transponder, read/write low frequency (LF), 125 kHz, Q5 with USB interface, serial protocol
CG		Push button, green, translucent	R2		Read/write high frequency (HF), 13.56 MHz, ISO 14443A and ISO 15693 with USB interface, serial protocol
CL		Push button label, without lens; 1 N.C. + 1 N.O.	R3		Read/write low frequency (LF), 125 kHz, Q5 with USB interface, with keyboard emulation
CN		Push button label, without lens; 2 N.O.	R4		Read/write high frequency (HF), 13.56 MHz, ISO 14443A and ISO 15693 with keyboard emulation, serial protocol
CR		Push button, red, translucent	S1	Selector Switch	Latching, 1x90 degrees right rotating; 1 N.C. + 1 N.O.
CW		Push button label, white, translucent	S2		Latching, 2x60 degrees rotating; 2 N.O.
CY		Push button, yellow, translucent	S3		Momentary, 2x40 degrees rotating; 2 N.O.
EN	Encoder	Incremental, 30 detent positions, unconstrained rotation, tactile pushbutton switch, A/B coding, 24V DC	S4		Momentary, 1x40 degrees right rotating; 1 N.C. + 1 N.O.
ET	Ethernet Interface	With protection cap, serigraph printed	S5		Latching, 1x90 degree rotating angle V-shape; 1 N.C. + 1 N.O.
K1	Key Switch	Momentary, 2x40 degrees, key removal in 0; 2 N.C.	US	USB 2.0	With protection cap
K2		Latching, 1x90 degrees, key removal in 0 and 1; 1 N.C. + 1 N.O.	X1	ATX Mode Power Supply	Non-illuminated, black protrudent button, wired
K3		Momentary, 1x40 degree right, key removal in 0; 1 N.C. + 1 N.O.	X2		Keylock momentary, 1x40 degree right, key removal in 0, wired
K4		Latching, 1x90 degrees, key removal in 0; 2 N.O.	X3		Non-illuminated, gray button, wired
K5		Latching, 2x90 degrees, key removal in 0; 2 N.O.	ZZ	Buzzer	
K6		Latching, 2x90 degrees, key removal in 0, 1, and 2; 2 N.O.			
K7		Latching, 2x90 degrees, key removal in 0, 1, and 2; 2 N.C.			
LB	Signal Indicator	Blue, translucent			
LG		Green, translucent			
LR		Red, translucent			

Battery

The real time clock (RTC) battery, model CR2032 MFR, stores the date and time of your On-Machine product.



For replacement instructions, see [Replace the Battery on page 95](#).

Figure 36 - CR2032 MFR Battery: Approximate Dimensions (mm)

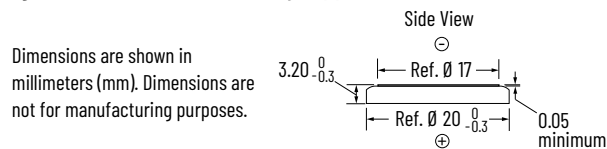


Figure 37 - CR2032 MFR Battery: Battery Performance

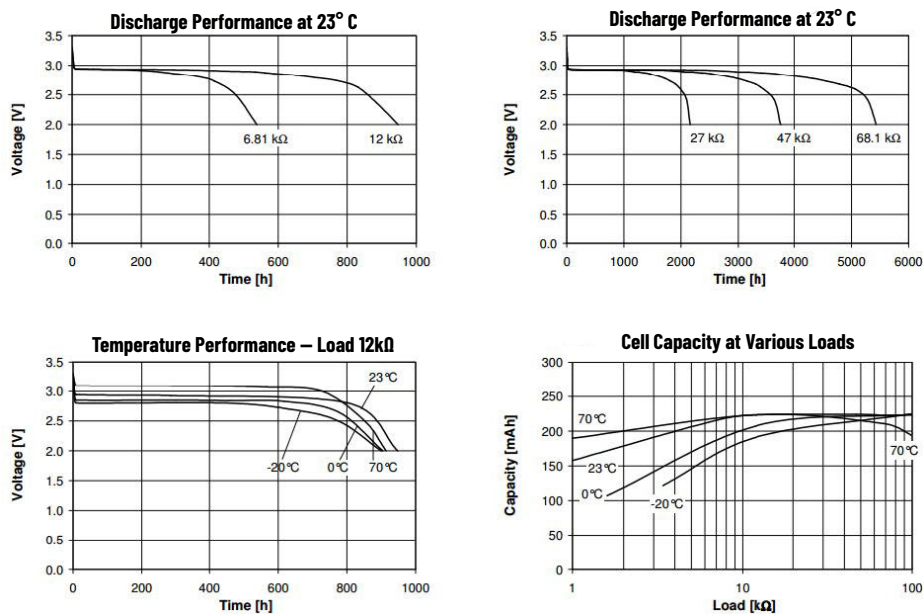


Table 78 - CR2032 MFR Battery: Technical Data



<div>Top View</div> 	Description	Value	Description	Value
	Model	CR2032 MFR	Rated Capacity	225 mAh
	Chemical System	Li/MnO2	Temperature Range	-30° C...70° C (-22° F...158° F)
	Nominal Voltage (V)	3V	Self Discharge at 32° C (89.6° F)	< 1% per year

Table 79 - Battery Holder

<div>Top View</div> 	Description	Value
	Model	Polypropylene, AC161 PP, off white
	UL Flammability Rating	UL 94-HB File No. E108370
	Contacts	Phosphor bronze C5191, nickel plated 80-150u thickness
	Vibration Test	10-50-10 Hz swept in 60 seconds x, y, z direction: 1 hour each direction
		Result: no dislodgement of the cell or damage no discontinuity over 10 ms
	Shock Test	half sine wave acceleration 150g 6 ms 3 shock pulses each direction per axis, total 18 pulses
		Result: no evidence of physical
	RoHS	2 compliant

Motherboard

COM1 I/O and COM1 Opto-isolated

Table 80 - COM1 I/O and COM1 Opto-isolated Cards: Detail

PIN	Signal	I/O
1	+5V DC	OUT
2	Transmit Data (RS-232)	OUT
3	Receive Data (RS-232)	IN
4	Request to Send	OUT
5	Clear to Send	IN
6	Data Set Ready	IN
7	Ground	—
8	Date Terminal Ready	OUT
9	Carrier Detect	IN
10	Transmit Data +/Receive Data + (RS-485/RS-422)	I/O
11	Transmit Data -/Receive Data - (RS-485/RS-422)	I/O
12	Ring Indication (RS-232)	IN
13	Receive Data + (RS-422)	IN
14	Receive Data - (RS-422)	IN
15	N.C.	N.C.

DIP Switch Values

Figure 38 - DIP Switch Locations SW3...SW5 — Top View of Motherboard MB1391/A

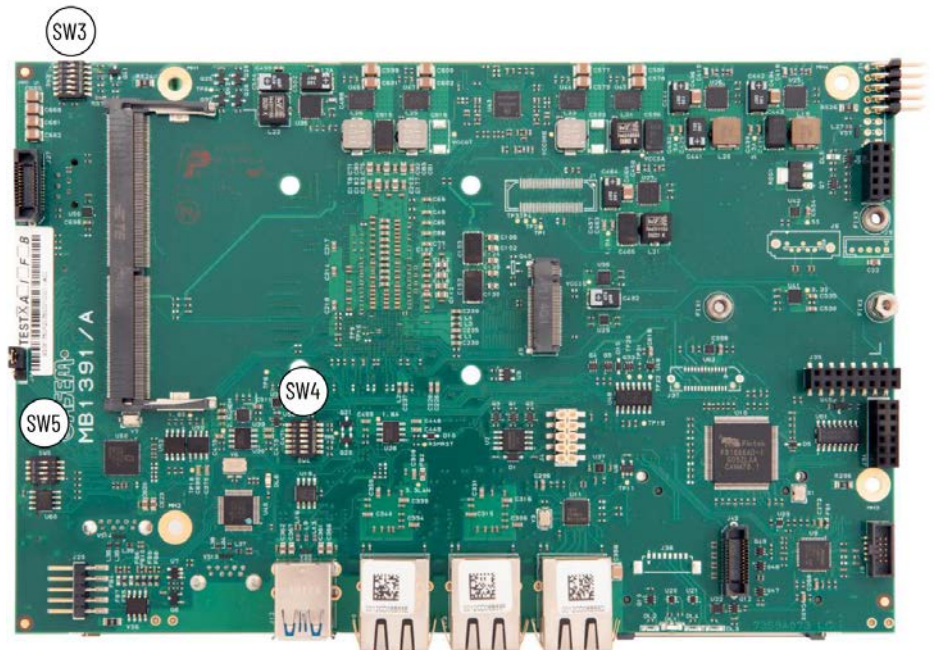


Table 81 - DIP Switch Values SW3...SW5 – Single LVDS

Attribute		LCD Size 15.6 and 18.5 in.
Backlight	SW 5-1	ON
	SW 5-2	OFF
	SW 5-3	ON
	SW 5-4	OFF
Alim LCD	JP1	1-2
Resolution	SW 1-1	ON
	SW 1-2	ON
	SW 1-3	ON
	SW 1-4	OFF
	GPIO Value	8
Resolution Setting		HD
Bits per Pixel (Bpp)		24
Resolution (pixel x pixel)		1366x768

Table 82 - DIP Switch Values SW3...SW5 – Double LVDS

Attribute		LCD Size (in.) and Manufacturer		
		15.6 Sharp	18.5 Sharp	18.5, 21.5, and 24 AUO
Backlight	SW 5-1	ON		ON
	SW 5-2	OFF		OFF
	SW 5-3	ON		OFF
	SW 5-4	OFF		ON
Alim LCD	JP1	2-3	1-2	1-2
Resolution	SW 1-1	OFF		ON
	SW 1-2	ON		OFF
	SW 1-3	OFF		OFF
	SW 1-4	OFF		OFF
	GPIO Value	13		14
Resolution Setting		HD 1080		HD 1080
Bits per Pixel (Bpp)		24		24
Resolution (pixel x pixel)		1920x1080		1920x1080

Table 83 - DIP Switch SW4

Attribute	Function	Default	Action
SW4-1	CLEAR ME	OFF	ON = Reset
SW4-2	CLEAR CMOS	OFF	ON = Reset
SW4-3	Restore BIOS Setup Defaults	OFF	ON = Restore Defaults
SW4-4	Watchdog Reset Enable	OFF	ON = Reset
SW4-5	PB/HT	OFF	PB
SW4-6	ENABLE FAN	OFF	NO FAN

Jumper Connector Values

Figure 39 - Jumper Connector Locations: Top View of Motherboard MB1391/A

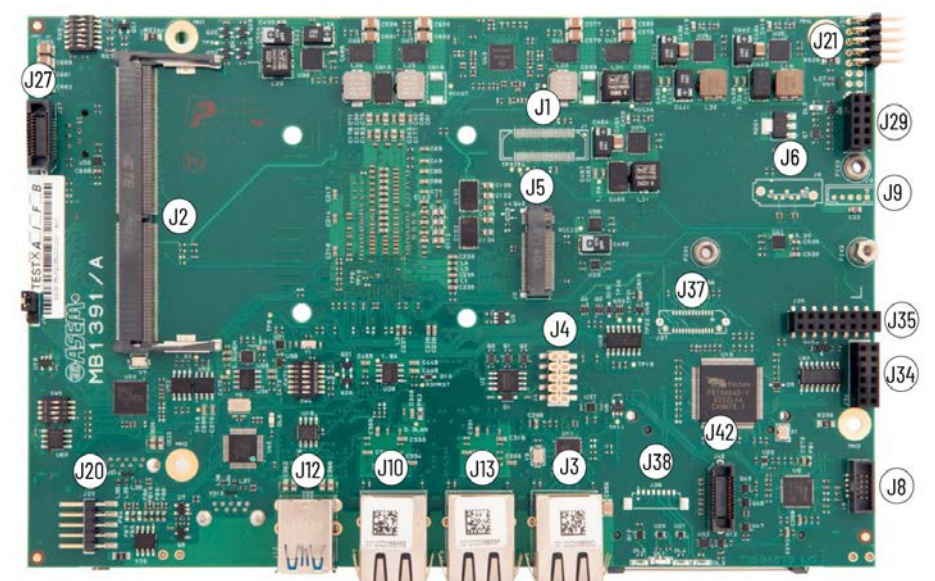


Figure 40 - Jumper Connector Locations: Bottom View of Motherboard MB1391/A

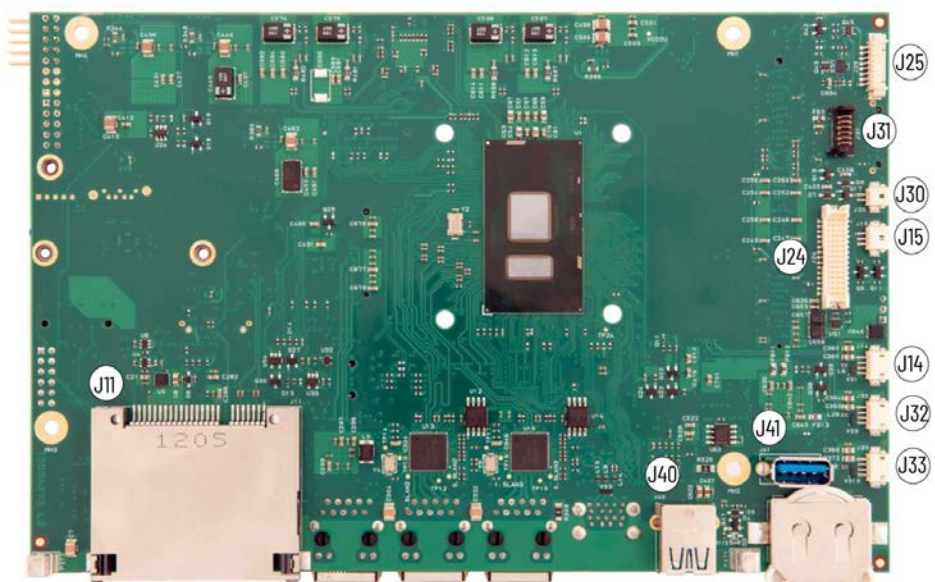


Table 84 - Jumper Connections: Summary

Value	Function	Value	Function	Value	Function	Value	Function
J1	Reserved	J10	Ethernet port LAN	J24	LCD signals	J34	Reserved
J2	DDR4 SODIMM	J11	CFJ20ast	J25	LED	J35	Reserved
J3	Ethernet port LAN	J12	USB 3.0	J27	Reserved	J37	Reserved
J4	DEDIPROG	J13	Ethernet port LAN	J29	Reserved	J38	Reserved
J5	M2 / SATA	J14	USB 2.0 internal	J30	Speaker	J40	USB 3.0
J6	Reserved	J15	Front panel LED	J31	ATX power button	J41	USB 3.0
J8	Reserved	J20	Touchscreen	J32	USB 2.0	J42	Reserved
J9	Reserved	J21	Power supply	J33	USB 2.0		

Table 85 - JP1: LCD Power Jumper Function

Position	Function
1-2	5V
2-3	3.3v default

Table 86 - J3: Ethernet Port LAN 1 (i219LM)

PIN	Signal	PIN	Signal
1	/	6	MDI2
2	MDIO	7	MDI2#
3	MDIO#	8	MDI3
4	MDI1	9	MDI3#
5	MDI1#	10	Ground

Table 87 - J4: Debug and Programming Connector (DEDIPROG)

PIN	Signal	I/O	PIN	Signal	I/O
1	VCC 3.3V	Power	6	MOSI	Output
2	Ground	Power	7	N.C.	—
3	CS.N	Input	8	DEDIPROG_IO_N	Input
4	CLK	Input	9	N.C.	—
5	MISO	Input	10	N.C.	—

Table 88 - J5: M2 Key M Connector

PIN	Signal	PIN	Signal	PIN	Signal	PIN	Signal	PIN	Signal
1	Ground	16	3.3V	31	PETp1	46	N/C	61	—
2	3.3V	17	PETn2	32	N/C	47	PERn0	62	—
3	Ground	18	3.3V	33	Ground	48	N/C	63	—
4	3.3V	19	PETp2	34	N/C	49	PERp0	64	—
5	PETn3	20	N/C	35	PERn1	50	PERST#	65	—
6	N/C	21	Ground	36	N/C	51	Ground	66	—
7	PETp3	22	N/C	37	PERp1	52	CLKREQ#	67	N/C
8	N/C	23	PERn2	38	N/C	53	REFCLKN	68	SUSCLK
9	Ground	24	N/C	39	Ground	54	PEWake#	69	PEDET
10	LED1#	25	PERp2	40	N/C	55	REFCLKN	70	3.3V
11	PERn3	26	N/C	41	PETn0	56	N/C	71	Ground
12	3.3V	27	Ground	42	N/C	57	Ground	72	3.3V
13	PERp3	28	N/C	43	PETp0	58	N/C	73	Ground
14	3.3V	29	PETn1	44	N/C	59	—	74	3.3V
15	Ground	30	N/C	45	Ground	60	—	75	Ground

Table 89 - J10: Ethernet Port LAN 3 (i210)

PIN	Signal	PIN	Signal
1	/	6	MDI2
2	MDIO	7	MDI2#
3	MDIO#	8	MDI3
4	MDI1	9	MDI3#
5	MDI1#	10	Ground

Table 90 - J11: CFast Connector

PIN	Signal
1	Ground
2	SATA_TX+
3	SATA_TX-
4	Ground
5	SATA_RX-
6	SATA_RX+
7	Ground
8	3.3V
9	Ground

PIN	Signal
10, 12, 13	/
14	Ground
15, 16, 17, 18, 19	/
20	3.3V
21	3.3V
22	Ground
23	Ground
24, 25, 26	/

Table 91 - J12: USB 3

PIN	Signal
1	+5V
2	USB 2.1 Data -
3	USB 2.1 Data +
4	Ground
5	USB 3.2 RX -
6	USB 3.2 RX +
7	Ground
8	USB 3.2 TX -
9	USB 3.2 TX +

PIN	Signal
10	+5V
11	USB 2.0 Data -
12	USB 2.0 Data +
13	Ground
14	USB 3.1 RX -
15	USB 3.1 RX +
16	Ground
17	USB 3.1 TX -
18	USB 3.1 TX +

Table 92 - J13: Ethernet Port LAN 2 (i210)

PIN	Signal
1	/
2	MDIO
3	MDIO#
4	MDI1
5	MDI1#

PIN	Signal
6	MDI2
7	MDI2#
8	MDI3
9	MDI3#
10	Ground

Table 93 - J14: Internal USB 2.0

PIN	Function
1	Vcc (5V)
2	D-

PIN	Function
3	D+
4	Ground

Table 94 - J15: Front Panel LED

PIN	Signal	I/O
1	Yellow anode	n/a
2	Common cathode	n/a
3	Green anode	n/a

Table 95 - J20: 5-wire Resistive Touchscreen Connector

PIN	Signal
1	H
2	X/XL
3	S/XR

PIN	Signal
4	Y/YT
5	L/YB

Table 96 - J21: DC Input Power Supply Connector

PIN	Signal
1	I2C2_DATA
2	I2C2_Clock
3	USB4N
4	SLEEP 24
5	USB4P
6	INUPS
7	GND
8	+12V

PIN	Signal
9	GND
10	+12V
11	GND
12	+12V
13	GND
14	+12V
15	+3A
16	NC

Table 97 - J24: LCD Signal

PIN	Signal
1	DATA0_N
2	DATA0_P
3	DATA1_N
4	DATA1_P
5	DATA2_N
6	DATA2_P
7	Ground
8	Ground
9	CLKA_N
10	CLKA_P
11	DATA3_N
12	DATA3_P
13	DATB0_N
14	DATB0_P
15	DATB1_N

PIN	Signal
16	DATB1_P
17	Ground
18	Ground
19	DATB2_N
20	DATB2_P
21	DATB3_N
22	DATB3_P
23	CLKB_N
24	CLKB_P
25	Ground
26	Ground
27	VDD
28	VDD
29	VDD
30	VDD

Table 98 - J25: LED Driving for LCD Connector

PIN	Signal
1, 2, 3	Power supply (12V)
4, 5, 6	Ground

PIN	Signal
7	ON/OFF signal (0V: OFF; 3.3V: ON)
8	PWM dimming signal (3.3V; 1 kHz)

Table 99 - J30: Speaker Connector

PIN	Signal
1	+
2	-

PIN	Signal
3	Ground
4	Ground

Table 100 - J31: ATX Power Button

PIN	Signal
1	Power Button
2	Ground
3	Inhibit MCU Power Button

PIN	Signal
4	Ground
5	5S
6	Ground

Table 101 - J32: Internal USB 2.0

PIN	Signal
1	Vcc (5V)
2	D-

PIN	Signal
3	D+
4	Ground

Table 102 - J33: Internal USB 2.0

PIN	Signal	PIN	Signal
1	Vcc (5V)	3	D+
2	D-	4	Ground

Table 103 - J32: Front Panel USB 2.0 Internal Connector

PIN	Signal	PIN	Signal
1	Vcc (5V)	3	D+
2	D-	4	Ground

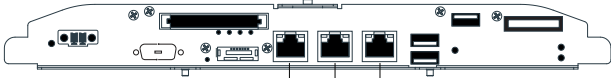
Table 104 - J33: Touch PCAP USB 2.0 Internal Connector

PIN	Signal	PIN	Signal
1	Vcc (5V)	3	D+
2	D-	4	Ground

LAN Ports

Table 105 - LAN Ports: Technical Data

On-Machine Panel PC, Underside View



LAN Ports

PIN	SIGNAL
1	TX+
2	TX-
3	RX+
4	Shield
5	Shield
6	RX
7	Shield
8	Shield

Accessories

The accessories listed in this section are for use with ASEM 6300MA On-Machine monitors and ASEM 6300PA On-Machine panel PCs.







Adapters

Table 106 - Adapters

	Description	Cat. No.
DisplayPort Adapter	to VGA active	6200V-DPVG2
	to DVI-D active	6200V-DPDV12
	to HDMI active	6200V-DPHDMI4K

ATX Mode Power Supply Operation Kits



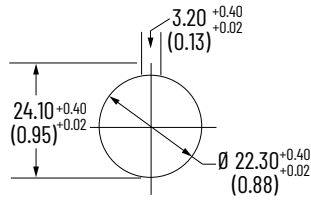
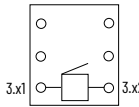
Table 107 - ATX Mode Power Supply Operation Kits: Detail ⁽¹⁾

Element	Label	Description	Features	N.C.	N.O.	Cat. No.
		Kit for Power Supply Operation in ATX Mode	Non-illuminated, black button, wired	1	1	6300V-ATX-X1
			Momentary key lock, 1 x 40 degree right, key removal in 0, wired			6300V-ATX-X2
			Non-illuminated, gray button, wire			6300V-ATX-X3

(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Buzzer

Table 108 - Buzzer: Detail ⁽¹⁾

Element	Label	Approximate Dimensions [mm (in.)] ⁽²⁾	Electrical Schema	Cat. No.
		 <p> $3.20^{+0.40}_{+0.02}$ (0.13) $24.10^{+0.40}_{+0.02}$ (0.95) $\varnothing 22.30^{+0.40}_{+0.02}$ (0.88) </p>	 <p>3.x1 3.x2</p>	6300V- BUZZER-ZZ

(1) A 22 mm socket wrench is required for installation.

(2) Dimensions are shown in millimeters (inches) [mm (in.)]. Dimensions are not for manufacturing purposes.

Cables

Table 109 - Cables

Description		Cable Length	Cat. No.
DisplayPort to DisplayPort cable		2 m (6.5 ft)	6200V-DPCBL2M
DVI cable		2 m (6.5 ft)	6200V-DVICBL2M
<div>Remote Video Link (RVL) Cable</div> <ul style="list-style-type: none">For long-distance featureCat 5e SF/UTP	<ul style="list-style-type: none">Fixed layingMin bend radius<ul style="list-style-type: none">15...50 m (49.2...164 ft) cable lengths: 50.4 mm (2 in.)100 m (328 ft) cable lengths: 90 mm (3.5 in.)	15 m (49.2 ft)	6300V-15RVLFIXED
		20 m (65.6 ft)	6300V-20RVLFIXED
		30 m (98.4 ft)	6300V-30RVLFIXED
		40 m (131.2 ft)	6300V-40RVLFIXED
		50 m (164 ft)	6300V-50RVLFIXED
		100 m (328 ft)	6300V-100RVLFIXED
	<ul style="list-style-type: none">Unguided flex layingMin bend radius: 94.5 mm (3.72 in.)	5 m (16.4 ft)	6300V-5RVLFLEX
		10 m (32.8 ft)	6300V-10RVLFLEX
		15 m (49.2 ft)	6300V-15RVLFLEX
		20 m (65.6 ft)	6300V-20RVLFLEX
		25 m (82 ft)	6300V-25RVLFLEX
		30 m (98.4 ft)	6300V-30RVLFLEX
		35 m (114.8 ft)	6300V-35RVLFLEX
		40 m (131.2 ft)	6300V-40RVLFLEX
		45 m (147.6 ft)	6300V-45RVLFLEX
		50 m (164 ft)	6300V-50RVLFLEX
Two-cable Kit	<ul style="list-style-type: none">DVI-D to DVI-DUSB (A-Type) to USB (B-type)	5 m (16.4 ft)	6300V-5MDVIUSB
USB to USB Touch Screen Cable		2 m (6.5 ft)	6200V-USBCBL2M

CFast SSD Card

Your On-Machine features a CFast SSD slot to accept CFast SSD cards for industrial applications to store your manufacturing data.

Table 110 - CFast SSD Card

Description	Storage Capacity	Cat. No.
CFast SSD Card	30 GB	6300V-CFASTT30
	60 GB	6300V-CFASTT60
	120 GB	6300V-CFASTT120
	340 GB	6300V-CFASTT240

Table 111 - CFast Card: Operating Voltage

Parameter	Minimum	Typical	Maximum
DC Power Supply	3.135 V	3.30 V	3.465 V

Table 112 - CFast Card: Power Consumption

Mode [mA]	Storage Capacity				
	30 GB	60 GB	120 GB	240 GB	480 GB
Active	245	325	385	390	400
Idle	75	75	75	75	75

Table 113 - CFast Card: Environment Specifications

Attribute		Value
Compliance		CE, FCC, RoHS, MIL-STD-810
Temperature	Operating Standard	0...+70 °C (32...158 °F)
	Operating Wide	-40...+85 °C (-40...+185 °F)
	Non-operating	-40...+100 °C (-40...+212 °F)
Vibration	Operating	7.69 GRMS, 20~2000 Hz/random compliant with MIL-STD-810G
	Non-operating	4.02 GRMS, 15~2000 Hz/random compliant with MIL-STD-810G
Shock	Operating	50 G, 11 ms
	Non-operating	1500 G, 0.5 ms (compliant with MIL-STD-883K)

IMPORTANT The environment specifications within [Table 113](#) indicate the test conditions for the device. Actual application conditions can effect the results.

Table 114 - CFast Card: Performance Specifications

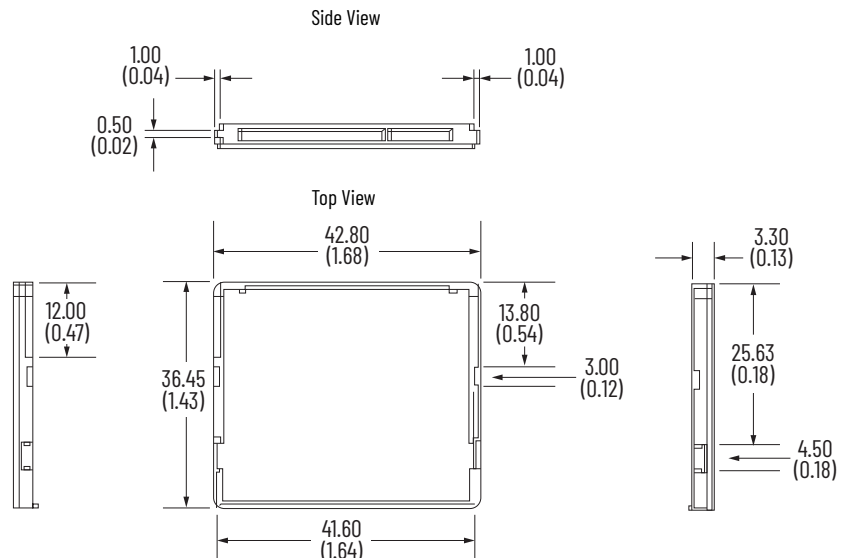
Performance	Storage Capacity				
	30 GB	60 GB	120 GB	240 GB	480 GB
Sequential Read	215 [MB/s]	435 [MB/s]	560 [MB/s]	560 [MB/s]	560 [MB/s]
Sequential Write	125 [MB/s]	260 [MB/s]	475 [MB/s]	505 [MB/s]	515 [MB/s]
Random Read	8,000 IOPS (4K)	19,000 IOPS (4K)	33,000 IOPS (4K)	52,000 IOPS (4K)	56,000 IOPS (4K)
Random Write	17,000 IOPS (4K)	58,000 IOPS (4K)	71,000 IOPS (4K)	71,000 IOPS (4K)	71,000 IOPS (4K)
Mean Time Between Failure (MTBF) ⁽¹⁾	3,000,000 hours				
Drive Writes per Day (DWPD) ⁽²⁾	3.20	3.45	3.37	3.42	3.40

(1) Predicted based on reliability data for the individual components in the CFast SSD card, serving as statistical reference. The MTBF is predicated and calculated based on "Telcordia Technologies Special Report", SR-332, Issue 3 in. method.

(2) The endurance of a storage device is predicted by DWPD based on several factors related to usage, such as the: amount of data written into the drive, block management conditions, and daily workload for the drive). DWPD is calculated based on the number of times that user overwrites the entire capacity of the CFast SSD card per day of its lifetime during the warranty period. This estimation complies with JEDEC JESD-219, Enterprise endurance workload of random data with payload size distribution.



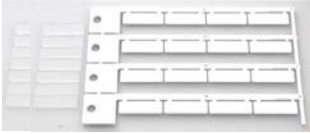
Figure 41 - CFast SSD Card: Approximate Dimensions [mm (in.)]d

Dimensions are shown in millimeters (inches) [mm (in)]. Dimensions are not for manufacturing purposes.





Element Accessories

Table 115 - Element Accessories

Accessory	Description	Cat. No.
	<ul style="list-style-type: none"> Spanner required for element installation 	6300V-FIXSPANER
	<ul style="list-style-type: none"> DIN A4 ready-made printable label sheet for custom labeling push buttons (BLWC) 6x9 mm (0.24x0.35 in) round, pre-cut Printing template available on Rockwell Automation site 	6300V-CUSTOMLABEL
	<ul style="list-style-type: none"> Generic label for signal indicators, push buttons, and selector switches Polycarbonate label material Polycarbonate transparent label protectors 	6300V-SHC

Ethernet Interface

Table 116 - Ethernet Interface: Detail ⁽¹⁾

Element	Label	Description	For Use With	Cat. No.
		Ethernet interface with protection cap, serigraph printed	6300MA On-Machine Monitors Only	6300V-ETH-EH
			6300PA On-Machine Panel PCs Only	6300V-ETH-ET

(1) A 22 mm socket wrench is required for installation.

Emergency Stop Buttons

IMPORTANT

- The emergency contacts voltage and current rates listed in Safety Contacts Properties listed are insufficient to describe the emergency circuit when end of line (EOL) resistors are installed. Be careful reading the constraints when an EOL configuration is used.
- Pay attention to the maximum/minimum voltages and maximum/minimum currents supported by the contacts. The safety PLC application or safety relay application is dependent on the maximum/minimum voltages and currents. The max voltage allowed to the rear panel connector pins is 24V DC.
- The functional safety chain safety integrity level (SIL) depends on all the components. The emergency stop (E-stop) button is only one element of that. Calculation of the overall SIL should be performed by well-trained functional safety technician.

IMPORTANT

If a pre-installed E-stop button kit needs to be replaced you **must**:

- (a)** replace the pre-installed E-stop button kit with an identical E-stop button kit and
- (b)** install the identical E-stop button kit in the same location on the button area to ensure certification compliance.

If another type of E-stop button kit is used, all certifications listed will be void.

Table 117 - E-stop Buttons: Summary

Description	Emergency Chain	LED Color	For Use With	Cat. No.
E-stop traction unlock, 2 N.C. for Safety PLC + 1 N.O.	26149501	—	6300PA-xxxB* and 6300MA-xxx(B/D) families	6300V-ESTOP-E1
E-stop traction unlock, 2 N.C. for Safety Relay	26149505	1 Red		6300V-ESTOP-E2
E-stop traction unlock, 2 N.C. for Safety PLC	26149517	1 Red		6300V-ESTOP-E3
E-stop traction unlock, 2 N.C. for Safety Relay	26149506	1 White		6300V-ESTOP-E4
E-stop traction unlock, 2 N.C. for Safety PLC	26149518	1 White		6300V-ESTOP-E5
E-stop rotating unlock, 2 N.C. for Safety PLC or Safety Relay + 1 N.O.	26149512	—		6300V-ESTOP-ES


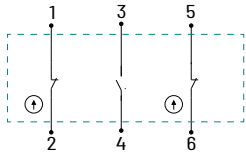
E-Stop Replacement Part Kits: 6300V-ESTOP-E1...E5

The following tables provide detail of E-stop replacement part kits available for your On-Machine product.

IMPORTANT Only the front portion of the emergency chain is replaceable.


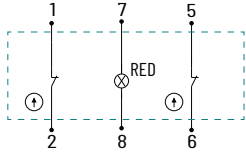
Description by Configuration No.

Table 118 - Configuration No. 1, 6300V-ESTOP-E1 spare part PN-684064, Emergency Chain Code 26149501⁽¹⁾

Kit	E-stop Description	Contacts Schema	Safety Contact Properties
	<ul style="list-style-type: none"> Reset by pulling 2 N.C. safety contacts for Safety Programmable Logic Controller (PLC) + 1 N.O. Dry contacts [RAFI 1.30.273.602/0300] ASEM printed circuit boards (PCBs) 		<p>See Table 123 on page 128</p> <p>RAFI 1.20.126.414/0000</p>


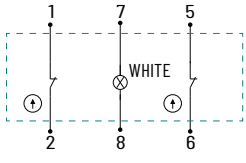
(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Table 119 - Configuration No. 5, 6300V-ESTOP-E2 spare part PN-684065, Emergency Chain Code 26149505⁽¹⁾

Kit	E-stop Description	Contacts Schema	Safety Contact Properties
	<ul style="list-style-type: none"> Illuminated LED: Red Reset by pulling 2 N.C. safety contacts for emergency relay Dry contacts [RAFI 1.30.273.101/2300] ASEM PCBs 		<p>See Table 125 on page 129</p> <p>RAFI 1.20.126.604/0000</p>


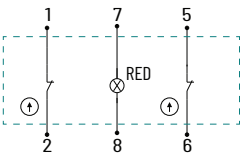
(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Table 120 - Configuration No. 6, 6300V-ESTOP-E4 spare part PN-684067, Emergency Chain Code 26149506⁽¹⁾

Kit	E-stop Description	Contacts Schema	Safety Contact Properties
	<ul style="list-style-type: none"> Illuminated LED: White Reset by pulling 2 N.C. safety contacts for emergency relay Dry contacts [RAFI 1.30.273.101/2200] ASEM PCBs 		<p>See Table 125 on page 129</p> <p>RAFI 1.20.126.604/0000</p>


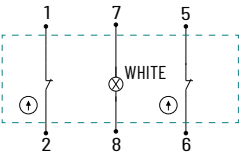
(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Table 121 - Configuration No. 17, 6300V-ESTOP-E3 spare part PN-684066, Emergency Chain Code 26149517 ⁽¹⁾

Kit	E-stop Description	Contacts Schema	Safety Contact Properties
	<ul style="list-style-type: none"> • Illuminated LED: Red • Reset by pulling • 2 N.C. safety contacts for Safety PLC • Dry contacts • [RAFI 1.30.273.101/2300] • ASEM PCBs 		<p>See Table 124 on page 128</p> <p>RAFI 1.20.126.404/0000</p>

(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Table 122 - Configuration No. 18, 6300V-ESTOP-E5 spare part PN-684068, Emergency Chain Code 26149518 ⁽¹⁾

Kit	E-stop Description	Contacts Schema	Safety Contact Properties
	<ul style="list-style-type: none"> • Illuminated LED: White • Reset by pulling • 2 N.C. safety contacts for Safety PLC • Dry contacts • [RAFI 1.30.273.101/2200] • ASEM PCBs 		<p>See Table 124 on page 128</p> <p>RAFI 1.20.126.404/0000</p>

(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Safety Contacts Properties

The following tables provide the safety contacts properties for the E-stop kits referenced in the previous tables in [Safety Contacts Properties](#).

Table 123 - Safety Contacts Properties: RAFI 1.20.126.414/0000

Attribute	Value	Attribute	Value
Operating Life Electrical	50.000 (10 mA / 24V DC) cycles	Rated Voltage	Minimum 20 mV
			Maximum 35V
B10 Electrical	65.000 (10 mA / 24V DC) cycles	Rated Current	Minimum 0.01 mA
			Maximum 100 mA
B10d	130,000 cycles	Rated Power	Maximum 0.25 W
Rated Insulation Voltage	50V	Categories of Use	DC-13
Rated Surge Voltage	500V	Conditional Short Circuit Current	1,000 A

Table 124 - Safety Contacts Properties: RAFI 1.20.126.404/0000

Attribute	Value	Attribute	Value
Operating Life Electrical	1,000,000 (10 mA / 24V DC) cycles	Rated Voltage	Minimum 20 mV
			Maximum 35V
B10 Electrical	1,300,000 (10 mA / 24V DC) cycles	Rated Current	Minimum 0.01 mA
			Maximum 100 mA
B10d	2,600,000 cycles	Rated Power	Maximum 0.25 W
Rated Insulation Voltage	50V	Categories of Use	DC-13
Rated Surge Voltage	500V	Conditional Short Circuit Current	1,000 A

Table 125 - Safety Contacts Properties: RAFI 1.20.126.604/0000

Attribute	Value	Attribute	Value
Operating Life Electrical	1,000,000 (1 A / 250V AC) cycles	Rated Voltage	Minimum 10V
	100,000 (2 A / 250V AC) cycles		Maximum —
	30,000 (4 A / 250V AC) cycles	Rated Current	Minimum 10 mA
			Maximum —
B10 Electrical	1,300,000 (1 A / 250V AC) cycles	Rated Power	Maximum 0.5 W
	200,000 (2 A / 250V AC) cycles		
	70,000 (4 A / 250V AC) cycles		
B10d	140,000 cycles	Categories of Use	DC-13 / Q300
Rated Insulation Voltage	250V	Category of use DC-13 / Q300	120V / 0,55 A (IEC 60947) 240V / 0,27 A (IEC 60947)
Rated Surge Voltage	2,500V	Conditional Short Circuit Current	1,000 A


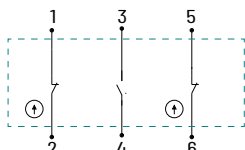
E-stop Replacement Part Kit: 6300V-ESTOP-ES

[Table 126](#) provides detail of E-stop replacement part kit available for your On-Machine product.

IMPORTANT Only the front portion of the emergency chain is replaceable.

Description by Configuration No.

Table 126 - Configuration No. 12, 6300V-ESTOP-ES Spare Part PN-684063, Emergency Chain Code 26149512 ⁽¹⁾

Kit	E-stop Description	Contacts Schema	Safety Contact Properties
 <ul style="list-style-type: none"> Reset by rotating 2NC safety contacts for Safety PLC/Relay + 1 N.O. Dry contacts [SCHLEGEL FRVK] ASEM PCBs 			<p>See Table 127 on page 129</p> <p>Schlegel PTS001</p>

(1) A 22 mm socket wrench is required for installation.

Safety Contacts Properties

[Table 127](#) provides the safety contacts properties for the Schlegel E-stop kits referenced in the previous table, [Table 126](#).

Table 127 - Safety Contacts Properties: PTS001

Attribute	Value	Attribute	Value
Mechanical Life	1 million switching cycles	Bouncing time N.C.	< 10 ms
Electrical Life (rated load)	1 million operations at rated load AC	Utilization Category	DC13 Q300
Contact Resistance N.C.	< 20 mOhm (new state)	Rated Insulation Voltage Ui	250V
Minimum Current	1 mA (under laboratory conditions)	Rated Operating Voltage Ue	24V
Minimum Voltage	5 V	Rated Operating Current Ie	2 A
Positive Opening Contact	According to EN60947-5-1, Appendix K	Breaking Capacity	1,1Ie

Table 128 - Replacement Part



Description	Cat. No.
DFMC 1,5 / 4-STF-3,5 PCB Connector Phoenix Contact 1790315	6300V-TB8CONN1

E-stop Accessory

Table 129 - E-stop Accessory



Description		Cat. No.
E-stop Button Label	<ul style="list-style-type: none"> • Ø 40mm (1.57 in) • Allows for text in 4 languages • Yellow auto adhesive PVC 	6300V-ESTOPLABEL

Handles

Table 130 - Handles

Description	Included Attachment Hardware	For Use With	Cat. No.
Perimeter handle (1 quantity) for landscape display models ⁽¹⁾	O-rings (8 quantity) and M5x16 mm screws (4 quantity)	15.6-in. display with button area	6300V-156PERIMETRALHANDLE
		15.6-in. display, without button area	6300V-156NBAPERIMETRALHANDLE
		18.5-in. display, with button area	6300V-185PERIMETRALHANDLE
		18.5-in. display, without button area	6300V-185NBAPERIMETRALHANDLE
		21.5-in. display, with button area	6300V-215PERIMETRALHANDLE
		21.5-in. display, without button area	6300V-215NBAPERIMETRALHANDLE
		24.0-in. display, without button area	6300V-240NBAPERIMETRALHANDLE
		24.0-in. display, with button area	6300V-240PERIMETRALHANDLE
Perimeter handle (1 quantity) for portrait display models ⁽²⁾	O-rings (4 quantity), M5x16 mm screws (2 quantity), and M5x30 mm screws (2 quantity)	21.5-in. display, with button area	6300V-215PERIMETRALHANDLE-PORTRAIT
		24.0-in. display, with button area	6300V-240PERIMETRALHANDLE-PORTRAIT
Side handles (2 quantity) for landscape models	O-rings (8 quantity) and M5x16 mm screws (4 quantity) ⁽³⁾	15.6-in. display	6300V-156SIDEHANDLE
		18.5-in. display	6300V-185SIDEHANDLE
		21.5-in. display	6300V-215SIDEHANDLE
		24.0-in. display	6300V-240SIDEHANDLE
Side handles (2 quantity) for portrait models	O-rings (4 quantity) and M5x30 mm Screws (4 quantity) ⁽³⁾	21.5-in. display, with button area	6300V-215SIDEHANDLE-PORTRAIT
		24.0-in. display, with button area	6300V-240SIDEHANDLE-PORTRAIT

(1) A perimeter handle can be installed along with a keyboard support tray for landscape display models only.

(2) A perimeter handle cannot be used along with a keyboard support tray for portrait display models.



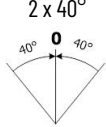
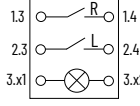


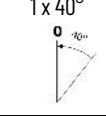
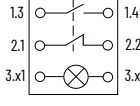


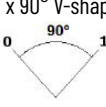
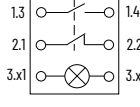
(3) Side handles can be installed along with a keyboard support tray for both landscape display models and portrait display models.

Illuminated Selector Switches

Table 131 - Illuminated Selector Switch Kits: Detail ⁽¹⁾

Element	Label	Rotating Angle(s)	Switch Type	N.C.	N.O.	Electrical Schema	Cat. No.
		1 x 90° right, shape 'L' 	Latching	1	1		6300V-SELECTSWITCH-SW1
		2 x 60° 	Latching	—	2		6300V-SELECTSWITCH-SW2



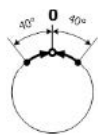
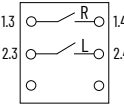



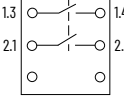


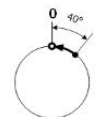
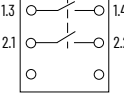


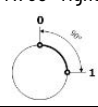
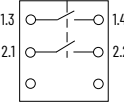


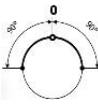
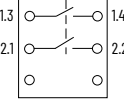



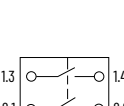


Table 131 - Illuminated Selector Switch Kits: Detail ⁽¹⁾ (Continued)

Element	Label	Rotating Angle(s)	Switch Type	N.C.	N.O.	Electrical Schema	Cat. No.
		2 x 40° 	Momentary	—	2		6300V-SELECTSWITCH-SW3
		1 x 40° 	Momentary	1	1		6300V-SELECTSWITCH-SW4
		1 x 90° V-shape 	Latching	1	1		6300V-SELECTSWITCH-SW6

(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Key Switches


Table 132 - Key Switches: Detail ⁽¹⁾

Element	Label	Rotating Angle(s)	Switch Type	Key Removal	N.C.	N.O.	Electrical Schema	Cat. No.
		2 x 40° 	Momentary	in 0	—	2		6300V-KEYSWITCH-KS1
		1 x 90° right 	Latching	in 0 and in 1	1	1		6300V-KEYSWITCH-KS2
		1 x 40° right 	Momentary	in 0	1	1		6300V-KEYSWITCH-KS3
		1 x 90° right 	Latching	in 0	—	2		KEYSWITCH-KS4
		2 x 90° right 	Latching	in 0	—	2		KEYSWITCH-KS5
		2 x 90° 	Latching	in 0, 1, and 2	—	2		KEYSWITCH-KS6
					2	—		KEYSWITCH-KS9

(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Keyboard Support Tray

Table 133 - Keyboard Support Tray

	Description	Included Attachment Hardware	For Use with	Cat. No.
	Keyboard support tray (1 quantity) for landscape models ⁽¹⁾	O-rings (8 quantity), spacers (4 quantity), and M5x25 mm screws (4 quantity)	15.6-in. display, with button area	6300V-156KEYBOARD
			15.6-in. display, without button area	6300V-156NBAKEYBOARD
			18.5-in. display, with button area	6300V-185KEYBOARD
			18.5-in. display, without button area	6300V-185NBAKEYBOARD
			21.5-in. display, with button area	6300V-215KEYBOARD
			21.5-in. display, without button area	6300V-215NBAKEYBOARD
			24.0 in.display, with button area	6300V-240KEYBOARD
			24.0-in. display, without button area	6300V-240NBAKEYBOARD
	Keyboard support tray (1 quantity) for portrait models ⁽¹⁾	M5 x 16 mm screws (2 quantity), and M4 x 16 mm screws (2 quantity)	21.5-in. display, with button area	6300V-215PKEYBOARD
			24.0-in. display, with button area	6300V-240PKEYBOARD



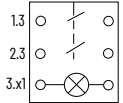


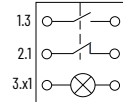


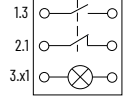


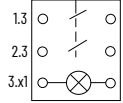


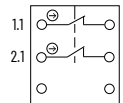
(1) Side handles can be installed along with a keyboard support tray for both landscape display models and portrait display models.
A perimeter handle can be installed along with a keyboard support tray for landscape models only.

Push Buttons, 22 mm

Table 134 - Push Buttons, 22 mm: Detail ⁽¹⁾






Push Button	Label	Color	Lens Type	N.C.	N.O.	Electrical Schema	Cat. No.
		Black	Opaque, Protruding	1	1		6300V-PUSHBUTTON-PK
		Black	Opaque	1	1		6300V-PUSHBUTTON-PA
		Black	Opaque	2	—		6300V-PUSHBUTTON-BK
		Blue	Translucent	1	1		6300V-PUSHBUTTON-PB
		Blue	Translucent	—	2		6300V-PUSHBUTTON-BB
		Green	Translucent	1	1		6300V-PUSHBUTTON-PG
		Green	Translucent	—	2		6300V-PUSHBUTTON-BG
		Red	Translucent	1	1		6300V-PUSHBUTTON-PR
		Red	Translucent	—	2		6300V-PUSHBUTTON-BR
		White	Translucent	1	1		6300V-PUSHBUTTON-PW
		White	Translucent	—	2		6300V-PUSHBUTTON-BW
		Yellow	Translucent	1	1		6300V-PUSHBUTTON-PY

Table 134 - Push Buttons, 22 mm: Detail ⁽¹⁾ (Continued)

Push Button	Label	Color	Lens Type	N.C.	N.O.	Electrical Schema	Cat. No.
		Yellow	Translucent	—	2		6300V-PUSHBUTTON-BY
		Slate Grey	Opaque	—	—		6300V-PUSHBUTTON-PE
		Custom	No Lens see Table 135 for lens selection	1	1		6300V-PUSHBUTTON-CL
				—	2		6300V-PUSHBUTTON-CN
		Black	N/A	2	—		6300V-PUSHBUTTON-PM

(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.









Table 135 - Push Buttons: Translucent Lenses for Custom Pushbuttons

Element	Color	Lens Type	For Use With
	White	Translucent, Flat Lens	6300V-PUSHBUTTON-CL and 6300V-PUSHBUTTON-CN
	Red		
	Yellow		
	Green		
	Blue		

Radio Frequency Identification Accessories

The following tables describe available radio frequency identification (RFID) accessories for your On-Machine Product with a button area.

Table 136 - RFID Transponder Reader/Writer: Detail ⁽¹⁾

Element	Label	Frequency	Interface	Cat. No.
		Low Frequency (LF) 125 kHz	USB Interface, serial protocol	6300V-RFID-R1
		High Frequency (HF) 13.56 MHz		6300V-RFID-R2
		Low Frequency (LF) 125 kHz	USB Interface for Keyboard Emulation	6300V-RFID-R3
		High Frequency (HF) 13.56 MHz		6300V-RFID-R4

(1) A 22 mm socket wrench is required for installation.



The radio frequency identification (RFID) transponder reader/writer module:

- is not connected to the terminal block.
- uses a USB port and therefore decreases the available number of USB ports that can be added on the button area.

Table 137 - RFID Tag Programming Unit



Description	Value	Cat. No.
Power Supply	5V DC± 5%	6300V-RFIDPROG
Drawn Power	Max 1 W	
Working Frequency	13.56 MHz ± 7 kHz	
Antenna	Integrated antenna	
Supported Tags	ISO 15693 and ISO 14443A	
Communication Interface	USB	
Indications	2 LEDs	
Dimensions (L x W x H)	115 x 75 x 25 mm (4.58 x 2.95 x 0.98 in.)	
Working Temperature	-10° ... +55°C (14° ... 131° F)	
Connection	USB B	



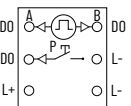
Replacement Parts

Table 138 - Replacement Parts

Description	Cat. No.
DC Terminal Block	6300V-DCCONN2
Mounting Clips, package quantity of 16	6300V-MCLIP16

Rotary Incremental Encoder with Push Button











Table 139 - Rotary Incremental Encoder with Push Button: Detail ⁽¹⁾

Element	Label	Description	Electrical Schema	Cat. No.
		<ul style="list-style-type: none"> • Incremental encoder • 30 detent positions with tactile pushbutton switch • Unconstrained rotation • A/B Push HTL 		6300V-ENCODER-EN

(1) A small flathead screwdriver is required for installation.

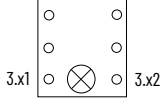
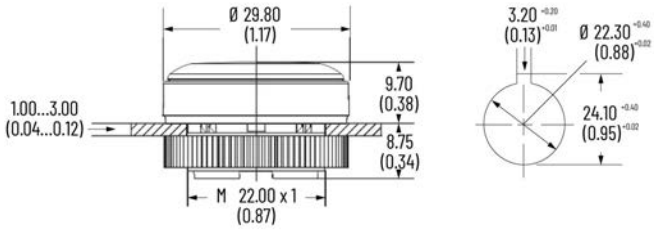
Signal Indicators

Table 140 - Signal Indicators: Lens Detail ⁽¹⁾

Signal Indicator	Label	Color	Lens Type	Illumination	Cat. No.
		Blue	Translucent, Flat Lens	Yes	6300V-LIGHT-LB
		Green			6300V-LIGHT-LG
		White			6300V-LIGHT-LW
		Red			6300V-LIGHT-LR
		Yellow			6300V-LIGHT-LY

(1) A 6300V-FIXSPANER is required for installation of these kits for power supply operation in ATX mode.

Table 141 - Signal Indicators: Technical Data

Description		Value
Collar	Form	Round
	Length	Acc. to potentiometer (mm)
Ring Nut	Torque	1.2N•m (10.62 lb•in.)
Dimensions	Overall Height	9.7 mm (0.38 in.)
	Mounting Depth	PCB 9.2 mm (0.36 in.)
		QC 27 mm (1.06 in.)
	Mounting Hole	22.3mm (0.88 in.)
	Key Grid	30 x 30 mm (1.18 x 1.18 in.)
Mounting	Type	Ring Nut
Degree of Protection	From Front Side	IP65 (DIN EN 60529)
Temperature	Ambient Operating	-25...+70° C (-13...+158° F)
	Storage	-40...+80° C (-40...+176° F)
Compliance	IEC Environmental Resistance	60068-2-14, -30, -33 and -78
	IEC Salt Spray	600 68-2-11
	ROHS	Yes
	REACH	Yes
Electrical Schema		
Approximate Dimensions [mm (in.)]	<p>Dimensions are shown in millimeters (inches) [mm (in)]. Dimensions are not for manufacturing purposes.</p> 	

USB 2.0




 The USB module is not connected to the terminal block.

Table 142 - USB 2.0: Detail ⁽¹⁾

Element	Label	Description	For Use With	Cat. No.
		USB 2.0 interface with protection cap, serigraph printed	All On-Machine Products	6300V-USB2-US

(1) A 22 mm socket wrench is required for installation.

Notes:

Notes:

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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