DOMINO

Domino F-Series
User Guide

F230i CP

F230i EP

F330i CP

F530i CP

F530i EP

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DOMINO

For sales and service please contact:

www.buydomino.com

www.domino-printing.com

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Fax: +44 (0)1954 782874

Domino North America

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Fax: +1 847 244 1421

AMENDMENT RECORD

Amendment	Date
All parts at Issue 1	October 2020
All parts at Issue 2	February 2022

PREFACE

WARNING:	Invisible Class 4 Laser Radiation. Risk of personal injury.
	**Read the manual before and when operating this laser system.** This product emits powerful invisible infrared laser radiation. A risk of personal injury or damage to equipment including fire may result if proper safety precautions are not obeyed.

This manual EPT065175 is intended for use only with the F-Series product with a BCP7 Controller:

F230i CP 10 STD

F230i CP 10 SHUTTER

F230i EP 10 STD

F230i EP 10 SHUTTER

F330i CP 10 STD

F330i CP 10 SHUTTER

F530i CP 10 STD

F530i CP 10 SHUTTER

F530i EP 10 STD

F530i EP 10 SHUTTER

This manual has been produced for use in the operation of the Domino F-Series Laser Coder and to reinforce and complement any training program available with the product. It is not designed to replace any such training program.

For sales and service assistance please visit the following website and select “Contact Domino in your country” for local technical support:

http://www.domino-printing.com

Domino Printing Sciences plc

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LASER SAFETY NOTICE

WARNING:	Class 4 laser product. Risk of personal injury.
	**Fit the coder with class 1 laser safety guarding before it is operated or made ready for use.** This is necessary to safeguard against accidental exposure or direct or scattered radiation. Guidance on creating and fitting laser guarding can be found in part 1 of the Product Manual. **Avoid eye or skin exposure to direct or scattered radiation.** Set up a laser safety zone and wear appropriate eye protection if laser radiation above class 1 may become available. Information about the correct type of Protective Safety Goggles can be found within the Product Manual. Contact with direct or scattered laser radiation can cause permanent damage to the eyes including instant blindness. Laser radiation can also burn human tissue and start fires. This product emits class 4 laser radiation from the laser aperture on the scan head. This radiation is a pulsed, invisible, infrared laser radiation with a wavelength off 1040 – 1200 nm, a maximum pulse energy of 2 mJ and CW Power of <60 W. Before the product is made ready for use, fit the laser aperture into a class 1 laser safety guard. Make sure that the laser energy will not act as an ignition source in your environment. This is necessary to safeguard against accidental exposure to direct or scattered radiation and fire risks. Guidance on creating and fitting laser guarding can be found within the Product Manual.

WARNING:	Class 4 laser product. Risk of personal injury.
	Do not use controls, adjust the laser coders performance or do any procedure, other than those specified in this manual. Do not apply changes or modifications that are not expressly approved by the manufacturer. To do so may result in hazardous radiation exposure and may void the user's authority to operate the equipment. **Avoid eye or skin exposure to direct or scattered radiation.** Do not open the laser source. The laser source (box inside the product) contains an embedded laser device that emits invisible radiation in the region of 900 - 1200 nm with a total output power of up to 60 W. This radiation is not accessible under normal use or service conditions. Opening of the protective housing of the laser source box is only allowed for technicians who are trained and certified by the manufacturer.

WARNING:	Class 3R Laser Radiation. Risk of personal injury
	**Avoid direct eye exposure.** This product emits a class 1 aiming beam as standard for aiming purpose from the laser aperture on the scan head. This radiation is a visible red laser with a wavelength of 630-670 nm and CW Power of <1.4 mW. This radiation can be dangerous to the eye if it is viewed directly. Avoid direct exposure of the eye. It is not harmful to the human skin.

WARNING:	Class 4 Laser Radiation. Risk of personal injury
	**Avoid direct eye exposure to direct or scattered radiation.** If the yellow beam delivery cable is damaged or overstressed, it may emit class 4 laser radiation while the laser source is energised. Avoid to bend it to a diameter below <150 mm, to twist it more than 180 degrees or to stress it with repeated movement. The beam delivery cable is not classified as class 1. Beam delivery cable break detection is NOT available on this product. To protect against beam delivery cable breaks, the installation technician must either: • Install the laser beam delivery cable inside the class 1 enclosure. • Make sure the beam delivery cable is positioned in a location that prevents it from becoming damaged or mishandled.

PRODUCT/BATTERY END OF LIFE

WARNING:	**Flammable Material. Risk of fire or explosion.**
	Do not dispose of the battery in a fire, hot oven, by mechanically crushing or cutting. Obey local waste regulations when disposing of batteries.
	Do not store or leave the battery in high or low extremes of temperature.
	Do not store or leave the battery in a location that is subject to low air pressure at high altitude.

CAUTION:	*Hazardous Material. Risk of damage to equipment and environment.*
	*If the battery needs replacement: The battery is a CR2032 battery. Obey local waste regulations when disposing of the battery and PCB.*

Recycling information in accordance with the WEEE and Battery Directives

Product mark

Battery mark

European Union only

The product/battery is marked with one of the above recycling symbols. It indicates that at the end of life of the product/battery, you should dispose of it separately at an appropriate collection point and not place it in the normal domestic waste stream.

CONTENTS

ORIGINAL EU DECLARATION OF CONFORMITY F230I

EU DECLARATION OF CONFORMITY

Manufacturer
Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

Trademark
DOMINO

Product Description
Domino F-Series Laser Coding System

Model/Type Number(s)
all consisting of a Laser Controller with fiber-connected Laser Head, Beam Delivery, Scan Head with Optics and an optional Touch Panel

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2011/65/EU	RoHS Directive

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Name and address of the person authorized to compile the technical file
Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

This declaration is valid for the product with serial numbers above
(relevant, incrementing serial number part in italic) S2*906693*-0421-S10-L

Place, Date and legal Signature:
Hamburg, 2022-02-07

i.V. M. Pauly

Martin Pauly
Director R&D-Laser,
Domino Laser GmbH,
for the Manufacturer

Document Number: Doc-0020679 R02 Page 1 of 1

TRANSLATION OF THE ORIGINAL EU DECLARATION OF CONFORMITY F230I (TRANSLATED FROM ENGLISH)

Manufacturer

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Name and address of the person authorized to compile the technical file

Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

This declaration is valid for the product with serial numbers above

(relevant, incrementing serial number part in italic) *S2906693*-0421-S10-L

Place, Date and legal Signature:

ORIGINAL UK DECLARATION OF CONFORMITY F230I

DOMINO

UK DECLARATION OF CONFORMITY

Manufacturer
Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

Trademark
DOMINO

Authorized Representative (person authorised to compile the technical file)
Domino UK Limited, Bar Hill, Cambridge CB23 8TU, UK

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Domino F-Series Laser Coding System

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This declaration is valid from the product starting with serial number:
(relevant, incrementing serial number part in italic) S*2906693*-0421-S10-L

Place, Date and legal Signature:

Hamburg, 2022-02-08

i.V. M. Pauly

Martin Pauly
Director R&D - Laser,
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for the Manufacturer

Cambridge, 2022-02-08

R Hall

Richard Hall
Group Development Director,
Domino UK Limited,
for the Authorized Representative

Document ID: Doc-0022835 R01

Page 1 of 1

TRANSLATION OF THE ORIGINAL UK DECLARATION OF CONFORMITY F230I (TRANSLATED FROM ENGLISH)

Manufacturer

Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

Trademark

DOMINO

Authorized Representative (person authorised to compile the technical file)

Domino UK Limited, Bar Hill, Cambridge CB23 8TU, UK

Product Description

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Further applied standards

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This declaration is valid from the product starting with serial number:

(relevant, incrementing serial number part in italic) *S2906693*-0421-S10-L

Place, Date and legal Signature:

ORIGINAL EU DECLARATION OF CONFORMITY F330I

EU DECLARATION OF CONFORMITY

Manufacturer
Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

Trademark
DOMINO

Product Description
Domino F-Series Laser Coding System

Model/Type Number(s)
all consisting of a Laser Controller with fiber-connected Laser Head, Beam Delivery, Scan Head with Optics and an optional Touch Panel
F330i CP 10 STD F330i CP 10 SHUTTER

We herewith declare under our sole responsibility that the above-mentioned products meet the provisions of the following EU Directives and harmonized standards:

EU Directives

2006/42/EC	Machinery Directive
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Further applied standards
EN 60825 -1:2014
EN 61010-1:2010+A1:2019
EN 60529:1991+A1:2000+A2:2013

Name and address of the person authorized to compile the technical file
Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

This declaration is valid from the product starting with serial number
(relevant, incrementing serial number part in italic) S*2906696*-0421-S10-L

Place, Date and legal Signature:
Hamburg, 2022-02-07

i.V. M. Pauly

Martin Pauly
Director R&D-Laser,
Domino Laser GmbH,
for the Manufacturer

Document Number: Doc-0020682 R03 Page 1 of 1

TRANSLATION OF THE ORIGINAL EU DECLARATION OF CONFORMITY F330I (TRANSLATED FROM ENGLISH)

Manufacturer

Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

Trademark

DOMINO

Product Description

Domino F-Series Laser Coding System

Model/Type Number(s)

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Name and address of the person authorized to compile the technical file

Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

This declaration is valid from the product starting with serial number

(relevant, incrementing serial number part in italic) *S2906696*-0421-S10-L

Place, Date and legal Signature:

ORIGINAL UK DECLARATION OF CONFORMITY F330I

DOMINO

UK DECLARATION OF CONFORMITY

Manufacturer
Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

Trademark
DOMINO

Authorized Representative (person authorised to compile the technical file)
Domino UK Limited, Bar Hill, Cambridge CB23 8TU, UK

Product Description
Domino F-Series Laser Coding System

Model/Type Number(s)
all consisting of a Laser Controller with fiber-connected Laser Head, Beam Delivery, Scan Head with Optics and an optional Touch Panel
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Place, Date and legal Signature:

Hamburg, 2022-02-08

i.V. M. Pauly

Martin Pauly
Director R&D - Laser,
Domino Laser GmbH,
for the Manufacturer

Cambridge, 2022-02-08

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Richard Hall
Group Development Director,
Domino UK Limited,
for the Authorized Representative

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TRANSLATION OF THE ORIGINAL UK DECLARATION OF CONFORMITY F330I (TRANSLATED FROM ENGLISH)

Manufacturer

Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

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Domino UK Limited, Bar Hill, Cambridge CB23 8TU, UK

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Place, Date and legal Signature:

ORIGINAL EU DECLARATION OF CONFORMITY F530I

EU DECLARATION OF CONFORMITY

Manufacturer
Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

Trademark
DOMINO

Product Description
Domino F-Series Laser Coding System

Model/Type Number(s)
all consisting of a Laser Controller with fiber-connected Laser Head, Beam Delivery, Scan Head with Optics and an optional Touch Panel

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Place, Date and legal Signature:
Hamburg, 2022-02-07

i. V. M. Pauly

Martin Pauly
Director R&D-Laser,
Domino Laser GmbH,
for the Manufacturer

Document Number: Doc-0020683 R03 Page 1 of 1

TRANSLATION OF THE ORIGINAL EU DECLARATION OF CONFORMITY F530I (TRANSLATED FROM ENGLISH)

Manufacturer

Domino Laser GmbH, Fangdieckstrasse 75a, 22547 Hamburg, Germany

Trademark

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Authorized Representative (person authorised to compile the technical file)
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Place, Date and legal Signature:

Hamburg, 2022-02-08

i.V. M. Pauly

Martin Pauly
Director R&D - Laser,
Domino Laser GmbH,
for the Manufacturer

Cambridge, 2022-02-08

R Hall

Richard Hall
Group Development Director,
Domino UK Limited,
for the Authorized Representative

Document ID: Doc-0022838 R01 Page 1 of 1

TRANSLATION OF THE ORIGINAL UK DECLARATION OF CONFORMITY F530I (TRANSLATED FROM ENGLISH)

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This declaration is valid from the product starting with serial number:

(relevant, incrementing serial number part in italic) *S2906697*-0421-S10-L

Place, Date and legal Signature:

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SOFTWARE LICENCE NOTES

This product contains open source software components that are subject to the terms and conditions of the applicable open source licences. Those open source software components, the open source licences applicable to them, and, where required, copies of their source code, can be found at:

https://www.domino-printing.com/en-gb/legal-and-ip/open-source-licensing.aspx

The following frameworks/libraries and their use are covered by the GNU Lesser General Public License, version 2.1:

- libsigc++
- dxflib
- libIconv
- QT

Required statement for the TBarCode library:

- Barcode Engine by TEC-IT - www.tec-it.com

Required statement for the FreeType library:

- Portions of this software are copyright © 2008 The FreeType Project (www.freetype.org). All rights reserved.

Required statement for the MD5 Algorithm:

- RSA Data Security, Inc. MD5 Message Digest Algorithm

HEALTH AND SAFETY

GENERAL

The F-Series laser coding systems are designed and built in accordance with international standards and other technical specifications which are to be observed. The equipment conforms to current technology and approved safety requirements.

This safety standard, however, can only be achieved if all intended and required measures have been taken and are constantly observed. It is part of the operator's duties to plan these measures and check their continuing implementation.

Domino F-Series laser coding systems are produced by Domino Laser GmbH Germany. For special details contact your local support office.

The F-Series laser coding systems have been developed and designed for fully automated coding of packaging materials and products by use of laser radiation.

The user must ensure that

- The laser coding system is only made ready for use after it has been installed and guarded to class 1 laser safety standards (EN60825-1: 2014). The laser provides class 4 laser radiation from the laser aperture on the scan head.
- The equipment is only used for its intended purpose.
- The equipment is only operated in a good, serviceable condition, and that all safety installations are regularly checked for their serviceability.
- Personal protective safety goggles for maintenance and repair personnel are required and made available.
- Only suitable and approved tools and equipment are used.
- This User Guide is complete and in a legible condition at the equipment location at all times.
- The valid rules and laws regarding accident prevention are available and obeyed.
- Only sufficiently qualified and authorised personnel according to Domino definitions shall operate, maintain and repair the laser coding system.
  These personnel are regularly instructed in all matters concerning appropriate labour safety and environmental protection, and that they are familiar with the operating manual, particularly the safety instructions contained herein.
- Any safety and warning labels on the laser coding system must not be removed and must remain in a readable condition.

SPECIFIC DANGERS

Electrical Voltage

In the F-Series laser coding system, the maximum operating voltage is the connected mains voltage, which can pose a hazard to health. The mains voltage to be maintained is shown on the type label.

Work on live components must only be performed by authorised personnel.

In the case of a defective power supply, operation of the laser coding system is to be stopped immediately and is only to be repaired by authorised personnel.

Keep the controller closed at all times. Only expressly authorised personnel are permitted to open the controller.

Laser Radiation

Laser radiation can pose a risk to eyes and skin. The danger is not only posed by direct laser radiation, but also by scattered radiation and reflections from the work piece or the machine into which the laser is integrated. The degree of injury depends on the duration of the effect, the power and the wavelength of the laser.

Lasers and their installations are classified into seven laser protection classes, depending on their potential danger. Class 1 is the safest and class 4 is potentially the most harmful. These classes are defined in detail in EN60825: 2014 Part 1 and are summarised below:

Class 1	Laser products that are safe during use, including long-term direct intrabeam viewing, even when exposure occurs while using telescopic optics. Class 1 also includes high power lasers that are fully enclosed so that no potentially hazardous radiation is accessible during use (embedded laser product). Intrabeam viewing of class 1 laser products which emit visible radiant energy may still produce dazzling visual effects, particularly in low ambient light.
Class 3R	Laser products that emit radiation that can exceed the MPE (Maximum Permissible Exposure) under direct intrabeam viewing, but the risk of injury in most cases is relatively low. Dazzle, flash-blindness and afterimages may be caused by a beam from a class 3R laser product in the visible wavelength range, particularly under low ambient light conditions. This may have indirect general safety implications resulting from temporary disturbance of vision or from startle reactions.
Class 4	Laser products for which intrabeam viewing and skin exposure is hazardous and for which the viewing of diffuse reflections may be hazardous. These lasers also often represent a fire hazard.

Aiming Beam / Pilot Laser

The system contains an internal aiming beam with a wavelength of 630nm to 670nm.

This laser is a class 1 laser.

Harmful Dust and Vapours

When radiating materials by using a laser, harmful dust and vapours can be produced. The user is responsible for appropriate measures, e.g. an exhaust system, to reduce such harmful dust and vapours to a level that complies with the allowed maximum concentration of pollutants at the work place.

Touching the Lens

Fused silica lenses are used in the F-Series laser system.

Lenses must not be touched.

If the lens has been soiled, it must be thoroughly cleaned before any operation.

Scan Head Mirrors

Never touch the mirrors of the scan head.

The mirrors are inside the scan head and there is a small risk of touching them when cleaning the lens.

When the mirrors have been touched accidentally, clean the mirrors thoroughly.

Protecting the Lens

The scan head has a fused silica lens that is accessible from the outside if the protection cap is removed.

This lens is protected by an aluminium frame, but the silica lens insert is fragile and can break and splinter if pressure is applied on it. Edges of the broken lens and loose splinters can lead to cut injuries or contamination.

Protect the lens with the protection cap while the system is installed, transported or not used for an extended time, but always ensure the cap is removed before you use the laser.

If a lens is broken, replace it immediately. Safely remove all splinters, to avoid cross contamination into areas where silica particles may become a health hazard. Avoid touching the broken lens parts with the fingers. Use sticky tape to carefully collect all silica splinters and parts. Include the broken lens and the sticky tape in a strong plastic bag and dispose of it in the normal waste container.

Noise

All systems emit a noise level lower than 80dB(A) during operation. No personal protective equipment against noise is needed. Local regulations may differ.

Crushing

There is a crushing hazard during installation and operation due to:

- Product moving along the laser head.
- Product moving into and out of protective housing.
- Doors and maintenance openings of protective housing.

Especially prevent the risk of crushing.

Laser Coding Process

Potential fire risks could result from examples as listed below. This list is not considered to be complete. Local conditions must be considered as well.

- Coding on not specified material (e.g. easily inflammable or explosive materials).
- Invalid parameter settings (e.g. very low coding speed).
- Invalid parameter settings due to corrupted code data.
- Coding constantly on the same product (e.g. no product movement caused by various reasons).
- Inflammable gases or materials inside the working area.

In coding mode the laser beam is controlled by software which must be considered as part of the risk assessment.

Note: Install a fire detector near the laser to monitor the coding process.

Velocity Kit Option

The fibre laser can be configured with an optional Velocity Kit for higher coding speed and therefore higher productivity. Once the laser is switched on there will always be a laser power output of below 5 mW. This enables an even faster start-up of the laser and thus high speed.

Note: This option requires hardware adoptions to be enabled in the software.

Guarding

Guarding is an initial part of the laser safety.

Laser guarding must be constructed and certified by specialists that are trained and have understood the use of the local laser regulations. The international standards mentioned here are a good starting point but may not fulfil all local regulations.

This Domino laser coding systems can emit class 4 laser radiation through the lens of the scan head when the dual channel safety circuit is closed and the system is powered.

Before powering the system, you must ensure that the environment is securely guarded against accidental exposure to direct or scattered radiation.

You must also verify that the yellow beam delivery cable is in good condition and either installed in the secure laser guarding, or take other suitable measures to ensure that the cable is protected from becoming damaged or mishandled under reasonable and foreseeable use.

Inside the laser guarding, provide suitable measures against the risk that the laser energy may act as an ignition source.

A risk assessment for your guarding considering all risks e.g. fault conditions like stuck or missing products, wrong laser parameters and projects, single worst fault conditions and foreseeable misuse is strongly recommended. We recommend using the standard ISO 12100:2010 “Safety of machinery - General principles for design - Risk assessment and risk reduction”.

The goal is to provide guarding that fulfils all necessary safety expectations.

An option is to follow the standard IEC 60825-1 Safety of laser products - Part 1: “Equipment classification and requirements and certify the guarding to be a laser class 1 guarding”.

More detailed laser guarding information is available in the standard IEC 60825-4 “Safety of laser products - Part 4: Laser guards”

As your guard will be part of a machinery setup, the standard ISO 14120 Safety of machinery – Guards – “General requirements for the design and construction of fixed and movable guards” must be taken into account.

If you need support in planning and verifying your laser guard, please contact Domino.

Beam Delivery Cable (Fibre)

The beam delivery cable is not classified as class 1. Beam delivery cable break detection is NOT available on this product. To protect against beam delivery cable breaks, the installation technician must either:

- Install the laser beam delivery cable inside the class 1 enclosure.
- Make sure the beam delivery cable is positioned in a location that prevents it from becoming damaged or mishandled.

The beam delivery cable has not been designed for robotic applications. The Laser must not be designed into systems where the Beam Delivery Cable will be subject to high levels of acceleration and twist, or a combination thereof. If this is a requirement for the integration, please contact Domino to discuss the application in more detail.

The minimum bend radius for the fibre is 75 mm.

Interlock Switches

Interlock switches must be fitted to all access guards preventing access to the laser output lens and coding area that can be opened without the use of access tools.

Interlock switches must be wired into the laser control circuit so that the laser beam is disabled when the guard is removed.

Emergency Off

Integrate the laser into the emergency off circuit of the machine into which the laser is integrated. Install an emergency off push button near the laser coding systems which turns off the laser. Connect the emergency off push button via the interlock circuit to the controller.

Guarding Labels

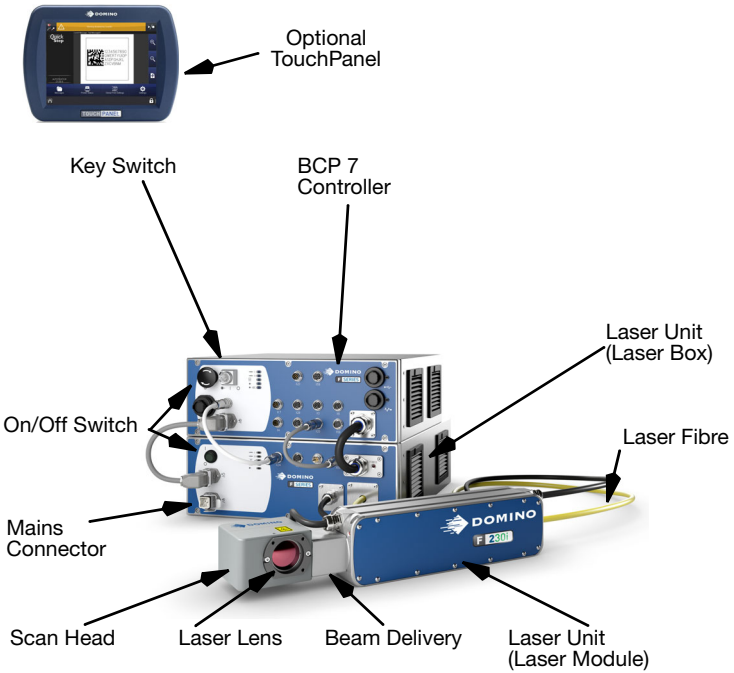
It is required that the following information is prominently displayed on the guard:

WARNING:	**Class 1 laser product containing an embedded class 4 laser. Operation of the product with safety guards removed may result in hazardous exposure to laser radiation.**

These labels are supplied with the laser system. Additional labels are available from Domino Prinitng Sciences plc as part of the Guarding Labels Kit, Part Number L007628.

OPERATION

F-SERIES LASER CODING SYSTEM



CONTROLS AND INDICATORS

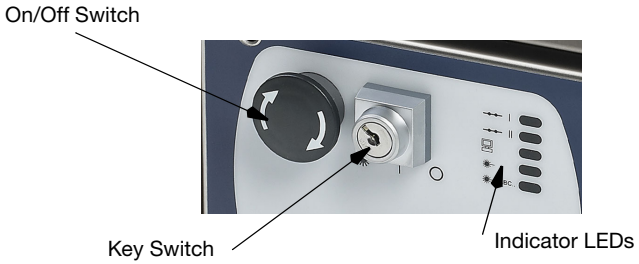
The User Interface, Indicator Lamps and Software icon functions are described in the following paragraphs:

TouchPanel and Interface

The software is operated via a PC keyboard, TouchPanel or Web Browser. If connected, the optional TouchPanel allows entry by touching the tabs and function keys on the screen. An onscreen keyboard is included in the software.

Note: The Web Browser does not support the message editor.

Controls



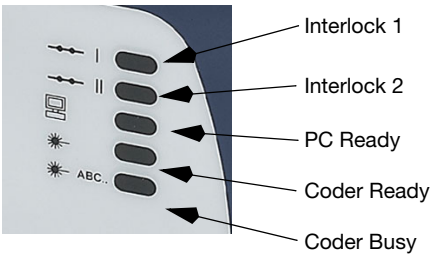
ON / OFF SWITCH - Starts and stops the controller

KEY SWITCH - Starts and stops the laser unit

The key switch has three positions:

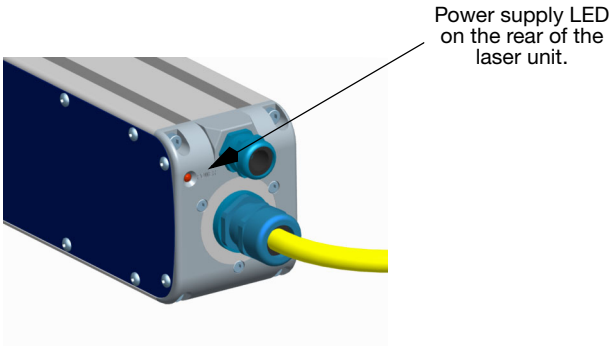
- “0” Laser off
- “1” Laser ready
- “*” Laser start.

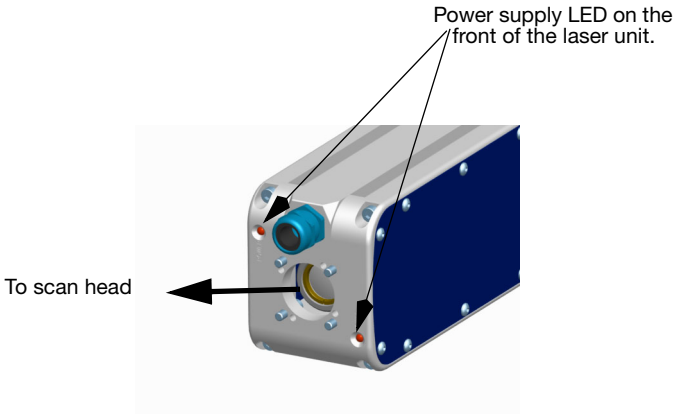
Indicator LEDs



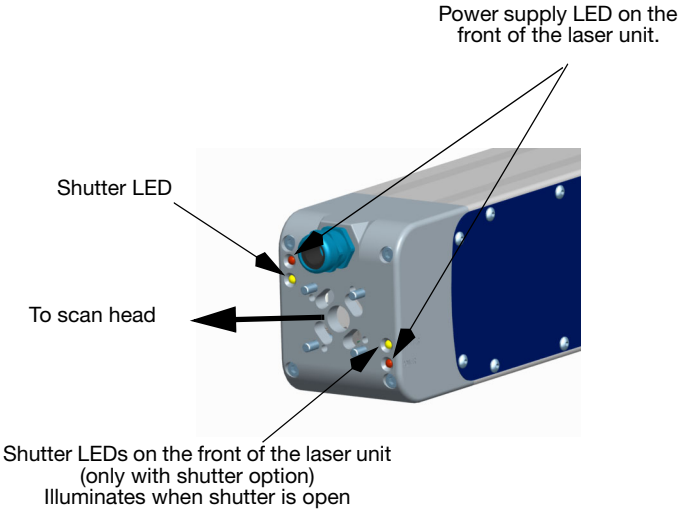
- Interlock 1 - Illuminates when the interlock 1 is closed.
- Interlock 2 - Illuminates when the interlock 2 is closed.
- PC Ready - Illuminates when the controller is ready for the laser to be started.
- Coder Ready - Illuminates when the laser is powered up and coding system is ready to code.
- Coder Busy- Illuminates when the laser is coding.

The activation of the laser power supply is also indicated by two red (Power) LEDs on the front and one at the rear of the laser module.



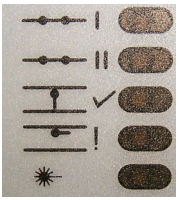


Laser Module without Shutter Option



Laser Module with Shutter Option

Additional Indicators Laser Units



Interlock Indicator 1
Interlock Indicator 2
Shutter Preparation / Error Indicator
Shutter State / Error Indicator
Laser Indicator

Interlock Indicator 1 and 2

Both interlock 1 LED and interlock 2 LED are GREEN	Interlock 1 and 2 respectively are closed.
LEDs are alternately flashing in RED colour	Wrong order was in the interlock loops e.g. open and close one loop only. Correct and restart the process. The interlock has been opened while the shutter self-test was running.
Both interlock 1 LED and interlock 2 LED parallel RED flashing	An electrical error (cross connection) was detected. Check wiring and restart the process.
Both Interlock 1 LED and interlock 2 LED are lit RED	The safety relay is completely shut down. Power cycling is required.

Note: Within approximately 8 seconds after power up (boot phases of the safety relay) the display of both interlock LEDs is not valid.

Shutter Preparation / Error Indicator

Flashing GREEN	Waiting for start command.
Lit GREEN	Ready.
Lit RED	A shutter malfunction is present
Flashing RED	A shutter malfunction was detected but is no more present.
Flashing ORANGE	A shutter malfunction was detected - waiting for start command.
Lit ORANGE	No shutter and shutter controlling is equipped.

Shutter State / Error Indicator

Lit YELLOW	Shutter is open, caution laser radiation is possible!
Lit RED	Shutter temperature display (after power-up only).
Lit RED (permanent)	shutter feedback cross-check failed.
Flashing RED while the GREEN shutter preparation LED is lit or flashing	Shutter is close to over temperature.
Flashing RED while GREEN shutter preparation LED is flashing	A shutter over temperature, or sensor fail (<10°C) had occurred. Therefore the laser was switched off. Restart is possible.
Flashing RED while GREEN shutter preparation LED is off	A shutter temperature sensor fail (<10°C) is present. Therefore the laser is switched off.
Blinking RED while GREEN shutter preparation LED is off	A shutter over temperature is present. Therefore the laser is switched off.

Note: The GREEN shutter preparation LED flashing is suppressed if one or both interlock is not closed.

Laser Indicator / Error Indicator

Lit YELLOW	Laser source ready for emission.
Lit RED (error)	Laser is not (correctly) started.
1x Flashing YELLOW	Laser modulation (coder activity) missed.
2x Flashing YELLOW	Laser modulation (coder activity) not permitted.
3x Flashing YELLOW	Laser modulation (coder activity) missed AND not permitted.

LED Test display on Power Up

After power up, the laser unit will start an error test display in the following sequence:

Shutter state error; each sec. means 10° Celsius of scan head temperature. This display shows that the temperature sensor of the shutter housing is properly connected, and that the LED works.

Then, approximately 8 seconds after power up, the 4 LEDs from top to bottom:

- Extinguish for a moment
- Light up (RED) for 1 second each, top to bottom
- Extinguish for a moment
- Display status as described above

If unauthorised changes are performed, the warranty will be invalidated.

SWITCHING ON AND OFF

WARNING:	**Class 4 Laser. Risk of personal injury.**
	**Only use the laser coding system for its intended purpose.** **Only trained personnel may operate the laser coding system.** **Only operate the system with all required cables connected and all parts mounted.** **Do not disconnect any cables during operation.**

CAUTION:	*Risk of material damage.*
	Remove the lens cap before use. It is used to prevent damage or external soiling that will cause a reduction in laser performance.

Switching On the Controller

Turn on the laser unit first by switching the switch from position “0” to “1”. At the control unit, release the On/Off switch by turning it clockwise. Wait until the PC READY  indicator has illuminated.

Switching On the Laser Head

Turn the key switch from position “0” to position “1”. To start the laser turn the key clockwise to the laser symbol and hold it for at least 1 second. The key automatically turns back to position “1”.

- The laser needs a warm-up phase of 3 to 5 seconds.

After initialising and starting the laser source, the coding system is ready.

The CODER READY  indicator illuminates.

Laser power is also displayed by one red LED on the rear of the laser unit and two red LED on the front of the laser unit.

Switching Off the Laser Head

- Turn the key switch from position “1” to position “0”. The laser hardware is switched off.

Switching Off the Controller

- Press the On/Off button at the BCP7 controller. The controller will immediately switch off.
- At the laser unit, toggle the green rocker switch from position "1" to position "0".

Switching on a System with Shutter

Switching On the Controller

Switch on the Shutter Extension Box. At the controller toggle the On/Off switch by from 0 to 1. Wait until the PC READY  indicator has illuminated.

Switching On the Laser Head

Close the (guard) door (i.e. interlock input) and keep it closed until the first coding is done.
Turn the key switch from position "0" to position "1".
Shutter start-up procedure / enabling
Insert a start command (24 V @ X69:Pin 7) of at least 100 ms duration. In case of the static mode is used the start command must remain "ON" until the first coding is done.
If the shutter and the safety output of the shutter monitoring system are tested successfully the safety interlock of the laser controller gets closed and the laser will be started automatically.
Laser power will be displayed by each a red LED on the rear and on the front of the laser head.
Wait until the laser controller indicates READY.
Insert a product detect go (trigger) and wait until the coding is completed.
Now the (guard) door / (i.e. interlock input) may be opened respectively the shutter may be closed.
Note that the shutter control system needs to verify the functionality of the laser modulation feedback path “frequently” in order to guarantee that it would be able to shut down in case that laser activity might appear when the shutter is closed.
For that reason, once the first code after the start-up procedure is done, the shutter may be closed and opened at maximum 19 times without coding activity. Every code will reset this counter.
Furthermore there is a time-out after 10 minutes which gets reduced by 30 seconds per each shutter closing. As well every coding will reset this timer.
If no code is made within 19 shutter closings respectively 10 minutes, the system will switch off the laser. The laser controller will then show an open interlock. In this case, to get the laser READY, the shutter start-up needs to be done again.

Switching Off the Laser Head

(1) Turn the key switch from position "1" to position "0". The laser hardware is switched off.

Switching Off the Controller

Switch the On/Off switch from 1 to 0. The controller will immediately switch off. Switch off the Shutter Extension Box.

Important additional Shutter Information

- X69 EXT_LSTART_IN must be used as this is the ONLY way to enable the shutter. Furthermore enabling the shutter is a precaution for switching on the laser. The laser might be switched on either automatically or later on.
- Once the laser is started (i.e. laser PSU switched on) it is not intended (thus NOT possible) to switch off the laser by opening the guard. The laser can be switched off:
  - by turning the key switch at the controller to the disable position
  - remotely by software
  - by switching off the mains switch

  This is a significant difference to systems without shutter, where opening of the guard door will always power down the laser PSU. Opening of the guard door on a system with shutter will close the shutter and suppress laser modulation. During the shutter test phase (after first shutter enabling) the laser PSU is not yet switched on.
- The door lock output may be used to drive a door locking device. Note that the door lock output is NOT declared as a safety output.
- The customer should wire the lock feedback into the safety circuit to improve safety.
- The X69 start input is internally working in parallel to the other (X4 and X59) laser start Inputs. Use this input for laser start. Thus, applying of constant voltage at this pin will suppress command edges coming from the other Laser Start Inputs. This is especially important if the static shutter mode is used, when maybe a switch is installed and switched on to open the shutter: as long as the switch is on it is not possible to start the laser via X4, X59 or even the key switch.

It is recommended to insert a start pulse with at least 100 ms duration. In case of need, shutter and/or laser may be re-started with a new pulse, for example if an error with the shutter or the safety loops occurred.

Note that the shutter controlling system will automatically start the laser after the shutter is enabled.

F-SERIES CONNECTIVITY

The F-Series is operated either via a remote TouchPanel or via a PC running on Microsoft Windows 10® with installed QuickStep software.

To connect to one F-Series, the TouchPanel is connected to the X59 TouchPanel connector of the controller.

The TouchPanel then displays the UI relating to that coder.

One TouchPanel can control multiple F-Series in the same network if required.

Details about the coder being controlled are displayed in the Home screen which lists: the logged in user, the coder's name and the coder model. To connect to another coder in the network, follow the steps below:

(1) Disconnect from the current coder by pressing the Lock button and selecting Disconnect From coder to display the coders' list screen.

(2) Press the Lock button and select Unlock UI Settings, enter the password (QS).

(3) Press Settings, select Broadcast (default) as the connection method.

(4) Go back to the coders' list screen and press Refresh to view a list of all coders in the network.

(5) Select the required coder.

A list of favourite remote coders can be created, as follows:

(1) From the coders' list screen, press the Lock button and select Unlock UI Settings, enter the password (QS).

(2) Press Settings and select Favourite as the connection method.

(3) Press Add Favourite and fill in the required fields manually or get a favourite coder from broadcast

(4) Select a coder from the Broadcast list.

(5) Press Add to Favourites.

Webserver

One may also connect to the coders' UI via standard web browser. The following web browsers are supported:

- Microsoft Internet Explorer from version 9.0 on
- Mozilla Firefox from version 22 on
- Google Chrome from version 27 on
- Apple Safari from version 6 on

The complete functionality of the UI is not available when connecting to the coders via a web browser.

Not available is:

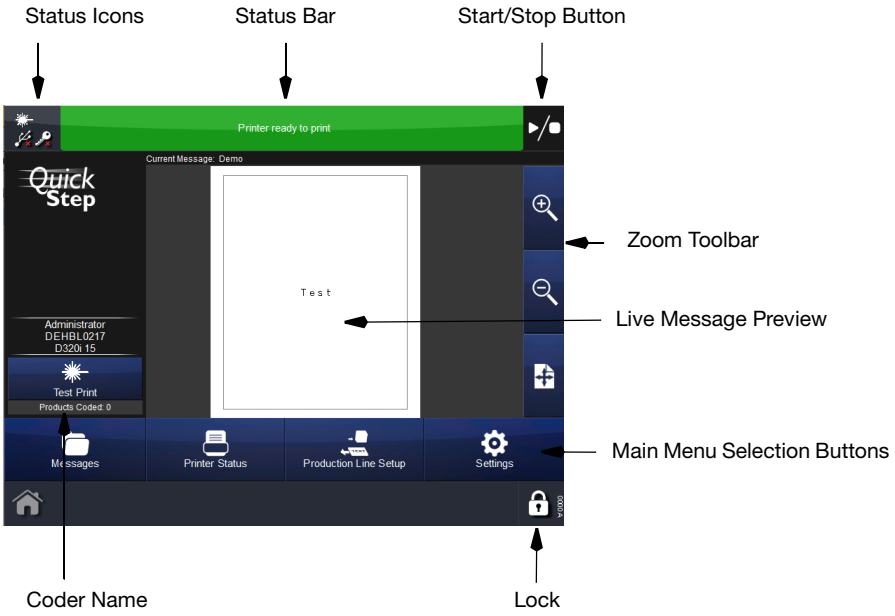
The Message Editor which is accessed via *Home Screen* > *Settings* > *Message Editor* or via *Home Screen* > *Messages* > *New Message* / *Edit coding Message*.

To connect, enter "http://[IP address of the controller]" in the address field of the web browser.

QUICKSTEP INTERFACE

Home Screen

When powering up the coder, the following Home screen is displayed.



Status Icons:	Displays current status of coder, e.g: Laser active (Laser is busy - laser emission!) USB device connected (USB device connected to controller or TouchPanel) Dongle connected (Service dongle connected)
Status Bar:	Displays coder and alert status. If more than one alert is present, the highest priority alert is displayed.

Start/Stop Button:	Enables coding *If the laser unit is switched off, it must be switched on before coding can take place.* Stops coding Restarts the coder
Zoom Toolbar:	Zooms in and out and to working area
Live Message Preview:	Preview and main working area. Used for settings and message creation.
Main Menu Selection Buttons:	Navigate to the four main QuickStep areas where all functions of the operational software can be accessed.
Lock Button:	Locks the screen to prevent accidental changes Login and logout Disconnects from coder
Coder Name:	Shows the coder which is being currently controlled

STATUS BAR

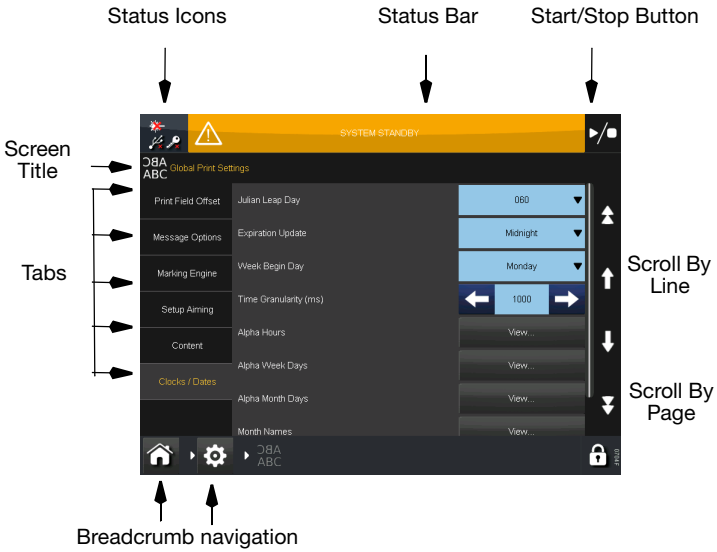
The status bar displays informal, warning and error messages - background colour of the status bar:

- Green - the condition is normal, no action is required.
- Amber - the condition is warning and may prevent coding, however if coding was enabled and the reason for this fault has become obsolete, it automatically re-enables coding.
- Red - the condition prevents coding and requires immediate correction.

Note: Click on the status bar to acknowledge alerts.

General Functions

The following illustration shows the Global Coding Settings screen and the various screen areas.



Click on a button and keep it pressed to get a description. Click on a button of the *Settings* area and keep it pressed to move this button to the *Home* screen.

Note: The breadcrumb navigation shows the current location inside the menu structure. One can switch the user interface level by clicking on the icons; it is also a quick way to return to the home screen from any page.

Initial Setup

The initial setup configures the overall look of the interface and also configures basic settings and presets for coder operation.

Display Settings

Home > Settings > Regional > Language and Keyboard

Set:

- Language
- Keyboard layout
- IME Scheme (Input Method Editor / Keyboard Layout)
- Primary currency

Setting the Master Clock

Home > Settings > Regional > Date and Time

Set:

- System date
- System time (24 hour clock)
- Time zone
- Automatic Daylight Saving Time
- Setup the Network Time Protocol

Security Management

Password protection prevents unauthorised changes to the software, and unauthorised operation of the laser coding system.

Some functions can only be accessed from higher user levels; the higher the user level, the more functions are available. The current user level is displayed on the Quickstep home screen.

The functions that can be accessed for each user level are as follows:

User Level	Functions	Password
Logout	View the main functions	none
Operator	Start / stop coding, acknowledge alerts	op
Supervisor	Create/Edit messages; Change Coding Parameters; Access to Editor and Save Editor	sv
Administrator	Edit most of the setup	Not published

Extended system parameter settings can only be changed after entering the Administrator password. This password is only known by employees authorised by Domino.

Note: If unauthorised changes are performed, the warranty will be invalidated.

Changing the passwords after the initial installation is recommended.

Creating and Editing a Message

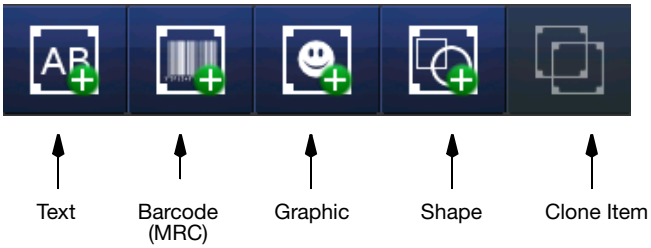
Add Text

(1) Select *Messages* > *New Message* or *Settings* > *Message Editor* to open the Message Editor.

(2) Press on the screen within a specific area of the Message Editor where you require the item to appear. A cross hair will appear at this location.

(3) Select the Add  icon.

The *Add* sub-menu displays.



(4) From the sub-menu select the Text  icon.
Change keyboards by selecting the appropriate Alternative Keyboard icon at the bottom of the text entry screen.

(5) Enter the required text using the keyboard and select the green tick icon when finished.

(6) To change text, select the text item and then the Keyboard icon on the *Edit* sub-menu.

(7) To change text parameters (Object Name, Position, Bold, Width etc.), use the sub-menu (Font, Alignment) or select More…

(8) To delete an object, select the object and select the delete  icon of the *Edit* menu.

(9) Activate the message for coding by sending it to the coder  via the *File* menu  .

Add a New Barcode

To add a barcode to the message:

(1) Press on the screen within a specific area of the Message Editor where you require the item to appear. A cross hair will appear at this location.

(2) Select the Add Barcode  icon and select the type and specification required from the list and editable text boxes.

(3) Use the Text, Variable, Edit Variable and Properties tabs to enter the barcode data.

(4) Select the green tick icon to insert the code into the message.

(5) Edit the barcode by highlighting the barcode within the message and using the sub-menu or by selecting More…

(6) Activate the message for coding by sending it to the coder  via the *File* menu  .

Add an Image

To insert an image into the message:

(1) Press on the screen within a specific area of the Message Editor where you require the item to appear. A cross hair will appear at this location.

(2) Select the Image  icon from the Add menu.

(3) An images folder stored in the coder will open.

(4) Browse for the required image.

(5) Select the green tick icon to insert the image.

Note: Monochrome Bitmap (.bmp), DXF (*.dxf) (up to Version 12, information about 3-dimensional objects is discarded, fonts and labels are not supported) and Hewlett Packard Graphics Language HPGL (*.plt) black white graphic file formats are supported.*
Supported commands for HPGL import are: Arc Absolute, Arc Relative, Plot Absolute, Plot Relative, Pen Up, Pen Down

(6) Select the Move  icon to move the copied item to the desired location within the message.

(7) Activate the message for coding by sending it to the coder  via the *File* menu  .

Use the File Manager (*Home* > *Settings* > *File Manager*) to copy an image from a USB device to the controller.

Add a New Variable

Message or system variables may be added. Message variables may only be used in the message in which they have been created. System variables can be used in all messages.

- Message variables are created via *Home* > *Settings* > *Message Editor* > *Add*  > *Text*  > *Add Variable*  .
- System variables are created *via Home* > *Settings* > *Message Editor* > *File*  > *Add/Edit Variable*  > *Add Variable*  .

Note: System variables are referenced within message via a link. Insert a link into a message to use a system variable.

The following variables can be created and added to the message:

- Clock (message & system).
- Counter (message & system).
- Prompted Field (message only).
- Link (message only).
- Script (message only).
- Coding (message only).
- Shift Code (message only).
- Text Insert (message & system).
- Text Variable (message & system).
- Text Link (message only).

Notes: (1) System variables are emptied on a power cycle.

(2) All steps below are described for local variables as they are the same for global variables.

Add a New Clock

To add a new offset clock to the message:

(1) Press on the screen within a specific area of the Message Editor where you require the item to appear. A cross hair will appear at this location.

(2) Select the Add  icon.

(3) From the sub-menu select the Add Text  icon.

(4) Select *+Variable* > *+Create New* > *Clock*.

(5) The scope cannot be changed - use the *File* menu to create a global clock.

(6) Enter a name for the clock or use the default name and use the new screen to select the format.

(7) Select the required offset parameters (Days, Months, Years and/or Hours, Minutes, Seconds and/or Weeks) and add values using the keyboard. Select the green tick icon when each parameter is completed.

(8) Review the entered information and select the green tick icon if correct or press in the required field to add or change values.

(9) Select the green tick icon to enter the offset clock into the message.

(10) Activate the message for coding by sending it to the coder  via the *File* menu  .

Add a New Counter

To add a new counter to the message:

(1) Press on the screen within a specific area of the Message Editor where you require the item to appear. A cross hair will appear at this location.

(2) Select the Add  icon.

(3) From the sub-menu select the Add Text  icon.

(4) Select *+Variable* > *+Create New* > *Counter*.

(5) The scope cannot be changed - use the *File* menu to create a global counter.

(6) Enter a name for the counter and enter the Format String “N” for numerical and “A” for alpha characters.

(7) Select a Leading Character Mode from the drop down options: None, Blank or Custom. If a custom character is selected in the Leading Character box, enter the character required.

(8) In the Step Control box, select the option required to activate the increment:
None
Coding Start
User Input (Rising Edge)- specify the User Input to be used
User Input (Falling Edge)- specify the User Input to be used.

(9) In the External Reset box, select
None
Coding Enable
Application Start
Message Load
User input Rising Edge
User input Falling Edge.

(10) In the Counter Repeat box, enter the number of items to be coded before the counter increments (default value is ‘1’).

(11) Step Size sets the increment value of the selected counter from 1 to 99999. The default value is ‘1’.

(12) Set the current value in the selected alphanumeric format of the counter.

(13) Set the start value in the selected alphanumeric format for the counter. If the start value is larger than the end value the counter will count backwards.

(14) Set the end value in the selected alphanumeric format of the counter.

(15) Edit, if required, the Alpha Field String. to be used for the alpha designators in the counters. All alphanumeric characters are available for use in this string. The maximum string length is 26 characters. The default string is A to Z (including all characters).

(16) Select an Ending Action: Select
None
Disable
User Output
User output and Disable
Select the User Output if activated.

(17) If required, set a Batch Link to another counter when this counter has it's end value and select the linked counter from the drop down list.

(18) Review the entered information and select the green tick icon if correct or press in the required field to add or change values.

(19) Select the green tick icon to enter the counter into the message.

(20) Activate the message for coding by sending it to the coder  via the *File* menu  .

Add a New Prompted Field

Prompted text fields may be inserted into messages. The content of these text fields is entered in QuickStep after sending the message to the coder.The content format has to be specified when creating these text fields in a message in the *Message Editor*.

To add a new prompted field to the message:

(1) Press on the screen within a specific area of the Message Editor where you require the item to appear. A cross hair will appear at this location.

(2) Select the Add  icon.

(3) From the sub-menu select the Add Text  icon.

(4) Select *+Variable* > *+Create New* > *Prompted Field*.

(5) Enter a name or use the default name for the prompted field object.

(6) Set a default value in the format matching the input mask for the prompted field.

(7) Enter a prompt which is displayed on screen when the data for the prompted field should be entered. (After sending the message to the coder).

(8) Select an input mask for the prompted field which specifies the type of content for the prompted field.Possible formats:

Mask	Description
0	Mandatory numeric character 0-9
9	Optional numeric character 0-9
L	Mandatory alpha character A-Z or a-z
?	Optional alpha character A-Z or a-z
A	Mandatory alphanumeric character 0-9, A-Z or a-z
a	Optional alphanumeric character 0-9, A-Z or a-z
C	Mandatory any character
c	Optional any character
#	Optional currency symbol €, $, £ or ¥
&	Mandatory any character or space

(9) Review the entered information and select the green tick icon if correct or press in the required field to add or change values.

(10) Select the green tick icon to enter the prompted field into the message.

(11) Activate the message for coding by sending it to the coder  via the *File* menu  .

Add a New Link

To add a new link to the message:

(1) Press on the screen within a specific area of the Message Editor where you require the item to appear. A cross hair will appear at this location.

(2) Select the Add  icon.

(3) From the sub-menu select the Add Text  icon.

(4) Select *+Variable* > *+Create New* > *Link*.

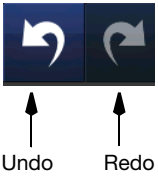
(5) Enter a name or use the default name for the link object.

(6) Specify the source of the link, e.g. a counter or a clock or message content element. System variables are entered into a message via a link.

(7) Select the green tick icon to enter the link into the message. The link object will have the same content as the source object.

(8) Activate the message for coding by sending it to the coder  via the *File* menu  .

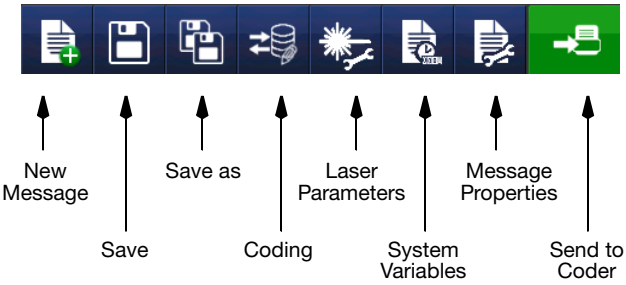
Undo / Redo



Undo or redo the last editing steps in the message editor including change of settings or parameter settings.

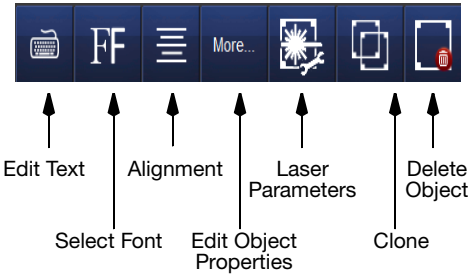
Note: Creating a new message clears the undo cache - no undo to the last message is possible.

Message



- New Message
  Creates a new message.
- Save
  Saves the current message in a selected message store.
- Save as
  Saves the current message with a given name in a selected message store.
- Coding
  Selects a source for the coding variable.
- Laser Parameters
  Create, delete and edit laser parameter sets.
- System Variables
  Create global variables.
- Message Properties
  Message settings overwrites system settings of Fields, Coding on the Fly, Vector Sorting and activate usable fields. Also enables the user to activate Optical Correction, Tube Distortion and PN Transformation.
- Send to Coder
  Sends the current message to the coder and activates it for coding.

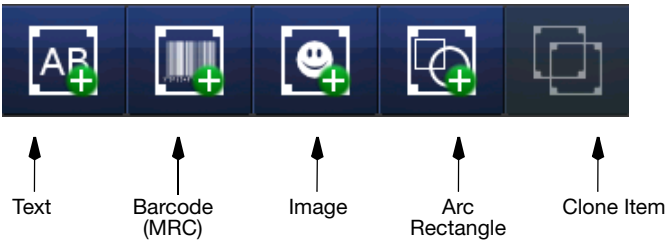
Edit



Edit menu for a text object.

- Edit Text
  Opens the keyboard to edit the text content
- Select Font
  Opens the list of available fonts to select a font
- Alignment
  Sets the alignment of the object
- Edit Object Properties
  Allows editing the properties of the object
- Laser Parameters
  Set laser parameters for the object
- Cone Item
  Duplicates the object
- Delete Object
  Deletes the selected object

Add

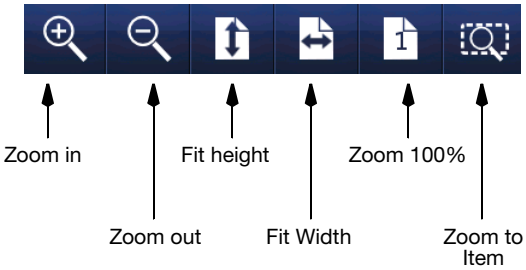


Move

Select an object in the editor by clicking on it and move it in the desired direction by clicking on the arrow icons.

Drag and drop can also be used.Select and hold the item within the message and move it to the desired location.

Zoom



To view the item(s) in the Message field, or the whole Message field in a different size, select the item(s) and then select the appropriate button from the above toolbar:

- Incrementally zoom in on the message area.
- Incrementally zoom out of the message area.
- Fit whole message height to area.
- Fit whole message width to area.
- Zoom to 100% (actual size) of Message.
- Zoom selected item to fit into message area.

Re-order Visual Items

Sets the order of objects to code.

Select an object of the list and use the arrows to change the order.

Item Selection List

Selects multiple or all objects of a message. Select the items of the list to be selected. Or click on “Select all” to select all objects. Click on “Clear Selection” to have no object selected.

Resize

Resize an object by selecting it and dragging the red mark of the object.

MESSAGE STORE AND FILE MANAGEMENT

Selecting an Existing Message

Note: When no message is selected for coding, no live message will be displayed in the Home screen.

(1) Select the Messages button to open the Message Store.

(2) Select the required message from the list.

(3) Choose to Edit, Preview or Send to Coder.

Note: Send to Coder will revert to the Home screen. The selected message will then be displayed.

File Manager

Home > Settings > File Manager

File Manager is a useful way of reviewing and organising stored messages, images and scripts.

Using File Manager it is easy to rename files, create new folders and copy content between folders.

New Store:	Create a new store for messages, images and scripts. *Note: A new message store can only be created in the messages folder.*
Edit:	Rename Copy Cut Delete Details
Paste:	Used with the Copy/Cut commands to add files into folders.

MAINTENANCE

CHECKING FANS AND AIR VENTS

WARNING:	**Mains electricity. Risk of death.**
	**Switch off and un-plug before undertaking any work on the laser coding system.**

The fans are located at the sides of the controller.

A fan defect immediately poses a danger of overheating that may result in damage to the BCP7 controller. Therefore, the fans must be checked once a month.

Controller

(1) Check the fans for bearing noises. If bearing noises exist, the respective fan must be replaced.

(2) Check the fan filters of the controller for blockages and dirt. If necessary, exchange them. This may be easily done from the outside without opening the controller.

CLEANING THE LENS

CAUTION:	*Sensitive material. Risk of lens damage.*
	*Do not use compressed air from the installation for cleaning.* *Do not use water for cleaning. The lenses are not water resistant.* *Clean carefully. There is a risk of scratch marks on the lens which will reduce the coding quality.*

WARNING:	**Mains electricity. Risk of death.**
	**Switch off and unplug from the mains before undertaking any work on the laser coding system.** Ensure the mains power plug is removed before cleaning the lens.

The lens must be checked monthly for dust, and if necessary be cleaned with (absolutely clean) compressed air from a can.

For all other dirt, the lens must be cleaned with 99,9% Isopropyl Alcohol and the Domino lens cleaning kit. The kit consists of two parts (both are needed):

- EPT033842 - SP Lens Cleaning Cotton Balls (Set of 50).
- EPT033843 - SP Lens Cleaning Cotton Swabs (Set of 100).

Cleaning procedure as follows:

(1) Take an unused cotton ball and soak it in Isopropyl Alcohol.

(2) Lightly wipe with ONE PASS ONLY across the surface of the lens.

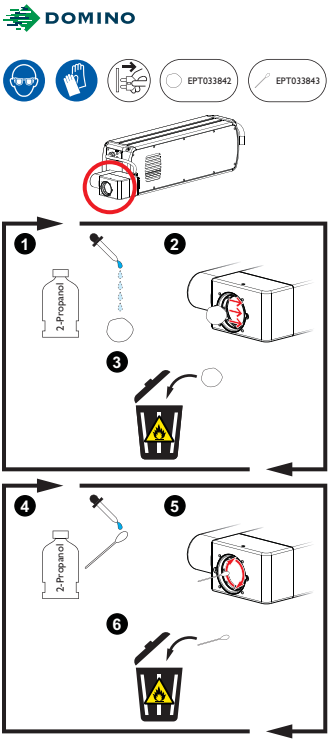
(3) Inspect the cotton swab. If dirt or oil is present, repeat steps (1) to (2).

(4) Take an unused cotton swab and soak one end in Isopropyl Alcohol.

(5) Lightly wipe across the border area of the surface of the lens.

(6) Inspect the cotton swab. If dirt or oil is present, repeat steps (4) to (5)

(7) Use an unused cotton swab to lightly wipe excess liquid from the lens.



GENERAL CLEANING

WARNING:	Mains electricity. Risk of death.
	**Switch off and un-plug the mains supply to the laser coding system and the connected installation.**

The outer surfaces may be cleaned with a damp cloth and a mild cleaning agent only. No humidity must get into the system.

SERVICE: REPLACEMENT OF COMPONENTS

Applications without Shutter

Maximum cycles of the Safety Relay PNOZ S4 (opening of guard door when laser is coding)	15 Million
Maximum cycles of Safety Relay PNOZ S4 (opening of guard door when laser is **not** coding)	100 Million

Applications with Shutter

Maximum cycles of Shutter	10 Million

Shutter Safety Relay

Maximum cycles of Safety Relay	10 Million

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FAULT FINDING

SYSTEM STATUS MESSAGES

	Status Message	Cause	Suggested Action
11	Product left coding area (moving too fast?).	The message has not been completed in time.	Slow down the conveyor, reduce the coding time, or move the text upstream on the field.
12	Product left coding area (moving too fast?).	The message has not been completed in time.	Reduce the coding time or move the text upstream on the field.
13	List buffer repeat count fail.	Internal Fault.	Restart the system, re-store back-up. Contact Domino.
14	Maximum code to code distance exceeded.	The maximum distance between coding trigger signals has been exceeded and an expected coding trigger was not received.	Check if the sensor is set up correctly, disable this function if the check is not needed.
15	Coding trigger signal ignored.	A coding trigger has been received too soon after the previous.	Check for switch bounce on the coding trigger, check for a correctly set up sensor.
16	Maximum laser on time exceed (laser disabled by hardware).	The laser has been firing for longer than expected.	Restart the system. Contact Domino.
17	Laser warm up.	A short warm up period is required before use.	Wait until this warning disappears before using the laser.
30	Scan head power missing.	There is no +/-15 V at the scan head, or no data returning from scan head.	Check connections to the laser head.
31	Scan head temperature out of valid range.	The scan head is cold.	Restart the system. Contact Domino.

	Status Message	Cause	Suggested Action
32	Scanhead warming up -please wait.	The scan head is cold.	Wait for the heaters in the scan head motors to warm the scan head, the coder can be used but you may experience very minor position errors.
33	Controller over temperature.	The temperature in the controller is very cold or too hot.	Make sure that the fans are working and that the filters are not blocked.
51	Controller near over temperature.	The controller is getting quite hot.	Make sure the fans are working and that the filters are not blocked.
56	coder ready to code.	coder will code if a coding trigger signal arrives.	Information Only.
58	No Message loaded.	There is no valid message loaded into the controller.	Load a message and send it to coder.
549	Turn keyswitch to enable coding.	The safety relay needs to be set after an interlock has been opened.	Turn keyswitch to start position, or give a remote start input (the “Play” button on the UI will not function).
550	System disabled.	The keyswitch is at position 0.	Turn the keyswitch to position 1.
551	Aiming turned on.	The aiming beam, configurable in the global settings, is turned on.	Information Only.
552	External Interlocks Open.	The interlock or interlocks are open. If shutter option is installed, shutter is not correctly started/prepared.	Close the guards to 'make' the interlocks. Respectively, check shutter functionality.
553	External Interlock 1 Open.	The interlock switch 1 is open.	Close the guards to 'make' the interlocks.
554	External Interlock 2 Open.	The interlock switch 2 is open.	Close the guards to 'make' the interlocks.
555	Air Fault.	Not enough air flow to cool the laser.	Check the air regulator filters and pressure settings.

	Status Message	Cause	Suggested Action
556	Vacuum Fault.	The DPX is not running.	Make sure the DPX is serviceable and running.
557	Filter not ok.	The DPX filters are blocked.	Change the DPX filters.
578	System Standby.	The keyswitch is at position 1 but not yet set by turning the keyswitch or remote start.	Turn the keyswitch to start position, or give a remote start input, or press the “Start” button on the user interface.
579	Coder enabling.	The laser is switched on but warming up.	Wait for the coder to be ready.
580	Inconsistent Laser On State.	The laser start input level is being overridden by a user interface laser on selection or by a fault message.	Restart the system. Contact Domino.
581	Next controller not ready.	The next controller in a “chain” in a Multihead configuration is not ready.	Restart the system. Contact Domino.
582	Controller Idle (Multi Head System).	The system is part of a multi head “chain” but has been disabled (see install options). This is for information only.	Restart the system. Contact Domino.
583	External Interlock has been opened.	One or both interlocks was opened but is now closed.	Restart the system. Contact Domino.
594	Safety Relay Fault.	There was a laser start command present while one or both (CAT3/4) interlocks where not closed.	Make sure the interlocks are closed before giving the laser start input.

Note: For all other errors or messages contact Domino.

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Domino F-Series User Guide - Part No. EPT065175

Domino Printing Sciences plc has a policy of continuous product improvement, the Company therefore reserves the right to modify the specification contained within this document without notice.

For additional documentation, including other available languages, either scan the QR code, or go to **https://mydomino.domino-printing.com**

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