

iFLEX-iRIS™

Laser Systems

The Qioptiq iFLEX-iRIS™ solid state laser systems offer high performance stability with low amplitude noise in a miniaturized package. They are ideally suited for integration into instruments that demand high performance yet need to retain a small form factor. The lasers are mode-hop free and wavelength stabilized as a result of active temperature control.

All CW iFLEX-iRIS lasers operate in automatic power control mode using an internal feedback loop. This feature provides highly stable output power, and ensures the high power stability performance is maintained throughout the product lifetime.

Well controlled digital modulation can be offered through the electrical interface PINs. This feature must be selected with order.

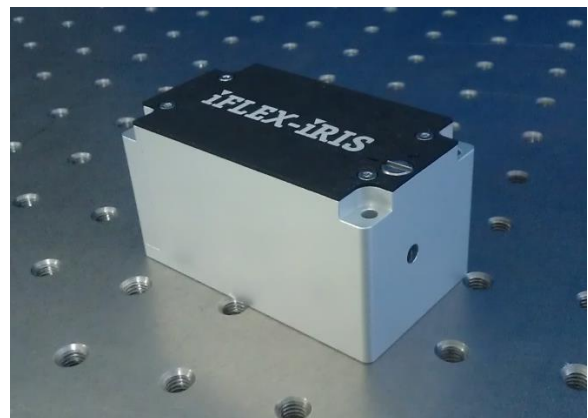
To ensure optimum performance is maintained throughout the product lifetime, the iFLEX-iRIS laser design is robustly tested to Telcordia specifications.

Product features include:

- High stability operation
- Low noise
- Miniaturized for easy integration
- Integrated electronics and TEC temperature stabilized control
- Conductively cooled through baseplate
- Automatic Power Control
- Mechanical shutter

Options include:

- Digital modulation
- CDRH compliant interlock unit
- Adaptor cable when an iFLEX-iRIS is used as a retrofit replacement for an iFLEX2000™ laser
- Industry compatible footprints and beam exit positions
- OEM versions on request
- Fiber coupling - please refer to the fiber coupled datasheet for information about fiber coupled iFLEX-iRIS lasers



iFLEX-iRIS laser specification overview

Operating Wavelengths

| Wavelength (nm) | 375 | 405 | 445 | 458 | 473 | 488 | 505 | 515 | 520 | 633 | 637 | 642 | 660 | 670 | 730 | 780 | 830 | 852 |
|------------------|----------------|-------------------------|----------------|----------|-----|------------------------|-----|----------------|-----|----------|-----------|-----------------|-----|-----|-----|-----|-----|-----|
| Laser Power (mW) | 20 40 50 | 50 100 200 220 | 20 50 75 | 20 70 | 75 | 20 40 100 140 | 50 | 20 50 60 | 30 | 30 70 | 20 100 | 20 40 100 | 80 | 10 | 20 | 70 | 100 | 35 |

Technical Specifications

| Laser parameters | | |
|-----------------------------------|--------------------------|--------------|
| Center wavelength | $\pm 5^*$ | nm |
| Power stability (8 hours) | < 1 | % |
| Optical Noise (20Hz-2MHz) | < 0.1** | % rms |
| Spatial mode | TEM ₀₀ | - |
| Beam diameter at 1/e ² | 0.7 \pm 0.2 | mm |
| Beam divergence (full angle) | Typ < 1** | mrad |
| M ² (beam quality) | Typ 1.2 | - |
| Pointing stability | < 5 | μ rad/°C |
| Polarization ratio | $\geq 200:1$ | - |
| Static alignment | | |
| Beam position | < 0.3 | mm |
| Beam angle | < 5 | mrad |
| Electrical | | |
| Power supply | 12V DC, 1A | - |
| Max. base plate temp. | 40 | °C |
| Max. heat dissipation | 12 | W |
| Operation Modes | | |
| CW | 0.1 - 100% and true off | |
| Digital Modulation | TTL signal | - |
| Rise time (10% to 90%) | < 1 | μ sec |
| Fall time (90% to 10%) | < 1 | μ sec |
| Modulation bandwidth | DC to 500 | kHz |
| Laser Dimensions | | |
| Laser only | 70(L) x 40(W) x 38(H) mm | |

| Environmental conditions | | |
|------------------------------|----------------------------------|----|
| Storage temperature | 10 to 50 | °C |
| Operating pressure | Atmospheric | - |
| Operating temperature | 10 to 40 | °C |
| Operating & storage humidity | Non-condensing, dew point <23 °C | |

*Center wavelength exceptions at: 637nm (+6/-5nm), 642nm (+5/-7nm), 660nm (+4/-6nm), 670nm (\pm 10nm), and 730nm (\pm 10nm)

**Model specific please contact Qioptiq for details
Custom OEM versions on request

iFLEX-iRIS laser specification overview

Operating Wavelengths:

| | | | |
|------------------|--------|--------|-----|
| Wavelength (nm) | 532 | 561 | 594 |
| Laser Power (mW) | 20, 40 | 20, 50 | 20 |

Technical Specifications

| Laser parameters | | |
|-----------------------------------|-----------------------------------|--------------|
| Center wavelength | ± 2 | nm |
| Power stability (8 hours) | < 2 | % |
| Optical Noise (20Hz-2MHz) | < 0.3* | % rms |
| Spatial mode | TEM ₀₀ | - |
| Beam diameter at 1/e ² | 0.7 \pm 0.2 | mm |
| Beam divergence (full angle) | Typ < 1* | mrad |
| M ² (beam quality) | Typ \leq 1.2 | - |
| Pointing stability | < 5 | μ rad/°C |
| Polarization ratio | > 200:1 | - |
| Static alignment | | |
| Beam position | < \pm 0.3 | mm |
| Beam angle | < 5 | mrad |
| Electrical | | |
| Power supply | 12V DC, 1A | - |
| Max. base plate temp. | 40 | °C |
| Max. heat dissipation | 12 | W |
| Operation Modes | | |
| CW | 50 - 100% adjustment and true off | |
| Laser Dimensions | | |
| Laser only | 70(L) x 40(W) x 38(H) mm | |

| Environmental conditions | | |
|------------------------------|---------------------------------|----|
| Storage temp. | 10 to 50 | °C |
| Operating pressure | Atmospheric | - |
| Operating temp. | 10 to 40 | °C |
| Operating & storage humidity | Non-condensing, dew point <23°C | |

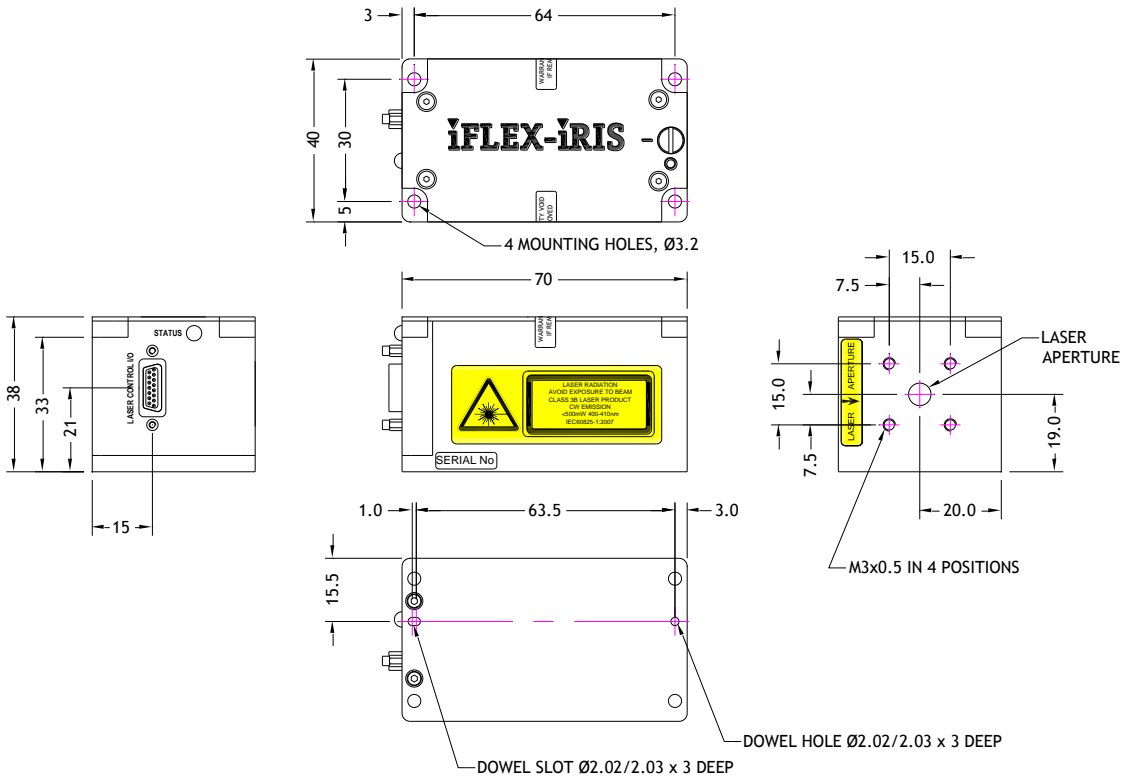
*Model specific please contact Qioptiq for details

Custom OEM versions on request

Model: iFLEX-iRIS-X0

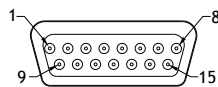
iFLEX-iRIS laser with central laser aperture position

Note: it is possible to attach a kineFLEX fiber delivery system to the iFLEX-iRIS-X0 laser with central laser aperture (beam exit) position. The kineFLEX can be attached by customers, as a future upgrade option.



iFLEX-iRIS electrical interface

| Pin | Function |
|-----|----------------------------------|
| 1 | Monitor Photodiode Output (Vmon) |
| 2 | Operating Current Output (Vop) |
| 3 | External Power Control |
| 4 | Laser Enable |
| 5 | Temperature OK Signal |
| 6 | Reserved |
| 7 | Laser Supply Voltage |
| 8 | Reserved |
| 9 | Reserved |
| 10 | Reserved |
| 11 | Chassis Ground |
| 12 | Digital Modulation Input |
| 13 | Reserved |
| 14 | 0V Laser Supply |
| 15 | 0V Signal Return |

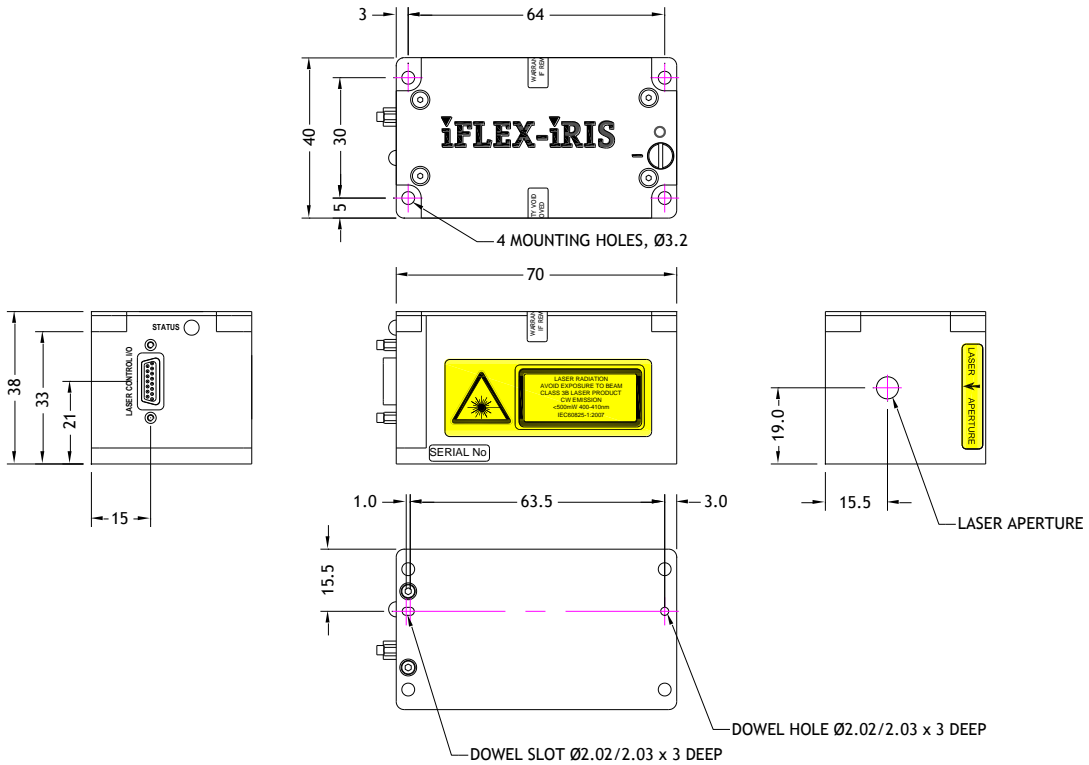


Please refer to iFLEX-iRIS user manual for detailed instructions on electrical control via PINs.

Model: iFLEX-iRIS-X2

iFLEX-iRIS laser with offset laser aperture position

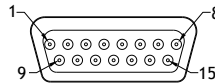
Note: the kineFLEX fiber delivery system cannot be directly attached to the iFLEX-iRIS-X2 laser with offset laser aperture (beam exit) position, and an adaptor interface would be required.



Other industry footprints and beam offsets may be available. Please contact Qioptiq Sales for details.

iFLEX-iRIS electrical interface

| Pin | Function |
|-----|----------------------------------|
| 1 | Monitor Photodiode Output (Vmon) |
| 2 | Operating Current Output (Vop) |
| 3 | External Power Control |
| 4 | Laser Enable |
| 5 | Temperature OK Signal |
| 6 | Reserved |
| 7 | Laser Supply Voltage |
| 8 | Reserved |
| 9 | Reserved |
| 10 | Reserved |
| 11 | Chassis Ground |
| 12 | Digital Modulation Input |
| 13 | Reserved |
| 14 | 0V Laser Supply |
| 15 | 0V Signal Return |

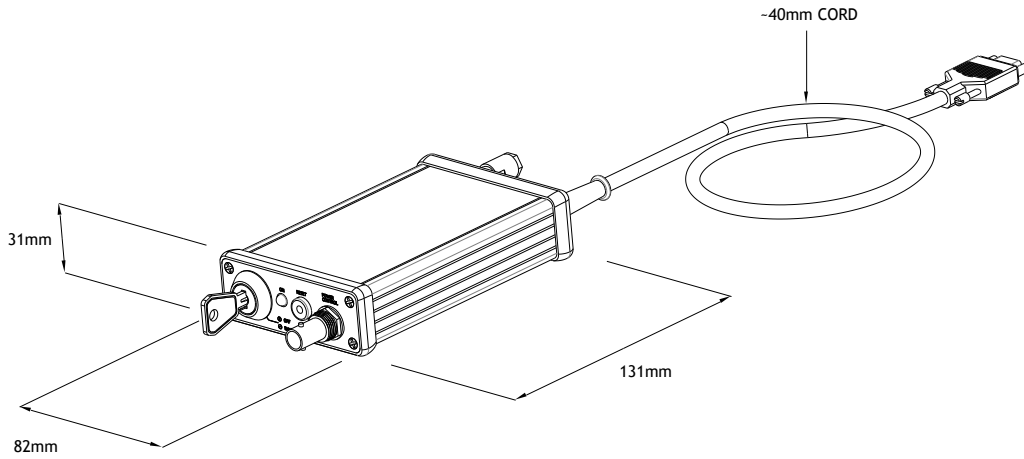


Please refer to iFLEX-iRIS user manual for detailed instructions on electrical control via PINs.

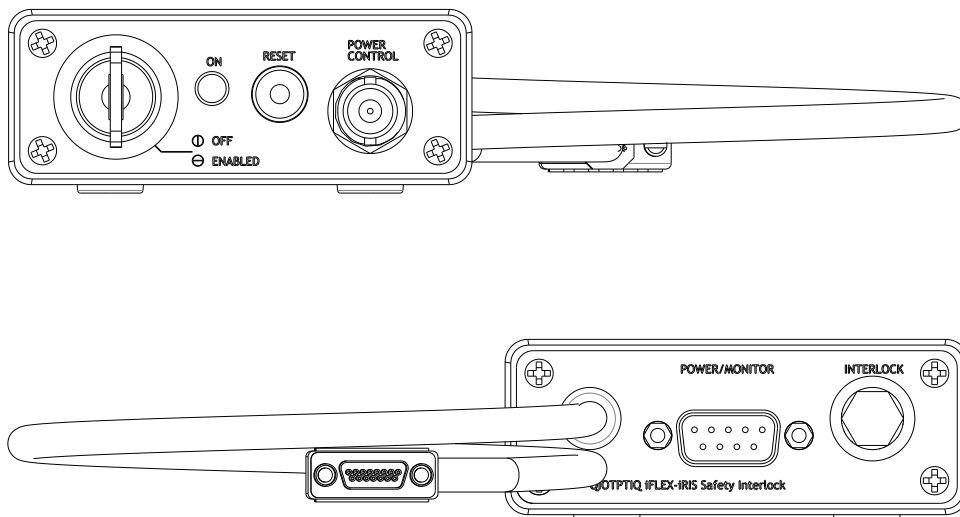
iFLEX-iRIS CDRH compliant interlock remote unit

For CDRH compliance a bench top standalone laser system must be used with a CDRH compliant interlock remote unit power supply. Qioptiq is pleased to offer this iFLEX-iRIS CDRH compliant interlock remote unit for use with the iFLEX-iRIS laser systems.

Note: The iFLEX-iRIS CDRH compliant interlock remote unit includes keyswitch, keys, interlock plug and power supply. This CDRH compliant interlock unit is recommended for bench top use.

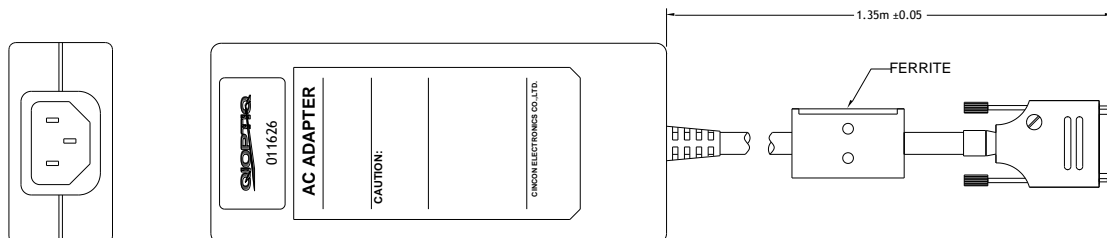


End panel views of the iFLEX-iRIS™ interlock remote unit detailing the location of the different connectors and indicators



iFLEX-iRIS OEM power supply

When iFLEX-iRIS lasers are integrated into OEM instrumentation then power may be supplied directly from the instrument or from an OEM power supply. Qioptiq is pleased to offer this OEM power supply for the iFLEX-iRIS laser systems.

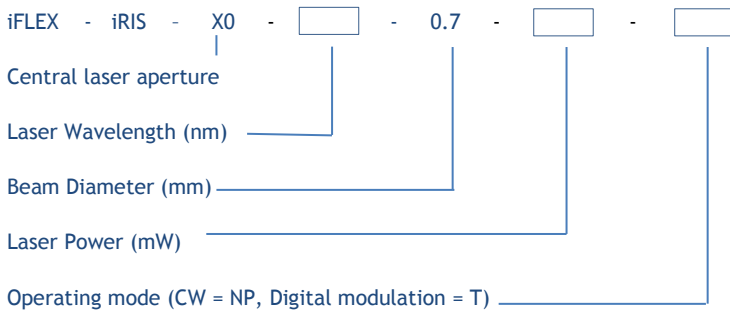


iFLEX-iRIS Adaptor Cable

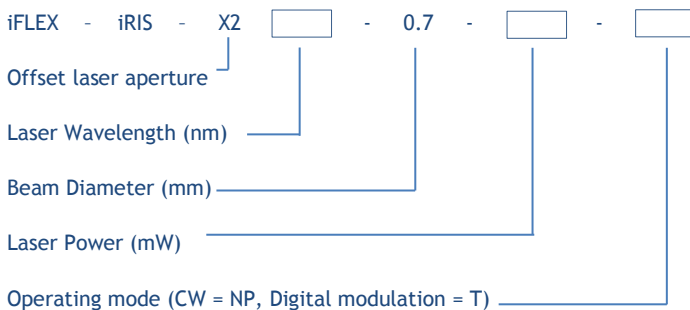
This allows an iFLEX-iRIS to be installed in place of an iFLEX2000, as a retrofit laser system.

iFLEX-iRIS Laser Order Codes

Model: iFLEX-iRIS-X0 iFLEX-iRIS laser with centralised laser aperture



Model: iFLEX-iRIS-X2 iFLEX-iRIS laser with offset laser aperture



For example: iFLEX-iRIS-X2-640-0.7-50-T

This iFLEX-iRIS laser operates at 640nm and outputs 50mW power. The output beam is collimated to 0.7mm diameter. The beam exit position is offset. This laser may be modulated in current control mode up to 500kHz. This does not include a power supply.

Please remember to select the appropriate power supply for your application

iFLEX-iRIS Power Supply Order Codes

Model: iFLEX-iRIS-CDRH-PSU-SET iFLEX-iRIS CDRH interlock remote unit with power supply, keys and interlock plug

Model: iFLEX-iRIS-OEM-PSU iFLEX-iRIS OEM power supply

Model: iFLEX-iRIS-ADAPTOR-2000 Adaptor cable from iFLEX-iRIS laser to iFLEX-2000 power supply

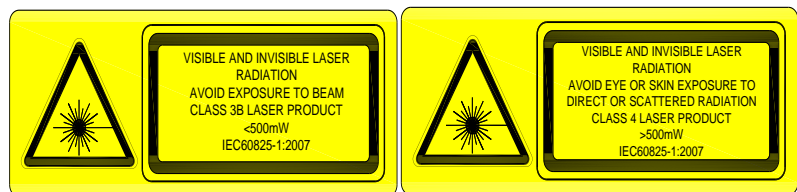
Note: IEC power lead to wall socket is country specific and may be sourced locally through most electronic retailers. It is not included.

These specifications may be amended without notice under our program of continual improvement, and Qioptiq reserve the right to amend these specifications without notice.

These lasers are designed and manufactured in a factory with ISO9001:2008 certification. These lasers are CE certified. These lasers meet the requirements for IEC60825-1. Only lasers used with a CDRH compliant interlock unit meet CDRH requirements. The addition of a fiber optic output can increase laser hazard. Please follow recommended laser safety guidelines when using these lasers.

For technical information contact:

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