

TFX-9080-EWC-UNI-C

MicroFocus Integrated X-Ray Source

(End Window Cone, Close Proximity)

Contact TruFocus for any modification of Specifications for your application

| FAMILY | TruFocus Ordered P/N | Min/Max Target Voltage (kV) | Min/Max Target Current (mA) | Maximum TUBE Power (W) | Focal Spot Size (um) | Beam Angle (°) | Focus to Object Distance (S) (FOD, mm) | Operation |
|--------|----------------------|-----------------------------|-----------------------------|------------------------|----------------------|----------------|--|------------|
| TFX | TFX-9080-EWC-UNI-C | 25 / 80 | 0.02 / 1 | 8* | <= 8 | 47.33 | 9.779 | Continuous |

*Maximum Tube Power depends on Focal Spot Size (FSS) and target material. See Tube Operating Power table below. 8 W for 8 um.



Top View

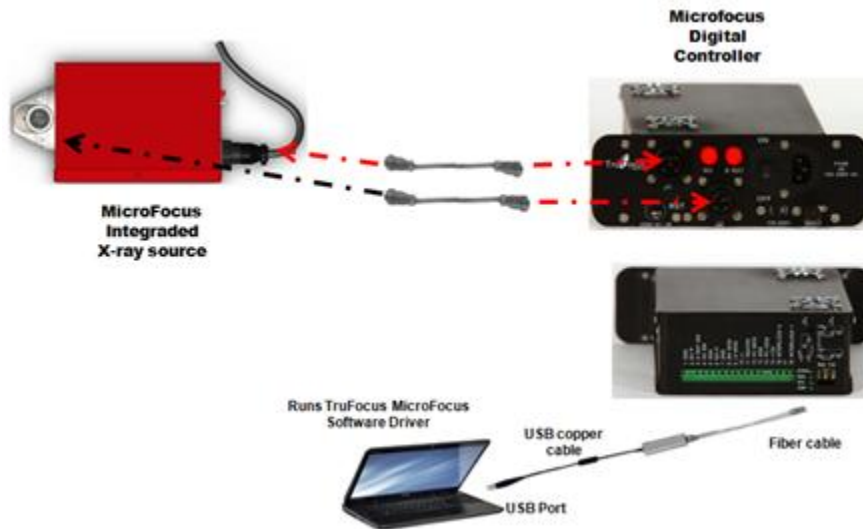


Side View

TFX-9080-EWC-UNI-C X-Ray source is part of the TruFocus 9000 series MicroFocus Tube family. The unit integrates a MicroFocus X-ray tube (<=8 μm in Focal Spot Size) and a High Voltage Power Supply (80kV, 1 mA) in one unit. This unit was developed to fulfill the need for high resolution imaging for Industrial, Medical (Specimen Radiography), Aerospace and Analytical applications. The Sub-system produces exceptional image quality and focus sharpness.

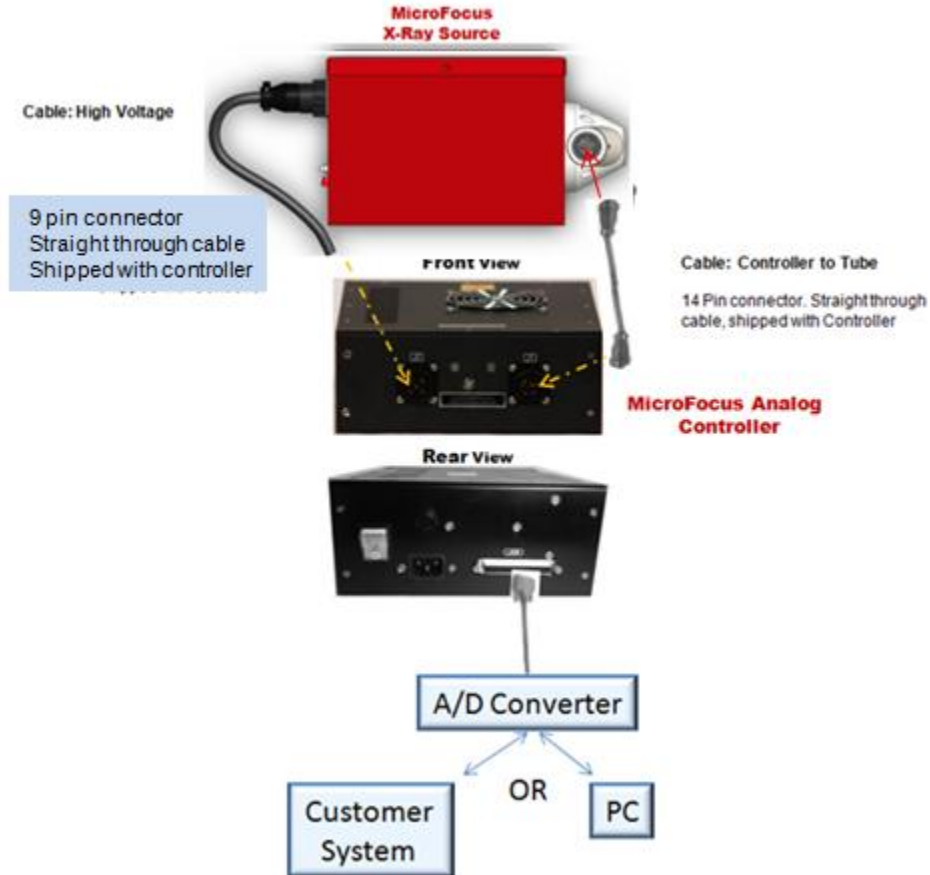
Sub-System Overview

Digital Controller Sub-system overview



TruFocus has developed Microfocus controllers, both digital and analog, to interface with this integrated power supply x-ray tube unit for monitoring and controlling the operation of this system when properly connected with an appropriate computer system.

Analog Controller Sub-system overview



Specifications

Order Part Number

| TFX | 9080 | EWC | UNI | C |
|-------------------------------------|-------------------------------------|------------------------------|--|--------------------------------------|
| Product Family Microfocus family | Product Series 9000 series, 80kV | Tube Type End Window Cone | Package Type: Integrated (X-ray source + Power Supply) | C: FOD Distance / Close Proximity |

| Max Target Voltage (KV) | Minimum Target (KV) | Max Target Current (mA) | Minimum Target (mA) | Operating Ambient Temperature (°C) | Maximum TUBE Power (W) | Operating Temperature (°C) | Operating and Storage Humidity (%) | Weight (lb) | HV Power Supply |
|-------------------------|---------------------|-------------------------|---------------------|------------------------------------|------------------------|----------------------------|------------------------------------|-------------|-----------------|
| 80 | 25 | 1 | 0.02 | 40 | 8* | 55 | 85% RH | 22 | Build-in |

*Maximum Tube Power depends on Focal Spot Size (FSS) and target material. See Tube Operating Power table below. 8 W for 8 μ m

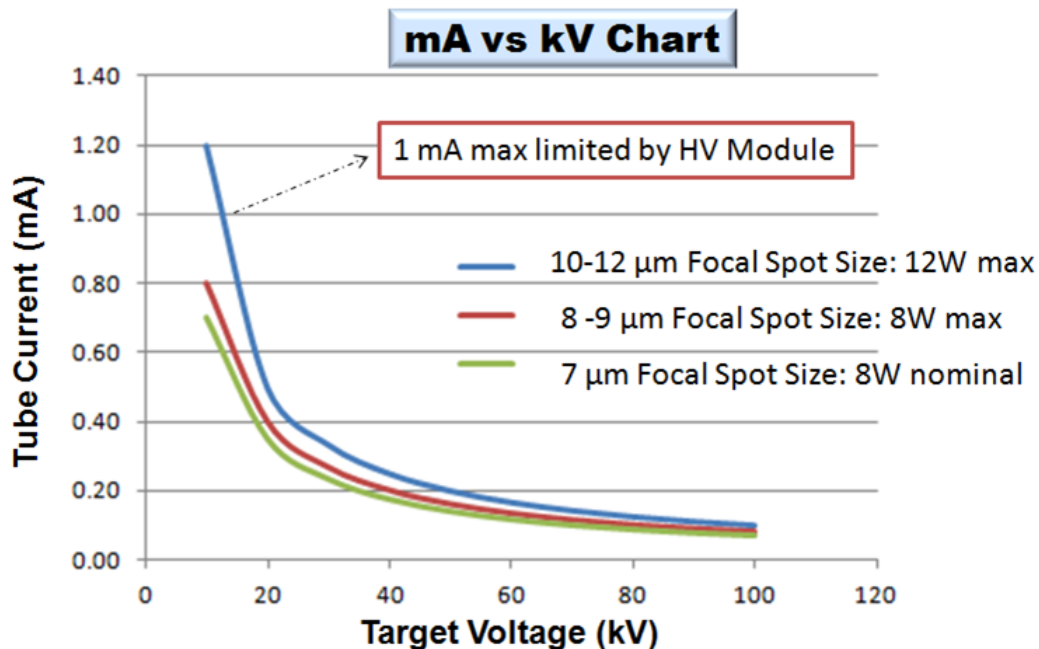
| Focus to object Distance (FOD, mm) | Focal Spot Size (μ m) | Beam Angle | Operation | Input Supply (V) |
|------------------------------------|----------------------------|------------|------------|---|
| 9.779 | ≤ 8 | 47.33° | Continuous | From TruFocus MicroFocus Controller . See Specification section |

| Tube Target Material | Tube Window Material | Tube Window Thickness | Tube Window type | Cooling Method | Flux Stability |
|----------------------|----------------------|-----------------------|------------------|----------------|----------------|
| Tungsten | Beryllium | 0.01 " | End Window Flat | Air | $<0.2\%$ * |

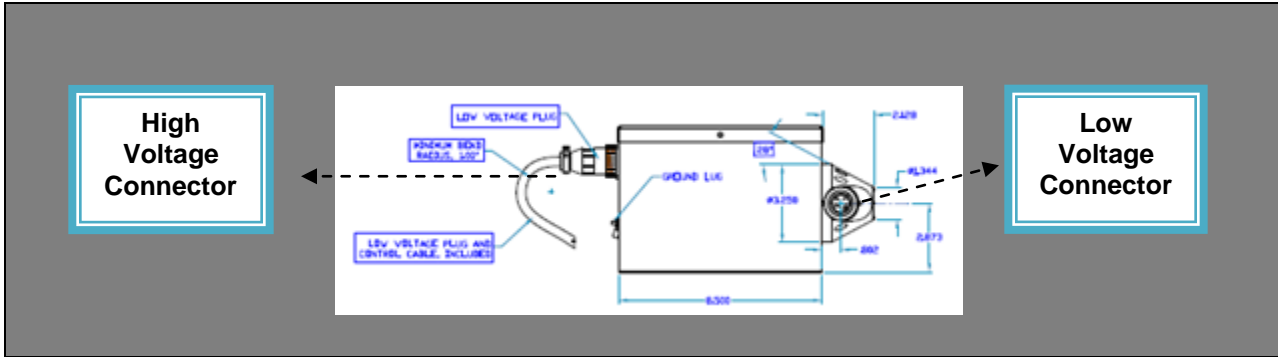
*Relative Standard Deviation over 4 hours of continued operation.

| 1W per 1 μ m Focal Spot Size (FSS) for Tungsten when FSS $< 10 \mu$ m | |
|---|--|
| Focal Spot Size (μ m) | Maximum Target Operating Power (Continuous, W) |
| 8 | 8 |
| 9 | 9 |
| 10 | 10 - 12 |

*Maximum Tube Operating Power (W) of 8000 series is: 12 W



Control Interface



Low Voltage Control Connector Pin out & Functional Description

| Pin # | Signal Names | Note |
|-------|--------------|--|
| 1 | N/A | |
| 2 | N/A | |
| 3 | GND | |
| 4 | Heater + | 6.0 V DC & 0.7A Max |
| 5 | Heater - | |
| 6 | L-1 | 0 to -20 VDC, Grid 1 |
| 7 | N/A | |
| 8 | N/A | |
| 9 | N/A | |
| 10 | N/A | |
| 11 | N/A | |
| 12 | L-2 | 2000 V DC Max. Contrast Control - Grid 2 |
| 13 | N/A | |
| 14 | L3 | 3000VDC Max Focus Control - Grid 3 |

**AMP 14-PIN, Female, Circular Plastic Connector
Standard Cable Length shipped: 8 ft**

**All Voltages set at TruFocus
Table provided only for monitoring purpose.**

High Voltage Control Connector Pin out & Functional Description

| Pin # | Signal Names | Note |
|-------|--------------|-------------|
| 1 | MA-Feedback | mA Feedback |
| 2 | NC | |
| 3 | KV-Feedback | KV Feedback |
| 4 | N/A | |
| 5 | GND | |
| 6 | N/A | |
| 7 | PWM1 | HV input 1 |
| 8 | N/A | |
| 9 | PWM2 | HV Input 2 |

**AMP 9-PIN, Male, Circular Plastic Connector
Standard Cable Length shipped: 8 ft**

**Connection between UNI unit and TruFocus MicroFocus
Controller**

MicroFocus Software Driver

TruFocus' Full User Graphic Interface (GUI) software driver

Connection: Via PC USB port

Software Driver supports Window Vista, Window XP and Window 7

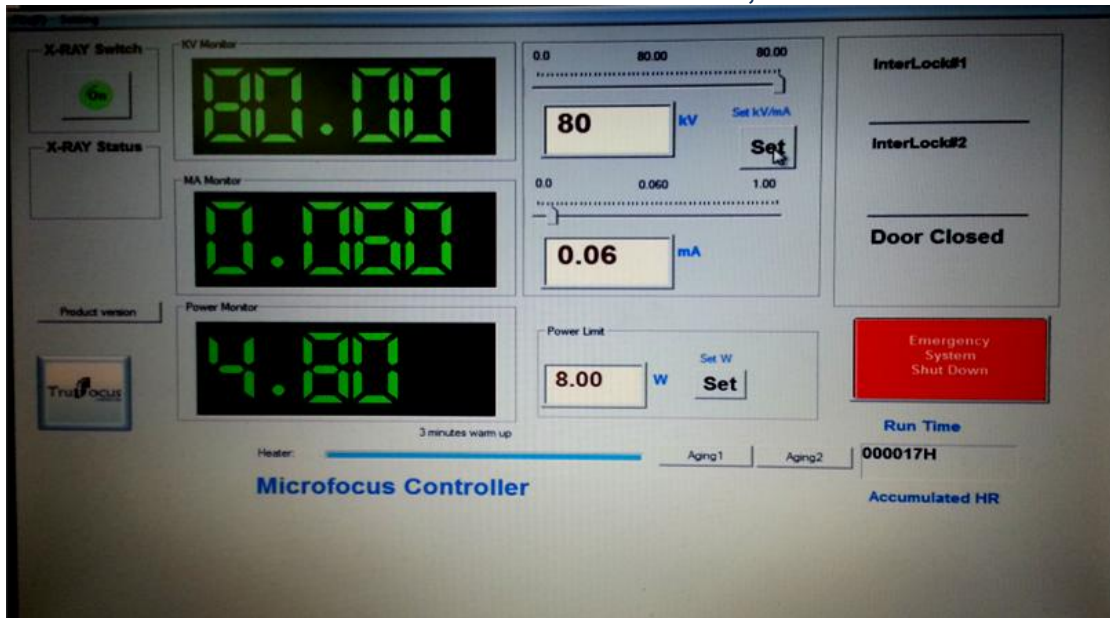
Software Driver shipped with MicroFocus Digital Controller

PC requirement: Standard PC, USB, 32 or 64 bit operating system. Minimum 4G RAM

Complete Software Development Kit available with engineering Technical Support

The main Control Display Screen

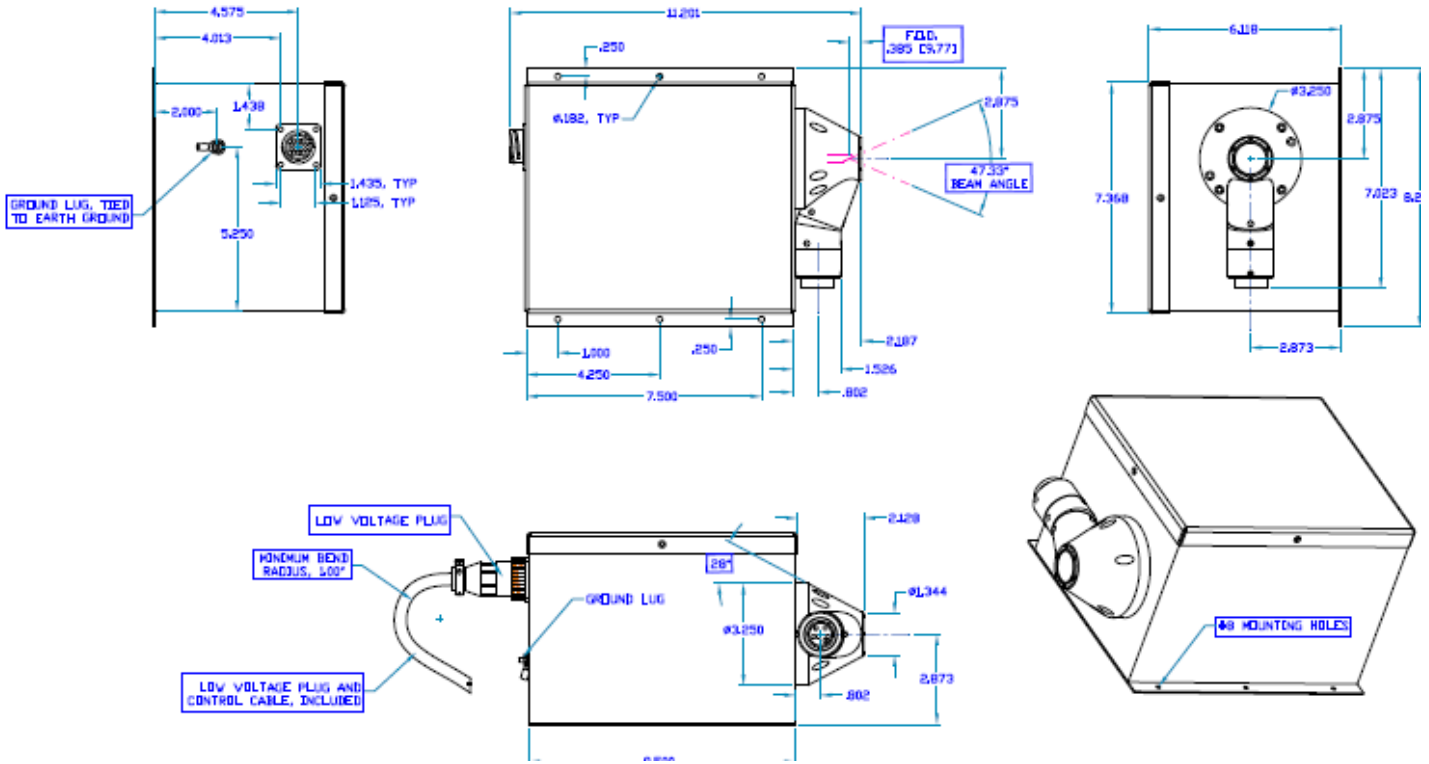
Screen Shot: 80kV & 0.08 mA, 8W



| Software Function | Description |
|----------------------------|---|
| X-ray Status | Indicating X-ray is actually ON or OFF |
| X-Ray Switch | Indicating X-ray Switch is currently at ON or OFF position |
| Product Version | Shows Controller Product version and SN number |
| KV Set | Type in an operating KV value, then, click on SET icon to set the KV value |
| mA Set | Type in an operating mA value, then, click on SET icon to set the mA value |
| Power Limit | Automatic protection function. Type in maximum Power Limit for this Test, then, click on SET Sub-system maximum power is preset to 8W for 8 um focal Spot size. User can change any maximum power lower than or equal 8 w for a given test |
| Heater | Tube Warm up process. Automatically starts every time software driver is Launched. |
| Aging1 | Click on Aging1 to start Automatic Tube Aging process (New tube or Tube that was not used for more than 5 days) |
| Aging2 | Click on Aging 2 to start Daily Automatic Aging process |
| InterLock 1 | Interlock #1 status indicator |
| InterLock 2 | Interlock #2 status indicator |
| Emergency System Shut down | Anytime, Click this icon, system will be shutdown |
| Run Time | Total X-ray run timer (in HR) |

OUTLINE DRAWING

| | |
|--------------------------------|----------------------------------|
| Drawing# & Version: | DW-TFX--9080-EWC-UNI-C-01 |
| TruFocus P/N: | TFX-9080-EWC-UNI-C |
| Unit: | In |



Caution

X-Ray Radiation



1. X-Ray radiation is harmful to the human body. It is necessary to take all safety precautions when operating this device.
2. The x-ray tube should be installed in an x-ray shielded cabinet to avoid exposure. It is recommended that the safety interlock system be used at all times.
3. It is the customer's responsibility to provide shielding for the use of this device.

Warranty Information

This x-ray tube is warranted to be free of defects in materials and workmanship for a period of 365 days (1 year). This warranty is limited to repair or replacement of defective products only. This warranty replacement cost to customer shall be prorated over the duration of the warranty period. The warranty period commences on the date of installation, but no later than 30 days from the date of shipment from TruFocus to the customer. Any loss, damage, failure and/or malfunction relating in any way to accident, abuse, alteration, misuse, neglect, fitting, disassembly, attempted repair, storage, adjustments of the electronics, or failure to use the tube within the specifications or operating instructions provided by TruFocus, or the lack of proper routine maintenance and care of the tube or system in which it is installed are expressly denied coverage under this warranty.

Subject to local and technical requirements and regulations. Availability of product in this promotional material may vary. Please consult with our office staff for availability.

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