RTI mA Test Point Cable

Tube Current Cable Adapter

User's Manual - English - Version 1.0B

INDEPENDENT X-RAY
QUALITY ASSURANCE

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Intended Use

Together with instruments from RTI Group AB it is to be used for independent service and quality control, as well as measurements of kerma, kerma rate, kVp, tube current, exposure time, luminance, and illuminance within limitations stated below.

If installed according to accompanying documents, the product is intended to be used together with all diagnostic X-ray equipment except for:
- therapeutical X-ray sources.
- X-ray equipment with tube potential below 20 kV.
- X-ray equipment on which the instrument cannot be mounted properly, e.g. equipment where the beam field size is narrower than the active part of the detector.
- specific types of X-ray equipment listed in the instructions for use or in additional information from the manufacturer.

With the X-ray installation in stand-by conditions without patients present, the product is intended to be used:
- to provide the operator with information on radiation beam parameters that might influence further steps in an examination but not an ongoing exposure.
- for assessing the performance of the X-ray equipment.
- for evaluation of examination techniques and procedures.
- for service and maintenance measurements.
- for quality control measurements.
- for educational purposes, authority supervision etc.

The product is intended to be used by hospital physicists, X-ray engineers, manufacturer's service teams, and other professionals with similar tasks and competencies. The operator needs a short training to be able to use the product as intended. This training can be achieved either by careful study of the manual, studies of the built-in help function in measurement software or, on request, in a course provided by the manufacturer.

The product is intended to be used inside X-ray rooms ready for clinical use and can safely be left switched on and in any measuring mode in the vicinity of patients.

The product is NOT intended to be used:
- for direct control of diagnostic X-ray equipment performance during irradiation of a patient.
- so that patients or other unqualified persons can change settings of operating parameters during and immediately before and after measurements.

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Note!

For a full description of the Piranha or Cobia, see the Piranha or Cobia Reference Manuals.
That Manual can be found on the Product USB or be downloaded from RTI's website (www.rtigroup.com).

1 INTRODUCTION

1.1 A Presentation of the RTI mA Test Point Cable

The RTI mA Test Point Cable provides an invasive way to measure mA and mAs on X-ray equipment, via test points in the generator.

The RTI mA Test Point Cable can measure from 0 V to 30V, when used together with the Piranha or Cobia.

CAUTION:
Users of mAs meters must be aware of the potential damage to generators and electrical human hazards in the case of improper connection or failure of any part of the meter circuit. The RTI mA Test Point Cable is intended for use only by those skilled in the calibration and repair of X-ray machines. Please read the section SAFETY PRECAUTIONS 6 for more safety rules.

2 FUNCTION AND CONNECTION

2.1 Connection of the RTI mA Test Point Cable

Please be aware that high voltage may exist if the mA probe connection is not properly made. Read the SAFETY PRECAUTIONS 6 chapter before you start measuring!

- Power down the X-ray unit.
- Connect the RTI mA Test Point Cable to the test points on the generator circuit board. Consult the X-ray generator service instructions to find the proper test points.
- Now connect the RTI mA Test Point Cable to the detector input of the Piranha or Cobia.

A variety of optional connectors, clips, and adapters, can be used with the RTI mA Test Point Cable.

Clips, Adapters, and accessories

10 m BNC extension cable (Standard)

BNC femal to banana connector, 4 mm (Standard)

BNC female to test hooks (Standard)

Test clip with hooks (Optional)

3 MEASUREMENTS

3.1 Measurements of the mAs and mA Value

- Setup the RTI mA Test Point Cable according to the section Connection of the RTI mA Test Point Cable 4. Power on the Piranha or Cobia.
- Select the appropriate generator type for the RTI mA Test Point Cable
- Tap **Reset**, then "0" should be displayed.
- The offset adjustment procedure for Piranha or Cobia is finished and the RTI mA Test Point Cable is ready for measurements.
- Make an exposure and the readings of tube current (mA) and tube charge (mAs) will display.

Note!

Note that when using a PC connected to mains and and at the same time a cable to the Piranha or Cobia, ground loops may arise that generates ground currents that affects the measurements. It is recommended to either connect wirelessly between the PC and meter, or run a laptop PC on battery.

4 SAFETY PRECAUTIONS

4.1 General Rules

Only use the RTI mA Test Point Cable if you have necessary skills and are authorised to open and measure inside the X-generator assembly.

- Do **NOT** connect the RTI mA Test Point Cable to the filament current circuitry. The RTI mA Test Point Cable is only intended to measure via test points.
- Do **NOT** use the RTI mA Test Point Cable in contact with a patient.
- Do **NOT** use RTI mA Test Point Cable on a circuit with voltage higher than 30 V DC.
- Do **NOT** use the RTI mA Test Point Cable on a circuit with a voltage of higher than 600 V AC.

Note!
The RTI mA Test Point Cable is intended for service and quality control of diagnostic X-ray equipment. It is not intended for use during or together with diagnostic examinations of patients.

RTI takes no responsibility for misuse of the RTI mA Test Point Cable or use together with products that the RTI mA Test Point Cable is not intended for.
RTI assumes no responsibility for customers not following these safety precautions.

5 SPECIFICATIONS

5.1 General Specifications for RTI mA Test Point Cable

Specifications are valid after a warm-up time of one minute and presuming reference conditions.

Reference conditions

Temperature	20 °C
Relative humidity	50%

Specifications

Input V range	0 - 30 V
Nominal Scale Factors: AMX 4 TP 3-5 Optima TP 3-5 Jedi TP 3-5 OEC Elite Hi mA TP40-49 Hologic Fluoroscan	 20 mA/V 100 mA/V 200 mA/V 20 mA/V 20 µA/V
Uncertainty with Piranha and Cobia	 1% or (Nominal Scale Factor) x 0.001 V
Operating temperature and relative humidity:	15 - 30 °C at <80 % relative humidity
Storage temperature	-10 °C to +50 °C
Weight	125 g
Cable Length	4 m
Connectors	BNC male to Hirose

Other

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