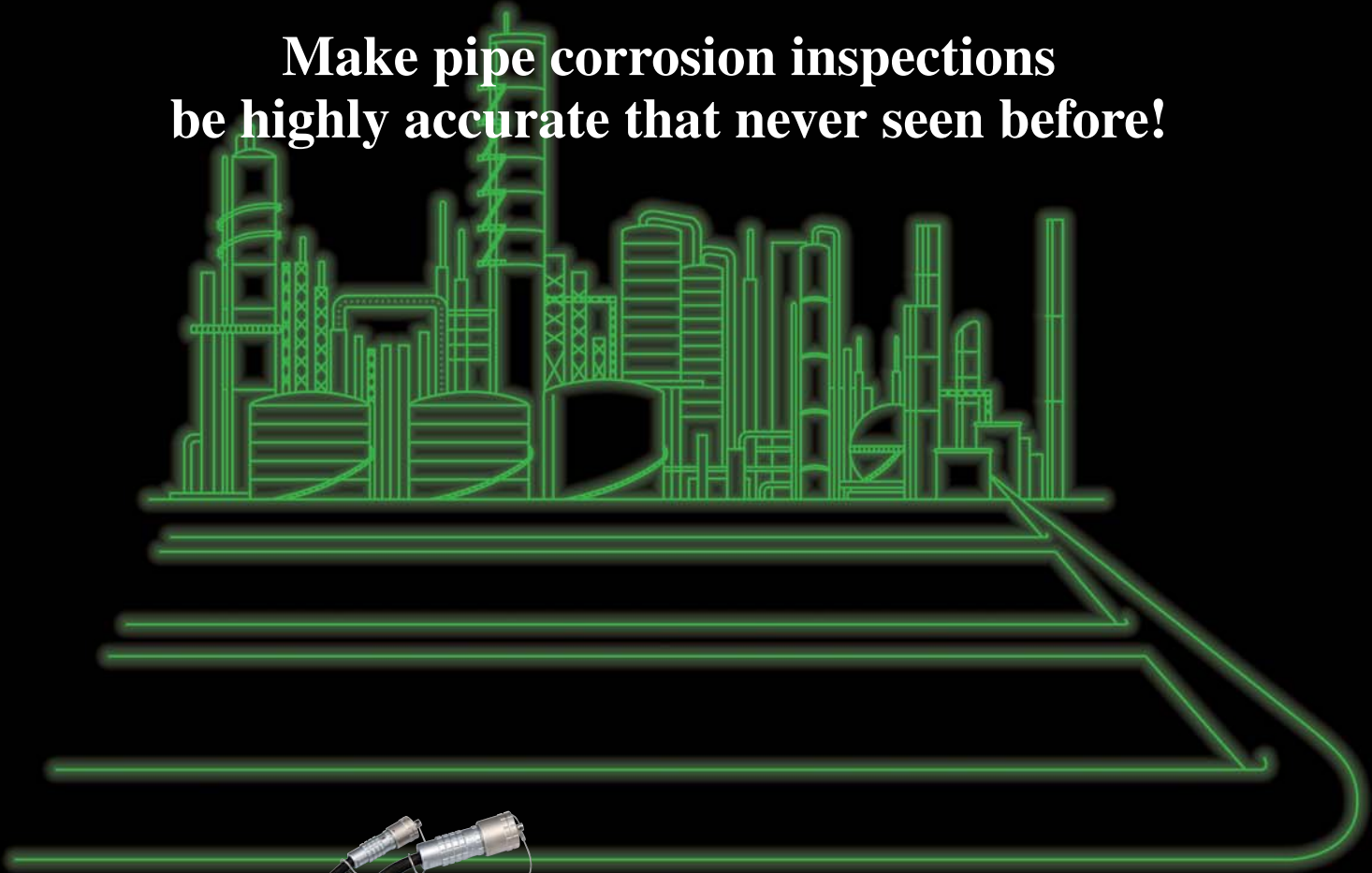


# **RADIATION LINE SENSOR FOR PIPE CORROSION INSPECTION**

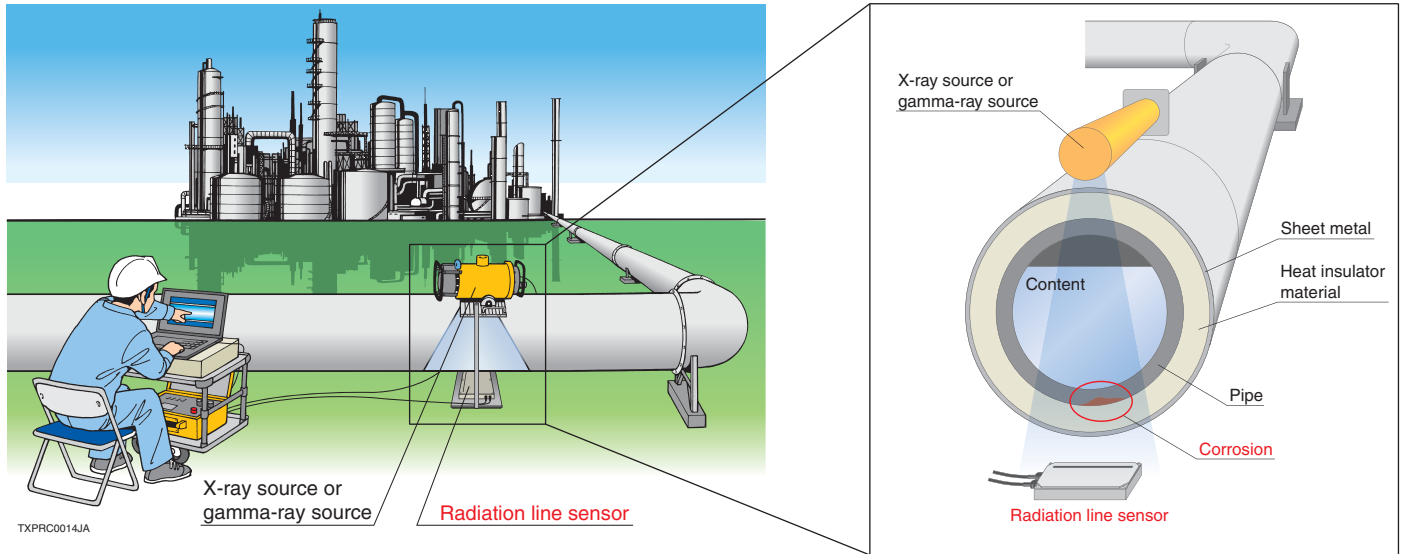
**(ENERGY DISCRIMINATION TYPE)**

## **C13247**

**Make pipe corrosion inspections  
be highly accurate that never seen before!**



The C13247 is an radiation line sensor designed for an efficient, non-invasive detection of pipe corrosion in industrial plants such as oil, gas and petrochemical refineries. The C13247 ensures high accuracy that never seen up till now and reliable inspections of pipe corrosion.

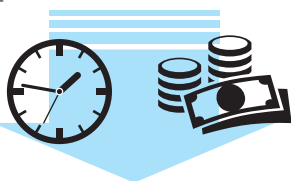


## FEATURES

No need to remove the heat insulator materials



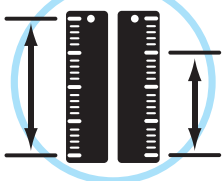
Reduces a lot of time and cost by making automated inspections



No need to stop ongoing pipe operation

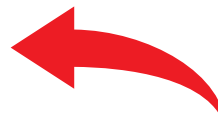
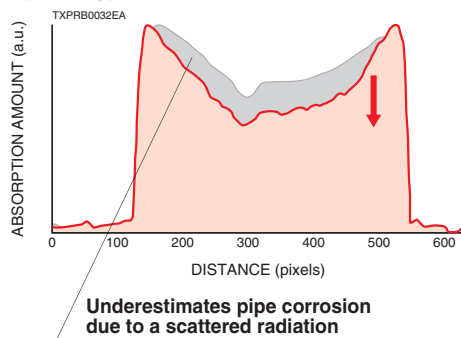


Allows quantitative measurement of pipe wall thickness

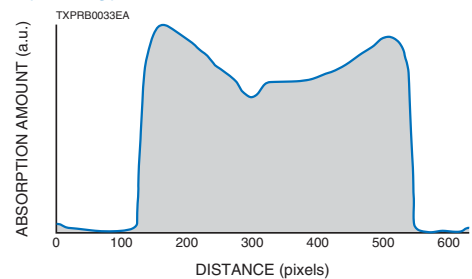


Eliminates scattered radiation

Scattered radiation eliminated by energy discrimination



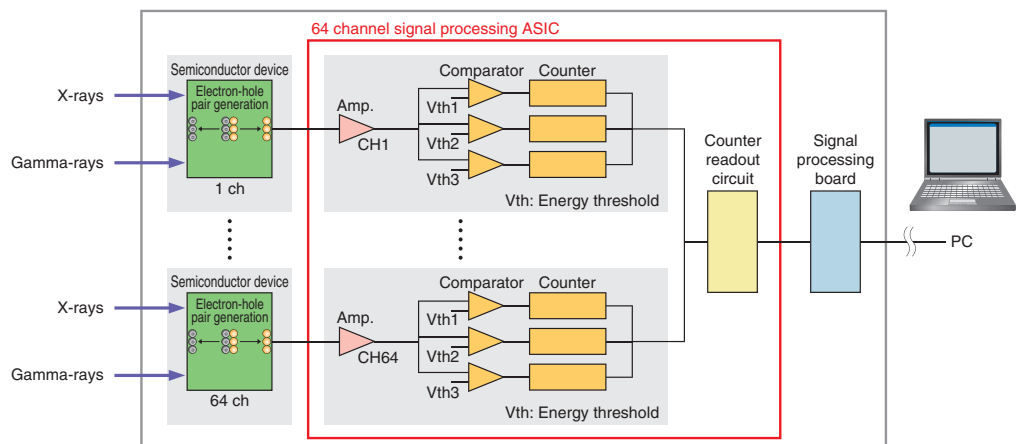
Scattered radiation not eliminated by energy discrimination



Removal of scattered radiation allows accurate inspection of pipe corrosion.

## RADIATION LINE SENSOR BLOCK DIAGRAM

Signal pulses from each semiconductor element are energy-discriminated by 3 comparators and then are output as the each comparator's photon count.

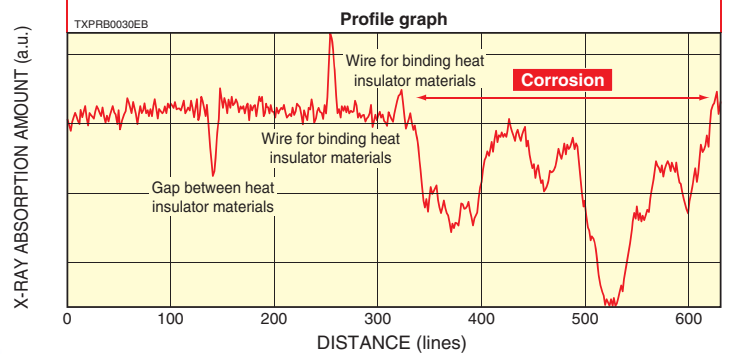
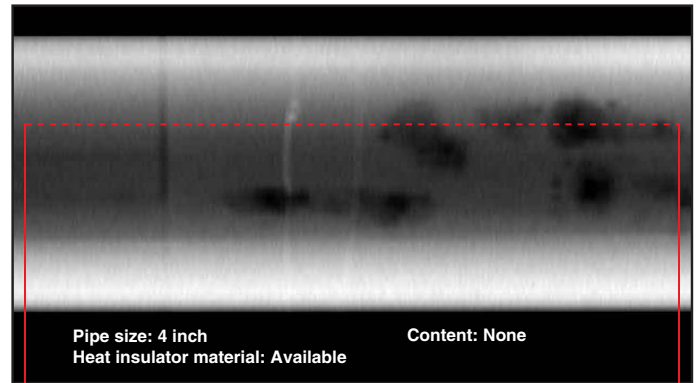
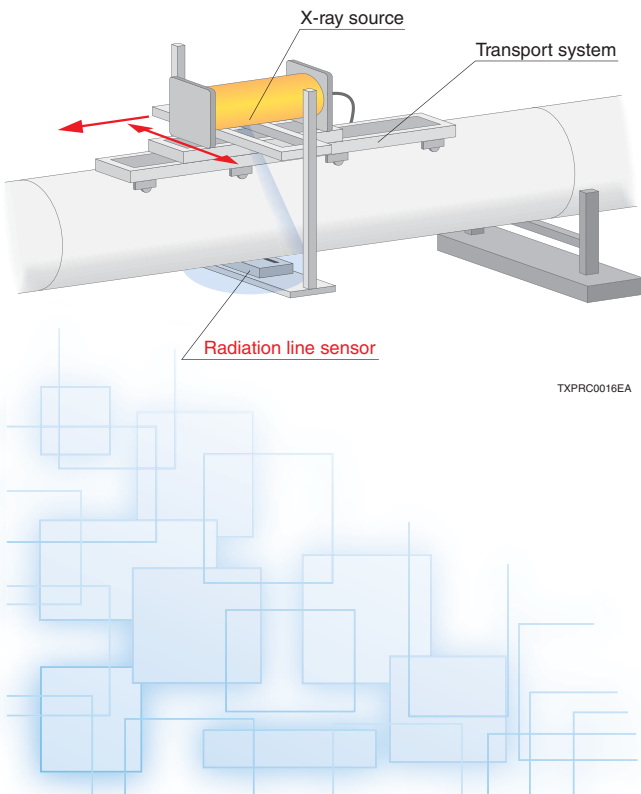


In conventional visual and ultrasonic inspections, the heat insulator materials must be removed from around the pipes. This also requires the time and the cost of installing scaffolds to remove and rewrap the heat insulator materials. Other techniques that utilize conventional radiation inspection or neutron moisture measurement inspection have the problem of being easily affected by scattered radiation which makes accurate measurement difficult. The C13247 radiation line sensor solves all of these problems to successfully capture sharp, clear inspection images.

## IMAGING EXAMPLES

### ■Pipe corrosion inspection with X-rays

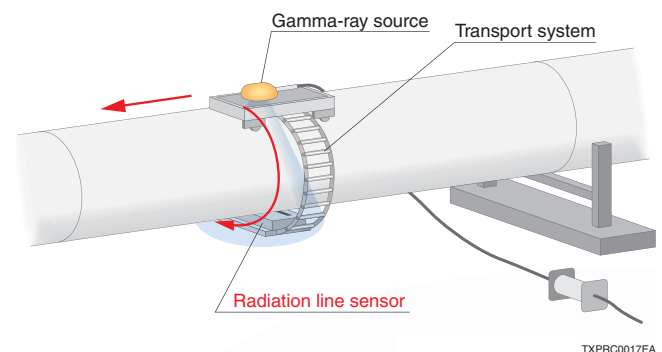
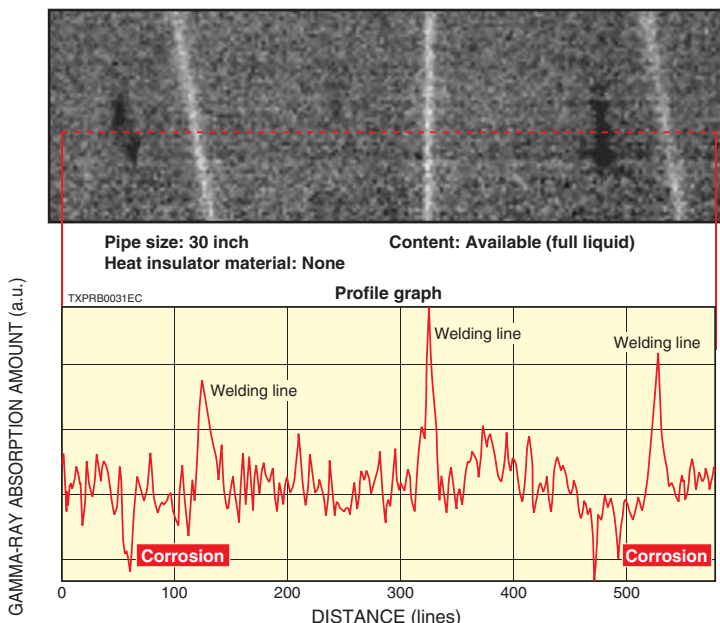
#### ●Pipe corrosion inspection system



Data courtesy of JGC Plant Innovation Co., Ltd.

### ■Pipe corrosion inspection with gamma-rays

#### ●Pipe corrosion inspection system



\* Please consult with us for inspection of large diameter pipes of 20 inch or more.

Data courtesy of Japan Non-Destructive Inspection Co., Ltd.

## SPECIFICATIONS

Parameter	Description / Value	
Detection method	Direct radiation detection by semiconductor in photon counting mode	
Number of detector pixels	64	
Detector pixel pitch	3.3 mm	
Detection width	211 mm	
Energy measurement range <sup>(A)</sup>	50 keV to 500 keV	
Number of energy thresholds	3 (Settable at any point within energy measurement range)	
Maximum count rate per channel <sup>(A)</sup>	$0.5 \times 10^6 \text{ s}^{-1}$	
Integration time per line	50 ms to 4095 ms	
Counter	16 bit	
Interface	Ethernet (LAN)	
Output <sup>(B)</sup>	Count (16 bit)	
Data output format	CSV, Excel <sup>®</sup>	
External start trigger	TTL	
Support OS	Windows <sup>®</sup> 7 (64-bit version)	
Input voltage <sup>(C)</sup>	15 V DC (Supplied AC adapter: 100 to 240 V, 50 Hz / 60 Hz)	
Operating temperature range	0 °C to +40 °C	
Storage temperature range	-10 °C to +50 °C	
Operating humidity range	30 % to 80 % (no condensation)	
Storage humidity range	30 % to 80 % (no condensation)	
Dimensions and weight	Sensor unit	250 mm × 155 mm × 30 mm / 4.5 kg
	Power supply trigger box	220 mm × 120 mm × 80 mm / 2.5 kg
	Switch box	220 mm × 120 mm × 80 mm / 1.8 kg

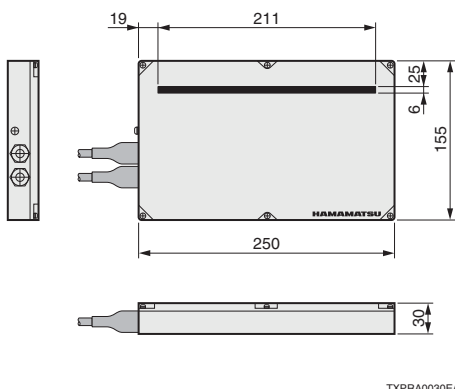
**NOTE:** <sup>(A)</sup>Depends on measurement photon energy and conditions.

<sup>(B)</sup>Number of radiation photons discriminated by the 3 comparators (energy threshold) for each semiconductor element.

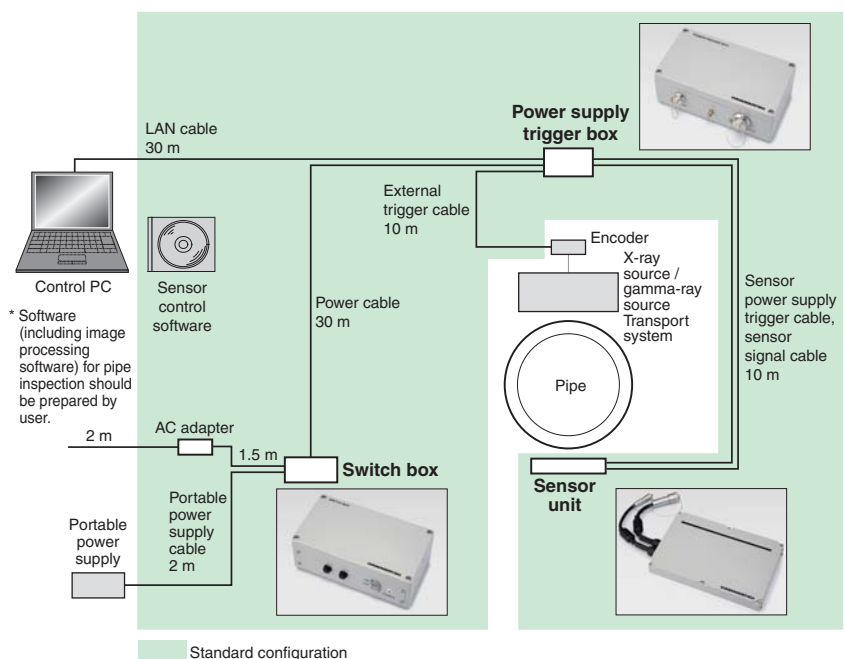
<sup>(C)</sup>Can use a portable 12 V DC battery.

## DIMENSIONAL OUTLINES (Unit: mm)

### ● Sensor unit



## CONNECTION DIAGRAM



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