

ET Enterprises





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- Company based in the UK close to London Heathrow Airport
- Specialise in the design and manufacture of photomultipliers and electronics
- 50 year history in photomultipliers and electronics for industrial, scientific, and medical applications



Company structure





Photomultiplier Businesses





ET Enterprises, UK

- •Pmts for specialist applications
- •19 mm to 280 mm diameter
- •110 to 900 nm sensitivity options
- •Low dark noise for photon counting Good SER p/v

•QE to 35%

- •Ultra-low background glass options
- •-200 to + 175 deg. C capability
- •Rugged pmts for space and oil well logging





ADIT, USA

•Pmts for radiation monitoring and homeland security

•Pmts for:

- plastic scintillators
- Inorganic scintillators
- Photon counting
- •13 mm to 135 mm diameter



General photomultiplier products



Flat windowed pmts for industrial scintillation and photon counting applications

Hemispherical pmts mainly for HEP applications including cryogenic experiments

Available with quantum efficiencies up to 35% peak

Low power consumption high performance power supplies and electronics (7 mW)









Recent developments – 38 mm pmts - CTA





Gradual design evolution part funded by CTA

Requires high QE, good uniformity, fast timing, and low afterpulse

- D569 Original 8 stage pmt to CTA spec.
- D573 7 stage pmt to meet revised CTA spec.

D569 and 573FL – designs for CTA



Performance in simulation



Integrated Electron optics and CAD design software

D569/3SA results





D569/3SA timing





7 stage D573KFL is slightly faster

APPEC 15

KM3NeT pmt Development







- Part funded by KM3NeT
- Very short, fast timing, large area, high gain, low afterpulse, and low cost pmt.
- Evolution of pmt design;

D783 – special window, D793 – blown window, D792 - larger area.

• The special blown bulbs are made in our UK glass facility where we make our special ultra-low background glass.

D792KFL – performance





11" Hemispherical pmt – type D784KFL





- Pressure resistant, good timing, good energy resolution, low afterpulse, can be made in our ultra-low background glass. (2.5 Bq/pmt)
- Designed for long-term deployment to 7 bar





11" pmt – Performance summary





Initial performance measurementsPeak QE28%1E7 gain1350VSER p/v2.5spe tts (FWHM)3.5 nsdark rate8kcpsDark rate / area0.1 cps.mm⁻²)



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- UK based manufacturer of photomultipliers and electronics
- Actively working to develop photomultipliers for HEP and industrial applications
- We are interested in collaborating with HEP groups to provide high performance detectors and electronics





Thank you