HAMAMATSU

PHOTON IS OUR BUSINESS

HIGH-SPEED RESPONSE PMT MODULES

FOR UNDERWATER OPTICAL COMMUNICATIONS

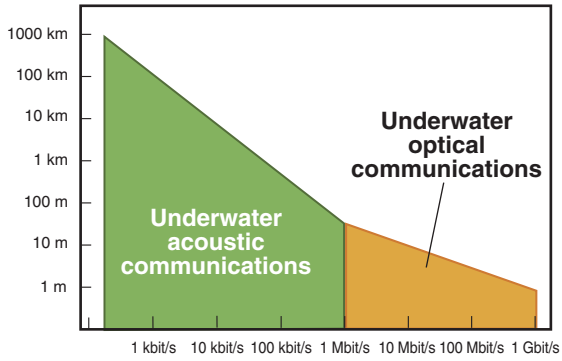
These high-speed response PMT (photomultiplier tube) modules are specifically designed for underwater optical communications. Besides high-speed response, these modules feature high gain and have a large effective diameter for better light collection making them ideal for high-speed underwater optical communications.

▲Right: H14447, Center: H14990-100-02, Left: H14600-100

FEATURES OFFERED BY UNDERWATER OPTICAL COMMUNICATIONS USING PMT

- **High-speed communication**
- **Easy-to-align receiver-transmitter optical axes due to large effective area**
- **High gain helps extend communication distance**

UNDERWATER COMMUNICATION DISTANCE AND TRANSMISSION RATE



Made by Hamamatsu Photonics based on research material

Underwater optical communications

1-Gbps communication available

Possible to 1Gbps communication which contribution video streaming and high-resolution image/movie transfer

Underwater acoustic communications

Communication speed is limited by narrower band width in acoustic

Specifications

Parameter	H14447	H14990-100-02	H14600-100	Unit
Output type	Cable output	Cable output	Lead pin output	—
Effective area	ϕ25	ϕ8	ϕ8	mm dia.
Number of dynodes	4	6	8	—
Control voltage	2.0	0.8	0.9	V
Gain	8.4×10^3	2.5×10^4	1.0×10^6	—
Rise time	350	370	600	ps
FWHM	440	620	1950	ps
Fall time	250	420	1700	ps
Frequency band	1.0	0.8	0.2	GHz
Maximum output signal current	0.1	0.1	0.1	mA

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Figure 1: Spectral response characteristics

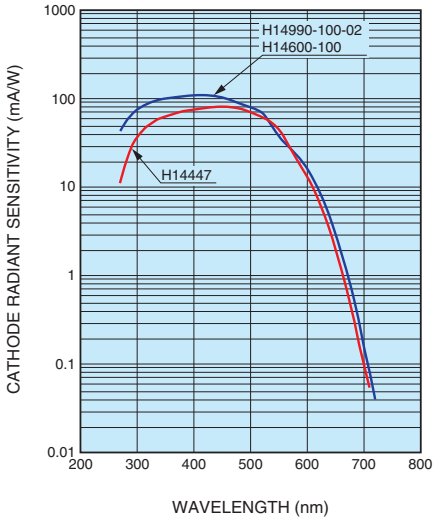


Figure 2: Gain (Typ.)

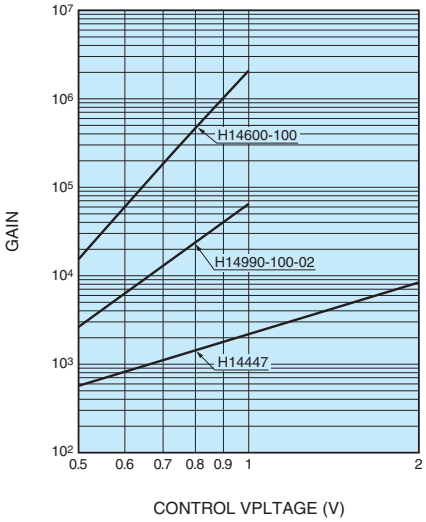


Figure 3: Eye pattern

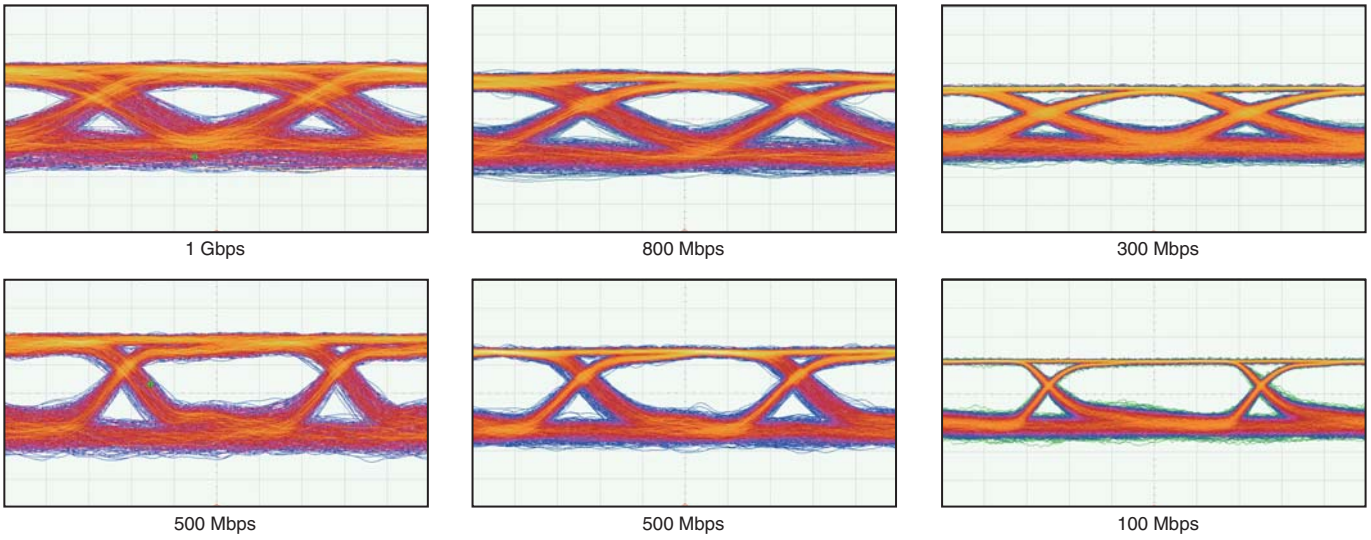
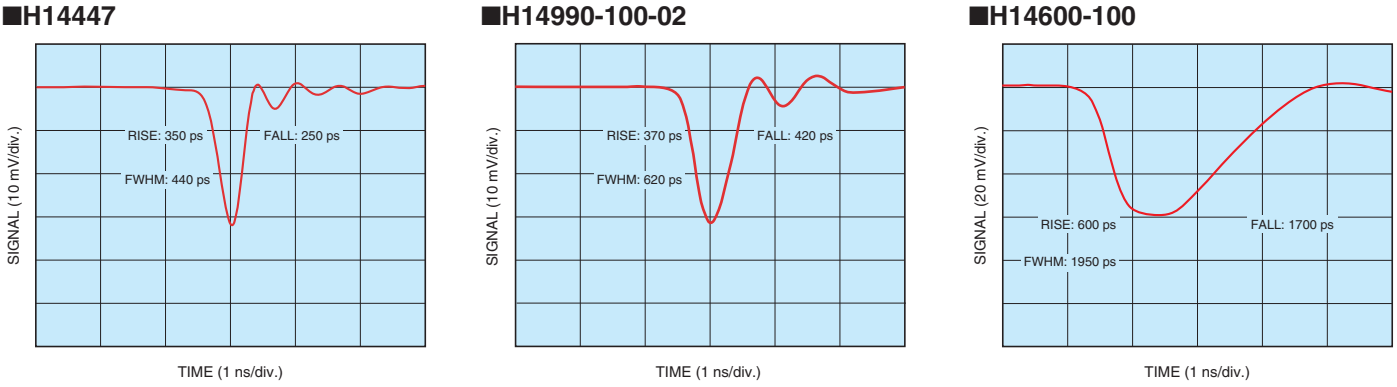


Figure 4: Time response characteristics



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