

Fiber & Coax Distribution Amplifier DA-36

Providing a long distance distribution of a reference frequency



Figure 1: DA-36 Front View

Fiber Distribution

The Distribution Amplifier DA-36 is the universal solution to the problem of distributing a reference frequency from the central frequency standard to several receivers.

DA-36 is as standard designed for distributing 10 MHz standard frequency, but can be configured to drive any standard reference sine wave signal between 200 kHz to 16 MHz over any distance below 2 kilometers, from one room to another, from one floor to another or from one building to another.

DA-36 uses an optical fiber for the transmission which gives a number of inherent advantages over conventional coaxial alternatives:

- Low loss - enabling very long path lengths.
- Minimal degradation of carrier-to-noise.
- Lightweight, highly flexible, small diameter cable.
- Frequency response is independent of path length.
- Immunity to electrical interference - the signal is not corrupted by radiated interference.
- Non-conductive - provides electrical isolation.
- No ground loops.

The DA-36 is designed to work with any Pendulum Frequency Standard (6688, 6689, GPS-88, GPS-89) or Fluke Frequency Standard (908, 909, 910, 910R), but will also fit almost all other brands.



Figure 2: DA-36 Rear View

Compact and Flexible

The compact unit is very easy to operate. There are no front panel controls, but status LEDs that give the user immediate feedback about the status of the distribution link. The DA-36 can be bench or wall mounted.

The system is very flexible. 1 piece of DA-36 acts as a local distribution amplifier with 4 coax outputs, see figure 3.

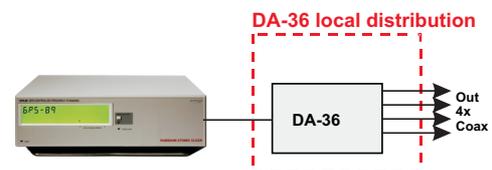


Figure 3: Local distribution

The typical standard configuration for long distance distribution involves 2 pieces of DA-36, see figure 4.

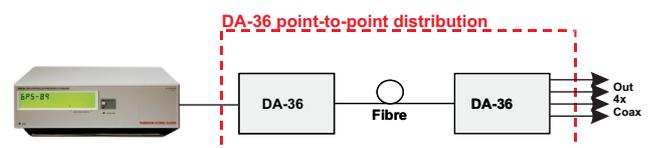


Figure 4: Point-to-point distribution

And when you need a multi-point distribution, you can cascade more DA-36:s. See figure 5.

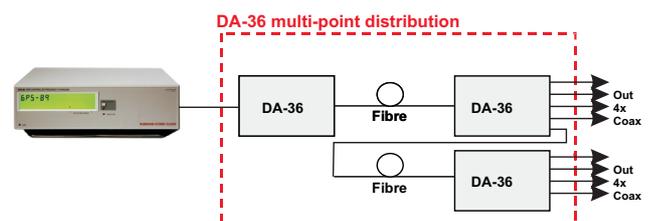


Figure 5: Multi-point distribution

Designed for safety and redundancy

The DA-36 has two reference inputs, one electrical and one optical. In a typical situation, the central reference frequency (from e.g. a Cesium, GPS or Rubidium clock) has been distributed by fiber to the receivers optical input. At the receivers electrical input you could connect a secondary back-up standard e.g. an oven controlled crystal oscillator (OCXO). As long as there is a valid input signal, the optical reference has priority and will be distributed. If it should fail for some reason, the back-up clock at the electrical input will automatically take over and assure that a clock signal is distributed to the outputs

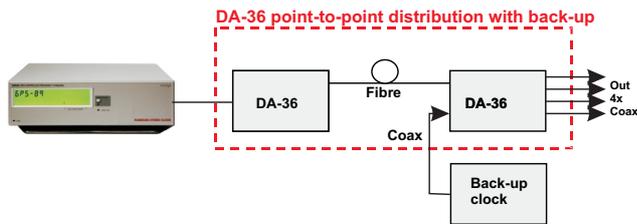


Figure 6: Point-to-point distribution with back-up clock

Technical Specifications

Inputs

<i>1x electrical:</i>	BNC coax connector
<i>1x optical</i>	ST connector
<i>Priority</i>	Optical input signal has priority over electrical input signal

Input signal range

<i>Bandwidth:</i>	200 kHz to 16 MHz sine
<i>Impedance:</i>	50 ohm nominal
<i>Amplitude (coax input):</i>	200 mVrms to 2 Vrms (sine)

Outputs

<i>4x Electrical:</i>	BNC coax connector
<i>1x optical</i>	ST connector
<i>Period-to-period Jitter:</i>	<(50 ps + optical jitter) Optical jitter is due to optical attenuation and depends on quality and length of fiber used and = 0ps for 1m and is typically <100 ps for 1km fiber of good quality
<i>Amplitude (coax output):</i>	1 Vrms nominal

Fiber characteristics

<i>Fiber type:</i>	Multimode fiber
<i>Connector type:</i>	ST
<i>Max length:</i>	2 km

User Interface

<i>Coax Status LED:</i>	Green: A valid electrical input signal is present on the input. Red: Input signal is lost or too weak
<i>Receiver Status LED:</i>	Green: A valid optical signal is present on the input Red: Received light level below threshold

Power Supply

<i>Safety:</i>	EN60950, UL 1950, CE
<i>Line voltage:</i>	90-264V, 47-63 Hz
<i>Power Consumption:</i>	<35W

Environmental Conditions

<i>EMC:</i>	EN55022, CE
<i>Operating Temperature:</i>	0°C to +50°C
<i>Storage Temperature:</i>	-40°C to +70°C

Dimensions and weight

<i>WxDxH</i>	125x170x30 mm
<i>Weight</i>	650g (1.1 kg incl power adapter)
<i>Shipping weight:</i>	< 2kg

Ordering information

<i>DA-36</i>	Fiber & Coax Distribution Amplifier
<i>DA-36/99</i>	Spare Power supply

Included Accessories

- 1x Transceiver/Distribution box
- 1x Power supply
- 1x Wall mount kit
- 1x Operators Manual
- Fiber cable is not included

Specifications subject to change without notice.

4031 600 36101-rev. 03 Feb 2004

Pendulum Instruments AB

www.pendulum.se

Experts in time & frequency calibration, measurement and analysis