

Technical Information  
Operating Instructions

**DOAL**

DCF77 Optical Antenna Link

## **Impressum**

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February 14, 2011

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## Features of DOAL

DOAL is a **DCF77 Optical Antenna Link** set for connecting a Meinberg DCF77 antenna to a Meinberg DCF receiver via an optical fiber. The module DOAL/R is to connect to the receivers antenna input via a patch cable and can be assembled somewhere around. The module DOAL/A is to mount indoor, connected to the Meinberg DCF antenna (AI01, AW02 or AK03) via a coaxial cable. Both modules are linked to each other via a GI50/125µm or GI62,5/125µm multimode gradient fiber. This kind of connection provides several advantages:

- large antenna cable distances (up to 2000 mtrs.)
- no destructive overvoltage via the antenna cable
- no unintentional monitoring via optical fiber

The receiver-side module DOAL/R is supplied with power via the antenna input connector of the DCF radio clock, therefore no external power supply is necessary. The module DOAL/A needs an external supply for operating and feeding the connected DCF77 antenna. The DOAL system is suitable for all Meinberg DCF77 radio clocks, even upgrading existing installations is possible, also for the correlation receivers PZF5xx.

## Installation

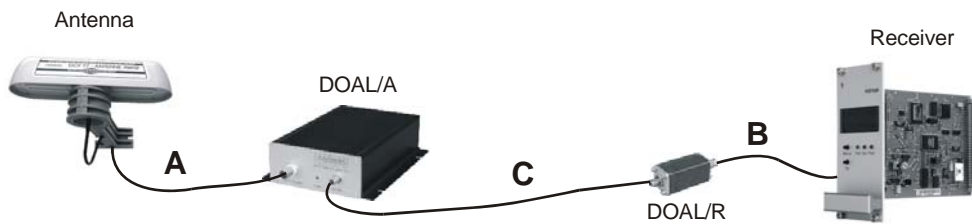


Fig. 1: Installation Scheme

The maximum cable length of the fiber optical connection (C) is up to 2000 mtrs. However, the maximum distance depends on the field strength of the received DCF signal. If the signal is weak, the maximum possible cable length might be shorter. If a maximum cable length is required, the optical link should be continuously, with no additional and attenuating FO connectors, and with the most short coax cable connection to the antenna (A) and to the receiver (B).

On the other hand, if the antenna input level is very high, e.g. due to a preconnected amplifier (AV4) or because of quite nearness to the DCF77 transmitter (Frankfurt a. M., Germany), the Optical Antenna Link could be falling into a saturation that prevents the receiver from synchronisation. To avoid such problems, the DOAL/A has a jumper on board that lowers the incoming signal level by approx. 20dB before converting it into an optical signal. To set this jumper the housing has to be opened by removing the aluminium front panel.

In order to compensate the group delay caused by the DOAL system together with PZF correlation receiver, 80km should be added in the "Distance to Transmitter" menu (refer to the receivers manual).

## Technical Specifications

### DOAL/A

#### ANTENNA-

INPUT: for active DCF77 antenna (77,5 kHz) via coaxial cable

#### FO LINK:

ST connector for GI 50/125 $\mu$ m or GI 62,5/125 $\mu$ m gradient fibre  
Wave length: 850nm (transmit)  
Launchable optical output power: typ. 15 $\mu$ W (into GI 62,5/125 $\mu$ m)

#### STATUS LED:

Power OK

#### CONNECTORS:

ST connector (FO Link)  
female BNC connector (Antenna)  
power supply via 5pin. DFK connector

#### POWER

REQUIREMENTS: 100 - 240VAC / 50/60Hz  
optional: 18 - 72VDC  
power consumption: 5W max.

#### FUSE:

500mA SB / 250V

#### AMBIENT

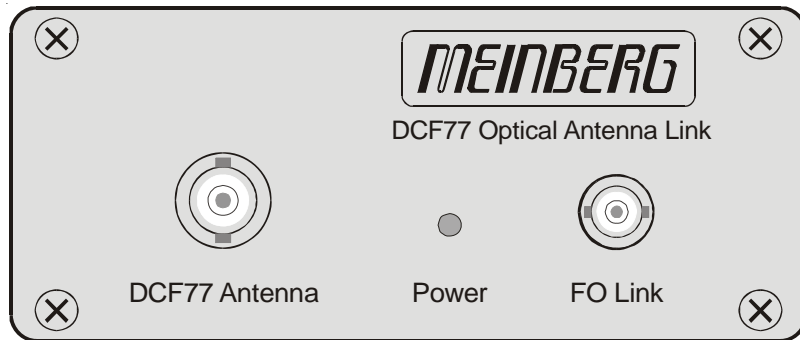
TEMPERATURE: -25 ... 65° C

#### HUMIDITY:

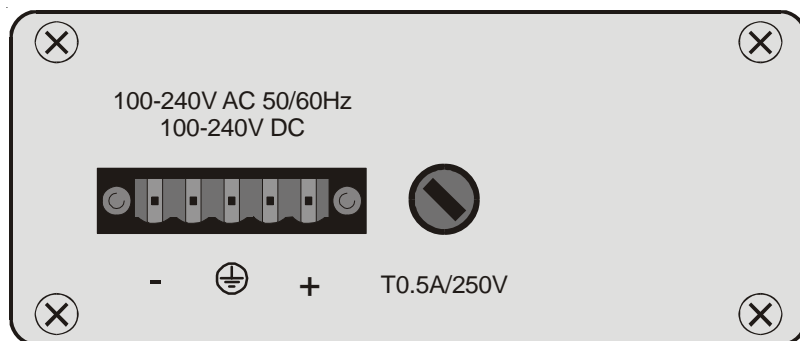
85% max.

HOUSING: black eloxadized aluminium housing, with aluminium front and rear panel, IP30 protected

PHYSICAL DIMENSIONS: 44mm x 105mm x 165mm (height x width x depth)



Front View DOAL/A



Rear View DOAL/A

**CLASS 1 LED PRODUCT**

## DOAL/R

FO LINK: ST connector for GI 50/125 $\mu$ m or GI 62,5/125 $\mu$ m gradient fibre  
Wave length: 850nm (receive)  
Optical input level: min. 3 $\mu$ W

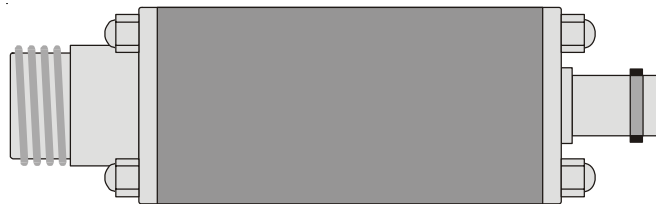
CONNECTORS: ST connector (FO Link)  
female BNC connector (Receiver)

AMBIENT  
TEMPERATURE: -25 ... 65° C

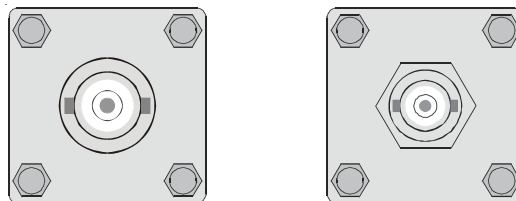
HUMIDITY: 85% max.

HOUSING: Aluminium HF housing, IP30 protected

PHYSICAL  
DIMENSIONS: 25mm x 25mm x 95mm (height x width x depth)



Side View DOAL/R



Front/Rear View DOAL/R



## CE Label



This device conforms to the directive 2004/108/EG on the approximation of the laws of the Member States of the European Community relating to electromagnetic compatibility.

### **Attention:**

The optical transmitter and receiver of the DOAL are very sensitive components! Do not use other than the specified cables/connectors. Do not clean the components with unsuitable methods or instruments but use the enclosed dust covers while no FO cable is connected, e.g. during transport.  
Disregarding this notes may cause permanent damage of the device!

