DIGI — Manual

Kanardia d.o.o.

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A lot of useful and recent information can be also found on the Internet. See `http://www.kanardia.eu` for more details.

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Revision History

The following table shows the revision history of this document.

Rev.	Date	Description
1.0	January 2020	Initial manual release

Contents

1 Introduction

First of all, we would like to thank you for purchasing our device.

Digi is an electronic display, which usually displays engine information. In most cases it works in a pair with Daqu (EMS box) unit. However, Digi can also show other flight parameters. In fact, it can show most information found on the CAN bus and it is not strictly limited to EMS only.

This manual describes the technical description of the unit, installation and operation.

1.1 General Description

Digi is a plug-and-play electronic engine monitoring display. Device consists of electronics which captures the engine data from CAN bus and displays it on 4.3 inch sunlight-readable LCD display. The device itself is only 15 mm thick which allows simple installation even where space is limited.

Digi can be configured to display most engine or flight parametersthat are present on CAN bus. It can also display visual alarms when specific parameter value is out of predefined range.

1.2 Technical Specification

Table 1 shows some basic technical specification of Digi.

1.3 Engine Time

When requested, Digi can be equipped with internal memory device to count engine time. This is usually required when Digi is the only device, which connects to the Daqu EMS box.

Description	Value
Weight	140 g
Size	117 x 71 x 17 (50 with connectors) mm
Operational voltage	6 to 32 V
Power consumption	2 W
Current	169 mA at 12 V 85 mA at 24 V
Operating temperature	-30 $\sim$ +85 °C
Humidity	30 $\sim$ 90 %, non condensing
Panel hole	rectangular 108 x 70 mm (refer to installation section)
Display	Diagonal: 4.3 inch Resolution: 480 x 272 Brightness: 1000 cd/m^2
Communication	CAN bus, 29 bit header, 500 kbit, Kanardia protocol

Table 1: Basic technical specifications.

2 Principle of Operation

Digi can't be used as a standalone intstrument and relies on other devices to provide necessary information. This information is obtained from the CAN bus to which Digi and all other devices are connected to.

Engine information comes from `Daqu` or from `miniDaqu`. Daqu connects to various engine and aircraft sensors, reads the sensor values and transmits sensors readings to the CAN bus.

Flight information is obtained in a similar way. Devices like Horis, Nesis, Aetos, Emsis, Indu altimeter and airspeed indicator share their sensor readings on the CAN bus.

Digi receives all this information automatically when it is connected to the bus. Its display layout can be configured to monitor specific data and show it on the display. In the case of OEMs such display layout is prepared in the factory according to OEMs requests. Individual customers can prepare display layout themselves using the Customizer application.

So, a minimal set of devices typically consists of:

- `Digi`. `Daqu` or `miniDaqu` who provides engine data. `Blu` who is needed to configure Daqu and to copy layouts prepared by Customizer into Digi.

Each of above mentioned devices comes with its onw manual.

- `Daqu` or `miniDaqu` manual. This manual explains how to properly connect engine and aircrafts sensors and what values shall be used in channels.
- `Customizer` manual explains how to create a Digi layout.
- `Blu & Kanja` manual explains how to configure Daqu channels and perform fuel level calibration, how to perform software updates and monitor CAN bus and much more.
- When Digi is connected to `Emsis/Nesis/Aetos` a lot of Daqu related operations can be also done via their user interface. If you have any of these on the same bus, please refer to their manual as well.

3 Display Layout

3.1 Layouts for OEMs

The instrument can be delivered with different display layouts. Please contact Kanardia about layout options.

3.2 Custom Layouts

Special application called *Customizer* can be used to design the Digi layout. This app is available for download from our web site since February 2020. In addition to customizer, *Blu* CAN bus – bluetooth interface module and *Kanja* Android app are also required to transfer the layout into the Digi.

A layout is put on Digi in the following steps:

1. Use the Customizer app on your PC to create the layout.
2. Transfer the resulting layout file to your Android device.
3. Insert the Blu module into Digi and use the Kanja app to copy the layout file to Digi.

Please refer to the Customizer manual for details about how to create a layout and to the Kanja manual for details about how to work with Android device.

4 Installation & Maintenance

4.1 Mounting Dimensions

Digi requires a 108 x 70 mm rectangular hole in the instrument panel. The position of the hole must ensure that the instrument is always visible from the pilot's perspective.

The instrument is mounted using four M3 screws, washers and nuts. To prevent internal stresses, please make sure that the instrument panel is flat. It is recommended that the instrument panel is mounted using rubber shocks, which reduce the vibrations.

Figure 1 illustrates panel cutout and mounting holes for Digi instrument.

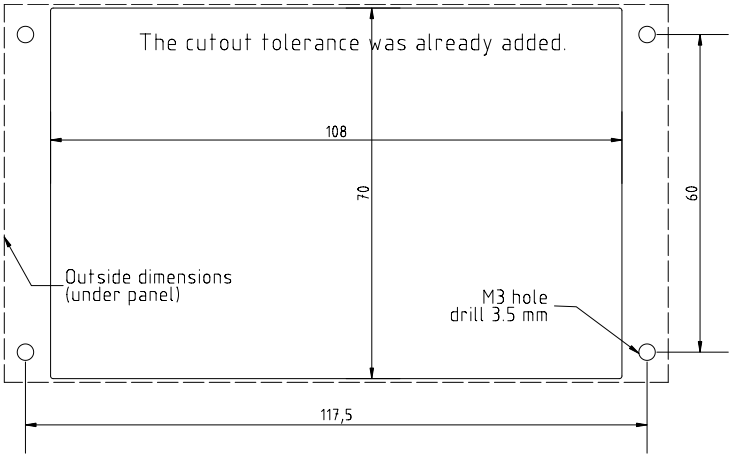

Figure 1: Instrument panel cutout and mounting holes. Note: Figure is not in scale.

4.2 Connections

Figure 2 illustrates all connections at the back side of the instrument. There are only two RJ45 CAN connectors and one power connector.

4.2.1 CAN Bus - CAN

Standard RJ45 computer cable is used to connect Digi to the Kanardia CAN bus. When connecting Digi to Daqu, special RJ45-Binder cable is needed due to different connector type on the Daqu side. (The cable comes with the Daqu unit.)

Figure 3 and Table 2 defines the pin out of the CAN bus.

4.2.2 Power - POWER

Connect supplied power cable at the back of the instrument. Power connector has a notch on one side, which protects against wrong

Figure 2: Back view of the Digi with connections.

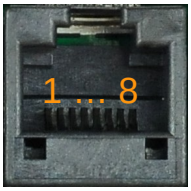

Figure 3: Illustration of the pin out of the CAN ports.

polarity.

Connect blue lead to negative (ground) terminal and red lead to positive (+12-24 V) terminal.

A 0.5 ampere slow fuse or similar shall be used on the positive lead.

4.3 Maintenance

No special maintenance is required.

Pin	Description
1	+12V out.
2	+12V out.
3	+12V out.
4	CAN low.
5	CAN high.
6	GND – ground.
7	GND – ground.
8	GND – ground.

Table 2: Description of pins for the CAN bus communication.

4.4 Repair

The Indu airspeed has no serviceable parts inside. In the case of malfunction, it must be sent to factory for a repair.

5 Limited Conditions

Although a great care was taken during the design, production, storage and handling, it may happen that the Product will be defective in some way. Please read the following sections about the warranty and the limited operation to get more information about the subject.

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5.2 TSO Information — Limited Operation

This product is not TSO approved as a flight instrument. Therefore, the manufacturer will not be held responsible for any damage caused by its use. The Kanardia is not responsible for any possible damage or destruction of any part on the airplane caused by default operation of instrument.