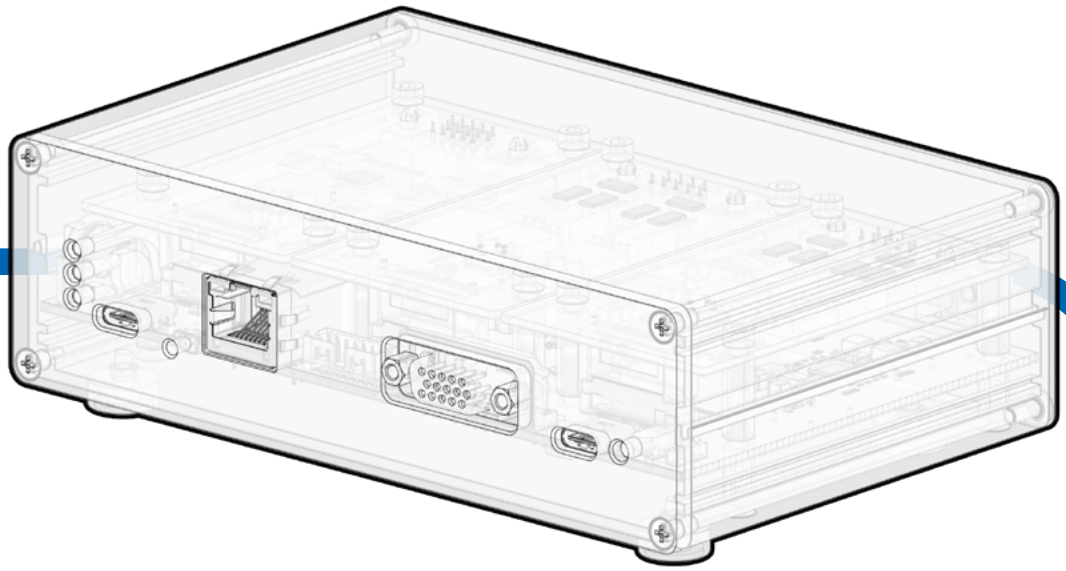
Datasheet



DE150000

Aviolinks®

ETH/USB

DEICO

www.deico.com.tr

Contents

1. Description

Aviolinks® ETH/USB is a versatile and high-performance unit designed to support a wide range of avionic protocols. With its modular architecture, the device can be configured to meet the specific application requirements.

1.1. Key Features

- The device supports up to three modules, each capable of handling one or more of the following avionic protocols:
  - MIL-STD-1553 (M1553-1): provides 1-channel, dual-redundant communication per module with a single or multi-function operation with selectable direct or transformer coupling interface
  - ARINC-429 (A429-1): enables data transmission with 2 RX & 4 TX channels per module, ideal for various avionics applications
  - ARINC-825 (A825-1): supports bidirectional communication with 2 channels per module, offering versatility in system integration
  - Avionic Discrete (DISC-1): provides precise control of avionic discrete signals with 8 channels per module
- IRIG B time decoder: decodes IRIG B time signals up to 4.5 V
- RS-485 interface: provides a high-speed at 20 Mb/s and a low-speed at 500 Kb/s serial communication interface
- Discrete I/O: offers 4 TTL level discrete input/output channels for digital control and monitoring
- Ethernet port: enables network connectivity for data transfer and communication
- USB 2.0 port: provides a USB interface for connecting peripheral devices
- Power input: powered via a USB Type-C connector, supporting 5 V - 15 W max. power input

IRIG B Time Decoder:

- Format: IRIG-B-122
- Carrier wave: 1 KHz amplitude modulated sine wave
- Input amplitude: 0.5 – 4.5 Vpp
- Modulation ratio: 3:1

2. Hardware Overview

2.1. Circuitry

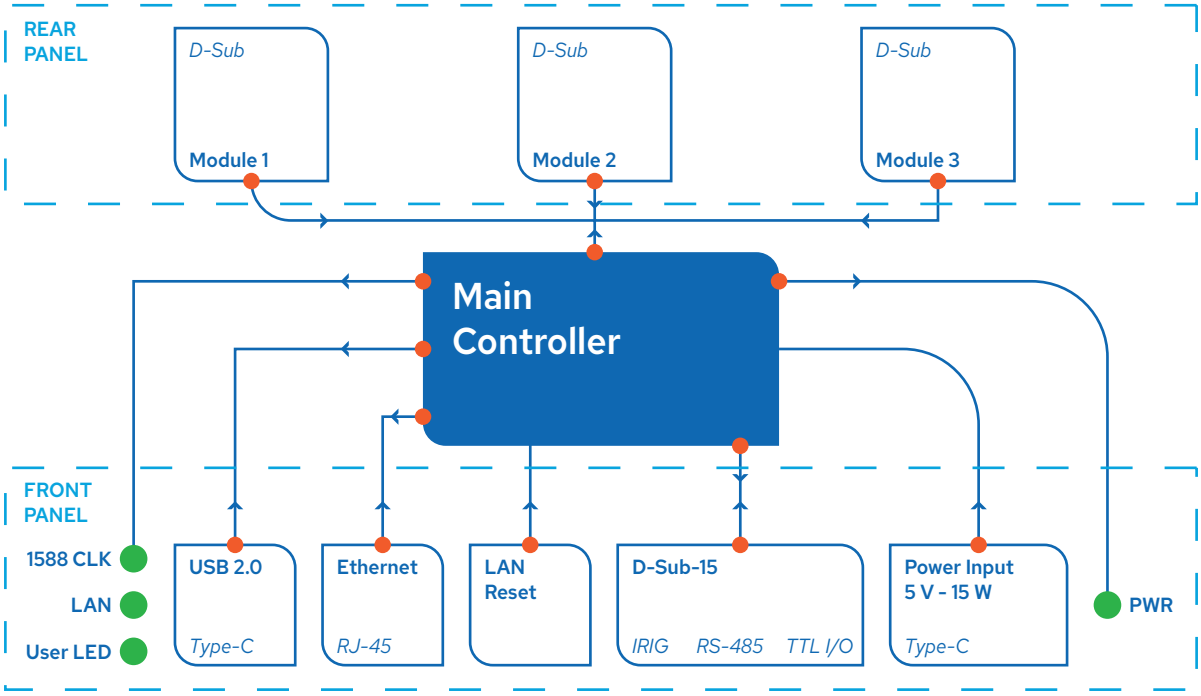


Figure 1: Block Diagram of DE150000 Aviolinks® ETH/USB

2.2. Hardware Specifications

Aviolinks® ETH/USB is designed as a converter that manages avionic communication protocols through ETH or USB interfaces. The managed avionic interfaces are based on a modular architecture, allowing for future expansion and better meeting user needs. Configuration and ordering information can be found in the configuration chapter.

2.2.1. Electrical Specifications

Table 1: Electrical Specifications

Specification	Min	Typical	Max
Input Voltage	-	5 V	-
Power Consumption	-	5 V DC, 1 A [1]	5V DC, 3 A
Ethernet	-	-	1000 Mb/s
USB 2.0	-	-	480 Mb/s
RS-485	500 Kb/s	-	20 Mb/s
TTL I/O VIH	-	-	5 V

1 Typical power consumption can vary depending on the modular configuration.

2.2.2. Physical Specifications

Table 2: Physical Specifications

Specification	Description	Notes
Dimensions	152 mm x 104 mm x 49 mm	Rubber feet and interface connectors are included.
Weight	500 g	With 3 modules
D-Sub-15 (Front Panel)	PN: K61X-E15S-NJ Kycon, Inc.	Standard DSUB-15 mating connector can be used.

2.2.3. Environmental Specifications

Table 3: Environmental Specifications

Specification	Condition	Values
Operating Humidity	Relative, non-condensing	10% - 90%
Storage Humidity	Relative, non-condensing	5% - 95%
Operating Temperature	Operational	0 °C - +40 °C
Storage Temperature	Non-operational	-40 °C - +71 °C

2.2.4. Front Side

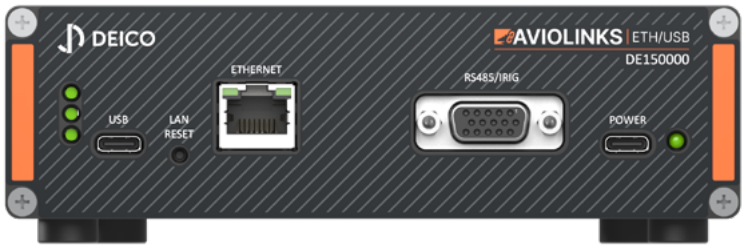


Figure 2: Front Side of DE150000 Aviolinks® ETH/USB

2.2.5. Rear Side

Figure 3: Rear Side of DE150000 Aviolinks® ETH/USB

3. Signal Connections

3.1. Power Connector (USB Type-C)

Table 4: Power Connector (USB Type-C) Pin Assignments

Pin	Description
A1	GND
A2	Not connected
A3	Not connected
A4	VBUS
A5	Not connected
A6	Not connected
A7	Not connected
A8	Not connected
A9	VBUS
A10	Not connected
A11	Not connected
A12	GND
B1	GND
B2	Not connected
B3	Not connected
B4	VBUS
B5	Not connected
B6	Not connected
B7	Not connected
B8	Not connected
B9	VBUS
B10	Not connected
B11	Not connected
B12	GND

3.2. USB Connector (Type-C)

Table 5: Ethernet Connector (RJ-45) Pin Assignments

Pin	Description
A1	GND
A2	Not connected
A3	Not connected
A4	VBUS
A5	Not connected
A6	USB DATA P
A7	USB DATA N
A8	Not connected
A9	VBUS
A10	Not connected
A11	Not connected
A12	GND
B1	GND
B2	Not connected
B3	Not connected
B4	VBUS
B5	Not connected
B6	USB DATA P
B7	USB DATA N
B8	Not connected
B9	VBUS
B10	Not connected
B11	Not connected
B12	GND

3.3. Ethernet Connector (RJ-45)

Table 6: Ethernet Connector (RJ-45) Pin Assignments

Pin	Description
1	TX1+
2	TX1-
3	TX2+
4	TX3+
5	TX3-
6	TX2-
7	TX4+
8	TX4-

3.4. External Interfaces Connector

Table 7: External Interfaces Connector Pin Assignments

Pin	Description
1	RS485_RX_P
2	RS485_RX_N
3	GND
4	RS485_TX_N
5	RS485_TX_P
6	GND
7	GND
8	IRIG_GND
9	IRIG_IN
10	GND
11	TTL_IO1
12	TTL_IO2
13	TTL_IO3
14	TTL_IO4
15	GND

3.5. MIL-STD-1553 Connector

Table 8: MIL-STD-1553 Connector Pin Assignments

Pin	Description
1	DIRABUS_N
2	DIRABUS_P
3	CHASSIS
4	DIRBBUS_P
5	DIRBBUS_N
6	TRFABUS_N
7	TRFABUS_P
8	TRFBBUS_P
9	TRFBBUS_N

3.6. ARINC-429 Connector

Table 9: ARINC-429 Connector Pin Assignments

Pin	Description
1	RX_ CH1_N
2	RX_ CH1_P
3	GND
4	RX_ CH2_N
5	RX_ CH2_P
6	RX_ CH3_N
7	RX_ CH3_P
8	GND
9	RX_ CH4_N
10	RX_ CH4_P
11	TX_ CH1_N
12	TX_ CH1_P
13	GND
14	TX_ CH2_N
15	TX_ CH2_P

3.7. Avionic Discrete I/O Connector

Table 10: Avionic Discrete I/O Connector Pin Assignments

Pin	Description
1	DISC I/O CH1
2	DISC I/O CH2
3	GND
4	DISC I/O CH3
5	DISC I/O CH4
6	DISC I/O CH5
7	DISC I/O CH6
8	DISC I/O CH7
9	DISC I/O CH8

3.8. ARINC-825 Connector

Table 11: ARINC-825 Connector Pin Assignments

Pin	Description
1	CAN2.0_CH1_P
2	CAN2.0_CH1_N
3	GND
4	CAN2.0_CH2_P
5	CAN2.0_CH2_N
6	CANFD_CH1_N
7	CANFD_CH1_P
8	CANFD_CH2_N
9	CANFD_CH2_P

3.9. LED Indicators

LED indicators are used to show internal information.

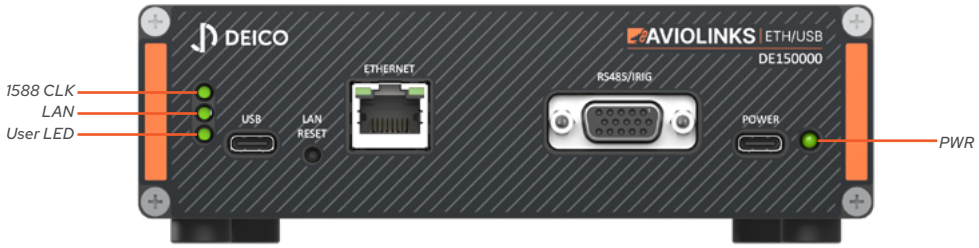


Figure 4: Front Side of the DE150000 Module Showing LEDs

3.10. Indicator LED Functions

Table 12: LED Functions

LED	Condition	Description
1588 CLK	-	To be defined
LAN	Solid Green	Normal operation
	Flashing Green	Device identify
	Solid Red	LAN fault
PWR	Off	No power
	Solid Red	Standby power
	Solid Green	Power is on
User LED	-	User defined

3.11. LAN Reset Button

LAN reset button is used to bring the Ethernet IP address to the default position. If the IP address information has been lost, LAN reset button can be pressed to give the default IP address to the device.

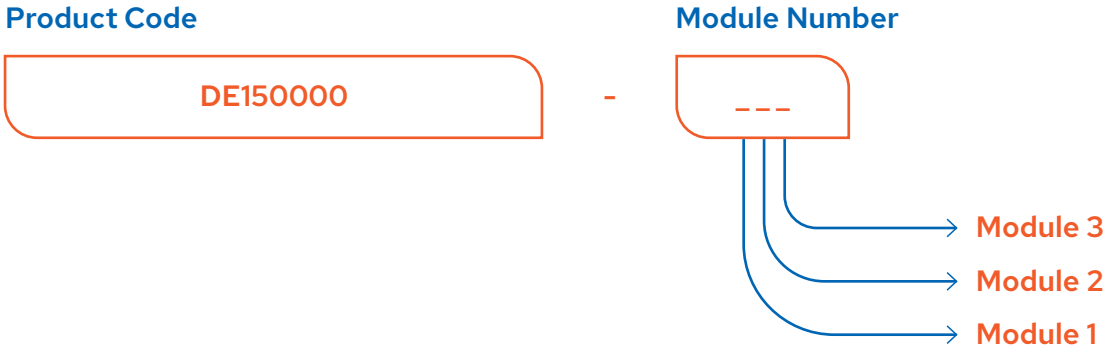
Note

The default IP address for DE150000-XXX is 192.168.0.100

4. Configuration

4.1. Ordering Information

An ideal device can be created with the modular system. Up to three modules may be selected from the library, and the table shall be used to customize the order. Custom modules can also be designed to meet specific requirements.



4.2. Part Number Informations

These codes shall be used to select the modules.

Table 13: Part Number Reference Table

Code	Variant	Description
0	NC	-
1	M1553-1	1 channel multifunction MIL-STD-1553
2	A429-1	2 TX / 4 RX channels ARINC-429
3	DISC-1	8 channels avionic discrete I/O
4	A825-1	2 channels ARINC-825

4.3. Part Number Examples

DE150000-100 — 1 module of 1 channel MIL-STD-1553

DE150000-222 — 3 modules of 2 TX / 4 RX Channels ARINC-429

DE150000-112 — 2 modules of 1 Channel MIL-STD-1553
+ 1 module of 2 TX / 4 RX Channels ARINC-429

4.4. Part Numbers

Table 14: Available Configurations

Part Numbers	Description
DE150000-100	Aviolinks® Standalone M1553-1/NC/NC
DE150000-110	Aviolinks® Standalone M1553-1/M1553-1/NC
DE150000-120	Aviolinks® Standalone M1553-1/A429-1/NC
DE150000-112	Aviolinks® Standalone M1553-1/M1553-1/A429-1
DE150000-122	Aviolinks® Standalone M1553-1/A429-1/A429-1
DE150000-123	Aviolinks® Standalone M1553-1/A429-1/DISC-1
DE150000-200	Aviolinks® Standalone A429-1/NC/NC
DE150000-220	Aviolinks® Standalone A429-1/A429-1/NC
DE150000-222	Aviolinks® Standalone A429-1/A429-1/A429-1
DE150000-300	Aviolinks® Standalone DISC-1/NC/NC
DE150000-330	Aviolinks® Standalone DISC-1/DISC-1/NC
DE150000-333	Aviolinks® Standalone DISC-1/DISC-1/DISC-1

5. Safety Guidelines

The DE150000 shall not be operated in any manner not specified in this document. Misuse of the product may result in a hazard. Safety protection features may be compromised if the product is damaged. In the event of damage, the product shall be returned for repair.

6. Compatibility Guidelines

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC). These requirements and limits provide reasonable protection against harmful interference when the product is operated in the intended operational electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in some installations, if the product is connected to a peripheral device or test object, or if the product is used in residential or commercial areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions specified in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by DEICO could void your authority to operate it under your local regulatory rules.

To ensure the specified EMC performance, the product shall be operated only with shielded cables and accessories.

To ensure the specified EMC performance, the length of any cable attached to the front connectors shall not exceed 3 m (10 ft.).