Eddyfi Technologies

Beyond current

Getting Started with

PANTHER 2

Getting Started

Rev A-01

Contents

Registre des versions

Version	Description	By	Date
A-01	**Original version**	**EBO**	**2024-07-29**

1.PACKAGE CONTENT

PANTHER

Power supplier

USB 3.0 cable
3m

MOLEX encoder to free
Wire cable (1 m)

Documents

2.INTENDED USE

The Panther is designed to perform ultrasonic non-destructive inspections of industrial and commercial materials.

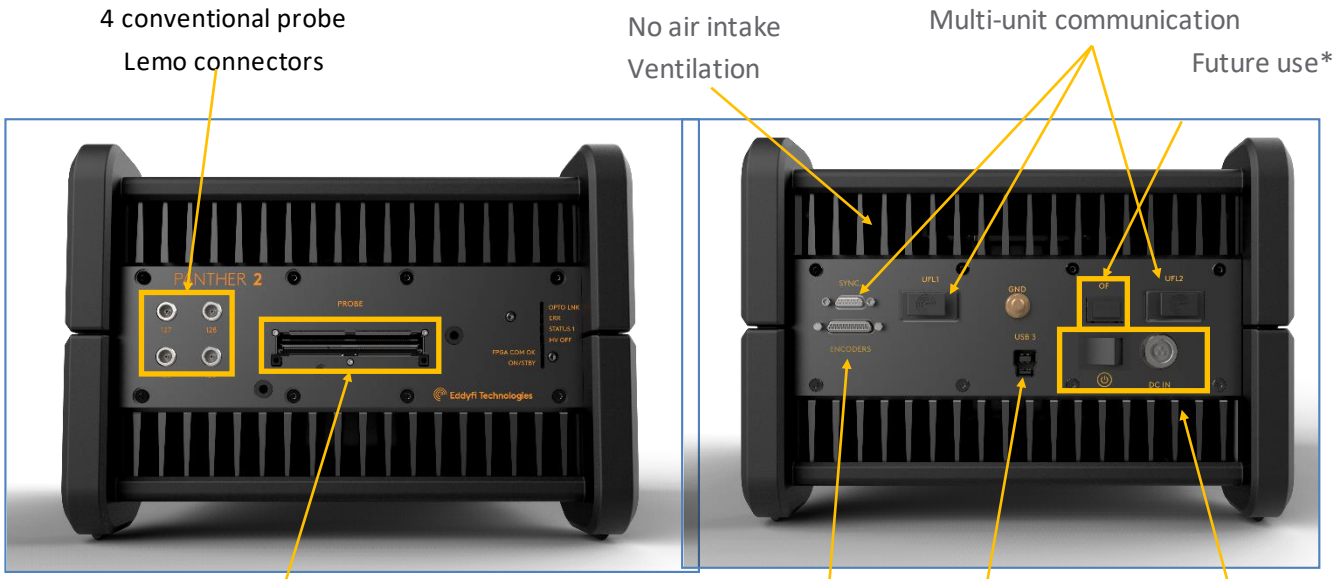
Do not use the Panther for any purpose other than its intended use.

Panther can manage all the conventional, phased array modes and Total Focusing Method (TFM).

3.CONNECTIONS

FRONT PANEL CONNECTORS

REAR PANEL CONNECTORS



* Optional

Connect the Panther to the external DC power supply that is connected to an appropriate AC

4.GLOBAL WARNINGS

⚠ Do not use the device for purposes other than those for which it was designed.

Do not inspect parts of the human body or animal body with PANTHER systems.

The use of non-compatible devices can cause device failure.

To avoid personal injury or property damage, do not disassemble, modify or attempt to repair the unit.

Carefully read the instructions in the user's manual before turning the unit on.

Obey all safety warnings on the unit and those contained in the User Manual.

Do not install substitute parts or do not make modifications not allowed on the device.

Repair instructions, if any, are for qualified technical staff. Do not attempt to service this product unless you are qualified to do so to avoid the risk of electric shock. If you have any problems or questions regarding this product, please contact EDDYFI TECHNOLOGIES or an authorized representative of EDDYFI TECHNOLOGIES.

Before turning on power, connect the ground of the device to the protective conductor of the power cord. The plug must be inserted only into an AC mains socket outlet with ground contact. You should never cancel function protection using an extension cord (power cable) without a protective conductor (grounding).

When the protective grounding seems damaged, you must power down the unit and prevent unintentional operation.

The device must only be connected to a power source of the type described in the annex below.

Prior to trash PANTHER system, make sure to comply with local laws.

In accordance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE), this symbol indicates that this product should not be disposed of with other household waste but should be collected separately. Please contact your local EDDYFI TECHNOLOGIES representative for instructions on how to take this product back, or to find out about collection facilities in your country.

The probes connected to the PANTHER must be equipped with reinforced insulation.

Avoid touching the inner conductor of I-PEX and LEMO connectors to reduce the risk of electric shock. The tension of the inner conductor of UT connectors can reach 160V and the voltage of the inner conductor PA connector can reach 160 V.

To completely disable the system, unplug the AC adaptor.

5. REGULATORY COMPLIANCE

FCC Compliance (USA)

This equipment was tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case you will be required to correct the interference at your own expense.

IC Compliance (Canada)

This device complies with Canadian ICES-001(A).

Cet appareil est conforme à la norme NMB-001(A) du Canada.

CE Marking (EU)

Hereby, Eddyfi Technologies declares that the PANTHER equipment complies to the essential requirements of the following directives:

- Electro Magnetic Compatibility (EMC, 2014/30/EU)
- Low Voltage (LVD, 2014/35/EU)
- Restriction of Hazardous Substance
  (RoHS, 2011/65/EU, 2015/863/EU and 2017/2102)

Please find the full EU Declaration of Conformity on the Eddyfi Technologies website (www.eddyfitechnologies.com).

UKCA Marking (UK)

Hereby, Eddyfi Technologies declares that the PANTHER equipment is in compliance to the essential requirements of Statutory Instruments:

- Electro Magnetic Compatibility (S.I. 2016 No. 1091)
- Electrical Equipment Safety (S.I. 2016 No. 1101)
- Restriction of Hazardous Substances
  (RoHS, S.I. 2012 No. 3032 and S.I. 2021 No. 422)

Please find the full UKCA Declaration of Conformity on the Eddyfi Technologies website (www.eddyfitechnologies.com).

WEEE Compliance (Waste)

This marking acts as a reminder that the product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling in accordance with the local regulations applicable to Waste Electrical and Electronic Equipment (WEEE).

6. SUGGESTED COMPUTER - LAPTOP

To benefit from the high throughput that the PANTHER can deliver, here are the 2 minimum suggested configurations:

LAPTOP Configuration – for USB use

Intel Core i9-11950H (8 Core, 24MB Cache, 2.60GHz to 5.00GHz, 45W, vPro)
Monitor 17.3" IPS FHD, 1920x1080, 60Hz.
32Go, 2x16Go, DDR4
SSD 512 Go, PCIe x4 NVMe Gen 3
SSD 1 To, PCIe x4 NVMe Gen 3
Battery, 95 Wh
NVIDIA GeForce RTX 4080 (ou RTX A5000) w/16 GB GDDR6
240W Power Adapter
Wireless Intel Wi-Fi 6E AX210 with Bluetooth 5.2
Keyboard & Touch PAD

Software

Windows 10 or 11 Professional, 64 bits

7. SUGGESTED COMPUTER - DESKTOP

To benefit from the high throughput that the PANTHER can deliver, here are the 2 minimum suggested configurations:

DESKTOP CONFIGURATION – for USB use

Intel® Core™ i9-10900X (19.25 MB cache, 10 cores, 20 threads, 3.70 GHz to 4.70 GHz Turbo, 165)
Monitor 23" FHD, 1920x1080, 60Hz
32Go, 2x16Go, DDR4
SSD 512 GB, PCIe NVMe
SSD 1 TB, PCIe NVMe
NVIDIA GeForce RTX 4080
Tower 950W Chassis, with USB3.0 and Ethernet 1 Gbit
Keyboard & Mouse

Software

Windows 10 or 11 Professional, 64 bits

COMPUTER SETTINGS

The computer can be used with a USB3 connection.

8. ACQUIRE SOFTWARE

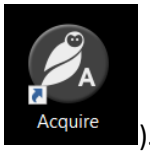
Acquire is the PANTHER operating software dedicated to conventional UT, TOFD, Phased-Array, TFM settings and acquisition.

LAUNCHING ACQUIRE

If a computer has been delivered by Eddyfi with your Panther system, ACQUIRE can be accessed from the Acquire Icon located on the windows desktop icon or by double clicking on the C:/Acquire/Go_Acquire_US.bat

INSTALLING ACQUIRE

If no computer has been delivered with your Panther system, please download Acquire from the support section (see https://www.eddyfi.com/en



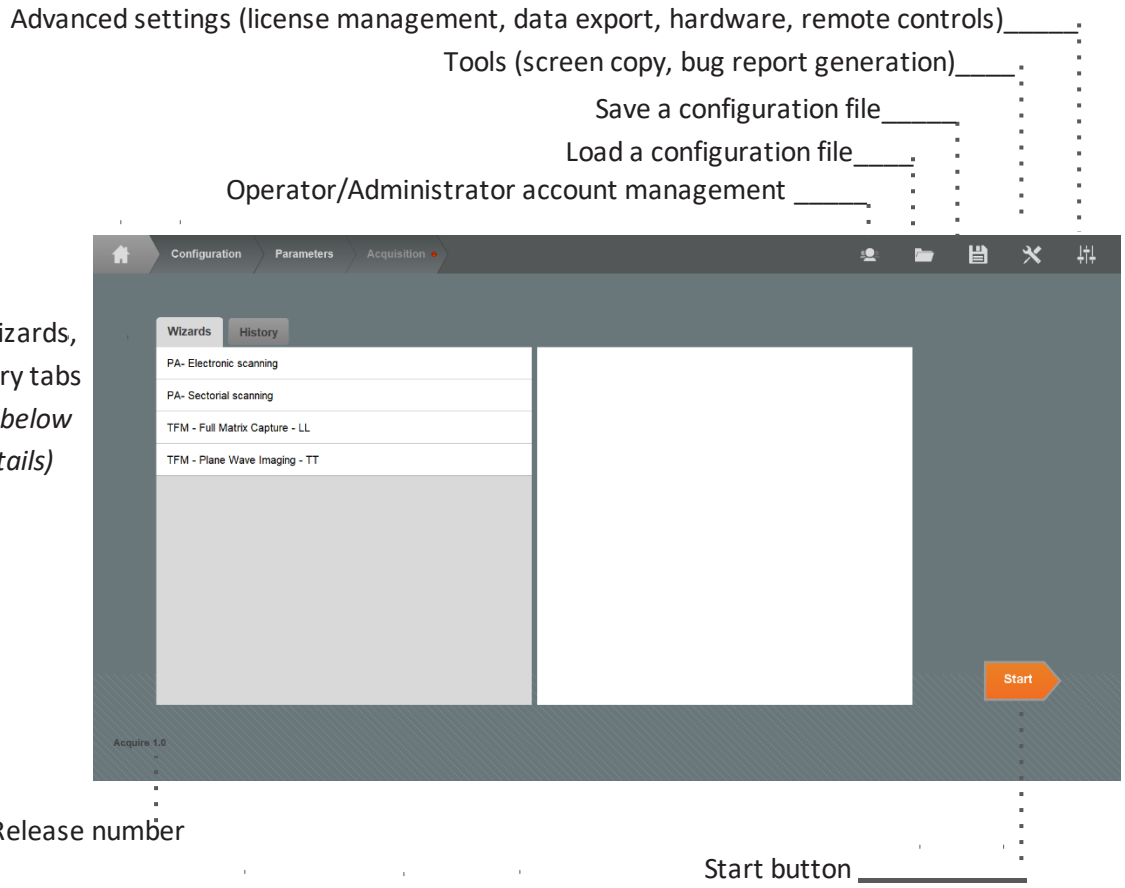
). Please check the installation guide for Eddyfi Panther in the documentation section.

LAUNCHING ACQUIRE IN SIMULATION MODE

Acquire software can be launched in simulation mode (i.e. without the Panther hardware connected) by double-clicking on C:/Acquire/Go_Acquire_Simulation.bat

9. ACQUIRE QUICK START

HOME PANEL



WIZARDS

Wizards are files containing basic

HISTORY

History contains the list of the

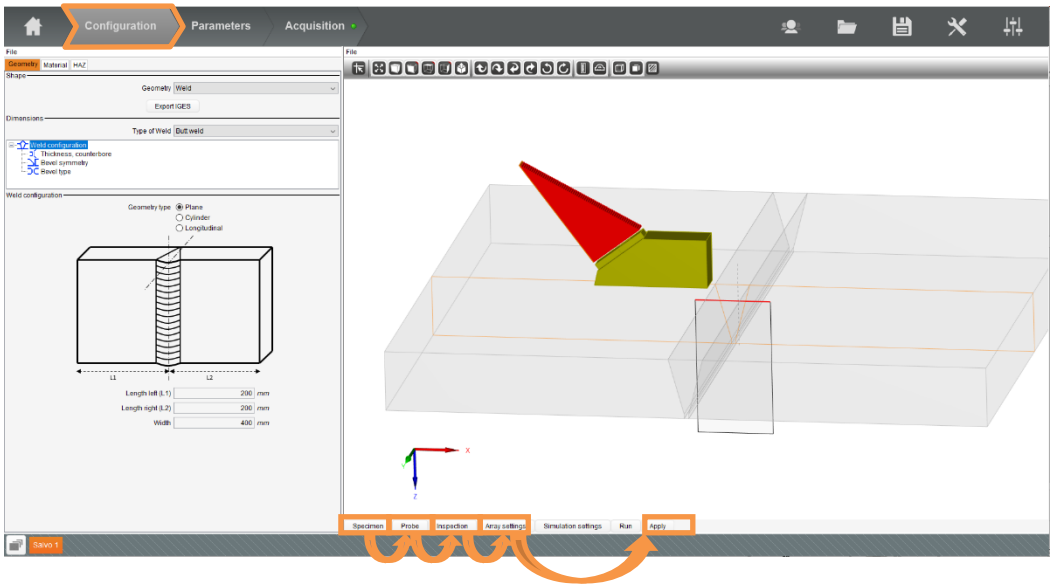
CONFIGURATION PANEL

CONFIGURATION PANEL

The configuration panel allows to setup a configuration (conventional PE, TOFD, Phased Array, TFM…).

It is based on the CIVA simulation software, the full CIVA manual can be accessed by **pressing F1**.

The configuration should be entered as carefully as possible as most of the imaging system of Acquire is using the CIVA configuration.



Basically, a CIVA configuration is setup by clicking successively on the Specimen, Probe, Inspection, Array Settings panels. The phased array or TFM modes (Linear Scanning, Sector Scan, Pitch-Catch, FMC/TFM, PWI/TFM….) are defined in the Array settings panel.

Once the configuration is managed, the phased array modes are applied by clicking on the Apply button.

10. SPECIFICATIONS

ENVIRONMENT	
Size (L x W x H)	298mm x 220mm x 159mm (11.73 in x 8.66 in x 6.25 in)
Weight	6,6 Kg (14,5 lbs)
Power supply	External AC/DC power supply: 240V/50Hz - 0.75A 110V/60Hz -1.5A Instrument: 24 VDC 3.75 A
IP rating	IP20 (IP54 with accessory)
Operating temperature	0 to 45°C (32 to 113°F)
Storage temperature	-20 to 70°C (-4 to 158°F)
Max altitude	2000 m
Indoor/Outdoor use	Indoor only
Maximum relative humidity	90% condensing
Pollution degree	2

CONNECTIVITY	
Phased-Array	IPEX (x1) – up to 128 channels
UT-TOFD	LEMO-00 (x4)
Encoder Input*	MicroD25 connector Up to 3 Quadrature or clock/dir

	5MHz max
Synchro Input/Output*	Internal use only
USB3	Up to 3 Gbits/sec

* Depending on the configuration and options

AVAILABLE CONFIGURATIONS	
1 PANTHER	32:128PR 64:64PR 64:128PR 128:128PR
2 PANTHER	64:256PR 128:256PR 256:256PR

Phased-Array	
Pulser	
Number of channels	Up to 128
Pulse type	Bipolar square pulse
Amplitude	From 20 to 100V
Pulse width	Pulse width from 20 to 2000 ns False time < 6 ns
Receiver	
Number of channels	Up to 128
Input impedance	50Ω
Frequency range	Frequency range 0.3 to 20MHz
Max. input signal	2 Vpp

Gain	0 to 120 dB – 0.1dB step
Active aperture	Up to 128 elements
Compliant with EN ISO 18563-1	

11. LOCAL REPRESENTATIVE

Eddyfi Europe SAS 21 Av. du Québec 91140 Villebon-sur-Yvette Tel: +33 160 923 965 https://eddyfi.com/en	Eddyfi UK Ltd. Clos Llyn Cwm Swansea Enterprise Park Swansea SA6 8QY Tel: +44 1792 798711 https://eddyfi.com/en

DOWNLOAD PLATFORM

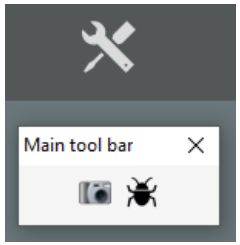
The Eddyfi Technologies support website gives access to the last software versions of ACQUIRE and CAPTURE, documentation, procedures.

With the search tool, search for 'Acquire' in 'Software'.

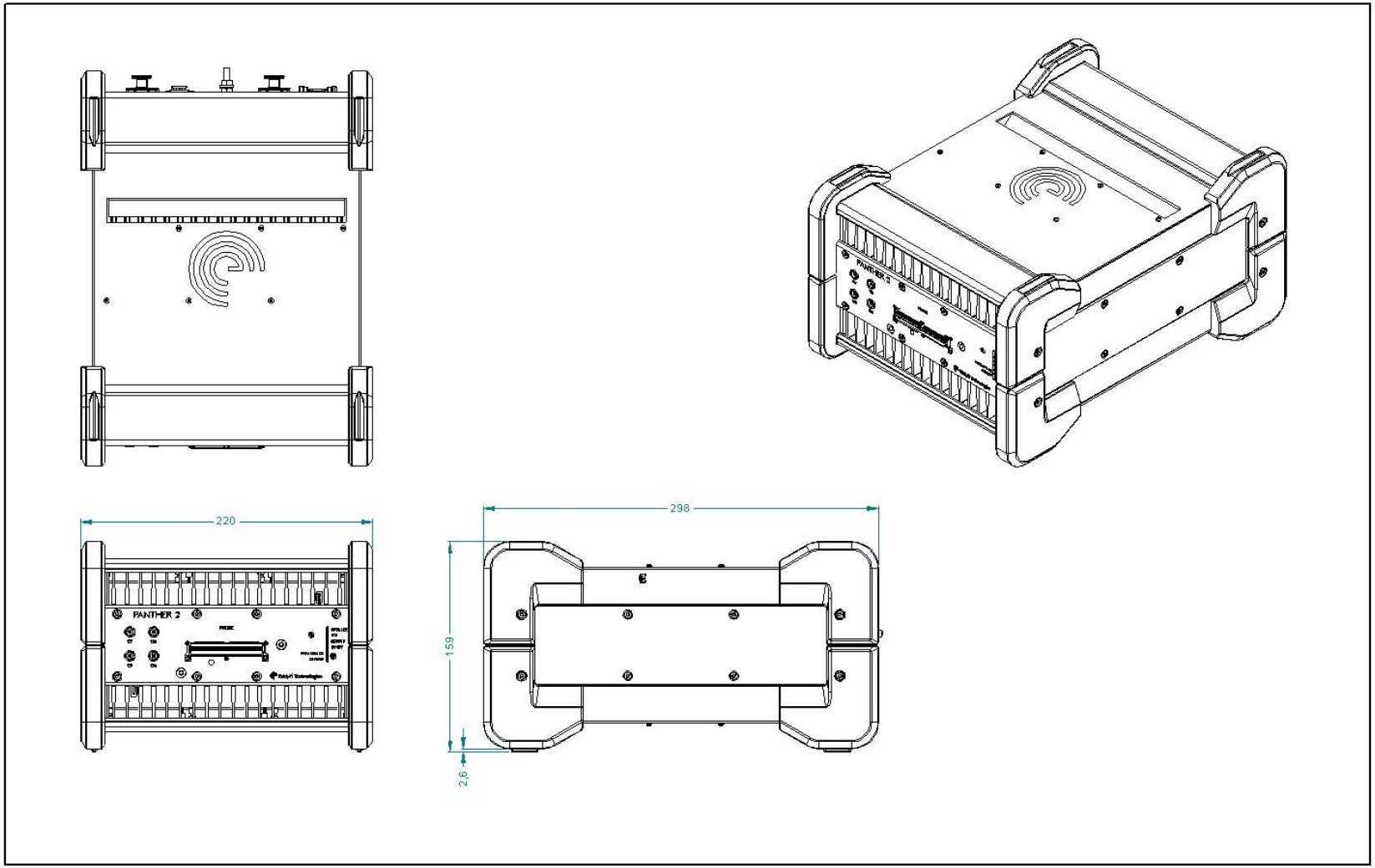
SUPPORT

To share feedback, remarks, or problems, do not hesitate to contact us at support@eddyfi.com.

In case of ACQUIRE or CAPTURE crash, please report us as many details as possible such as application files, inspection files, screenshot and bug reports generated with the following bug report tool:



ANNEX 2 - MECHANICAL DRAWING



ANNEX 3 - CONNECTOR INFORMATION

1. PHASED ARRAY CONNECTOR

Connector Location

Connector Information

Supplier: I-PEX

Reference: 30046-160T-F

Matching Connector

Supplier: I-PEX

References:

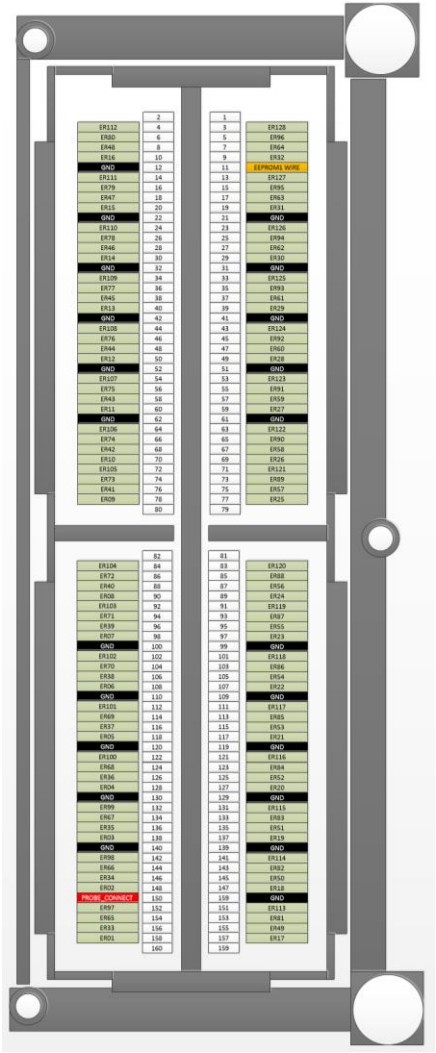
- straight: 30056-160T-F
- right angle: 30047-160T-04F

Connector function

- Plug Phased-array IPEX probes
- Connect probe splitters or probe adaptors
- Compatible with IPEX easy-latch adaptor frame: IMP_0061 EASYLATCH ADAPT

For electric safety reasons, only accessories approved by Eddyfi Technologies can be used with Panther systems. Before purchasing any probe, please contact us.

Connector Mapping (female side)



Connector Signal Description

Signal Name	Description	User matching signal
ER1 to ER128	Phased-array channel number 1 to 128	Phased-array probe channel 1 to 128*
GND	Ground pin	For better ultrasound result, all GND pin have to be connected to probe ground.

2. UT CONNECTORS

Connectors Location

Connector function

4 P/R LEMO allowing to use :

- 4 conventional UT probe in pulse-echo mode
- 2 pairs of TOFD or 2 Dual element probes

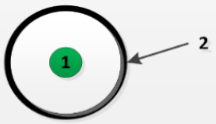
Connector Information

Supplier: LEMO

Reference: ERN.00.250.CTL

Connector Mapping (female side)

Pin number	Pin signification
1	U.T
2	GND



Front view

Matching Connector

UT connector is NimCAMAC standard.

Supplier: LEMO

Reference: FFA.00.250.CTAC31

For electric safety reasons, only accessories approved by EDDYFI can be used with Panther systems. Before purchasing any probe, please contact us.

3. ENCODER CONNECTOR

Connector Location

Description	Value	Internal 330 Ω
Maximum admissible input current	20 mA.	8 V
Recommended "ON" value	10 mA	4.8 V
Minimum "ON" value	5 mA	3.1 V (V+ - V-)
Maximum "OFF" value	250 µA	1,45 V
Maximum reverse value	-20 mA	8 V
Maximum Frequency	5 MHz	Recommended 400KHz max

Connector Information

Supplier: GLENAIR

Reference: 654-M83513/01-DC

Matching Cable (male)

Supplier: MOLEX

Reference: 8

Connector function

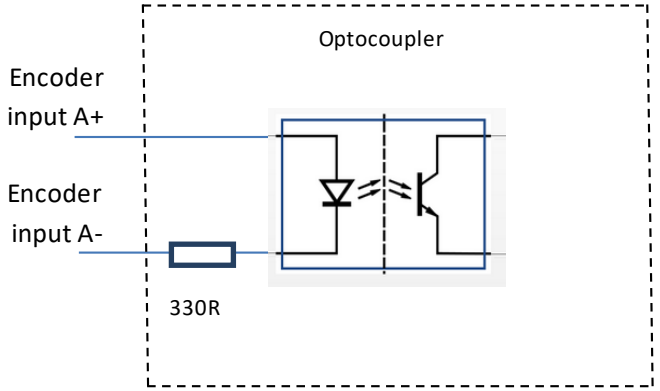
- **CONNECT UP TO 3 DIFFERENT ENCODERS:**
  - 5V optocoupled*
  - quadrature mode or clock/dir mode
  - Number of available encoders: 2 or 3 depending on software setup and option.
  - Encoder 3 can be used to reset encoder 1 and 2

optocoupled* : A photoelectric diode transfers the encoder signal. This protects the Panther system from too high voltage or two high intensity or ground noise. Common mode max = 50V

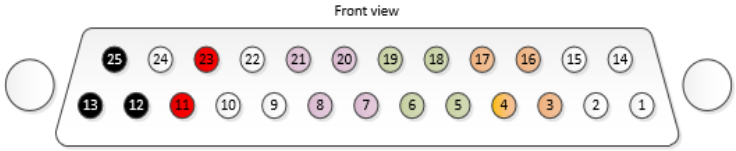
Connector Mapping

PIN Number	I/O	I/O Type	Pin feature in Quadrature mode	Pin feature in Clock+Dir mode
1	-		Not connected	Not connected
2	-		Not connected	Not connected
3	IN	Optocoupler	Encoder 3 Phase /A-	Encoder 3 /Clock-
4	IN	Optocoupler	Encoder 3 Phase /B-	Encoder 3 /Direction-
5	IN	Optocoupler	Encoder 2 Phase /A-	Encoder 2 /Clock-
6	IN	Optocoupler	Encoder 2 Phase /B-	Encoder 2 /Direction-
7	IN	Optocoupler	Encoder 1 Phase /A-	Encoder 1 /Clock-
8	IN	Optocoupler	Encoder 1 Phase /B-	Encoder 1 /Direction-
9	-		Reserved / Do not connect	Reserved / Do not connect
10	-		Reserved / Do not connect	Reserved / Do not connect
11	OUT		DC 5V	DC 5V
12	OUT		GND	GND
13	OUT		GND	GND
14	-		Not connected	Not connected
15	-		Not connected	Not connected
16	IN	Optocoupler	Encoder 3 Phase A+	Encoder 3 Clock+
17	IN	Optocoupler	Encoder 3 Phase B+	Encoder 3 Direction+
18	IN	Optocoupler	Encoder 2 Phase A+	Encoder 2 Clock+
19	IN	Optocoupler	Encoder 2 Phase B+	Encoder 2 Direction+
20	IN	Optocoupler	Encoder 1 Phase A+	Encoder 1 Clock+
21	IN	Optocoupler	Encoder 1 Phase B+	Encoder 1 Direction+
22	-		Reserved / Do not connect	Reserved / Do not connect
23	OUT		DC 5V	DC 5V
24	-		Reserved / Do not connect	Reserved / Do not connect
25	OUT		GND	GND

Encoder Input



Connector (female side)



Signal Name	Description	User matching signal
Encoder Phase A/B	5V optocoupled	- Absolute Max current 20 mA - Max frequency = 5MHz

4. SYNCHRO CONNECTOR

Connector Location

Connector Information

Supplier: MOLEX
Reference: 836129024

Connector function

- **This connector is used to synchronize two PANTHERs either for:**
  - Multi-system: 2x PANTHER XX:128
  - Multi-module: 1x PANTHER XX:256
- **This connector shall be not use for any other purpose.**

Matching Cable

Supplier: MOLEX
Reference: 0834229007
EDDYFI Reference: CAB_0115-SYNC-PANTHER-256

5. I/O CONNECTORS (USB 3.0)

Connector Location

USB 3.0

Connector function

- The USB 3.0 is used to transfer data from the Panther to the computer running Acquire Software.

Connector description

USB

- 1x USB3.0: high-speed USB

Matching Cable

EDDYFI Reference :

- Cable 3m = CAB_0119_CABLE USB3 BLINDE – 3m
- Cable 5m = CAB_0120_CABLE USB3 BLINDE – 5m

Only high-quality USB cables must be used for proper operation.

6.POWER CONNECTOR

Connector Location

Connector function

- This connector is the global system power supply.
- When plugged in, the external power supply is used to power on the system.
- Only use the external power supply supplied by EDDYFI with the PANTHER system.

Connector Information

Supplier: LEMO

Reference: EEG.0K.303.CLN

Matching Cable

Supplier: LEMO

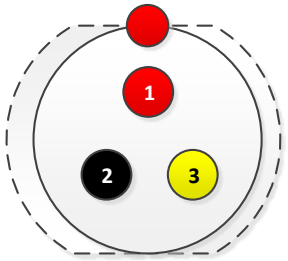
Reference: FGG.0K.303.CLAC45Z

EDDYFI Reference: CAB_0098-POWER-PANTHER

Connector Mapping (female side)

Front view :

Pin number	Pin signification
1	+24V
2	GND
3	GND (EARTH)



When the power cable is plugged in, the position of the system should allow the plug to be easily unlocked. This is so that the unit can be switched off in case of emergency.

Description	Value
Minimum Voltage	16 V DC.
Maximum Voltage	30 V DC
Power max	90 W
Power typical	70 W

Protect the unit from EMC interference by using a ferrite on the power cable.
Use a regulated power supply.
Use the correct cable diameter for the current consumption.
Connect to earth and check the quality of the connection for the safety of the user and the correct functioning of the equipment.
Input protected by internal fuse.

7. UFL CONNECTORS

Connector Location

Connector function

- These connectors allow the ultrafast communication between two systems to transfer elementary A-scan, in particular for 256:256 configuration.

Connector Information

Supplier: MOLEX

Reference: 1704650002

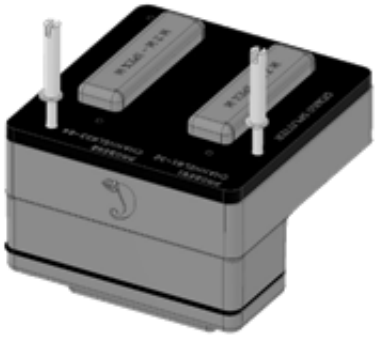
Matching Cable

Supplier: MOLEX
Reference: 1110251200
EDDYFI reference: CAB_0139-UFL-PANTHER

This connector is not rugged and designed for regular plug-unplug (certified 250 operations), it must be handled with care.

ANNEX 4 - Accessories

Accessory Name	Description	Picture
Easy-Latch EDDYFI ref : IMP_0061-EASYLATCH-ADAPT	This accessory allows the connection of a probe with an EASY_LATCH connector to PANTHER system.	
Hardware Dongle protection for « Acquire » software	This accessory is the protection dongle that allows the use of « Acquire » software on a computer. A software dongle can be also proposed.	

Accessory Name	Description	Picture
IPEX FRB Adaptor EDDYFI ref: ADAPT_IPEX_FRB_V2	This adaptor allows connection of a probe with an HYPERTRONICS (FRB) connector to the PANTHER system.	
Available splitter models : **SPLITTER 1x64 -> 2x32** **SPLITTER 1x128 -> 4x32** **SPLITTER 1x128 -> 2x64** **SPLITTER 1x64 -> 2x30 + 4 LEMO** **SPLITTER 1x128 -> 2x62 + 4 LEMO** **….** EDDYFI ref : CAB_0109-SPL-FRB128-4X32	The PANTHER channels are split between 2 different I-PEX connectors and LEMO-00 connectors (optional).	

Accessory Name	Description	Picture
Adaptor for LEMO16 connector scanners EDDYFI ref : *CAB_0037-ENC-GEKKO-LEMO16*	This cable allows connection of scanners with LEMO16 (MOLEX) encoder connector to PANTHER system, MicroD25	
Adaptor for SUBD15 connector scanners EDDYFI ref : *CAB_0017_ENC-GEKKO-DE15*	This cable allows connection of scanners with SUBD15 encoder type to PANTHER system, MicroD25	
Adaptor for SUBD25 connector scanners EDDYFI ref : *CAB_0065-ENC-GEKKO-DE25*	This cable allows connection of scanners with SUBD25 encoder type to PANTHER system, MicroD25	

Accessory Name	Description	Picture
Adaptor to increase IP rating EDDYFI ref : PANTHER-IP54-BOX	Cable protection box for PANTHER, for outdoor use.