



NILFISK P53 Machine Controller Board User Manual

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NILFISK

P53 Machine Controller Board
User Manual

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User instructions:

This device is a subpart of various applications. Usage depends on application where device is implemented, see user manual for actual application.

Operating instructions:

The product is a Machine Controller board. It has Cortex M0+ MCU and for Bluetooth it has an DA14531 IC and PCB antenna. The BLE chip has 3.3V supply from on-board power supply. The machine controller has an AC motor control output and a current sense measurement circuit. It has several generic I/O's, outputs for buzzer and solenoid and furthermore UART and SPI data connections.

PCB functions:

AC motor control with regulation
Solenoid output
Buzzer output
EC motor output
Current measurement circuit
5 x Generic analog inputs
3 x Generic digital I/O
External UART interface for TC-1
External SPI interface

General data:

Rating	85-265 VAC input voltage
Working temperature	-10~40° C
Relative Humidity:	15.0~93.0 %

For Bluetooth Module:

Operation Frequency:	2402 MHz ~ 2480MHz
Bluetooth Version:	5.1 LE
Modulation Technique:	GFSK
Data transmission rate:	1Mbit/s
Number of Channel:	40
Antenna Type	PCB Antenna
Antenna Gain	3.42 dBi
Crystal:	32 MHz

Installation instructions:



P53 installation instruction_HU.pdf

The module is limited to Nilfisk A/S installation only. Nilfisk A/S is responsible for ensuring that the end-user has no manual instruction to remove or install module.

For USA

FCC Statement

FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

PCB antenna

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the

user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or a Nilfisk service technician for help.

We will retain control over the final installation of the modular such that compliance of the end product is assured. In such cases, an operating condition on the limit modular approval for the module must be only approved for use when installed in devices produced by a specific manufacturer. If any hardware modify or RF control software modify will be made by host manufacturer, C2PC or new certificate should be applied to get approval, if those change and modification made by host manufacturer not expressly approved by the party responsible for compliance, then it is illegal.

FCC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices. This modular cannot be installed in any portable device if without any further certify include C2PC with SAR. This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be collocated or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body. If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2AVNE-AW1 Or Contains FCC ID: 2AVNE-AW1"

When the module is installed inside another device, the user manual of the host must contain below warning statements:

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
 - (1) This device may not cause harmful interference.
 - (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or a Nilfisk service technician for help.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any company of the host device which install this modular with limit modular approval should perform the test of radiated& conducted emission and spurious emission, etc. according to FCC part 15C: 15.247and 15.209 &15.207 ,15B Class B requirement, only if the test result comply with FCC part 15C: 15.247and 15.209 &15.207 ,15B Class B requirement then the host can be sold legally.

For Canada IC STATEMENT

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device

IC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device.

This modular complies with IC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the IC number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains IC: 25476-AW1" when the module is installed inside another device, the user manual of this device must contain below warning statements:

1. This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:
 - (1) This device may not cause interference.
 - (2) This device must accept any interference, including interference that may cause undesired operation of the device.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

This device has been designed to operate with internal PCB antenna and any modification to this is strictly prohibited.

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Documents / Resources

The image shows the front cover of the NILFISK P53 User Manual. The cover is white with a blue header containing the NILFISK logo. Below the logo, the title 'P53 User Manual' is printed in a small font. The main title 'NILFISK P53 Machine Controller Board' is prominently displayed in a large, bold, blue font. Below this, the subtitle 'AW1, 2AVNE-AW1, 2AVNEAW1, P53, P53 Machine Controller Board, Machine Controller Board, Controller Board' is written in a smaller, black font. The bottom section of the cover contains technical specifications in a table format, including details about the board's dimensions, weight, and environmental conditions.