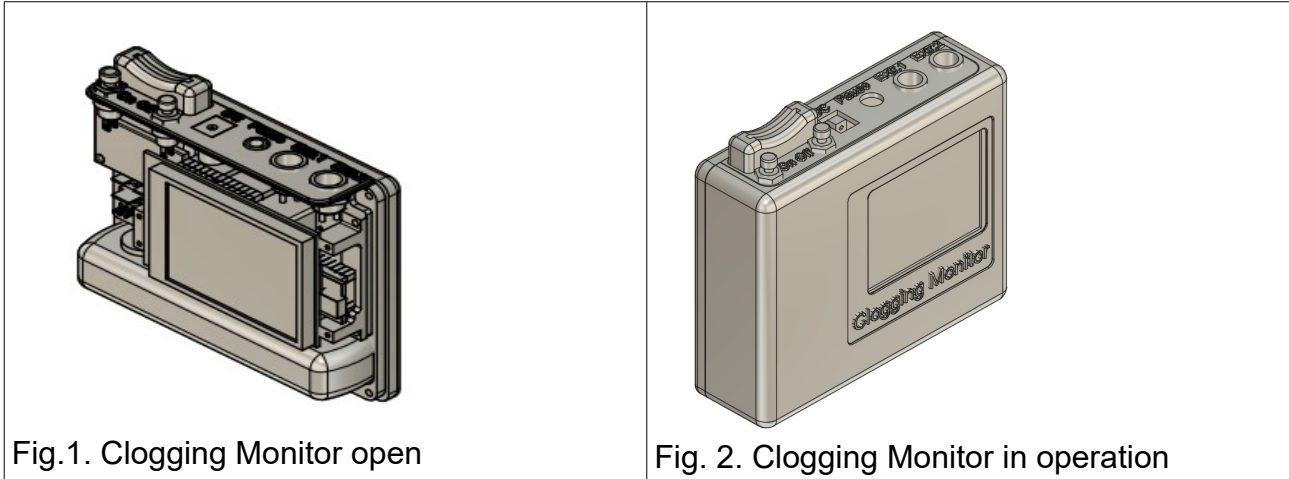


A3 Clogging Monitor Appliance

PAN, May 16 th, 2023

1. Introduction

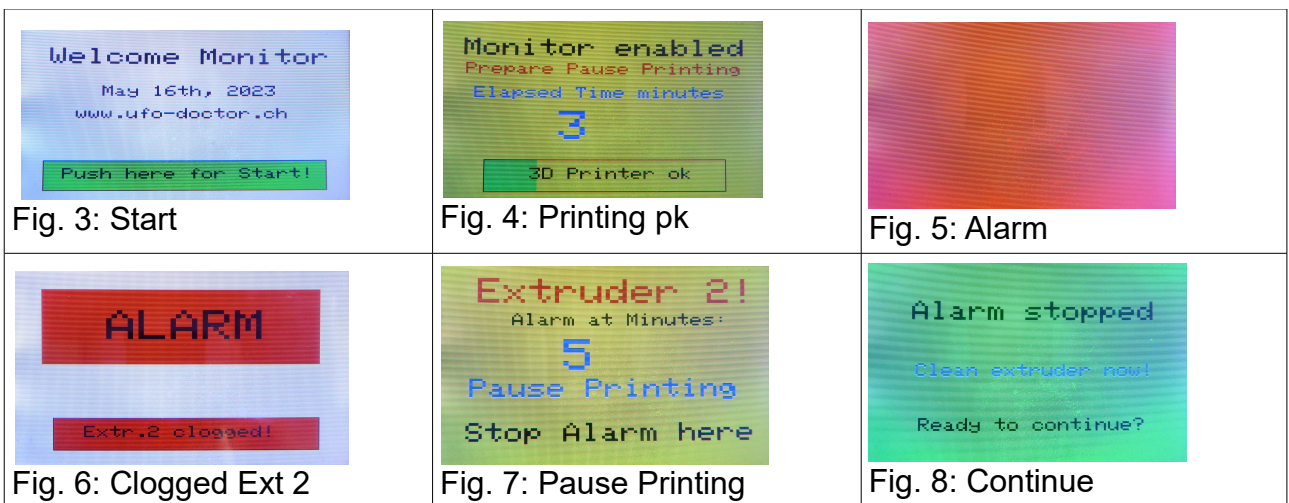
The Clogging Monitor Appliance is designed for a 3D-Printer, using the Clogging Sensors described by the report “A2 Clogging Sensor”



2. Specifications

- Check if the filament transport is interrupted, giving optical and acoustic alert
- Activate the „Pause Function“ after a delay > 30 Seconds for the 3D-Printer,
- If no operator reaction: „Power off“, after a delay of 30 Minutes
- Power supply 7.5 V, 500 mA
- Wireless AC Power Remote control for 3D-Printer and monitor
- SD Adapter Cable (SD Micro on Printer, SD Standard on Monitor)
- Arduino Nano and Velleman Display
- Short blinking LED at Sensors during every filament transport step

3. Velleman Display



4. Circuit

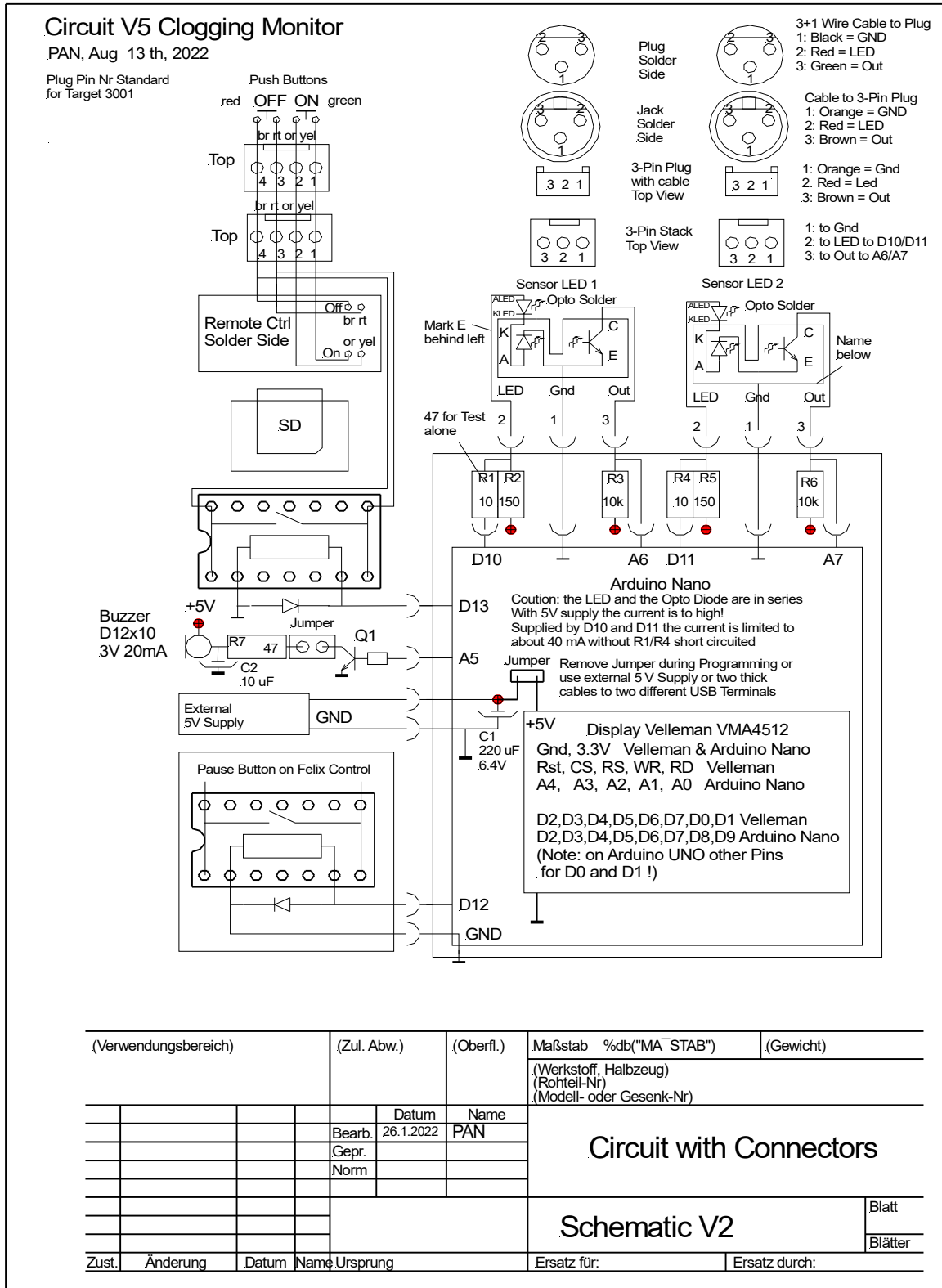


Fig. 9: Circuit

5. Clogging Monitor Components



Fig. 10: Overview

3D Parts

1. Base Plate
2. Cover
3. Front Panel Frame
4. Display carrier
- 5 Top Panel with plugs

Components

6. DC 7.5V 500 mA Supply
7. Remote AC Power Switch
8. Remote Control Power On/Off
9. PCB with Arduino Nano
10. SD Card Adapter
11. Velleman Display
12. Clogging Sensors
13. Arduino Programming cable

6. PCB Target Design

For more Details: see B4 PCB Design

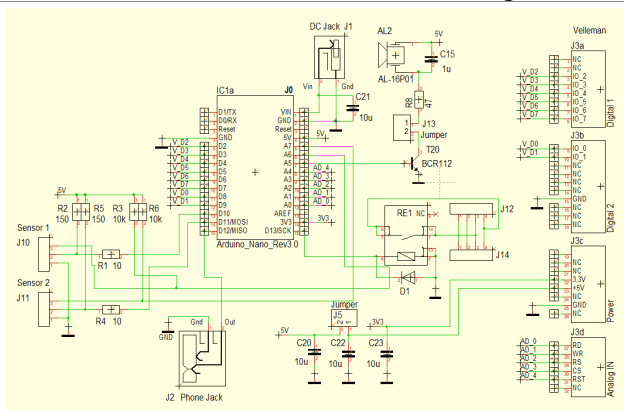


Fig. 11: Circuit

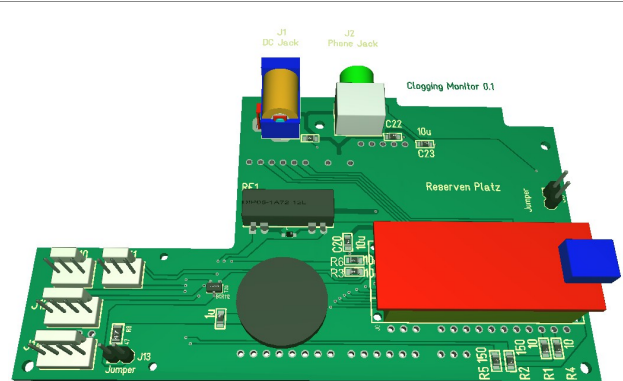


Fig. 9 Board 3D View without Display

Arduino_Nano_Rev3.0	User
Velleman	User
Phone Jack	User
TESTPUNKT_DUKO	
!GND	
DC Jack	User
!LABEL	
Arduino_Nano_Rev3.0	
Arduino_Nano_Rev2.3	
Arduino_Nano_Shield_REV3	
Arduino_Nano_Shield_REV2	
Arduino_Uno_Shield_Rev3	My

Fig. 12: Target User Components

Target User Components Design:

- Velleman
- Phone Jack
- DC Jack
- Arduino NANO with small stack

7. Assembly

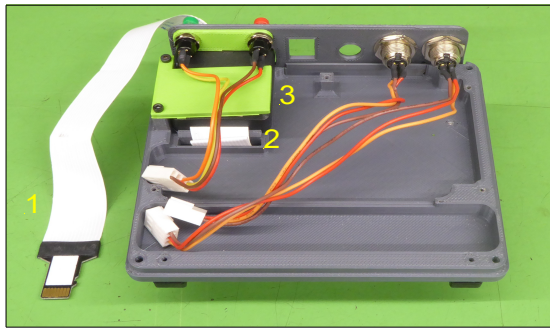


Fig. 13: Mounting SD Adapter

1. SD Adapter
Standard SD to SD Mini
Thin Flat Cable, take care!
SD Mini to 3D-Printer must be secured!
2. Slot in Base (no sharp edges!)
3. Adapter Clamp fixed with M2x5

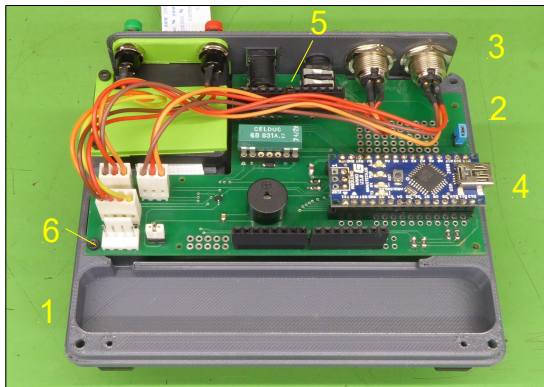


Fig. 14: PCB Mounting

1. Base
2. PCB
3. Top Panel
4. Arduino NANO
5. M2x5 screws
6. M2x5 screws

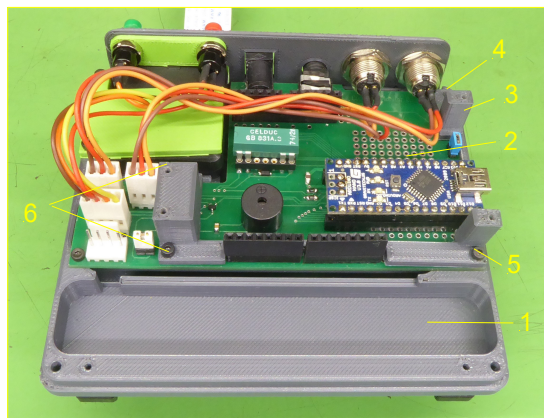


Fig. 15: Holder for Velleman Display

1. Base
2. PCB
3. Spacer Display Carrier
4. M2x8 screws
5. M2x8 screws
6. M2x5 screws into PCB



Fig.16: Velleman Display mounted

1. Velleman Display
2. Front Panel Frame
3. Remote Control Power On/Off
4. M2x6 screws
5. M2x6 screws

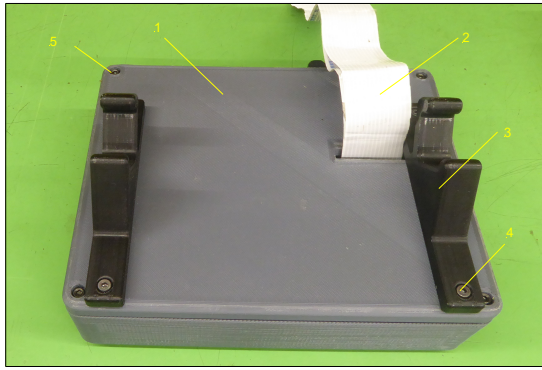


Fig.17: Rear Side with clamps

1. Base
2. SD Adapter cable
3. Clamp to Felix 3D Printer
4. M2x10 screw (4x)
4. M2x16 screw (4x)

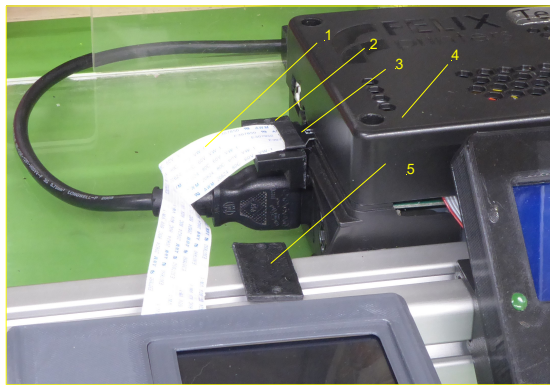


Fig. 18: SD Adapter connected

1. SD Cable
2. New Guide on 3D Printer Electronics (PLA-Carrier, for Felix Printer)
3. SD Plug inserted
4. 3D Printer Electronics
5. Fixation Plate for New Guide, M2x5

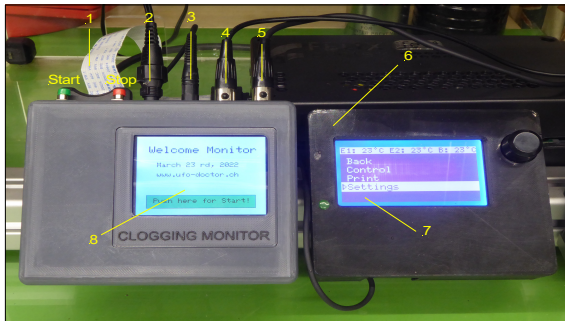


Fig. 19: Clogging Monitor on 3D Printer

1. SD Cable
2. DC Supply Jack
3. Pause Jack
4. Clogging Sensor 1 Jack
5. Clogging Sensor 2 Jack
6. 3D Printer Control
7. Display 3D Printer, see instructions
8. Display Clogging Monitor see instructions