

# UFC ST Nucleo Shields

## **Expansion Boards User Guide**

## UFC\_ST\_Nucleo\_Shields

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#### **1** Introduction

ScioSense ultrasonic flow converters are well established in the market as leading solutions as front-ends for time-of-flight ultrasonic flow meters. For those users that design their system based on a ST Microelectronics platform ScioSense offers a series of ST Nucleo shields. Those boards can easily be combined with both, the ST development kits and the ScioSense evaluation kits in combination with the UfcEvaluationSoftware package.

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The boards have two rows of connectors that fit into the ST Nucleo boards and additional connector to our PICOPROG interface. Actually, shields are available for TDC-GP30YA-F01 (with flow firmware), AS6031 and AS6040.

Product	Material number	Image
GP30YA-F01_ST_NS	220260014	
AS6031-QF_ST_NS	221020007	
AS6040-QF_ST_NS	220500002	

#### Figure 1: Available shields



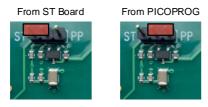
#### 2 Hardware

#### 2.1 Common Hardware Elements

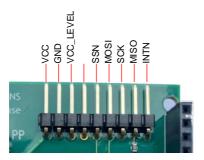
All shields have some interfaces or connectors in common:

- Power selection. Via jumper the user can select whether the 5V supply comes from the ST motherboard or from the ScioSense PICOPROG interface.

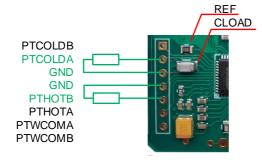
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- 9-pin connector to PICOPROG with SPI interface, interrupt, level shifter feedback, power.



- Temperature ports



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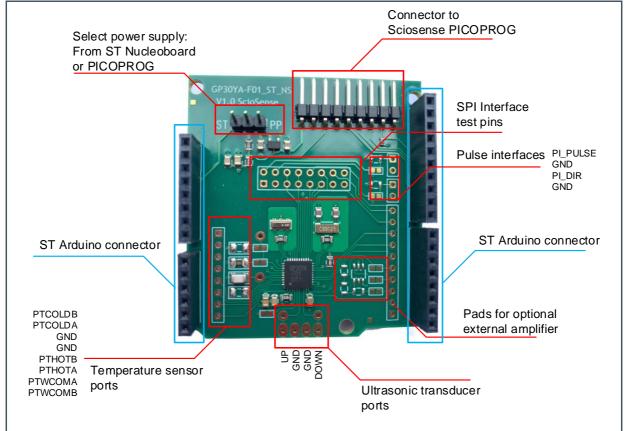


#### 2.2 GP30YA-F01 Shield

This shield is based on TDC-GP30YA-F01 which has a flow firmware on chip.

The following figure shows the main interfaces:

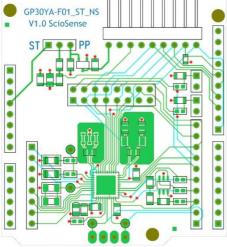




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#### 2.2.1 GP30YA-F01 Layout

Figure 3: GP30YA-F01 Shield layout





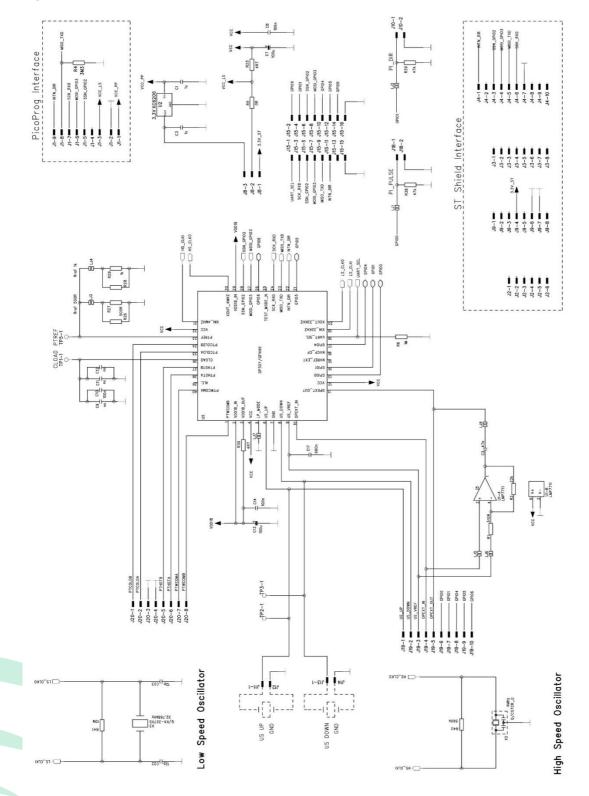
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#### 2.2.2 GP30YA-F01 Schematics

The schematic of this boards is mainly a copy of the GP30-DEV reference board.

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Figure 4: GP30YA-F01 Shield schematics



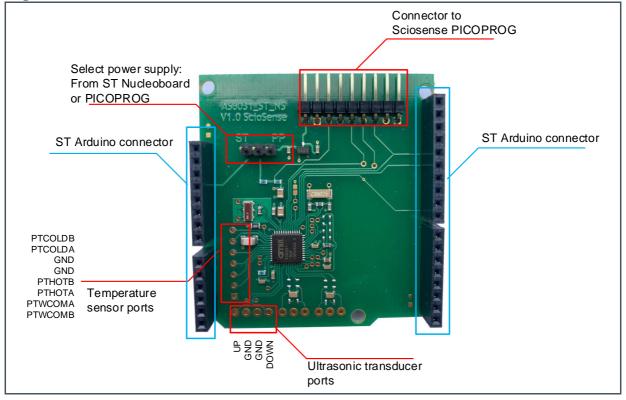


#### 2.3 AS6031 Shield

This shield is based on AS6031-QF\_DK\_RB. The following figure shows the main interfaces:

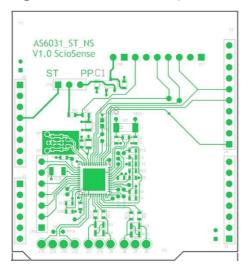
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#### Figure 5: AS6031 Shield



#### 2.3.1 AS6031 Layout

Figure 6: AS6031 Shield layout



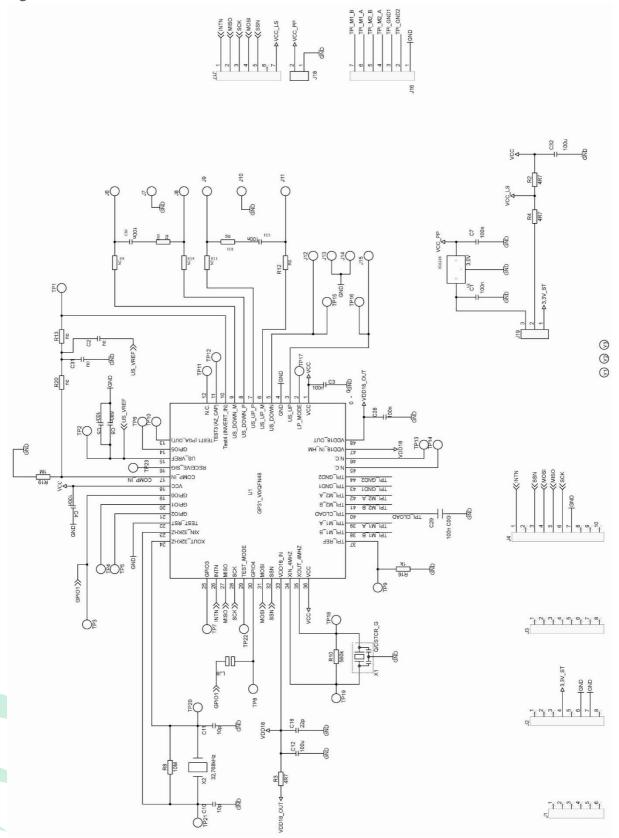
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#### 2.3.2 AS6031 Schematics

Figure 7: AS6031 Shield schematics



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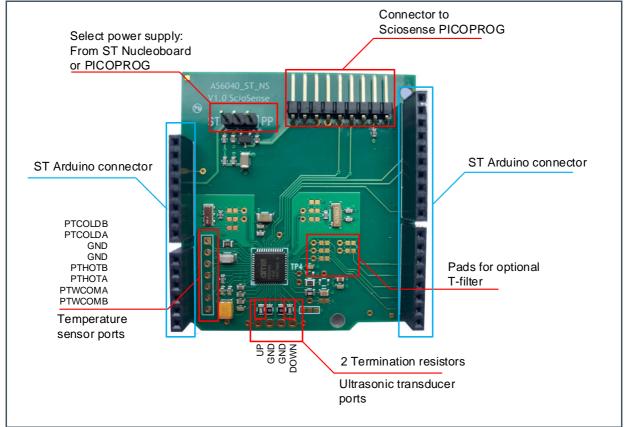


#### 2.4 AS6040 Shield

This shield is based on AS6040-QF\_DK\_RB.

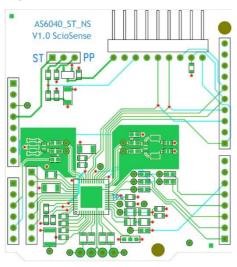
The following figure shows the main interfaces:





#### 2.4.1 AS6040 Layout

#### Figure 9: AS6040 Shield layout



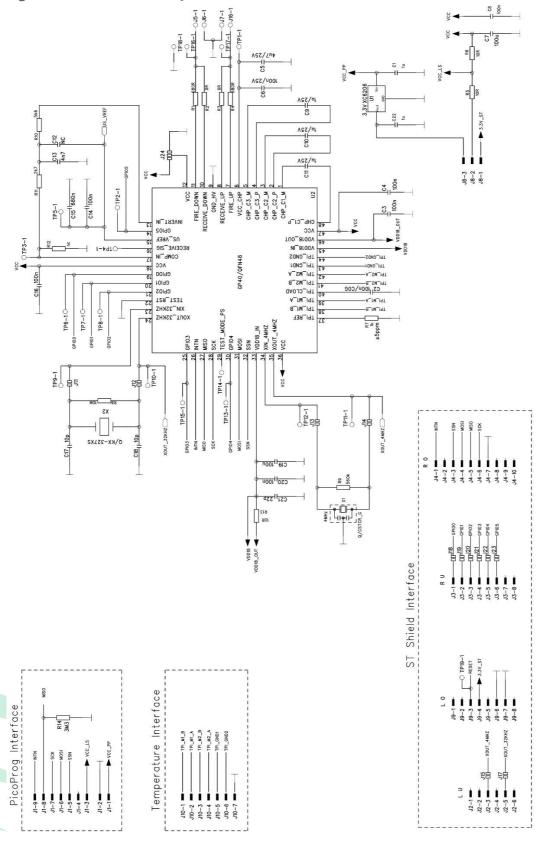
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#### 2.4.2 AS6040 Schematics

#### Figure 10: AS6040 Shield layout

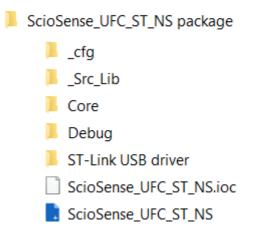






#### 3 Software

ScioSense provides a common sample software package for the three UFC chips.



The main program is found in the Core src folder.

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### 4 Copyrights & Disclaimer

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### 5 Revision Information

**Table 1: Revision History** 

Revision	Date	Comment	Page
1	July 2021	Initial Version	

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#### Note(s) and/or Footnote(s):

- 1. Page and figure numbers for the previous version may differ from page and figure numbers in the current revision.
- 2. Correction of typographical errors is not explicitly mentioned.



#### ScioSense is a Joint Venture of ams AG

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AS6031\_ST\_NS V1.0 AS6040\_ST\_NS V1.0 GP30YA-F01\_ST\_NS V1.0