

## Interface Control Document for UVSIPM



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**ASTRI Mini-Array**  
**Astrofisica con Specchi a Tecnologia Replicante Italiana**



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**DOCUMENT HISTORY**

Issue/Revision	Date	Modification
1.0	15/01/2019	First release
1.1	19/10/2020	Changed to comply with the general document scheme for the ASTRI Mini-Array project



## 1 Introduction

The ASTRI Mini-Array is an INAF project aimed to construct, deploy and operate a set of 9 Cherenkov telescopes of the 4 meters class at the Observatorio del Teide in Tenerife (IAC, Spain). The ASTRI Mini-Array will observe astronomical sources emitting at very high-energy in the TeV spectral band.

### 1.1 Purpose

This document is the Interface Control Document regulating the hardware interface between the ASTRI Mini-Array telescope and the UVSIPM device. The device will be designed and manufactured by the ASTRI Mini-Array team and delivered to the ASTRI telescope contractor by INAF.

### 1.2 Scope of the document

This document describes the interfaces (mechanical, electrical and communication) of the UVSIPM device to the ASTRI telescope.

### 1.3 Content

Section 3 describes the mechanical, the electrical and the software interface between the UVSIPM device and the telescope.

### 1.4 Definitions and Conventions

#### 1.4.1 Abbreviations and acronyms

ASTRI	Astrofisica con Specchi a Tecnologia Replicante Italiana
IAC	Instituto de Astrofisica de Canarias
INAF	Istituto Nazionale di Astrofisica
M1	ASTRI Mini-Array telescope primary mirror
TBC	To Be Confirmed



## 2 Related Documents

### APPLICABLE DOCUMENTS

[AD1] ASTRI-INAF-ICD-7132-001 ICD for the Telescope Communication Hardware

### REFERENCE DOCUMENTS

[RD1] M.C. Maccarone, O. Catalano, S. Giarrusso, G. La Rosa, A. Segreto, G. Agnetta, B. Biondo, A. Mangano, Fr. Russo, S. Billotta (2011), "[Performance and applications of the UVscope instrument](#)", NIM-A, vol. 659, Issue 1, pp. 569-578.

### 3 UVSiPM Interface Control Document

This device is used for end-to-end calibration purpose of the telescope. The suggested position is to fix the assembly on the bottom side of the M1 dish and co-aligned with the ASTRI telescope and camera. The device mounts a collimator that therefore looks in a field-of-view co-aligned with the ASTRI camera.

#### 3.1 UVSiPM Mechanical Interface

The assembly is mounted on a frame which shall be integrated on the bottom side of the M1 dish. No particular requests are necessary for the M1 dish surface onto which the UVSiPM will be placed.

The physical dimension of the UVSiPM interface flange (about 33 kg) is shown in Figure 1.

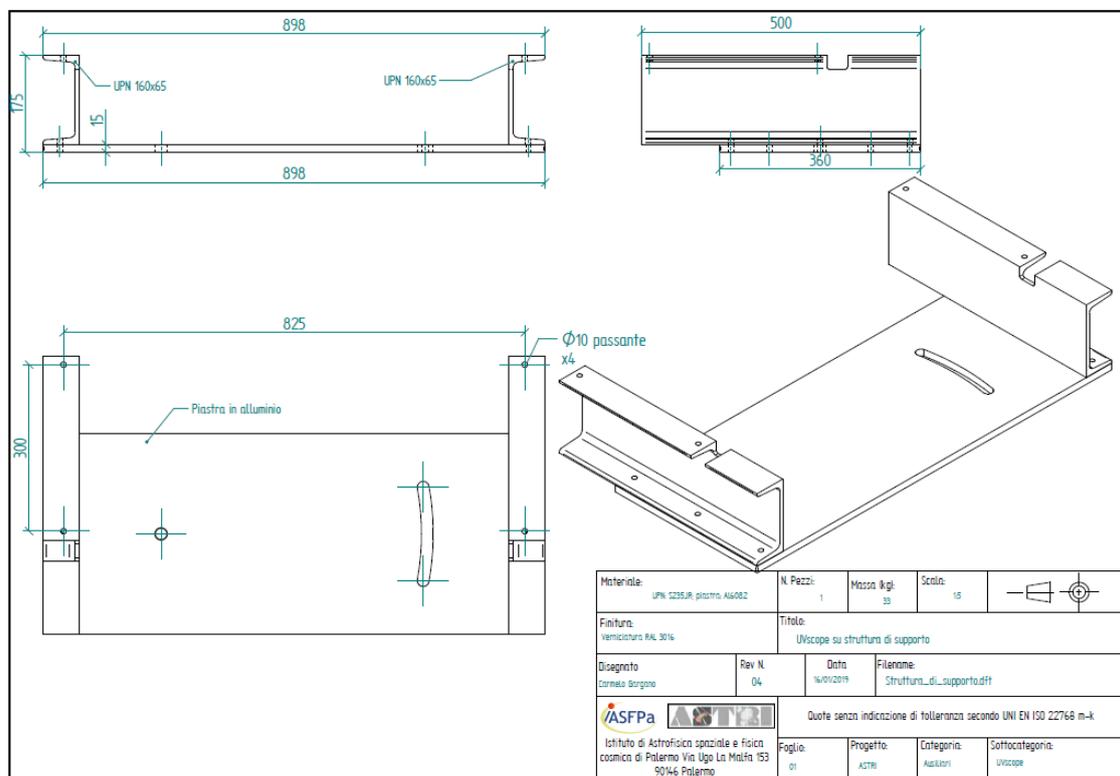


Figure 1. UVSiPM interface flange.

The interface flange is able to support the UVSiPM device with its electronics for a total weight of about 50 kg (TBC). Just as example, Figure 2 shows the prototype design as implemented for UVscope on board the ASTRI-Horn telescope.

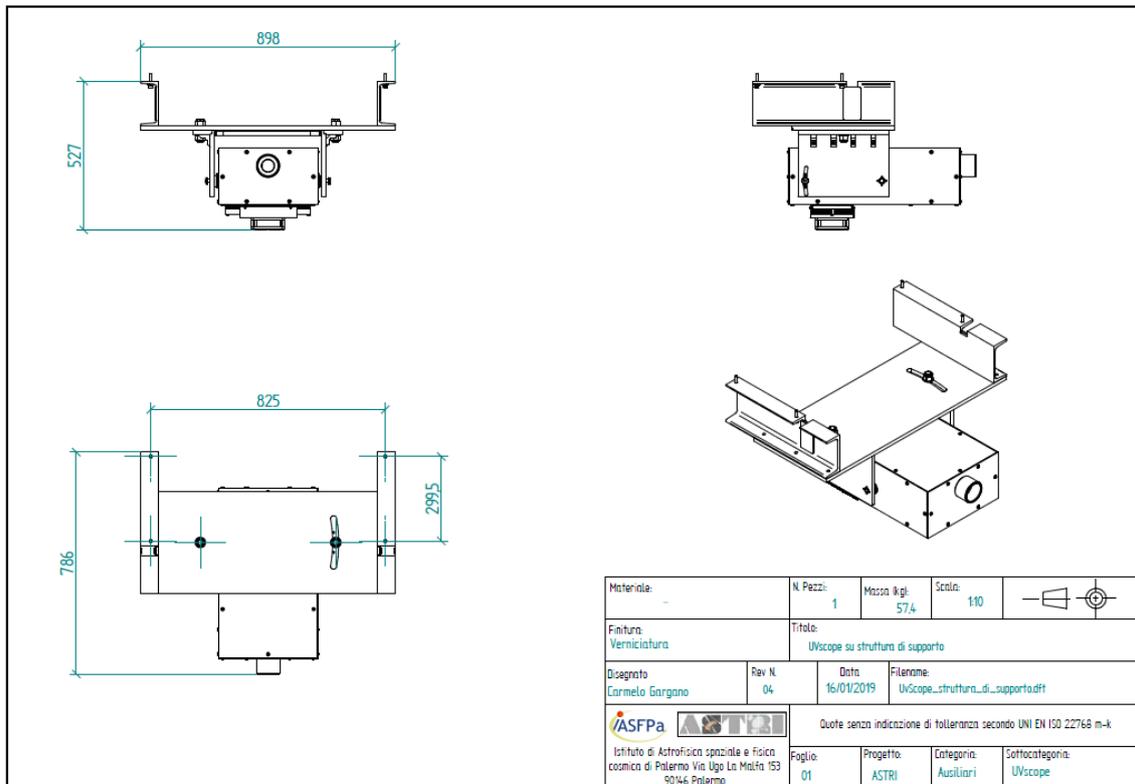


Figure 2. UVscope design for the ASTRI-Horn telescope.

### 3.2 UVSIPM electrical interface

The device can be considered as a standalone device for which a power connection and a data connection are required.

Table 1. UVSIPM power characteristics and connectors

Power	150 Watt (Typ) (250W Max)	The UVSIPM alone is 50W and the Peltier unit is 170W for peak power. The connector type is mounted on the UVSIPM panel is BULGIN mod. PXP7012/06P/ST and mates with mod. PXP7010/06S/ST/0709
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Table 2. UVSIPM power Connector Pin Out

Pin	Signal	Note
01	+24 Volt	Peltier
02	Ret	Peltier
03	Shield	
04	+24 Volt	UVSiPM
05	Ret	UVSiPM

The device needs an Ethernet connection to the telescope switch, so there will be one Ethernet "receptacle" standard RJ45 connector for outdoor application. The UVSIPM



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panel mounting connector (LAN) is RJ45 BULGIN mod. PX0833. It is a CAT.5e shielded coupler and mates with mod. PX0834/36/37/38.

### 3.3 UVSIPM Communication interface

The device is connected to the telescope switch therefore no software interface exists with the electromechanical structure (see [AD1]).