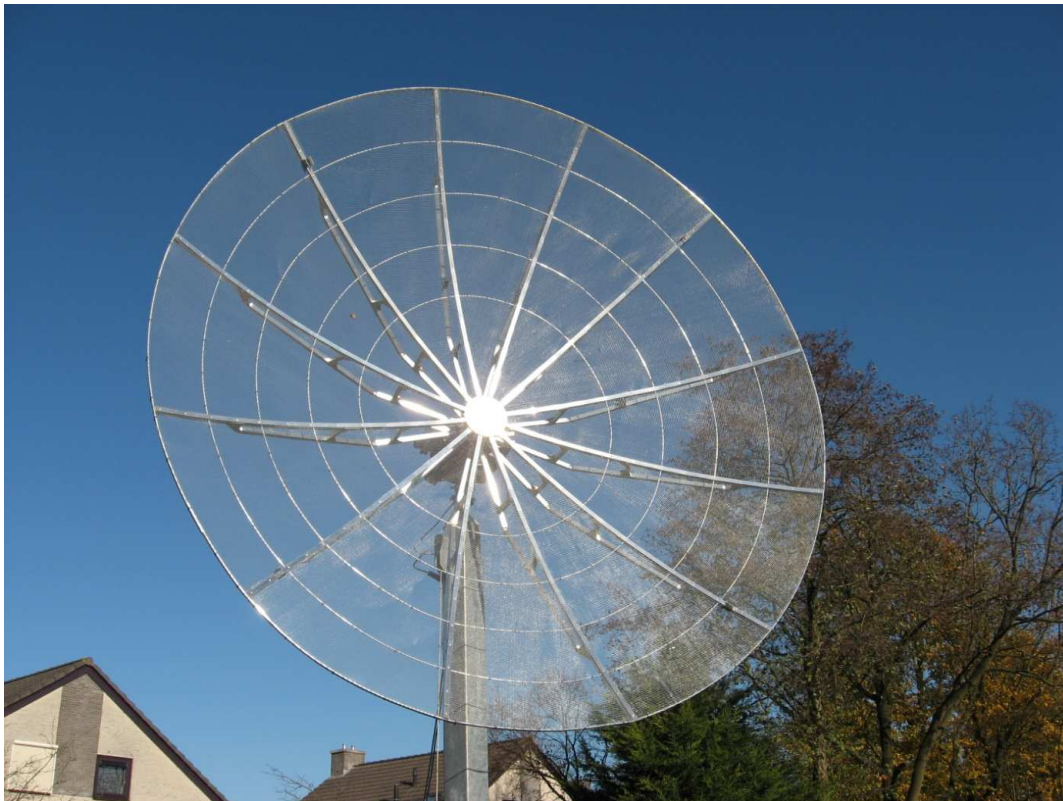


The following documents list the specifications of the 3-meter dish and BIG-RAS/HR rotator to be used for operations in the 2.4 GHz band as part of Cornell University's small satellite ground station.

**Specifications Sheet:**  
**PRIME FOCUS MESH DISH KIT**  
**3 Meter DISH**  
Available F/D 0.40 & 0.45



3 meter DISH KIT



- ✓ This 3 Meter Prime Focus MESH DISH KIT is specially designed to use with prime focus dish feeds.
- ✓ RF HAMDESIGN can offer you a wide range of Dish feeds, Linear (H or V) or circular (LHCP or RHCP) polarized. Multiband linear dish feeds up to 5 band are also available.
- ✓ Built up notes of each Mesh Dish are in the delivered user manual described step by step with lot of pictures.
- ✓ All delivered mounting parts are made of stainless steel and or aluminum.
- ✓ To assemble RF HAMDESIGN's DISH KIT you will only need some small hand tools, a little hand driller, a metal saw, some writing stuff, a small metal hand cutter, a open end spanner No. 10 and 13 and a Hand riveter
- ✓ Assembly time is about 7...8 hours.



### Specifications 3 Meter Prime Focus Mesh Dish

Mesh useable up to	6 GHz
Weight 3M dish (ex dish feed)	27 Kg
Wind load 120 Km/h	773 Newton
DISH Surface area:	7.07 M2
Mast clamp	Yes: Available Option
2 pcs CNC Milled center	Aluminum, 20cm diameter / 10mm thickness
20mm assembled ribs ready to place	12 pcs
Inner rings to secure mesh	5 pcs
Easy to place outer RIM	1 pcs
Feed support including	3 or 4 – leg 15 or 20mm/sq
Available F/D	0.4 (available start 2012 0.45)

### Gain calculation

(Surface quality factor ( $\eta$ ) 0.65)

Frequency MHz	Gain dBd	1/2-power (3 dB) beam widths Degree
1296	30.3	5.7
2320	35.4	3.2
3456	38.8	2.1
5760	43.3	1.3

### Focal length

(Focal length: the distance from the center of the dish to the front of the dish feed.)

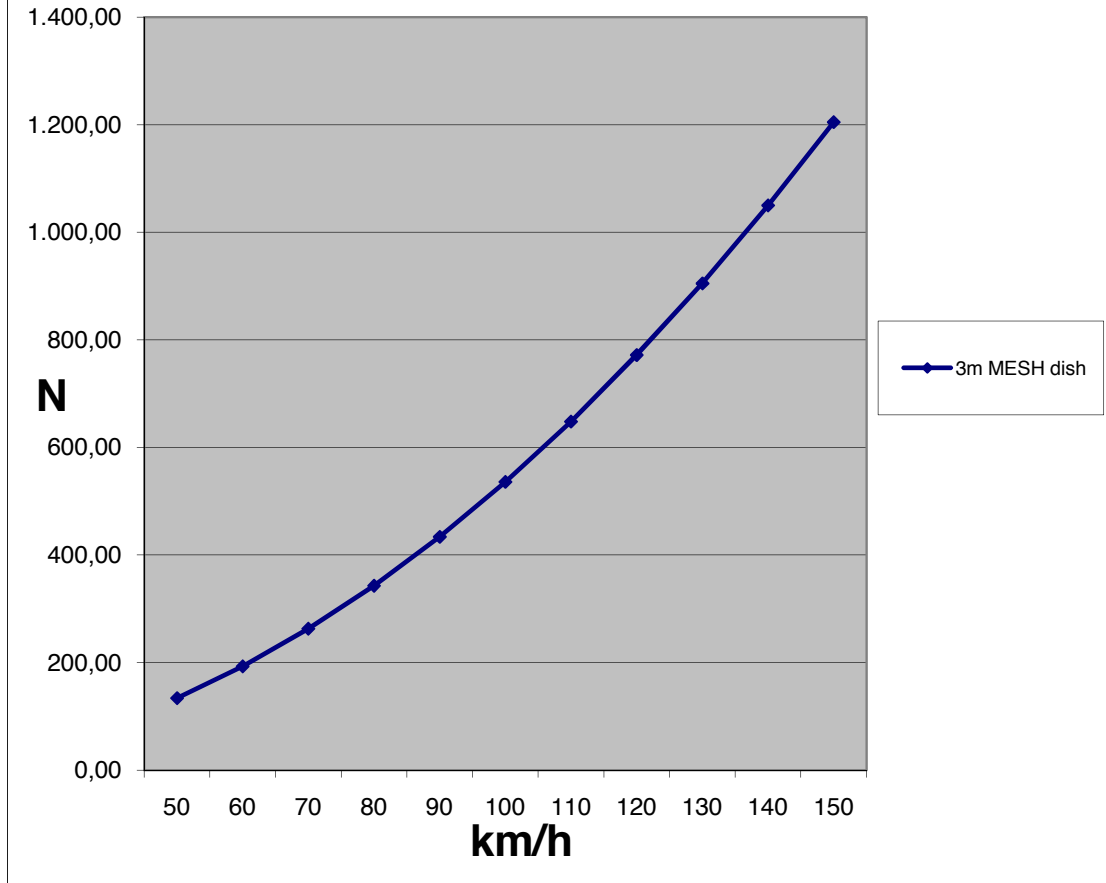
DISH SIZE	F/D=0.40	F/D=0.45
3 meter	120 cm	135 cm

**Available options:**

<ul style="list-style-type: none"><li>➤ SPID Azimuth / Elevation rotator, 12 / 24 Volts</li><li>➤ Incl controller with built in track interface</li><li>➤ Resolution standard 1 degree / option 0.5 and 0.2 degree</li></ul>	
<ul style="list-style-type: none"><li>➤ Mounting bracket Dish &lt;-&gt; Rotator</li><li>➤ Made of aluminium</li><li>➤ Stainless steel bolts</li><li>➤ Easy to mount at all SPID AZ&amp;EL rotators</li></ul>	
<ul style="list-style-type: none"><li>➤ SPID Adaptor</li><li>➤ Used to place the rotator at a base plate</li></ul>	
<ul style="list-style-type: none"><li>➤ Power supply 110~230Volts AC</li><li>➤ Output 20-26Volts DC / 11.7Amp</li></ul>	
<ul style="list-style-type: none"><li>➤ 8-Core control cable</li></ul>	

Note: Prices can be found in our price list, download link at our web-site:  
[www.rfhamdesign.com](http://www.rfhamdesign.com)

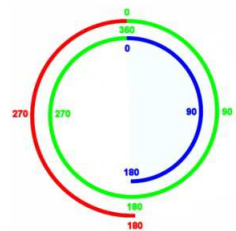
# RF HAMDESIGN WIND LOAD - 3 Meter MESH DISH



## SPID Azimuth & Elevation antenna rotator Type: BIG-RAS/HR



Normal 360  
- 180  
or  
+540 from  
North 0  
for  
total of 720



### SPID BIG-RAS/HR MD-01 Rotor Controller



**Type BIG-RAS/HR is a two engine rotor system (AZ & EL) delivered including:**

- ✓ **BIG-RAS/HR rotor 0.1 degree resolution**
- ✓ **MD-01 rotor controller**
- ✓ **MD-01 Software to control MD-01 rotor controller**
- ✓ **USB Driver**
- ✓ **All connectors to connect to rotor and PS-01**

We recommend to use module PS-01 to supply the MD-01 and Rotor.  
This module is a dual voltage power supply which will be connected to the MD-01 module

Alle leveringen dienen te worden betaald binnen 30 dagen na factuurdatum. Voor alle door ons gesloten overeenkomsten, leveringen en diensten gelden onze algemene verkoop en leveringsvoorwaarden welke op [www.rfhamdesign.com](http://www.rfhamdesign.com) zijn vermeld.  
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## Short summary specifications:

Type BIG-RAS/HR is configured with two electronic sensors in order to indicate the position of **Azimuth and Elevation with a resolution of 0.1 degree** (transmission is 0,0058 degree on impulse)

The MD-01 rotor controller has a built in backlight Display which shows Azimuth and Elevation real time at 0.1 degree resolution. This means the rotor can also be used as a stand-alone configuration and AZ & EL engines can be moved using the arrow buttons at the front.

Also can be the menu be entered and changes can be made to all available functions

Built in the MD-01 rotor controller is also a track interface which will be connected through USB (Win XP...Win 7) USB Driver is available and ready for download at our BIG-RAS/HR support page.

Lot of new functions available now and can be configured by the user through MD-01 PC interface:

MD-01 Interface (Picture right) can be used to control the AZ & EL rotor by Personal Computer.

One of the most used track program Orbitron is integrated to select easy.  
(more info at BIG-RAS/HR support page)



More available functions:

- ✓ Most used and special function is the integrated function: Soft Start and Soft Stop !  
Soft start and stop has available a 3 step Delay time and a 3 step acceleration time. Both Delay and acceleration can be set by the user step by step. This function is very helpful for large dishes
- ✓ Firmware update free of charge
- ✓ Short way function for Satellite track
- ✓ USB controlled
- ✓ Mouse option: control AZ and EL movement by a mouse connected to MD-01
- ✓ Minimum and maximum angle free adjustable for Azimuth and Elevation
- ✓ Write your own protocol and/or PC application (protocol available for download)
- ✓ Ethernet module option (ready to build in)
- ✓ Build in 19" rack system
- ✓ Free of charge software update available at our BIG-RAS/HR support page
- ✓ Track software supported: Orbitron and PST rotor (more will be available)
- ✓ MD-01 Rotor Controller can emulate all Yaesu rotor drivers !

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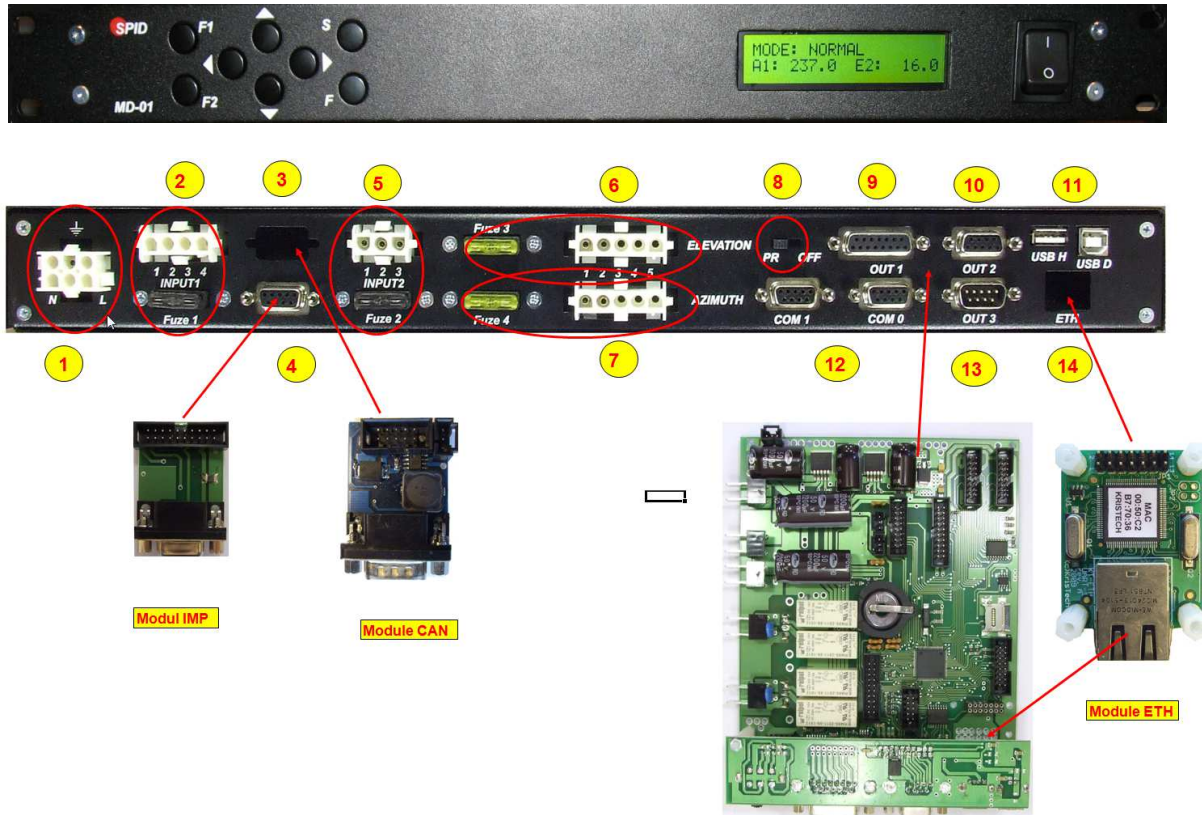
<b>Specifications Rotor Controller, type MD-01</b>	
Supply voltage input	13.8 and 24 volt
Current consumption	6....18 A
Supplied with	build in PC track interface (USB), MD01 controlling software, connectors
Dimensions	19 inch rack Mount (483x366x43mm)
Weight:	1.9 Kg
Case	Aluminium / steel
Environment	Ground / Mobile Sheltered
MTBF	15000 hours @ -5 to +40°C
Display	2* 4 digit (green)
Control cable 8-core	Connection inc. 2* 4 pin connector

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## MD-01 Rotor Controller in spotlight



Description by Number:

- 1# Plug in for Ground connecting ( rest of the pins NC )
- 2# PSU plug in for Rotors engine 24Volts ( FUZE 25A )
- 3# NC, can b used for connecting modules for example CAN, RS485, RS422 or other analog plug in
- 4# Impulse plug in ( plug in for HALL 4 sensors from Rotors engine )
- 5# PSU plug in for electronic 13.8Volts ( FUZE 4A )
- 6# Plug out for connecting Rotor ELEVATION BIG-RAS On each plug out FUZE ( 15A )
- 7# Plug out for connection Rotor AZIMUTH BIG-RAS On each plug out there is FUZE ( 15 A )
- 8# Switch for updating Firmware (firmware is available for free at our BIG-RAS/HR support page)
- 9# Universal plug out . There is possibility to connect relay module inside of the driver .  
MD-01 can have a function to switch for example antennas .
- 10# Universal plug out
- 11# USB plug in  
USB – D (PC)  
USB – H (HOST) (version on future)
- 12# Plug out RS-232  
COM 0 ( RxD and TxD, COM 0 also used for firmware update)  
COM 1 ( RxD nad TxD )
- 13# Universal plug in for mouse
- 14# Ethernet plug in  
This is available to use after installing the ethernet module (picture)

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Example set up using 4 units combined including SW-01 and PSU PS-01 module



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## BIG-RAS/HR Azimuth and Elevation Rotor



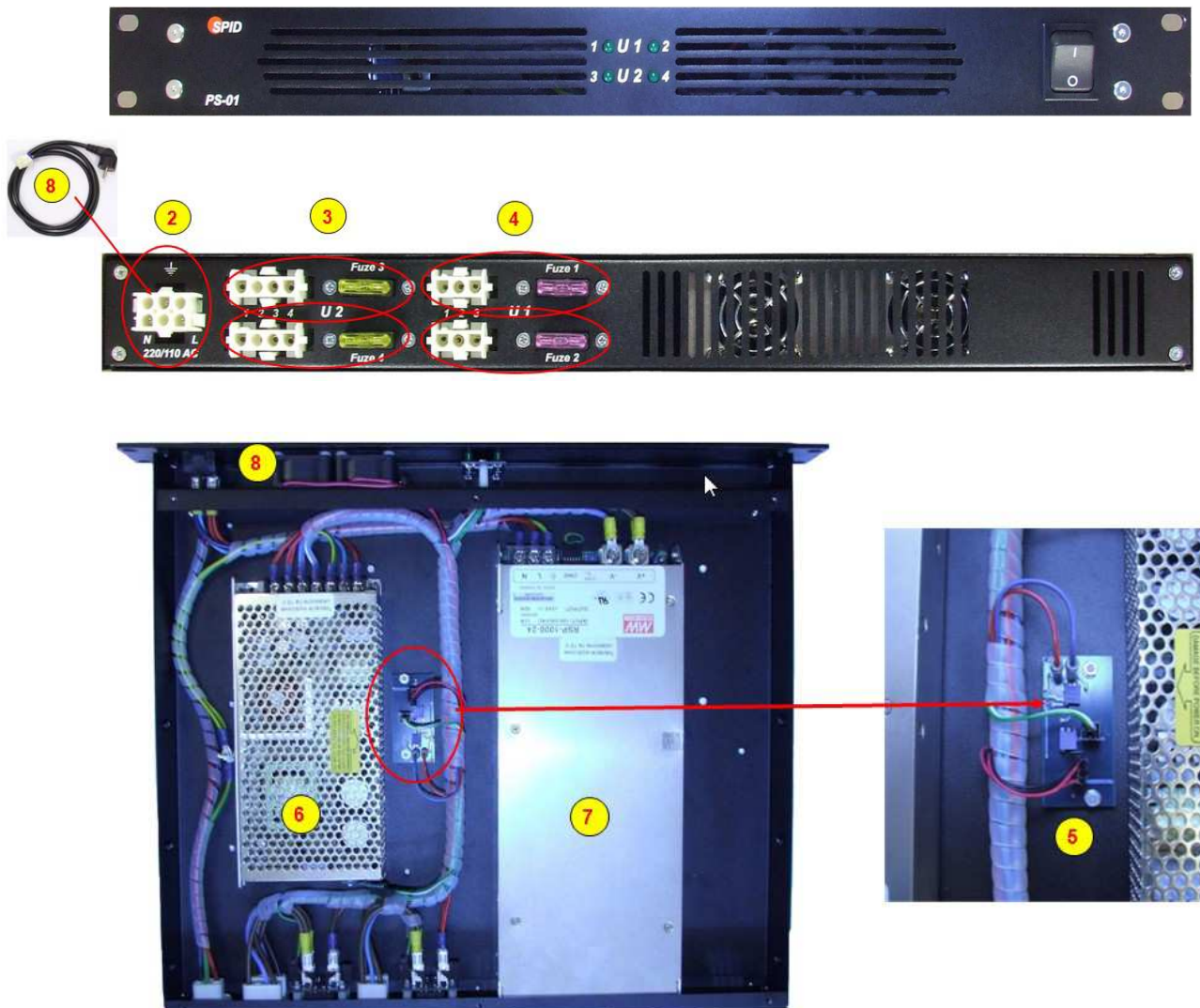
Specifications: SPID BIG RAS/HR Azimuth and Elevation Rotor	BIG RAS/HR
Turning torque in-lbs/Nm	5398 in lb/ 610 Nm
Brake Torque in lbs/Nm	24,000 in lb/ 2,712 Nm
Brake Construction	Double Worm Gears
Vertical Load lbs/Kg	>700 lbs/318 Kg
Rotation Speed 105 Degree	60 sec (3.42 min / 360 dgr)
Resolution	0.1 degree
Rotation Range Az/EI	360/180 deg
Weight lbs / Mass Kg	51 lbs/23 Kg
Position Sensor	HALL Sensors
Mast size inches/mm Bottom mount	2.6 in/66 mm
Mast size inches/mm Elevation	2.0 in/50 mm
Environment	Ground / Mobile free air and / or Sheltered
MTBF	12500 hours @ -20 to +55°C
Control cable Engine	4-core / 1.5mm <sup>2</sup>
Control cable Sensors	8-core / 0.2mm <sup>2</sup>

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## SPID Power Supply Module, PS-01



**This Module, PS-01 is a Dual Voltage PSU which can be connected to MD-01**  
Standard build in is a 15Volt / 10A and a 24Volt / 22A Power Supply unit

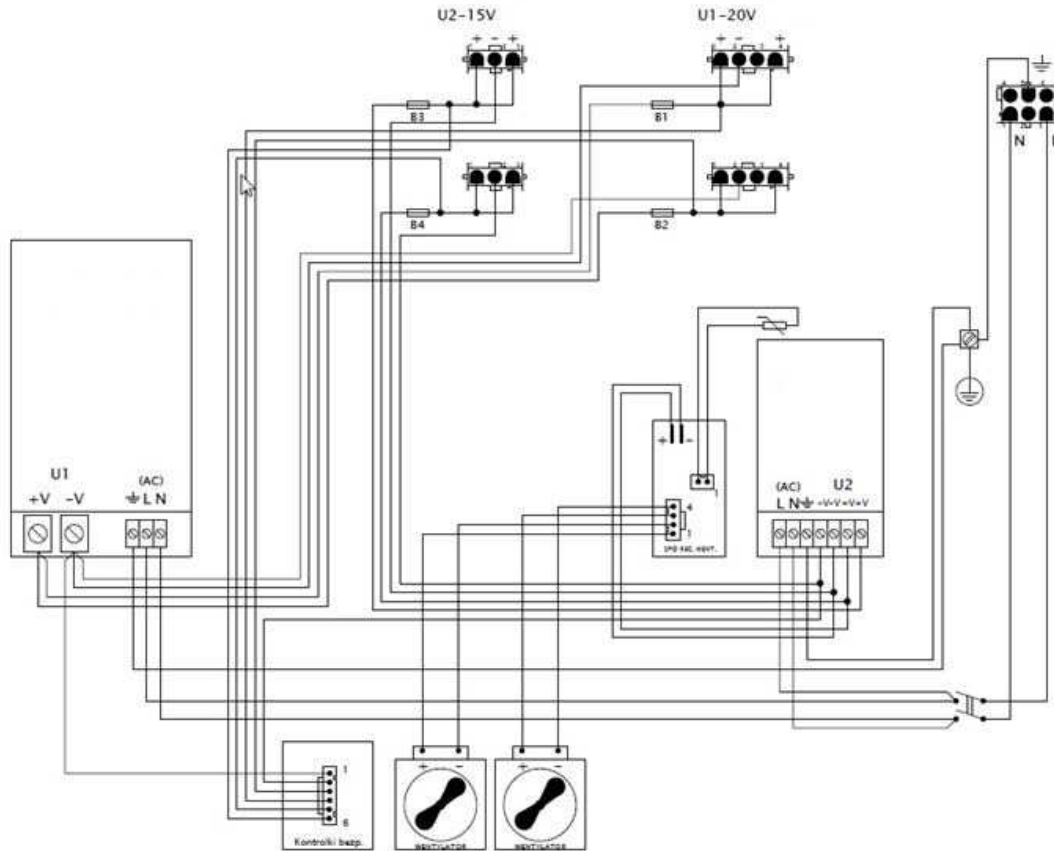
### Description by number:

- 1# Indicators are showing whether on plug outs
- 2# Plug in for power supply 90 – 230 Volts AC
- 3# Output 24V / 22A
- 4# Output 15V / 10A
- 5# Temperature sensor
- 6# 15V / 10 A PSU
- 7# 24V / 22 A PSU
- 8# Blowers

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## DIAGRAM Power Supply PS-01

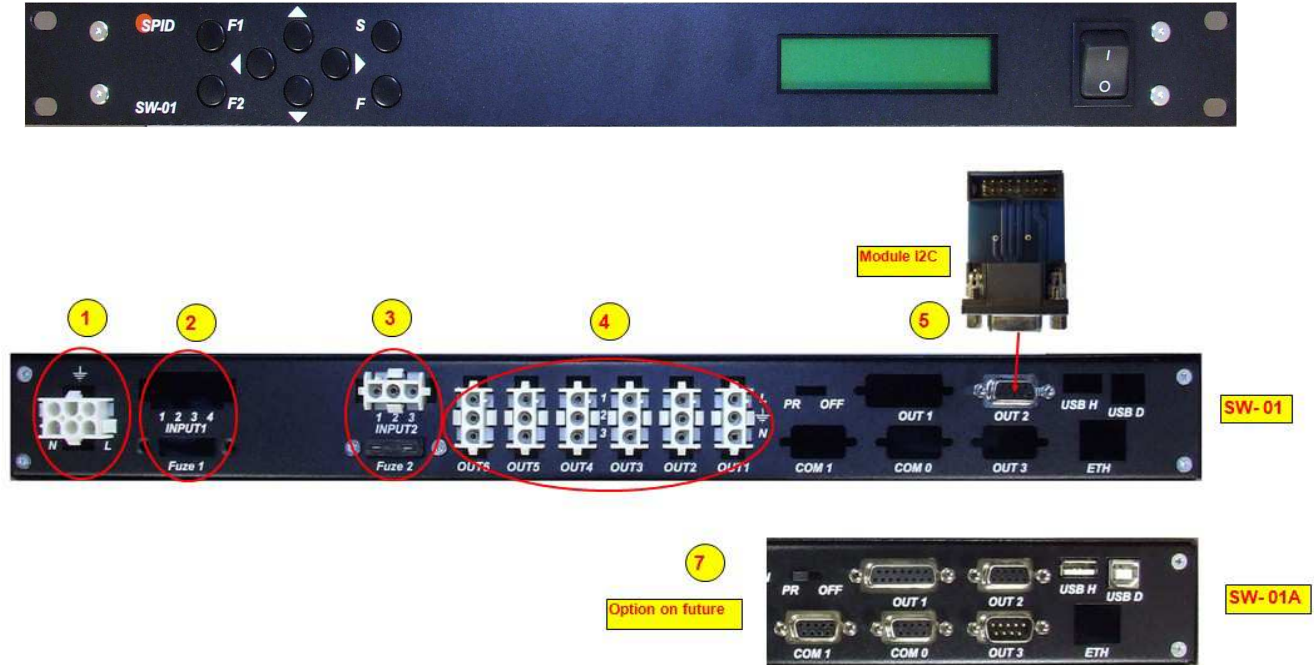


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## SPID SWITCH Module, SW-01

The Switch Unit, type SW-01 is a option if you want to switch on/off connected interfaces, amplifiers etc, etc. All can be controlled by the MD-01 program through PC.  
Dimensions: 19 inch rack Mount (483x366x43mm)



### Description by Number:

1# Power supply plug in OUT1-OUT6

For pins N,L we are connecting power supply ( in this case 220/110 AC ) this circuit is without FUSE .

2# NC, There can be additional power supply from PS-01 connected .

3# Power supplying electronic ( FUZE 2A )

4# Plug out for switcher ( OUT1 -- OUT6 )

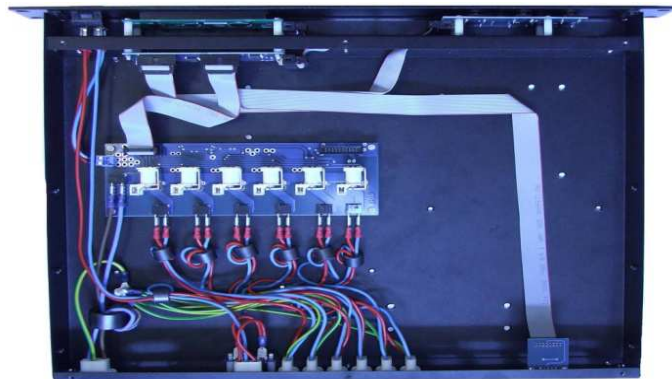
On plug out there is voltage from plug in "1"

5# I2C plug in connected to plug out I2C in DRIVER ( OUT2 MD-1 --- OUT2 SW-01 )

6# PCB control, DELAY for turning on plug outs OUT1 - OUT6 ( 30 A, 600V )

7# In the future there is possibility that SW-01 can work as a separate device .



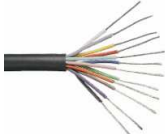

In such case SW-01 instead of module I2C there can be full control motherboard ( just like in MD-01 ) and device will be fully separate .



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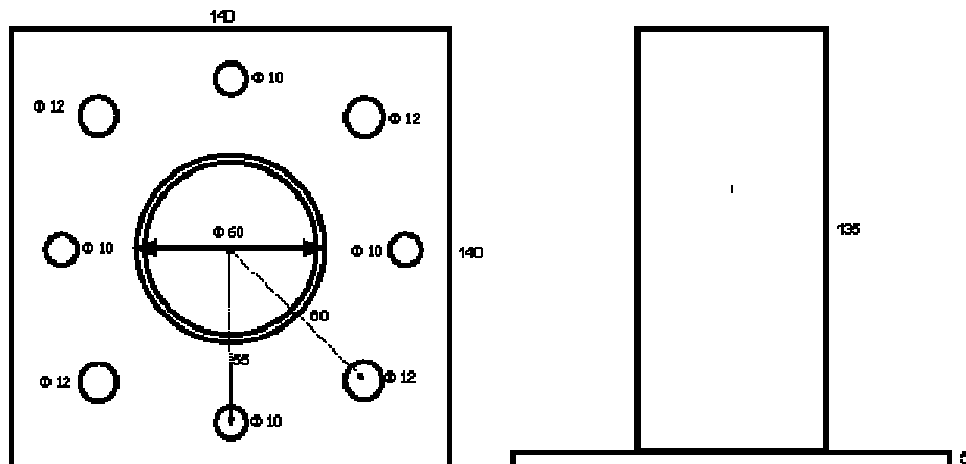
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## Available accesories

Accessories	Type	
<b>Mounting bracket</b>	<b>FPD-BR01</b>	
<b>Control cable 4-core (4x1,5mm<sup>2</sup>)</b> Reel: 25meter / 50 meter	<b>CC4-002/25</b>	
<b>Control cable 8-core (8x0,2mm<sup>2</sup>)</b> Reel: 25meter / 50 meter	<b>CC8-004/25</b>	
<b>SPID ADAPTOR Plate</b> Used to Mount the rotator at a base-plate	<b>ALPHA-ADAPT</b>	
<b>MOUSE</b> Control AZ & EL movement by mouse connected to MD01	<b>SPID MOUSE</b>	

**Note:** Prices can be found in our price list, download link at our web-site: [www.rfhamdesign.com](http://www.rfhamdesign.com)

### Dimension SPID ADAPTOR Plate in mm.



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